A Litigation Target

Commercial Vehicle Anti-Lock Braking Systems

by Paul W. Grego

It was a typical winter day for a tractor-trailer driver, who was driving his rig in a mountainous area of North Central Pennsylvania. There were squalls of snow in the area, the roadway was icy and slippery, and the temperature hovered around 20 degrees. Then, at approximately 4:30 p.m., the tractor-trailer reached the crest of a hill and, while negotiating a gradual right-hand curve, the truck driver noticed a small car moving slowly ahead of him in the southbound lane of travel. When the car suddenly applied its brakes, the truck driver, in sequence, engaged the tractor's engine brake, the trailer's brakes, and applied the tractor's foot brakes in a successful attempt to avoid a collision with the small car. However, while the tractor-trailer slowed down to avoid the collision, the trailer crossed into the northbound lane of travel and collided with a station wagon. The trailer returned to the southbound lane before it again crossed into the northbound lane and collided with another car. As a result of the collision, the driver of the car was seriously injured and her passenger was killed.

The tractor was manufactured in 1986 and the attached trailer was manufactured in 1994. Neither vehicle was equipped with an anti-lock braking system (ABS). As a result of the accident, suit is brought against several parties, including the tractor and trailer manufacturers, who were sued for purported defects in the design and/or manufacture of the tractor and trailer, respectively, by virtue of the lack of ABS. This factual scenario, and, in particular, the allegation that the tractor and/or trailer were “defective” because they lacked ABS, provide a harbinger of future litigation regarding ABS that will be targeted at the trucking industry. The National Highway Traffic Safety Administration (NHTSA) has promulgated a regulation, Federal Motor Vehicle Safety Standard (FMVSS) 121, requiring ABS on air-brake equipped truck-tractors manufactured on or before March 1, 1999. Ret-rofitting of vehicles manufactured prior to these dates is not required by the regulation.

ABS tractor-trailer regulation has spanned more than a quarter of a century, has been rescinded in the past by lawsuit, and has required numerous notices of proposed rulemaking. ABS tractor-trailer regulation is a complicated issue, as highlighted by the difficulty in establishing a final rule. The complexity of the issue is inherent because of the nature of the braking systems on tractor-trailers. This complexity presents a major obstacle for plaintiffs to overcome in lawsuits alleging design and/or manufacture defects in accidents involving tractor-trailer combinations without ABS that were manufactured before the effective dates of the ABS regulation. Because of this complexity, expert testimony that a particular accident would not have occurred had the tractor and/or trailer been equipped with ABS is required. The Daubert standard regarding the admissibility of expert testimony presents a major hurdle for plaintiffs and their experts to overcome to be successful in ABS litigation.

The Fundamentals of Commercial Vehicle Braking

In principle, brake systems used on commercial vehicles are quite simple. When the brakes on a vehicle are applied, forces are generated at the vehicle's wheels that slow the vehicle. As the driver applies force and movement to the brake pedal, air pressure from pressurized reservoirs is delivered through a series of valves and lines to the brake chamber located at the wheel brake.

The purpose of an anti-lock braking system is to help maintain directional stability and control during braking, and possibly reduce stopping distances on some road surfaces. ABS is potentially effective in any situation where the driver brakes hard enough to activate the system, and where conventional brakes may contribute to directional instability. It is believed that ABS could reduce commercial vehicle crashes involving jackknife, loss-of-control, run-off-road, lane departure, or skidding—to the extent that these phenomena may be caused by brake-related directional instability. However, ABS will have no effect on situations where a truck is standing still, moving too slowly for ABS activation, or proceeding straight ahead when another vehicle unexpectedly hits it in the side or rear. See NHTSA Proposed Evaluations of Antilock Brake Systems.
An anti-lock braking system includes wheel speed sensing equipment, an electronic control unit (ECU), brake pressure modulator valves, and a variety of electrical harnesses, switches, relays, and lamps for interfacing the ABS with the vehicle power train, electrical, and braking systems. The sensors continuously monitor wheel speed and send that information to the ECU, which processes the information based upon the algorithm that has been embedded into the ECU. Based on the data processed by the ECU, it will send output signals to the modulator valve to provide appropriate brake pressure control. Specifically, as the ECU receives and interprets the wheel speed signals from the sensors, it uses this information to determine if a wheel is approaching lock and when and how to activate the ABS valves. Through this valve activation, the ECU can regulate air pressure to the brake chambers—preventing lock-up. See Buckman, Commercial Vehicle Braking Systems: Air Brakes, ABS and Beyond (1998), at p. 97-98.

ABS will not independently apply the brakes, but rather allows the braking pressure to increase to the level that is currently being demanded by the driver. ABS takes its pressure supply and signal from the standard pneumatic brake system. It cannot supply a higher pressure to the brakes than the driver is requesting. ABS will “activate” only if the driver “asks” for more braking than the vehicles surface can sustain without lock-up. ABS is passive when the vehicle is not being braked and in the vast majority of braking operations when wheel lock is not pending. See Buckman, supra, at 94.

A trailer’s anti-lock braking system is essentially the same as tractor ABS, but operates completely independently (with the exception of receiving its power from the tractor). The trailer ABS also has an ECU that receives wheel speed information from sensors located in the wheel ends of the axles. There may be two or more sensors on the trailer, depending on the number of axles and the ABS configuration. Sensors continuously monitor wheel speed and send this information to the ECU. When a wheel starts to lock, the ECU, using the wheel speed information and programmed algorithm, sends output signals to control the operation of the ABS modulator valves. In this way, this enables the system to maintain wheel slip in the optimum range for maximum braking while maintaining vehicle stability by avoiding wheel slide. By assuring that the wheels are rolling and therefore capable of generating stabilizing side forces, ABS minimizes any tendency for trailer swing due to hard braking conditions. See Buckman, supra, at 129.

A Brief History of ABS

In 1957, Bendix Westinghouse began work on an anti-lock braking system for heavy commercial vehicles. The ABS performed well within a given set of parameters regarding vehicle load, speed, and road surface, but failed to perform properly in real world conditions. All of these early ABS systems performed with varying degrees of reliability.

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The 1960s brought a significant increase in public awareness of vehicle safety for both passenger automobiles and commercial vehicles. As a result, the Safety Act was enacted in 1966. This Act created the NHTSA within the Department of Transportation and delegated to it the responsibility to develop and implement safety regulations for all highway vehicles. During this time, increased attention was given to the development of ABS on highway vehicles. However, most of the developments regarding ABS occurred in the passenger car market, rather than the commercial vehicle market. In June 1970, included among the NHTSA’s proposals was a regulation regarding new motor vehicle safety standards for air-braked trucks, buses, and trailers. The proposed regulation called for an “anti-lockup system” which “through wheel slip sensing methods, automatically controls brake torque at one or more road wheels of the vehicle during braking.” This proposed regulation, which ultimately became FMVSS 121, was scheduled to take effect on January 1, 1975. It necessitated the drastic redesign of brake systems of all heavy commercial vehicles.

When the regulation was in its proposal phase, the vehicle industry had just begun the development of ABS. ABS in passenger cars had just been introduced as an option on a small number of vehicles. Commercial vehicle manufacturers voiced concerns about the reliability and performance of ABS. Tractor, trailer, and bus manufacturers had difficulty with the performance of ABS, as their ABS vehicles frequently failed to function properly and incidents of “lockup” and loss of control became more frequent. Nevertheless, the original 1975 effective date of FMVSS 121 remained unchanged. See Buckman, supra, at 83-86.

The Paccar Decision and its Aftermath

The lack of reliability of anti-lock braking systems led Paccar Corporation and the American Trucking Association (ATA) to file suit against the NHTSA, alleging that it planned to implement FMVSS 121 without proven technology to justify its ABS requirement. This suit reached the Ninth Circuit Court of Appeals in California in 1978, which ruled against the NHTSA and invalidated all of the braking requirements of FMVSS 121 for trucks and trailers. See Paccar, Inc. v. National Highway Traffic Safety Administration, 573 F.2d 632 (9th 1978).

The market for commercial vehicle ABS disappeared with the rescinding of the braking requirements of FMVSS 121; the trucking industry in the United States effectively withdrew from ABS development. Fleet operators immediately switched their vehicles to systems without ABS. Manufacturers stopped offering ABS, and suppliers who had expended large amounts on research and development for ABS canceled further work in the area.

While ABS development in the United States came to a sudden halt after the Paccar decision, it continued forward in Europe. By early 1991, approximately 20 percent of European heavy trucks were equipped with ABS. On October 1, 1992, the European Economic Commission began requiring all commercial vehicles over 16 metric tons to have ABS.

In the United States, the ABS scene remained quiet until 1987, when Freightliner Corporation became the first heavy truck manufacturer to re-introduce ABS to the North American market. Then, in 1988, the NHTSA began a 200 vehicle fleet test of ABS, which lasted for...
two years, to determine reliability and cost effectiveness. This was done in an effort to assure that the NHTSA would have appropriate documentation on the feasibility of ABS prior to issuing any new regulations.

In 1992, the United States Congress ordered the Department of Transportation to once again initiate rulemaking regarding ABS. That same year, the National Traffic Safety Board also issued a recommendation that ABS be required on commercial vehicles. Subsequently, the NHTSA proceeded to issue an advanced notice of rulemaking on the subject and sponsored a fleet test of trailer ABS, which began in 1992 and was completed two years later.

As a result, FMVSS 121 was amended in 1995 to again require ABS on air-braked tractor-trailers, trucks, trailers and buses in the United States. The effective dates were phased in, with the tractor deadline of March 1, 1997, and the truck, trailer and bus deadline one year later. See Buckman, supra, at 88-90.

### NHTSA Evaluations of ABS

The National Highway Traffic Safety Administration believes that anti-lock braking systems could reduce heavy commercial vehicle crashes involving jackknife, loss-of-control, run-off road, lane departure, or skidding, or where trucks with conventional brakes were unable to stop in time to avoid hitting something frontally.

In August of 2000, the NHTSA proposed to obtain crash data over a two-year period (2001-2002) to statistically evaluate the effectiveness of ABS on heavy commercial trucks. According to NHTSA, this study has now been delayed until the beginning of 2003. Tractor-trailer combinations can belong to four groups with respect to ABS: (1) tractor and trailer both ABS-equipped; (2) ABS tractor, non-ABS trailer; (3) non-ABS tractor, ABS trailer; and (4) neither ABS-equipped. Therefore, crash data is needed to identify the ABS status (i.e., “present” or “absent”) of the trailer as well as the tractor. The NHTSA will compute crash statistics separately for each group, and the effectiveness of configurations (1), (2), and (3) will be calculated relative to (4).

The NHTSA is working with state police, who will send data to the NHTSA on every crash they investigate that involves a tractor-trailer, bobtail tractor, or medium or heavy single-unit truck. The data will include the basic state crash report plus a supplemental form indicating if the truck or trailer are ABS-equipped. The basic crash report will describe the crash configuration, the movement of each vehicle prior to the crash, and the point of impact on each vehicle. In many cases, the basic crash report will provide enough information for the NHTSA to assign trucks to crash groups. The basic report also will indicate the model year and VIN of the tractor-trailer or single-unit truck. The supplemental form will enable police to record information about trailers needed to determine if they have ABS, including the presence of an exterior malfunction indicator light (MIL), the model year, the build date, and the VIN. The supplemental form also will include a few questions about the crash configuration where the basic report does not provide all the data needed to group crashes. The crash test data compiled by the NHTSA will comprise approximately 10,000 tractor-trailer crashes and 5,000 single-unit trucks.

### Admissibility of Expert Testimony

Beginning with the United States Supreme Court decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the opportunities to exclude unreliable and baseless expert testimony have been greatly expanded. Before the *Daubert* decision, challenges to expert testimony were mostly based on the standard set forth in *Frye v. United States*, 293 Fed. 1013 (D.C.Cir. 1923). Under *Frye*, expert testimony is admissible if it is based upon techniques and procedures “generally accepted” in the scientific community. In *Daubert*, the Supreme Court took the opportunity to enunciate a new standard for admissibility of expert testimony. It stated that trial courts should act as “gatekeepers” and exclude expert testimony that is unreliable. This gatekeeping role involves two functions: (1) determining if the proposed expert testimony is based upon “scientifically valid” reasoning or methodology; and (2) determining if the proposed expert testimony is relevant (i.e. the reasoning and methodology “can properly be applied to the facts at issue”).

The *Daubert* Court went on to list several non-exhaustive factors, representing a general framework by which the reliability of expert testimony can be judged. See 509 U.S. at 593-94. The *Daubert* factors are:

1) Whether the expert’s technique or theory can be or has been tested;
2) Whether the technique or theory has been subject to peer review and publication;
3) The known or potential rate of error of the technique or theory when applied;
4) The existence and maintenance of standards and controls; and
5) Whether the technique or theory has been generally accepted in the scientific community.

*Daubert* concerned expert testimony that constituted “scientific knowledge” as opposed to “technical or other specialized knowledge.” As such, the decision was laden with scientific terminology and references to the “scientific methodology,” which involves “generating hypotheses and testing them to see if they can be falsified…” 509 U.S. at 593. To be reliable and hence admissible, scientific testimony must be based upon scientifically valid principles and methodology; meaning they support what they purport to show.

Subsequently, in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), the Court concluded that the *Daubert* reliability requirements applies to all experts, not just “scientific testimony” experts. Moreover, in *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), the Court expanded the *Daubert* ruling by insisting that there be both a reliable methodology and a reliable application of the methodology. An expert must explain both “how” and “why” he reached his opinion. Simply because a well-qualified expert says something, does not make it so. All experts must present opinions that are relevant and that are reliably based upon “the knowledge and experience of [the relevant] discipline,” *Daubert*, 509 U.S. at 592.

The trial court must avoid generalities and focus on “the particular circumstances of the particular case at issue.” *Kumho Tire*, 526 U.S. at 150. However, courts have flexibility in performing their gatekeeping function. The common thread in the *Daubert*, *Kumho*, and *Joiner* decisions is the Court’s desire to curtail expert testimony offering subjectively based opinions that the same expert could not get away with in the “real world.” The courtroom is not a laboratory. Therefore, no one should expect that lawsuits will produce scientific discoveries. Thus, courts must separate reliable expert testimony from the unreliable by employing the objective rules and standards that exist outside the courtroom. Insisting that the expert explain the “how” and “why” of his opinion, and not accepting the expert’s self-validated work, helps ensure reliability.
Applying Daubert to ABS Litigation

Now let's return to our factual scenario and the ensuing litigation. The plaintiff provides the reports of three experts that express their opinions regarding whether the accident would have been prevented if there had been an anti-lock braking system on the tractor and trailer. One expert in the area of "force analysis and dynamics" concludes that the braking procedure that the truck driver employed to slow his vehicle to prevent it from colliding with the small car in front of him, as well as the design of the braking system in both the tractor and trailer, caused the trailer wheels to lock up, which then caused the trailer to swing into the northbound lane. It was this expert's opinion that vehicles equipped with ABS would maintain directional stability much more effectively than vehicles without ABS, and that if the tractor and trailer were equipped with ABS, the accident would not have occurred.

The second expert, an "engineering and management consultant," provided a report that stated, in relevant part, the following:

"Slowing a tractor-trailer under slippery road conditions is a dangerous and demanding psychomotor task. Maintaining lane position while braking is a difficult task. Avoiding collision with a vehicle that is traveling at a slower speed and braking is a complex and stressful psychomotor task. Any of these tasks could have resulted in [the driver] losing lateral control of the trailer. The combination of tasks makes "locking up" his wheels with the air brakes highly likely, and maintenance of lateral control of the trailer almost impossible. Without the augmented braking capacity provided by an ABS, this accident was a virtual certainty... [T]he absence of an [ABS] on the tractor-trailer was a significant causal contributor to the accident."

The plaintiff's third expert, an accident reconstructionist, concluded that the brakes on the trailer locked when the driver first applied them to avoid hitting the small car, which allowed the trailer to swing out onto the northbound lane of travel. This expert described this condition as "trailer swing," which may result when trailer wheels are locked. He concluded that the accident occurred due to wheel lock-up, and that the accident would not have occurred had the tractor and trailer been equipped with ABS, which, in his opinion, would have prevented wheel lock-up.

All three of the plaintiff's experts believed that the accident occurred because of wheel lock-up, and that the accident would have been prevented if the tractor-trailer had ABS, which presumably would have prevented wheel lock-up. However, all three of the experts were silent regarding what methodology was used to support their conclusions. Instead, the plaintiff's experts merely relied on their general background and experience, or intuition, in theorizing what might or might not have occurred if the tractor and trailer had been equipped with ABS. In other words, there was no evidence of "how" and "why" the experts reached their conclusions. Thus, a Daubert challenge, based upon the above factors, is clearly in order as a "first line of defense."

To attempt to thwart the defense's Daubert challenge, the plaintiff could try to argue that the weight to be given to the expert testimony is for the trier of fact to determine. This is true, so long as the expert's opinion is based on reliable methodology and a reliable application of the methodology. However, it is incumbent that the defense analyze closely the methodology used. Thus, it is likely that, under this scenario, the plaintiff's expert testimony would have been declared inadmissible under the Daubert test based on the lack of reliable methodology. This, in the opinion of the writer, is the best method to defeat this attempt, and other similar attempts, to bring ABS or lack thereof, into an allegedly viable cause of action.

If the Daubert challenge is unsuccessful, the traditional use of contrary expert testimony should be utilized as a first alternative (with the added benefit of possibly augmenting the Daubert arguments). In other words, beyond the lack of ABS, none of the plaintiff's experts addressed any other potential factors that may have caused or contributed to the accident. Many factors, alone or in combination, often contribute to truck accidents, including: driver training and/or behavior, brake maladjustment, road conditions, truck loading, and mismatch of units. Any of these factors can contribute to dynamic/lateral instability, even on vehicles with ABS. In other words, trailer swing, blow out, or jackknife can occur even in trailers equipped with ABS. Defense experts should have little or no difficulty in citing these, and other traditional liability/causation defenses to plaintiffs' causes of action.

Therefore, one may ask how plaintiffs' attorneys can attempt to overcome these ostensibly solid defense measures. Plaintiffs in future ABS litigation have the potential to buttress their expert testimony with computer simulations and/or live dynamic accident reconstructions. However, with so many potential factors contributing to any tractor-trailer accident, plaintiffs in ABS litigation still have a difficult hurdle to overcome. Any accident reconstruction and/or computer simulation with an ABS-equipped tractor-trailer must accurately reproduce the numerous factors that existed at the time of the underlying accident.

Defense attorneys must be aware of the difference between computer "simulation" and "animation." Computer simulation, by definition, must be based on real-world physics in its programming. It cannot simply be an animation divorced from the laws of physics. In other words, the data of the accident is put into the simulation program and the program runs the simulation of the accident based upon the laws of physics. However, animation is not based on the laws of physics, but made to do whatever the animator (or expert telling the animator) wants to do. In this fashion, plaintiffs' experts will determine their opinions, then tell the animator to simply create the "cartoon" to show it. Thus, if an expert wanted to show a tractor-trailer on its rear wheels going 100 mph in reverse, an animator could do it. Of course, this would be contrary to the laws of physics, and, therefore, could not occur in a simulation. Therefore, defense counsel must be aware of this critical difference when considering challenging opposing expert testimony.

The case of Rapp v. Singh, 152 F.Supp.2d 694 (E.D.Pa. 2001), involving another alleged truck design defect of recently innovative equipment, such as ABS, provides an example.
of putting this Daubert challenge into prac-
tice. On August 21, 1998, Mr. Rapp was driv-
ing with his family eastbound on Interstate 78
in a Mercury Sable station wagon in south-
estern Pennsylvania. He stopped his vehicle in
the right-hand lane of travel behind a tractor-
trailer owned by Gilbert Express and oper-
ated by Pablo Molina; this vehicle was stopped
in traffic because of an earlier accident. The
Molina trailer had been manufactured by Great
Dane. While the Rapp car was stopped be-
hind the Molina trailer, another truck, a GMC
owned by G.S. Freight Lines and operated by
Gurdev Singh, collided with the rear of the
Rapp car, propelling it forward into the rear of
the Molina trailer. Mr. Rapp and his son were
killed in the collision and two other passen-
gers were injured.

Mrs. Rapp filed an action against Great Dane
alleging that the rear bumper guard on the
Molina trailer was defective for failing to have
a vertical attachment between the edges of
the horizontal member and the rear corners
of the trailer. Great Dane filed a motion for
summary judgment, arguing that Mrs. Rapp
had failed to set forth a prima facie case be-
cause her proposed expert testimony failed to
satisfy the Daubert standard as applied in
Kumho Tire.

In 1953, the Interstate Commerce Commis-
sion promulgated the first regulation regard-
ing the problem of “underride,” which occurs when
a passenger vehicle collides with the rear end
of a trailer and slides under the trailer. This
regulatory activity was similar to the present
state of ABS; that is, the recent regulation and
subsequent pending NHTSA testing to deter-
mine the effectiveness of the required sys-
tems. The 1953 underride standard required
the use of rear impact guards on trailers. Since
1967, the NHTSA has studied the underride
issue to determine performance criteria for an
optimum rear impact guard standard. After a
series of proposals and tests, in 1996 NHTSA
authored a final rule establishing two Federal
Motor Vehicle Safety Standards, effective as of
January 26, 1998, setting forth the require-
ments that a rear impact guard must meet and
specifying the procedures that the NHTSA
will use when testing a guard.

Although the trailer involved in the Rapp
accident was manufactured before the effec-
tive date of the regulation, the rear guard in
fact exceeded the current requirements for
height, width, and location, as well as strength
and energy absorption. Great Dane also man-
ufactured trailers whose rear guards contain
additional vertical attachments that connect
the rear corners of the trailer to either end of
the horizontal bar. According to Great Dane,
however, the strength and energy absorption
capabilities of these vertical attachments are
not known, and they are typically added at a
customer’s request to support an intermediate
step between the horizontal bar and the trailer
cargo area. Plaintiff Mrs. Rapp contended that
had the trailer been equipped with these ver-
tical attachments, the Rapp car would have
been deflected from the corner of the Molina
trailer, thereby eliminating the passenger com-
partment intrusion of the right rear corner of
the trailer.

After an analysis of the requirements of
Daubert and its progeny, the Rapp v. Singh
court turned its attention to the testimony of
the plaintiff’s experts. The court stated that
the plaintiff’s experts’ data involved only the
mechanics of the accident as it happened and
did not reflect, in even the barest terms, what
would have happened with the addition of a
vertical attachment. These data thus in no
way illuminated the problem at the heart of
the plaintiff’s case against Great Dane, which
was the degree of enhancement the allegedly
defective rear guard added to her husband’s
and son’s fatal injuries.

A critical element cited by the court was the
state of flux relative to the guard by virtue of
the relatively new regulation and lack of de-
finitive subsequent testing of its effective-
ness. Therefore, the court concluded that the
plaintiff failed to establish that her expert tes-
timony with respect to the addition of vertical
attachments was based upon “valid reasoning
and reliable methodology.” Absent such expert
testimony, the plaintiff could not establish
that the Molina trailer rear guard was defec-
tive, or that the proposed rear guard with ver-
tical attachments constituted a safer design.
Accordingly, the court granted Great Dane’s
motion for summary judgment.

Conclusion
Due to the recent regulatory requirements cou-
pled with no necessity of retrofitting, there
are many tractors and trailers operating with-
out anti-lock braking systems. While ABS is
widely thought to be effective in reducing cer-
tain accidents by preventing wheel lock-up,
currently there is a lack of scientific data re-
garding any real-world accident reducing ca-
pabilities of ABS. The NHTSA is in the process
of collecting crash data on tractor-trailers to ac-
cess the effectiveness of ABS. This study is not
scheduled to be concluded until the end of
2005.

Under the Daubert test regarding the admis-
sibility if expert testimony, in litigation alleging
defective design for lack of ABS, a plaintiff
must produce expert testimony based on a
reliable application of a reliable methodology
that an accident involving a tractor or trailer
without ABS would not have occurred if the
vehicle was ABS-equipped. An expert, no mat-
ter how well-qualified, cannot merely rely on
their general background and experience, or
intuition, in theorizing about what might or
might not have occurred with ABS. Presently,
because the benefits of ABS are undetermined,
the Daubert standard presents a major hurdle
for plaintiffs and their experts to overcome in
ABS litigation. The defense bar must be aware
of these attempts, and be prepared to rebut
them (and any other “new creations” by the
plaintiffs’ bar) successfully first with Daubert,
then traditional defense expert testimony, and
cross-examination of plaintiffs’ experts as to
the support of their opinions. If not, then the
trucking industry states retrofitting of all com-
mmercial vehicles without ABS “in the face.” Ob-
viously, this would be a devastating result.
Hopefully, the suggestions in this article will
aid the defense bar in preventing such a calam-
ity to the trucking industry from occurring.