Status Report

Insurance Institute for Highway Safety | Highway Loss Data Institute

Long haul

Mandate for electronic logging devices is finally on the books

Vol. 51, No. 2
February 26, 2016

Historic mandate for electronic logs to bring trucker work-rule compliance into 21st century

In an era of smartphones, online banking and self-checkout kiosks, the paper logbooks truck and bus drivers keep to attest to their compliance with federal work rules are decidedly antiquated.

Finally, that's set to change.

More than 29 years after the Institute first petitioned the U.S. Department of Transportation to ditch paper logs in favor of automatic devices to record when a truck is moving, a mandate for electronic logging devices (ELD) is on the books. The rule aims to reduce fatigue-related crashes by drivers who may have doctored their paper logs to hide the real hours they have driven beyond what regulations allow.

Electronic logging devices should help reduce the problem of fatigue-related truck crashes by helping enforce federal hours-of-service rules for truck drivers.

"Since 1938, complex, on-duty/off-duty logs for truck and bus drivers were made with pencil and paper, virtually impossible to verify," said U.S. Transportation Secretary Anthony Foxx in announcing the rule on Dec. 10, 2015.

"This automated technology not only brings logging records into the modern age, it also allows roadside safety inspectors to unmask violations of federal law that put lives at risk," Foxx said.

Studies of long-distance truckers indicate that work rules commonly are flouted. Hours-of-service regulations govern how much time truck drivers can be on the road and when and for how long they need to rest. Although the current regulations allow too much time on the road — up to 11 hours a shift and up to 77 hours over 7 days — better compliance would likely reduce the number of tired drivers (see *Status Report*, April 26, 2011, and Jan. 24, 2012, at iihs.org).

Requiring all truckers to use ELDs also levels the playing field by removing any

A truck driver reviews his handwritten daily logbook of work hours at a rest area in Maryland. Since 1938, drivers have been allowed to self-report their on-duty/off-duty time this way. The paper logs are often called "comic books" because they are easy to falsify to hide the fact that drivers have been on the road longer than federal rules allow without rest.

Long road to a mandate for electronic logging devices

- **1971** Federal legislation introduced to require all trucks and buses to be equipped with tachographs
- **1986** IIHS petitions FHWA for mandate
- **1987** IIHS asks FHWA to reconsider denial of mandate
- **1989** IIHS petitions FHWA for mandate for carriers transporting hazardous materials
- **1995** IIHS and 5 other safety groups petition FHWA for mandate
- **2000** FMCSA proposes new trucker work rules, including ELD mandate
- **2003** FMCSA announces new rule increasing allowable driving time but no ELD mandate
- **2005** IIHS petitions for reconsideration of 2003 work rule and lack of ELD mandate
- **2010** FMCSA mandates ELDs for carriers with egregious violation history, effective 2012
- **January 2011** FMCSA proposes comprehensive mandate
- **August 2011** Federal appeals court rejects limited ELD mandate due to lack of driver protection from harassment
- **2014** FMCSA re-proposes mandate
- **Dec. 2015** FMCSA issues final rule mandating ELDs by December 2017 for all commercial truck and bus drivers required to complete paper logbooks
- **Dec. 2015** Owner-Operator Independent Drivers Association files lawsuit to block ELD mandate

Courtesy of Omnitracs LLC

Courtesy of Omnitracs LLC

Many fleets already use electronic logging devices. Compliance software from Omnitracs sends automatic updates to fleet managers about a driver's duty status, driving time and remaining hours of service.

The ELD mandate covers an estimated 3 million truck and bus drivers. The federal government estimates it will save 26 lives and prevent 562 injuries on average a year.

competitive advantage to violating work rules compared with carriers who follow the rules, industry representatives say. In turn, that should help ensure that drivers overall are more rested and alert when they return to the road.

If the rule survives a legal challenge, commercial truck and bus drivers currently required to record their duty hours must start using compliant ELDs by December 2017. The rule exempts short-haul drivers who use time cards. Drivers of vehicles made before 2000 can continue to use paper logbooks. Carriers who already use ELDs that don't meet the new technology requirements have until December 2019 to upgrade to compliant systems.

"This is a game-changer for the safety of our highways," says Adrian Lund, who is president of the Institute.

Lund was there at the beginning when the Institute asked the U.S. Department of Transportation in October 1986 for an automatic recorder mandate to help enforce truck driver work rules (see *Status Report*, Nov. 8, 1986). Two months later, the Department of Transportation denied the petition.

"We made a reasonable request, based on solid research. It should have been an easy win," Lund recalls. "Then every time it looked as if an electronic log requirement was gaining traction, trucking industry lobbyists, federal regulators or judges stalled the progress. And all the while people were being killed in crashes involving truckers who were too tired to be on the road."

The ELD mandate covers an estimated 3 million drivers and is expected to save 26 lives and prevent 562 injuries on average per year, the Federal Motor Carrier Safety Administration (FMCSA) says. Cost savings for the trucking industry should top $1 billion a year, mainly by reducing paperwork, the agency says.

The American Trucking Associations, which had once opposed a mandate for electronic recorders, lauded the rule in a Dec. 10 tweet: "Today is a historic day for #trucking as FMCSA has issued its ELD rule. Technology to improve safety & efficiency."

ATA President Bill Graves added, "This regulation will change the trucking industry — for the better — forever."

In 2005, the trade group softened its stance on mandatory ELDs, then known as electronic onboard recorders (see *Status Report*, Jan. 31, 2005), and in 2010 made them a top legislative priority.

Still, not all truckers are on board. Days after FMCSA's announcement, the Owner-Operator Independent Drivers Association filed a lawsuit to block the rule's implementation. The group, which thwarted a prior ELD mandate, vowed "to fight it with everything we have available."

A federal appeals court struck down a 2010 rule after the owner-operator group challenged it on the grounds that carriers might use recorders to harass drivers by pressuring them to drive when they are tired (see *Status Report*, Oct. 13, 2011).

FMCSA went back to the drawing board and in March 2014 issued a revised proposal that explicitly prohibits such harassment (see *Status Report*, April 8, 2014). December's regulation is the result.

Automated logging systems have been around for decades, and many carriers use them to collect fleet data. ELDs monitor engine hours, vehicle movement, miles driven and location information. They can be standalone telematics devices or software applications installed on laptops, smartphones, tablets or other wireless devices.

The rule stipulates that ELDs be able to transfer data wirelessly or locally using Bluetooth or a USB port. Drivers must be able to show roadside inspectors their hours-of-service logs, either on a display screen or a paper printout.

Canada- and Mexico-based truckers also will have to comply when operating on U.S. roads. Canada doesn't yet require ELDs. The Canadian Trucking Alliance, a federation of provincial trucking associations, has lobbied for a mandate for more than a decade, and the government last year signaled its intention to move ahead with one. ELDs aren't required in Mexico, where truck drivers aren't covered by hours-of-service regulations either. The European Union mandated electronic logs in 2006, replacing a prior rule on the books since the 1980s requiring large trucks to be equipped with mechanical tachographs to record vehicle travel hours. ■

Front crash prevention requirement for large trucks may be on horizon

Large trucks could get a major safety upgrade if the U.S. mandates front crash prevention systems on big rigs.

The National Highway Traffic Safety Administration (NHTSA) in October 2015 granted a petition for rulemaking calling for forward collision warning and automatic braking capability on trucks with a gross vehicle weight rating of 10,000 pounds or more (federalregister.gov/a/2015-26294). The petition was filed in February 2015 by the Truck Safety Coalition, the Center for Auto Safety, Advocates for Highway and Auto Safety, and Road Safe America.

The agency "agrees with the petitioners that [these] systems have the potential to save lives by preventing or reducing the severity of rear-end crashes."

Front crash prevention systems use cameras, radar, or other sensors to monitor a truck's path and alert the driver of a potential collision with a vehicle or object. Some systems require drivers to react to warnings, while others may automatically brake or steer a truck to reduce crash severity or avoid a crash altogether.

IIHS estimates that forward collision warning/mitigation could address up to 37 percent of large truck front-to-rear crashes if all large trucks had the technology (see *Status Report*, May 20, 2010, at iihs.org).

Researchers at the University of Michigan Transportation Research Institute have estimated that collision mitigation braking could reduce fatalities in rear-end crashes by 44 percent and injuries by 47 percent if all tractor-semitrailers were equipped with the technology (www.mema.org/Document-Vault/PDFs/2013/6-14-13-NHTSA-F-CAM-Safety-Memo.pdf).

Studies of real-world system effectiveness for large trucks in the U.S. aren't yet available because most trucks sold here don't have front crash prevention. The technology is significantly reducing rear-end crashes in passenger vehicles (see *Status Report*, Jan. 28, 2016).

The American Trucking Associations supports the measure. "ATA strongly believes that preventing rear-end crashes is a far better strategic goal than mitigating them and strongly recommends that all vehicles (light and heavy) be equipped with forward collision warning and mitigation braking technology," the group said in comments to NHTSA on a proposal to strengthen truck underride guards.

The European Union requires forward collision warning and automatic braking on most new heavy vehicles. ■

U.S. can do better than simply adopt Canada's rear underride guard standard

A proposed upgrade to rear underride guard regulations for tractor-trailers is a move in the right direction but isn't comprehensive enough to deliver the safety gains IIHS outlined in a 2011 petition for rulemaking, especially when it comes to preventing underride in offset crashes.

The National Highway Traffic Safety Administration (NHTSA) in December issued a notice of proposed rulemaking to require stronger underride guards to stop passenger vehicles from sliding underneath the backs of trailers and semitrailers in rear-end crashes. The notice responds to the Institute's petition to improve rear underride guards, as well as a 2014 request from the Truck Safety Coalition and Marianne Karth, a North Carolina mother whose daughters AnnaLeah, 17, and Mary, 13, died in an underride crash in 2013 (see *Status Report*, Oct. 9, 2014, at iihs.org).

The proposed rule doesn't address crashes involving the outer edges of trailers, where underride guards are weakest. IIHS crash tests have shown that rear guards built to meet minimum Canadian requirements can fail to prevent underride in offset crashes.

The proposal would align U.S. regulations with stricter ones in place in Canada since 2007. NHTSA estimates that 93 percent of new semitrailers sold in the U.S. already comply with the Canadian rules, based on information from the Truck Trailer Manufacturers Association. The agency estimates the rule would save one life and prevent three serious injuries a year.

IIHS crash tests show that compliance with the Canadian standard does not ensure guards can prevent underride when cars run into the outer ends of a trailer, where the underride guards are weakest (see *Status Report*, March 14, 2013).

"We had hoped for a more a meaningful upgrade to the outdated standard for rear underride guards," says Adrian Lund, IIHS president. "As written, this proposal will have a minimal impact on safety. We urge NHTSA not to miss the opportunity to address a wider range of rear underride crashes."

In 2014, 371 of the 2,485 passenger vehicle occupants killed in large truck crashes died when the fronts of their vehicles struck the rears of trucks. Gaps in federal crash data make it difficult to pinpoint exactly how many of these crashes involve underride. A 2011 IIHS study of 115 crashes in which a passenger vehicle struck the back of a heavy truck or semitrailer found only about one-fifth involved no underride or negligible underride. Nearly half of the vehicles had severe or catastrophic underride damage, and those vehicles accounted for 23 of the 28 fatal crashes in the study.

When IIHS petitioned the federal government for a stronger underride guard standard, it asked NHTSA to include test procedures that would address protection in small overlap crashes. IIHS made the

The rear guard on this 2015 Vanguard trailer (left) slowed the Chevrolet Malibu enough to prevent underride in the 30 percent overlap test at 35 mph. Vanguard is the second manufacturer to pass this demanding IIHS test.

request after finding that in cases involving regulation underride guards, 30 percent involved crashes in which less than half of the passenger vehicle overlapped the trailer. In most of these, the guards' vertical supports didn't engage the passenger vehicle.

NHTSA declined to take up the issue, stating that offset crashes "appear to represent a small portion of the rear underride fatality problem."

IIHS believes the agency underestimates the scope of underride. NHTSA uses an estimate of the proportion of fatal crashes that involve severe underride that was derived from interviews taken long after the crash and thus may not be accurate. What is more, researchers interviewed people who were familiar with the crash but not necessarily driving the truck when it crashed.

Small overlap crashes

IIHS crash tests have demonstrated that rear guards can be designed to resist underride in small overlap crashes. So far, two trailers have successfully stopped underride in the toughest test, which involves 30 percent of the front of a car hitting the trailer at its outermost corner at 35 mph. The test configuration represents the minimum overlap under which the head of a person in a passenger vehicle would contact an intruding trailer if an underride guard fails.

The first trailer to pass the 30 percent test was a 2012 model made by Canadian manufacturer Manac Inc. The Manac was the only trailer out of eight to pass. In January, IIHS evaluated a new design from Indiana-based Vanguard National Trailer Corp. The rear guard on the 2015 trailer prevented severe underride and intrusion into the striking car's occupant compartment. All injury measures taken from the dummy were good.

Manac and Vanguard are among the manufacturers voluntarily equipping trailers with rear guards that exceed safety standards.

"The performance of the Vanguard and Manac trailers shows there's more than one way to address underride crashes at the far edges of trailers," says Matthew Brumbelow, a senior research engineer at IIHS.

The Manac trailer's vertical supports are attached to a reinforced floor and located closer to the trailer's outer edges than on other models IIHS has evaluated. The design limited the potential for injuries to the dummy in the car and also reduced damage to the trailer itself.

On the Vanguard, extra vertical support tubes are located at the outermost ends of the underride guard and are reinforced with a triangle support gusset. In the test, the weld failed on the upper end of the tube where it attaches to the trailer sill, and the gusset tore free and bent. Still, the guard kept the Malibu from underriding the trailer.

Another new underride guard design looks promising. Wabash National Corp. in February announced a new rear impact guard engineered to prevent underride in small overlap crashes. The guard has two additional vertical support posts and a longer, reinforced bumper tube to "absorb energy better and deflect rear impact at any point along the bumper," Wabash says. The company notes that it has been building underride guards to exceed U.S. and Canadian standards since 2007. At Wabash's request, IIHS plans to test the new guard this spring.

Exempted trucks

NHTSA's proposal fails to mandate rear underride guards for more types of trucks, including ones with rear wheels set very close to the back of the trailer. IIHS research has shown that more than half of the truck units studied in real-world crashes were exempt from federal underride guard rules. Wheels-back trailers and single-unit trucks accounted for most of these exemptions.

Last year, NHTSA outlined a plan to require rear underride guards on single-unit trucks but didn't include wheels-back trucks (see *Status Report*, Nov. 10, 2015). A 2008-09 study by the University of Michigan Transportation Research Institute found that half of the wheels-back trailers involved in any fatal crashes had rear guards despite being exempt from the rules.

"The large number of wheels-back trailers with underride guards suggests it would be feasible to remove this exemption," Brumbelow says.

Courtesy of Wabash National Corp.

Wabash recently introduced a new rear impact guard built to prevent underride in offset crashes. It includes extra vertical support posts on both ends of the guard and a longer, reinforced bumper bar. IIHS plans to test the guard this spring. A prior design failed the 30 percent overlap test.

Attachment strength certification

The proposed rule would allow manufacturers to conduct certification tests on guards affixed to a rigid test fixture instead of actual trailers or sections of trailers that include the frame rails or cross beams. Trailer tests are more representative of real-world crash loads and can expose vulnerabilities at attachment points. It's not just the underride guard that must be strong. The points where the guards attach to the trailer also must be strong enough to withstand crash forces.

"Manufacturers can't just attach a stronger underride guard to a trailer without also reinforcing the underlying attachment structures," Brumbelow says. "In a real crash, deformation will happen at the weakest point. Trailer structures have to be able to resist as much loading as the guard does." ■

Insurance Institute for Highway Safety
Highway Loss Data Institute

Status Report

Vol. 51, No. 2
February 26, 2016

Inquiries/print subscriptions:
StatusReport@iihs.org

Editor: Kim Stewart
Writer: Sarah Karush
Art Director: Steve Ewens

iihs.org

iihs.org/rss

youtube.com/IIHS

@IIHS_autosafety

IIHS is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from crashes on the nation's roads.

HLDI shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

Both organizations are wholly supported by the following auto insurers and funding associations:

MEMBER GROUPS

Acceptance Insurance
AIG PC Global Services, Inc.
Alfa Alliance Insurance Corporation
Alfa Insurance
Allstate Insurance Group
American Family Mutual Insurance Company
American National
Ameriprise Auto & Home
Amica Mutual Insurance Company
Auto Club Enterprises
Auto Club Group
Auto-Owners Insurance
Bankers Insurance Group
Bitco Insurance Companies
California Casualty Group
Censtat Casualty Company
CHUBB
Colorado Farm Bureau Mutual Insurance Company
Concord Group Insurance Companies
COUNTRY Financial
CSAA Insurance Group
CSE Insurance Group
Direct General Corporation
Elephant Insurance Company
Erie Insurance Group
Esurance
Farm Bureau Financial Services
Farm Bureau Insurance of Michigan
Farm Bureau Mutual Insurance Company of Idaho
Farmers Insurance Group
Farmers Mutual Hail Insurance Company of Iowa
Farmers Mutual of Nebraska
Florida Farm Bureau Insurance Companies
Frankenmuth Insurance
Gainsco Insurance
GEICO Corporation
The General Insurance
Georgia Farm Bureau Mutual Insurance Company
Goodville Mutual Casualty Company
Grange Insurance
Hallmark Financial Services
Hanover Insurance Group
The Hartford
Haulers Insurance Company, Inc.
Horace Mann Insurance Companies
ICW Group
Imperial Fire & Casualty Insurance Company
Indiana Farmers Mutual Insurance Company
Infinity Property & Casualty
Kemper Corporation
Kentucky Farm Bureau Mutual Insurance Companies
Liberty Mutual Insurance Company
Louisiana Farm Bureau Mutual Insurance Company
The Main Street America Group
Mercury Insurance Group
MetLife Auto & Home
Mississippi Farm Bureau Casualty Insurance Company
MMG Insurance
Munich Reinsurance America, Inc.
Mutual Benefit Group
Mutual of Enumclaw Insurance Company
Nationwide
New Jersey Manufacturers Insurance Group
Nodak Mutual Insurance Company
Norfolk & Dedham Group
North Carolina Farm Bureau Mutual Insurance Company
Northern Neck Insurance Company
Ohio Mutual Insurance Group
Old American County Mutual Fire Insurance Company
Old American Indemnity Company
Oregon Mutual Insurance Company
Paramount Insurance Company
Pekin Insurance
PEMCO Insurance
Plymouth Rock Assurance
Progressive Insurance
PURE Insurance
Qualitas Insurance Company
The Responsive Auto Insurance Company
Rider Insurance
Rockingham Group
Safe Auto Insurance Company
Safeco Insurance
Samsung Fire & Marine Insurance Company
SECURA Insurance
Sentry Insurance
Shelter Insurance Companies
Sompo Japan Insurance Company of America
South Carolina Farm Bureau Mutual Insurance Company
Southern Farm Bureau Casualty Insurance Company
State Auto Insurance Companies
State Farm Insurance Companies
Tennessee Farmers Mutual Insurance Company
Texas Farm Bureau Insurance Companies
The Travelers Companies
United Educators
USAA
Utica National Insurance Group
Virginia Farm Bureau Mutual Insurance
West Bend Mutual Insurance Company
Western National Insurance Group
Westfield Insurance
XL Group plc

FUNDING ASSOCIATIONS

American Insurance Association
National Association of Mutual Insurance Companies
Property Casualty Insurers Association of America