

NTSB Truck Underride Safety Recommendations to NHTSA

Safety Recommendation H-10-013, Issue Date: 10/21/2010

[Truck-Tractor Semitrailer Rear-End Collision Into Passenger Vehicles on Interstate 44](#), On June 26, 2009, a multivehicle accident occurred on Interstate 44 (I-44) near Miami, Oklahoma, shortly after a minor accident in the same vicinity occurred. The minor accident took place about 1:13 p.m., when a 2001 Ford Focus traveling eastbound at milepost 321.7 on I-44 drifted into a truck-tractor semitrailer parked on the right shoulder. After the Focus sideswiped the semitrailer, the car's driver overcorrected to the left, lost control, and struck the concrete center median barrier. The Focus came to rest in the roadway, blocking the left eastbound lane. As the trailing traffic began to slow and stop, it formed a queue. Several motorists exited their vehicles and began to push the disabled Focus to the right shoulder. The queue of stopped vehicles and approaching but slowing vehicles extended back from the accident site approximately 1,500 feet to about milepost 321.5. Meanwhile, about 1:19 p.m., a 76-year-old truck driver operating a 2008 Volvo truck-tractor in combination with an empty 2009 Great Dane refrigerated semitrailer was traveling eastbound in the outside (right) lane of I-44 at approximately 69 mph. (The posted speed limit was 75 mph.) The truck driver did not react to the queue of slowing and stopped vehicles and collided with the rear of a 2003 Land Rover sport utility vehicle (SUV). As both vehicles moved forward, the Land Rover struck a 2003 Hyundai Sonata and then departed the right lane and shoulder, coming to rest off the roadway. The **Volvo** continued forward, **struck and overrode** the Hyundai Sonata, **struck and overrode** a 2004 Kia Spectra, and then struck the rear of a 2000 Ford Windstar minivan. The **Volvo overrode** a portion of the Windstar while pushing it into the rear of a livestock trailer being towed by a 2004 Ford F350 pickup truck. The Ford pickup truck was pushed forward and struck a 2008 Chevrolet Tahoe SUV. The Volvo combination unit came to rest approximately 270 feet past the point where it initially struck the Land Rover. As a result of the Volvo combination unit's striking the slowed and stopped vehicle queue on I-44, **10 passenger vehicle occupants died**, 5 received minor-to-serious injuries, and the driver of the Volvo combination unit was seriously injured.¹ The NTSB determined that the probable cause of this accident was the Volvo truck driver's fatigue, caused by the combined effects of acute sleep loss, circadian disruption associated with his shift work schedule, and mild sleep apnea, which resulted in the driver's failure to react to slowing and stopped traffic ahead by applying the brakes or performing any evasive maneuver to avoid colliding with the traffic queue. **Contributing to the severity** of the accident were the **Volvo truck-tractor combination unit's** high impact speed and its **structural incompatibility with the passenger vehicles**.

NTSB Response to NHTSA on 7/3/2013

From the Safety Study: Crashes Involving Single-Unit Trucks that Resulted in Injuries and Death, NTSB/SS-13/01, PB13-106637, adopted June 17, 2013, published July 3, 2013: **Truck frontal impacts pose a major hazard to passenger vehicle occupants and front underride contributes to the risk.** The majority of fatal large truck crashes involve the fronts of large trucks (Jarossi et al. 2011). Data from the participating states indicated that **collisions involving the fronts of trucks were the most common type** of collision and occurred more frequently for single-unit trucks than for tractor-trailers (see figure 27). **Passenger compartment intrusion in underride collisions results in deaths and serious injuries to passenger vehicle occupants and is common in truck frontal impacts.** Blower and Woodrooffe (2013) indicated that front underride occurred in 72 percent and passenger compartment intrusion occurred in 64.5 percent of large truck front impacts resulting in injury or death. Their research also showed a **strong relationship between the height of front truck bumpers and the occurrence of front underride**, which **suggests that a front underride protection system could prevent both front underride and passenger compartment intrusion**. This study found that about 18 percent of single-unit truck frontal impacts with passenger vehicles resulting in injury or death involved underride during 2001–2003. This resulted in a national estimate of 1,215 for front underrides involving single-unit trucks (see table 15). Front underride was most common in head-on collisions (37 percent). **Since 2003, European Union countries have required front underride protection systems on all newly manufactured heavy-goods vehicles, which indicates that such a standard is feasible.** The **NTSB concludes** that **collisions between passenger vehicles and the front of single-unit trucks or**

tractor-trailers are common types of crashes that result in fatalities, and front underride contributes to crash severity. The NTSB therefore **reiterates its prior recommendations** that **(1) NHTSA develop performance standards for front underride protection systems for trucks** with gross vehicle weight ratings over 10,000 pounds (Safety Recommendation H-10-12), and **(2) that once the performance standards in Safety Recommendation H-10-12 have been developed, require all newly manufactured trucks with gross vehicle weight ratings over 10,000 pounds to be equipped with front underride protection systems** meeting the performance standards (Safety Recommendation H-10-13).
(https://www.nts.gov/safety/safety-recs/_layouts/ntsb.recsearch/Recommendation.aspx?Rec=H-10-013)

OPEN- UNACCEPTABLE RESPONSES (<https://www.nts.gov/safety/mwl/Pages/mwl2017-safety-recs.aspx>):

H-10-012	TO THE NHTSA: To improve highway vehicle crash compatibility, develop performance standards for front underride protection systems for trucks with gross vehicle weight ratings over 10,000 pounds. [This recommendation supersedes Safety Recommendation H-06-16]
H-10-013	TO THE NHTSA: After establishing performance standards for front underride protection systems for trucks with gross vehicle weight ratings over 10,000 pounds, require that all such newly manufactured trucks be equipped with front underride protection systems meeting the performance standards.
H-13-013	TO THE NHTSA: Develop performance standards for side underride protection systems for single-unit trucks with gross vehicle weight ratings over 10,000 pounds.
H-13-014	TO THE NHTSA: Once the performance standards requested in H-13-13 have been developed, require newly manufactured single-unit trucks with gross vehicle weight ratings over 10,000 pounds to be equipped with side underride protection systems meeting the performance standards.
H-13-015	TO THE NHTSA: Develop performance standards for rear underride protection systems for single-unit trucks with gross vehicle weight ratings over 10,000 pounds.
H-13-016	TO THE NHTSA: Once the performance standards requested in H-13-15 have been developed, require newly manufactured single-unit trucks with gross vehicle weight ratings over 10,000 pounds to be equipped with rear underride protection systems meeting the performance standards.
H-14-002	TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Require that newly manufactured trailers with gross vehicle weight ratings over 10,000 pounds be equipped with side underride protection systems that will reduce underride and injuries to passenger vehicle occupants.
H-14-003	TO THE NHTSA: Require that newly manufactured truck-tractors with gross vehicle weight ratings over 26,000 pounds be equipped with side underride protection systems that will reduce underride and injuries to passenger vehicle occupants.
H-14-004	TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Revise requirements for rear underride protection systems for newly manufactured trailers with gross vehicle weight ratings over 10,000 pounds to ensure that they provide adequate protection of passenger vehicle occupants from fatalities and serious injuries resulting from full-width and offset trailer rear impacts.