Underride Research Presentation to NHTSA

Including reports from a Side Guard Task Force Meeting

YouTube video of meeting

Spring 2021

Turning Tragedy Into Advocacy

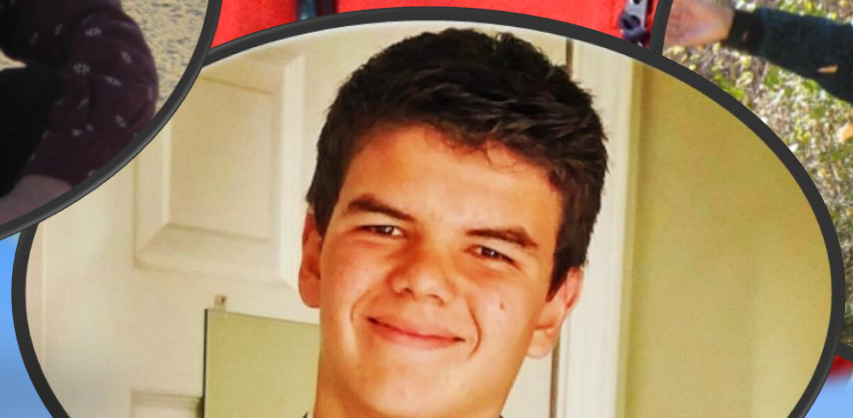
Turning Tragedy Into Advocacy

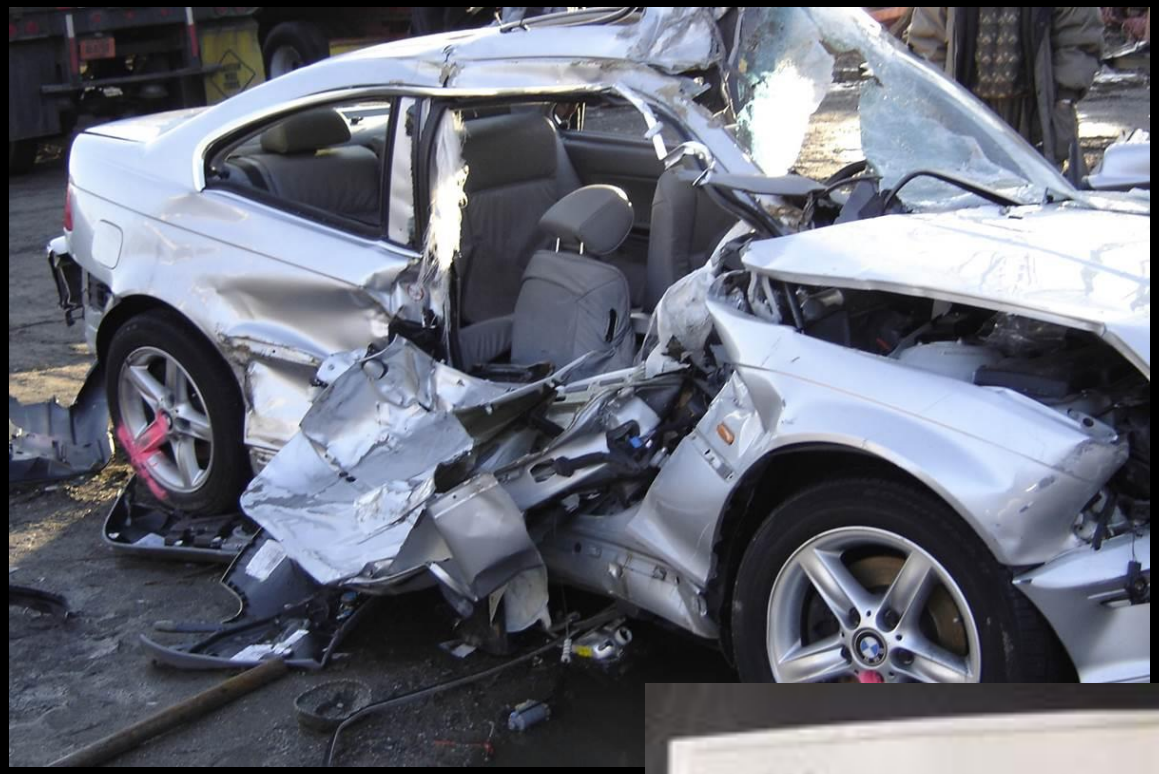
Coming Together On A Mission To Make Truck Crashes More Survivable

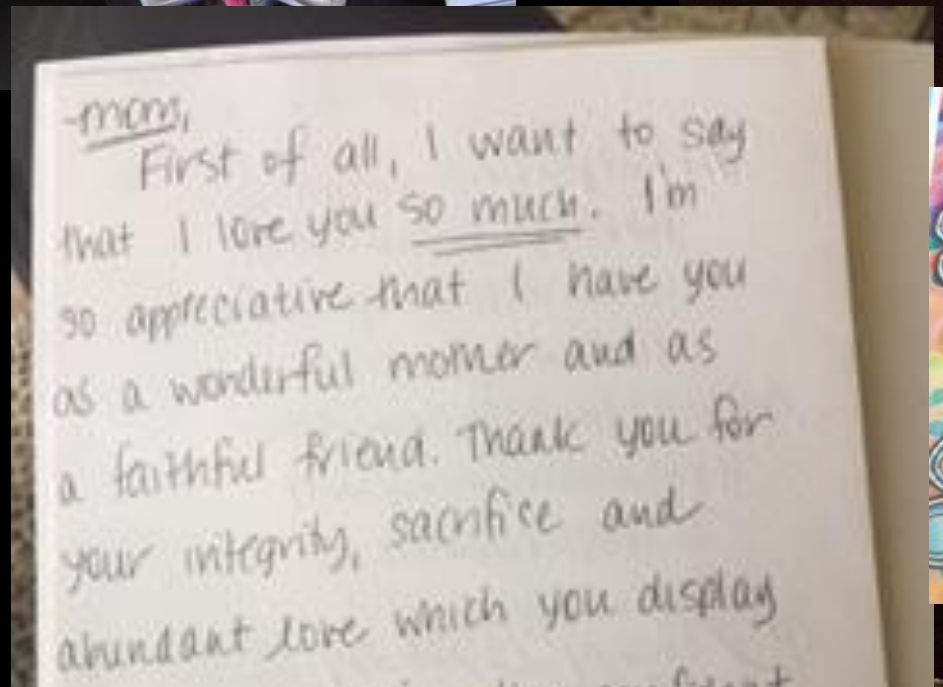
https://youtu.be/lrLEKrxy6a0?t=3


Would YOUR car fit under a truck?
STRICK
WERNER

Riley
2015





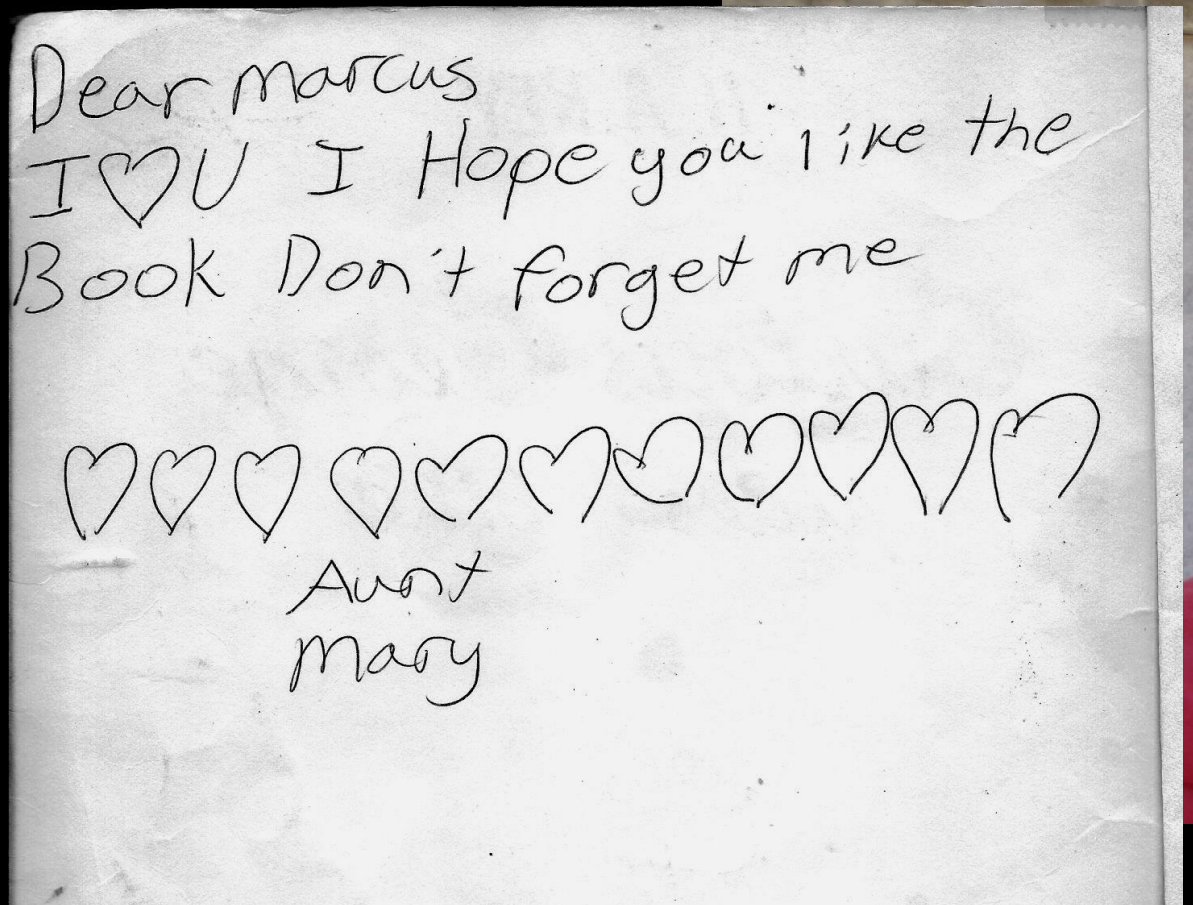


Roya
2004

4/30/2021

Mary
2013


THANK A VET


Dear marcus
I ♡ U I Hope you like the
Book Don't forget me
Aunt
Mary


Bear's Adventure
with Mary
by Marianne Karth

AnnaLeah
2013

Home as Witness

(shattered families & homes are a heavy cost)

Before the Crash

AnnaLeah sewed a tiny bridal dress for her 4 yr. old birthday (May 28)—with material scraps from Rebekah's wedding dress. AnnaLeah did a wonderful job--so proud of her.

To understand the significance of her accomplishment in sewing the tiny bridal dress, you would need to know that AnnaLeah was like someone who plays the piano by ear. Following instructions to create something was a foreign concept to her, but she managed to do so and did it well.

This time last year...
I didn't have a clue what we were about to face. I was busy getting pearly lace for the hem of Rebekah's wedding dress, practicing making cake pops for the reception, helping AnnaLeah update her resume and take it to Books A Million (so proud of her). AnnaLeah and Mary both had their dresses picked out to wear at the wedding (going along with Rebekah's royal blue theme).

AnnaLeah had her bedroom all packed up—the boxes of 600+ books stacked in the living room and her bed moved to the first floor bedroom (switched with Caleb) in readiness for sharing her room with Susanna who was coming from Texas after graduation and for the move to our new house on the Fourth of July. I was so proud of how organized AnnaLeah was and the initiative she had displayed in that project.

AnnaLeah had gone on a field trip with Jerry earlier in the spring to see historical sites around Durham. Then, they had gone with Mary to a big Used Book Sale at the Durham Public Library; they got me my last gift from them, The Red Balloon.

On April 28, Mary had her first of several public questionings in preparation for her Confirmation. And Mary and I had found the perfect white dress for her upcoming Confirmation in June.

We were making plans on the best way to pack everything for the trip--packing as little as possible but being sure to include reading material; AnnaLeah had a good supply of books in her bag which she kept close to her in the car--ready to share with Caleb & Mary.

Mary painted her nails; I think they were blue. (The women from Our Redeemer in Augusta noticed Mary's nails when they sat and sang & read to her in the hospital.)

And the week before we left, Mary had found the hairstyle which she decided to have for the wedding. We tried it out a few days before the trip—May 1.

Trooper Dash Cam of Traffic Backup at Crash Scene

Brophy was cited for failure to yield one-half of the roadway.

1974 River-Cade Attendant Injured

SIOUX CENTER, Iowa — A former River-Cade Queen attendant remained in "serious" condition Sunday at a Sioux City hospital from injuries she suffered in a traffic accident near Orange City Saturday.

Anita Plantage, 18, of Sioux Center, was still confined to the intensive care unit at St. Luke's Medical Center, according to hospital authorities.

The Sioux County Sheriff's Department said Miss Plantage was eastbound on Iowa 10 when she collided with a westbound truck about two and a half miles west of Orange City.

The truck's driver, Jack Brophy, 27, of La Vista, Neb., was unhurt. Miss Plantage was taken to the Floyd Valley Hospital at Le Mars, then transferred to St. Luke's following the mishap.

during this year's River-Cade celebration. She was a member of Queen Kim Johnson's court and participated in the 1973 queen contest.

Anita Plantage

In Saturday car-truck collision

Anita Plantage seriously injured

...nita Plantage, Northwestern cheerleader last year, is in stable condition in a ...ux City hospital following an accident Saturday west of Orange City. Anita, 19, suffered two broken legs, her pelvis was broken in three places and she was operated on to remove her spleen.

She was traveling east on Highway 10 in her 1971 Chevrolet when a 1972 International semi driven by Jack Brophy of La Vista, NE., swerved into the left lane to avoid hitting a pickup parked on the shoulder of the road. The two collided almost head-on and Brophy was charged with failure to yield half the roadway. The semi suffered ... and the Plantage vehicle was totaled, according to investi... of the Highway Patrol and the Sheriff's Department.

Anita Plantage hopes to be out of body cast by November 25

Anita Plantage, 19, daughter of Mr. and Mrs. Wm. Plantage of Sioux Center, who has been recuperating at her parental home here from severe injuries sustained in a car-truck collision 2½ miles west of Orange City on August

...pes

25

...of Mr. ...Cen... ...at her ...injuries ...n 2½ ...ugust ...she is

My family and I wish to thank all our relatives and friends for the many prayers, visits, cards, gifts and food which we have received while I was in the hospital and now at home. A Very Special Thank You to Pastor Kiel and Pastor Huizenga for their many visits and prayers. I will never forget the thoughtfulness and kindness of this community.

GOD KNOWS BEST

Our Father knows what's best for us,
So why should we complain.
We always want the sunshine,
But He knows there must be
We will find

Anita

1974

Thomas, Christina, Sophia, Elianna

2018

The Detroit News

HOME NEWS SPORTS BUSINESS AUTOS LIFE + HOME ENTERTAINMENT OPINION PHOTO + VIDEO MORE SUB

‘It’s tragic’: Vacationing Grosse Pointe family dies

Leonard N. Fleming, The Detroit News Published 3:43 p.m. ET April 8, 2018 | Updated 9:30 a.m. ET April 9, 2018

CONNECT TWEET LINKEDIN COMMENT EMAIL MORE

Thomas Toth was a huge Grateful Dead fan and a

Share your feedback to improve our site exper

NATION WORLD

UPDATE: Three killed, one injured after multi-car wreck on I-75 South identified

THP said three people have died after a wreck on I-75 South in Campbell County.

Author: WBIR
Published: 5:24 PM EDT July 11, 2018
Updated: 5:24 PM EDT July 11, 2018

UPDATE (Monday 10:25 a.m.): Three people are dead and one is injured after a multi-vehicle wreck on I-75 in Campbell County on Sunday.

Lieutenant Don Boshears with the Tennessee Highway Patrol said the crash involved a tractor trailer and a Dodge Caravan at the 141 mile marker near Jacksboro.

42-year-old Rebecca Bachman, 13-year-old Daniel Bachman and 15-year-old Lauren Bachman were all killed in the crash. 10-year-old Jake Bachman was injured. All four were wearing a seat belt and are from

Rebecca, Daniel, L

2018

Ally
2020

Ally Davis, 21, was a senior musical theatre student at Northern Kentucky University

By: WCPO staff

HIGHLAND HEIGHTS, Ky. — A woman who died in a crash in Boone County on Monday is being remembered for her friendship, humor and dedication to her craft this week.

Twenty-one-year-old Allyson Davis, who hailed from Floyd County, Kentucky and was a senior musical theatre student at Northern Kentucky University, died Monday morning in a crash on I-75 near Walton.

NEWS > REGION NORTHERN KENTUCKY

NKU student who died in crash remembered for big heart, talent and 'infectious smile'

Ally Davis was 'destined for a strong vocal career'

On September 12, 2013, along with the Truck Safety Coalition, I met with Secretary Foxx and asked for comprehensive underride rulemaking – improved rear, side, front, and single unit trucks.

Stand Up for Truck Safety - Save Lives and Prevent Injuries!

by: Danelle Karth

recipient: Secretary of Transportation Anthony Foxx

11,390 SUPPORTERS **15,000** GOAL

Each year 4,000 people are killed and another 100,000 people are injured in truck crashes. This is an unacceptably high number of losses and injuries, but most people don't know about these numbers or the safety equipment that can protect

Couple fights for stricter trucking regulations after daughters' deaths

4/30/2021

On July 10, 2014, NHTSA responded to part of the petition – for improved rear protection on trailers and for single unit trucks.

FMCSA
Federal Motor Carrier Safety Administration

Search FMCSA site GO

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- Rulemaking Documents
- Notices
- Regulatory Enforcement
- Disclaimer

Federal Motor Vehicle Safety Standards; Rear Impact Guards, Rear Impact Protection

Action:
Grant of petition for rulemaking.

Summary:
By initiating rulemaking to consider enhancing related safety standards, this notice grants the part of the petition for rulemaking submitted by Ms. Marianne Karth and the Truck Safety Coalition (Petitioners) requesting that the agency improve the safety of rear impact (underride) guards on trailers and single unit trucks. Based on the petition, available information, and the agency's analysis in progress, NHTSA has decided that the Petitioners' request related to rear impact guards merits further consideration. Therefore, the agency grants the Petitioners' request to initiate rulemaking on rear impact guards. NHTSA is planning on issuing two separate notices--an advanced notice of proposed rulemaking pertaining to rear impact guards and other safety strategies for single unit trucks, and a notice of proposed rulemaking focusing on rear impact guards on trailers and semitrailers. NHTSA is still evaluating the Petitioners' request to improve side guards and front override guards and will issue a separate decision on those aspects of the petition at a later date.

View PDF

Authority:

Details

Published Date:
07/10/2014

Effective Date:
N/A

Comment By:
N/A

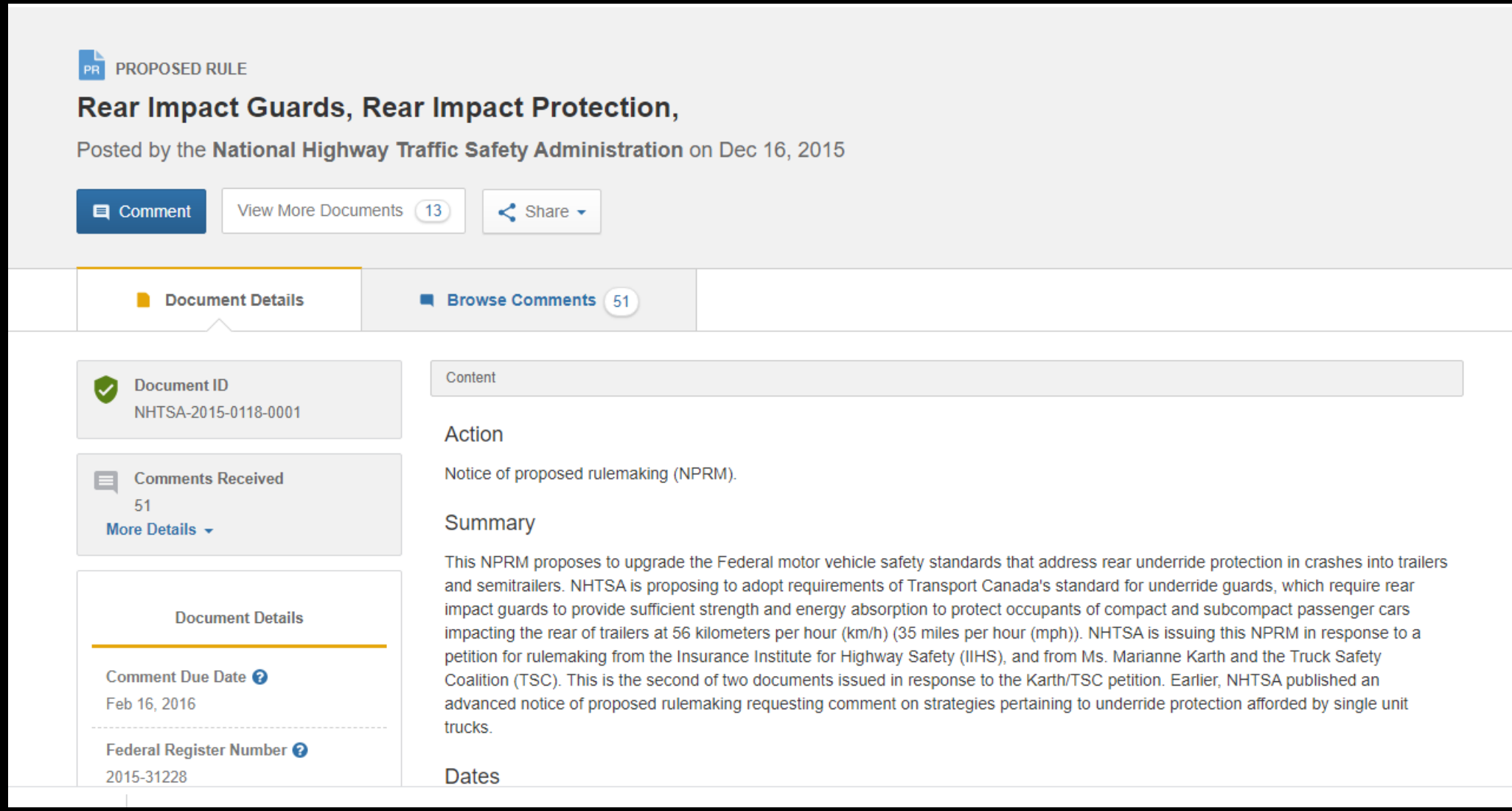
Federal Register:
2014-16018

RIN:
N/A

Docket Number:
NHTSA-2014-0080

CFR Part:
571

The Proposed Rule for Rear Impact Guards on trailers was issued on December 16, 2015. A Final Rule has not yet been issued.



On July 23, 2015, NHTSA issued an ANPRM for Rear Underride Protection on Single Unit Trucks.

The Fall 2020 Regulatory Agenda includes this Rule – indicating that it is to be withdrawn because it is not cost-justified. But there is no actual date of withdrawal.

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View Rule

View EO 12866 Meetings | Printer-Friendly Version | Download RIN Data in XML

DOT/NHTSA | **RIN:** 2127-AL57 | **Publication ID:** Fall 2020

Title: +Retroreflective Tape and Underride Guards for Single Unit Trucks

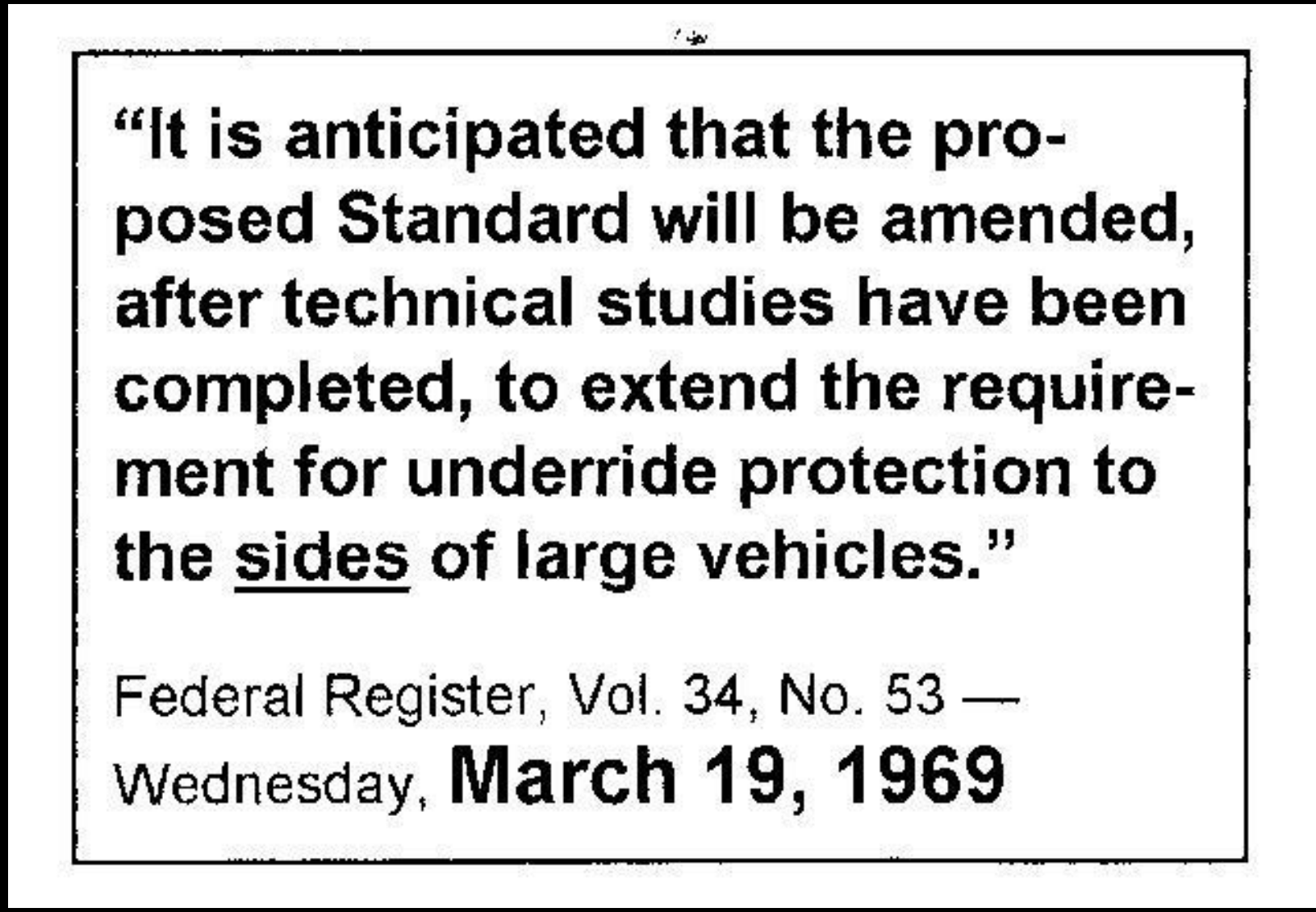
Abstract: NHTSA withdraws its July 23, 2015 Advanced Notice of Proposed Rulemaking (ANPRM) that responded in part to a petition for rulemaking regarding possible amendments to the Federal motor vehicle safety standards (FMVSSs) relating to rear underride guards. The ANPRM requested comment on NHTSA's analysis of the costs and benefits of amending the FMVSS to single unit trucks (SUTs) either to be equipped with improved rear underride guards or with retroreflective tape to improve visibility to other drivers. NHTSA has determined based on the comments received, as well as further agency analysis of the petitions, that the changes considered in the ANPRM are not justified at this time.

Agency: Department of Transportation(DOT)
Priority: Economically Significant
RIN Status: Previously published in the Unified Agenda
Agenda Stage of Rulemaking: Prerule Stage
Major: Yes
Unfunded Mandates: No
EO 13771 Designation: Regulatory
CFR Citation: 49 CFR 571.108 49 CFR 571.223 49 CFR 571.224
Legal Authority: 49 USC 30111 49 USC 30115 49 USC 30117 49 USC 30166 49 USC 322 delegation of authority at 49 CFR 1.95
Legal Deadline: None
Timetable:

Action	Date	FR Cite
ANPRM	07/23/2015	80 FR 43663
ANPRM Comment Period End	09/21/2015	
Notice of Withdrawal	11/00/2020	

Regulatory Flexibility Analysis Required: Undetermined
Government Levels Affected: None
Small Entities Affected: Businesses
Federalism: No
Included in the Regulatory Plan: No
RIN Information URL: www.regulations.gov
Public Comment URL: www.regulations.gov
RIN Data Printed in the FR: No
Agency Contact:
Shashi Kuppa
Special Vehicles and Systems Division

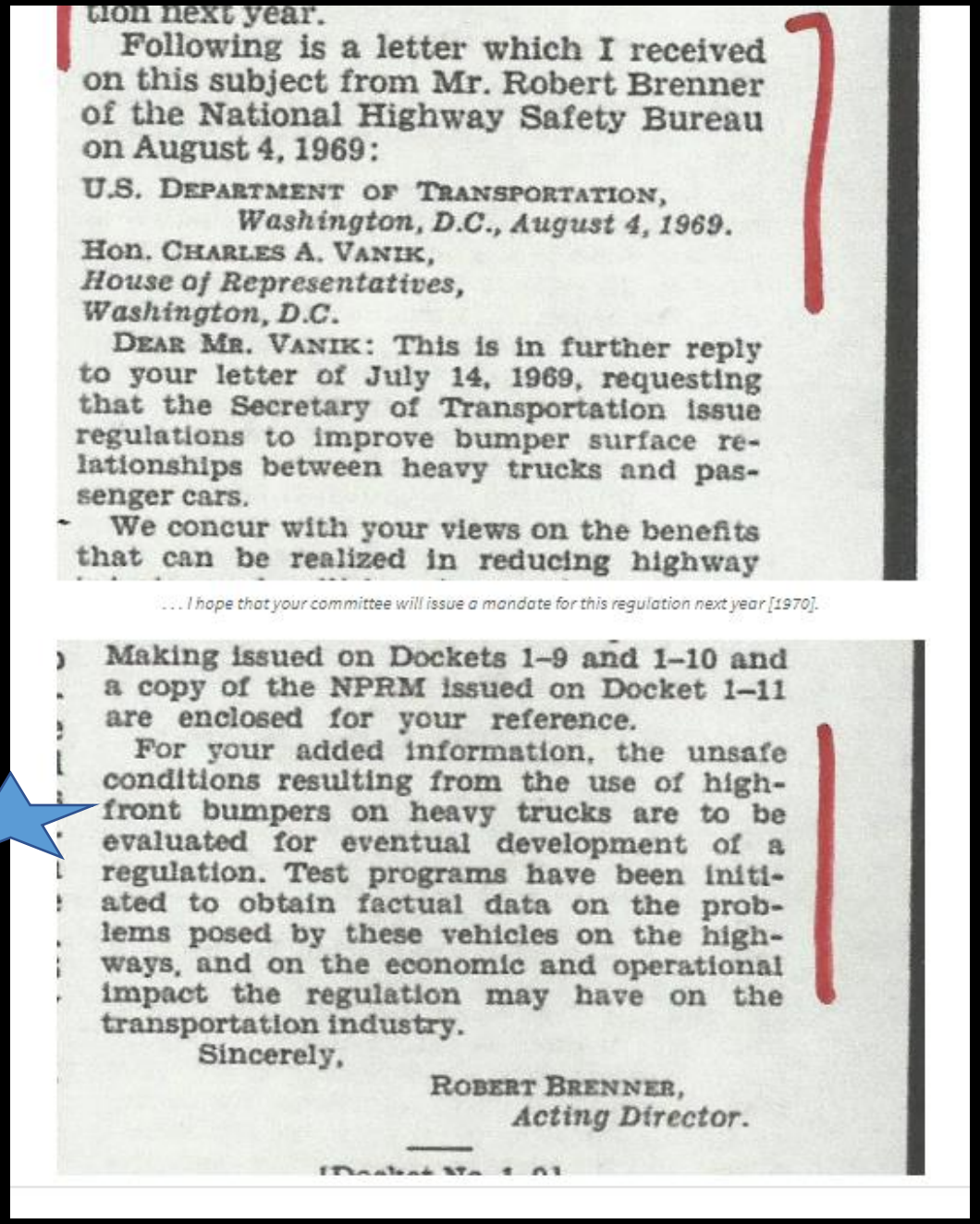
Numerous technical studies have been completed on side underride, however, NHTSA still has not issued a decision on our 2013 and 2014 petitions for side guard rulemaking.



"It is anticipated that the proposed Standard will be amended, after technical studies have been completed, to extend the requirement for underride protection to the sides of large vehicles."

Federal Register, Vol. 34, No. 53 —
Wednesday, **March 19, 1969**

Despite discussion about the need for front underride protection by NHTSA in 1969, NHTSA still has not issued a decision on our 2013 and 2014 petitions for front underride protection rulemaking.



tion next year.

Following is a letter which I received on this subject from Mr. Robert Brenner of the National Highway Safety Bureau on August 4, 1969:

U.S. DEPARTMENT OF TRANSPORTATION,
Washington, D.C., August 4, 1969.

HON. CHARLES A. VANIK,
House of Representatives,
Washington, D.C.

DEAR MR. VANIK: This is in further reply to your letter of July 14, 1969, requesting that the Secretary of Transportation issue regulations to improve bumper surface relationships between heavy trucks and passenger cars.

We concur with your views on the benefits that can be realized in reducing highway

. . . I hope that your committee will issue a mandate for this regulation next year [1970].

Making issued on Dockets 1–9 and 1–10 and a copy of the NPRM issued on Docket 1–11 are enclosed for your reference.

For your added information, the unsafe conditions resulting from the use of high-front bumpers on heavy trucks are to be evaluated for eventual development of a regulation. Test programs have been initiated to obtain factual data on the problems posed by these vehicles on the highways, and on the economic and operational impact the regulation may have on the transportation industry.

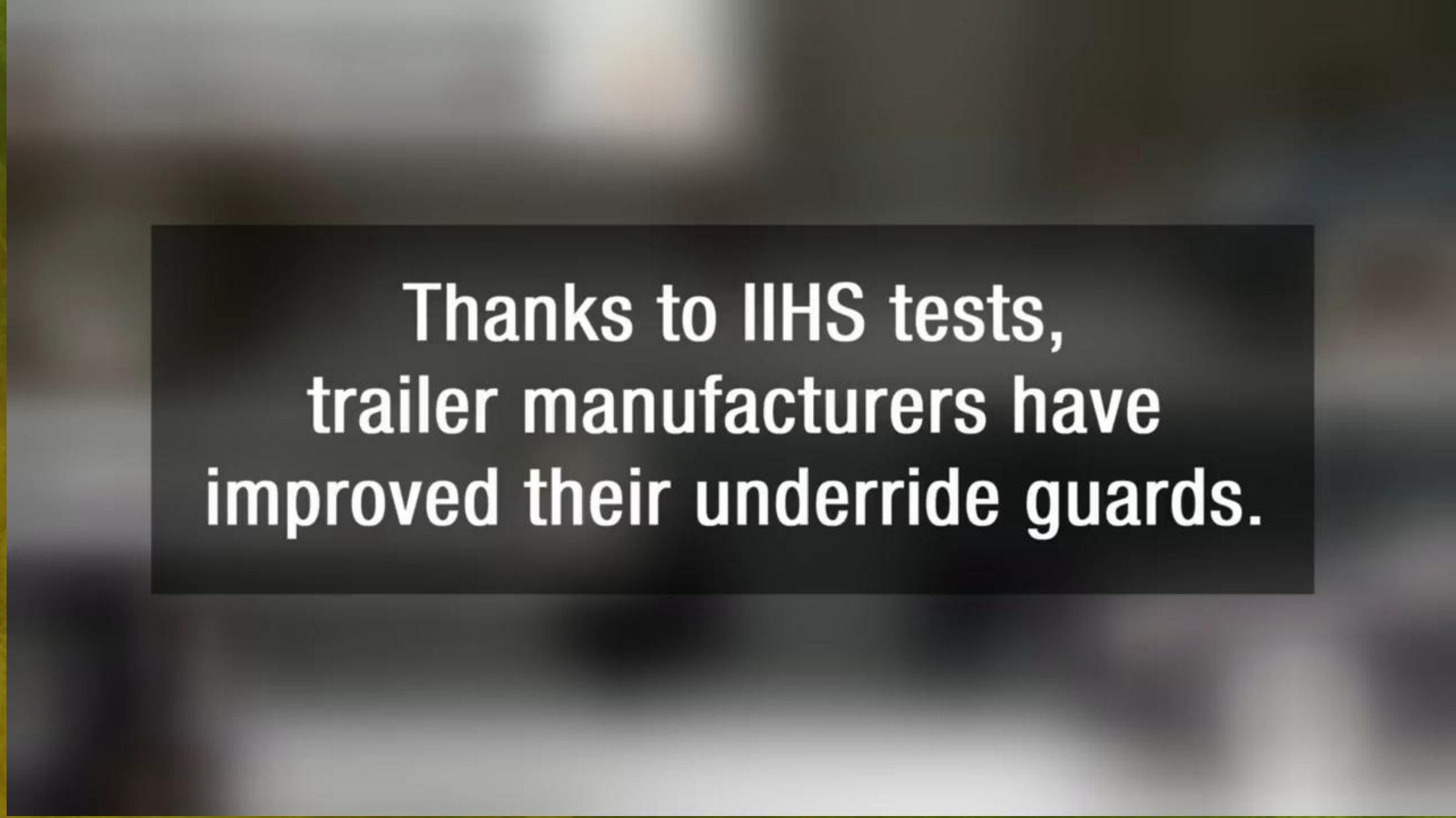
Sincerely,

ROBERT BRENNER,
Acting Director.

IIHS tested the Rear Impact Guards of the eight trailer manufacturers, which led to the development of stronger rear underride protection to meet the TOUGHGuard Standard.

Some manufacturers offer it as Standard on new trailers and some as an Option.

Millions of existing trailers still have Rear Impact Guards which meet the 1998 FMVSS Standard but do not have the TOUGHGuard level of strength to prevent underride and Passenger Compartment Intrusion.



The difference a well-designed rear underride guard can make

". . .is also I.I.H.S. certified and TOUGHGuard awarded. TOUGHGuard awards trailers with guards that prevent underride in all three of the institute's rear underride tests . . . ***Utility Implements Standard 7" Rear Impact Guard on All Trailer Models***

Sapa Aluminum Extrusions (now Hydro) designed a Rear Impact Guard from aluminum, which they successfully crash tested at 35 and 40 mph.

https://youtu.be/lhHPPJZMerI?t=283

TrailerGuards offers a generic
Rear Impact Guard (RIG) Retrofit
out of aluminum
which can be installed
on most any model of trailer.

See it crash tested here at 38 mph. https://www.youtube.com/watch?v=pFFXMWSDBFw

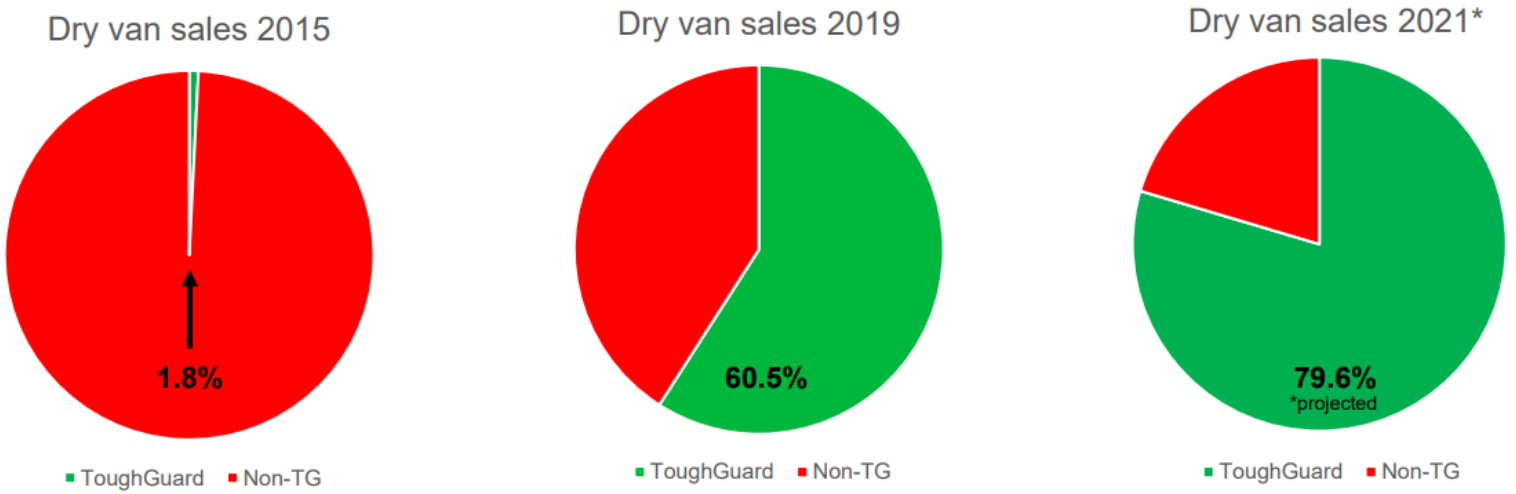

SafetySkirt™
www.TrailerGuards.com

Rear Guard Update by Sean O'Malley, IIHS, February 26, 2021

Rear Guard Update Presentation by Sean O'Malley, Senior Test Coordinator at the Insurance Institute for Highway Safety

Production numbers

ToughGuard equipped



- In 2019, there were almost 160,000 ToughGuard equipped trailers sold with the TG as standard equipment (Great Dane, Stoughton, Hyundai/Translead, Vanguard, Manac and Strick).
- All Utility dry vans have a TG RIG installed, 2020 to current (7th of 9 OE's with standard TG)
- Estimated 500,000+ trailers sold 2015-2020 with a stronger guard!
- Wabash and K-T offer ToughGuard rear guards as an option…….

If the TOUGHGuard level of protection was offered as STANDARD on all new trailers, rather than as an OPTION, IIHS predicts that the number of trailers sold with the stronger guard would go up from 79% to 98%.

If NHTSA makes it a federal standard, then obviously it would go up to 100% on all new trailers going forward.

The average incremental cost of equipping CMVSS No. 223 compliant rear impact guards on an applicable new trailer is about $229 and the corresponding average incremental weight increase is 49 lb. The annual average incremental material and fuel cost of requiring all applicable new trailers in the fleet with CMVSS No. 223 guards is $13 million.

ToughGuard

Why?

STOUGHTON®

It's in the details

NEW REAR UNDERRIDE GUARD

Now standard on our dry vans.

No additional cost. No additional weight.

PROTECTS THE DRIVING PUBLIC

The new rear underride guard resists compartmental intrusion of an automobile when the location of impact is at 30% to 100% overlap of the width of the car to the underride guard, meeting the testing protocol established by the IIHS and complying with all applicable U.S. and Canadian regulations.

TESTED AND PROVEN DESIGN

Stoughton trailers equipped with the new patent-pending rear underride guard underwent extensive tests both internally and through multiple independent testing agencies, including crash testing performed at the Insurance Institute for Highway Safety (IIHS) facility.

The leading-edge enhancements of the rear underride guard are engineered to smoothly integrate into the trailer, creating a robust and sleek rear appearance, without adding weight to the trailer.

NEW REAR UNDERRIDE GUARD

NEW REAR UNDERRIDE GUARD

HDT 20 TOP PRODUCTS 2017

"We place such a high value on the safety of both our customers and the driving public that we now provide a higher level of safety and performance as standard on our dry vans, at no additional cost."

—Bob Wahlin, President & CEO

- Designed with two additional bolt-on vertical supports on the outer ends of the horizontal bar to increase strength and prevent vehicle intrusion
- All four supports are integrated into the bar and fastened to a robust under carriage to strengthen the guard
- Standard on all dry van trailer models
- No added weight
- No negative impact on aerodynamics
- No additional costs
- Available in:
  - Painted carbon steel
  - Galvanized steel
  - Stainless steel

For more information and videos, visit StoughtonTrailers.com/RearGuard

STOUGHTON®

416 S. Academy Street • Stoughton, Wisconsin 53589 • www.stoughtontrailers.com • 608/873-2500 • FAX 608/873-2575

During 2020, the following engineers met as an Underride Engineering Subcommittee to develop a Consensus Side Guard Standard:

The following group of individuals participated in the Underride Engineering Subcommittee and are willing to continue to provide input.

Jared Bryson
Malcolm Deighton
Keith Friedman
Aaron Kiefer
Garrett Mattos
Perry Ponder

Consensus Side Guard Standard

A side underride guard
shall be considered
to meet the performance standard
if it is able to provide
vehicle crash compatibility with a midsize car,
to prevent intrusion into
the occupant survival space,
when it is struck at any location, at any angle, and at any speed up to and including 40 mph.

[Explanation of the Consensus Side Guard Standard]

https://www.youtube.com/watch?v=Ofw9xSoWwu8&feature=emb_logo

IIHS Side Guard Crash Test at 40 mph, August 29, 2017

SafetySkirt Crash Test in DC, March 26, 2019

https://www.youtube.com/watch?v=aBaBKHI2AHQ


SAFETYSKIRT™
www.TrailerGuards.com

Fully Guarded Trailer Gets on the Road

Fortier Lateral Protection Device


ROBERT
protectionlaterale.ca


9
LOAD LINER

A Century of Underride Research, Reports, and Recommendations

Underride Guard Patents

P. HAWKSWORTH.

SAFETY DEVICE FOR MOTOR VEHICLES.

APPLICATION FILED OCT. 22, 1913.

1,127,241. Patented Feb. 2, 1915.

Fig. 1.

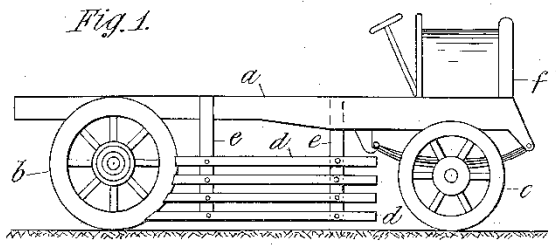


Fig. 2.

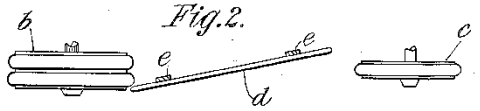


Fig. 5.

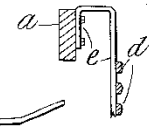
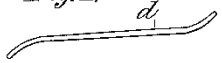


Fig. 3.

Fig. 4.



Witnesses

W. E. McRae

C. B. Keslar

Inventor

Percy Hawksworth

by James L. Norris

attorney


CF17005


Prototype Side
Impact Guard

Fig. 6

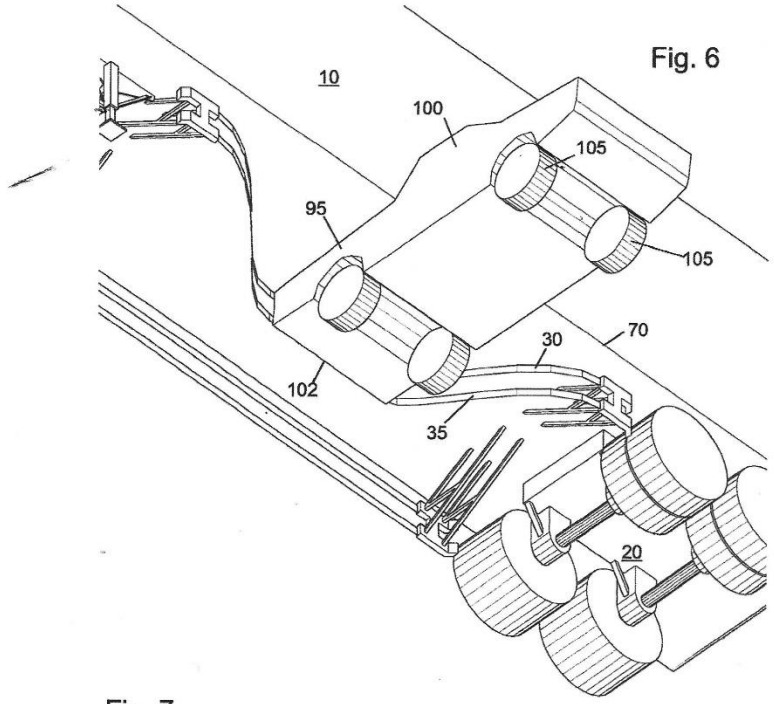
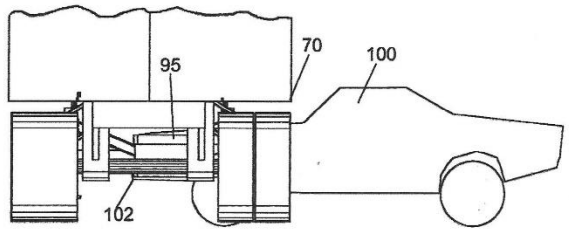


Fig. 7



[Vanguard Trailers Side Guard Patent]

2021-04-06

Protecting Passenger Vehicles from Side Underride with Heavy Trucks,

SAE Technical Paper

A tractor-trailer, with and without side impact underride protection, was impacted by a passenger car and SUV under a range of impact conditions. Passenger vehicle intrusion metrics were calculated to provide an indication of relative risk for each impact condition. The results can support the development of side underride protection recommended practices.

[Explanation of the Protecting Passenger Vehicles from Side Underride]

Industry Operational Concerns about Side Guards

Weight of Side Guards:

- **Effect on fuel cost**
- **Effect on trailer's frame**

Road Clearance:

- **Ability to navigate loading docks**
- **Ability to clear rail grade crossing**

Effects on Under-Trailer Equipment/Access:

- **Do side underride guards limit access to or displace equipment?**
- **Do side underride guards inhibit inspection of vehicle**

Transport Companies Provide Feedback On Side Guard Operational Issues:

- Letter from Glenn Berry, Thomas Transport
- Letter from Ferdinand Heres, Heres Transport
- Letter from Richard Camden, Prest XsPress
- Audio interview of Chris Brock, leasing a **fully guarded trailer**

Video from Transport Co. CEO Statements at Side Guard Task Force Meeting

Dispelling Common Misconceptions About Underride Protection. including **Krone Side Guard Debate**

Front Underride Protection Standard

FUPS Brochure

STATUS REPORT
INSURANCE INSTITUTE FOR HIGHWAY SAFETY
Vol. 24, No. 8 August 26, 1989

In this test collision, the truck bumper intrudes dangerously close to the passenger cabin.

Front End, Energy-Absorbing Truck Guards Reduce the Risks for Motorists

Head-on collisions between trucks and cars are deadly encounters for auto occupants. Researchers report that nearly two-thirds of the German car passengers killed in truck crashes were the victims of such impacts.

To help prevent such deaths, researchers at the Technical University of Berlin developed a new front crash protection system for trucks that, its researchers say, could greatly reduce occupant death and injury if adopted by vehicle manufacturers.

Data from a previous study showed that the average speed for real-world, head-on fatal crashes between cars and trucks in Germany is about 47 to 56 mph. Crash tests demonstrate that auto passenger compartment deformation in impacts with heavy trucks can occur at speeds of 37 mph due to the stiffness and height of truck front ends. The researchers goal was to develop a design that can prevent passenger compartment deformation and intrusion at those speeds.

The researchers developed a design incorporating a front-end soft plastic exterior face to absorb minor collisions without damage, with a metal honeycomb mounted behind to a support frame. In a more severe crash, the honeycomb absorbs some of the crash force. The support frame prevents the car from sliding beneath the truck's front end and transfers the crash energy to the chassis of the truck.

In 70 kph, or 44 mph, overlapping frontal impacts, the researchers report the guard spreads the crash force over a broad area of the car, which greatly reduces the intrusion into the passenger compartment. In a comparison test with-

(Cont'd on Page 3)

SAFETY RESEARCH

This special issue of *Status Report* focuses on research findings presented at the Twelfth International Technical Conference on Experimental Safety Vehicles in Goteborg, Sweden earlier this year.

The conference is made possible through bilateral agreements between France, the Federal Republic of Germany, Italy, Japan, Sweden, the United Kingdom, and the United States. Agencies of these governments, the automotive industry, and vehicle safety research organizations meet periodically to share state-of-the-art safety technology. The conference reflects the international concern over traffic deaths and injuries around the world.

The complete proceedings of the conference will be published by the National Highway Traffic Safety Administration (NHTSA) and should be available early next year. Copies may be obtained by sending a self-addressed mailing label to: Linda O'Connor, Technical Coordinator, NRD-01, NHTSA Office of Research and Development, 400 Seventh St. SW, Washington, D.C. 20590.

https://annaleahmary.com/wordpress/wp-content/uploads/2019/01/IIHS-Status-Report-on-Front-Underride-Protection-August-26-1989.pdf

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM CONDITIONS OF APPROVAL AND RECIPROCAL RECOGNITION OF APPROVAL FOR MOTOR VEHICLE EQUIPMENT AND PARTS

done at Geneva on 20 March 1958

Addendum 92: Regulation No. 93

Date of entry into force: 27 February 1994

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF:

I. FRONT UNDERRUN PROTECTIVE DEVICES (FUPDs)
II. VEHICLES WITH REGARD TO THE INSTALLATION OF AN FUPD OF AN APPROVED TYPE
III. VEHICLES WITH REGARD TO THEIR FRONT UNDERRUN PROTECTION (FUP)

United Nations FUPS Standard

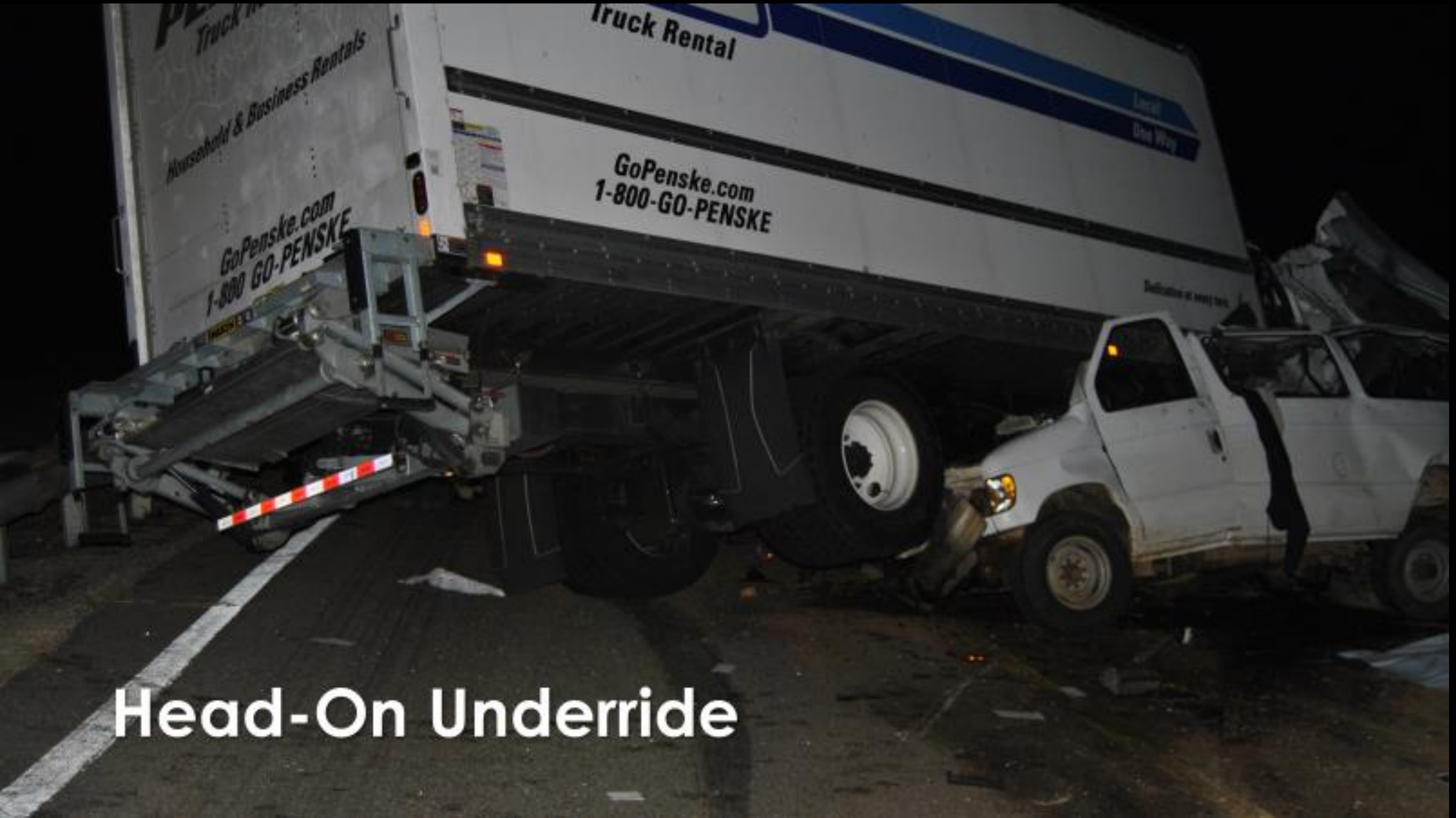
Front Underride Protection Panel

Andy Young, Iain Knight,
Aaron Kiefer, Keith Freidman, George Rechnitzer

Front Underride Protection Panel, February 26, 2021

The front of a truck can go over a car

Source: Oklahoma State Police



Head-On Underride

Front Underride Protection Crash Test

Trailer makers said they were prepared to adjust to any mandate.

“We do not currently offer this feature. Like other manufacturers, we have looked at the concept but have not yet found a way to make them commercially viable,” Glenn Harney, chief sales officer at Hyundai Translead, told Transport Topics.

If the government makes them mandatory, we would, of course, do our best." Use of side guards will have to emerge from regulations, "or else the playing field won't be level, and no one is going to accept it," said Charles Willmott, chief sales officer at trailer maker Strick Group. *Highway Safety Institute Backs Side Underride Guards for Trailers, Transport Topics, May 11, 2017*

Petition to Secretary Buttigieg for Supplemental Comprehensive Underride Rulemaking

Petition – February 4, 2021

In 1992, NHTSA issued a Supplemental NPRM based on Public Comments.

The agency received over 100 comments on the proposal, some of which raised issues about possible alternatives to the proposal and about the burdens of the proposal on small businesses. The **SNPRM** sought to retain the safety benefits of the earlier proposal while meeting the concerns about potential small business impacts. This rulemaking is considered significant because of substantial public interest.

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View Rule

View EO 12866 Meetings

Printer-Friendly Version Download RIN Data in XML

DOT/NHTSA **RIN:** 2127-AA43 **Publication ID:** Spring 1992

Title: Truck Rear Underride Protection

Abstract: On January 8, 1981 (46 FR 2136) the agency published a notice of proposed rulemaking on rear underride crashes relative to small vehicles colliding with the rear of a heavy vehicle (a vehicle with a gross vehicle weight rating (GVWR) greater than 10,000 pounds). Rear underride occurs when the front of the smaller vehicle slides under ("underrides") the rear end of the larger vehicle. The agency received over 100 comments on the proposal, some of which raised issues about possible alternatives to the proposal and about the burdens of the proposal on small businesses. The SNPRM sought to retain the safety benefits of the earlier proposal while meeting the concerns about potential small business impacts. This rulemaking is considered significant because of substantial public interest.

Agency: Department of Transportation(DOT)

RIN Status: Previously published in the Unified Agenda **Agenda Stage of Rulemaking:** Proposed Rule Stage

CFR Citation: 49 CFR 571

Legal Authority: 15 USC 1392 15 USC 1407

Timetable:

Action	Date	FR Cite
NPRM	01/08/1981	46 FR 2136
NPRM Comment Period End	04/08/1981	46 FR 2136
SNPRM; Comment Period End 03/04/92	01/03/1992	57 FR 252
SNPRM Comment Period Reopened to 06/08/92	04/09/1992	57 FR 12289
Final Action	10/00/1992	

Additional Information: Docket No. 1-11. NPRM, Notice 8. ^PANALYSIS: Regulatory Evaluation, 01/03/92, 57 FR 252^PRFA: N

Regulatory Flexibility Analysis Required: Undetermined **Government Levels Affected:** None

Included in the Regulatory Plan: Yes

Agency Contact:
Dr. Patricia Breslin
Office Director, Office of Planning and Consumer Programs
Department of Transportation
National Highway Traffic Safety Administration
400 Seventh Street SW.,
Washington, DC 20590
Phone:202 366-0842

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NTSB has made recommendations to NHTSA calling for FRONT, SIDE, REAR underride protection for trailers and underride protection for Single Unit Trucks.

OPEN UNACCEPTABLE RESPONSES

4/30/2021

OPEN- UNACCEPTABLE RESPONSES (https://www.ntsb.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.

These petitions would be met by adopting three standards, and including *Single Unit Trucks* rather than exempting them:

- **IIHS TOUGHGuard Rear Standard**
- **Consensus Side Guard Standard**
- **UNECE-93 Front Underride Protection Standard**

Engineering Discussion of Underride Solutions for Specialty Trucks

How often does underride happen?

STATUS REPORT
INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Vol. 27, No. 9 July 11, 1992

Death Count May Be Too Low

How often do cars and other passenger vehicles slide into and under the rear of big truck rigs, killing the people in the passenger vehicles? Underride crashes may happen more than twice as often as the National Highway Traffic Safety Administration (NHTSA) recognizes.

Institute researchers analyzing NHTSA data files have discovered that many states don't identify any fatal rear-end truck crashes as involving underride. These omissions lead researchers to conclude that many more deaths may be occurring in underrides than the average of 72 annually that NHTSA recognizes.

In California, for example, 24 percent of all 1989 passenger vehicle occupant deaths that occurred in rear-end truck and parked vehicle crashes are identified in NHTSA data files as involving underride. But, in 36 states and the District of Columbia, not a single one of the 400 passenger vehicle occupant deaths in such crashes is identified as involving underride. (See table on page 2.)

Institute researchers scrutinized police reports for the 1989 California crashes identified as underrides and verified them as such. "It's more than likely a coding problem that's keeping more crashes nationwide from being properly identified as underrides," says Institute President Brian O'Neill. Police reports don't always include enough information to determine whether individual crashes involve underride, so the crashes don't get coded as such in NHTSA's data system.

As many as 151 deaths in underride crashes may be occurring each year — not the 72 NHTSA recognizes — if the proportion of underride crashes in California holds true for the nation as a whole.

"If underrides are underreported, and it appears they are, then it's all the more reason to get on with federal rulemaking for improved underride guards," O'Neill says. NHTSA's recent proposal to require lower, stronger guards on truck trailers is the agency's sixth announced plan to upgrade a 1953 underride regulation that's still in force. Proposals were issued — then abandoned — in 1967, 1969, 1970, 1977, and 1981. (See *Status Report*, Vol. 27, No. 2, Feb. 8, 1992.)

Referring to the likely underreporting of underrides, the Institute says NHTSA should amend its data-gathering processes to more accurately identify such crashes. Plus, Institute researchers have identified the following shortcomings in NHTSA's proposed underride guard requirements:

Guards Too High The proposed 22-inch maximum ground clearance for rear underride guards is preferable to the 30 inches now allowed, but it's still way too high. It'll fail to prevent many underrides and won't take full advantage of automobile safety technology like air bags, the Institute says. A 20-year-old NHTSA

GEORGIA

Crash Year by Initial Impact Point on the Large Truck	Passenger Vehicle Compartment Intrusion?			Total
	Compartment	No	Compartment	
2011				
2012				
2013				
2014				
2015				
1994-2015				

This report was ge

file:///U:/_Eas

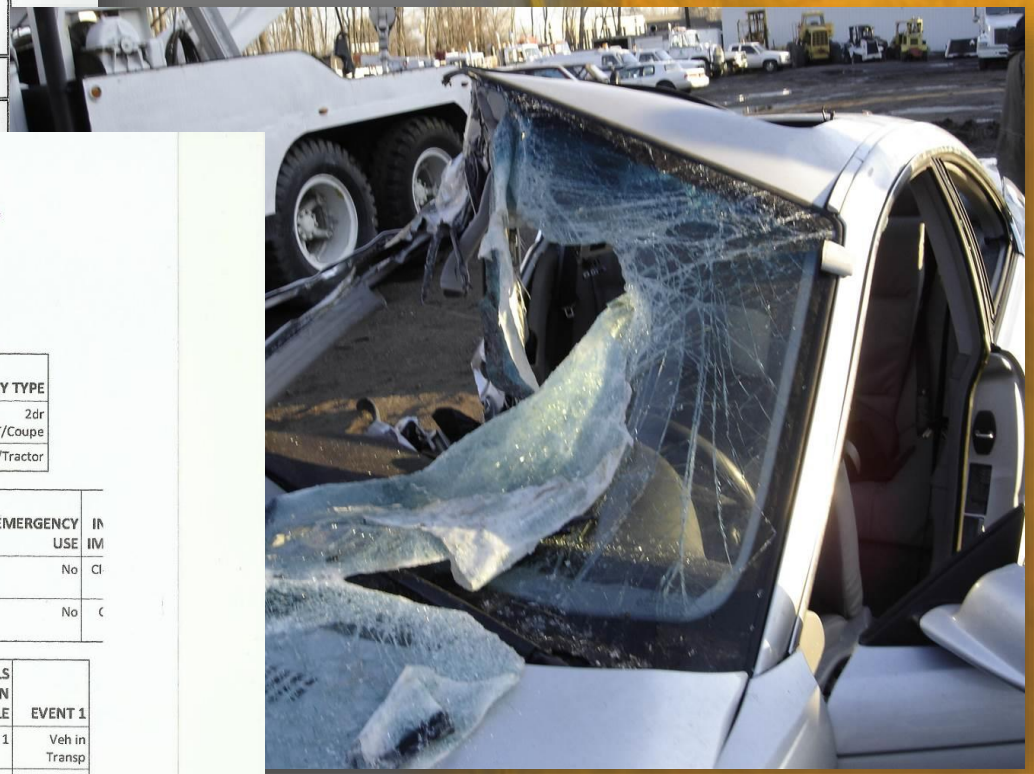
VARIABLE LISTING OF CASE # 130366 VEHICLE DATA FILE
FATAL MOTOR VEHICLE TRAFFIC CRASH ON MAY 4, 2013 IN GREENSBORO, GA
FATALITY ANALYSIS REPORTING SYSTEM(FARS) 2013 ARF

Extent of Damage	Vehicle Removal	Most Harmful Event	Related Factors-Vehicle Level	Related Factors-Vehicle Level 2	Fire Occurrence
Disabling Damage	Towed Due to Disabling Damage	Motor Vehicle In-Transport	None	None	No or Not Reported
Disabling Damage	Towed Due to Disabling Damage	Motor Vehicle In-Transport	None	None	No or Not Reported
Disabling Damage	Towed Due to Disabling Damage	Motor Vehicle In-Transport	None	None	No or Not Reported
Emergency Use	**Travel Speed**	**Underride/Override**	**Rollover**	**Location of Rollover**	**Initial Contact Point**
Not Applicable	Not Reported	No Underride or Override Noted	No Rollover	No Rollover	1 Clock Point
Not Applicable	Not Reported	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion Unknown	No Rollover	No Rollover	11 Clock Point
Not Applicable	Not Reported	No Underride or Override Noted	No Rollover	No Rollover	6 Clock Point
Driver Presence	**Driver's License State (FARS Only)**	**Driver's ZIP Code**	**Non-CDL License Status**	**Non-CDL License Type**	**Commercial Motor Vehicle License Status**
Yes	California	90025	Valid	Full Driver License	Valid
Yes	North Carolina	27804	Valid	Full Driver License	No (CDL)
Yes	Florida	34420	Valid	Full Driver License	Valid

Under-reporting: a major problem

Indiana FARS

Crash Year by Initial Impact Point on the Large Truck	Passenger Vehicle Compartment Intrusion?			Total
	Compartment Intrusion	No Compartment Intrusion	Compartment Intrusion Unknown	
Rear	0	0	1	1
Total	1	0	3	4



Roya

FULL FIELD DATA DUMP OF 2004 FARS CASE 180748 - VEHICLE FILE
FATAL MOTOR VEHICLE TRAFFIC CRASH OCCURRING ON NOVEMBER 24, 2004 IN INDIANA
THE CRASH INVOLVED A BMW AND A TRUCK TRACTOR
2004 FATALITY ANALYSIS REPORTING SYSTEM (FARS) - FINAL

ST_CASE	VEHICLE #	VIN	VIN_1	VIN_2	VIN_3	VIN_4	VIN_5	VIN_6	VIN_7	VIN_8	VIN_9	VIN_10	VIN_11	VIN_12	STATE	OCCUPANTS	MAKE	MODEL	BODY TYPE
180748	1	WBABN33441JW	W	B	A	B	N	3	3	4	4	1	J	W	Indiana	2	BMW	34	2dr Sedan/HT/Coupe
180748	2	1FUJBBCK94LN	1	F	U	J	B	B	C	K	9	4	L	N	Indiana	1	Freightliner	883	Truck/Tractor

ST_CASE	VEHICLE #	REGISTRATION STATE	REGISTERED VEHICLE OWNER	ROLLOVER	JACKKNIFE	TRAVEL SPEED	HAZARDOUS CARGO	TOWED TRAILING UNIT	VEHICLE CONFIGURATION	NUMBER OF AXLES	CARGO BODY TYPE	SPECIAL USE	EMERGENCY USE	IM
180748	1	Illinois	Driver Not Owner	No Rollover	Not Articulated	Unknown	No	No	Not Applicable	Not Applicable	Not Applicable	No Special Use	No	CI
180748	2	Multi-In State	Business or Govt	No Rollover	No	Unknown	No	Yes/1 Unit	Tractor/Semi	5	Van/Enclosed Box	No Special Use	No	

ST_CASE	VEHICLE #	PRINCIPAL IMPACT	UNDERRIDE/OVERRIDE	DEFORMATION	VEHICLE ROLE	MANNER LEAVING SCENE	FIRE OCCURRENCE	RELATED FACTOR 1	RELATED FACTOR 2	VEHICLE MANEUVER	CRASH AVOIDANCE MANEUVER	MOST HARMFUL EVENT	FATALS IN VEHICLE	EVENT 1
180748	1	Clock 12	No Under/Override	Disabling	Striking	Towed Away	No Fire	None	None	Going Straight	No Maneuver	Veh in Transp	1	Veh in Transp
180748	2	Clock 3	No Under/Override	Disabling	Struck	Towed Away	No Fire	None	None	Going Straight	No Maneuver	Veh in Transp	0	Veh in Transp

ST_CASE	VEHICLE #	EVENT 2	EVENT 3	EVENT 4	EVENT 5	EVENT 6	VIN LENGTH	BUS USE	GVW RATING	VEHICLE MODEL	MODEL YEAR	VIN MODEL	VIN SERIES TRUCK	VIN_BT	MOTOR CARRIER ID	TRUCK FUEL CODE	WHLBASE SHORT-AUTO	WHLI LONG-A
180748	1	Unknown	Unknown	Unknown	Unknown	Unknown	17	Not Used a Bus	Not Applicable	BMW 3-series	2001	5CI	***	CP	00000000000	*	1073	
180748	2	Unknown	Unknown	Unknown	Unknown	Unknown	17	Not Used a Bus	26,001 or more	FRHT COE hi ent	2004	ST2	CON	DS	5780806	D	9999	

ST_CASE	VEHICLE #	CC DISPLACEMENT	VIN WEIGHT-AUTO	TRUCK WEIGHT CODE	DRIVER PRESENCE	DRIVER DRINKING	LICENSE STATE	NON-CDL LICENCE TYPE	NON-CDL LICENCE STATUS	COMM MV LICENCE STATUS	COMPLIANCE W/LIC ENDORSEMENTS	DRIVER LICENCE TYPE COMPLIANCE	COMPLIANCE W/LIC RESTRICTIONS	VIOLATION CHARGE 1
180748	1	0	3252	0	Driver Operated	No Drinking	Illinois	Full License	Valid	No (CDL)	No Endorsements	Valid	No Restrict,N/A	None
180748	2	0	0	8	Driver Operated	No Drinking	Michigan	Full License	Valid	Valid	No Endorsements	Valid	Complied	None

nder-reporting: major problem

FIELD DATA DUMP OF 2016 FARS CASE 120918 - VEHICLE FILE
L MOTOR VEHICLE TRAFFIC CRASH OCCURRING ON MAY 7, 2016 AT 4:40PM IN
CRASH INVOLVED A TESLA AND A TRUCK TRACTOR
FATALITY ANALYSIS REPORTING SYSTEM (FARS) - FINAL

ecutive lumber	Vehicle Number	Travel Speed	Underride/Override	Rollover Type	Location of Rollover	Areas of Impact - Initial Contact Point	Extent of Damage										
120918	1	035 MPH	No Underride or Override Noted	No Rollover	No Rollover	9 Clock Point	Functional Damage										
120918	2	065 MPH	No Underride or Override Noted	No Rollover	No Rollover	12 Clock Point	Disabling Damage	Towed Due to Disabling Damage	Motor Vehicle In-Transport	None	None	No or Not Reported	Yes	Ohio	44705	Valid	Full Driver License

Joshua Brown Tesla Side Underride Crash

Under-counted and under-reported

- Inconsistency in police reports
- No checkbox for underride in police reports
- Poorly understood by law enforcement
- Looking for reason for crash - not reason for fatalities.
- Looking at driver behavior instead of dangerous design of trailer.
- Lack of awareness
- Well-documented inaccuracy of data

GAO Truck Underride Report

. . . these fatalities are likely underreported due to variability in state and local data collection. . . As a result, NHTSA may not have accurate data to support efforts to reduce traffic fatalities.

The Administrator of the National Highway Traffic Safety Administration should recommend to the expert panel of the Model Minimum Uniform Crash Criteria to update the Criteria to provide a standardized definition of underride crashes and to include underride as a recommended data field. (Recommendation 1)

The Administrator of the National Highway Traffic Safety Administration should provide information to state and local police departments on how to identify and record underride crashes. (Recommendation 2)

Truck Crash Investigation
Underride Evaluation Checklist

These questions should be asked and answered during every truck crash investigation and included in the crash report and FARS Report:

1. Did airbags deploy and seat belt pre-tensioners activate/function as intended?
2. Did the car's crumple zone function as intended?
3. Did the truck enter any part of the passenger occupant space, i.e., passenger compartment intrusion (PCI)? What was the condition of the car, i.e., were the windshield, doors, or roof caved-in or sheared off?
4. Was the intrusion in their survival space?
5. Were the occupants trapped? Did they have to be extricated?
6. What part of the car was involved in collision with the truck?
7. With what part of the truck did the car initially collide?
8. Did it happen at the side of the truck?
9. Did it happen at the front of the truck?
10. If it collided in the rear, at what point on the rear guard did it make contact?
11. What happened to the rear underride guard?
12. What appeared to be the condition of the rear underride guard? Did it look like it was properly maintained? Was it rusty, corroded, have cracks, etc.?
13. Did the underride prevention equipment have any record of maintenance?
14. Was it a tractor trailer or a single unit truck (box truck, straight truck)?
15. Who was the truck manufacturer? What make, model, and year was the truck-tractor?
16. Who was the trailer manufacturer? What make, model, and year was the trailer (**ask for VIN**)?
17. Were there any serious injuries? If so, where was the person sitting in the passenger vehicle?
18. Were there any fatalities?
19. If so, where was the person sitting in the passenger vehicle?
20. If so, what was listed as the primary cause of death?
21. Capture as much of this information as possible with photographic evidence.
22. If a person was taken to the hospital with injuries, follow-up later to see if they died or had long-term debilitating injuries.

3/7/21 mwk

Truck Crash Investigation Recommendations for Underride Evaluation Checklist

Circular A-4 states: “…you should present a summary of the benefit and cost estimates for each alternative, including the qualitative and non-monetized factors affected by the rule, so that readers can evaluate them.” (P.3) In addition, it states: “Your analysis should also have an executive summary, including a standardized accounting statement.”

(P. 3). It further states, “You need to provide an accounting statement with tables reporting benefit and cost estimates for each major final rule for your agency.” (P. 44). Circular A-4 includes an example of a format for agency consideration.

Home as Witness


Q&A

Questions for the engineers

1. Have there been any operational issues with side guards on the road?
2. Does the use of seatbelts impact survivability when underride and deadly Passenger Compartment Intrusion occur? How does that impact cost benefit analysis?
3. Speed is a factor in many crashes. What difference would underride protection make in these crashes?
4. How does the use of collision avoidance technology change the potential for underride to occur?
5. It is well known that underride deaths are undercounted. What does your truck crash reconstruction work indicate about the frequency of underride deaths?
6. What fuel savings can be expected from the use of side guards?
7. What difference might side guards make in collisions between large trucks and Vulnerable Road Users (pedestrians, cyclists, and motorcyclists)?

The Administrator of the National Highway Traffic Safety Administration should conduct additional research on side underride guards to better understand the overall effectiveness and cost associated with these guards and, if warranted, develop standards for their implementation. (Recommendation 4)

DOT noted that NHTSA is conducting a review of police accident reports of light vehicle crashes into the side of trailers in order to (1) estimate the number of fatalities from side underride crashes and (2) understand the effectiveness of side underride guards in preventing and mitigating the severity of side underride crashes. NHTSA then plans to conduct an analysis of the impacts of requiring side underride guards on trucks and trailers. As of March 2021, NHTSA plans to complete these analyses by July 2021.

Is there any information which we can provide you with to help you with the analysis you are working on in response to this GAO Recommendation?

. Ground Clearance
FMVSS No. 224 and CMVSS No. 223 require the bottom edge of the horizontal member of the rear impact guard of the trailer to be no more than 560 mm (22 inches) above the ground when the trailer is unloaded and on level ground. IIHS requests that NHTSA evaluate whether the ground clearance of rear impact guards can be reduced. The Karth/TSC petition suggests that NHTSA require rear impact guards on trailers and semitrailers be mounted 406 mm (16 inches) from the ground. (34)

Agency Decision
NHTSA has considered the petitions and is generally denying the request to lower the ground clearance requirement.

So, what about Single Unit Trucks with Ground Clearance above 22 inches?

The maximum required ground clearance of 560 mm (22 inches) is sufficiently low to engage the engine block of an impacting passenger vehicle.

Is ground clearance an issue for underride guards?

NHTSA is not proposing to reduce the maximum allowable ground clearance of rear impact guards also because NHTSA continues to be concerned that a lower guard ground clearance requirement may interfere with functionality of some of the vehicles. For example, in intermodal operations, some trailers are driven into ships on ramps instead of being crane loaded and some trailers need to drive up sloping driveways during normal operations. Some trailers may have the rear axle further forward to improve maneuverability of the trailer. NHTSA believes that, for such trailers, rear impact guards that are lower than 560 mm (22 inches) may scrape and snag with the ground and get damaged.

What do you think of this estimate of potential # of lives saved?

NHTSA estimated an overall effectiveness of 25 percent (approximately 30% x 85%) for CMVSS No. 223 rear impact guards in preventing fatalities in light vehicle crashes into the rear of SUTs with PCI.3

our review of 2009 TIFA data files of light vehicle impacts with PCI into the rear of SUTs indicated that only 55 percent of the fatally injured occupants were restrained.32

The real world data indicated that there are annually 31 light vehicle crashes with PCI into the rear of SUTs

resulting in 33 light vehicle occupant fatalities. Since only 59 percent of SUTs would require rear impact guards, the target population is reduced to approximately 20 (=33 x 59%).

Applying 25 percent effectiveness of CMVSS compliant guards, the upper bound on lives saved by CMVSS No. 223 compliant rear impact guards on SUTs is about 5.

Will you also be factoring in potential increase in seatbelt use and increase installation and use of collision avoidance technology?

Did you consider that seatbelt usage is rendered useless when underride & deadly Passenger Compartment Intrusion occur?

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Ark City bicyclist killed after hitting side of semi

14 hrs 40 mins ago

written by **KAKE News**

[bicyclist killed after hitting side of semi]

Are Vulnerable Road Users
(pedestrians, cyclists, & motorcyclists)
included in the formula for
lives which could be saved?