

Commercial Truck Collision with
Stopped Vehicles on Interstate 88
Naperville, Illinois
January 27, 2014



Accident Summary Report

NTSB/HAR-16/01/SUM
PB2016-101907



**National
Transportation
Safety Board**

Highway Accident Summary Report

Commercial Truck Collision with
Stopped Vehicles on Interstate 88
Naperville, Illinois
January 27, 2014



**National
Transportation
Safety Board**

490 L'Enfant Plaza, S.W.
Washington, D.C. 20594

National Transportation Safety Board. 2016. *Commercial Truck Collision with Stopped Vehicles on Interstate 88, Naperville, Illinois, January 27, 2014. Highway Accident Summary Report* NTSB/HAR-16/01/SUM. Washington, DC.

Abstract: On January 27, 2014, about 9:20 p.m., a 2004 Freightliner truck-tractor semitrailer, operated by DND International Inc., collided with stopped vehicles providing assistance to a disabled 2000 Volvo truck-tractor semitrailer, operated by Michael's Cartage Inc., in the right lane of eastbound Interstate 88, near Naperville, Illinois. The Federal Motor Carrier Safety Administration (FMCSA) had classified both carriers involved in this crash as high-risk carriers, meaning that their ratings in the Behavior Analysis and Safety Improvement Categories (BASICS), which the agency uses to assess carrier safety, were above certain established levels. As a result of the collision, an Illinois State Toll Highway Authority worker died. An Illinois State Police trooper was seriously injured in a postcrash fire that consumed his patrol car, and the driver of the Freightliner combination vehicle was seriously injured. The driver of the disabled Volvo combination vehicle received minor injuries. The report focuses on the safety issues of commercial driver fatigue and the inadequacy of FMCSA efforts to address the safety deficiencies of high-risk carriers or prioritize action to halt their operations. As a result of the investigation, the NTSB makes four new safety recommendations and reiterates one recommendation to the FMCSA.

The National Transportation Safety Board (NTSB) is an independent federal agency dedicated to promoting aviation, railroad, highway, marine, and pipeline safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine their probable causes, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person." 49 *Code of Federal Regulations* 831.4. Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 *United States Code* 1154(b).

For more detailed background information on this report, visit www.nts.gov/investigations/SitePages/dms.aspx and search for NTSB accident ID HWY14FH002. Recent publications are available in their entirety on the Internet at www.nts.gov. Other information about available publications also may be obtained from the website or by contacting:

**National Transportation Safety Board
Records Management Division, CIO-40
490 L'Enfant Plaza, SW
Washington, DC 20594
(800) 877-6799 or (202) 314-6551**

NTSB publications may be purchased from the National Technical Information Service. To purchase this publication, order product number PB2016-101907 from:

**National Technical Information Service
5301 Shawnee Rd.
Alexandria, VA 22312
(800) 553-6847 or (703) 605-6000
www.ntis.gov**

Contents

Figures and Tables	iii
Abbreviations and Acronyms	iv
Executive Summary	vi
1 The Crash	1
1.1 Crash Narrative	1
1.1.1 Events Preceding the Crash	1
1.1.2 Crash Sequence	3
1.2 Injuries	5
1.3 Highway Information	6
1.4 Driver Information	6
1.4.1 DND International Driver Operating the Freightliner Truck-Tractor Semitrailer	6
1.4.2 Michael’s Cartage Driver Operating the Volvo Combination Vehicle	10
1.4.3 Logbook Falsification	11
1.5 Vehicle Information	12
1.5.1 Freightliner Truck-Tractor Semitrailer Operated by DND International	12
1.5.2 Volvo Combination Vehicle Operated by Michael’s Cartage	12
2 FMCSA Oversight of High-Risk Carriers	14
2.1 Introduction	14
2.2 FMCSA Oversight of Motor Carriers	14
2.2.1 Mission and Challenges	14
2.2.2 CSA and High-Risk Carriers	15
2.3 Oversight of Naperville High-Risk Carriers	17
2.3.1 DND International	17
2.3.2 Michael’s Cartage	22
2.3.3 FMCSA Constraints	25
2.4 Consequences of Allowing High-Risk Carriers to Continue to Operate	25
2.4.1 Data on Crash Risk Posed by High-Risk Carriers	25
2.4.2 Safety Fitness Determination Rulemaking	27
2.5 Proposed Intervention Strategies for High-Risk Carriers	28
2.5.1 High-Risk Carrier Insurance	29
2.5.2 “Fit, Willing, and Able” Policy	30
2.5.3 Partnering with Stakeholders	32
2.6 DOT Independent Review Team Report	33
3 Conclusions	35
3.1 Findings	35
3.2 Probable Cause	36

4 Recommendations	37
4.1 New Recommendations	37
4.2 Previously Issued Recommendation Reiterated in this Report.....	38
Board Member Statement.....	39
References	41

Figures and Tables

Figure 1. Location of the Naperville, Illinois, crash, just beyond the Chicago city limits	2
Figure 2. Crash scene photo looking east, showing the vehicles at final rest.....	4
Figure 3. Crash scene photo showing the ISP patrol car and Freightliner combination vehicle at final rest.....	5
Figure 4. Estimated sleep opportunities for the DND International driver.....	8
Figure 5. FMCSA criteria for the determination of high-risk carriers.....	16
Figure 6. DND International BASIC scores at the time of the Naperville crash.....	18
Figure 7. Michael's Cartage BASIC scores at the time of the Naperville crash.....	23
Table 1. Injury table	6
Table 2. DND International 24-month history of BASIC scores exceeding thresholds	19
Table 3. Michael's Cartage 24-month history of BASIC scores exceeding thresholds.....	24
Table 4. Carriers identified and prioritized for CSA interventions by BASIC	26
Table 5. Crash rates for carriers based on number of BASICs in alert status	26

Abbreviations and Acronyms

ATRI	American Transportation Research Institute
BASICs	Behavior Analysis and Safety Improvement Categories
CAST	Commercial Aviation Safety Team
CDL	commercial driver's license
<i>CFR</i>	<i>Code of Federal Regulations</i>
CR	compliance review
CSA	Compliance Safety Accountability program
CSMS	Carrier Safety Measurement System
DOT	US Department of Transportation
ECM	electronic control module
ELD	electronic logging device
FAA	Federal Aviation Administration
FAST Act	Fixing America's Surface Transportation Act
FMCSA	Federal Motor Carrier Safety Administration
<i>FMCSRs</i>	<i>Federal Motor Carrier Safety Regulations</i>
<i>FR</i>	<i>Federal Register</i>
FY	fiscal year
HELP	Highway Emergency Lane Patrol
HOS	hours-of-service
I-88	Interstate 88
IH	imminent hazard
IRT	Independent Review Team
ISP	Illinois State Police
ISTHA	Illinois State Toll Highway Authority
MC	motor carrier

NPRM	notice of proposed rulemaking
NTSB	National Transportation Safety Board
PU	power unit
SAFER	Safety and Fitness Electronic Records
SFD	Safety Fitness Determination
UMTRI	University of Michigan Transportation Research Institute
<i>USC</i>	<i>United States Code</i>

Executive Summary

Investigation Synopsis

On January 27, 2014, about 9:20 p.m. central standard time, a 2004 Freightliner truck-tractor semitrailer, operated by the motor carrier DND International Inc., collided with stopped vehicles that were providing assistance to a disabled 2000 Volvo truck-tractor semitrailer, operated by the motor carrier Michael's Cartage Inc., in the right lane of eastbound Interstate 88 (I-88), at milepost 122 near Naperville, Illinois. A flare line separated traffic from the response area containing the stopped vehicles. The responding Highway Emergency Lane Patrol (HELP) truck was using an active yellow arrow board to direct traffic away from the area, and the responding police patrol car had activated its flashing blue and red lights. The Federal Motor Carrier Safety Administration (FMCSA) classified both of the carriers involved in this crash as high-risk carriers, meaning that their ratings in the Behavior Analysis and Safety Improvement Categories (BASICS), which the agency uses to assess carrier safety, were above certain established threshold levels.

As a result of the collision, an Illinois State Toll Highway Authority worker operating the HELP truck died. An Illinois State Police trooper was seriously injured in a postcrash fire that completely consumed his patrol car, and the driver of the Freightliner combination vehicle was seriously injured. The driver of the disabled Volvo combination vehicle, who was sitting in the right front seat of the HELP truck when the crash occurred, received minor injuries.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the Naperville, Illinois, crash was the DND International Inc. driver's delayed response to the stopped vehicles ahead of him in the roadway because he was fatigued due to inadequate sleep. Contributing to the circumstances that resulted in the crash was the failure of DND International Inc. to ensure that its driver adhered to federal hours-of-service regulations. Also contributing to the crash was inadequate safety oversight by the Federal Motor Carrier Safety Administration.

Safety Issues

Due to its focused scope, this investigation did not address any issues beyond establishing the probable cause of the crash and assessing the FMCSA's oversight of the two carriers involved in it. Consequently, this summary report concentrates on the following safety issues:

- **Commercial driver fatigue:** In the 37 hours prior to the crash, the DND International driver slept a total of less than 4.5 hours. His fatigue is evidenced by his failure to see the stopped and lighted vehicles in the lane ahead of him on the night of the crash until immediately before he struck them, which limited his ability to take effective action to avoid the crash. In addition, the driver's activities during his trip on

January 26, the day preceding the crash, were not accurately reflected in his logbook entries.

- **Inadequacy of FMCSA efforts to address the safety deficiencies of high-risk carriers or prioritize action to halt their operations:** Both motor carriers involved—DND International and Michael’s Cartage—had longstanding records of operating unsafely, causing the FMCSA to classify them as high-risk carriers. Unsafe operations on the part of DND International led to the circumstances that caused this crash. DND International, which operated the 2004 Freightliner combination vehicle, did not ensure that its drivers adhered to hours-of-service requirements, which enabled the driver fatigue that caused the DND International driver to strike the group of vehicles stopped in the right lane of eastbound I-88. Had DND International adhered to the *Federal Motor Carrier Safety Regulations (FMCSRs)*, it is possible that the driver of the Freightliner combination vehicle would not have been so fatigued as to run into the stopped vehicles. The FMCSA is responsible for overseeing motor carrier compliance with the *FMCSRs*, a duty that it carries out through a variety of interrelated systems. With respect to its oversight of the high-risk carriers DND International and Michael’s Cartage, the FMCSA had substantial evidence over a long period that they were significantly deficient in compliance with the *FMCSRs*, but the FMCSA did not take effective action to keep either carrier from operating unsafely.

Safety Recommendations

As a result of the investigation, the NTSB makes four new safety recommendations to the FMCSA and reiterates one recommendation to the FMCSA.

1 The Crash

The National Transportation Safety Board (NTSB) investigation of this crash focused on motor carrier safety and Federal Motor Carrier Safety Administration (FMCSA) oversight and intervention actions concerning high-risk carriers. The investigation did not address any issues outside the probable cause of the crash and the FMCSA's oversight of the two carriers involved. Consequently, "The Crash" portion of this report includes the crash narrative; the injuries that resulted from the crash; and the highway, driver, and vehicle factors immediately related to the crash.

1.1 Crash Narrative

1.1.1 Events Preceding the Crash

About 7:45 p.m. on Monday, January 27, 2014, a 2000 Volvo truck-tractor in combination with an intermodal chassis and container semitrailer became disabled in the eastbound right lane of Interstate 88 (I-88), also referred to as the Ronald Reagan Memorial Tollway, at milepost 122 near Naperville, Illinois.¹ (See figure 1.) The driver of the Volvo combination vehicle stated that the truck broke down for unknown mechanical reasons. He also said that he thought he had pulled his vehicle onto the right shoulder; he had in fact stopped his vehicle in the rightmost of the three eastbound travel lanes.

¹ Unless otherwise noted, all times are central standard time.



Figure 1. Location of the Naperville, Illinois, crash, just beyond the Chicago city limits (city limits are shown in light gray on the map).

Two Illinois State Toll Highway Authority (ISTHA) 2010 International flatbed Highway Emergency Lane Patrol (HELP) trucks and an Illinois State Police (ISP) 2011 Ford Crown Victoria patrol car arrived to render assistance to the Volvo combination vehicle and warn oncoming traffic of the blocked lane. When the two ISTHA HELP truck operators arrived on scene, they positioned their trucks in the right lane, immediately ahead of and behind the disabled Volvo combination vehicle, respectively. The ISP patrol car was positioned behind the rear ISTHA HELP truck. The two ISTHA HELP trucks attempted first to pull, and then to push, the Volvo combination vehicle onto the shoulder, but they were unsuccessful. The operators advised their dispatcher to send a heavy-duty tow truck to the scene. The two ISTHA HELP truck operators put out a flare pattern to alert motorists to the presence of the stopped vehicles.² The ISTHA HELP truck that had been in front of the Volvo combination vehicle left the area of the stopped vehicles after the flare line was set out. In addition to the flare line, the vehicle lights marking the disabled vehicle response area included emergency lights and an active yellow arrow board on the remaining ISTHA HELP truck, positioned behind the disabled vehicle (directing traffic to the left), and flashing blue and red police lights on the ISP patrol car.

A 1991 White Motor Company heavy-duty tow truck from Naperville Towing Services was dispatched to the scene; it was crewed by an operator and an assistant operator. The tow truck stopped in front of and hooked up to the Volvo combination vehicle. The tow truck driver notified the remaining ISTHA HELP truck driver that removal of the Volvo truck-tractor would take some time due to the disabled truck not having enough air pressure to release the brakes.³ He stated that he needed to cage the tractor's brakes and run air lines to the trailer. The tow truck driver had just finished putting in the cage bolts and connecting the air lines when the crash occurred.⁴

1.1.2 Crash Sequence

About 9:20 p.m., while the disabled Volvo combination vehicle and responding vehicles were stopped in the right lane of eastbound I-88, a 2004 Freightliner and 2012 East flatbed semitrailer combination vehicle, transporting a load of three steel coils from Nebraska to Illinois, was traveling in this lane, approaching the stopped vehicles at an engine-recorded speed of 63 mph. According to a witness who was also traveling in the right lane, at a distance he estimated as about 0.5 mile behind, he saw two combination vehicles traveling in the lane ahead of him, "back to back." He said that he noticed a flashing yellow light ahead of them in the right lane.⁵ As the two trucks approached the flashing lights, he saw the first truck move over to the center lane, at which time he said he clearly saw a flashing yellow arrow pointing to the left. This

² The flare pattern began at the front of the disabled Volvo combination vehicle on the lane line separating the center and rightmost lanes and extended to the rear of the second HELP truck; it then angled back to the solid white line on the right shoulder to the rear of the ISP patrol car.

³ Commercial vehicle air brake systems have a required parking or emergency spring that must be released using at least 60 psi of air pressure to disengage the brakes. The large coil spring serves as a backup safety feature, holding the brakes in an applied position in the absence of brake system air pressure.

⁴ The parking or emergency spring can be manually compressed or "caged" by inserting and locking a "caging bolt" into the brake chamber and rotating the nut at the end of the bolt with a wrench.

⁵ The ISTHA HELP truck was equipped with a flashing yellow arrow board.

witness stated that the second truck (the 2004 Freightliner) never moved out of the right lane and never slowed down. He said that the second truck then seemed to go directly into the yellow light, at which point the crash occurred and a fire ignited.

The 2004 Freightliner continued toward the stopped vehicles in the right lane and collided with them from behind.⁶ The Freightliner combination vehicle first collided with the ISP patrol car, pushing it off the highway into the right shoulder and ditch; it then continued forward into the ISTHA HELP truck. The impact caused the ISTHA HELP truck to strike the Volvo combination vehicle, which in turn collided with the back of the heavy-duty tow truck. After the collision, the Freightliner went off into the right shoulder and ditch. (See figure 2.) During the collision, all three steel coils being transported by the Freightliner combination vehicle became detached from the flatbed semitrailer. One of the steel coils made contact with the ISTHA HELP truck and came to rest in the center lane of I-88. The other two steel coils came to rest in the ditch to the right of the highway.



Figure 2. Crash scene photo looking east, showing the vehicles at final rest. (Source: Illinois State Police)

According to the postcrash report from the Illinois State Fire Marshal, the force of the impact and intrusion into the rear of the ISP patrol car ruptured its fuel tank, which released ignitable liquid/vapors (gasoline) onto multiple hot surfaces (exhaust), leading to a vehicle fire. The fire spread to and damaged the rear of the ISTHA HELP truck. The postcrash fire consumed the ISP patrol car and also spread to the flatbed semitrailer of the Freightliner combination vehicle. (See figure 3.)

⁶ Evidence from the Freightliner's electronic control module indicated that this vehicle was not braked until about 1 second before the impact.



Figure 3. Crash scene photo showing the ISP patrol car and Freightliner combination vehicle at final rest. (Source: Illinois State Police)

The collision occurred in darkness, and there was no roadway lighting in the immediate vicinity. The roadway surface was dry, and weather conditions were clear. According to weather information from the Aurora Municipal Airport, at 8:52 p.m., the air temperature was -8°F with winds out of the west at 12 mph.⁷ The temperature with the wind chill factor was -28°F.

1.2 Injuries

See table 1 for injury summary information.

⁷ The Aurora Municipal Airport is about 14 miles west of the crash site.

Table 1. Injury table.

	Uninjured	Minor	Serious	Fatal ^a
2004 Freightliner combination driver	0	0	1	0
2000 Volvo combination driver ^b	0	1	0	0
ISP patrol officer	0	0	1	0
ISTHA HELP truck driver	0	0	0	1
Heavy-duty tow truck operators	2	0	0	0
TOTAL	2	1	2	1
^a The injury levels were evaluated according to 49 <i>Code of Federal Regulations (CFR)</i> 830.2, which defines fatal injury as "any injury which results in death within 30 days of the accident" and serious injury as "any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burn affecting more than 5 percent of the body surface."				
^b At the time of the crash, the Volvo driver was in the ISTHA HELP truck occupying the front passenger seat.				

1.3 Highway Information

In the vicinity of the crash, I-88 is an east/west six-lane divided interstate with three travel lanes in each direction. The interstate in this area is straight with a gradual uphill grade in the eastbound direction. Lane markings include a solid yellow edgeline for the left lane, dashed white centerlines separating the travel lanes, and a solid white edgeline for the right lane. Travel lanes are approximately 12 feet wide, with a 13-foot-wide left shoulder and an 11-foot-wide right shoulder. Rumble strips are in place on the shoulders outside the edgelines. The posted speed limit in the vicinity is 55 mph.

1.4 Driver Information

1.4.1 DND International Driver Operating the Freightliner Truck-Tractor Semitrailer

Licensing and Experience. The motor carrier DND International employed the driver of the 2004 Freightliner truck-tractor and semitrailer combination vehicle that struck the stopped vehicles. The driver held an Illinois commercial driver's license (CDL) with the correct endorsement for the vehicle he was operating. He had about 7 years of experience driving trucks, mostly in flatbed operations, and had been employed with DND International for 3 years. The driver's driving record showed a property damage accident in March 2012, a violation for following improperly in June 2010, and a speeding violation in March 2010 (in a commercial vehicle).

Toxicology. A postcrash toxicology analysis of the driver's blood and urine conducted by the ISP crime laboratory was negative for alcohol and illicit drugs.

Sleep Opportunity. Investigators constructed a profile of the activities of the DND International driver prior to the crash, using his statements to investigators, cell phone records, dispatch records, load delivery records, fuel receipts, and I-PASS (electronic toll) account reports.

According to the driver's statements made to the ISP, he had been off duty on Saturday, January 25, 2014. Per his self-report of activities, he woke about 8:30 a.m., on Sunday, January 26, the day before the crash. He reported undertaking several activities that day before beginning driving; these included dropping off paperwork at the motor carrier, going to church, warming up his truck, and having a meal out. He reported no napping activity. He told the ISP that he began driving to deliver a load to Elkhorn, Nebraska, about 5:30 p.m. For much of the trip, he was heading westbound on I-88.

The driver's I-PASS records show that he went through the Aurora, Illinois, toll plaza at 6:54 p.m., on January 26. These records also show him westbound on I-88 and as being at DeKalb, Illinois, at 8:00 p.m. and at Dixon, Illinois, at 8:46 p.m. Given the speed limits for this trip, the route from Dixon to Elkhorn would normally require about a 5.5-hour drive. However, a weather-related (whiteout conditions) crash shut down westbound I-88 at milepost 33 from approximately 9:30 p.m. to 1:30 a.m. that night. The driver later told investigators that his vehicle had been stuck near the front of the traffic jam related to the January 26 crash. Because of this shutdown period and the snowy weather, investigators believe that the trip to Elkhorn would have taken at least 4 hours longer than usual. The driver told the ISP that while traffic was shut down due to the crash, he remained in his truck in the traffic on westbound I-88. He stated that during the shutdown, he went to his truck's sleeper berth and slept for a period he estimated as from about 9:00 p.m. to 1:30 a.m. He said that about 1:30 a.m., an ISP officer told him he could continue his journey west on I-88.⁸

Cell phone records indicated that the driver was in Iowa, about 1 hour east of his Elkhorn delivery point, at 6:55 a.m. on Monday, January 27. The delivery in Elkhorn was recorded as having taken place between 8:45 a.m. and 9:20 a.m. on January 27.

After delivering his load in Elkhorn, the driver drove to Cedar Rapids, Iowa, which would have taken an estimated 4.5 hours of driving time. The driver said that he began driving to Cedar Rapids about 11:00 a.m. He said he was in Cedar Rapids, where he picked up a load of steel coils, between 3:30 p.m. and 5:00 p.m. (Records from the freight location indicated that he picked up a load there at 4:00 p.m.) The driver told the ISP that he slept for about 15 minutes while in Cedar Rapids.

Upon leaving Cedar Rapids after 5:00 p.m., the driver headed eastbound en route to the Naperville area, which required at least 3.5 hours of driving time. I-PASS records showed that he

⁸ The driver initially told the ISP that he slept 7–8 hours on the night of January 26–27. However, he later changed his account when reminded of the facts concerning the January 26 crash on I-88 westbound.

was eastbound on I-88, traveling through Dixon, Illinois, at 8:17 p.m.; DeKalb, Illinois, at 8:45 p.m.; and Aurora, Illinois, at 9:14 p.m. Examination of the driver's cell phone records indicated that he last had cell phone activity more than a half hour prior to the crash, when he received an incoming call that lasted about 2 minutes and ended about 8:46 p.m. The crash occurred at 9:20 p.m.

Based on the driver's self-reports to the ISP, coupled with known information about driving distances between his destinations, his cell phone records, load delivery information, his I-PASS account, and fueling station receipts, he did not have opportunity for adequate sleep between the morning of Sunday, January 26, and the time of the crash, at 9:20 p.m. on Monday, January 27. The driver reported that during this period he slept for 4.5 hours in his sleeper berth while waiting to be released from a crash-related traffic jam on westbound I-88. Based on the time (9:30 p.m.) that the ISP actually shut down the highway on January 26, this sleep opportunity period is more likely to have been of only 4 hours duration, from 9:30 p.m. to 1:30 a.m. His only other reported sleep during this roundtrip was a nap of about 15 minutes that he said he took in Cedar Rapids the afternoon of January 27. See figure 4 for a chart that reflects the driver's self-reported sleep for January 26–27, 2014.

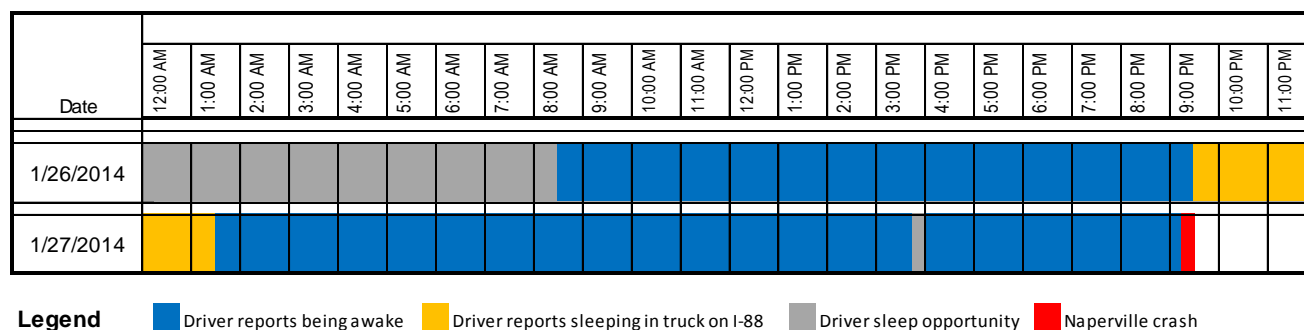


Figure 4. Estimated sleep opportunities for the DND International driver.

To summarize, in the nearly 37 hours between the driver's reported wake time of 8:30 a.m. on Sunday, January 26, and the crash at 9:20 p.m. on Monday, January 27, the driver reported that he slept a total of less than 4.5 hours. Moreover, any sleep obtained as he reported would not have been of the best quality. He might have been able to sleep during the 4 hours while stopped on westbound I-88. But if the driver was able to sleep at all during this period and under these conditions, the circumstances cannot have been conducive to uninterrupted, restorative sleep. He would not have been able to relax fully, given the uncertainty of when traffic might be released.

Additional information suggests that the driver was fatigued when the Naperville crash occurred. During interviews with the ISP, the driver repeatedly stated that he did not see the stopped and lighted vehicles in the lane ahead of him on the night of January 27 until immediately before he crashed into them. Another driver, who said he was traveling eastbound on I-88 in the center lane just prior to the crash (some distance ahead of the 2004 Freightliner in the right lane), said that he made a lane change to the left when he saw the flare line and police car and ISTHA HELP truck lights indicating the stopped vehicles. This driver made the

following statement: “I just don’t understand how no one would see that there was someone having trouble on the road—the site in question was well lit, very bright, and as far off the road as possible. It was a clear night with no obstructions in the roadway whatsoever.”⁹

The facts that the driver did not see the flare- and emergency light-marked area containing the stopped vehicles and did not apply his truck’s brakes until just prior to impact suggest extreme inattention, consistent with fatigue. Moreover, although he initially stated in interviews with the ISP that he was not asleep when the crash occurred, ultimately, when asked why he did not see the lights on the stopped vehicles until immediately before crashing into them, he replied, “Maybe because [I was] sleeping or something. But I don’t see ‘em.” When specifically asked by the ISP, “Were you sleeping, you think? Yes or no?,” he replied, “Yeah, because I say I don’t see nothing.” The NTSB concludes that the DND International driver was impaired by fatigue at the time of the crash due to his lack of adequate sleep, which resulted in his delayed response to the vehicles stopped ahead of him.

HOS Compliance. Investigators noted that the driver’s activities during his trip on January 26, the day preceding the crash, were not accurately reflected in his logbook entries. For example, based on the known distances, speed limits, and crash- and weather-related delays during his westbound journey, investigators estimated that the earliest the driver could have arrived in Elkhorn, Nebraska, was about 7:00 a.m. on January 27. The driver recorded in his logbook that he went off duty in Elkhorn at 9:00 p.m. on January 26. According to I-PASS records, at this time, the driver was near Dixon, Illinois, and was still hundreds of miles from Elkhorn. During interviews with the ISP, the driver ultimately admitted that he had made false logbook entries.

NTSB investigators compared information obtained using the driver’s fuel receipts and I-PASS statements to his logbooks for the 6 months preceding the crash to determine his log falsification rate. The evaluation found that of 149 logs reviewed, 55 were false, representing an average falsification rate of 36.9 percent for the 6-month period. A falsification rate of 36.9 percent falls well within the FMCSA’s definition of a critical violation of the hours-of-service (HOS) regulations.¹⁰ Consequently, the NTSB concludes that the DND International driver routinely falsified his logbook entries and had a history of logbook falsification.

Given that the crash driver in this case had routinely falsified his logbooks, NTSB investigators evaluated the logbooks of four additional DND International drivers in comparison to their fuel receipts and I-PASS statements for a 4-month period from October 2013 through January 2014. The drivers selected were among the most frequent HOS violators still employed by DND International. Data for the driver selection were based on the carrier’s documented roadside inspections over the last 24 months. Drivers with the most HOS violations or who were placed out of service for logbook violations during that period were selected.

⁹ The assistant operator of the heavy tow truck that was dispatched to help move the disabled Volvo combination vehicle noted in his ISP interview that while en route to the site of the disablement that night, he could clearly see the lighted ISTHA HELP truck and ISP patrol car at a distance he estimated as 1.5–2 miles.

¹⁰ The FMCSA considers a log falsification rate over 10 percent a critical violation of the HOS regulations.

Of 461 logs reviewed, the group had 74 false logs, representing an average falsification rate of 16 percent during the reviewed period. All four of these drivers were also systematically falsifying their logbooks.¹¹

DND International drivers recorded their hours of service using traditional paper logs. The carrier had its drivers turn in their logbooks to the company office on a weekly basis. However, the carrier did not use the logbooks as a means of checking to ensure drivers' compliance with HOS rules (such as by comparing the log entries with available toll records from I-PASS accounts). Therefore, the NTSB concludes that DND International failed to adequately monitor its drivers' compliance with HOS rules.

1.4.2 Michael's Cartage Driver Operating the Volvo Combination Vehicle

Licensing and Experience. The driver of the disabled 2000 Volvo truck-tractor and intermodal semitrailer combination vehicle held a Michigan CDL, which the ISP later cited as invalid, noting that the driver had resided in Illinois since 2004 or earlier and had not yet obtained an Illinois driver's license as required by statute. The driver was hired by the motor carrier Michael's Cartage in January 2007, and he had about 2 years of previous employment as a truck driver. The driver's driving record showed one citation for driving the wrong way on a one-way street in August 2009, one for disobeying a traffic signal in July 2004, and one for an improper lane change in November 2002.

HOS Compliance. The driver generally operated within the 100-air-mile radius of the Michael's Cartage terminal, picking up and delivering intermodal containers and semitrailers. At the time of the crash, he was nearing the end of his shift and was engaged in his final delivery trip for the day.¹² Due to his staying within the 100-air-mile radius, the driver could have claimed an exemption to the record-of-duty-status (logbook) requirement, per 49 *CFR* 395.1(e). However, he elected to keep a daily log.

NTSB investigators then compared the driver's fuel receipts and I-PASS statements to his logbooks. On the day of the crash, the Michael's Cartage driver logged on duty at 6:00 a.m. and off duty at 5:00 p.m. According to his I-PASS statements, the driver continued operating the truck after logging off duty. The truck then became disabled about 7:45 p.m., so the driver had a false log at the time of the crash. For the 3 months prior to the crash, of the 88 logs reviewed, the driver had 48 false logs, providing an average falsification rate of 54.4 percent for the reviewed period. The NTSB concludes that the Michael's Cartage driver routinely falsified his logbook entries and had a history of logbook falsification above the critical level.

Because of this driver's high falsification rate, the NTSB compared the logbooks of four additional Michael's Cartage drivers to their fuel receipts and I-PASS statements for a 3-month period from November 2013 through January 2014. Of the 352 logbooks reviewed, the group of

¹¹ At the time of the crash, DND International employed 49 drivers. Including the accident driver, the group of drivers whose logbooks the NTSB examined represented over 10 percent of the carrier's drivers.

¹² When the crash occurred, the Michael's Cartage driver had about 15 minutes remaining before reaching his maximum 14-hour HOS limit.

drivers had 185 false logs, representing an average falsification rate of 52.5 percent during the reviewed period. All four drivers evaluated were falsifying their logbooks beyond the 10 percent critical level.¹³

Michael's Cartage drivers recorded their hours of service using traditional paper logs. The carrier had a fulltime employee who checked driver logbooks against work orders. The logs were scanned and entered into a computer but were not reviewed for HOS violations. Once a log was scanned and found to match the work order for that trip, the review was halted, and the log was filed. The carrier disciplined drivers only if they received an HOS violation during a roadside inspection or failed to turn in their logbooks. The logbook process failed to take into account any supporting documentation; that is, the drivers' logs were not compared with fuel or toll receipts to determine the accuracy of the entries.¹⁴ The NTSB concludes that Michael's Cartage failed to adequately monitor its drivers' compliance with HOS rules.

1.4.3 Logbook Falsification

The NTSB has frequently uncovered logbook falsification as an issue in its investigations. As recently as 2013, the NTSB investigated two crashes—one in Elizabethtown, Kentucky, and the other in Murfreesboro, Tennessee—in which the carriers had long histories of noncompliance with HOS regulations and high rates of logbook falsification (NTSB 2013). The FMCSA was aware of the logbook problems with these carriers but did not take effective corrective action.

The NTSB found that the drivers of both motor carriers involved in the Naperville crash were engaging in logbook falsification at rates above the critical level. As a consequence of his failure to comply with HOS regulations, the DND International driver was so fatigued that he crashed his truck into stopped vehicles that were using high-visibility lighting, causing one death and two serious injuries.

The NTSB has repeatedly recommended that the FMCSA require all trucks and buses to be equipped with electronic logging devices (ELD) to improve the accuracy of carrier HOS records and encourage compliance with HOS regulations. In its 2007 report on a crash that took place in Chelsea, Michigan, the NTSB made the following recommendation to the FMCSA (NTSB 2007):

Require all interstate commercial vehicle carriers to use electronic on-board recorders that collect and maintain data concerning driver hours of service in a valid, accurate, and secure manner under all circumstances, including accident

¹³ At the time of the crash, Michael's Cartage employed 105 drivers. Including the driver involved in this crash, the five drivers whose records the NTSB examined represented 4.8 percent of the carrier's drivers.

¹⁴ Carrier Safety Measurement System data at the time of the crash indicated that among the HOS compliance failures for Michael's Cartage were instances of violations of the rules against driving beyond the 11-hour driving limit, driving beyond the 14-hour duty period, and driving beyond the 8-hour limit since the end of the last off-duty or sleeper period of at least 30 minutes.

conditions, to enable the carriers and their regulators to monitor and assess hours-of-service compliance. (H-07-41)

Because of its importance to decreasing the incidence of fatigue-related crashes that may result from HOS violations, this recommendation was on the NTSB's Most Wanted List of transportation safety improvements for a number of years. The recommendation is classified "Open—Acceptable Response."¹⁵

1.5 Vehicle Information

1.5.1 Freightliner Truck-Tractor Semitrailer Operated by DND International

The striking vehicle, the 2004 Freightliner truck-tractor semitrailer, underwent a postcrash inspection. According to the ISP Commercial Motor Vehicle Inspection Report, no preexisting vehicle defects were noted, and all brakes were found to be within adjustment limits. NTSB investigators downloaded data from the Freightliner truck-tractor's electronic control module (ECM), which indicated that the vehicle had been traveling approximately 63 mph (in a 55 mph zone) and that the brakes were not applied until about 1 second before impact.

1.5.2 Volvo Combination Vehicle Operated by Michael's Cartage

The disabled truck that was struck, the 2000 Volvo combination vehicle, also underwent a postcrash inspection. The ISP Commercial Motor Vehicle Inspection Report noted several preexisting vehicle defects. The axle 2 left brake was found to be out of adjustment at 2 1/8 inches. The report noted four separate non-crash-related lighting defects and two non-crash-related windshield cracks.

The postcrash inspection report also listed several non-crash-related tire defects. These included the left steer axle tire being worn such that tire cord was exposed, a missing tread section on the axle 2 right inside tire, and a bolt puncture and no pressure in the axle 3 left outside tire. Inspectors could not be certain whether the bolt puncture, as well as a low tire pressure (measured at 30 psi) on the axle 2 right outside tire, had existed prior to the crash.¹⁶ Nevertheless, the overall condition of the tires on the 2000 Volvo truck-tractor indicated poor vehicle maintenance that would have placed the vehicle out of service had it been subjected to a roadside inspection prior to the crash. The NTSB concludes that the owner-operator of the 2000 Volvo truck-tractor that became disabled and stopped in the right lane of eastbound I-88 failed to adequately maintain his vehicle.

Additional information regarding the condition of the 2000 Volvo truck-tractor was found in its Detroit Diesel ECM. NTSB investigators downloaded the ECM on February 25,

¹⁵ On December 16, 2015, the FMCSA published a final rule to establish the following: minimum performance and design standards for HOS ELDs, requirements for the mandatory use of these devices by drivers currently required to prepare HOS record-of-duty-status logs, requirements concerning HOS supporting documents, and measures to address concerns about harassment resulting from the mandatory use of ELDs.

¹⁶ Postcrash, the vehicle was towed and stored in an open lot where the defects were noticed.

2014. The downloaded data did not contain any hard brake or last stop record events but did contain diagnostic records and engine fault codes. The data showed that on the day of the crash, the truck had experienced two ECM errors and had an active “memory data incorrect” fault code.

Both ECM errors indicated that the data received were invalid and possibly led to engine-control-related shutdowns. As a result of the invalid data errors, the diagnostic information within the records may not be accurate. For this reason, NTSB investigators were unable to interpret the data to determine why the truck became disabled. The last error occurred at an engine-recorded time of 6:44:57 p.m.

2 FMCSA Oversight of High-Risk Carriers

2.1 Introduction

The FMCSA had longstanding evidence of high levels of noncompliance with safety regulations by both carriers involved in this crash, resulting in their unsafe operations. Yet, even after the fatal crash, the FMCSA was unable to take effective action to ensure that these carriers improved their safety or to put them out of business. Based on their safety records, the FMCSA considered both DND International and Michael's Cartage to be "high-risk" carriers, a designation defined in section 2.2.2 of this report.

Until the FMCSA can find a way to make high-risk carriers, such as DND International and Michael's Cartage, comply with requirements to operate safely or to remove them from the industry, they will continue to jeopardize the safety of other highway users.¹⁷ This part of the report discusses (1) the FMCSA's challenges in overseeing motor carriers, (2) the FMCSA's oversight actions for the two carriers involved in this crash, (3) the safety implications of allowing high-risk carriers to continue to operate, and (4) new actions that may help to remove high-risk carriers from our nation's highways.

2.2 FMCSA Oversight of Motor Carriers

2.2.1 Mission and Challenges

The FMCSA was established in 2000 as a US Department of Transportation (DOT) agency with the primary mission of preventing fatalities and injuries resulting from commercial motor vehicle-related incidents. The FMCSA is tasked with overseeing the safety of motor carrier operations, a duty that it performs primarily by establishing and enforcing safety regulations for the industry.

The compliance review (CR) process is the FMCSA's principal means of providing oversight. Generally, a CR is an on-site examination of the motor carrier's records and operation. To increase its ability to conduct CRs, the FMCSA partners with states to make use of state investigators as well as its own federal workforce. Both state and FMCSA investigators may carry out CRs. Upon completion of a review, the FMCSA assigns the carrier a safety rating that

¹⁷ The US Department of Transportation recognizes that FMCSA oversight of high-risk carriers has been problematic. On May 5, 2015, the department's Office of Inspector General began an audit of the FMCSA's investigative practices for high-risk motor carriers.

reflects its compliance with the *Federal Motor Carrier Safety Regulations (FMCSRs)* and the *Hazardous Materials Regulations*.¹⁸

Since its inception, the FMCSA has found that its resources are too limited to fulfill its vast responsibilities, given the size of the motor carrier industry. According to FMCSA statistics, the industry is composed of more than 539,000 interstate truck and bus companies, 10.6 million large trucks, 764,000 buses, and 5.6 million commercial drivers (FMCSA 2014a). In fiscal year (FY) 2014, the FMCSA conducted over 7,600 CRs with its workforce of 369 federal safety investigators. Nearly 500 state-level safety investigators working in partnership with the FMCSA conducted another 7,300 CRs. In all, only about 14,900 CRs were conducted in FY 2014, resulting in an annual CR rate of about 2.8 percent of the industry.

2.2.2 CSA and High-Risk Carriers

In December 2010, the FMCSA began implementing the Compliance Safety Accountability program (CSA) to assess motor carrier compliance with safety regulations and to prioritize which carriers should receive CRs. Through the implementation of the CSA, the FMCSA has been working to broaden its means of interventions and to provide direct oversight to more carriers.

With the CSA, the FMCSA also created a new carrier assessment tool called the Carrier Safety Measurement System (CSMS). The CSMS uses data from roadside inspections (including all safety-based violations), state-reported crashes, and the Federal Motor Carrier Census to quantify a carrier's performance in seven Behavior Analysis and Safety Improvement Categories (BASICS). The seven BASICS are (1) Unsafe Driving, (2) HOS Compliance, (3) Driver Fitness, (4) Controlled Substances and Alcohol, (5) Vehicle Maintenance, (6) Hazardous Materials Compliance (if applicable), and (7) Crash Indicator.

A carrier's rating for each BASIC depends on its number of adverse safety events, the severity of its violations or crashes, and when the adverse safety events occurred (more recent events are weighted more heavily). Carriers are compared to a peer group of other carriers with similar numbers of inspections using a percentile rating of 0 to 100, with the 100 percentile indicating the worst performance. The FMCSA uses these ratings to prioritize carriers for

¹⁸ Safety ratings are classified as "satisfactory," "conditional," "unsatisfactory," or "unrated" using the factors prescribed in 49 *CFR* 385.7 and the Safety Fitness Methodology. A satisfactory safety rating means that a motor carrier has in place and functioning adequate safety management controls to meet the safety fitness standard. A conditional safety rating means that a motor carrier does not have adequate safety management controls in place to ensure compliance with the safety fitness standard, which could result in occurrences listed in 49 *CFR* 385.5 (a) through (k). An unsatisfactory safety rating means that a motor carrier does not have adequate safety management controls in place to ensure compliance with the safety fitness standard, which has resulted in occurrences listed in 49 *CFR* 385.5 (a) through (k). The designation "unrated" means that the FMCSA has not assigned the carrier a safety rating.

undergoing CRs. Investigative actions resulting from CSMS information can include comprehensive CRs and focused CRs.¹⁹

Carriers receive priority for an on-site CR when the FMCSA determines them to be “high risk” for 2 consecutive months. The FMCSA defines a high-risk carrier as one that has a rating at or above 85 percent in the Crash Indicator, HOS Compliance, or Unsafe Driving BASIC, in addition to having any other single BASIC over the threshold level for that BASIC.²⁰ It also defines a carrier as high risk if it has four or more BASICs over threshold. (See figure 5.)²¹

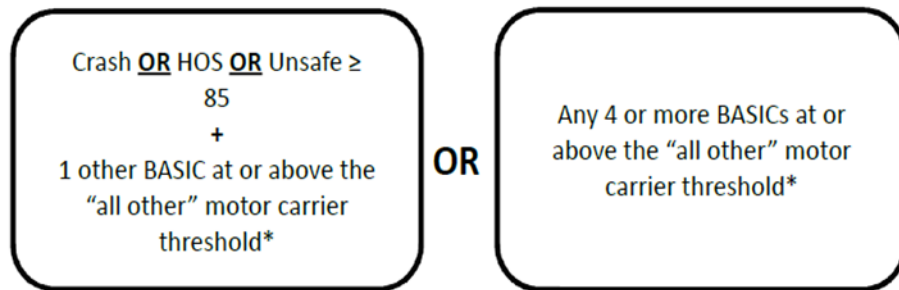


Figure 5. FMCSA criteria for the determination of high-risk carriers (FMCSA 2014b).

According to the FMCSA, motor carriers that meet these high-risk carrier criteria are designated as priorities for CRs and are put on the mandatory CR list for the local FMCSA division office. Under CSA, and consistent with section 4138 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, motor carriers on the mandatory list must be prioritized for an onsite CR that should be conducted within 1 year (if they have not undergone a CR in the past 24 months). Congress has taken special interest in motor carriers classified as high risk. For a number of years, the House Committee on Appropriations has required that the FMCSA report to it annually on the agency’s ability to meet the requirement to

¹⁹ The FMCSA has been making greater use of focused rather than comprehensive CRs in recent years. A focused CR evaluates only those specific areas of the carrier’s operation identified by data-driven analysis (generally a BASICs rating) as a problem area. In a focused CR, the investigator considers only those violations in the specific areas originally identified for oversight.

²⁰ Thresholds of the Crash Indicator, HOS Compliance, and Unsafe Driving BASICs are set at 50 percent for passenger carriers, 60 percent for hazmat carriers, and 65 percent for all other carriers. BASIC thresholds for Driver Fitness, Controlled Substances and Alcohol, and Vehicle Maintenance are set at 65 percent for passenger carriers, 75 percent for hazmat carriers, and 80 percent for all other carriers.

²¹ The number “85” as noted in figure 5 is the percentage threshold that a carrier must exceed in either the Crash Indicator or HOS Compliance or Unsafe Driving BASIC to be considered high risk. The asterisk (*) refers to “all other” motor carrier thresholds at or above 65 percent for the Crash Indicator, Unsafe Driving, and HOS Compliance BASICs, and at or above 80 percent for the Driver Fitness, Controlled Substances and Alcohol, and Vehicle Maintenance BASICs.

conduct CRs on all motor carriers identified as mandatory/high risk.²² The FMCSA reported to Congress that in FY 2014, it had identified 6,168 mandatory carriers.²³

2.3 Oversight of Naperville High-Risk Carriers

2.3.1 DND International

DND International, the carrier that operated the striking 2004 Freightliner combination vehicle, was based in Naperville, Illinois, and specialized in flatbed transportation. The company was registered with the FMCSA as a for-hire carrier of general freight. At the time of the January 2014 Naperville crash, DND International employed 49 drivers and operated 49 truck-tractors and 55 semitrailers. All of the carrier's drivers were owner-operators or independent contractors.

FMCSA Profile of Carrier. Threshold levels for each BASIC depend on the inherent risk of the category, as well as the carrier type (passenger, hazmat, or all others). DND International was grouped under "all other carriers." Its CSMS profile was on the FMCSA's website, and an intervention alert symbol appeared for any designated BASIC in which it exceeded the threshold for that BASIC. According to the carrier's CSMS profile at the time of the Naperville crash, it had intervention alerts in two BASICs—Unsafe Driving and HOS Compliance. (See figure 6.)²⁴

²² With the implementation of CSMS, the statutory mandate for the FMCSA to inspect high-risk carriers no longer reflected current program terminology. Therefore, the Committee included a technical correction to reflect the modernization of the program in section 132 of the 2014 Transportation and Housing and Urban Development Appropriations Bill (Senate Bill 1243, Administrative Provisions for the FMCSA).

²³ For more information, see www.fmcsa.dot.gov/mission/policy/mandatory-high-risk-carriers-report-congress-%E2%80%93-fy-2014, accessed February 8, 2016.

²⁴ The graphics used to display the BASIC scores for DND International (figure 6) and Michael's Cartage (figure 7) represent screen views of information that no longer exists on the FMCSA's Safety and Fitness Electronic Records (SAFER) website. Sometime after the crash date, the FMCSA revised its on-screen design and imagery for this website, which changed the way carrier score information appeared on the site. Then, as a result of the Fixing America's Surface Transportation Act (FAST Act), which was enacted on December 4, 2015, the FMCSA removed BASIC scores from public view.

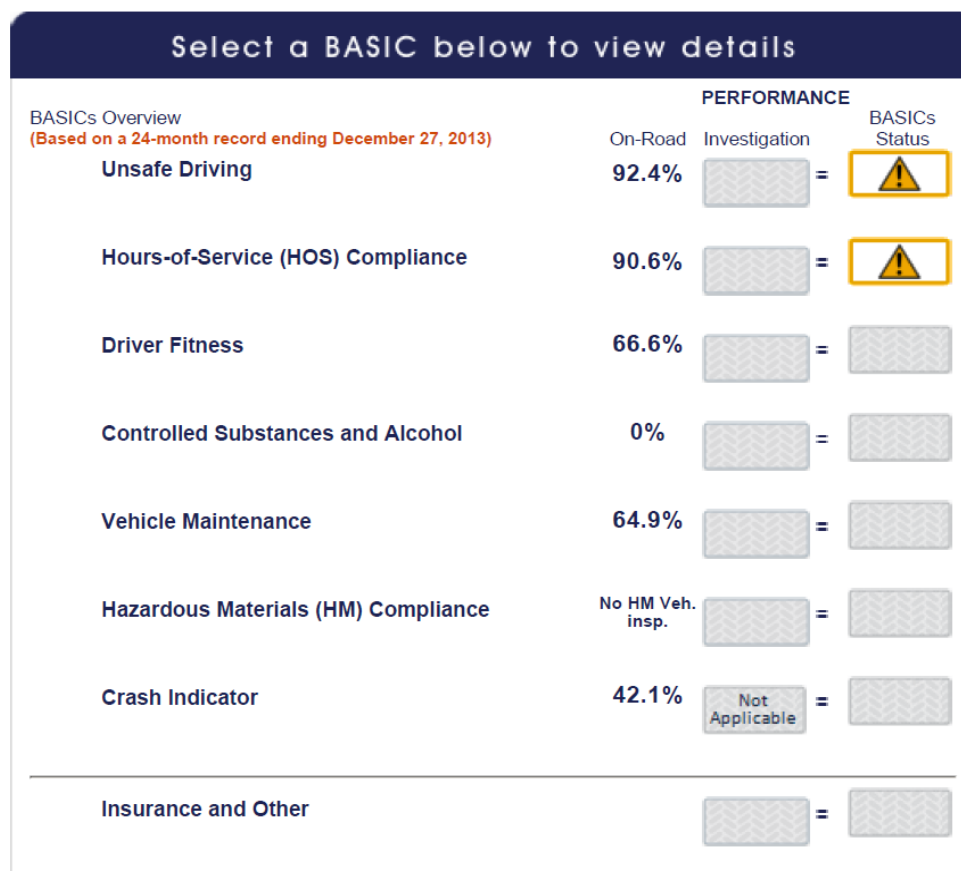


Figure 6. DND International BASIC scores at the time of the Naperville crash. (Source: SAFER website [from 2014].)

High-Risk and CR History. DND International had a history as a high-risk carrier. The carrier received its first CR on March 1, 2011, because of its high-risk classification. DND International had been considered high risk for at least the 2 years prior to the 2014 Naperville crash. (See table 2.) Because it had scores over the 85 percentile in both the Unsafe Driving and HOS BASICs, the FMCSA considered DND International a high-risk carrier at the time of the Naperville crash.

Table 2. DND International 24-month history of BASIC scores exceeding thresholds.

Month	Unsafe driving (%)	HOS compliance (%)	Driver fitness (%)	Crash indicator (%)
January 2014	92.4	90.6	*	*
December 2013	92.8	88.8	*	*
November 2013	94.5	89.6	*	*
October 2013	94.5	89.6	*	*
September 2013	93.4	85.5	*	*
August 2013	93.9	86.8	*	*
July 2013	92.8	88.4	*	*
June 2013	92.6	89.3	*	*
May 2013	94.1	90.4	*	*
April 2013	92.8	88.1	*	*
March 2013	93.5	85.9	*	*
February 2013	89.7	82.0	*	*
January 2013	91.0	82.2	*	*
December 2012	89.2	87.4	*	66.8
November 2012	87.3	82.1	86.0	66.3
October 2012	90.5	83.4	85.9	71.2
September 2012	91.9	87.6	86.0	77.2
August 2012	93.4	89.4	78.5	66.8
July 2012	92.0	92.7	80.5	66.9
June 2012	91.8	93.8	83.6	*
May 2012	90.3	92.3	*	*
April 2012	96.1	93.0	*	74.1
March 2012	95.7	90.9	*	*
February 2012	95.0	91.8	*	*
January 2012	95.5	94.1	*	*
* Category score did not exceed BASIC threshold.				

The comprehensive CR conducted on March 1, 2011, reported eight violations and resulted in DND International being issued a conditional safety rating. The carrier underwent a second CR—a focused CR—on July 6, 2011, and no violations or deficiencies were noted. DND International received a satisfactory safety rating on July 8, 2011.

Although DND International was a high-risk carrier due to its BASIC scores, which were generally above 85 percent in the Unsafe Driving and HOS Compliance BASICs from 2012

through 2013, it was not put on the mandatory list for another CR until August 2013. According to the FMCSA, the carrier did not receive priority for a CR during this period because it had had its most recent CR in July 2011, less than the 24 months that was then required between CRs.

Once a high-risk carrier is on the mandatory CR list, it can take up to 12 months for the CR to be conducted.²⁵ Because of the FMCSA's policy of providing a 24-month period between CRs and the up to 12 months required for scheduling a CR, a delay of as long as 3 years could take place between a carrier being classified as high risk and the FMCSA intervention. During this period, the high-risk carrier could continue to operate unsafely, as DND International did for at least 2 years, as demonstrated by the data in table 2.²⁶ The NTSB concludes that although the CSMS appropriately identified DND International as a high-risk carrier, procedural delays in the FMCSA oversight process allowed this high-risk carrier to continue to operate without intervention for at least 2 years.

Allowing a known high-risk carrier to continue operating for such a lengthy period without an FMCSA intervention is an unacceptable safety risk. DND International demonstrated significant and regular noncompliance with the *FMCSRs* that should not have gone unchecked by the FMCSA between its July 6, 2011, CR and its postcrash CR.

Since the Naperville crash, the FMCSA has changed its internal policies to provide more authority for its Division Administrators to use their discretion in taking immediate intervention action (including conducting a CR) in the case of a high-risk carrier that has a worsening safety and compliance posture, even if it has had a CR within the past 24 months. The NTSB appreciates that the FMCSA is taking action on this important safety issue to help ensure that high-risk carriers receive more timely interventions.

Postcrash Imminent Hazard Order. According to 49 *CFR* 386.72, the FMCSA can issue an imminent hazard (IH) order under the following circumstances:

- (a) Whenever it is determined that there is substantial likelihood that death, serious illness, or severe personal injury, will result from the transportation by motor vehicle of a particular hazardous material before a notice of investigation proceeding, or other administrative hearing or formal proceeding to abate the risk of harm can be completed, the Chief Counsel or the Assistant Chief Counsel for Motor Carrier and Highway Safety Law may bring, or request the United States Attorney General to bring, an action in the appropriate United States District Court for an order suspending or restricting the transportation by motor vehicle of the hazardous material or for such other order as is necessary to eliminate or ameliorate the imminent hazard, as provided by section 111(b) of the Hazardous Materials Transportation Act (49 *United States Code [USC]* 1810).

²⁵ During the period between being put on the list and the conduct of the CR, the carrier maintains priority status for a CR regardless of any improvements that may occur in its CSMS data.

²⁶ Because of the January 27, 2014, Naperville crash, the FMCSA conducted a focused CR of the carrier's operation on March 21, 2014. The CR reported 10 violations, including 2 critical violations in the HOS Compliance area, and resulted in DND International being issued another conditional safety rating.

(b)(1) Whenever it is determined that a violation of 49 *United States Code* 3102 or the Motor Carrier Safety Act of 1984 or the Commercial Motor Vehicle Safety Act of 1986 or a regulation issued under such section or Acts, or combination of such violations, poses an imminent hazard to safety, the Director, Motor Carrier Safety Field Operations or the Regional Director of Motor Carriers, or his or her delegate, shall order a vehicle or employee operating such vehicle out of service, or order an employer to cease all or part of the employer's commercial motor vehicle operations as provided by section 213(b) of the Motor Carrier Safety Act of 1984 and section 12012(d) of the Commercial Motor Vehicle Safety Act of 1986 (49 *USC* 521(b)(5)).

When an IH order is issued, the motor carrier must cease commercial motor vehicle operations.²⁷ Two months after the fatal Naperville crash, on April 1, 2014, the FMCSA issued DND International an IH order, and the carrier was placed out of service. However, on April 16, 2014, the FMCSA's IH order was overturned after DND International appealed the order and a DOT administrative law judge found in its favor.²⁸

Because of the burden of proof and the need to rely on court proceedings, pursuing IH orders has been a challenge for the FMCSA, and they are not frequently used. The FMCSA reported that between 2000 and 2009, it issued just 14 IH orders, and these were issued only to passenger carriers. In recent years, however, the FMCSA has made greater use of its IH authority. Between 2009 and 2011, the FMCSA issued 14 IH orders—as many in 2 years as it had in the previous 10 years. In 2011, the FMCSA issued 48 IH orders. The fact that the postcrash IH order issued against DND International in this case ultimately failed to remove the high-risk carrier from the industry should not discourage the FMCSA from employing IH orders more frequently.

However, given the problems the FMCSA experienced with the IH order in this case, the NTSB concludes that although IH orders are not always successful in removing high-risk carriers from the road for significant periods, they could have greater safety impact if the FMCSA implemented them more effectively. Therefore, the NTSB recommends that the FMCSA review the process and procedures for IH orders to identify ways in which this process can be improved to work more swiftly and effectively; the FMCSA should, when implementing the improvements, seek legislative authority for such changes as necessary.

²⁷ The FMCSA must provide opportunity for review of the IH order in accordance with 5 *USC* 554. An IH order to an employer or intermodal equipment provider to cease all or part of its operations shall not prevent vehicles in transit at the time the order is served from proceeding to their immediate destinations, unless any such vehicle or its driver is specifically ordered out of service. However, vehicles and drivers proceeding to their immediate destination are subject to compliance with the IH order upon arrival.

²⁸ In the decision (USDOT no. 1434005, docket no. FMCSA-2014-0159) issued on April 16, 2014, the judge indicated that the IH order had to be rescinded because in taking more than 10 days to review the case, the FMCSA had violated DND International's rights of due process. The decision also stated that "the preponderance of evidence standard does not support FMCSA's allegation DND was an Imminent Hazard."

On June 5, 2014, the carrier's insurer cancelled its insurance policy due to nonpayment; consequently, the FMCSA suspended the carrier's operating authority on June 11, 2014.²⁹ As a result, DND International is classified as "NOT AUTHORIZED" and is restricted from transporting freight in interstate commerce.³⁰

2.3.2 Michael's Cartage

The motor carrier Michael's Cartage operated the intermodal combination vehicle that became disabled prior to this crash. Michael's Cartage is located in Bridgeview, Illinois, and began business in 1996 as an interstate intermodal carrier. An intermodal carrier transports intermodal cargo containers on chassis semitrailers from rail and/or marine shipping terminals to their final destinations or to other terminals for continued transportation. Michael's Cartage registered with the FMCSA as a for-hire transporter of general freight and intermodal containers. At the time of the crash, Michael's Cartage employed 105 drivers, 40 of whom were owner-operators and 65 of whom were full-time company-employed drivers. The carrier operated 58 truck-tractors and 50 chassis semitrailers.

FMCSA Profile of Carrier. The CSMS profile for Michael's Cartage at the time of the Naperville crash indicated that the carrier had intervention alerts in four BASICS: Unsafe Driving, HOS Compliance, Driver Fitness, and Vehicle Maintenance. (See figure 7.)

²⁹ The DND International insurance information is on the SAFER system's public website. (See http://li-public.fmcsa.dot.gov/LIVIEW/pkg_carrquery.prc_authorityhistory?pv_apcant_id=520477&pv_legal_name=D^N^D^INTERNATIONAL^INC&pv_pref_docket=MC604538&pv_usdot_no=1434005&pv_vpath=LIVIEW, accessed February 8, 2016.)

³⁰ The FMCSA indicated to NTSB investigators that, as of February 27, 2015, DND International was unable to maintain operating authority due to lack of insurance. The FMCSA's profile for DND International as of February 8, 2016, continued to show the carrier as not having operating authority.

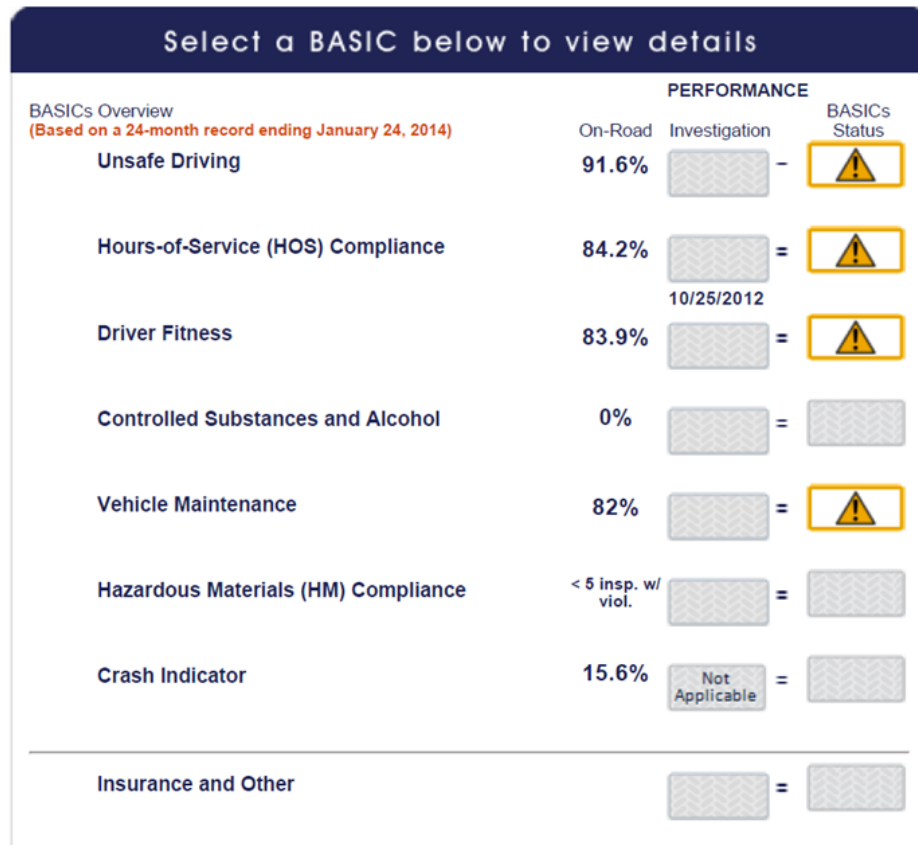


Figure 7. Michael's Cartage BASIC scores at the time of the Naperville crash. (Source: FMCSA's SAFER website [from 2014].)

High-Risk and CR History. Michael's Cartage met the criteria for being classified as a high-risk carrier at the time of the crash because it had an over 85 percentile rating in the Unsafe Driving BASIC, as well as having three other BASICs over threshold. Michael's Cartage would also have qualified as a high-risk carrier because it had four BASICs over threshold. Moreover, as with DND International, the CSMS data showed that Michael's Cartage was a high-risk carrier for at least the 2 years prior to the crash. (See table 3.)

Table 3. Michael's Cartage 24-month history of BASIC scores exceeding thresholds.

Month	Unsafe driving (%)	HOS compliance (%)	Driver fitness (%)	Vehicle maintenance (%)
January 2014	91.6	84.2	83.9	82.0
December 2013	91.0	78.8	89.3	80.2
November 2013	93.1	75.6	89.1	82.2
October 2013	93	75.2	89.8	85.1
September 2013	91.9	75.2	81.8	89.5
August 2013	92.7	68.0	86.1	89.6
July 2013	74.2	64.4	87.1	88.5
June 2013	70.8	72.4	76.7	89.2
May 2013	73.0	73.0	65.9	88.5
April 2013	71.3	75.1	67.3	90.1
March 2013	70.7	79.3	65.3	89.1
February 2013	71.3	76.3	78.8	87.6
January 2013	72.3	75.9	77.7	87.3
December 2012	75.0	78.7	81.4	88.8
November 2012	73.9	79.4	81	87.8
October 2012	72.2	79.5	79.6	75.0
September 2012	74.5	81.9	*	77.3
August 2012	82.9	77.9	75.2	*
July 2012	84.3	78.2	*	*
June 2012	80.4	80.1	*	75.0
May 2012	74.5	76.8	*	77.9
April 2012	74.5	78.3	*	76.9
March 2012	68.2	76.8	*	78.3
February 2012	68.0	76.6	*	76.8
January 2012	67.2	77.8	*	76.0
* Category score did not exceed BASIC threshold.				

Michael's Cartage has had a long history of noncompliance with the *FMCSRs*. Between 1996, when it entered interstate commerce, and the crash date, the carrier had been the subject of five CRs. Four of the five CRs resulted in conditional safety ratings. As a result of this crash, the FMCSA conducted a postcrash CR of Michael's Cartage, and on May 28, 2014, it issued the carrier an unsatisfactory safety rating. The rating was upgraded to conditional on June 30,

2014.³¹ As of December 7, 2015, Michael's Cartage was still operating under a conditional rating.³² The NTSB concludes that although Michael's Cartage was the subject of numerous CRs that resulted in conditional and unsatisfactory safety ratings, and its BASIC scores were routinely unacceptable, the FMCSA was not able to take effective action to stop the carrier's noncompliant behavior and unsafe operations.

2.3.3 FMCSA Constraints

The Naperville crash provides an all-too-common picture of the difficulty the FMCSA faces in fulfilling its oversight responsibility with respect to high-risk carriers. Both of the carriers involved in this crash—DND International and Michael's Cartage—had long histories of noncompliance with the *FMCSRs*, and the FMCSA was aware of their compliance problems through both CSMS data and CR results. Despite receiving CRs that indicated serious and persistent safety deficiencies, both carriers continued to operate. Indeed, Michael's Cartage continues to operate, and DND International lost its operating authority only through losing its insurance, not due to effective FMCSA oversight. The NTSB acknowledges that the barriers to meaningful oversight, including lack of resources, are considerable, but the fact remains that the FMCSA's own data repeatedly showed that these were high-risk carriers, and yet the FMCSA was unable to intervene to change these carriers' behaviors or seriously constrain their operations either before or after the Naperville crash. The NTSB concludes that the FMCSA was unable to act effectively on its CSMS data and CR results identifying high-risk carriers.

2.4 Consequences of Allowing High-Risk Carriers to Continue to Operate

2.4.1 Data on Crash Risk Posed by High-Risk Carriers

High-risk carriers represent a relatively small group of commercial motor carriers, but the FMCSA's failure to remove them from the industry has far-reaching safety implications. High BASIC scores and numerous intervention alerts have been shown to be linked to increased crash rates for carriers.

A February 2014 study prepared by the John Volpe National Transportation Systems Center for the FMCSA analyzed the effectiveness of the CSMS data from January 2011 through June 2012 in identifying high-risk carriers and the crash risk they pose (FMCSA 2014b). The test group consisted of 278,318 carriers. The results indicated that the Unsafe Driving, HOS Compliance, Vehicle Maintenance, and Crash Indicator BASICS were the most accurate predictors of future crash risk. Carriers with an intervention alert for any of these BASICS had a 65–93 percent higher future crash rate than the national average of 3.43 crashes per 100 power units (PUs). (See table 4.)

³¹ After the FMCSA Midwest Service Center reviewed the unsatisfactory CR, it downgraded two of the critical violations, resulting in a revised rating of conditional for the postcrash CR.

³² Postcrash, the FMCSA initially pursued an IH order against Michael's Cartage, but it ceased this effort when the IH order against DND International was overturned.

Table 4. Carriers identified and prioritized for CSA interventions by BASIC. (Source: FMCSA/Volpe *CSMS Effectiveness Test*, February 2014)

BASIC intervention alert	Number of carriers with alerts	Total PUs	Total crashes	Crash rate (crashes per 100 PUs)	% Increase over national average of 3.43 crashes per 100 PUs
Unsafe Driving	9,594	194,756	12,888	6.62	93
Crash Indicator	4,662	246,463	15,638	6.34	85
HOS Compliance	22,558	343,114	21,462	6.26	83
Vehicle Maintenance	15,734	234,895	13,261	5.65	65

The Volpe *CSMS Effectiveness Test* also determined how many carriers had 0 to 5 BASICs with alerts and the correlation of BASIC alerts to crash risk. The group of carriers with no BASIC alerts had a crash rate of 2.69 crashes per 100 PUs, less than the national average of 3.43 crashes per 100 PUs. Overall, the group of carriers with an alert in any BASIC had a 79 percent higher future crash rate (4.82 crashes per 100 PUs) than the group of carriers with no alerts (2.69 crashes per 100 PUs). The study also found that as the number of BASICs with alerts increased from 1 to 5, so did the crash rates, moving up to a crash rate of 7.17 crashes per 100 PUs, more than twice the national average. (See table 5.)

Table 5. Crash rates for carriers based on number of BASICs in alert status. (Source: Based on data from the FMCSA/Volpe *CSMS Effectiveness Test*, February 2014)

Number of BASICs with alerts	Number of carriers	Crash rate (crashes per 100 PUs)	% Increase over national average of 3.43 crashes per 100 PUs
0	235,276	2.69	---
1	30,440	4.26	24
2	8,572	5.77	68
3–4	3,746	6.24	82
5+	284	7.17	109

More recent snapshot data from the CSMS have similarly indicated that carriers with higher numbers of BASICS in alert status have higher-than-average future crash rates. Other studies have looked at the CSMS BASICS and their relationship to future crash risk. An analysis by the University of Michigan Transportation Research Institute (UMTRI) found that the CSMS is a significant improvement over its predecessor, SafeStat, in identifying unsafe motor carriers (Green and Blower 2011). In particular, the evaluation found that five of the seven BASICS employed during the CSA field test demonstrated a strong relationship to crash risk. The American Transportation Research Institute (ATRI) has determined that a carrier's crash risk increases as its number of BASIC alerts increases (ATRI 2012).

The NTSB has investigated many crashes involving carriers with poor CSMS scores.³³ In the case of the Naperville crash, both of the involved carriers had long precrash histories of intervention alerts in the Unsafe Driving and HOS Compliance BASICS. These safety lapses were reflected in the roadside inspection violations and over-threshold BASIC scores in both carriers' profiles.

The findings of the Naperville investigation show that the safety violations identified during roadside inspections, and the resulting BASIC intervention alerts, were accurate in recognizing areas of noncompliance for the carriers involved in this crash. Based on the aggregate data in the 2014 Volpe study and other recent study results, the NTSB concludes that motor carriers with BASIC scores that define them as high-risk carriers have been proven to have a higher future crash risk than other carriers.

2.4.2 Safety Fitness Determination Rulemaking

For years, the NTSB has been concerned that the FMCSA has not been using its data as effectively as possible to carry out its motor carrier oversight responsibilities. Following the FMCSA's 2010 implementation of the CSA, and as a result of the investigation of a 15-fatality motorcoach crash in New York City in 2011, the NTSB made the following recommendation to the FMCSA (NTSB 2012a):

Include safety measurement system rating scores in the methodology used to determine a carrier's fitness to operate in the safety fitness rating rulemaking for the new Compliance, Safety, Accountability initiative. (H-12-17)

The NTSB urged the FMCSA to move forward more expeditiously on finalizing the proposed Safety Fitness Determination (SFD) process to help remove unsafe motor carriers and their drivers from the nation's highways. One benefit of making CSMS scores an integral part of the SFD process is that it should provide a procedure by which the FMCSA can more directly and quickly shut down unsafe carriers. Because driver violations have been shown to be a clear

³³ Recent NTSB crash investigations have highlighted cases in which carriers' CSMS scores have accurately predicted their safety deficiencies. These include Alban Trucking in Rosedale, Maryland (NTSB 2014); Mi Joo Tour and Travel in Pendleton, Oregon, Scapadas Magicas in San Bernardino, California, Highway Star Inc. in Elizabethtown, Kentucky, and H&O Transport in Murfreesboro, Tennessee (NTSB 2013); and Sky Express in Doswell, Virginia (NTSB 2012b).

indicator of crash risk, the proposed SFD process could address deficiencies in the current CR process by basing a motor carrier's safety rating on violations of important safety-based regulations (as found in roadside inspections), helping to prevent unsafe carriers from continuing to operate.

In response to Safety Recommendation H-12-17, the FMCSA made the following statement:

The FMCSA is currently involved in rulemaking that would establish safety fitness determinations based on safety data from crashes, inspections, investigations, and violation history rather than just the standard CR. The specifics would be determined through a notice-and-comment rulemaking process to revise 49 *CFR* Part 385, Safety Fitness Procedures. Currently, the safety fitness rating of a motor carrier is determined based on the results of a very labor intensive CR conducted at the carrier's place of business. The CR is the Agency's primary intervention. Under CSA, FMCSA is implementing a broader array of progressive interventions, and making contact with more carriers. Through this rulemaking, FMCSA would establish safety fitness determinations based on safety data from crashes, inspections, investigations, and violation history rather than just the standard CR. This will enable the Agency to assess the safety performance of a greater segment of the motor carrier industry with the goal of further reducing large truck and bus crashes and fatalities. The notice of proposed rulemaking on safety fitness determination is scheduled to be released in 2013.

Safety Recommendation H-12-17 is classified "Open—Acceptable Response."

The NTSB has long been concerned about the continued delay in the progress of the SFD rulemaking. On January 21, 2016, more than 8 years after it initiated the project, the FMCSA published a notice of proposed rulemaking (NPRM) on the SFD in the *Federal Register (FR)*. Although the NTSB is pleased that the FMCSA has finally published an NPRM, this is only the beginning of the rulemaking process, which is likely to take years to complete. Such excessive delays in the progress of safety-critical rulemaking are unacceptable. The NTSB concludes that the significant and continuing delays in enacting rulemaking on the SFD process are depriving the FMCSA of the tools it needs to use its data most effectively to address the safety risks posed by high-risk carriers. Therefore, the NTSB reiterates Safety Recommendation H-12-17.

2.5 Proposed Intervention Strategies for High-Risk Carriers

Because of the continuing delays in the rulemaking needed to include CSMS data in the methodology to assess a carrier's fitness to operate, as the NTSB proposed in Safety Recommendation H-12-17, the FMCSA has been unable to use its CSMS data directly to expedite the process of shutting down unsafe carriers. The NTSB is aware that the SFD rulemaking may still require years to complete, and rulemaking is often only the beginning of the process of implementing regulatory change. In the meantime, the FMCSA is limited in its oversight progress by its current regulations, processes, and lack of resources.

The NTSB appreciates that the FMCSA is trying to resolve the longstanding issue of high-risk carriers. The information obtained during the Naperville investigation suggests some promising approaches to address this persistent problem, which are discussed below.

2.5.1 High-Risk Carrier Insurance

One of the obvious lessons learned in reviewing the carrier oversight information associated with the Naperville crash is that, although the FMCSA tried numerous interventions to address the crash risk posed by high-risk carrier DND International—ultimately even imposing an IH order—it was unable to significantly improve the safety profile of this carrier or to remove it from the industry for a substantial period. Today, however, DND International no longer has operating authority, not because of direct federal intervention, but because it lost its insurance following the crash.

In accordance with 49 *CFR* 387.7, the FMCSA has established minimum insurance requirements for private and for-hire motor carriers. Subject to certain exceptions, the regulations stipulate that no motor carrier shall operate a commercial motor vehicle in interstate commerce until it has obtained and has in effect the minimum levels of financial responsibility established by the FMCSA. The amount of insurance required to be maintained may vary, based on the types of registrations involved, but the minimum levels of financial responsibility for motor carriers of property are \$750,000 for transportation of property, \$5 million for transportation of certain hazardous materials, and \$1 million for transportation of other hazardous materials. The financial responsibility minimums for passenger-transporting motor carriers are \$1.5 million for carriers operating vehicles with a seating capacity of 15 or fewer and \$5 million for carriers operating vehicles with a seating capacity of 16 or more passengers.³⁴

Like other motor carriers registered with the FMCSA, DND International was required to maintain insurance to keep its operating authority. Following the Naperville crash, DND International's insurance provider reassessed the risk posed by the carrier and would not continue to insure it without a sizable increase in the insurance rate. DND International determined that it could not afford the higher cost, and the FMCSA denied the carrier operating authority because it lacked proper insurance. In effect, the market force of the higher rate charged by the insurer of a high-risk carrier removed that unsafe carrier from the industry. None of the FMCSA's intervention efforts, including a postcrash IH order, had such a positive safety impact. The NTSB concludes that DND International stopped operating not through the FMCSA's IH order process, which was ultimately unsuccessful, but because DND International's insurance was cancelled due to nonpayment, when the insurer raised its rates after the January 27, 2014, crash.

Other insurers and sureties of high-risk carriers might take similar action, if made aware that the carriers they insure are in the FMCSA's high-risk category.³⁵ If such insurance providers

³⁴ The FMCSA published an advance NPRM on November 28, 2014, concerning a proposal to increase these minimum levels. The NPRM comment period closed on February 26, 2015.

³⁵ A surety is an entity that undertakes an obligation to pay a sum of money or to perform some duty or promise for another in the event that person fails to act.

are informed of the heightened crash hazards posed by carriers in the high-risk category, it would be reasonable for them to reevaluate the associated risks and costs. Reevaluation could result in higher insurance premiums for the high-risk carrier. The increased cost could cause the carrier to take steps to improve its safety profile, in an attempt to lower its insurance rate, or in some cases force it to leave the industry. The NTSB concludes that notifying the insurer of a high-risk motor carrier that the carrier's BASIC scores indicate a heightened crash risk could prompt the insurer to increase its rate to offset the increased risk, which might place a sufficient financial burden on the carrier to persuade it to comply with safety requirements.

The FMCSA already issues warning letters to carriers when they meet or exceed the threshold in one or more BASICs.³⁶ The NTSB considers that creating a similar warning program whereby carriers are notified that they have entered the high-risk category, which has been proven to have a heightened crash risk—and including their insurers in the notification—could have a positive effect on safety.³⁷ Therefore, the NTSB recommends that the FMCSA develop and implement, or if necessary, seek authority to implement, a notification program that automatically sends a letter to any motor carrier with BASIC scores defined as “high risk,” making it a “mandatory carrier.” This letter should state that the carrier is in high-risk status and should warn that the carrier has been placed on the mandatory compliance review list because of its increased crash risk; in addition, the FMCSA should send the carrier's insurance provider or surety a copy of the letter.

2.5.2 “Fit, Willing, and Able” Policy

For several years, the FMCSA has been implementing a new intervention policy by which it may remove the operating authority from motor carriers that have demonstrated unwillingness or inability to comply with safety regulations. On August 2, 2012, the FMCSA published a notice of policy titled “FMCSA Policy on Granting, Withholding, Suspending, Amending or Revoking Operating Authority Registration” (*FR* 2012). The policy is sometimes referred to as the “Fit, Willing, and Able” program. The FMCSA stated that carriers must “demonstrate a willingness and ability to comply with applicable statutes and regulations in order to obtain and maintain operating authority registration.” If the carrier does not do so, the FMCSA may “suspend, amend, or revoke” the carrier's registration.

The NTSB is encouraged by this new policy, which appears to be designed to raise the bar on motor carrier compliance. Among the factors the FMCSA has indicated it considers when assessing a carrier's willingness and ability to meet requirements are the following:

³⁶ According to the FMCSA, there is no cap or limit on the number of warning letters a motor carrier can receive over a period of years or decades under the current system. However, the FMCSA will send a carrier only one warning letter per 24-month period. The agency's rationale for this limitation is that during this period the FMCSA will be pursuing other interventions if the carrier does not make safety improvements.

³⁷ The FMCSA collects and maintains insurance provider information from each registered carrier. For additional information, see safer.fmcsa.dot.gov/CompanySnapshot.aspx, accessed February 8, 2016.

- (1) The nature and extent of existing or past violations;
- (2) The degree to which existing or past violations will affect, or have affected, the safety of operations, taking into account any crashes, deaths, or injuries associated with the violations;
- (3) Whether existing or past regulatory or statutory violations are the result of a willful failure to comply with applicable requirements;
- (4) The existence and nature of pending and closed enforcement actions;
- (5) Whether adequate safety management controls exist to ensure acceptable compliance with applicable requirements; and
- (6) The existence of corrective action, if any.

All of these factors are crucial to assessing the suitability of a high-risk carrier to continue in operation.

Although this new policy is a step in the right direction, the FMCSA has not yet used it widely against high-risk carriers. Between January 2013 and September 2014, the FMCSA used its authority only nine times and only in two of its four service center areas.³⁸ The policy was announced in August 2012, but the FMCSA did not use it to assess whether DND International or Michael's Cartage—two significantly high-risk carriers—were fit, willing, and able to meet safety regulations, either before or after the January 2014 Naperville crash. Therefore, the NTSB concludes that although the new “Fit, Willing, and Able” policy appears to be a promising approach to strengthening FMCSA compliance oversight, the agency could have a more significant safety impact by using this authority more often with respect to high-risk carriers.

The NTSB recognizes that more aggressive oversight efforts demand a significant expenditure of the FMCSA's resources. However, for some carriers with egregiously poor safety records, such expenditure is both warranted and necessary. The 2014 Volpe report indicated that fewer than 300 active motor carriers had five or more intervention alerts in their BASICS (FMCSA 2014b). Given the correlation between intervention alerts and increased crash risk, this group of high-risk carriers must receive immediate and vigorous intervention from the FMCSA. By using the criterion of five or more intervention alerts to trigger the application of the “Fit, Willing, and Able” policy, the FMCSA would be able to remove those motor carriers that are clearly demonstrating inability to operate safely on public roads.

An intervention based on “Fit, Willing, and Able” authority, which would affect only this extremely small and dangerous portion of the industry, should be designed as an administrative rather than a regulatory action and should have no effect on the carrier's permanent record. The goal of the new intervention would be to remove the worst of the worst motor carriers from operation until they can show the FMCSA evidence of their fitness, willingness, and ability to comply with the *FMCSRs*. Implementation of the policy could follow the same path that the FMCSA used to create its Safety Management Cycle as a component of its overall CSA. As an

³⁸ The FMCSA did not use this authority prior to 2013.

innovative development of the FMCSA's existing investigative and oversight process, the Safety Management Cycle focused on improving the safety culture of a carrier with safety problems.

Applying fit, willing, and able criteria to those carriers that most significantly flout the *FMCSRs*, to the detriment of the motor carrier industry and the hazard of the traveling public, could improve the condition of the industry and the safety of all highway users. It would also provide an opportunity by which the FMCSA could first halt the safety threat posed by a high-risk carrier and then work with it to improve its procedures and enable it to regain operating authority based on proof of an improved safety culture. Therefore, the NTSB recommends that the FMCSA use the policy articulated in the August 2012 "Policy on Granting, Withholding, Suspending, Amending or Revoking Operating Authority Registration," to suspend the operating authority of any carrier that has five or more intervention alerts in its BASICS, demonstrating that it is not fit, willing, or able to comply with the *FMCSRs*; the carrier should be informed as to what actions it must take to demonstrate that it has corrected its safety issues and improved its safety procedures to reverse the suspension.

2.5.3 Partnering with Stakeholders

The NTSB recognizes that, given its limited resources, the FMCSA may not be able to fully address the problem of high-risk carriers through its own interventions. To have the broadest effect, the agency will need to involve all those parties that have an interest in improving the safety of the motor carrier industry. Other transportation modes have found that involving stakeholders in the process of improving industry safety can have beneficial results.

For example, in aviation, the Commercial Aviation Safety Team (CAST) involves the cooperative actions of key aviation stakeholders to lead the aviation community to the highest levels of safety by focusing efforts on those issues with the greatest safety return. The model used by CAST identifies the top safety areas through the analysis of accident and incident data, charters joint teams of experts to develop methods to fully understand the chain of events leading to accidents, and identifies and implements high-leverage interventions or safety enhancements to reduce the fatality rates in these areas. The Federal Aviation Administration (FAA) is a member of CAST. According to CAST, its efforts (in combination with new aircraft, regulations, and other developments) reduced the fatality risk for commercial aviation in the United States by 83 percent between 1998, when CAST was formed, and 2008.

The General Aviation Joint Steering Committee, in which the FAA also participates, follows a related model of public-private partnership by involving stakeholders in efforts to improve general aviation safety through data-driven risk reduction focused on education, training, and provision of new aircraft equipment. The FMCSA could foster a similar approach to these partnering efforts in the motor carrier industry, to improve highway safety by directly engaging stakeholders.

The NTSB concludes that the FMCSA could most likely achieve more effective action to stop unsafe and noncompliant carrier behavior by working more closely with safety and industry partners, including insurers, to share relevant information. Therefore, the NTSB recommends that the FMCSA form a working group consisting of safety partners, industry representatives, and insurers, along the lines of the FAA/industry CAST and General Aviation Joint Steering

Committee programs, to determine ways to share information that would work best to induce noncompliant and unsafe motor carriers to take appropriate remedial action.

2.6 DOT Independent Review Team Report

To conclude, the NTSB is not alone in its concern with respect to the deficiencies in the FMCSA's oversight of high-risk carriers. In 2013, the NTSB sent a letter to the DOT discussing four recent NTSB investigations that highlighted weaknesses in the FMCSA's CR program and issuing the following safety recommendations to the DOT (NTSB 2013):

Conduct an audit of the compliance review processes used by the Federal Motor Carrier Safety Administration (FMCSA) to determine (1) why inspectors are not identifying all violations of safety regulations by motor carriers undergoing review, and (2) why the FMCSA's quality assurance efforts are not fully effective in assessing the accuracy and completeness of compliance reviews; once these determinations have been made, require the FMCSA to revise its processes to correct these deficiencies. (H-13-39)

Conduct an audit of the effectiveness of focused compliance reviews and, upon the completion of the audit, require the Federal Motor Carrier Safety Administration to take action to resolve any safety issues raised by the audit. (H-13-40)

In early 2014, the Secretary of Transportation tasked the DOT Safety Council to oversee an independent review of the FMCSA's CR process. Staff from the FAA led the effort and convened an expert Independent Review Team (IRT) to evaluate FMCSA safety oversight programs and make recommendations for policy and procedure improvements. The IRT provided its report to the DOT Safety Council in summer 2014.

In the report, titled *Blueprint for Safety Leadership: Aligning Enforcement and Risk* (DOT 2014), the IRT acknowledged the huge task the FMCSA is facing in regulating the vast motor carrier industry but found that today's CR process does not consistently generate the intended results. The report stated that the FMCSA needs to develop new approaches to increase motor carrier compliance with safety requirements. The IRT report also indicated that the FMCSA is at a "challenging juncture in the change management process" as it attempts to improve the effectiveness of its compliance and enforcement programs in the period following enactment of CSA but preceding SFD implementation. Because these two systems are designed to work together, having only CSA in effect causes incongruities and disconnects throughout the compliance system. Thus, the IRT urged forwarding SFD rulemaking as soon as possible.

The report indicated a number of promising areas for FMCSA action. Among many other findings and proposals, the IRT report stated that to make the best use of its resources, the FMCSA must focus on high-risk carriers as those most likely to cause harm. It recommended that the FMCSA sharpen its priority-setting focus and improve the timeliness of investigator actions on those motor carriers representing the highest risk. The report also indicated that the FMCSA should better align resources across its regions to locations of highest risk. More generally, the IRT pressed the FMCSA to develop a broader array of safety tools, which might

include alternative initiatives and programs resulting in a “modern portfolio” of safety strategies. On the basis of the IRT study and report, the NTSB classified Safety Recommendations H-13-39 and -40 “Closed—Exceeds Recommended Action” in October 2015.

As reflected in the new recommendations issued to the FMCSA in this summary report, the NTSB shares at least some of the views expressed by the IRT—especially with regard to the need for the FMCSA to develop new approaches to address the serious problem of high-risk carrier oversight. The NTSB will follow with interest the FMCSA’s efforts to adjust its operations to implement the proposals in the IRT report.

The new 5-year highway funding bill, known as the Fixing America’s Surface Transportation Act (FAST Act), which was enacted on December 4, 2015, required the FMCSA to remove CSA scores from public view. The FAST Act also required the National Academy of Science to perform a study on the CSA program and deliver the results and recommendations with the FMCSA’s plan of action to Congress within 18 months.

3 Conclusions

3.1 Findings

1. The DND International Inc. driver was impaired by fatigue at the time of the crash due to his lack of adequate sleep, which resulted in his delayed response to the vehicles stopped ahead of him.
2. The DND International Inc. driver routinely falsified his logbook entries and had a history of logbook falsification.
3. DND International Inc. failed to adequately monitor its drivers' compliance with hours-of-service rules.
4. The Michael's Cartage Inc. driver routinely falsified his logbook entries and had a history of logbook falsification above the critical level.
5. Michael's Cartage Inc. failed to adequately monitor its drivers' compliance with hours-of-service rules.
6. The owner-operator of the 2000 Volvo truck-tractor that became disabled and stopped in the right lane of eastbound Interstate 88 failed to adequately maintain his vehicle.
7. Although the Carrier Safety Measurement System appropriately identified DND International Inc. as a high-risk carrier, procedural delays in the Federal Motor Carrier Safety Administration oversight process allowed this high-risk carrier to continue to operate without intervention for at least 2 years.
8. Although imminent hazard orders are not always successful in removing high-risk carriers from the road for significant periods, they could have greater safety impact if the Federal Motor Carrier Safety Administration implemented them more effectively.
9. Although Michael's Cartage Inc. was the subject of numerous compliance reviews that resulted in conditional and unsatisfactory safety ratings, and its Behavior Analysis and Safety Improvement Category scores were routinely unacceptable, the Federal Motor Carrier Safety Administration was not able to take effective action to stop the carrier's noncompliant behavior and unsafe operations.
10. The Federal Motor Carrier Safety Administration was unable to act effectively on its Carrier Safety Measurement System data and compliance review results identifying high-risk carriers.
11. Motor carriers with Behavior Analysis and Safety Improvement Category scores that define them as high-risk carriers have been proven to have a higher future crash risk than other carriers.

12. The significant and continuing delays in enacting rulemaking on the Safety Fitness Determination process are depriving the Federal Motor Carrier Safety Administration of the tools it needs to use its data most effectively to address the safety risks posed by high-risk carriers.
13. DND International Inc. stopped operating not through the Federal Motor Carrier Safety Administration's imminent hazard order process, which was ultimately unsuccessful, but because DND International Inc.'s insurance was cancelled due to nonpayment, when the insurer raised its rates after the January 27, 2014, crash.
14. Notifying the insurer of a high-risk motor carrier that the carrier's Behavior Analysis and Safety Improvement Category scores indicate a heightened crash risk could prompt the insurer to increase its rate to offset the increased risk, which might place a sufficient financial burden on the carrier to persuade it to comply with safety requirements.
15. Although the new "Fit, Willing, and Able" policy appears to be a promising approach to strengthening Federal Motor Carrier Safety Administration compliance oversight, the agency could have a more significant safety impact by using this authority more often with respect to high-risk carriers.
16. The Federal Motor Carrier Safety Administration could most likely achieve more effective action to stop unsafe and noncompliant carrier behavior by working more closely with safety and industry partners, including insurers, to share relevant information.

3.2 Probable Cause

The National Transportation Safety Board determines that the probable cause of the Naperville, Illinois, crash was the DND International Inc. driver's delayed response to the stopped vehicles ahead of him in the roadway because he was fatigued due to inadequate sleep. Contributing to the circumstances that resulted in the crash was the failure of DND International Inc. to ensure that its driver adhered to federal hours-of-service regulations. Also contributing to the crash was inadequate safety oversight by the Federal Motor Carrier Safety Administration.

4 Recommendations

4.1 New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following safety recommendations:

To the Federal Motor Carrier Safety Administration:

Review the process and procedures for imminent hazard orders to identify ways in which this process can be improved to work more swiftly and effectively; when implementing the improvements, seek legislative authority for such changes as necessary. (H-16-01)

Develop and implement, or if necessary, seek authority to implement, a notification program that automatically sends a letter to any motor carrier with Behavior Analysis and Safety Improvement Category scores defined as “high risk,” making it a “mandatory carrier.” This letter should state that the carrier is in high-risk status and should warn that the carrier has been placed on the mandatory compliance review list because of its increased crash risk. In addition, send the carrier’s insurance provider or surety a copy of the letter. (H-16-02)

Use the policy articulated in the August 2012 “Policy on Granting, Withholding, Suspending, Amending or Revoking Operating Authority Registration” to suspend the operating authority of any carrier that has five or more intervention alerts in its Behavior Analysis and Safety Improvement Categories, demonstrating that it is not fit, willing, or able to comply with the *Federal Motor Carrier Safety Regulations*. The carrier should be informed as to what actions it must take to demonstrate that it has corrected its safety issues and improved its safety procedures to reverse the suspension. (H-16-03)

Form a working group consisting of safety partners, industry representatives, and insurers, along the lines of the Federal Aviation Administration/industry Commercial Aviation Safety Team and General Aviation Joint Steering Committee programs, to determine ways to share information that would work best to induce noncompliant and unsafe motor carriers to take appropriate remedial action. (H-16-04)

4.2 Previously Issued Recommendation Reiterated in this Report

As a result of this investigation, the National Transportation Safety Board reiterates the following safety recommendation:

To the Federal Motor Carrier Safety Administration:

H-12-17

Include safety measurement system rating scores in the methodology used to determine a carrier's fitness to operate in the safety fitness rating rulemaking for the new Compliance, Safety, Accountability initiative.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

CHRISTOPHER A. HART
Chairman

ROBERT L. SUMWALT
Member

T. BELLA DINH-ZARR
Vice Chairman

EARL F. WEENER
Member

Adopted: February 9, 2016

Chairman Hart filed the following statement.

Board Member Statement

Chairman Christopher A. Hart filed the following concurring and dissenting statement on February 12, 2016.

I concur with the findings, the probable cause, and the recommendations in the report. I dissent in part because the report inappropriately addresses issues regarding the driver of the stationary truck.

Concurrence in part:

This crash involved a truck driver who fell asleep at the wheel and impacted a truck that had a mechanical breakdown and was stopped in the roadway, along with a highway patrol car that had stopped to render assistance. I concur that the probable cause of the crash was that the driver of the striking truck was fatigued due to inadequate sleep. I also concur that contributing to the cause of this crash was that the company that employed him as a driver failed to ensure that he adhered to hours-of-service (HOS) requirements and that FMCSA's safety oversight was inadequate.

Dissent in part:

For three reasons, I dissent in part because the report inappropriately addresses issues regarding the driver of the stationary truck that was struck.

Not in Our Lane

First, the only relevant fact regarding the truck that was struck is that it was stationary in the roadway. The actions or inactions of the driver of that truck, or of the company that operated it, are irrelevant to the fact that the fatigue of the striking driver was the cause of the crash. To the extent the report explores the stationary truck driver's actions, it inappropriately goes beyond what this agency was created to do.

This agency's reason for being is to determine what caused the crash and decide what can be done to prevent it from happening again. In that respect, the report appropriately discusses the HOS violations and fatigue of the driver of the striking truck, as well as inadequate oversight by the company and by FMCSA.

Our reason for being is not to be a general enforcer that investigates anyone and everyone who happens to be nearby and who happens not to be doing the right thing. Hence, I am very concerned about the extent to which the report discusses HOS and other violations by the driver of the struck truck. The argument that the stationary truck would not have been at that place in the road at that time if the driver had stopped driving in accordance with his HOS requirements is specious because, among other reasons, we have no way of knowing where that driver or truck might have been when the mechanical breakdown occurred if he had consistently been following HOS rules.

We do not know why the mechanical breakdown occurred in the stationary truck, but if it was related to time, rather than distance, then one could just as well argue that the truck would not have been at that place in the road at that time if the driver had driven at a different speed; so does that mean that we should also explore whether that driver had been speeding before the mechanical breakdown? And if he had not been speeding, should the report note that the truck would not have been at that place in the road to be struck if the driver had been speeding?

Considering another possible scenario, if the driver had stopped because the cargo was becoming loose and he wanted to re-secure it, should we be investigating why the cargo was becoming loose?

Consider the mechanical breakdown itself. Should the report address the maintenance history? If the road was blocked by construction on a bridge, should the report address whether the bridge was being adequately maintained? If the road was blocked by a struck deer, should the report address the adequacy of the state's wildlife management program?

The bottom line is that there are many reasons why the stationary truck could be stopped where it was, but none of those reasons are relevant to the cause of this crash, which is that the driver of the striking truck fell asleep. Therefore the report should not be addressing any of them.

Inappropriate Use of Limited Resources

Second, dedicating time and attention to factors that are not causal to the crash constitutes an inappropriate use of our limited investigation resources. Our investigators obviously need to be free to go wherever the facts take them, but once it becomes apparent during the investigation that certain facts are not related to the cause of the crash, those facts should be left on the cutting room floor so that our resources can go where they belong – to determining what caused the crash and how to prevent recurrences.

Potential Loss of Cooperation From Witnesses

Last, but not least, I am concerned about establishing a reputation for going after any and every potential wrongdoing. An example of how such a reputation could be a problem is that our investigations are increasingly benefitting from evidence that is volunteered to us by witnesses, including evidence that we would not know existed except that a witness volunteered it. One of our recent investigations benefitted significantly from a recording from a dash cam, and there is no way we would have known about the dash cam other than that it was voluntarily provided. If the dash cam had been in a truck in which the driver was out of HOS compliance, or in which the driver was speeding, might we never have seen it because of the driver's fear that we would disclose his violation? We must be very careful not to undermine voluntary participation by witnesses.

I understand the desire to include issues in the report about the driver of the stationary truck, to show how widespread HOS and maintenance problems are and to demonstrate FMCSA's inability to keep abreast of these issues, but I am concerned that going out of our lane could set a very harmful precedent for us. To the extent these issues about the truck that was struck are addressed in the report, I dissent.

References

- ATRI (American Transportation Research Institute). 2012. *Compliance, Safety, Accountability: Analyzing the Relationship of Scores to Crash Risk*. See atri-online.org/2012/10/01/compliance-safety-accountability-analyzing-the-relationship-of-scores-to-crash-risk/, accessed February 8, 2016.
- DOT (US Department of Transportation). 2014. *Blueprint for Safety Leadership: Aligning Enforcement and Risk*. Washington, DC: DOT.
- FMCSA (Federal Motor Carrier Safety Administration). 2014a. *2014 Pocket Guide to Large Bus and Truck Statistics*. Washington, DC: FMCSA Office of Analysis, Research, and Technology.
- _____. 2014b. *The Carrier Safety Measurement System (CSMS) Effectiveness Test by Behavior Analysis and Safety Improvement Categories (BASICS)*. Cambridge, MA: John A. Volpe National Transportation Systems Center.
- FR (*Federal Register*). 2012. “FMCSA Policy on Granting, Withholding, Suspending, Amending or Revoking Operating Authority Registration.” 77 FR 46147. Washington, DC: FMCSA.
- Green, Paul E., and Daniel Blower. 2011. *Evaluation of the CSA 2010 Operational Model Test*. UMTRI-2011-08. Ann Arbor, MI: UMTRI.
- NTSB (National Transportation Safety Board). 2014. *Highway–Railroad Grade Crossing Collision, Rosedale, Maryland, May 28, 2013*. NTSB/HAR-14/02. Washington, DC: NTSB.
- _____. 2013. Safety Recommendation letter to the DOT. Washington, DC: NTSB. See text of recommendation letter, accessed February 8, 2016, at www.nts.gov/safety/safety-recs/_layouts/nts-recsearch/Recommendation.aspx?Rec=H-13-039.
- _____. 2012a. *Motorcoach Run-Off-the-Road and Collision With Vertical Highway Signpost, Interstate 95 Southbound, New York City, New York, March 12, 2011*. NTSB/HAR-12/01. Washington, DC: NTSB.
- _____. 2012b. *Motorcoach Roadway Departure and Overturn on Interstate 95 Near Doswell, Virginia, May 31, 2011*. NTSB/HAR-12/02. Washington, DC: NTSB.
- _____. 2007. *Rear-end Collision—Two Tractor-Semitrailers and Passenger Vehicle, Eastbound Interstate 94 at Fletcher Road Overpass, Near Chelsea, Michigan, July 16, 2004*. NTSB/HAB-07/01. Washington, DC: NTSB.