



## **FACTUAL REPORT OF INVESTIGATION**

**Naperville, IL; 1/27/2014  
HWY14FH002**

(9 Pages)

**NATIONAL TRANSPORTATION SAFETY BOARD  
OFFICE OF HIGHWAY SAFETY  
WASHINGTON, D.C.**

**FACTUAL REPORT OF INVESTIGATION**

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**A. ACCIDENT SUMMARY**

Location: Interstate 88 (I-88) eastbound at milepost 122 in Naperville Township, DuPage County, Illinois

VEHICLE 1: 2004 Freightliner truck-tractor and 2012 East flatbed semitrailer combination unit

OPERATOR: DND International Inc., Naperville, Illinois

VEHICLE 2: 2011 Ford Crown Victoria Police Interceptor

OPERATOR: Illinois State Police

VEHICLE 3: 2010 International flatbed Highway Emergency Lane Patrol truck

OPERATOR: Illinois State Toll Highway Authority

VEHICLE 4: 2000 Volvo truck-tractor and intermodal chassis and container semitrailer combination unit (disabled combination vehicle)

OPERATOR: Michaels Cartage Inc., Bridgeview, Illinois

VEHICLE 5: 1991 White Motor Company heavy duty tow truck

OPERATOR: Naperville Towing Services, Naperville, Illinois

DATE: Monday January 27, 2014

TIME: Approximately 9:20 p.m. central time

FATAL: 1 fatality

INJURED: 3 injured, 2 uninjured

NTSB #: **HWY14FH002**

**B. ACCIDENT SUMMARY**

About 7:45 p.m. (local time), on Monday, January 27, 2014, a 2000 Volvo truck-tractor in combination with an intermodal chassis and container semitrailer became disabled in the right lane of Interstate 88 (I-88), also referred to as the Ronald Reagan Memorial Tollway, near Naperville, in DuPage County, Illinois. The Volvo combination vehicle had been traveling eastbound when its engine shut down, disabling the vehicle at milepost 122. An Illinois State Toll Highway Authority (ISTHA) 2010 International flatbed Highway Emergency Lane Patrol (HELP) truck, along with an Illinois State Police (ISP) 2011 Ford Crown Victoria patrol car stopped behind the Volvo combination vehicle to render assistance and to warn oncoming traffic of the blocked lane. Naperville Towing Services was also dispatched to the scene and arrived in a 1991 White Motor Company heavy duty tow truck, which stopped in front of and hooked up to the Volvo combination vehicle. Emergency lights on the responding vehicles included an active arrow board on the ISTHA HELP truck, and flashing police lights on the ISP patrol car. In addition, flares were placed in the road around the Volvo combination vehicle.

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 truck-tractor and 2012 East flatbed semitrailer combination vehicle, transporting a load of three steel coils from Nebraska to Illinois, was traveling in the right lane of eastbound on I-88, approaching the stopped vehicles. The driver failed to yield to the stopped vehicles, and collided with them from behind. The Freightliner combination vehicle first collided with the ISP patrol car, pushing it off into the right shoulder and ditch, and then continued forward into the ISTHA HELP truck, before going off into the right shoulder and ditch itself. 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 eastbound I-88. The other two steel coils came to rest in the right ditch, east of the stopped vehicles. The impact caused the ISTHA HELP truck to collide into the back of the Volvo combination vehicle, which in turn collided into the back of the heavy duty tow truck.

As a result of the accident, a post-crash fire consumed the ISP patrol car and spread to the flatbed semitrailer of the Freightliner combination vehicle, near where the patrol car came to rest. The 46-year old driver of the Freightliner combination vehicle was seriously injured. The 39-year-old driver of the ISTHA HELP truck was fatally injured, and the 57-year-old right front passenger in the ISTHA HELP truck, who was also driver of the disabled Volvo combination vehicle, received minor injuries. The 38-year-old driver of the ISP patrol car was severely burned. Two tow truck operators were outside of the heavy duty tow truck at the time of the accident and were not injured.

### C. OCCUPANT INFORMATION

**Table 1** summarizes the occupant and injury information as documented in the Illinois State Police Traffic Crash Report.

**Table 1.** Occupant Injury Information

Vehicle	Occupant		Position	Injury Severity <sup>1</sup>
	Age	Gender		
1 - Freightliner combination vehicle	46-year-old	Male	Driver	Serious
2 - ISP patrol car	38-year-old	Male	Driver	Serious
3 - ISTHA HELP truck	39-year-old	Male	Driver	Fatal
	57-year-old	Male	Right front passenger	Minor
4 - Volvo combination vehicle	unoccupied			
5 – Heavy duty tow truck	31-year-old	Male	Outside of vehicle	None
	26-year-old	Male	Outside of vehicle	None

<sup>1</sup> Injury level as defined by Title 49 Code of Federal Regulations 830.2: Fatal - injury which results in death within 30 days of the accident; Serious - injury which requires hospitalization or results in fractures, hemorrhages, nerve, tendon, internal organ damage, or serious burns; Minor - other injury that is not a serious injury; None - used for occupants who were not injured.

## D. HIGHWAY DESIGN AND ENVIRONMENT

The accident occurred on eastbound I-88 in Naperville Township between the towns of Aurora and Naperville, Illinois. In the vicinity of the accident I-88 is an east/west six-lane two-way divided interstate with three travel lanes in each direction. In the vicinity of the accident I-88 is straight and at the beginning of a gradual uphill grade in the eastbound direction. Just west of the accident location was a railroad bridge overpass. The nearest roadway intersection was with Eola Road approximately one-half mile west of the accident location. The nearest toll plaza was Aurora Plaza 61, approximately 4 miles west of the accident location. Lane markings included a solid yellow edge line for the left lane, dashed white centerlines separating the travel lanes, and solid white edge line for the right lane. Travel lanes were 12-feet wide,<sup>2</sup> with a 13-foot wide left shoulder and an 11-foot wide right shoulder located on either side of the travel lanes. Rumble strips were in place on the shoulders to the outside of the edge lines. The posted speed limit in the vicinity of the accident was 55 miles per hour.

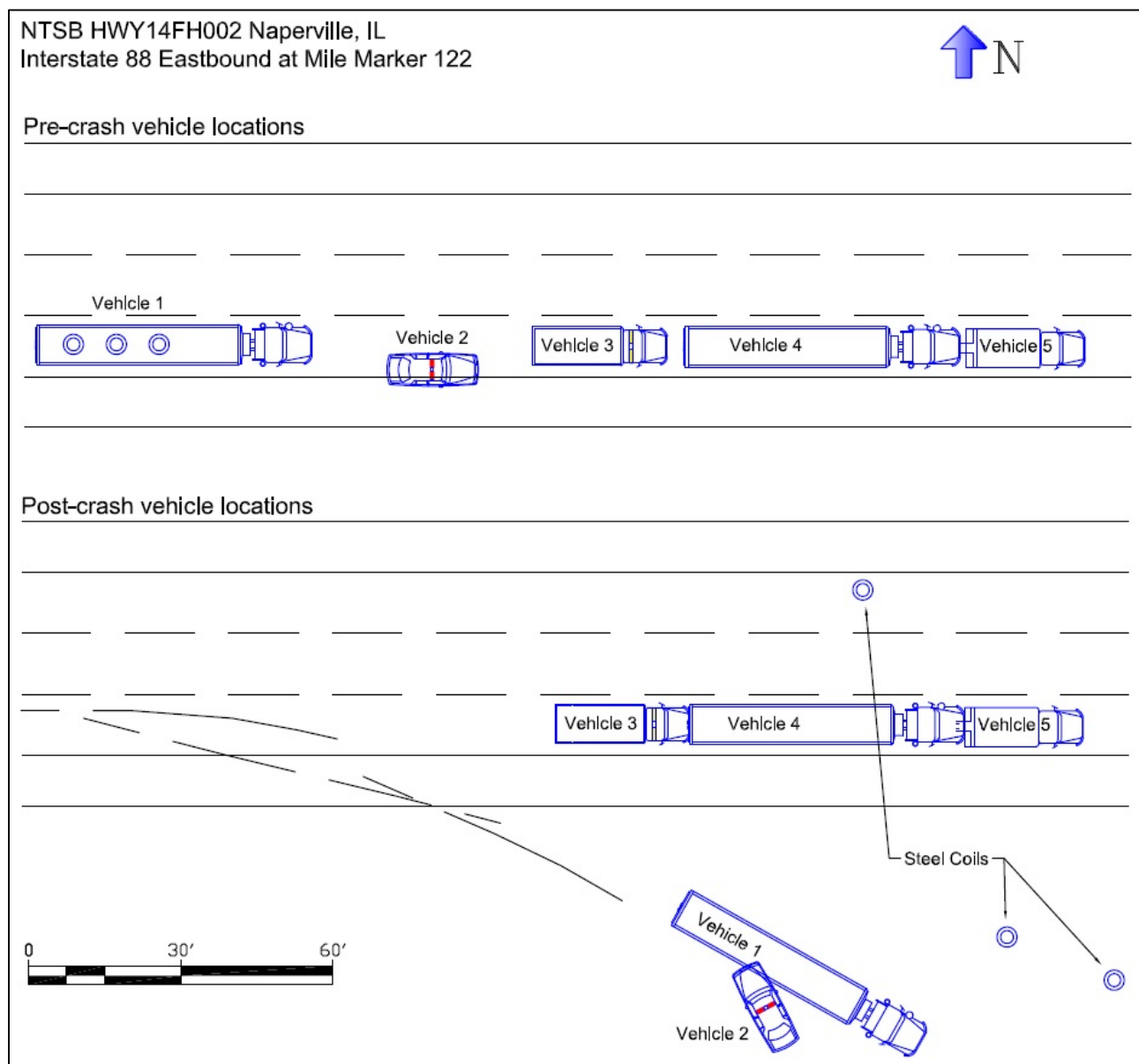
The accident occurred in darkness, and there was no roadway lighting in the immediate vicinity. The roadway surface and weather conditions were dry and clear. According to weather information from the Aurora Municipal Airport at 8:52 p.m. on the night of the accident, the air temperature was -8 degrees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

The Illinois State Police documented the accident scene and noted only post-crash tire marks from the Freightliner combination vehicle in the right lane of the interstate. The tire marks continued into the right shoulder and ditch to where the Freightliner combination vehicle and ISP patrol car came to rest. **Figure 1** below shows an eastbound view of the accident scene. **Figure 2** is a set of scene diagrams showing the pre-crash and post-crash locations of the accident vehicles.



**Figure 1.** Accident scene view looking east showing the heavy duty tow truck, disabled intermodal combination vehicle, and the ISTHA HELP truck at final rest in the right lane of eastbound I-88. The 2004 Freightliner combination can be seen off in the right ditch

<sup>2</sup>At the crash site the left and middle lanes were measured by the ISP to be 12-foot 4-inches wide, and the right lane was measured to be 12-foot 6-inches wide.



**Figure 2.** Scene diagrams showing the pre-crash and post-crash locations of the accident vehicles.

## E. VEHICLES

All of the accident vehicles were removed from the accident scene and inspected by the Illinois State Police at an ISTHA maintenance facility located in Downers Grove, Illinois. The Illinois State Police Commercial Motor Vehicle Inspectors completed vehicle inspections on all commercial vehicles involved in the accident. The following list includes accident vehicle specifications along with damage and inspection summaries.

**Vehicle 1. Truck-tractor: 2004 Freightliner Columbia 120**

VIN:<sup>3</sup> 1FUJA6CV64LN27615

Company Unit #: 25

Date of Manufacture: February 2004

GVWR:<sup>4</sup> 52,000 lbs

GAWR (front axle):<sup>5</sup> 12,000 lbs

GAWR (rear axles): 40,000 lbs

Empty / as-built Weight: 19,822 lbs

Engine: Mercedes Benz 12.8L L6 diesel engine

Transmission: Eaton Fuller Manual 15410C

Semitrailer: 2012 East flatbed

VIN: 1E1H5Y289CRC47917

Company Unit #: 30

Date of Manufacture: March 2012

GVWR: 80,000 lbs

GAWR (rear axles): 21,200 lbs

Empty / as-built Weight: 7,880 lbs

Cargo: 3 steel rolls with a combined weight of 43,740 lbs

The 2004 Freightliner truck-tractor sustained damage to its hood, right front bumper, and right front wheel area. There was also damage along the right side of the truck tractor cab and to the right outside tire and wheel on the second axle. The semitrailer sustained fire damage concentrated at the center right underside of the semitrailer, adjacent to where the ISP patrol car came to rest. As noted in **Figure 2**, all three steel coils that were loaded onto the semitrailer became detached during the accident. According to the Illinois State Police Commercial Motor Vehicle Inspection Report, all brakes on the Freightliner combination vehicle were found to be within adjustment.<sup>6</sup> No preexisting vehicle defects were noted during the inspection.

The Mercedes Benz engine of the tractor truck was equipped with a Detroit Diesel Electronic Control (DDEC) series VI Electronic Control Module (ECM). The NTSB downloaded the ECM on February 25, 2014. The downloaded data contained an overlapping “Hard Brake Event” and “Last Stop Record” which captured the accident event. The data indicated that at the time of the accident the Freightliner combination vehicle was traveling at approximately 63 mph when it began to suddenly decelerate. The complete data obtained is detailed in the *Electronic Control Module Specialist’s Factual Report*, which can be found in the docket for this investigation.

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<sup>3</sup> Vehicle Identification Number (VIN), with the last 6 digits redacted.

<sup>4</sup> Gross Vehicle Weight Rating (GVWR) is the total maximum weight that a vehicle is designed to carry when loaded, including the weight of the vehicle itself plus fuel, passengers, and cargo.

<sup>5</sup> Gross Axle Weight Rating (GAWR) is the maximum distributed weight that a given axle is designed to support.

<sup>6</sup> See Commercial Motor Vehicle Inspection Report for Vehicle 1 – 2004 Freightliner Combination Vehicle.

**Vehicle 2.** 2011 Ford Crown Victoria Police Interceptor

VIN: 2FABP7BV7BX145598

Company Unit #: 15-125

Date of Manufacture: 2011

GVWR: 5,200 lbs

Empty / as-built Weight: 4,180 lbs

Engine: Ford Interceptor 4.6L V8

Transmission: 4-speed Automatic

The ISP patrol car sustained complete overall damage due to the post-crash fire. Impact damage was noted at the left rear corner of the vehicle, crushing the rear bumper into the area of the left rear door. The vehicle's truck, roof, left rear door and driver side door were all crushed due to the impact damage and the overall body and frame of the vehicle were distorted. Due to the extent of the fire damage the vehicle's airbag control module was not downloaded.

The Illinois State Fire Marshal conducted an examination of the ISP Patrol car. The resulting report noted "extensive intrusion damage to the rear of the vehicle; the left rear quarter of the vehicle sustained extensive intrusion damage that resulted in collapsing/pushing the rear trunk into the rear passenger compartment" and "the force of the impact and intrusion into the rear of the vehicle resulted in the rupturing the fuel cell releasing ignitable liquid/vapors (gasoline) on to multiple hot surfaces (exhaust)".<sup>7</sup>

**Vehicle 3.** 2010 International 4300 Flatbed Truck

VIN: 1HTMNAAL5AH176713

Company Unit #: M808

Date of Manufacture: April 2009

GVWR: 25,500 lbs

GAWR (front axle): 8,000 lbs

GAWR (rear axle): 17,500 lbs

Engine: International 7.6L L6 diesel engine

The ISTHA HELP truck sustained rear end damage that crushed and flattened the flatbed portion of the truck and its contents into the arrow board at the rear of the truck cab. As a result, the cab of the HELP truck was crushed downward from the rear. The front of the truck also sustained damage from where it was in contact with the disabled intermodal combination vehicle during the rear end impact. The ISTHSA HELP truck was stationary at the time of the accident. No efforts were made to download any event recorded vehicle or engine data. According to the Illinois State Police Commercial Motor Vehicle Inspection Report, no preexisting vehicle defects were noted during the inspection.<sup>8</sup>

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<sup>7</sup> See Illinois State Fire Marshal Report, which can be found in the docket for this investigation.

<sup>8</sup> See Commercial Motor Vehicle Inspection Report for Vehicle 3 – 2010 International 4300 Flatbed Truck.

**Vehicle 4.** Truck-tractor: 2000 Volvo VNL  
VIN: 4V4ND1RH0YN794834  
Company Unit #: 22  
Date of Manufacture: March 2000  
GVWR: 50,350 lbs  
GAWR (front axle): 9,000 lbs  
GAWR (rear axles): 40,000 lbs  
Empty / as-built Weight: 18,727 lbs  
Engine: Detroit Diesel Series 60 12.7L diesel engine  
Transmission: Meritor RMX 10-speed manual  
Chassis semitrailer: Intermodal Chassis  
VIN: 1NNC0482XTM290708  
Company Unit #: TSXZ6  
Date of Manufacture: June 1996  
GVWR: 68,000 lbs  
GAWR (rear axles): 19,040 lbs  
Empty / as-built Weight: 6,300 lbs  
Cargo: Crowley shipping container, CMCU 4967490, with an empty weight of 8,550 lbs and a maximum weight of 67,200 lbs

The disabled intermodal combination vehicle sustained damage to the left rear corner of the chassis semitrailer bumper and to the hood and undercarriage of the truck tractor where the vehicle had been hooked up to the heavy duty tow truck.

According to the Illinois State Police Commercial Motor Vehicle Inspection Report, several preexisting vehicle defects were noted during the inspection of this vehicle.<sup>9</sup> The axle 2 left brake was found to be out-of-adjustment at 2 1/8 inches. The report also noted four separate non-crash related lighting defects and two non-crash related windshield cracks. The broken leaf spring on the right side of the steer axle was noted as being crash related due to the truck being up on the tow arm when the rear impact occurred.

Most notable in the inspection report were the tire defects, which would have placed the vehicle out-of-service had it been subjected to a roadside inspection prior to the accident. These included the left steer axle tire being worn such that tire cord was exposed over the entire circumference of the inside edge of the tire. A missing tread section was found on the axle 2 right inside tire. There was also a bolt puncture and no pressure in the axle 3 left outside tire, however due to the vehicle being towed and stored in an open lot prior to the defect being noticed, it is uncertain if the condition was preexisting. Similarly, the axle 2 right outside tire was found to have a low tire pressure (measured at 30 psi) but it was found to be uncertain if the condition was preexisting.

The Detroit Diesel engine of the Volvo truck-tractor was equipped with a DDEC series IV ECM. The NTSB downloaded the ECM on February 25, 2014. The downloaded data did not contain any hard brake or last stop record event data, but it did contain diagnostic records and engine fault codes. The data showed that on the day of the accident the truck had experienced two “EEPROM Write Error’s” and had an active “Nonvolatile memory data incorrect” fault code. The complete data obtained is detailed in the *Electronic*

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<sup>9</sup> See Commercial Motor Vehicle Inspection Report for Vehicle 4 – 2000 Volvo Combination Vehicle.



*Control Module Specialist's Factual Report*, which can be found in the docket for this investigation.

**Vehicle 5.** 1991 White Company heavy duty tow truck  
VIN: 4V2JCBLFXMR810029  
Company Unit #: 19  
GVWR: 50,000 lbs  
Engine: GMC 2.1L L6 DIESEL  
Transmission: 10-speed manual

The heavy duty tow truck sustained a dent and some scratches at its rear end and rear towing arm. According to the Illinois State Police Commercial Motor Vehicle Inspection Report, all brakes on the heavy duty tow truck were found to be within adjustment, however four separate non-crash related vehicle defects were noted during the inspection.<sup>10</sup> None of the vehicle defects would have placed the tow truck out-of-service. The heavy duty tow truck was not equipped with any event data recording systems.

## **F. MOTOR CARRIER FACTORS**

According to the 46-year-old driver of the Freightliner combination vehicle (accident driver), he moved from the center lane to the right lane approximately 3 miles before encountering the stopped vehicles. The accident driver remained in the right lane and failed to yield or slow to the stopped vehicles. When interviewed by the Illinois State Police, the driver stated that he “must have fallen asleep” at the time of the accident. When investigating the accident driver’s trip and hours-of-service on the day of, and the day preceding the accident, several issues were discovered. Issues were also found with both motor carriers involved in this accident.

According to the Federal Motor Carrier Safety Administration’s Safety Measurement System, at the time of the accident, the carrier in operation of the Freightliner combination vehicle, DND International of Naperville, IL, had “Alerts” in 2 of the 5 BASIC categories on which a carrier is measured. An alert indicates to the FMCSA that the carrier exceeds an intervention threshold, and is prioritized for intervention action, based on violations documented during roadside inspections. The alerts for DND International were in the areas of Unsafe Driving and Hours-of-Service Compliance. At the time of the accident, the carrier in operation of the Volvo combination vehicle, Michael’s Cartage of Bridgeview, IL, had alerts in 4 of the 5 BASIC categories. The alerts for Michael’s Cartage were in the areas of Unsafe Driving, Hours-of-Service Compliance, Driver Fitness, and Vehicle Maintenance.

Details regarding the accident driver’s hours-of-service and the compliance of the motor carriers involved in this accident with the applicable federal regulations are covered in the *Motor Carrier Factors Group Chairman’s Report of DND International*, and the *Motor Carrier Factors Group Chairman’s Report of Michael’s Cartage*, both of which can be found in the docket for this investigation.

## **END OF REPORT**

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<sup>10</sup> See Commercial Motor Vehicle Inspection Report for Vehicle 5 – 1991 White Company Heavy Duty Tow Truck.