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REMOTE ADVANCED OCCUPANT PROTECTION SYSTEM INVESTIGATION

CASE NUMBER - IN-05-002
LOCATION - Ohio
VEHICLE - 2004 PONTIAC GRAND PRIX
CRASH DATE - April 2004

Submitted:
June 23, 2006
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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator' s expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

Technical Report Documentation Page

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Remote investigation of an air bag deployment crash involving a 2004 Pontiac Grand Prix that impacted a 1989 Jeep Cherokee and a steel W-beam guardrail

16. *Abstract*

This report covers a remote investigation of an air bag deployment crash involving a 2004 Pontiac Grand Prix sedan (case vehicle), a 1989 Jeep Cherokee sport utility vehicle (first other vehicle), a 2000 Volvo truck-tractor pulling two semi-trailers (second other vehicle) and a 2003 Mercury Sable sedan (third other vehicle). This crash was initially thought to be of special interest because the case vehicle's front right passenger (11-year-old female) sustained multiple critical head and neck injuries, possibly from her deploying front right passenger air bag, resulting in her death. This investigation revealed that this was a crash of high severity (delta-V 40 km.p.h. [25 m.p.h.] or greater) for the case vehicle and the fatal victim sustained additional severe thoracic and abdominal injuries. When the crash forces are so great and the injuries so pervasive, it is not reasonable to attribute the fatality to a single factor and this investigation was converted to an Advanced Occupant Protection System (AOPS) investigation. The case vehicle's restrained driver (36-year-old female) and back left passenger (5-year-old male) both sustained police-reported " A" (incapacitating) injuries. All of the vehicles were traveling on an Interstate highway divided by a grass median with no barrier. The case vehicle was traveling northward in the inside northbound lane and the Mercury was traveling northward in the outside northbound lane. The Jeep was traveling southward in the inside southbound lane and the tractor-trailer rig was traveling southward in the center southbound lane. The crash sequence began when the Jeep attempted to move from the inside to the center southbound lane. As the Jeep made this move, its right rear corner was struck by the tractor-trailer rig's front left corner. This impact caused the Jeep to lose control and run into the median. The Jeep traveled through the median and entered the northbound lanes, heading eastward. The case vehicle's front impacted the Jeep's right side, causing the case vehicle's driver and front right passenger air bags to deploy. The case vehicle was redirected off the east edge of the northbound roadway, where its front impacted a steel W-beam guardrail. The impact with the case vehicle caused the Jeep to roll left two quarter-rolls and it slid, upside down, off the east edge of the northbound roadway. The Mercury's left side was struck by an unknown loose object or debris set in motion by the previous events. The Mercury's driver did not stop at the scene, but came forward to the police the following day. The tractor-trailer rig was brought to a controlled stop.

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This remote investigation was brought to the NHTSA's attention in January 2005 by a review of the 2004 Fatality Analysis Reporting System (FARS) data. This crash involved a 2004 Pontiac Grand Prix sedan (case vehicle), a 1989 Jeep Cherokee sport utility vehicle (first other vehicle), a 2000 Volvo truck-tractor pulling two semi-trailers (second other vehicle) and a 2003 Mercury Sable sedan (third other vehicle). The crash occurred in April 2004, at 6:29 p.m., in Ohio, and was investigated by the applicable state police. This crash was initially thought to be of special interest because the case vehicle's front right passenger (11-year-old female, white, unknown if Hispanic) sustained multiple critical head and neck injuries, possibly from her deploying front right passenger air bag, resulting in her death. This investigation revealed that this was a crash of high severity (delta-V 40 km.p.h. [25 m.p.h.] or greater) for the case vehicle and the fatal victim sustained additional severe thoracic and abdominal injuries. When the crash forces are so great and the injuries so pervasive, it is not reasonable to attribute the fatality to a single factor and this investigation was converted to an Advanced Occupant Protection System (AOPS) investigation. The case vehicle's restrained driver (36-year-old female, unknown race/ethnicity) and the restrained second row left passenger (5-year-old male, unknown race/ethnicity) both sustained police-reported " A" (incapacitating) injuries. There were no other occupants in the case vehicle. The case vehicle was not available to be inspected and no on-scene investigation was conducted. Medical treatment data are not available for the driver, and only partial medical data were obtained for the second row left passenger. This report is based on the police crash report, police photographs (on-scene and in a tow yard), medical treatment data and the autopsy report for the fatal victim, medical treatment data from the initial facility only for the second row left passenger, and this contractor's evaluation of the available evidence.

CRASH CIRCUMSTANCES

Figure 1: Police on-scene view of the northbound lanes in the area of the crash

All of the vehicles were traveling on an Interstate highway that was oriented in a generally northeast-southwest direction at the location of the crash (designated as northbound and southbound). There were three lanes in each direction, separated by a grass median with no barrier. The posted speed limit was 105 km.p.h. [65 m.p.h.]. It was daylight, raining and the asphalt road surface was wet but otherwise free of defects (**Figure 1**). The case vehicle was traveling northward in the inside northbound lane and the Mercury was traveling northward in the outside northbound lane a short distance behind the case vehicle. The Jeep was traveling southward in the inside southbound lane and the tractor-trailer rig was traveling southward in the center southbound lane, abreast of one another. It is not known if any of the involved drivers attempted any avoidance maneuvers.

The crash sequence began when the Jeep attempted to move from the inside to the center southbound lane. As the Jeep made this move, its right rear corner was struck by the tractor-trailer rig's front left corner (event #1). This impact caused the Jeep to lose control and run off

the left (east) side of the southbound roadway, into the median. The Jeep traveled through the median with counterclockwise yaw motion and entered the northbound lanes, heading approximately eastward (**Figure 2**). The case vehicle's front impacted the Jeep's right side (event #2), causing the case vehicle's driver and front right passenger air bags to deploy. The damage on the case vehicle suggests that the case vehicle driver probably steered right immediately prior to the impact. The case vehicle was redirected and it ran off the right (east) edge of the northbound roadway, where its front impacted a steel W-beam guardrail (event #3). The case vehicle came to rest with its front against the guardrail, heading east. The impact with the case vehicle caused the Jeep to roll left two quarter-rolls (event #4) and it slid, upside down, off the right (east) edge of the northbound roadway. The Jeep came to rest, on its roof, with its right side near the guardrail, heading south. The Mercury's left side was struck (event #5) by an unknown loose object or debris set in motion by the previous events. The Mercury's driver did not stop, but came forward to the police the following day. The tractor-trailer rig was brought to a controlled stop on the inside shoulder of the southbound roadway.

Figure 2: Police on-scene view from northbound lanes across median, showing the yaw marks left by the Jeep as it traveled across the median

CASE VEHICLE: 2004 PONTIAC GRAND PRIX

The case vehicle was a 2004 Pontiac Grand Prix GTP front wheel drive, four-door, five-passenger sedan (VIN: 2G2WR544141------), equipped with a supercharged V6 3.8 liter gasoline engine and an automatic transmission with a console-mounted selector lever. Four-wheel anti-lock brakes and traction control were options on this model, but it is not known if the case vehicle was so equipped. The case vehicle was equipped with driver and front right passenger dual-stage frontal air bags. Side curtain air bags were an option for this model, but the case vehicle did not have this option. Its specification wheelbase was 281 centimeters [110.5 inches] and its odometer reading is not known. The case vehicle was towed due to damage.

Figure 3: Left side of case vehicle at final rest; note, slight bending of guardrail

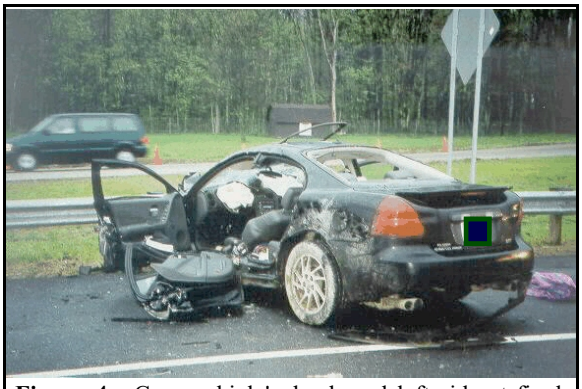


Figure 4: Case vehicle's back and left side at final rest

The case vehicle sustained very heavy frontal damage from two overlapping impacts, the first with the Jeep and the second with a steel W-beam guardrail (**Figure 3**). All of the frontal structures were crushed rearward against the engine and front tires, and the wheelbase was probably shortened on both sides. The hood was crushed and folded and probably impacted the windshield. The right front area is not visible in the available photographs. The available photographs show that the left front door was pried open, with the left B-pillar cut at the top and bottom and the left rear door removed. The laminated windshield was shattered across its entire width with a large slit in the center. All the other glazing except the right front door window was disintegrated, but some of this glazing damage probably occurred during extrication efforts (**Figure 4**). There was direct contact damage along the left fender, left A-pillar and roof rail, and left front door. This left side damage suggests that the case vehicle driver probably steered right immediately prior to the first impact, such that the case vehicle's left side engaged the Jeep's right side during the first impact. The left front tire appears to be deflated, with the right front tire not visible and the two rear tires inflated.

The CDC for the case vehicle's first (most severe) impact, with the Jeep, was estimated from the available photographs as **11-FDEW-3 (340 degrees)**. The CDC for the case vehicle's second impact, with the guardrail, was estimated from the available photographs as **12-FDEW-99 (0 degrees)**, with the extent zone unknown due to the overlapping damage. The WinSMASH reconstruction program, CDC-only algorithm based on the photo-estimated CDCs for the two vehicles, was used on the case vehicle's most severe impact (event #2, impact with the Jeep). The total, longitudinal and lateral delta-Vs for the case vehicle are, respectively: 46.0 km.p.h. [28.0 m.p.h.], -43.2 km.p.h [-26.8 m.p.h.] and + 15.7 km.p.h. [+ 9.6 m.p.h.]. This is a borderline reconstruction because it was based on two photo-estimated CDCs only and the case vehicle sustained a second impact in the same area, but the results appear reasonable. This was an impact of high severity (40 km.p.h.[25 m.p.h.] or greater) for the case vehicle.

No reconstruction was attempted for the case vehicle's second impact (with the guard rail) because the extent of deformation attributable to the second impact cannot be estimated from the available photographs. The guardrail shows some slight deformation (see **Figure 3**) and this contractor estimates that the second impact was of low severity (12-23 km.p.h. [9-14 m.p.h.]) for the case vehicle.

The available photographs do not show the case vehicle's interior except at a distance. The driver's air bag was located in the steering wheel hub and the front right passenger's air bag was located in the top of the instrument panel on the right. Both air bags deployed and there is no visible evidence of any damage to the air bags.

The available photographs show the two front bucket seat backs in the fully-reclined position, probably as a result rescue activities. There was intrusion of unknown magnitude by frontal components into the case vehicle's interior. The frontal damage profile as seen from the case vehicle's position at final rest shows that the amount of crush was heavier on the right and the right instrument panel and the front right passenger's toe pan probably intruded longitudinally.

The case vehicle's front right passenger (11-year-old female, white, unknown if Hispanic, 150 centimeters, 42 kilograms [59 inches, 92 pounds]) was restrained by her available, active, three-point, lap-and-shoulder safety belt system. The manner in which she had the safety belt positioned is not known, but her injuries indicate that the lap portion was probably situated relatively high, across her abdomen. Her seat track and seat back incline adjustments are not known. Her seated posture is not known.

Figure 5: Case vehicle's right side, showing front right passenger's seat area after extrication

The case vehicle driver probably steered to the right immediately prior to the case vehicle's first impact, and probably braked. The front right passenger probably moved slightly forward and leftward in response to this pre-impact steering and braking. The case vehicle's front impacted the Jeep's right side, causing the driver's and front right passenger's air bags to deploy, and causing the front right passenger to move further forward and leftward in response to the 11:00 o'clock direction of the impact force. The child probably slid forward on the seat cushion as she loaded the safety belt and the lap portion compressed her abdomen, causing: a linear contusion-abrasion across the abdomen above the level of the umbilicus; lacerations of the spleen; and contusions of the pancreas, both kidneys, the urinary bladder and the intestinal mesentery. Her face encountered the deploying air bag and she sustained multiple contusions and abrasions on her face. She also sustained a non-anatomic brain injury (loss of consciousness, unresponsive to painful stimuli, pupils fixed and dilated, apneic, asystole, hypoxic, and cyanotic) and atlanto-occipital dislocation with a contusion of the cervical spinal cord. The case vehicle rotated clockwise, traveled a short distance and its front impacted a W-beam guardrail. The front right passenger moved further forward in response to the 12:00 o'clock impact force as the air bag deflated. The right side of the instrument panel probably intruded longitudinally and she impacted the instrument panel. She sustained: bilateral rib fractures; contusions and lacerations of the left lung; a contusion of the right lung; and bilateral hemothoraces. Her legs flailed and she sustained contusions on her lower legs bilaterally. Her position at final rest is not known. The emergency medical technicians reported that bystanders had cut the safety belt webbing away from her and that she was " wedged" between the front seat and the instrument panel.

CASE VEHICLE FRONT RIGHT PASSENGER'S INJURIES

The front right passenger was transported via ground ambulance to a local hospital, where she was pronounced dead approximately one hour post-crash.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
1	Nonanatomic brain injury with loss of consciousness resulting from traumatic arrest; unresponsive to painful stimuli, pupils fixed and dilated, apnea[1], asystole, hypoxic, cyanotic, GCS = 3	critical 160824.5,0	Air bag, front right passenger's	Probable	Emergency room records
2	Contusion cervical spinal cord[2] with atlanto-occipital dislocation, not further specified as to site of contusion	critical 640226.5,6	Air bag, front right passenger's	Probable	Autopsy
3	Contusions right and left lungs, not further specified as to location	severe 441410.4,3	Right instrument panel and below	Probable	Autopsy
4	Lacerations left lung with bilateral hemothoraces (i.e., 200 cc right; 100 cc left pleural cavities)	serious 441414.3,2	Right instrument panel and below	Probable	Autopsy
5	Fracture left 7th, 8th, and 9th ribs posterolaterally	moderate 450230.3,3	Right instrument panel and below	Probable	Autopsy
	Fracture right 10th rib, anterolaterally				Emergency room records

[1] The following terms are defined in DORLAND'S ILLUSTRATED MEDICAL DICTIONARY as follows:
apnea (ap′ne-a): 1. cessation of breathing. 2. asphyxia.
apneic (ap′ne-ik): pertaining or relating to apnea or affected with apnea.
asystole (a-sis′to-le): cardiac standstill or arrest; absence of a heartbeat.
asystolic (a"sis-tol′ik): asystole.
cyanosis (si-no′sis) **[Gr. Kyanos blue]**: a bluish discoloration, especially of the skin and mucous membranes due to excessive concentration of deoxyhemoglobin in the blood.
cyanotic (si-not′ik): pertaining to or characterized by cyanosis.
hypoxemia (hi"pok-se′e-a): deficient oxygenation of the blood; hypoxia.
hypoxia (hi-pok′se-a): reduction of oxygen supply to tissue below physiological levels despite adequate perfusion of the tissue by blood. Compare with ***anoxia***.
hypoxic (hi-pok′sik): pertaining to or characterized by hypoxia.

[2] The choice of injury code is difficult because the NASS CDS Injury Coding manual presumes that one knows whether there was a complete or an incomplete cord syndrome. Because the medical record is an autopsy, the syndrome issue is not discernable (i.e., you cannot determine the difference in a deceased person). In the absence of protocol, this contractor chooses to assume that the syndrome was complete.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
6	Contusion {perivesical[3] hematoma} involving dome of urinary bladder	moderate 540610.2,8	Lap portion of safety belt system	Probable	Autopsy
7 8	Contusion {hematoma} perinephric[3], bilaterally, not further specified	moderate 541610.2,1 541610.2,2	Lap portion of safety belt system	Probable	Autopsy
9	Contusion {hematoma} mesentery, extensive, not further specified	moderate 542010.2,8	Lap portion of safety belt system	Probable	Autopsy
10	Contusion {hematoma}, peripancreatic[3], extensive, not further specified	serious 542814.3,7	Lap portion of safety belt system	Probable	Autopsy
11	Lacerations, multiple areas, spleen, not further specified	moderate 544220.2,2	Lap portion of safety belt system	Probable	Autopsy
12	Abrasions forehead, not further specified	minor 290202.1,7	Air bag, front right passenger's	Probable	Autopsy
13	Abrasion chin, not further specified	minor 290202.1,8	Air bag, front right passenger's	Probable	Autopsy
14	Contusion, 5.1 cm (2 in) lateral right eyebrow	minor 290402.1,7	Air bag, front right passenger's	Probable	Autopsy
15	Contusion {hematoma} to the right of and below the right eye, not further specified	minor 290402.1,1	Air bag, front right passenger's	Probable	Emergency room records
16	Contusion {hematoma} right and left jaw area, not further specified	minor 290402.1,8	Air bag, front right passenger's	Probable	Emergency room records
17	Contusion [soft tissue trauma (i.e., seat belt sign)] chest, not further specified	minor 490402.1,4	Torso portion of safety belt system	Probable	Emergency room records
18	Abrasion transabdominal, supraumbilical, associated with contusion cited below	minor 590202.1,8	Lap portion of safety belt system	Certain	Autopsy

[3] The following terms are defined in DORLAND'S ILLUSTRATED MEDICAL DICTIONARY as follows:
perivesical (per"-i-ves´kl): near the urinary bladder; called also ***paravesical*** and ***pericystic***.
perinephric (per-nef/rik): surrounding the kidney; called also perirenal.
peripancreatic (per-pankre-at/ik): near or around the pancreas.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
19	Contusion {obvious bruising–seat belt sign},5.1 x 50.8 cm (2 x 20 in), on transabdominal, supra-umbilical abdomen where lap belt had been	minor 590402.1,8	Lap portion of safety belt system	Certain	Autopsy
20	Contusions, 5.1 cm (2 in) right mid-tibial area and dorsum of bilateral feet, not further specified	minor 890402.1,3	Right instrument panel and below	Probable	Autopsy
21	Contusions {hematomas} left distal lateral lower leg, not further specified	minor 890402.1,2	Right instrument panel and below	Probable	Emergency room records

CASE VEHICLE DRIVER'S KINEMATICS

The case vehicle's driver (36-year-old female, race/ethnicity, height and weight unknown) was police-reported as restrained by her available, active, three-point, lap-and-shoulder safety belt system and the steering wheel-mounted air bag deployed. Her seat track and seat back incline adjustments are not known. Her seated posture is not known.

The case vehicle driver probably steered to the right immediately prior to the case vehicle's first impact, and probably braked, and she probably moved slightly forward and leftward in response to this pre-impact steering and braking. The case vehicle's front impacted the Jeep's right side, causing the driver's and front right passenger's air bags to deploy, and causing the driver to move further forward and leftward in response to the 11:00 o'clock direction of the impact force. The case vehicle rotated clockwise, traveled a short distance and its front impacted a W-beam guardrail. The driver probably moved further forward in response to the 12:00 o'clock impact force. Her position at final rest is not known.

CASE VEHICLE DRIVER'S INJURIES

The case vehicle driver was transported via helicopter from the scene to a regional trauma center. Her medical records were not available. She sustained police reported "A" (incapacitating) injuries. Her treatment status and specific injuries are unknown.

CASE VEHICLE BACK LEFT PASSENGER'S KINEMATICS

The case vehicle's back left passenger (5-year-old male, race/ethnicity, height/weight unknown) was restrained by his available, active three-point, lap-and-shoulder safety belt system. His seat track and seat back incline were not adjustable. His seated posture is not known.

The case vehicle driver probably steered to the right immediately prior to the case vehicle's first impact, and probably braked. The back left passenger probably moved slightly forward and leftward in response to this pre-impact steering and braking. The case vehicle's front impacted the Jeep's right side, causing the driver's and front right passenger's air bags to deploy, and causing the back left passenger to move further forward and leftward in response to the 11:00 o'clock direction of the impact force. The back left passenger loaded against the safety belt webbing and he sustained abrasions on the anterior portion of his neck and chest, contusions on the right side of his chest wall, and abrasions across his abdomen. The case vehicle rotated clockwise, traveled a short distance and its front impacted a W-beam guardrail. The back left passenger moved further forward in response to the 12:00 o'clock impact force and his head impacted the back of the driver's seat, causing subarachnoid hemorrhage and a non-anatomic brain injury. His position at final rest is not known.

CASE VEHICLE BACK LEFT PASSENGER'S INJURIES

The back left passenger was transported via ground ambulance to a local hospital, and he was subsequently transported via helicopter to a regional trauma center. He sustained police reported " A" (incapacitating) injuries. His medical records from the initial treatment facility were acquired, but the records from the hospital to which he was transferred were not available. The following table contains the injuries noted at the initial facility.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
1	Hemorrhage, subarachoid, diffuse, extensive, including cisterns and sulci	serious 140684.3,9	Seat back, driver's	Possible	Emergency room records
	Nonanatomic brain injury with prior unconscious of unknown duration and lethargy on initial observation (i.e., GCS = 12-14) and emesis x 3	Not coded	Seat back, driver's	Possible	Emergency room records
2	Abrasions anterior neck	minor 390202.1,5	Torso portion of safety belt system	Probable	Emergency room records
3	Abrasion right chest	minor 490202.1,1	Torso portion of safety belt system	Probable	Emergency room records
4	Contusion right chest wall	minor 490402.1,1	Torso portion of safety belt system	Probable	Emergency room records
5	Abrasion across abdomen, not further specified	minor 590202.1,8	Lap portion of safety belt system	Probable	Emergency room records

The first other vehicle was a 1989 Jeep Cherokee Limited 4 x 4, four-door, five passenger sport utility vehicle (VIN: 1J4FJ78L0KL------), equipped with an I-6, 4.0 liter gasoline engine and a manual transmission with a floor-mounted shift lever. The Jeep was not equipped with air bags. Its specification wheelbase was 258 centimeters [101.6 inches] and its odometer reading is not known. The Jeep was towed due to disabling damage.

The Jeep sustained very heavy damage on the right side from its impact with the case vehicle. It then rolled two quarter-rolls to the left, onto its roof, resulting in substantial distortion to the greenhouse area. It came to rest upside down and rescue personnel performed major cutting and prying to extricate the driver. The available photographs show the Jeep at final rest (upside down, **Figure 6**) and at a tow yard (set upright, **Figure 7**).

Figure 6: The Jeep at final rest, showing left side with cutting and prying required for extrication

Figure 7: The Jeep's front and right side, at a tow yard

The CDC for the Jeep's first impact (event #1, with the tractor-trailer rig) is unknown because the impact area is obscured by subsequent damage. The CDC for the Jeep's most severe impact (event #2, with the case vehicle) was estimated from the available photographs as **03-RDAW-3 (80 degrees)**. The CDC for the Jeep's rollover (event #4) was estimated as **00-TDDO-3 (non-horizontal)**.

The WinSMASH reconstruction program, CDC-only algorithm based on the photo-estimated CDCs for the two vehicles, was used on the Jeep's most severe impact (event #2, impact with the case vehicle). The total, longitudinal and lateral delta-Vs for the Jeep are, respectively: 52.0 km.p.h. [32.3 m.p.h.], -9.0 km.p.h. [-5.6 m.p.h.] and -51.2 km.p.h. [-31.8 m.p.h.]. This is a borderline reconstruction because it is based on two photo-estimated CDCs, but the results appear reasonable. This was an impact of high severity (40 km.p.h. [25 m.p.h.] or greater) for the Jeep.

According to the police crash report, the Jeep's driver (55-year-old male) was not using his available safety belt system. This occupant was taken by ambulance to a hospital. He sustained police reported " A" (incapacitating) injuries. His treatment status and specific injuries are not known. There was no other occupant in the Jeep.

The second other vehicle was a 2000 Volvo-GM Heavy Truck Corp. model VNM conventional 4 x 2 truck tractor (VIN: 4V4M42RF9YN------) pulling two 8.5 meter [28 feet] box semi-trailers, the first a 1987 Pines Trailer Corp. (VIN: 1PND281S3HK------) and the second a 1993 Pines Trailer Corp. (VIN: 1PNE281F0PK------). The tractor-trailer rig was driven from the scene.

The Volvo truck-tractor sustained relatively minor damage at the apex of its front left corner (**Figures 8** and **9**). The part of the front bumper that folds around onto the left side was broken at the crease of its fold and was pushed inward. The left turn signal lens was shattered but the left headlamp was intact, and there was some scraping on the left fender immediately below the turn signal assembly. The TDC for the Volvo truck-tractor, estimated from the available photos, is **12-FLES-1 (0 degrees)**.

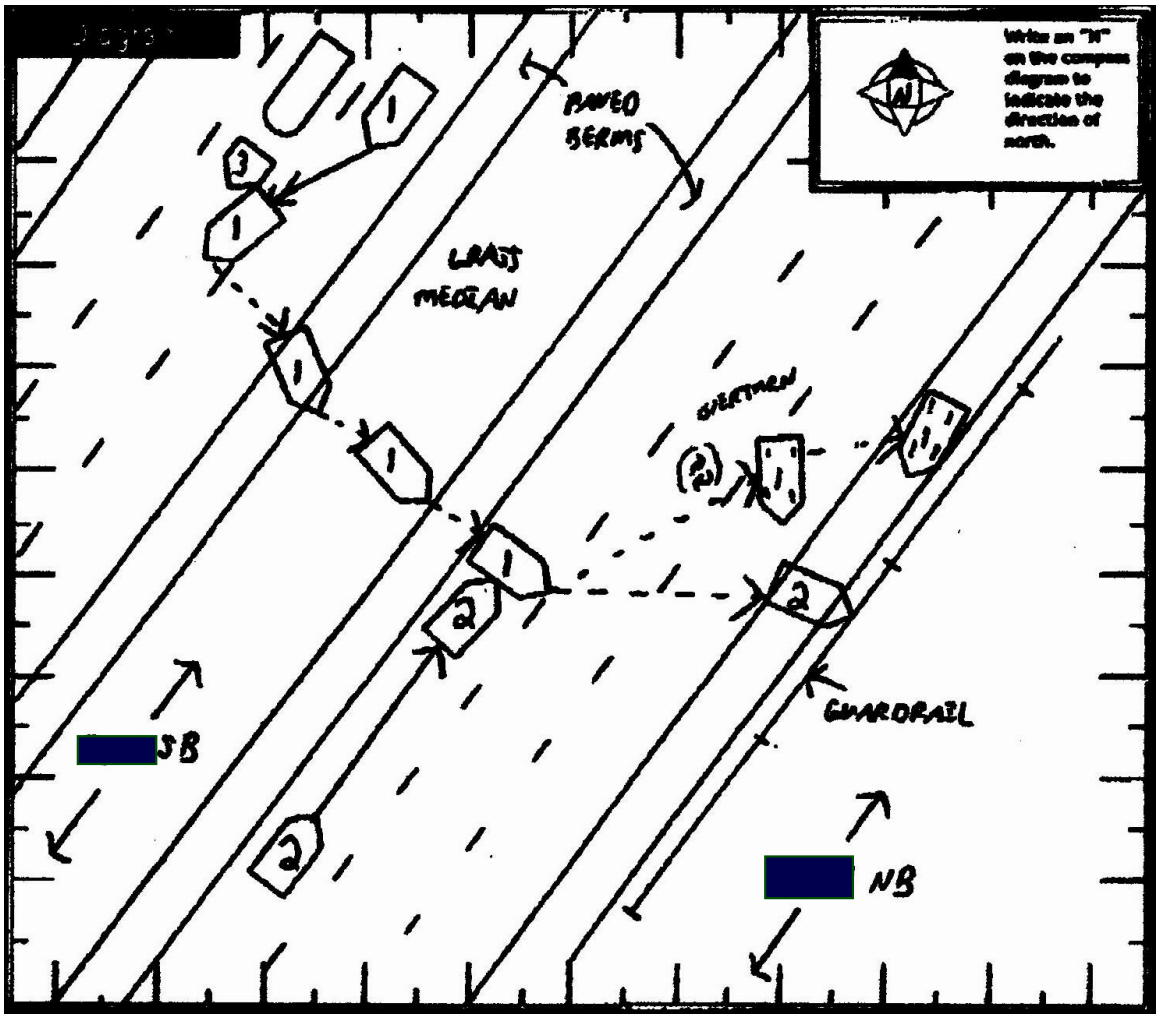
Figure 8: Police on-scene view of the Volvo's front left corner area; note, turn signal lens missing

Figure 9: Police on-scene view, showing the Volvo rig's entire left side

The tractor-trailer rig's driver (50-year-old male) was police-reported as not injured and there was no other occupant. The tractor-trailer rig did not make contact with the case vehicle and is not discussed further.

THIRD OTHER VEHICLE: 2003 MERCURY SABLE

The third other vehicle was a 2003 Mercury Sable four-door, five-passenger sedan (VIN: unknown). The Mercury was struck by a loose object or debris set in motion by the crash events and it sustained very minor surface scratching and light denting on the left side. The Mercury's driver did not stop at the crash scene, but came forward the next day. The Mercury did not have an impact with any of the other vehicles and is not discussed further.



Copied from the police crash report. The case vehicle is V2 in this drawing. V1 is the Jeep and V3 is the Volvo tractor-trailer rig. The Mercury Sable (third other vehicle) is not depicted in this drawing.