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U.S. Department
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**TRANSPORTATION SCIENCES CENTER**
**ACCIDENT RESEARCH GROUP**

Division of Calspan Corporation
[redacted]

# CALSPAN ON-SITE SEAT BELT FAILURE INVESTIGATION
**CALSPAN CASE NO. 94-35**
**VEHICLE: 1991 CHEVROLET CAPRICE (POLICE FLEET)**
**LOCATION:** [redacted]

Contract No. DTNH22-94-D-07058

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

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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 are 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 STANDARD TITLE PAGE

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15. *Supplementary Notes*
On-site investigation of a seat belt failure that resulted from driver loading in a 1991 Chevrolet Caprice police vehicle.


16. *Abstract*
This on-site investigation focused on a seat belt failure in a 1991 Chevrolet Caprice marked police vehicle. The driver was responding to an emergency police call and initiated a left turn at a four-leg intersection. A transmission tunnel mounted police radio speaker separated from its mount and fell onto the driver's right foot and under the brake pedal. As a result, the vehicle drifted wide in the turn and departed the intersection in a tracking mode. The center frontal area of the vehicle impacted a 22.9 cm (9.0") tree which resulted in a 35 km/h (22 mph) velocity change which deployed the vehicle's supplemental driver's side air bag system.

The driver responded to the 12 o'clock direction of force impact and initiated a forward trajectory. He loaded the manual 3-point lap and shoulder belt system. His loading force was evidenced by a D-ring transfer, striations on the webbing, a cinch bar transfer, and subsequent separation of the webbing at the cinch bar location of the latchplate. Following the separation of the belt webbing, the driver loaded the knee bolster and the deployed air bag. His loading of the bolster and the restraint systems resulted in minor severity (AIS-1) level injuries.


| | | | |
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**CALSPAN CASE NO. 94-35**
**VEHICLE: 1991 CHEVROLET CAPRICE (POLICE FLEET)**
**LOCATION: [redacted]NJ**

## TECHNICAL SUMMARY

This on-site investigation focused on a seat belt webbing failure that resulted from driver loading during a moderately severe frontal impact sequence with a 22.9 cm (9.0") diameter tree. The involved vehicle was a 1991 Chevrolet Caprice marked police unit that was equipped with manual 3-point continuous loop lap and shoulder belts in the front outboard seat positions and a supplemental driver's side air bag system. The police vehicle was operated by the [redacted] Police Department and was used as a patrol car by numerous officers for all work shifts over the 24 hour period. Departmental personnel noted that the vehicle was used primarily in a city environment which accounted for the majority of the 206,603 km (128,381 miles) that were recorded on the odometer. The Caprice was manufactured in June 1991, and was identified by the following vehicle identification number (VIN): 1GLB1537[redacted]

The crash occurred at an urban four-leg intersection in [redacted] NJ, on [redacted] 1994, at 1904 hours. The involved officer had reported to duty at 1900 hours and immediately responded to a purse snatching call. He entered the Chevrolet Caprice and properly buckled the manual 3-point lap and shoulder belt system. As he initiated a left turn at a four leg intersection, a police radio speaker dislodged from its center mount and fell onto the driver's right foot and under the brake pedal.

The Chevrolet Caprice drifted wide into the left turn and departed the upper left quadrant of the intersection. The center frontal area of the vehicle impacted the 22.9 cm (9.0") diameter oak tree that was located 0.9 m (3.0') outboard of the curbline. The 12 o'clock direction of force impact crushed the front bumper to a maximum depth of 76.5 cm (30.1"). As a result of the impact, the vehicle underwent a velocity change of 35 kph (22 mph) which deployed the supplemental driver's side air bag system.

The driver was a 38 year old male with a stated height of 183 cm (72") and weight of 109 kgs (240 lbs.). He was wearing his police uniform (long sleeve shirt and sweater) and his equipment belt. In addition, the driver was wearing a bulletproof vest with a 15x20 cm (6x8") steel shock plate inserted into the vest over the heart area. The officer estimated the weight of the vest and the shock plate at 5 kg (11 lbs). He was in a normal seated position with the seat track adjusted to the full rearward position and the seatback reclined slightly against the safety cage that was mounted between the B-pillars.

At impact, the driver stated that he heard a loud bang within the vehicle that he associated with deployment of the supplemental driver's side air bag. He initiated a forward trajectory in

response to the 12 o'clock impact force and loaded the manual 3-point lap and shoulder belt webbing. His loading force against the belt system resulted in a complete failure of the webbing at the latchplate cinch bar. The driver's loading force against the belt resulted in a band-like contusion across the left upper quadrant of the chest and left anterior shoulder and a contused rib cage. Compression of the shock plate against his chest from belt loading probably contributed to the rib contusions. He also sustained bilateral contusions of the knees and upper shins from contact with the knee bolster. There was no contact evidence from the left knee; however, the right knee contact scuffed the plastic outer panel of the bolster and deformed the steel inner panel to a depth of approximately 2.5 mm (0.1").

The driver's upper torso and face continued on a forward trajectory and loaded the deployed air bag. Driver facial contact with the air bag resulted in a laceration of the lower lip. His thoracic loading force was transmitted through the bag and into the steering assembly. The upper steering wheel rim was deformed 2.5 cm (1.0") forward and the energy absorbing column was compressed. In addition to column compression, both shear brackets were completely separated from the blocks. The left shear capsule yielded 5.1 cm (2.0") of compression while the right was compressed 4.5 cm (1.75"). The driver's side air bag was cut from the module and was not available during the inspection of the vehicle. The driver was transported to a local hospital by ambulance where he was examined and treated for his minor severity injuries.

The manual belt system consisted of a continuous loop webbing that was anchored to the sill of the Caprice at the leading edge of the base of the B-pillar. Located 9.5-11.4 cm (3.75-4.5") above the floor anchorage was an energy management loop. The upper and lower fold points of the loop contained a single row of stitching that extended across the width of the belt. An X-pattern of stitching crossed the webbing between the horizontal rows. The energy management loop in this driver's side belt webbing remained intact without separation of the stitching.

The webbing continued upward along the pillar to a triangular shaped D-ring that was mounted to the upper B-pillar. The steel D-ring was approximately 1.1 cm (7/16") in diameter and was 7.6 cm (3.0") in height and 7.9 cm (3.1") in width at the lower edge. The D-ring was covered with a thin black plastic-type coating. This coating was worn off the D-ring from routine usage of the belt system over the life of the vehicle. The latchplate was of typical design with a concealed sliding cinch bar which the webbing looped around. The latchplate was stamped with an identification number of [redacted] There was no impact or loading damage to the latchplate; however, the male end of the latchplate was heavily worn (scratched) from routine usage. The webbing subsequently spooled onto an inertia activated locking retractor that was affixed to the lower B-pillar. The latchplate buckled into a conventional buckle with a center mounted release button. The plastic extrusion that housed the buckle assembly was worn, therefore the buckle rested on the seat cushion when not in use.

Inspection of the belt webbing revealed numerous wear patterns that resulted from extensive usage and misuse of the system. The lap belt portion of the continuous loop webbing contained numerous gouges and indentations in the fabric from the belt becoming caught between the door latch and strike plate. These marks on the webbing were located 34.3-52.1cm (13.5-20.5") above the floor

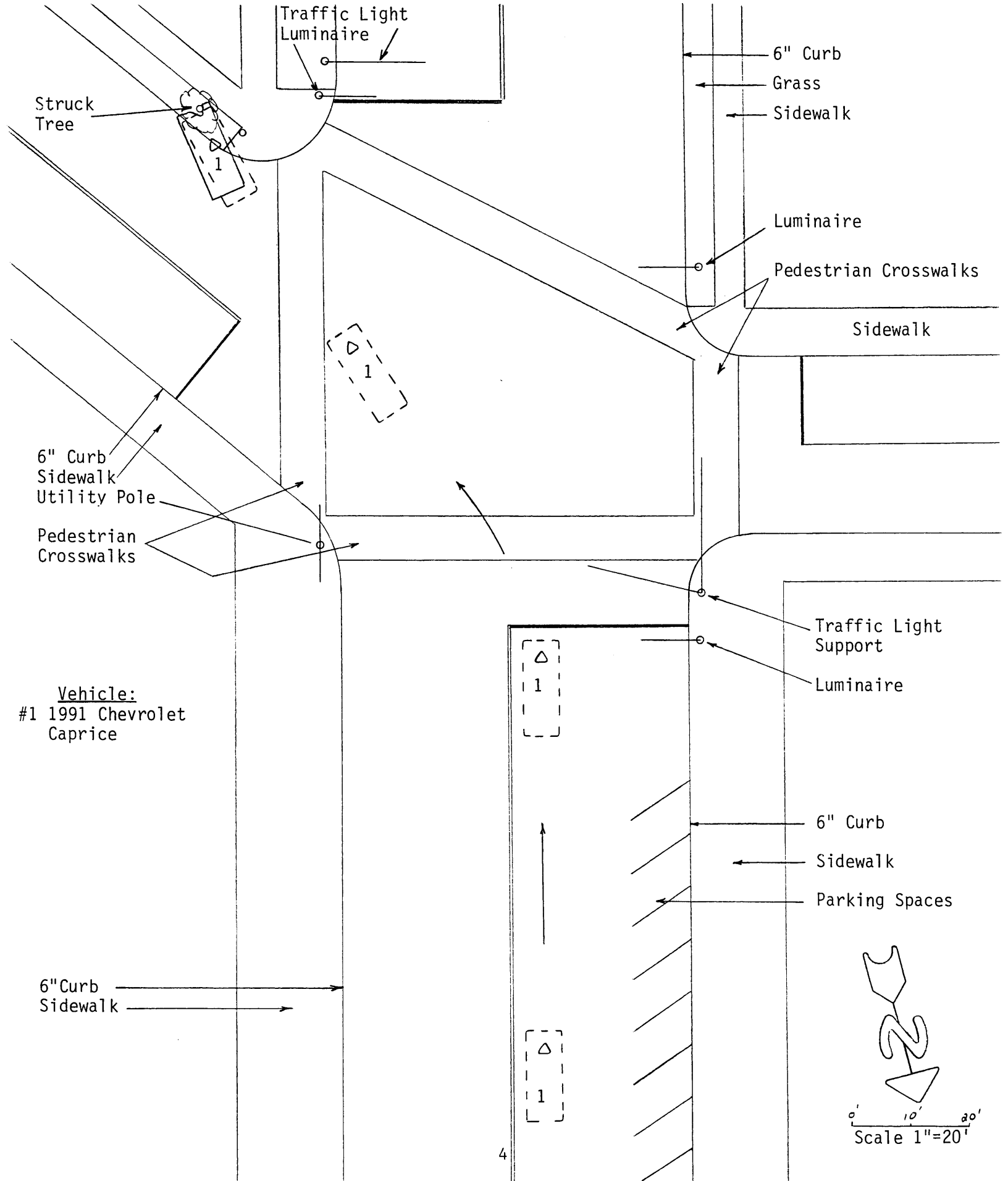
anchorage point and below the failure point of the webbing. There were also numerous snags and gouge type marks on both edges of the belt webbing at 38-80.7 cm (15-31.75") above the sill anchorage. These marks were small in size and were limited to less than 6.4 mm (0.25") in diameter. Both edges of the webbing were also frayed from frequent extension and retraction through the cutout in the B-pillar panel above the retractor, through the D-ring, and from adjustment of the cinch bar latchplate. The label at the retractor end of the belt webbing identified the manufacturer as [redacted] with the following identification numbers: [redacted] and [redacted].

The failure point on the belt webbing was located 80.6 cm (31.75") above the floor anchorage point. With the belt fully extended from the retractor, the tear point was 177.8 cm (70.0") above the B-pillar panel that surrounds the retractor mechanism. The tear was perpendicular to the webbing with both edges of the belt frayed 6.4-9.5 mm (0.25-0.375"). On the inboard side of the lap belt portion of the webbing, the full width of the belt contained a loading transfer from the latchplate cinch bar. This loading transfer extended 2.5 cm (1.0") below the failure point.

There were numerous longitudinal striations on the inside surface of the shoulder belt webbing. These striations extended 123.8-177.8 cm (48.75-70.0") above the fully extended retractor end of the shoulder belt webbing. Within these striations were several black plastic type transfers that probably resulted from button or zipper contact from the driver's sweater as his thoracic area loaded the shoulder belt webbing. The belt loading against the B-pillar mounted D-ring produced a diagonally orientated polished-type transfer on the shoulder belt webbing 87.0-93.3cm (34.25-36.75") above the tear point of the belt.

The energy management loop did not separate from occupant loading prior to the failure of the belt webbing. This would indicate that the strength of the belt webbing probably had diminished over the three year period that the vehicle was in service. The condition of the belt webbing was considered worn from frequent usage and from becoming snagged in the door latch/strike assembly. This, however, did not weaken the belt in the area of the tear. There was no evidence on the latchplate cinch bar that would indicate the webbing had been cut by this component. The driver was, however, fortunate that the Chevrolet Caprice had a supplemental driver's side air bag system which deployed and probably reduced the severity of his injuries.

CRASH SCHMATIC
CALSPAN CASE NO.94-35



**CALSPAN ON-SITE SEAT BELT FAILURE INVESTIGATION**
**CALSPAN CASE NO. 94-35**
**VEHICLE: 1992 CHEVROLET CAPRICE (POLICE FLEET)**
**LOCATION: [redacted], NJ**

## CRASH DATA

| | |
|---|---|
| Location: | Four-leg urban intersection |
| City/Township: | [redacted] NJ |
| Area/Type: | Urban/Commercial |
| Crash Date/Time: | [redacted] 1994, nighttime hours |
| Investigating Police Agency: | [redacted] City Police Department |
| Crash Type: | Car/Tree, center frontal impact |
| Driver Injury Severity: | Minor (AIS-1) |

## AMBIENCE

| | |
|---|---|
| Viewing Conditions: | Dusk |
| Weather: | Clear |
| Precipitation: | None |
| Road Surface: | Dry |

## HIGHWAY

| | |
|---|---|
| Type: | City street |
| Number of Lanes: | 2 |
| Width: | 10.9 m (35.6') |

**HIGHWAY (CONT'D.)**

| | |
|---|---|
| Surface: | Asphalt |
| Median: | None |
| Edge: | Barrier curbs |
| Vertical Alignment: | Level |
| Horizontal Alignment: | Straight |
| Estimated Coefficient of Friction: | .75 |
| Traffic Density: | Light |

**TRAFFIC CONTROLS**

| | |
|---|---|
| Signals: | Overhead signal system |
| Signs: | None |
| Markings: | Double yellow centerlines, solid white stopline, marked pedestrian crosswalks |
| Speed Limit: | 40 km/h (25 mph) |

**VEHICLE**

| | |
|---|---|
| Description: | 1991 Chevrolet Caprice , 4 dr. sedan, marked police unit |
| V.I.N.: | 1G1BL5378MR[redacted] |
| Date of Manufacture: | 6/91 |
| Color: | Two-tone, white/blue |
| Odometer: | 206602.7 kms (128,380.5 miles) |
| Engine: | 5.7 liter, V-8 |

## VEHICLE (CONT'D.)

| | |
|---|---|
| Transmission: | 4-speed automatic overdrive |
| Steering: | Power |
| Brakes: | Power-assisted with anti-lock (ABS) |
| Padding: | Upper, mid, and lower instrument panel, air bag module cover, door panels, door armrests, sunvisors, adjustable head restraints |
| Manual Restraints: | 3-point lap and shoulder belts in the four outboard seated positions |
| Automatic Restraints: | Driver's side supplemental air bag system which deployed as a result of the frontal impact sequence |
| Tow Status: | Towed due to vehicle damage |

## VEHICLE DAMAGE

Exterior: The 1991 Chevrolet Caprice sustained moderately severe frontal damage from its impact sequence with a wooden utility pole. Maximum crush was 76.5 cm (30.1") located on the bumper facia 8.9 cm (3.5") right of the vehicle's centerline. Direct contact damage began at the centerline and extended 24.1 cm (9.5") to the right. The narrow impact to the vehicle resulted in a combined induced and direct damage width of 94.6 cm (37.3") which extended from bumper corner-to-bumper corner. Crush values were documented at bumper level and were as follows: $C_1$= -2.5 cm (-1.0"), $C_2$= 24.1 cm (9.5"), $C_3$= 48.3 cm (19.0"), $C_4$= 76.5 cm (30.1"), $C_5$= 33.0 cm (13.0"), $C_6$= 2.5 cm (1.0").

Components damaged by the frontal impact included the front bumper facia and reinforcement bar, grille, right headlamp assembly, hood, both front fenders, air conditioning condenser, radiator, radiator support panel, and the windshield. The windshield sustained stress crack damage which originated at the bottom mid point of the glass and radiated outward. The wheelbases were reduced in length by 1.7 cm (0.7") on the left and 6.1 cm (2.4") on the right side.

The four doors of the vehicle remained closed during the crash and were operational at the time of our inspection. There was no other glass or sheetmetal damage rearward of the A-pillars. The rear mounted HDPE fuel tank remained intact with damage or fuel leakage.

## VEHICLE DAMAGE (CONT'D.)

**CDC:** 12-FCEN-3

**Repair Cost:** Total loss

**Interior:** Interior damage to the Chevrolet Caprice was associated with driver loading and contact of interior components. There was no damage attributed to exterior deformation or intrusion of the passenger compartment. The driver's side air bag deployed, however, the air bag had been cut from the gas generator prior to [redacted] inspection of the vehicle.

The driver loaded the manual 3-point lap and shoulder belt system as he responded to the 12 o'clock direction of force crash. As a result of driver loading, the belt webbing tore at the latchplate cinch bar. This issue is addressed under the heading Manual Restraint System which follows this section of this report.

The driver's right knee contacted and scuffed the plastic outer panel of the knee bolster 17.1-24.8 cm (6.75-9.75") right of the steering column. In addition to the scuff, his loading force deformed the steel backer panel to a residual depth of approximately 3.2 mm (0.125"). The driver's chest subsequently loaded the deployed air bag and compressed the bag against the steering wheel. As a result of the thoracic loading, the upper steering wheel rim was displaced forward approximately 2.5 cm (1.0"). His loading force was transmitted into the energy absorbing steering column which compressed approximately 5.1 cm (2.0"). The shear capsule brackets compressed and disengaged from the blocks. Compression was measured at 5.1 cm (2.0") at the left side and 4.45 cm (1.75") at the right unit.

The plastic handle for the left A-pillar mounted spot light was fractured and deformed in a forward direction from probable driver left hand contact. The shaft for the spot light was not deformed.

## MANUAL RESTRAINT SYSTEM

The 1991 Chevrolet Caprice vehicle was equipped with manual 3-point lap and shoulder belts in the four outboard seated positions. The front mounted belts consisted of a continuous belt webbing that extended from an inertia activated locking retractor mounted in the lower B-pillars of the vehicle. The webbing looped through a triangular shaped steel D-ring that was bolted to the upper B-pillars and was attached to the floor of the vehicle at the leading edge of the B-pillar. The D-ring was 7.6 cm (3.0") in height and 7.9 cm (3.1")

## MANUAL RESTRAINT SYSTEM (CONT'D.)

in width at the base. Located 9.5-11.4 cm (3.75-4.5") above the floor anchorage point was an energy management loop. The loop consisted of a double 180 degree fold of the webbing with two horizontal rows of stitching with a X-pattern stitch pattern located between the horizontal rows. The energy management loop remained intact with no displacement of the stitching. A sliding latchplate was attached to the segment of belt webbing that extended between the D-ring and the floor of the vehicle. The inboard aspect of the left side manual belt webbing contained an identification label with the following [redacted].

The latchplate was designed with an internal sliding cinch bar. The edges of the cinch bar which were in contact with the belt webbing appeared smooth with no evidence of sharp edges or burrs. There was no evidence of damage to the latchplate or the cinch bar mechanism. The male tab of the latchplate did contain heavy longitudinal wear marks which were attributed to routine (frequent) usage of the belt system. The latchplate was stamped with a Part No. of [redacted]

The lower segment of the belt webbing contained numerous gouges and snags on both edges of the nylon lap belt material. These were located 38.1-80.7 cm (15-31.75") above the floor anchorage. In addition, there was numerous gouges in the webbing at 34.3-52.1 cm (13.5-20.5") above the floor anchorage point that resulted from the belt webbing becoming caught between the door latch and the B-pillar mounted striker post. This pre-existing damage to the belt webbing in documented in Photograph No. [redacted]

Driver loading evidence of the manual belt system consisted of a diagonally orientated D-ring scuff mark on the webbing, fabric transfers on the shoulder belt aspect of the webbing, a latchplate (cinch bar) scuff mark on the webbing which extended 2.5 cm (1.0") below the tear point, and a tear across the full width of the belt. The D-ring scuff mark was located 167.6-174.0 cm (66.0-68.5") above the floor anchorage point. On the inside (side positioned against driver) aspect of the shoulder belt webbing, were black vinyl type transfers were located 123.8-177.8 cm (48.25-70.0") above the floor anchorage point. These transfers were probably associated with buttons or a zipper on the driver's sweater.

The driver's loading force against the manual lap and shoulder belt webbing produced a complete separation of the webbing at the cinch bar location. The tear point was approximately perpendicular to the length of the webbing and was located 80.7 cm (31.75") above the referenced floor anchorage point. The webbing fibers at the tear point on both edges of the belt were stretched and frayed in a longitudinal direction and were approximately 6.4-9.5 mm (0.25-0.375") in length.

## AUTOMATIC RESTRAINT SYSTEM

In addition to the manual 3-point lap and shoulder belt at the driver's position, the 1991 Chevrolet Caprice was equipped with a Supplemental Inflatable Restraint (SIR) system with consisted of a driver's side air bag. The SIR deployed as a result of the center frontal impact with the utility pole.

The SIR system consisted of two discriminating (crash) sensors that were mounted to the radiator support panel, an arming (safeing) sensor and a diagnostic energy reserve module (DERM) that were mounted under the instrument panel, a instrument cluster mounted indicator lamp, and the steering wheel mounted driver's side air bag module assembly.

The air bag was cut from the gas generator and removed from the vehicle prior to [redacted] inspection of the Chevrolet Caprice, therefore contact evidence and/or damage to the air bag was unknown. The vehicle's battery lacked sufficient power to test the instrument panel indicator lamp for the post-crash status of the SIR system.

## VEHICLE VELOCITY ESTIMATES

| | |
|---|---|
| Travel Speed: | 56 km/h (35 mph), driver estimate |
| Impact Speed: | 40 km/h (25 mph) |
| Total Delta V: | 35 km/h (22 mph) |
| Longitudinal Delta V: | -35 km/h (-21 mph) |
| Lateral Delta V: | -03 km/h (-02 mph) |
| Energy Absorption: | 90,326 joules (66,612 ft/lb) |

The above velocity changes were computed by the damage and trajectory algorithm of the CRASHPC Program.

## COLLISION SEQUENCE

**Pre-Crash:** The driver of the 1991 Chevrolet Caprice reported to police duty at 1900 hours and immediately responded to a emergency police call for a purse snatching. He entered the involved vehicle and buckled the manual 3-point lap and shoulder belt system and departed the police headquarters. The driver proceeded in an easterly direction and initiated a right turn to proceed in a southerly direction en route to the location of the call. He had traveled the distance of approximately ten city blocks as he approached a four-leg intersection that was controlled by an overhead signal system. The driver estimated his travel speed at approximately 56 km/h (35 mph) as he approached the intersection on a green signal phase. He initiated a left turn onto a two-lane local street. As he initiated the left turn, the driver noted that a police radio speaker had dislodged from its transmission mount and fell onto the driver's right foot and under the brake pedal. The driver noted that the speaker prevented him from applying the vehicle's brakes and decelerating the vehicle sufficiently to negotiate the left turn. He stated that the Caprice drifted wide into the turn and departed the southeast quadrant of the intersection.

**Crash:** The vehicle departed the roadedge in a tracking mode and impacted a 22.9 cm (9.0") diameter tree with the center frontal area of the vehicle. The tree was located 0.9 m (3.0') outboard of the 12.7 cm (5.0") barrier curbline. The CRASHPC program computed an impact speed of 40 km/h (25 mph) for the Chevrolet Caprice. In addition, the CRASHPC program computed a total velocity change of 35 km/h (22 mph) for the 12 o'clock direction of force impact. As result of the impact induced deceleration, the supplemental driver's side air bag system deployed.

**Post-Crash:** The Caprice came to rest against the struck tree, facing in a southerly direction. The driver notified his dispatcher of the crash via police radio and exited the vehicle and waited for police and emergency personnel to arrive on-scene. He was subsequently transported to a local hospital where he was treated for his injuries and released.

## HUMAN FACTORS/OCCUPANT DATA

| | |
|---|---|
| Driver: | 38 year old male |
| Height: | 182.9 cm (72.0") |
| Weight: | 108.9 kgs (240 lbs) |
| Manual Restraint System Usage: | 3-point lap and shoulder belt system |
| Usage Source: | Vehicle inspection, driver interview, police report |
| Eyeware: | None |
| Trip Plan: | Responding to an emergency police call |
| Mode of Transport From Scene: | Ambulance |
| Type of Medical Treatment: | Treated at a local hospital and released |

## DRIVER INJURIES

| Injury | Severity (OIC/AIS) | Injury Mechanism |
|---|---|---|
| Contused ribs, bilaterally | Minor (450202.13) | Shoulder belt webbing and air bag/steering wheel loading |
| Band-like contusion of the left anterior shoulder | Minor (790402.12) | Shoulder belt webbing |
| Band-like contusion of the left upper quadrant of the chest | Minor (490402.12) | Shoulder belt webbing |
| Lacerated lower lip | Minor (290602.18) | Air bag |
| Bilateral contusions of the knees and upper shins | Minor (890402.11, 890402.12) | Knee bolster |

## DRIVER KINEMATICS

The driver of the 1991 Chevrolet Caprice was wearing his police uniform with a sweater over his uniform shirt and his equipment belt. In addition, the officer was wearing a bullet proof vest with a 15-20 cm (6 x 8") steel shock plate positioned over the heart area. The driver estimated the weight of the vest, inclusive of the shock plate, at 5 kgs (11 lbs.). He was in a normal driving posture with the seat track adjusted to the full rearward position and the seat back reclined against the safety cage that was mounted between the B-pillars of the vehicle. The driver was properly restrained by the manual 3-point lap and shoulder belt system. Belt usage was determined by loading evidence on the webbing and the subsequent separation of the webbing at the lap plate cinch bar.

At impact, the supplemental air bag deployed. The driver initiated a forward trajectory in response to the 12 o'clock direction of force and loaded the manual 3-point lap and shoulder belt webbing. His loading force against the belt webbing produced a D-ring scuff on the webbing and fabric-type transfers on the shoulder belt aspect of the webbing. The webbing was also stressed against the cinch bar of the latchplate which produced a transfer on the webbing. As a result of belt loading, the driver sustained a band-like contusion across the anterior aspect of his left shoulder and left upper quadrant of the chest.

The belt webbing subsequently tore at the transition point of the lap belt and shoulder belt at the cinch bar of the latchplate. The complete separation of the webbing occurred as the driver was fully engaged with the belt. The energy management loop of the belt remained intact with no separation of the stitch pattern. He subsequently continued in a forward direction and contacted the knee bolster with both knees and upper shins which resulted in contusions over the contacted body areas. The right knee contact scuffed the plastic outer panel of the bolster and deformed the backer panel to a depth of approximately 0.3 cm (0.1"). There was no contact evidence or damage from the left knee contact.

The separated belt webbing allowed the driver's torso to contact the deployed air bag. His loading force compressed the deployed air bag against the steering wheel rim which deformed the upper rim of the two spoke wheel approximately 2.5 cm (1.0") forward. In addition, his loading force was transmitted through the air bag and into the energy absorbing steering column. The shear capsule brackets of the energy absorbing column compressed 5.1 cm (2.0') on the left side and 4.4 cm (1.75") on the right. The combination of loading forces from the belt system, air bag, and the steering assembly compressed the steel shock plate within the driver's vest against his chest which contributed to bilateral rib contusions. The driver's face probably contacted the deployed air bag which either lacerated his lower lip or compressed his lip against his teeth resulting in the laceration. During the crash, the driver's left hand probably separated from the steering wheel as a result of air bag contact with his anterior forearm, and impacted the handle for the left A-pillar mounted police spot light. Although no injury occurred, the plastic handle was cracked and the stem for the light was deformed forward.

**DRIVER KINEMATICS (CONT'D.)**

Following the crash, the driver was transported to a local hospital by ambulance where he was treated for his injuries and released. He stated that he developed a headache which persisted for approximately five days. The driver also complained of bloody stools which possibly resulted from abdominal trauma from belt loading and the impact force associated with the crash. Both of these complaints are outside of the AIS-90 injury coding guidelines, therefore no injury codes were assigned.

**ATTACHMENT A**

**Selected Prints**

**SELECTED PRINTS**
**CALSPAN CASE NO. 94-35**
**[redacted] CITY, NJ**

1. Pre-crash trajectory of the Chevrolet Caprice.

2. Initiation of the left turn onto the two-lane local street.

3. Struck tree.

4. Lookback view of the vehicle's trajectory.

5. Frontal view of the tree impact damage to the Chevrolet Caprice.

6. Overhead view showing the extent of frontal crush.

7. Left front three-quarter view of the Caprice.

8. Perpendicular view of the frontal deformation from the left side of the vehicle.

9. Left side view of the Caprice.


10. Left rear three-quarter view of the Caprice.

11. Right front three-quarter view of the Caprice.

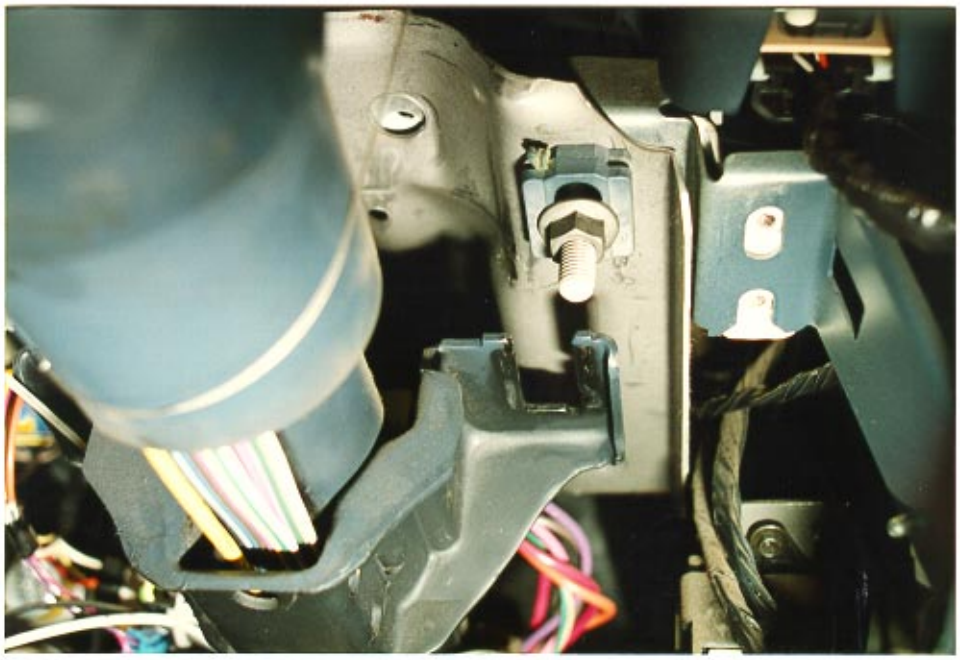
12. Perpendicular view from the right front corner area of the vehicle.

13. & 14. Overall views of the driver's compartment and steering assembly.

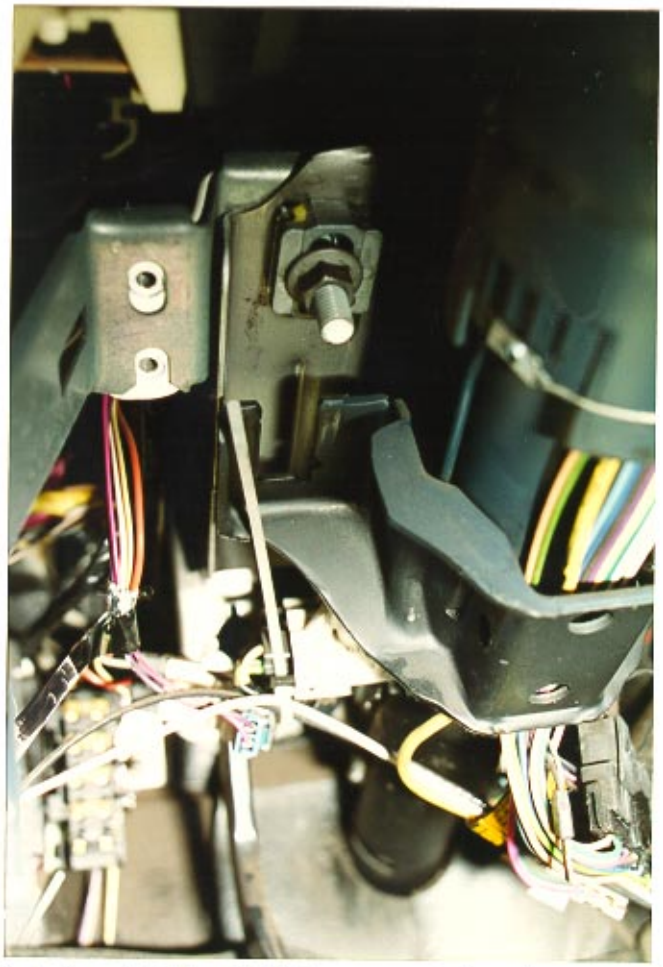
15. Forward deflection of the upper steering wheel rim.


16. Air bag module cover flaps and gas generator with air bag cut from module assembly.

17. Compression of the energy absorbing steering column.



18. 4.4 cm (1.75") of displacement of the right shear capsule bracket.

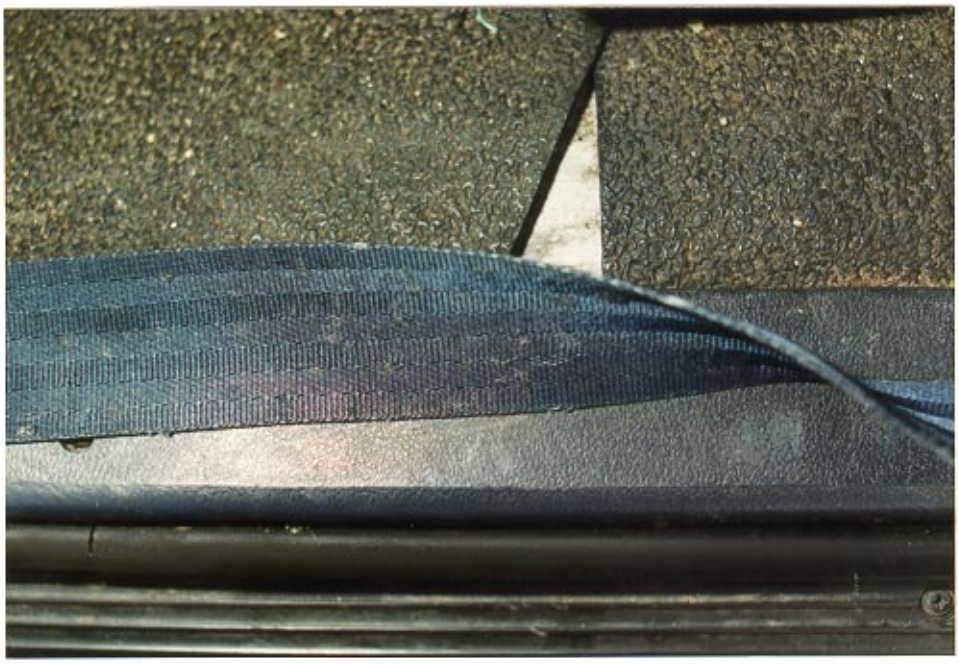


19. 1.0 cm (2.0") of left shear capsule bracket separation.

20. Right knee contact (scuff) to the removed knee bolster outer panel.

21. Deformation (0.25 cm) from right knee contact to the bolster backer panel.

22. Overall view of the manual 3-point lap and shoulder belt system.



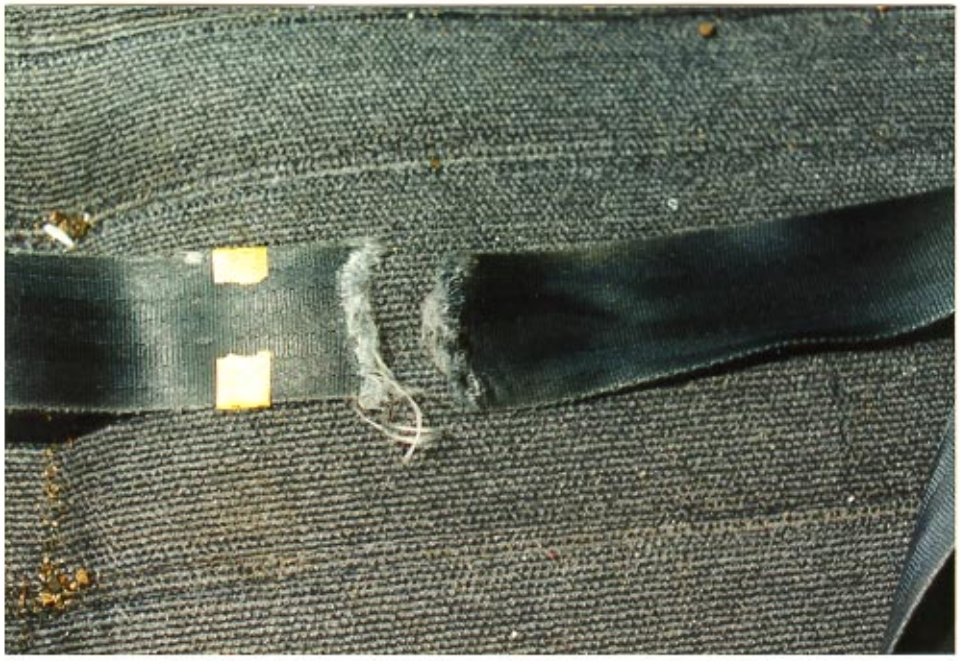
23. & 24. Gouges and scrapes in lap belt webbing from belt becoming caught in door latch/striker.

25. D-ring loading transfer on the shoulder belt webbing.

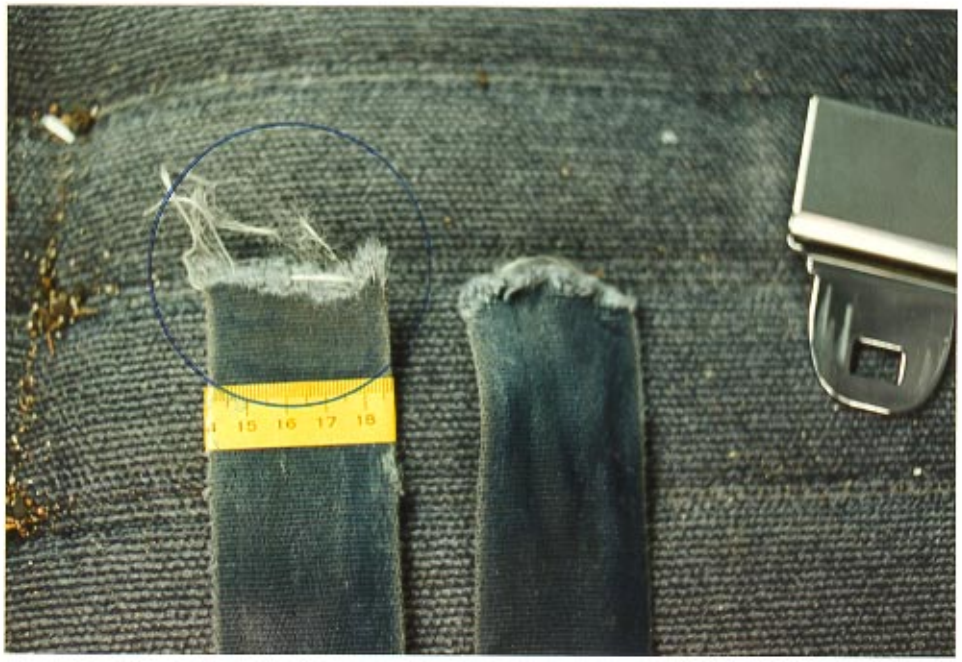
26. Driver loading fabric transfers on the shoulder belt webbing.

27. Additional view of the loading transfers on the shoulder belt webbing.

28. Energy management loop and the lower anchorage point of the driver's side belt webbing.



29. & 30. Separation of the belt webbing at the cinch bar location.




31. Cinch bar loading transfer on the inner aspect of the belt webbing (circled).


32. Additional view of the separation.

33. Routine usage wear marks on the male tab of the latchplate.

34. Sliding cinch bar in the latchplate.

35. Undamaged buckle assembly from the driver's side belt system.

**ATTACHMENT B**

**Police Accident Report**

PAGE 1 OF 3

# NEW JERSEY POLICE ACCIDENT REPORT

☒ REPORTABLE ☐ NON-REPORTABLE

FOR D.O.T. USE ONLY

39 CASE NUMBER [redacted]

40 POLICE DEPARTMENT CODE 101 [redacted]

42

| 43 DATE OF COLLISION MONTH | DAY | YEAR | 44 DAY OF COLLISION S | M | T | W | T | F | S | 45 TIME (USE 2400 HRS.) | 46 NO. OF VEHICLES | 47 NUMBER KILLED | 48 NUMBER INJURED | 49 COUNTY | MUNICIPAL CODE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [redacted] | | 94 | X | | | | | | | [redacted] | 1 | 0 | 1 | [redacted] | |

50 [redacted] 51 ROUTE NUMBER OR NAME OF STREET [redacted] 52 MILE POST 53 INTERSECTING ROAD, RAILROAD OR RAMP [redacted] St.

54 NEAREST INTERSECTING ROADS BETWEEN WHICH ACCIDENT OCCURRED 1. [redacted] 2.

55 DISTANCE FROM 1 OR 2 (DESIGNATE) S.E. CORNER [redacted]

| VEH. 1 | 56 POLICY NO. | 57 INS. CODE |
|---|---|---|
| | [redacted] | |

PARKED VEH. ☐ PEDESTRIAN ☐ PEDALCYCLIST ☐

58 DRIVER'S FIRST NAME [redacted] INITIAL [redacted] LAST NAME [redacted]

59 NUMBER AND STREET [redacted]

60 CITY [redacted] STATE N.J. EXPIRES [redacted]

| 61 DRIVER'S LICENSE NUMBER | 62 STATE | 63 DOB MO. | DAY | YR | 64 EYES | 65 SEX |
|---|---|---|---|---|---|---|
| [redacted] | NJ. | [redacted] | | | 2 | M |

66 OWNER'S FIRST NAME ☐ SAME AS DRIVER [redacted] INITIAL [redacted] LAST NAME [redacted]

67 NUMBER AND STREET [redacted]

68 CITY [redacted] STATE [redacted] EXPIRES [redacted]

| 69 MAKE AND MODEL | COLOR | 70 YEAR | 71 PLATE NO. | 72 STATE |
|---|---|---|---|---|
| Chevy Caprice | IWT | 91 | [redacted] | N.J. |

73 VIN NUMBER 1G1BL5378MR[redacted]

74 VEHICLE REMOVED TO Towed to Station

75 AUTHORITY 1 OWNER 2 DRIVER (3 POLICE)

| VEH. 2 | 81 POLICY NO. | 82 INS. CODE |
|---|---|---|
| | | |

PARKED VEH. ☐ PEDESTRIAN ☐ PEDALCYCLIST ☐

83 DRIVER'S FIRST NAME INITIAL LAST NAME

84 NUMBER AND STREET

85 CITY STATE EXPIRES

| 86 DRIVER'S LICENSE NUMBER | 87 STATE | 88 DOB MO. | DAY | YR | 89 EYES | 90 SEX |
|---|---|---|---|---|---|---|
| | | | | | | |

91 OWNER'S FIRST NAME ☐ SAME AS DRIVER INITIAL LAST NAME

92 NUMBER AND STREET

93 CITY STATE EXPIRES

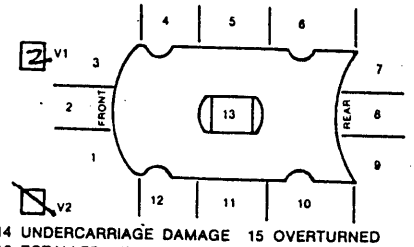
| 94 MAKE AND MODEL | COLOR | 95 YEAR | 96 PLATE NO. | 97 STATE |
|---|---|---|---|---|
| | | | | |

98 VIN NUMBER

99 VEHICLE REMOVED TO

100 AUTHORITY 1 OWNER 2 DRIVER 3 POLICE

76 INITIAL IMPACT



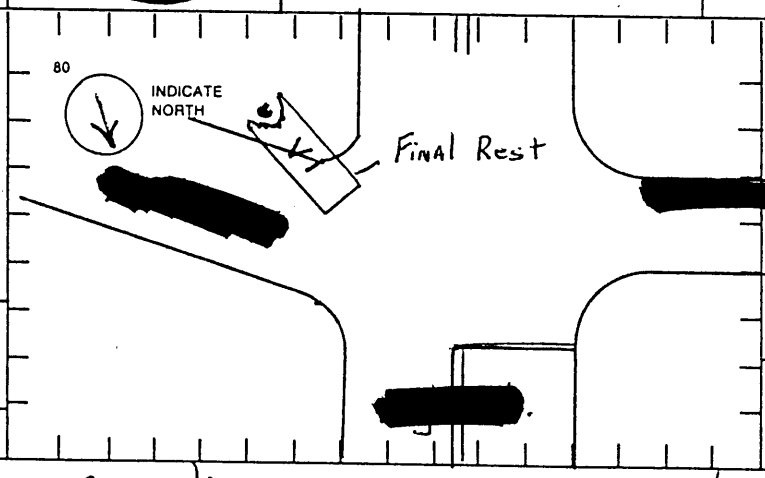

14 UNDERCARRIAGE DAMAGE 15 OVERTURNED 16 TOTALLED 17 NONE 18 OTHER*

77 AREAS DAMAGED (REFER TO ABOVE)

| | | | | |
|---|---|---|---|---|
| VEH. 1 | 2 | 16 | | |
| VEH. 2 | | | | |

78 SPEED POSTED 25

79 TIRE MARKS ☐ YES* ☒ NO




101 ALCOHOL DATA

| TEST GIVEN | DRIVER 1 RESULTS |
|---|---|
| ☐ YES | |
| ☒ NO | |

| DRIVER 2 RESULTS | |
|---|---|
| ☐ YES | |
| ☐ NO | |

| PEDESTRIAN RESULTS | |
|---|---|
| ☐ YES | |
| ☐ NO | |

102 HAZARDOUS MATERIAL

| | V1 | V2 |
|---|---|---|
| ON BOARD | ☐ | ☐ |
| SPILL | ☐ | ☐ |

103 ACCIDENT DESCRIPTION

Driver was Responding to a purse snatching call when due to vehicle failure, struck tree.

Investigation: Undersigned officer when arrived on the scene spoke to Driver #1 who stated he was breaking to turn left onto [redacted], but the brakes didn't work. The police vehicle had struck the tree approx. dead center in hood area.

(SEE PAGE #2)

104 DAMAGE TO OTHER PROPERTY

| OPER. | 105 CHARGE | SUMMONS NUMBER | OPER. | 106 CHARGE | SUMMONS NUMBER |
|---|---|---|---|---|---|
| | [redacted] | | | | |

107 OFFICER [redacted] 108 BADGE NUMBER [redacted] 109 REVIEWED BY (BADGE NUMBER) 110 STATUS Complete

| ALL INVOLV | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | NAMES—ADDRESSES OF OCCUPANTS—IF DECEASED DATE & TIME OF DEATH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | 1 | 4 | 1 | | M | 2,12 | 4/8 | 4 | [redacted] | [redacted] | Driver #1 |
| B | | | | | | | | | | | | |
| C | | | | | | | | | | | | |
| D | | | | | | | | | | | | |





RECORD BUREAU COPY

STATE OF NEW JERSEY

# MOTOR VEHICLE ACCIDENT DESCRIPTION

Police Agency [redacted]

Station ..... Case No. .....

103 Accident Description
(Refer to vehicle by number)

| ALL INVOLVED | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | NAMES—ADDRESSES OF OCCUPANTS IF DECEASED ALSO INCLUDE DATE & TIME OF DEATH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | | | | | | | | | | |
| B | | | | | | | | | | | | |
| C | | | | | | | | | | | | |
| D | | | | | | | | | | | | |
| E | | | | | | | | | | | | |

Observations inside the vehicle revealed: the air bag had deployed, seat belt(strap) broken, the buckle was still secured in the clasp. Lying on the floor in the driver area was the speaker for the Police Radio. It appears that the nut came off of the speaker mount bolt, allowing the speaker to fall into the pedal area of the vehicle during operation, possibly preventing operation of the brake pedal. There were no skid marks visible on the road. Nut for speaker mount also found on floor in drivers area

Witness: [redacted] was enroute to work, statement to be taken at later date

Six Photos included with Accident Report. Speaker Tagged + placed in evidence locker #2

[redacted]

nature

# [redacted]

Badge Number

NJTR-1A (R 1/88)

[redacted]

STATE OF NEW JERSEY

# MOTOR VEHICLE ACCIDENT DESCRIPTION

Police Agency .....

Station ..... Case No. .....

103 Accident Description
(Refer to vehicle by number)

| ALL INVOLVED | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | NAMES—ADDRESSES OF OCCUPANTS IF DECEASED ALSO INCLUDE DATE & TIME OF DEATH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | | | | | | | | | | | |
| | B | | | | | | | | | | | |
| | C | | | | | | | | | | | |
| | D | | | | | | | | | | | |
| | E | | | | | | | | | | | |

THE UNDERSIGNED WAS RESPONDING TO A PURSE SNATCHING CALL BEHIND [redacted] WHEN I ATTEMPTED TO TURN EAST ON TO [redacted], I TRIED TO HIT THE BRAKES. THE BRAKE PEDAL APPEARED STUCK, THIS OCCURED SO QUICKLY, I AGAIN TRIED TO CONTROL THE VEHICLE AND HIT THE BRAKES HOWEVER THE BRAKE WOULDN'T WORK, I HIT THE TREE.

NJTR-1A (R 1/88)

_____ Signature _____ Badge Number

New Jersey

**PEDESTRIAN MANEUVER** (1)
1 Crossing/Entering Roadway at Intersection
2 Crossing/Entering Roadway Not at Intersection
3 Walking on Road w/Traffic
4 Walking on Road Against Traff.
5 Playing in Road
6 Standing in Road
7 Getting On or Off Vehicle
8 Pushing or Working on Veh.
9 Other Working in Roadway
10 Hitch-Hiking
11 Approaching or Leaving School Bus
12 Coming From Behind Park Veh.
13 Other*

**TRAFFIC CONTROLS** (2 Veh. 1, 3 Veh. 2)
1 Police Officer
2 R.R. Watchman, Gates, Etc.
3 Traffic Signal
4 Lane Markings
5 Channelization—Painted
6 Channelization—Physical
7 Warning Signal
8 Stop Sign
9 Yield Sign
10 No Control Present
11 Other*

**ROAD SYSTEM** (4)
1 Interstate
2 State Highway
3 State Interstate Authority
4 State Park or Inst
5 County
6 Co. Auth. Park or Institution
7 Municipal
8 Priv. Prop.
9 U.S. Gov. Prop.

**ROAD CHARACTER** (5)
1 Straight and Level
2 Straight and Grade
3 Straight at Hillcrest
4 Curve and Level
5 Curve and Grade
6 Curve and Hillcrest

**ROAD SURFACE TYPE** (6)
1 Concrete
2 Blacktop
3 Gravel
4 Steel Grid
5 Dirt
6 Other*

**SURFACE CONDITION** (7)
1 Dry 3 Snowy 5 Other*
2 Wet 4 Icy

**IS ROAD UNDER CONSTRUCTION?** (8)
1 YES 2 NO

**WORKERS PRESENT?** (9)
3 YES 4 NO

**VEHICLE TYPE** (10 Veh. 1, 11 Veh. 2)
1 Pass. Car-Sta. Wag.
2 Pass. Car w/Trailer
3 Recreation Veh.
4 Taxicab/Lim.
5 Bus
6 School Bus
7 Emergency Veh.
8 Motorcycle
9 Moped
10 Pickup
11 Van/Step Van
12 Truck
13 Trk. Combo 8' x 48'
14 Trk. Combo 8½' x 48'
15 Trk. Combo 8' over 48'*
16 Trk. Combo 8½' over 48'*
17 Trk. Combo Dbl. Bottom*
18. Other*

**ROAD DIVIDED BY** (12)
1 Guide Rail
2 Concrete Barrier
3 Concrete Island
4 Grass Median
5 None
6 Other*

**WEATHER** (13)
1 Clear 3 Snow 5 Other*
2 Rain 4 Fog

**WHICH VEHICLE OCCUPIED**
1 Veh. 1 B Pedalcycle O Other*
2 Veh. 2 P Pedestrian

**POSITION IN/ON VEHICLE** (15)
1 Driver 2 thru 7 Passengers
8 Riding/Hanging On Outside

**SAFETY EQUIP USED**
1 No restraint used
2 Lap Belt
3 Harness
4 Lap Belt & Harness
5 Child Restraint
6 Helmet
7 Passive Restraint
8 Other*

8 | 1 2 3 | 8 | 4 5 6 | 8 | 7 | 8

**EJECTION FROM VEHICLE** (16)
1 Not Ejected
2 Partial Ejection
3 Ejected

**AGE** (17) **SEX** (18) M F (19)

**APPARENT CONTRIBUTING CIRCUMSTANCES**
(Human, Vehicle, Environmental Factors) (20)
1 Unsafe Speed
2 Driver Inattention
3 Failed to Obey Traffic Signal
4 Disregarded Stop Sign
5 Failed to Yield Right of Way to Vehicle/Pedestrian
6 Improper Lane Change
7 Improper Passing
8 Improper Use of Turn Signals
9 Improper Turning
10 Following too Closely
11 Backing Unsafely
12 Dazzling, Improper or No Lights
13 Wrong Way, One-Way Road
14 Improper Parking
15 Pedestrian's/Bicyclist's Actions
16 Improper Right Turn on Red
17 Failed to Signal
18 Alcohol/Drug Involvement
19 Vehicle Defect*
20 Oversized Vehicle
21 Tire Failure/Deformity
22 Animal's Action
23 Defective Shoulder
24 View Obstruction/Limited*
25 Water Puddles
26 Obstruction/Debris on Road
27 Improper/Inadequate Lane Marking
28 Holes/Bumps/Ruts in Road
29 Other Roadway Defects*
30 Traffic Control Device Defective/Missing
31 None
32 Other*

**LIGHT CONDITION** (21)
1 Daylight
2 Dawn or Dusk
3 Dark (St. Light On)
4 Dark (St. Lights Off)
5 Dark (No St. Lights)

# STATE OF NEW JERSEY
# POLICE ACCIDENT REPORT

*EXPLAIN IN ACCIDENT DESCRIPTION

IF A QUESTION DOES NOT APPLY, ENTER A DASH (—).

IF AN ANSWER IS UNKNOWN, ENTER A "U"

**DIRECTION OF TRAVEL** (28 Veh. 1, 29 Veh. 2)
N 1, W 4, E 2, S 3

**PRE-ACCIDENT VEHICLE ACTION** (30 Veh. 1, 31 Veh. 2)
1 Going Straight Ahead
2 Making Right Turn
3 Making Left Turn
4 Making U Turn
5 Starting from Parking
6 Starting in Traffic
7 Slowing or Stopping
8 Stopped in Traffic
9 Parking
10 Parked
11 Changing Lanes
12 Merging
13 Backing
14 Driverless/Moving
15 Other*

**LOCATION OF MOST SEVERE PHYSICAL INJURY**
1 Head
2 Face
3 Eye
4 Neck
5 Chest
6 Back
7 Shoulder—Upper Arm
8 Elbow/Lower Arm/Hand
9 Abdomen/Pelvis
10 Hip—Upper Leg
11 Knee/Lower Leg/Foot
12 Entire Body

**TYPE OF MOST SEVERE PHYSICAL INJURY** (21)
1 Amputation
2 Concussion
3 Internal
4 Bleeding
5 Contusion/Bruise/Abrasion
6 Burn
7 Fracture—Dislocation
8 Complaint of Pain
9 None Visible

**VICTIM'S PHYSICAL CONDITION** (22)
1 Killed
2 Incapacitated
3 Moderate Injury
4 Complaint of Pain

**INJURED TAKEN BY** (23) **TO** (24)

**LOCATION OF FIRST IMPACT** (32)
1 On Roadway ... ff Roadway

**COLLISION WITH** (33)
1 Pedes... 6 Animal
2 Other ...hicle 7 Fixed Object
3 Overturned 8 Other Object*
4 Other Non-Collision 9 R.R. Train
5 Pedalcycle

**COLLISION TYPE (With Other MV)** (34)
1 Same Direction—Rear-End
2 Same Direction—Sideswipe
3 Angle
4 Head-On
5 Left Turn
6 Struck Parked Veh.
7 Other*

**FIXED OBJECT** (35)
1 Utility Pole
2 Trees
3 Median/Ctr. Barrier/Ctr. Island
4 Curb/Catch Basin/Culvert
5 Guide Rail
6 Sign Post
7 Signal Standard
8 Abutment/Embankment Wall
9 Building/Telephone Booth
10 Other*

**PHYSICAL STATUS** (Veh. 1 36, Veh. 2 37)
1 Apparently Normal
2 Had Been Drinking
3 Physical Handicaps
4 Illness
5 Fatigued
6 Apparently Asleep
7 Using Drugs
8 Other*

Ped. 38

Original size of document — 8½ × 11

# ATTACHMENT C

## CRASHPC Output
## Damage and Trajectory Algorithm

## COLLISION AND SEPARATION

| | VEHICLE #1 | VEHICLE #2 |
|---|---|---|
| COLLISION | | |
| IMPACT X-POSITION | -2.5 M. ( -8.3 FT.) | 1.3 M. ( 4.2 FT.) |
| IMPACT Y-POSITION | -.3 M. ( -.9 FT.) | .0 M. ( .0 FT.) |
| IMPACT HEADING ANGLE | 0 DEGREES | 180 DEGREES |
| SEPARATION (USING SPINOUT) | | |
| US | 5 KPH ( 3 MPH) | 0 KPH ( 0 MPH) |
| VS | -1 KPH ( 0 MPH) | 0 KPH ( 0 MPH) |
| PSISD | 22 DEG/SEC | 0 DEG/SEC |

## DAMAGE DATA

| | VEHICLE #1 | VEHICLE #2 |
|---|---|---|
| SIZE CATEGORY | 4 | 11 |
| STIFFNESS CATEGORY | 4 | 0 |
| VEHICLE WEIGHT | 1931 KGS ( 4258 LBS) | 453600 KGS (1000000 LBS) * |
| CDC | 12FCEN3 | BARRIER |
| PDOF ANGLE | 4 DEGREES | 0 DEGREES * |
| CRUSH LENGTH | 173 CM. ( 68 IN.) | 0 CM. ( 0 IN.) * |
| C1 | 0 CM. ( 0 IN.) | 0 CM. ( 0 IN.) * |
| C2 | 24 CM. ( 10 IN.) | 0 CM. ( 0 IN.) * |
| C3 | 48 CM. ( 19 IN.) | 0 CM. ( 0 IN.) * |
| C4 | 76 CM. ( 30 IN.) | 0 CM. ( 0 IN.) * |
| C5 | 33 CM. ( 13 IN.) | 0 CM. ( 0 IN.) * |
| C6 | 0 CM. ( 0 IN.) | 0 CM. ( 0 IN.) * |
| D | 12 CM. ( 5 IN.) | 0 CM. ( 0 IN.) * |
| D' | 17 CM. ( 7 IN.) | 0 CM. ( 0 IN.) * |

(* INDICATES DEFAULT VALUE)

## SUMMARY OF CRASHPC RESULTS USING DAMAGE

CRASH3 RECONSTRUCTION

| | SPEED CHANGE (DAMAGE) | IMPACT SPEED (DAMAGE AND SPINOUT) |
|---|---|---|
| VEHICLE #1 | | |
| TOTAL | 35 KPH ( 22 MPH) | 40 KPH ( 25 MPH) |
| LONGITUDINAL | -35 KPH ( -21 MPH) | 40 KPH ( 25 MPH) |
| LATITUDINAL | -2 KPH ( -2 MPH) | 0 KPH ( 0 MPH) |
| PDOF ANGLE | 4 DEGREES | |
| ENERGY DISSIPATED = | 90326 JOULES ( 66612 FT-LB) | |
| VEHICLE #2 | | |
| TOTAL | 0 KPH ( 0 MPH) | 0 KPH ( 0 MPH) |
| LONGITUDINAL | 0 KPH ( 0 MPH) | 0 KPH ( 0 MPH) |
| LATITUDINAL | 0 KPH ( 0 MPH) | 0 KPH ( 0 MPH) |
| PDOF ANGLE | 0 DEGREES | |
| ENERGY DISSIPATED = | 0 JOULES ( 0 FT-LB) | |

## SCENE INFORMATION

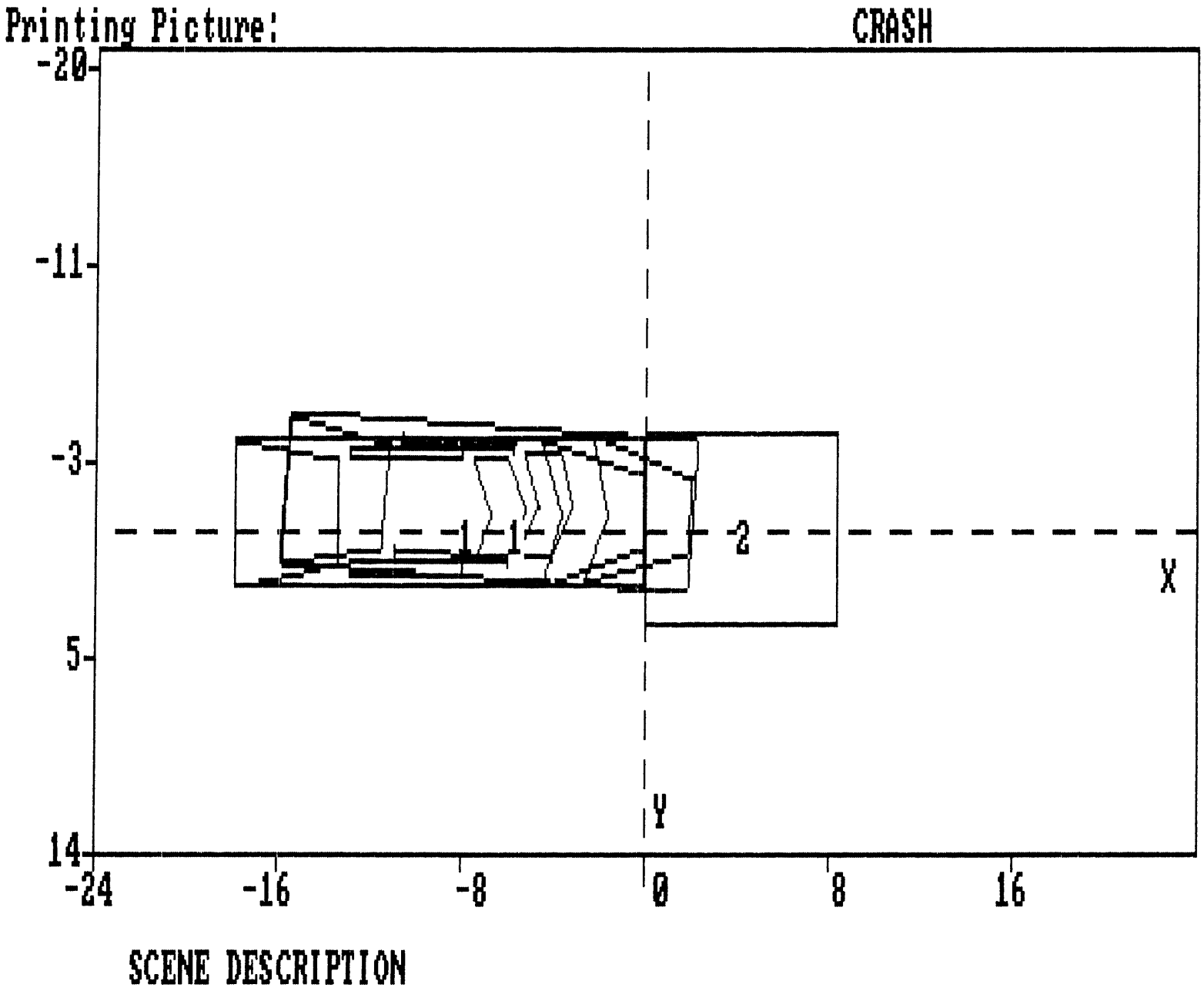
| | VEHICLE #1 | VEHICLE #2 |
|---|---|---|
| IMPACT X-POSITION | -2.5 M. ( -8.3 FT.) | 1.3 M. ( 4.2 FT.) |
| IMPACT Y-POSITION | -.3 M. ( -.9 FT.) | .0 M. ( .0 FT.) |
| IMPACT HEADING ANGLE | 0 DEGREES | 180 DEGREES |
| REST X-POSITION | -1.9 M. ( -6.2 FT.) | 1.3 M. ( 4.2 FT.) |
| REST Y-POSITION | -.4 M. ( -1.2 FT.) | .0 M. ( .0 FT.) |
| REST HEADING ANGLE | 4 DEGREES | 180 DEGREES |
| SIDE-SLIP ANGLE | 0 DEGREES | 0 DEGREES |
| DIRECTION OF ROTATION | CW | NONE |
| AMOUNT OF ROTATION | <360 | <360 |

## DIMENSIONS AND INERTIAL PROPERTIES

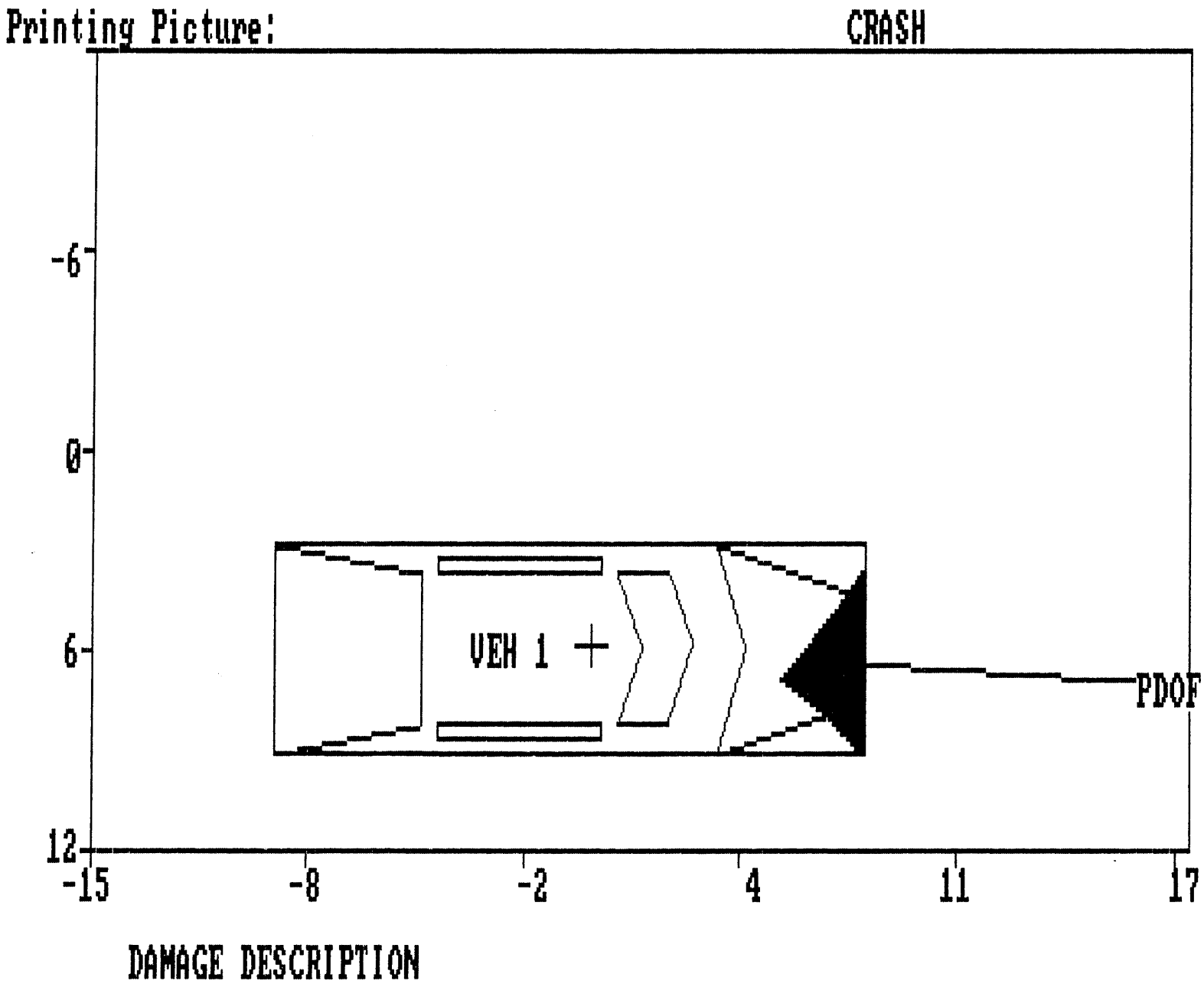
| | VEHICLE #1 | VEHICLE #2 |
|---|---|---|
| CG TO FRONT AXLE | 139 CM. ( 55 IN.) | 127 CM. ( 50 IN.) |
| CG TO REAR AXLE | 150 CM. ( 59 IN.) | 127 CM. ( 50 IN.) |
| TRACK | 157 CM. ( 62 IN.) | 127 CM. ( 50 IN.) |
| CG TO FRONT OF VEH | 251 CM. ( 99 IN.) | 127 CM. ( 50 IN.) |
| CG TO REAR OF VEH | -290 CM. (-114 IN.) | -127 CM. ( -50 IN.) |
| CG TO SIDE OF VEH | 98 CM. ( 39 IN.) | 127 CM. ( 50 IN.) |
| MOMENT OF INERTIA | 18787 KGS ( 41418 LBS) | ****** KGS (******* LBS) |
| VEHICLE MASS | 5 KGS ( 11 LBS) | 1179 KGS ( 2600 LBS) |

| ROLLING RESISTANCE | | |
|---|---|---|
| LEFT FRONT WHEEL | .05 | .00 |
| RIGHT FRONT WHEEL | .05 | .00 |
| LEFT REAR WHEEL | .15 | .00 |
| RIGHT REAR WHEEL | .15 | .00 |

COEFFICIENT OF FRICTION = .75




SCENE DESCRIPTION


Printing Picture:
CRASH
-6
0
6
12
VEH 1
PDOF
-15
-8
-2
4
11
17
DAMAGE DESCRIPTION

**ATTACHMENT D**

**NASS Vehicle Forms**

U.S. Department of Transportation
National Highway Traffic Safety Administration

# GENERAL VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

1. ~~Primary Sampling Unit Number~~ ____
2. Case Number - ~~Stratum~~ 94-35
3. Vehicle Number 01

## VEHICLE IDENTIFICATION

4. Vehicle Model Year 91
   Code the last two digits of the model year
   (99) Unknown

5. Vehicle Make (specify): 20
   CHEVROLET
   Applicable codes are found in your NASS Data Collection, Coding and Editing Manual.
   (99) Unknown

6. Vehicle Model (specify): 002
   CAPRICE
   Applicable codes are found in your NASS Data Collection, Coding and Editing Manual.
   (999) Unknown

7. Body Type 04
   Note: Applicable codes may be found on the back of this page.

8. Vehicle Identification Number

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G | 1 | B | L | 5 | 3 | 7 | 8 | M | R | | | | | | |

   Left justify; Slash zeros and letter Z (0 and Z)
   No VIN—Code all zeros
   Unknown—Code all nines

## OFFICIAL RECORDS

9. Police Reported Vehicle Disposition 1
   (0) Not towed due to vehicle damage
   (1) Towed due to vehicle damage
   (9) Unknown

10. Police Reported Travel Speed 999
    Code to the nearest kph (NOTE: 000 means less than 0.5 kph)
    (160) 159.5 kph and above
    (999) Unknown

    ___ mph X 1.6093 = ___ kph

11. Police Reported Alcohol Presence 0
    (0) No alcohol present
    (1) Yes (alcohol present)
    (7) Not reported
    (8) No driver present
    (9) Unknown

    Note: See variables 37 through 55 (Page 4) for information on Other Drugs

12. Alcohol Test Result For Driver 96
    Code actual value (decimal implied before first digit—0.xx)
    (95) Test refused
    (96) None given
    (97) AC test performed, results unknown
    (98) No driver present
    (99) Unknown

    Source: _____

## ACCIDENT RELATED

13. Speed Limit 040
    (000) No statutory limit
    Code posted or statutory speed limit in kph
    (999) Unknown

    25 mph X 1.6093 = 040 kph

14. Attempted Avoidance Maneuver 01
    (01) No avoidance actions
    (02) Braking (no lockup)
    (03) Braking (lockup)
    (04) Braking (lockup unknown)
    (05) Releasing brakes
    (06) Steering left
    (07) Steering right
    (08) Braking and steering left
    (09) Braking and steering right
    (10) Accelerating
    (11) Accelerating and steering left
    (12) Accelerating and steering right
    (97) No driver present
    (98) Other action (specify):
    _____
    (99) Unknown

15. Accident Type 01
    Applicable codes may be found on the back of page two of this field form
    (00) No impact
    Code the number of the diagram that best describes the accident circumstance
    (98) Other accident type (specify):
    _____
    (99) Unknown

****** SKIP TO VARIABLE GV37 IF GV07 DOES NOT EQUAL 01-49 ******

# CODES FOR BODY TYPE

## CDS APPLICABLE VEHICLES

*Automobiles*

(01) Convertible (excludes sun-roof, t-bar)
(02) 2-door sedan, hardtop, coupe
(03) 3-door/2-door hatchback
(04) 4-door sedan, hardtop
(05) 5-door/4-door hatchback
(06) Station wagon (excluding van and truck based)
(07) Hatchback, number of doors unknown
(08) Other automobile type (specify):

_____

(09) Unknown automobile type

*Automobile Derivatives*

(10) Auto based pickup (includes El Camino, Caballero, Ranchero, Brat, and Rabbit pickup)
(11) Auto based panel (cargo station wagon, auto based ambulance/hearse)
(12) Large limousine - more than four side doors or stretched chassis
(13) Three-wheel automobile or automobile derivative

*Utility Vehicles (≤ 4,500 kgs GVWR)*

(14) Compact utility (Jeep CJ-2 - CJ-7, Scrambler, Golden Eagle, Renegade, Laredo, Wrangler, Cherokee [84 and after], Dispatcher, Raider, Bronco II, Bronco [76 and before], Explorer, S-10 Blazer, Geo Tracker, Bravada, S-15 Jimmy, Thing, Pathfinder, Trooper, Trooper II, Rodeo, Amigo, Navajo, 4-Runner, Montero, Samurai, Sidekick, Rocky)
(15) Large utility (includes Jeep Cherokee [83 and before], Ramcharger, Trailduster, Bronco-fullsize [78 and after], fullsize Blazer, fullsize Jimmy, Landcruiser, Rover, Scout)
(16) Utility station wagon (Chevy Suburban, GMC Suburban, Travelall, Grand Wagoneer, includes suburban limousine)
(19) Utility, unknown body type

*Van Based Light Trucks (≤ 4,500 kgs GVWR)*

(20) Minivan (Chrysler Town and Country, Caravan, Grand Caravan, Voyager, Grand Voyager, Mini-Ram, Dodge/Plymouth Vista, Aerostar, Villager, Lumina APV, Trans Sport, Silhouette, Astro, Safari, Toyota Van, Toyota Minivan, Previa, Nissan Minivan, Quest, Mitsubishi Minivan, Vanagon/Camper.)
(21) Large van (B150-B350, Sportsman, Royal, Maxiwagon, Ram, Tradesman, Voyager [83 and before], E150-E350, Econoline, Clubwagon, Chateau, G10-G30, Chevy Van, Beauville, Sport Van, G15-G35, Rally Van, Vandura.)
(22) Step van or walk-in van (≤ 4,500 kgs GVWR)
(23) Van based motorhome (≤ 4,500 kgs GVWR)
(24) Van based school bus (≤ 4,500 kgs GVWR)
(25) Van based other bus (≤ 4,500 kgs GVWR)
(28) Other van type (Hi-Cube Van, Kary) (specify):

_____

(29) Unknown van type

*Light Conventional Trucks (Pickup style cab, ≤ 4,500 kgs GVWR)*

(30) Compact pickup (D50, Colt P/U, Ram 50, Dakota, Arrow Pickup [foreign], Ranger, Courier, S-10 , T-10, LUV, S-15, T-15, Sonoma, Datsun/Nissan Pickup, P'up, Mazda Pickup, Toyota Pickup, Mitsubishi Pickup)
(31) Large Pickup (Jeep Pickup, Comanche, Ram Pickup, D100-D350, W100-W350, F100-F350, C10-C35, K10-K35, R10-R35, V10-V35, Silverado, Sierra, R100-R500,)
(32) Pickup with slide-in camper
(33) Convertible pickup
(39) Unknown pickup style light conventional truck type

*Other Light Trucks (≤ 4,500 kgs GVWR)*

(40) Cab chassis based (includes rescue vehicles, light stake, dump, and tow truck)
(41) Truck based panel
(42) Light truck based motorhome (chassis mounted)
(45) Other light conventional truck type
(48) Unknown light truck type
(49) Unknown light vehicle type (automobile, utility, van, or light truck)

## OTHER VEHICLES

*Buses (Excludes Van Based)*

(50) School bus (designed to carry students, not cross country or transit)
(58) Other bus type (e.g., transit, intercity, bus based motorhome) (specify):

_____

(59) Unknown bus type

*Medium/Heavy Trucks (> 4,500 kgs GVWR)*

(60) Step van (> 4,500 kgs GVWR)
(61) Single unit straight truck (4,500 kgs < GVWR ≤ 8,850 kgs)
(62) Single unit straight truck (8,850 kgs < GVWR ≤ 12,000 kgs)
(63) Single unit straight truck (> 12,000 kgs GVWR)
(64) Single unit straight truck, GVWR unknown
(65) Medium/heavy truck based motorhome
(67) Truck-tractor with no cargo trailer
(68) Truck-tractor pulling one trailer
(69) Truck-tractor pulling two or more trailers
(70) Truck-tractor (unknown if pulling trailer)
(78) Unknown medium/heavy truck type
(79) Unknown truck type (light/medium/heavy)

*Motored Cycles (Does Not Include All-Terrain Vehicles/Cycles)*

(80) Motorcycle
(81) Moped (motorized bicycle)
(82) Three-wheel motorcycle or moped
(88) Other motored cycle (minibike, motorscooter) (specify):_____
(89) Unknown motored cycle type

*Other Vehicles*

(90) ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
(91) Snowmobile
(92) Farm equipment other than trucks
(93) Construction equipment other than trucks
(97) Other vehicle type
(99) Unknown body type

## OCCUPANT RELATED

16. Driver Presence in Vehicle: 1
(0) Driver not present
(1) Driver present
(9) Unknown

17. Number of Occupants This Vehicle: 01
(00-96) Code actual number of occupants for this vehicle
(97) 97 or more
(99) Unknown

18. Number of Occupant Forms Submitted: 01

## VEHICLE WEIGHT ITEMS

19. Vehicle Curb Weight: 1,770
____Code weight to nearest 10 kilograms.
(045) Less than 450 kilograms
(610) 6,100 kilograms or more
(999) Unknown

3,907 lbs X .4536 = 1,772 kgs

Source: MVMA SPECS

20. Vehicle Cargo Weight: 0,050
____Code weight to nearest 10 kilograms.
(000) Less than 5 kilograms
(450) 4,500 kilograms or more
(999) Unknown

,100 lbs X .4536 = 0,045 kgs

## RECONSTRUCTION DATA

21. Towed Trailing Unit: 0
(0) No towed unit
(1) Yes—towed trailing unit
(9) Unknown

22. Documentation of Trajectory Data for This Vehicle: 0
(0) No
(1) Yes

23. Post Collision Condition of Tree or Pole (For Highest Delta V): 1
(0) Not collision (for highest delta V) with tree or pole
(1) Not damaged
(2) Cracked/sheared
(3) Tilted <45 degrees
(4) Tilted ≥45 degrees
(5) Uprooted tree
(6) Separated pole from base
(7) Pole replaced
(8) Other (specify): _____
(9) Unknown

24. Rollover: 0
(0) No rollover (no overturning)

*Rollover (primarily about the longitudinal axis)*
(1) Rollover, 1 quarter turn only
(2) Rollover, 2 quarter turns
(3) Rollover, 3 quarter turns
(4) Rollover, 4 or more quarter turns (specify): _____

(5) Rollover--end-over-end (i.e., primarily about the lateral axis)
(9) Rollover (overturn), details unknown

## OVERRIDE/UNDERRIDE (THIS VEHICLE)

25. Front Override/Underride (this Vehicle): 0

26. Rear Override/Underride (this Vehicle): 0

(0) No override/underride, or not an end-to-end impact

*Override (see specific CDC)*
(1) 1st CDC
(2) 2nd CDC
(3) Other not automated CDC (specify): _____

*Underride (see specific CDC)*
(4) 1st CDC
(5) 2nd CDC
(6) Other not automated CDC (specify): _____

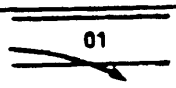
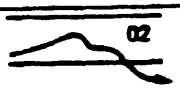
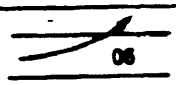
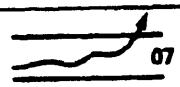
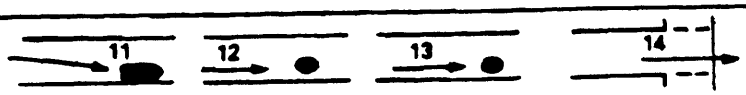
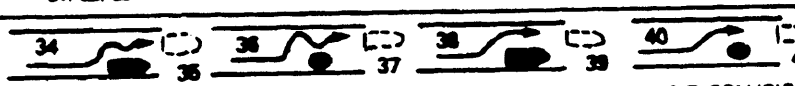
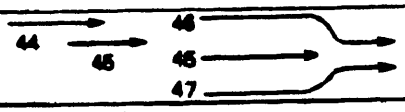
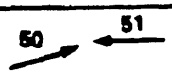
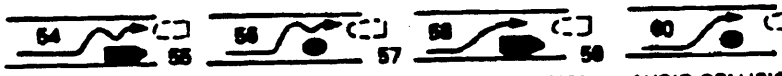
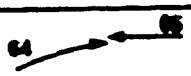
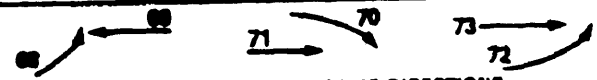
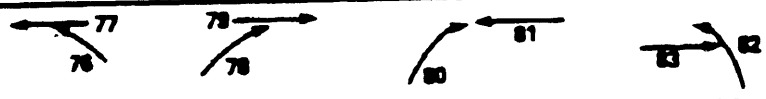
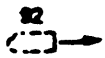
(7) Medium/heavy truck or bus override
(9) Unknown

## HEADING ANGLE AT IMPACT FOR HIGHEST DELTA V

Values: (000)-(359) Code actual value
(997) Noncollision
(998) Impact with object
(999) Unknown

27. Heading Angle For This Vehicle: 998

28. Heading Angle For Other Vehicle: 998

| Category | Configuration | ACCIDENT TYPES (Includes Intent) | | | | |
|---|---|---|---|---|---|---|
| I Single Driver | A Right Roadside Departure |  01 DRIVE OFF ROAD |  02 CONTROL/ TRACTION LOSS |  03 AVOID COLLISION WITH VEH., PED., ANIM. | 04 SPECIFICS OTHER | 05 SPECIFICS UNKNOWN |
| | B Left Roadside Departure |  06 DRIVE OFF ROAD |  07 CONTROL/ TRACTION LOSS |  08 AVOID COLLISION WITH VEH., PED., ANIM. | 09 SPECIFICS OTHER | 10 SPECIFICS UNKNOWN |
| | C Forward Impact |  11 PARKED VEH. 12 STA. OBJECT 13 PEDESTRIAN/ ANIMAL 14 END DEPARTURE | | | 15 SPECIFICS OTHER | 16 SPECIFICS UNKNOWN |
| II Same Trafficway Same Direction | D Rear-End |  20 22 21 23 STOPPED 21, 22, 23 24 26 25 27 SLOWER 25, 26, 27 28 30 29 31 DECEL. 29, 30, 31 | | | (EACH • 32) SPECIFICS OTHER | (EACH • 33) SPECIFICS UNKNOWN |
| | E Forward Impact |  34 35 CONTROL/ TRACTION LOSS 36 37 CONTROL/ TRACTION LOSS 38 39 AVOID COLLISION WITH VEH. 40 41 AVOID COLLISION WITH OBJECT | | | (EACH • 42) SPECIFICS OTHER | (EACH • 43) SPECIFICS UNKNOWN |
| | F Sideswipe Angle |  44 45 46 45 47 | | | (EACH • 48) SPECIFICS OTHER | (EACH • 49) SPECIFICS UNKNOWN |
| III Same Trafficway Opposite Direction | G Head-On |  50 51 LATERAL MOVE | (EACH • 52) SPECIFICS OTHER | (EACH • 53) SPECIFICS UNKNOWN | | |
| | H Forward Impact |  54 55 CONTROL/ TRACTION LOSS 56 57 CONTROL/ TRACTION LOSS 58 59 AVOID COLLISION WITH VEH. 60 61 AVOID COLLISION WITH OBJECT | | | (EACH • 62) SPECIFICS OTHER | (EACH • 63) SPECIFICS UNKNOWN |
| | I Sideswipe Angle |  64 65 LATERAL MOVE | (EACH • 66) SPECIFICS OTHER | (EACH • 67) SPECIFICS UNKNOWN | | |
| IV Change Trafficway Vehicle Turning | J. Turn Across Path |  68 69 INITIAL OPPOSITE DIRECTIONS 71 70 73 72 INITIAL SAME DIRECTIONS | | | (EACH • 74) SPECIFICS OTHER | (EACH • 75) SPECIFICS UNKNOWN |
| | K. Turn Into Path |  77 76 78 79 TURN INTO SAME DIRECTION 81 80 82 83 TURN INTO OPPOSITE DIRECTIONS | | | (EACH • 84) SPECIFICS OTHER | (EACH • 85) SPECIFICS UNKNOWN |
| V Intersecting Paths (Vehicle Damage) | L. Straight Paths |  87 86 88 89 | | (EACH • 90) SPECIFICS OTHER | (EACH • 91) SPECIFICS UNKNOWN | |
| VI Miscellaneous | M. Backing Etc. |  92 BACKING VEH. 93 OTHER VEH. OR OBJECT | | 98 Other Accident Type<br>99 Unknown Accident Type<br>00 No Impact | | |

29. Basis for Total Delta V (highest) 2

*Delta V Calculated*
(1) CRASH program—damage only routine
(2) CRASH program—damage and trajectory routine
(3) Missing vehicle algorithm

*Delta V Not Calculated*
(4) At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable reconstruction program, regardless of collision conditions.
(5) All vehicles within scope (CDC applicable) of CRASH program but one of the collision conditions is beyond the scope of the CRASH program or other acceptable reconstruction technique, regardless of adequacy of damage data.
(6) All vehicle and collision conditions are within scope of one of the acceptable reconstruction programs, but there is insufficient data available.

## COMPUTER GENERATED DELTA V

Highest

30. Total Delta V 035

35 Nearest kph (highest)

_____ Nearest kph (secondary)

(NOTE: 000 means less than 0.5 kph)
(160) 159.5 kph and above
(999) Unknown

31. Longitudinal Component of Delta V +0035

_____ Nearest kph (highest)

_____ Nearest kph (secondary)

(NOTE: __000 means greater than −0.5 kph and less than +0.5 kph)
(±160) ±159.5 kph and above
(__999) Unknown

Highest

32. Lateral Component of Delta V +0002

_____ Nearest kph (highest)

_____ Nearest kph (secondary)

(NOTE: __000 means greater than −0.5 kph and less than +0.5 kph)
(±160) ±159.5 kph and above
(__999) Unknown

33. Energy Absorption 090,300

90326 Nearest 100 joules (highest)

_____ Nearest 100 joules (secondary)

(NOTE: 0000 means less than 50 joules)
(9997) 999,650 joules or more
(9999) Unknown

34. Confidence In Reconstruction Program Results (For Highest Delta V) 1
(0) No reconstruction
(1) Collision fits model — results appear reasonable
(2) Collision fits model — results appear high
(3) Collision fits model — results appear low
(4) Borderline reconstruction — results appear reasonable

35. Type of Vehicle Inspection 1
(0) No inspection
(1) Complete inspection
(2) Partial inspection (specify):
_____

36. Is this an AOPS Vehicle? 1
(0) No
(1) Yes - researcher determined
(2) VIN determined air bag system
(3) VIN determined automatic (passive) belts
(4) VIN determined air bag and automatic (passive) belts

**IS OLDMISS APPLICABLE FOR THIS VEHICLE? [ ] YES [ ] NO**

**IF YES: IS A COMPLETED OLDMISS PROGRAM SUMMARY INCLUDED? [ ] YES [ ] NO**

37. Police Reported Other Drug Presence 0
(0) No other drug(s) present
(1) Yes [other drug(s) present]
(7) Not reported
(8) No driver present
(9) Unknown

38. Police Reported Drug Evaluation Classification (DEC) Test For Driver 0
(0) No DEC process available or given
(1) DEC process given, results known
(2) DEC process given, results unknown
(3) DEC process available, unknown if given
(8) No driver present

39. Other Drug Specimen Test Type For Driver 0
(0) No specimen test given
(1) Blood test
(2) Urine test
(3) Other specimen tests (specify): _____
(7) Unspecified specimen test
(8) No driver present
(9) Unknown if specimen test given

## DRUG EVALUATION CLASSIFICATION
### OTHER DRUGS TEST RESULTS FOR DRIVER

| | DEC Test Results | Specimen Test Results |
|---|---|---|
| Narcotic Drug | 40. 0 | 41. 0 |
| Depressant Drug | 42. 0 | 43. 0 |
| Stimulant Drug | 44. 0 | 45. 0 |
| Hallucinogen Drug | 46. 0 | 47. 0 |
| Cannabinoid Drug | 48. 0 | 49. 0 |
| Phencyclidine (PCP) | 50. 0 | 51. 0 |
| Inhalant Drug | 52. 0 | 53. 0 |
| Other Drug (Excluding Nicotine, Aspirin, Alcohol, Drugs Administered Post-Crash) | 54. 0 | 55. 0 |

Codes For DEC Test Results

(0) No DEC test given
(1) Passed DEC test
(2) Failed DEC test
(3) DEC test given—results unknown
(8) No driver present
(9) Unknown if DEC test given

Codes for Specimen Test Results

(0) No specimen test given
(1) Drug not found in specimen
(2) Drug found in specimen
(7) Specimen test given, results unknown or not obtained
(8) No driver present
(9) Unknown if specimen test given

## OTHER DATA

56. Driver's Zip Code [redacted]

(00000) Driver not present
(00001) Driver not a resident of U.S. or territories
_____ Code actual 5-digit zip code
(99999) Unknown

57. Driver's Race/Ethnic Origin 2
(0) Driver not present
(1) White (non-Hispanic)
(2) Black (non-Hispanic)
(3) White (Hispanic)
(4) Black (Hispanic)
(5) American Indian, Eskimo or Aleut
(6) Asian or Pacific Islander
(8) Other (specify): _____
(9) Unknown

58. Vehicle Special Use (This Trip) 5
(0) No special use
(1) Taxi
(2) Vehicle used as school bus
(3) Vehicle used as other bus
(4) Military
(5) Police
(6) Ambulance
(7) Fire truck or car
(8) Other (specify): _____
(9) Unknown

## ROLLOVER DATA

If GV07 (Body Type) ≠ 1-49, leave GV59-GV63 blank.
If GV24 (Rollover) = 0, then GV59-GV63 must equal 0.
If GV24 = 9, then GV59-GV63 must equal 9.

59. Rollover Initiation Type 0
(0) No rollover
(1) Trip-over
(2) Flip-over
(3) Turn-over
(4) Climb-over
(5) Fall-over
(6) Bounce-over
(7) Collision with another vehicle
(8) Other rollover initiation type specify): _____
(9) Unknown rollover initiation type

60. Location of Rollover Initiation 0
(0) No rollover
(1) On roadway
(2) On shoulder—paved
(3) On shoulder—unpaved
(4) On roadside or divided trafficway median
(9) Unknown

61. Rollover Initiation Object Contacted 00

62. Location on Vehicle Where Initial Principal Tripping Force Is Applied 0
(0) No rollover
(1) Wheels/tires
(2) Side plane
(3) End plane
(4) Undercarriage
(5) Other location on vehicle (specify): _____
(8) Non-contact rollover forces (specify): _____
(9) Unknown

63. Direction of Initial Roll 0
(0) No rollover
(1) Roll right - primarily about the longitudinal axis
(2) Roll left - primarily about the longitudinal axis
(5) End-over-end (i.e., primarily about the lateral axis)
(9) Unknown roll direction

## PRECRASH DATA

64. Pre-Event Movement (Prior to Recognition of Critical Event) 01
(01) Going straight
(02) Slowing or stopping in traffic lane
(03) Starting in traffic lane
(04) Stopped in traffic lane
(05) Passing or overtaking another vehicle
(06) Disabled or parked in travel lane
(07) Leaving a parking position
(08) Entering a parking position
(09) Turning right
(10) Turning left
(11) Making a U-turn
(12) Backing up (other than for parking position)
(13) Negotiating a curve
(14) Changing lanes
(15) Merging
(16) Successful avoidance maneuver to a previous critical event
(97) Other (specify): _____
(98) No driver present
(99) Unknown

# CODES FOR ROLLOVER INITIATION OBJECT CONTACTED

(00) No rollover
(01-30) — Vehicle Number

Noncollision
(31) Turn-over — fall-over
(33) Jackknife

Collision With Fixed Object
(41) Tree (≤ 10 cm in diameter)
(42) Tree (> 10 cm in diameter)
(43) Shrubbery or bush
(44) Embankment

(45) Breakaway pole or post (any diameter)

Nonbreakaway Pole or Post
(50) Pole or post (≤ 10 cm in diameter)
(51) Pole or post (> 10 cm but ≤ 30 cm in diameter)
(52) Pole or post (> 30 cm in diameter)
(53) Pole or post (diameter unknown)

(54) Concrete traffic barrier
(55) Impact attenuator
(56) Other traffic barrier (includes guardrail) (specify):_____

(57) Fence
(58) Wall
(59) Building
(60) Ditch or culvert
(61) Ground
(62) Fire hydrant
(63) Curb
(64) Bridge
(68) Other fixed object (specify):
_____
(69) Unknown fixed object

Collision with Nonfixed Object
(71) Motor vehicle not in-transport
(76) Animal
(77) Train
(78) Trailer, disconnected in transport
(79) Object fell from vehicle in-transport
(88) Other nonfixed object (specify):
_____
(89) Unknown nonfixed object

(98) Other event (specify):
_____
(99) Unknown event or object

## PRECRASH DATA (Continued)

65. Critical Precrash Event 15

*This Vehicle Loss of Control Due To:*
(01) Blow out or flat tire
(02) Stalled engine
(03) Disabling vehicle failure (e.g., wheel fell off) (specify): _____
(04) Non-disabling vehicle problem (e.g., hood flew up) (specify): _____
(05) Poor road conditions (puddle, pot hole, ice, etc.) (specify): _____
(06) Traveling too fast for conditions
(08) Other cause of control loss (specify): _____
(09) Unknown cause of control loss

*This Vehicle Traveling*
(10) Over the lane line on left side of travel lane
(11) Over the lane line on right side of travel lane
(12) Off the edge of the road on the left side
(13) Off the edge of the road on the right side
(14) End departure
(15) Turning left at intersection
(16) Turning right at intersection
(17) Crossing over (passing through) intersection
(19) Unknown travel direction

*Other Motor Vehicle In Lane*
(50) Stopped
(51) Traveling in same direction with lower speed (i.e., lower steady speed or decelerating)
(52) Traveling in same direction with higher speed
(53) Traveling in opposite direction
(54) In crossover
(55) Backing
(59) Unknown travel direction of other motor vehicle in lane

*Other Motor Vehicle Encroaching Into Lane*
(60) From adjacent lane (same direction)—over left lane line
(61) From adjacent lane (same direction)—over right lane line
(62) From opposite direction—over left lane line
(63) From opposite direction—over right lane line
(64) From parking lane
(65) From crossing street, turning into same direction
(66) From crossing street, across path
(67) From crossing street, turning into opposite direction
(68) From crossing street, intended path not known
(70) From driveway, turning into same direction
(71) From driveway, across path
(72) From driveway, turning into opposite direction
(73) From driveway, intended path not known
(74) From entrance to limited access highway
(78) Encroachment by other vehicle—details unknown

*Pedestrian or Pedalcyclist, or Other Nonmotorist*
(80) Pedestrian in roadway
(81) Pedestrian approaching roadway
(82) Pedestrian—unknown location
(83) Pedalcyclist or other nonmotorist in roadway (specify): _____
(84) Pedalcyclist or other nonmotorist approaching roadway (specify): _____
(85) Pedalcyclist or other nonmotorist—unknown location (specify): _____

*Object or Animal*
(87) Animal in roadway
(88) Animal approaching roadway
(89) Animal—unknown location
(90) Object in roadway
(91) Object approaching roadway
(92) Object—unknown location

(98) Other critical precrash event (specify): _____
(99) Unknown

For Corrective Actions Attempted see variable GV14 (Attemped Avoidance Manuever)

66. Precrash Stability After Avoidance Maneuver 0
(0) No avoidance maneuver
(1) Tracking
(2) Skidding longitudinally—rotation less than 30 degrees
(3) Skidding laterally—clockwise rotation
(4) Skidding laterally—counterclockwise rotation
(7) Other vehicle loss-of-control (specify): _____
(8) No driver present
(9) Precrash stability unknown

67. Precrash Directional Consequences of Avoidance Maneuver (Corrective Action) 4
(0) No avoidance maneuver
(1) Vehicle stayed in travel lane where avoidance maneuver was initiated
(2) Vehicle stayed on roadway but left travel lane where avoidance maneuver was initiated
(3) Vehicle stayed on roadway, not known if left travel lane where avoidance maneuver was initiated
(4) Vehicle departed roadway
(5) Avoidance maneuver initiated off roadway
(8) No driver present
(9) Directional consequences unknown

***** IF THE CDS APPLICABLE VEHICLE WAS NOT INSPECTED (I.E., GV35 = 0), *****
**DO NOT COMPLETE THE EXTERIOR AND INTERIOR VEHICLE FORMS.**

***** IF GV07 DOES NOT EQUAL 01-49, DO NOT COMPLETE *****
**THE EXTERIOR VEHICLE, INTERIOR VEHICLE,**
**OCCUPANT ASSESSMENT, AND OCCUPANT INJURY FORMS.**

U.S. Department of Transportation
National Highway Traffic Safety Administration

# EXTERIOR VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

1. ~~Primary Sampling Unit Number~~ ____
2. Case Number - ~~Stratum~~ 94-35
3. Vehicle Number 01

## VEHICLE IDENTIFICATION

VIN 1GIBL5378MR_____ Model Year 91

Vehicle Make (specify): CHEVROLET Vehicle Model (specify): CAPRICE

## LOCATOR

Locate the end of the damage with respect to the vehicle longitudinal center line or bumper corner for end impacts or an undamaged axle for side impacts.

| Specific Impact No. | Location of Direct Damage | Location of Field L |
|---|---|---|
| 1 | BUMPER FACIA BEGAN AT C/L | BUMPER CORNER-TO-BUMPER |
| | EXTENDED 24.1 CM TO RIGHT | CORNER |
| | | |

## CRUSH PROFILE IN CENTIMETERS

NOTES: Identify the plane at which the C-measurements are taken (e.g., at bumper, above bumper, at sill, above sill, etc.) and label adjustments (e.g., free space).

Measure and document on the vehicle diagram the location of maximum crush.

Measure C1 to C6 from driver to passenger side in front or rear impacts and rear to front in side impacts.

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

Use as many lines/columns as necessary to describe each damage profile.

| Specific Impact Number | Plane of Impact C-Measurements | Direct Damage | | Field L | $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | ±D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Width (CDC) | Max Crush | | | | | | | | |
| 1 | BUMPER FACIA | 24.1 | 76.5 | 94.6 | -2.5cm | 24.1 | 48.3 | 76.5 | 33.0 | 2.5 | +12.1 |
| | | | | | | | | | | | |
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# ORIGINAL SPECIFICATIONS WORK SHEET

| | | | | | | |
|---|---|---|---|---|---|---|
| Wheelbase | 115.9 | inches | x 2.54 | = | 294 | cm |
| Overall Length | 214.1 | inches | x 2.54 | = | 544 | cm |
| Maximum Width | 77.0 | inches | x 2.54 | = | 196 | cm |
| Curb Weight | 3,907 | pounds | x .4536 | = | 1,772 | kg |
| Average Track | 61.3 | inches | x 2.54 | = | 156 | cm |
| Front Overhang | ___ | inches | x 2.54 | = | ___ | cm |
| Rear Overhang | ___ | inches | x 2.54 | = | ___ | cm |
| Undeformed End Width | 68.0 | inches | x 2.54 | = | 173 | cm |
| Engine Size: cyl./displ. | ____ | cc | x .001 | = | ___ | L |
| | 350 | CID | x .0164 | = | 5.7 | L |

# VEHICLE DAMAGE SKETCH

## TIRE–WHEEL DAMAGE

a. Rotation physically restricted

RF 2
LF 2
RR 2
LR 2

b. Tire deflated

RF 2
LF 2
RR 2
LR 2

(1) Yes (2) No (8) NA (9) Unk.

## TYPE OF TRANSMISSION

☐ Manual ☒ Automatic

## ORIGINAL SPECIFICATIONS

| | | |
|---|---|---|
| Wheelbase | 294 | cm |
| Overall Length | 544 | cm |
| Maximum Width | 196 | cm |
| Curb Weight | 1772 | kg |
| Average Track | 156 | cm |
| Front Overhang | | cm |
| Rear Overhang | | cm |
| Undeformed End Width | 173 | cm |
| Engine Size: cyl./displ. | 5.7 | L |

## WHEEL STEER ANGLES

(For locked front wheels or displaced rear axles only)

RF ± ___ ___ °
LF ± ___ ___ °
RR ± ___ ___ °
LR ± ___ ___ °

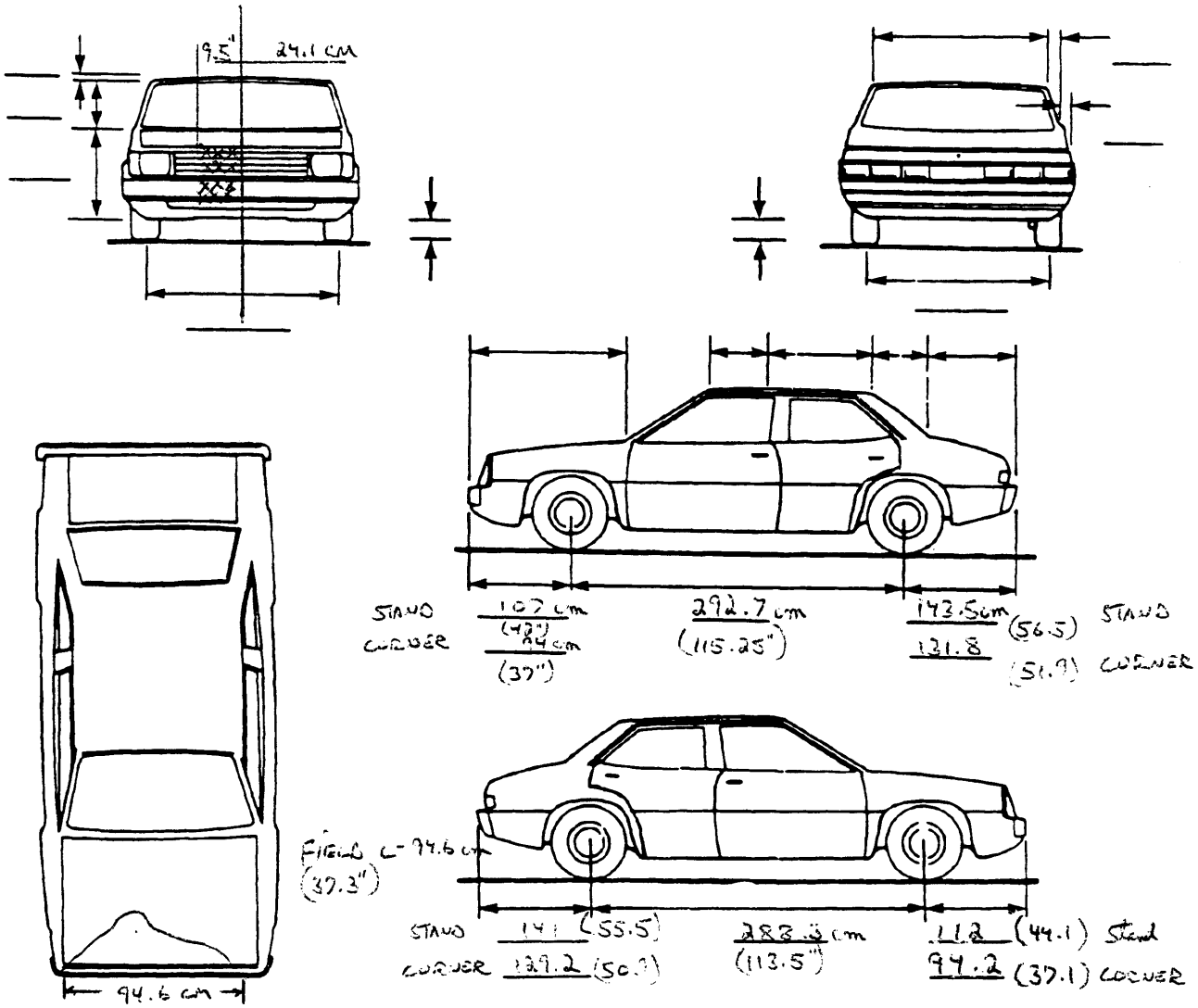
Within ± 5 degrees

## DRIVE WHEELS

☐ FWD ☒ RWD ☐ 4WD

Approximate Cargo Weight 45 kg

DIRECT DAMAGE **MEASUREMENTS IN CENTIMETERS**




NOTES: Sketch new perimeter and cross hatch direct damage and single hatch induced damage on all views. Annotate observations which might be useful in reconstructing the accident (e.g., grass in tire bead, direction of striations, scuff on sidewalls, etc.). If pulling trailer, sketch type of trailer and damage received on the back of this page.

Annotate any damage caused by extrication such as component removal by torching, prying, or hydraulic shears.

## CDC WORKSHEET

CODES FOR OBJECT CONTACTED

(01-30) — Vehicle Number

Noncollision
- (31) Overturn — rollover
- (32) Fire or explosion
- (33) Jackknife
- (34) Other intraunit damage (specify): _____
- (35) Noncollision injury
- (38) Other noncollision (specify): _____
- (39) Noncollision — details unknown

Collision With Fixed Object
- (41) Tree (≤ 10 cm in diameter)
- (42) Tree (> 10 cm in diameter)
- (43) Shrubbery or bush
- (44) Embankment
- (45) Breakaway pole or post (any diameter)

Nonbreakaway Pole or Post
- (50) Pole or post (≤ 10 cm in diameter)
- (51) Pole or post (> 10 cm but ≤ 30 cm in diameter)
- (52) Pole or post (> 30 cm in diameter)
- (53) Pole or post (diameter unknown)
- (54) Concrete traffic barrier
- (55) Impact attenuator
- (56) Other traffic barrier (includes guardrail) (specify): _____
- (57) Fence
- (58) Wall
- (59) Building
- (60) Ditch or culvert
- (61) Ground
- (62) Fire hydrant
- (63) Curb
- (64) Bridge
- (68) Other fixed object (specify): _____
- (69) Unknown fixed object

Collision with Nonfixed Object
- (71) Motor vehicle not in-transport
- (72) Pedestrian
- (73) Cyclist or cycle
- (74) Other nonmotorist or conveyance _____
- (75) Vehicle occupant
- (76) Animal
- (77) Train
- (78) Trailer, disconnected in transport
- (79) Object fell from vehicle in-transport
- (88) Other nonfixed object (specify): _____
- (89) Unknown nonfixed object
- (98) Other event (specify): _____
- (99) Unknown event or object

DEFORMATION CLASSIFICATION BY EVENT NUMBER

| Accident Event Sequence Number | Object Contacted | (1) (2) Direction of Force (degrees) | Incremental Value of Shift | (3) Deformation Location | (4) Specific Longitudinal or Lateral Location | (5) Specific Vertical or Lateral Location | (6) Type of Damage Distribution | (7) Deformation Extent |
|---|---|---|---|---|---|---|---|---|
| 01 | 42 | 000 | 00 | F | C | E | N | 03 |
| | | | | | | | | |
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## COLLISION DEFORMATION CLASSIFICATION

HIGHEST DELTA "V"

| Accident Event Sequence Number | Object Contacted | (1) (2) Direction of Force | (3) Deformation Location | (4) Longitudinal or Lateral Location | (5) Vertical or Lateral Location | (6) Type of Damage Distribution | (7) Deformation Extent |
|---|---|---|---|---|---|---|---|
| 4. 01 | 5. 42 | 6. 12 | 7. F | 8. C | 9. E | 10. N | 11. 03 |

Second Highest Delta "V"

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. |

## CRUSH PROFILE IN CENTIMETERS

The crush profile for the damage described in the CDC(s) above should be documented in the appropriate space below. (ALL MEASUREMENTS ARE IN CENTIMETERS.)

HIGHEST DELTA "V"

| 20. L | 21. $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | 22. ±D |
|---|---|---|---|---|---|---|---|
| 095 | 000 | 024 | 048 | 017 | 033 | 003 | + -012 |

Second Highest Delta "V"

| 23. L | 24. $C_1$ | $C_2$ | $C_3$ | $C_4$ | $C_5$ | $C_6$ | 25. ±D |
|---|---|---|---|---|---|---|---|
| | | | | | | | + - |

26. Are CDCs Documented but Not Coded on The Automated File? 0
(0) No
(1) Yes

27. Researcher's Assessment of Vehicle Disposition 1
(0) Not towed due to vehicle damage
(1) Towed due to vehicle damage
(9) Unknown

28. Original Wheelbase 294
Code to the nearest centimeter
(999) Unknown

115.9 inches X 2.54 = 294 centimeters

29. Is This A Multi-Stage Manufactured Vehicle And/Or A Certified Altered Vehicle? 0
(0) No post manufacturer modifications
(1) Yes - post manufacturer modifications (specify): _____
_____
_____
(Include photograph of CERTIFICATION PLACARD in case report)
(9) Unknown if vehicle is modified

30. Fire Occurrence 0
(0) No fire

Yes, fire occurred
(1) Minor
(2) Major
(9) Unknown

31. Origin of Fire 0
(0) No fire
(1) Vehicle exterior (front, side, back, top)
(2) Exhaust system
(3) Fuel tank (and other fuel retention system parts)
(4) Engine compartment
(5) Cargo/trunk compartment
(6) Instrument panel
(7) Passenger compartment area
(8) Other location (specify):
_____
(9) Unknown

32. Type of Fuel Tank-1 2

33. Type of Fuel Tank-2 0
(0) No fuel tank (electrical vehicle)
(1) Metallic
(2) Non-metallic
(9) Unknown

34. Fuel Tank-1 Location 1

35. Fuel Tank-2 Location 0
(0) No fuel tank
(1) Aft of center of the rear wheels (rear axle) centered
(2) Aft of center of the rear wheels (rear axle) left side
(3) Aft of center of the rear wheels (rear axle) right side
(4) Forward of center of the rear wheels (rear axle) centered
(5) Forward of center of the rear wheels (rear axle) left side
(6) Forward of center of the rear wheels (rear axle) right side
(7) Over center of the rear wheels (rear axle)
(8) Other (specify):
_____
(9) Unknown

36. Fuel Tank-1 Filler Cap Location 1

37. Fuel Tank-2 Filler Cap Location 0
(0) No fuel tank
(1) On back plane
(2) Aft of center of the rear wheels (rear axle) on left side plane
(3) Aft of center of the rear wheels (rear axle) on right side plane
(4) Forward of center of the rear wheels (rear axle) on left side plane
(5) Forward of center of the rear wheels (rear axle) on right side plane
(6) Over the center of the rear wheels (rear axle) on left side plane
(7) Over the center of the rear wheels (rear axle) on right side plane
(8) Other (specify):_____
(9) Unknown

38. Fuel Tank-1 Damage 1

39. Fuel Tank-2 Damage 0
(0) No fuel tank
(1) No damage to fuel tank
(2) Deformed, no seam failure
(3) Deformed, with a seam failure
(4) Punctured
(5) Lacerated (ripped)
(6) Abraded (scraped)
(7) Filler neck separation from the fuel tank
(8) Other damage (specify):
_____
(9) Unknown

40. Location of Fuel System-1 Leakage 1

41. Location of Fuel System-2 Leakage 0
(0) No fuel tank
(1) No fuel leakage

*Primary Area Of Leakage*
(2) Tank
(3) Filler neck
(4) Cap
(5) Lines/pump/filter
(6) Vent/emission recovery
(8) Other (specify): _____
(9) Unknown

42. Fuel Type-1 01

43. Fuel Type-2 00

*Single Fuel Type*
(00) No fuel tank
(01) Gasoline
(02) Diesel
(03) CNG (Compressed Natural Gas)
(04) LPG (Liquid Petroleum Gas) also known as Propane
(05) LNG (Liquid Natural Gas)
(06) Methanol (M100 or M85)
(07) Ethanol (E100 or E85)
(08) Other (Hydrogen or others) (specify): _____

*Electric Powered or Electric/Solar Powered Vehicles*
(10) Lead Acid Battery
(11) Nickel-Iron Battery
(12) Nickel-Cadmium Battery
(13) Sodium Metal Chloride Battery
(14) Sodium Sulfur Battery
(18) Other (Specify): _____

(98) Other Hybrid (specify): _____

(99) Unknown fuel type

44. Is This Vehicle Equipped With More Than Two Fuel Tanks? 0
(0) No (one or two tanks only)

*Yes - More Than Two Tanks*
(1) Yes -- no damage to any tank or filler cap and no fuel system leakage
(2) Yes -- no damage to any tank or filler cap but there is fuel system leakage (specify leakage location): _____
(3) Yes -- damage to an additional tank or filler cap and there is fuel system leakage (specify the following):
Type of tank _____
Tank location _____
Filler cap location _____
Tank damage _____
Location of leakage _____
Type of fuel _____
(9) Unknown if more than two tanks

**COMMENTS**

*** STOP: IF THE CDS APPLICABLE VEHICLE WAS NOT TOWED AND WAS NOT AN AOPS *** (I.E., GV09=0 OR 9 AND GV36=0), DO NOT COMPLETE THE INTERIOR VEHICLE FORM.

U.S. Department of Transportation
National Highway Traffic Safety Administration

# INTERIOR VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

1. ~~Primary Sampling Unit Number~~ ____
2. Case Number - ~~Stratum~~ 94-35
3. Vehicle Number 01

## INTEGRITY

4. Passenger Compartment Integrity 00
(00) No integrity loss

Yes, Integrity Was Lost Through
(01) Windshield
(02) Door (side)
(03) Door/hatch (back door)
(04) Roof
(05) Roof glass
(06) Side window
(07) Rear window (backlight)
(08) Roof and roof glass
(09) Windshield and door (side)
(10) Windshield and roof
(11) Side and rear window (side window and backlight)
(12) Windshield and side window
(13) Door and side window
(98) Other combination of above (specify): _____
(99) Unknown

### Door, Tailgate or Hatch Opening

5. LF 1 6. RF 1 7. LR 1 8. RR 1 9. TG/H 0

(0) No door/gate/hatch
(1) Door/gate/hatch remained closed and operational
(2) Door/gate/hatch came open during collision
(3) Door/gate/hatch jammed shut
(8) Other (specify): _____
(9) Unknown

### Damage/Failure Associated with Door, Tailgate or Hatch Opening in Collision. If IV05-IV09 ≠ 2, Then code Ø

10. LF 0 11. RF 0 12. LR 0 13. RR 0 14. TG/H 0

(0) No door/gate/hatch or door not opened

Door, Tailgate or Hatch Came Open During Collision
(1) Door operational (no damage)
(2) Latch/striker failure due to damage
(3) Hinge failure due to damage
(4) Door structure failure due to damage
(5) Door support (i.e., pillar, sill, roof side rail, etc.) failure due to damage
(6) Latch/striker and hinge failure due to damage
(8) Other failure (specify): _____
(9) Unknown

## GLAZING

### Glazing Damage from Impact Forces

15. WS 2 16. LF 0 17. RF 0 18. LR 0 19. RR 0
20. BL 0 21. Roof 8 22. Other 8

(0) No glazing damage from impact forces
(2) Glazing in place and cracked from impact forces
(3) Glazing in place and holed from impact forces
(4) Glazing out-of-place (cracked or not) and not holed from impact forces
(5) Glazing out-of-place and holed from impact forces
(6) Glazing disintegrated from impact forces
(7) Glazing removed prior to accident
(8) No glazing
(9) Unknown if damaged

### Glazing Damage from Occupant Contact

23. WS 0 24. LF 0 25. RF 0 26. LR 0 27. RR 0
28. BL 0 29. Roof 0 30. Other 0

(0) No occupant contact to glazing or no glazing
(1) Glazing contacted by occupant but no glazing damage
(2) Glazing in place and cracked by occupant contact
(3) Glazing in place and holed by occupant contact
(4) Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact
(5) Glazing out-of-place by occupant contact and holed by occupant contact
(6) Glazing disintegrated by occupant contact
(9) Unknown if contacted by occupant

**If No Glazing Damage *And* No Occupant Contact or No Glazing, Then Code IV31 Through IV46 As Ø**

### Type of Window/Windshield Glazing

31. WS 1 32. LF 2 33. RF 2 34. LR 2 35. RR 2
36. BL 2 37. Roof 0 38. Other 0

(0) No glazing contact and no damage, or no glazing
(1) AS-1 — Laminated
(2) AS-2 — Tempered
(3) AS-3 — Tempered-tinted
(4) AS-14 — Glass/Plastic
(8) Other (specify): _____
(9) Unknown

### Window Precrash Glazing Status

39. WS 1 40. LF 2 41. RF 2 42. LR 2 43. RR 2
44. BL 1 45. Roof 0 46. Other 0

(0) No glazing contact and no damage, or no glazing
(1) Fixed
(2) Closed
(3) Partially opened
(4) Fully opened
(9) Unknown

# OCCUPANT AREA INTRUSION

Note: If no intrusions, leave variables IV47-IV86 blank.

| | Location of Intrusion | Intruding Component | Magnitude of Intrusion | Dominant Crush Direction |
|---|---|---|---|---|
| 1st | 47.___ ___ | 48.___ ___ | 49.___ | 50.___ |
| 2nd | 51.___ ___ | 52.___ ___ | 53.___ | 54.___ |
| 3rd | 55.___ ___ | 56.___ ___ | 57.___ | 58.___ |
| 4th | 59.___ ___ | 60.___ ___ | 61.___ | 62.___ |
| 5th | 63.___ ___ | 64.___ ___ | 65.___ | 66.___ |
| 6th | 67.___ ___ | 68.___ ___ | 69.___ | 70.___ |
| 7th | 71.___ ___ | 72.___ ___ | 73.___ | 74.___ |
| 8th | 75.___ ___ | 76.___ ___ | 77.___ | 78.___ |
| 9th | 79.___ ___ | 80.___ ___ | 81.___ | 82.___ |
| 10th | 83.___ ___ | 84.___ ___ | 85.___ | 86.___ |

## LOCATION OF INTRUSION

Front Seat
- (11) Left
- (12) Middle
- (13) Right

Second Seat
- (21) Left
- (22) Middle
- (23) Right

Third Seat
- (31) Left
- (32) Middle
- (33) Right

Fourth Seat
- (41) Left
- (42) Middle
- (43) Right

- (97) Catastrophic
- (98) Other enclosed area (specify) _____
- (99) Unknown

## INTRUDING COMPONENT

*Interior Components*
- (01) Steering assembly
- (02) Instrument panel left
- (03) Instrument panel center
- (04) Instrument panel right
- (05) Toe pan
- (06) A (A1/A2)-pillar
- (07) B-pillar
- (08) C-pillar
- (09) D-pillar
- (10) Door panel (side)
- (12) Roof (or convertible top)
- (13) Roof side rail
- (14) Windshield
- (15) Windshield header
- (16) Window frame
- (17) Floor pan (includes sill)
- (18) Backlight header
- (19) Front seat back
- (20) Second seat back
- (21) Third seat back
- (22) Fourth seat back
- (23) Fifth seat back
- (24) Seat cushion
- (25) Back door/panel (e.g., tailgate)
- (26) Other interior component (specify): _____
- (27) Side panel - forward of the A (A2)-pillar
- (28) Side panel - rear of the A (A2)-pillar

NO INTRUSION

*Exterior Components*
- (30) Hood
- (31) Outside surface of this vehicle (specify): _____
- (32) Other exterior object in the environment (specify): _____
- (33) Unknown exterior object
- (97) Catastrophic
- (98) Intrusion of unlisted component(s) (specify): _____
- (99) Unknown

## MAGNITUDE OF INTRUSION

- (1) ≥ 3 centimeters but < 8 centimeters
- (2) ≥ 8 centimeters but < 15 centimeters
- (3) ≥ 15 centimeters but < 30 centimeters
- (4) ≥ 30 centimeters but < 46 centimeters
- (5) ≥ 46 centimeters but < 61 centimeters
- (6) ≥ 61 centimeters
- (7) Catastrophic
- (9) Unknown

## DOMINANT CRUSH DIRECTION

- (1) Vertical
- (2) Longitudinal
- (3) Lateral
- (7) Catastrophic
- (9) Unknown

## STEERING RIM/SPOKE DEFORMATION

**(All Measurements Are in Centimeters)**

| COMPARISON VALUE | — | DAMAGE VALUE | = | DEFORMATION |
|---|---|---|---|---|
| | — | | = | |
| | — | | = | |
| | — | | = | |
| | — | | = | |

## STEERING COLUMN

87. Steering Column Type 2
(1) Fixed column
(2) Tilt column
(3) Telescoping column
(4) Tilt and telescoping column
(8) Other column type (specify): _____
(9) Unknown

88. Blank X X
(This variable is left blank so that numbering consistency can be maintained with the 1988-94 CDS.

89. Blank X X X
(This variable is left blank so that numbering consistency can be maintained with the 1988-94 CDS.

90. Blank X X X
(This variable is left blank so that numbering consistency can be maintained with the 1988-94 CDS.

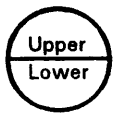
91. Blank X X X
(This variable is left blank so that numbering consistency can be maintained with the 1988-94 CDS.

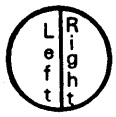
92. Steering Rim/Spoke Deformation 03
_____Code actual measured deformation to the nearest centimeter
(00) No steering rim deformation
(01-14) Actual measured value in centimeters
(15) 15 centimeters or more
(98) Observed deformation cannot be measured
(99) Unknown

93. Location of Steering Rim/Spoke Deformation 05
(00) No steering rim deformation

*Quarter Sections*
(01) Section A
(02) Section B
(03) Section C
(04) Section D


*Half Sections*
(05) Upper half of rim/spoke
(06) Lower half of rim/spoke
(07) Left half of rim/spoke
(08) Right half of rim/spoke




(09) Complete steering wheel collapse
(10) Undetermined location
(99) Unknown

## INSTRUMENT PANEL

94. Odometer Reading ___ ___ ___,000
_____kilometers—Code to the nearest 1,000 kilometers
(000) No odometer
(001) Less than 1,500 kilometers
(500) 499,500 kilometers or more
(999) Unknown

128,381 miles X 1.6093 = 206,603 kilometers

Source: _____

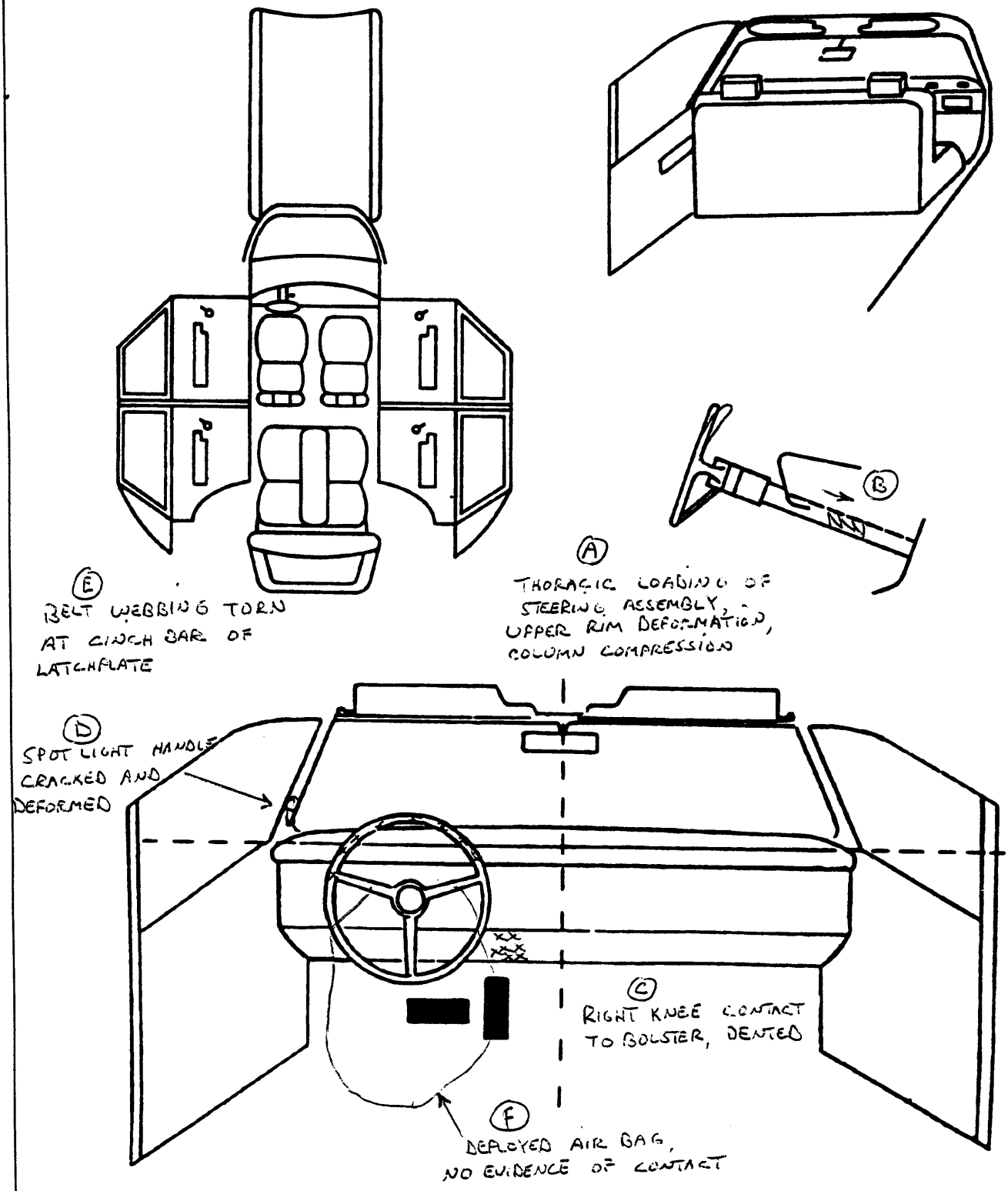
95. Instrument Panel Damage from Occupant Contact? 0
(0) No
(1) Yes
(9) Unknown

96. Knee Bolsters Deformed from Occupant Contact? 1
(0) No
(1) Yes
(8) Not present
(9) Unknown

97. Did Glove Compartment Door Open During Collision(s)? 0
(0) No
(1) Yes
(8) Not present
(9) Unknown

## VEHICLE INTERIOR SKETCHES

Note area of ejection/entrapment




Sketch windshield contact(s) and the damaged area(s) on the instrument panel outline (e.g., radio, glove compartment, damage to instrument panel structure.
Cross hatch contact points, draw spider webs or use other annotation as may be appropriate.
Annotate the contacted area with a letter (begin with A) and list on the Points of Occupant Contact page.

## POINTS OF OCCUPANT CONTACT

| Contact | Interior Component Contacted | Occupant No. If Known | Body Region If Known | Supporting Physical Evidence | Confidence Level of Contact Point |
|---|---|---|---|---|---|
| A | 04 | 1 | TORSO | 1" OF UPPER RIM DEFLECTION | 1 |
| B | 07 | 1 | TORSO | 2" OF SMEAR CAPSULE COMPRESSION | 1 |
| C | 13 | 1 | KNEES | DENTED .125" | 1 |
| D | 22 | 1 | (L) HAND | CRACKED/DEFORMED | 1 |
| E | 41 | 1 | TORSO | TORN WEBBING | 1 |
| F | 45 | 1 | TORSO | TRAJECTORY | 1 |
| G | | | | | |
| H | | | | | |
| I | | | | | |
| J | | | | | |
| K | | | | | |
| L | | | | | |
| M | | | | | |
| N | | | | | |

### CODES FOR INTERIOR COMPONENTS

FRONT
- (01) Windshield
- (02) Mirror
- (03) Sunvisor
- (04) Steering wheel rim
- (05) Steering wheel hub/spoke
- (06) Steering wheel (combination of codes 04 and 05)
- (07) Steering column, transmission selector lever, other attachment
- (08) Add on equipment (e.g., CB, tape deck, air conditioner)
- (09) Left instrument panel and below
- (10) Center instrument panel and below
- (11) Right instrument panel and below
- (12) Glove compartment door
- (13) Knee bolster
- (14) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or mirror (passenger side only)
- (16) Driver side air bag compartment cover
- (17) Passenger side air bag compartment cover
- (18) Windshield reinforced by exterior object (specify):_____
- (19) Other front object (specify):

LEFT SIDE
- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A (A1/A2)-pillar
- (23) Left B-pillar
- (24) Other left pillar (specify):
- (25) Left side window glass or frame
- (26) Left side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
- (27) Other left side object (specify):
- (28) Left side window sill

RIGHT SIDE
- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A (A1/A2)-pillar
- (33) Right B-pillar
- (34) Other right pillar (specify):
- (35) Right side window glass or frame
- (36) Right side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B pillar, or roof side rail.
- (37) Other right side object (specify):
- (38) Right side window sill

INTERIOR
- (40) Seat, back support
- (41) Belt restraint webbing/buckle
- (42) Belt restraint B-pillar attachment point
- (43) Other restraint system component (specify):_____
- (44) Head restraint system
- (45) Air bag (use codes "16" and "17" for injuries sustained from air bag compartment covers)
- (46) Other occupants (specify):
- (47) Interior loose objects
- (48) Child safety seat (specify):
- (49) Other interior object (specify):

ROOF
- (50) Front header
- (51) Rear header
- (52) Roof left side rail
- (53) Roof right side rail
- (54) Roof or convertible top

FLOOR
- (56) Floor (including toe pan)
- (57) Floor or console mounted transmission lever, including console
- (58) Parking brake handle
- (59) Foot controls including parking brake

REAR
- (60) Backlight (rear window)
- (61) Backlight storage rack, door, etc.
- (62) Other rear object (specify):

CONFIDENCE LEVEL OF CONTACT POINT
- (1) Certain
- (2) Probable
- (3) Possible
- (9) Unknown

# AUTOMATIC RESTRAINTS

NOTES: Encode the data for each applicable front seat position. The attribute for the variables may be found below. Restraint systems should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

## AIR BAGS

| | | Left | Right |
|---|---|---|---|
| FIRST | Availability/Function | 1 | 0 |
| | Deployment | 1 | 0 |
| | Failure | 1 | 0 |

**Air Bag System Availability/Function**
(0) Not equipped/not available
(1) Air bag

*Non-functional*
(2) Air bag disconnected (specify): _____
(3) Air bag not reinstalled
(9) Unknown

**Air Bag System Deployment**
(0) Not equipped/not available
(1) Air bag deployed during accident (as a result of impact)
(2) Air bag deployed inadvertently just prior to accident
(3) Air bag deployed, accident sequence undetermined
(4) Nondeployed
(5) Unknown if deployed
(6) Air bag deployed as a result of a noncollision event during accident sequence (e.g., fire, explosion, electrical)
(9) Unknown

**Are There Indications of Air Bag System Failure?**
(0) Not equipped/not available
(1) No
(2) Yes (specify): _____
(9) Unknown

## AUTOMATIC BELTS

| | | Left | Right |
|---|---|---|---|
| FIRST | Availability/Function | 0 | 0 |
| | Use | 0 | 0 |
| | Type | 0 | 0 |
| | Proper Use | 0 | 0 |
| | Failure Modes | 0 | 0 |

**Automatic (Passive) Belt System Availability/Function**
(0) Not equipped/not available
(1) 2 point automatic belts
(2) 3 point automatic belts
(3) Automatic belts - type unknown

*Non-functional*
(4) Automatic belts destroyed or rendered inoperative
(9) Unknown

**Automatic (Passive) Belt System Use**
(0) Not equipped/not available/destroyed or rendered inoperative
(1) Automatic belt in use
(2) Automatic belt not in use (manually disconnected, motorized track inoperative)
(3) Automatic belt use unknown
(9) Unknown

**Automatic (Passive) Belt System Type**
(0) Not equipped/not available
(1) Non-motorized system
(2) Motorized system
(9) Unknown

**Proper Use of Automatic (Passive) Belt System**
(0) Not equipped/not available/not used
(1) Automatic belt used properly
(2) Automatic belt used properly with child safety seat

*Automatic Belt Used Improperly*
(3) Automatic shoulder belt worn under arm
(4) Automatic shoulder belt worn behind back
(5) Automatic belt worn around more than one person
(6) Lap portion of automatic belt worn on abdomen
(7) Automatic lap and shoulder belt or automatic shoulder belt used improperly with child safety seat (specify): _____
(8) Other improper use of automatic belt system (specify): _____
(9) Unknown

**Automatic (Passive) Belt Failure Modes During Accident**
(0) Not equipped/not available/not in use
(1) No automatic belt failure(s)
(2) Torn webbing (stretched webbing not included)
(3) Broken buckle or latchplate
(4) Upper anchorage separated
(5) Other anchorage separated (specify): _____
(6) Broken retractor
(7) Combination of above (specify):
(8) Other automatic belt failure (specify): _____
(9) Unknown

## MANUAL RESTRAINTS

NOTES: Encode the applicable data **for each seat position** in the vehicle. The attribute for the variable may be found below. Restraint systems should be assessed during the vehicle inspection then coded on the Ocupant Assessment Form.

If a Child safety seat is present, encode the data on the back of this page.

If the vehicle has automatic restraints available, encode the appropriate data on the back of the previous page.

| | | Left | Center | Right |
|---|---|---|---|---|
| FIRST | Availability | 4 | 3 | 4 |
| | Evidence of usage | 4 | - | - |
| | Used in this crash? | 04 | - | - |
| | Proper Use | 1 | - | - |
| | Failure Modes | 2 | - | - |
| SECOND | Availability | 4 | 2 | 4 |
| | Evidence of usage | - | - | - |
| | Used in this crash? | - | - | - |
| | Proper Use | - | - | - |
| | Failure Modes | - | - | - |
| OTHER | Availability | | | |
| | Evidence of usage | | | |
| | Used in this crash? | | | |
| | Proper Use | | | |
| | Failure Modes | | | |

**Manual (Active) Belt System Availability**
(0) None available
(1) Belt removed/destroyed
(2) Shoulder belt
(3) Lap belt
(4) Lap and shoulder belt
(5) Belt available - type unknown

*Integral Belt Partially Destroyed*
(6) Shoulder belt (lap belt destroyed/removed)
(7) Lap belt (shoulder belt destroyed/removed)

(8) Other belt (specify): _____

(9) Unknown

**Manual (Active) Belt System Use**
(00) None used, not available, or belt removed/destroyed
(01) Inoperable (specify): _____
(02) Shoulder belt
(03) Lap belt
(04) Lap and shoulder belt
(05) Belt used - type unknown
(08) Other belt used (specify): _____
(12) Shoulder belt used with child safety seat
(13) Lap belt used with child safety seat
(14) Lap and shoulder belt used with child safety seat
(15) Belt used with child safety seat - type unknown
(18) Other belt used with child safety seat (specify): _____
(99) Unknown if belt used

**Proper Use of Manual (Active) Belts**
(0) None used or not available
(1) Belt used properly
(2) Belt used properly with child safety seat

*Belt Used Improperly*
(3) Shoulder belt worn under arm
(4) Shoulder belt worn behind back or seat
(5) Belt worn around more than one person
(6) Lap belt worn on abdomen
(7) Lap belt or lap and shoulder belt used improperly with child safety seat (specify): _____
(8) Other improper use of manual belt system (specify): _____
(9) Unknown

**Manual (Active) Belt Failure Modes During Accident**
(0) No manual belt used or not available
(1) No manual belt failure(s)
(2) Torn webbing (stretched webbing not included)
(3) Broken buckle or latchplate
(4) Upper anchorage separated
(5) Other anchorage separated (specify): _____
(6) Broken retractor
(7) Combination of above (specify): _____
(8) Other manual belt failure (specify): _____
(9) Unknown

## CHILD SAFETY SEAT FIELD ASSESSMENT

**When a child safety seat is present enter the occupant's number in the first row and complete the column below the occupant's number using the codes listed below. Complete a column for each child safety seat present.**

| Occupant Number | | | | | | |
|---|---|---|---|---|---|---|
| 1. Type of Child Safety Seat | | | | | | |
| 2. Child Safety Seat Orientation | | | | | | |
| 3. Child Safety Seat Harness Usage | | | | | | |
| 4. Child Safety Seat Shield Usage | | | | | | |
| 5. Child Safety Seat Tether Usage | | | | | | |
| 6. Child Safety Seat Make/Model | Specify Below for Each Child Safety Seat | | | | | |

1. Type of Child Safety Seat

   (0) No child safety seat
   (1) Infant seat
   (2) Toddler seat
   (3) Convertible seat
   (4) Booster seat
   (7) Other type child safety seat (specify):

   _____

   (8) Unknown child safety seat type
   (9) Unknown if child safety seat used

2. Child Safety Seat Orientation

   (00) No child safety seat

   Designed for Rear Facing for This Age/Weight
   (01) Rear facing
   (02) Forward facing
   (08) Other orientation (specify):

   _____

   (09) Unknown orientation

   Designed for Forward Facing for This Age/Weight
   (11) Rear facing
   (12) Forward facing
   (18) Other orientation (specify):

   _____

   (19) Unknown orientation

   Unknown Design or Orientation For This Age/Weight, or Unknown Age/Weight
   (21) Rear facing
   (22) Forward facing
   (28) Other orientation (specify):

   _____

   (29) Unknown orientation

   (99) Unknown if child safety seat used

3. Child Safety Seat Harness Usage

4. Child Safety Seat Shield Usage

5. Child Safety Seat Tether Usage
   Note: Options Below Are Used for Variables 3-5.

   (00) No child safety seat

   Not Designed with Harness/Shield/Tether
   (01) After market harness/shield/tether added, not used
   (02) After market harness/shield/tether used
   (03) Child safety seat used, but no after market harness/shield/tether added
   (09) Unknown if harness/shield/tether added or used

   Designed With Harness/Shield/Tether
   (11) Harness/shield/tether not used
   (12) Harness/shield/tether used
   (19) Unknown if harness/shield/tether used

   Unknown If Designed With Harness/Shield/Tether
   (21) Harness/shield/tether not used
   (22) Harness/shield/tether used
   (29) Unknown if harness/shield/tether used

   (99) Unknown if child safety seat used

6. Child Safety Seat Make/Model
   (Specify make/model and occupant number)

   _____

   _____

   _____

   _____

## HEAD RESTRAINTS/SEAT EVALUATION

NOTES: Encode the applicable data for **each seat position** in the vehicle. The attribute for these variables may be found at the bottom of the page. Head restraint type/damage and seat type/performance should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

| | | Left | Center | Right |
|---|---|---|---|---|
| FIRST | Head Restraint Type/Damage | 3 | 0 | 3 |
| | Seat Type | 06 | 06 | 06 |
| | Seat Performance | 1 | 1 | 1 |
| | Seat Orientation | 1 | 1 | 1 |
| SECOND | Head Restraint Type/Damage | 0 | 0 | 0 |
| | Seat Type | 03 | 03 | 03 |
| | Seat Performance | 1 | 1 | 1 |
| | Seat Orientation | 1 | 1 | 1 |
| THIRD | Head Restraint Type/Damage | | | |
| | Seat Type | | | |
| | Seat Performance | | | |
| | Seat Orientation | | | |
| OTHER | Head Restraint Type/Damage | | | |
| | Seat Type | | | |
| | Seat Performance | | | |
| | Seat Orientation | | | |

**Head Restraint Type/Damage by Occupant at This Occupant Position**

(0) No head restraints
(1) Integral — no damage
(2) Integral — damaged during accident
(3) Adjustable — no damage
(4) Adjustable — damaged during accident
(5) Add-on — no damage
(6) Add-on — damaged during accident
(8) Other Specify): _____
(9) Unknown

**Seat Type (this Occupant Position)**

(00) Occupant not seated or no seat
(01) Bucket
(02) Bucket with folding back
(03) Bench
(04) Bench with separate back cushions
(05) Bench with folding back(s)
(06) Split bench with separate back cushions
(07) Split bench with folding back(s)
(08) Pedestal (i.e., column supported)
(09) Other seat type (specify): _____
(10) Box mounted seat (i.e., van type)
(99) Unknown

**Seat Performance (this Occupant Position)**

(0) Occupant not seated or no seat
(1) No seat performance failure(s)
(2) Seat adjusters failed
(3) Seat back folding locks or "seat back" failed specify: _____
(4) Seat tracks/anchors failed
(5) Deformed by impact of occupant
(6) Deformed by passenger compartment intrusion (specify): _____
(7) Combination of above (specify): _____
(8) Other (specify): _____
(9) Unknown

**Seat Orientation (this Occupant Position)**

(0) Occupant not seated or no seat
(1) Forward facing seat
(2) Rear facing seat
(3) Side facing seat (inward)
(4) Side facing seat (outward)
(8) Other (specify): _____
(9) Unknown

**DESCRIBE ANY INDICATION OF ABNORMAL OCCUPANT POSTURE (I.E., UNUSUAL OCCUPANT CONTACT PATTERN)**

## EJECTION/ENTRAPMENT DATA

Complete the following if the researcher has any indication that an occupant was either ejected from or entrapped in the vehicle. Code the appropriate data on the Occupant Assessment Form.

**EJECTION** No [✓] Yes [ ]

Describe indications of ejection and body parts involved in partial ejection(s):

| | | | | | | |
|---|---|---|---|---|---|---|
| Occupant Number | | | | | | |
| Ejection | | | | | | |
| (Note on Vehicle Interior Sketch) Ejection Area | | | | | | |
| Ejection Medium | | | | | | |
| Medium Status | | | | | | |

**Ejection**
(1) Complete ejection
(2) Partial ejection
(3) Ejection, Unknown degree
(9) Unknown

**Ejection Area**
(1) Windshield
(2) Left front
(3) Right front
(4) Left rear
(5) Right rear
(6) Rear
(7) Roof
(8) Other area (e.g., back of pickup, etc.) (specify): _____
(9) Unknown

**Ejection Medium**
(1) Door/hatch/tailgate
(2) Nonfixed roof structure
(3) Fixed glazing
(4) Nonfixed glazing (specify): _____
(5) Integral structure
(8) Other medium (specify): _____
(9) Unknown

**Medium Status (Immediately Prior to Impact)**
(1) Open
(2) Closed
(3) Integral structure
(9) Unknown

**ENTRAPMENT** No [✓] Yes [ ]

Describe entrapment mechanism: _____

Component(s): _____

(Note in vehicle interior diagram)

**ATTACHMENT E**

**NASS Occupant Forms**

U.S. Department of Transportation
National Highway Traffic Safety Administration

# OCCUPANT ASSESSMENT FORM

Form Approved
O.M.B. No. 2127-0021

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

1. ~~Primary Sampling Unit Number~~ ____
2. Case Number - ~~Stratum~~ 94-35
3. Vehicle Number 01
4. Occupant Number 01

## OCCUPANT'S CHARACTERISTICS

5. Occupant's Age 38
   Code actual age at time of accident.
   (00) Less than one year old (specify by month): _____
   (97) 97 years and older
   (99) Unknown

6. Occupant's Sex 1
   (1) Male
   (2) Female
   (9) Unknown

7. Occupant's Height 183
   Code actual height to the nearest centimeter.
   (999) Unknown

   72 inches X 2.54 = 183 centimeters

8. Occupant's Weight 109
   Code actual weight to the nearest kilogram.
   (999)Unknown

   240 pounds X .4536 = 109 kilograms

9. Occupant's Role 1
   (1) Driver
   (2) Passenger
   (9) Unknown

## OCCUPANT'S SEATING

10. Occupant's Seat Position 11
    *Front Seat*
    (11) Left side
    (12) Middle
    (13) Right side
    (14) Other (specify): _____
    (15) On or in the lap of another occupant

    *Second Seat*
    (21) Left side
    (22) Middle
    (23) Right side
    (24) Other (specify): _____
    (25) On or in the lap of another occupant

    *Third Seat*
    (31) Left side
    (32) Middle
    (33) Right side
    (34) Other (specify): _____
    (35) On or in the lap of another occupant

    *Fourth Seat*
    (41) Left side
    (42) Middle
    (43) Right side
    (44) Other (specify): _____
    (45) On or in the lap of another occupant

    (97) In or on unenclosed area
    (98) Other seat (specify): _____
    (99) Unknown

11. Occupant's Posture 0
    (0) Normal posture

    *Abnormal posture*
    (1) Kneeling or standing on seat
    (2) Lying on or across seat
    (3) Kneeling, standing or sitting in front of seat
    (4) Sitting sideways or turned to talk with another occupant or to look out a rear window
    (5) Sitting on a console
    (6) Lying back in a reclined seat position
    (7) Bracing with feet or hands on a surface in front of seat
    (8) Other abnormal posture (specify): _____
    (9) Unknown

## EJECTION/ENTRAPMENT

12. Ejection 0
    (0) No ejection
    (1) Complete ejection
    (2) Partial ejection
    (3) Ejection, unknown degree
    (9) Unknown

13. Ejection Area 0
    (0) No ejection
    (1) Windshield
    (2) Left front
    (3) Right front
    (4) Left rear
    (5) Right rear
    (6) Rear
    (7) Roof
    (8) Other area (e.g., back of pickup, etc.) (specify):_____
    (9) Unknown

14. Ejection Medium 0
    (0) No ejection
    (1) Door/hatch/tailgate
    (2) Nonfixed roof structure
    (3) Fixed glazing
    (4) Nonfixed glazing (specify):
    _____
    (5) Integral structure
    (8) Other medium (specify):
    _____
    (9) Unknown

15. Medium Status (Immediately Prior To Impact) 0
    (0) No ejection
    (1) Open
    (2) Closed
    (3) Integral structure
    (9) Unknown

16. Entrapment 1
    (NOTE: Entrapped means that part of the person was in the vehicle and mechanically restrained; jammed doors and immobilizing injuries by themselves are not sufficient to constitute entrapment.)
    (0) Not entrapped
    (1) Entrapped
    (9) Unknown

## RESTRAINT SYSTEM EVALUATION

17. Manual (Active) Belt System Availability 4
(0) None available
(1) Belt removed/destroyed
(2) Shoulder belt
(3) Lap belt
(4) Lap and shoulder belt
(5) Belt available—type unknown

*Integral Belt Partially Destroyed*
(6) Shoulder belt (lap belt destroyed/removed)
(7) Lap belt (shoulder belt destroyed/removed)

(8) Other belt (specify): _____
(9) Unknown

18. Manual (Active) Belt System Use 04
(00) None used, not available, or belt removed/destroyed
(01) Inoperative (specify): _____
(02) Shoulder belt
(03) Lap belt
(04) Lap and shoulder belt
(05) Belt used—type unknown
(08) Other belt used (specify): _____
(12) Shoulder belt used with child safety seat
(13) Lap belt used with child safety seat
(14) Lap and shoulder belt used with child safety seat
(15) Belt used with child safety seat—type unknown
(18) Other belt used with child safety seat (specify): _____
(99) Unknown if belt used

19. Proper Use of Manual (Active) Belts 1
(0) None used or not available
(1) Belt used properly
(2) Belt used properly with child safety seat

*Belt Used Improperly*
(3) Shoulder belt worn under arm
(4) Shoulder belt worn behind back or seat
(5) Belt worn around more than one person
(6) Lap belt worn on abdomen
(7) Lap belt or lap and shoulder belt used improperly with child safety seat (specify): _____
(8) Other improper use of manual belt system (specify): _____
(9) Unknown

20. Manual (Active) Belt Failure Modes During Accident 2
(0) No manual belt used
(1) No manual belt failure(s)
(2) Torn webbing (stretched webbing not included)
(3) Broken buckle or latchplate
(4) Upper anchorage separated
(5) Other anchorage separated (specify): _____
(6) Broken retractor
(7) Combination of above (specify): _____
(8) Other manual belt failure (specify): _____
(9) Unknown

21. Air Bag System Availability/Function 1
(0) Not equipped/not available
(1) Air bag

*Non-functional*
(2) Air bag disconnected (specify): _____
(3) Air bag not reinstalled
(9) Unknown

22. Air Bag System Deployment 1
(0) Not equipped/not available
(1) Air bag deployed during accident (as a result of impact)
(2) Air bag deployed inadvertently just prior to accident
(3) Air bag deployed, accident sequence undetermined
(4) Nondeployed
(5) Unknown if deployed
(6) Air bag deployed as a result of a noncollision event during accident sequence (e.g., fire, explosion, electrical)
(9) Unknown

23. Are There Indications of Air Bag System Failure? 1
(0) Not equipped/not available
(1) No
(2) Yes (specify): _____
(9) Unknown

Note: See Variables 44 through 48 (Page 5) for Information on Automatic Belts

24. Police Reported Restraint Use 4
(0) None used
(1) Police did not indicate restraint use
(2) Shoulder belt
(3) Lap belt
(4) Lap and shoulder belt
(5) Belt used, type not specified
(6) Child safety seat
(7) Other or automatic restraint (specify): _____
(8) Restrained, type unknown
(9) Police indicated "unknown"

## HEAD RESTRAINT AND SEAT EVALUATION

25. Head Restraint Type/Damage by Occupant at This Occupant Position: 3
    (0) No head restraints
    (1) Integral—no damage
    (2) Integral—damaged during accident
    (3) Adjustable—no damage
    (4) Adjustable—damaged during accident
    (5) Add-on—no damage
    (6) Add-on—damaged during accident
    (8) Other (specify): _____
    (9) Unknown

26. Seat Type (this Occupant Position): 06
    (00) Occupant not seated or no seat
    (01) Bucket
    (02) Bucket with folding back
    (03) Bench
    (04) Bench with separate back cushions
    (05) Bench with folding back(s)
    (06) Split bench with separate back cushions
    (07) Split bench with folding back(s)
    (08) Pedestal (i.e., column supported)
    (09) Other seat type (specify): _____
    (10) Box mounted seat (i.e., van type)
    (99) Unknown

27. Seat Performance (this Occupant Position): 1
    (0) Occupant not seated or no seat
    (1) No seat performance failure(s)
    (2) Seat adjusters failed
    (3) Seat back folding locks or "seat back" failed (specify): _____
    (4) Seat track/anchors failed
    (5) Deformed by impact of occupant
    (6) Deformed by passenger compartment intrusion (specify): _____
    (7) Combination of above (specify): _____
    (8) Other (specify): _____
    (9) Unknown

## CHILD SAFETY SEAT

28. Child Safety Seat Make/Model ___0 0 0___
(000) No child safety seat
Applicable codes are found in your NASS CDS Data Collection, Coding and Editing
(950) Built-in child safety seat
(997) Other make/model (specify):
_____
(998) Unknown make/model
(999) Unknown if child safety seat used

29. Type of Child Safety Seat ___0___
(0) No child safety seat
(1) Infant seat
(2) Toddler seat
(3) Convertible seat
(4) Booster seat
(7) Other type child safety seat (specify):
_____
(8) Unknown child safety seat type
(9) Unknown if child safety seat used

30. Child Safety Seat Orientation ___0 0___
(00) No child safety seat

*Designed for Rear Facing for This Age/Weight*
(01) Rear facing
(02) Forward facing
(08) Other orientation (specify):
_____
(09) Unknown orientation

*Designed For Forward Facing for This Age/Weight*
(11) Rear facing
(12) Forward facing
(18) Other orientation (specify):
_____
(19) Unknown orientation

*Unknown Design or Orientation For This Age/Weight, or Unknown Age/Weight*
(21) Rear facing
(22) Forward facing
(28) Other orientation (specify):
_____
(29) Unknown orientation

(99) Unknown if child safety seat used

31. Child Safety Seat Harness Usage ___0 0___

32. Child Safety Seat Shield Usage ___0 0___

33. Child Safety Seat Tether Usage ___0 0___

Note: Options below applicable to Variables OA31-OA33.
(00) No child safety seat

*Not Designed With Harness/Shield/Tether*
(01) After market harness/shield/tether added, not used
(02) After market harness/shield/tether used
(03) Child safety seat used, but no after market harness/shield/tether added
(09) Unknown if harness/shield/tether added or used

*Designed With Harness/Shield/Tether*
(11) Harness/shield/tether not used
(12) Harness/shield/tether used
(19) Unknown if harness/shield/tether used

*Unknown If Designed With Harness/Shield/Tether*
(21) Harness/shield/tether not used
(22) Harness/shield/tether used
(29) Unknown if harness/shield/tether used

(99) Unknown if child safety seat used

## INJURY CONSEQUENCES

34. Injury Severity (Police Rating) 1

(0) O - No injury
(1) C - Possible injury
(2) B - Nonincapacitating injury
(3) A - Incapacitating injury
(4) K - Killed
(5) U - Injury, severity unknown
(6) Died prior to accident
(9) Unknown

35. Treatment - Mortality 4
(0) No treatment
(1) Fatal
(2) Fatal - ruled disease (specify):

_____

*Nonfatal*
(3) Hospitalization
(4) Transported and released
(5) Treatment at scene - nontransported
(6) Treatment later
(8) Treatment - other (specify):

_____
(9) Unknown

36. Type Of Medical Facility (for Initial Treatment) 2
(0) Not treated at a medical facility
(1) Trauma center
(2) Hospital
(3) Medical clinic
(4) Physician's office
(5) Treatment later at medical facility
(8) Other (specify):

_____
(9) Unknown

37. Hospital Stay 0 0
(00) Not Hospitalized
____Code the number of days (up through 60) that the occupant stayed in hospital.
(61) 61 days or more
(99) Unknown

38. Working Days Lost 1 0
____Code the number of days (up through 60) that the occupant lost from work due to the accident
(00) No working days lost
(61) 61 days or more
(62) Fatally injured
(97) Not working prior to accident
(99) Unknown

**STOP - GO TO VARIABLE 44 ON PAGE 7**

**VARIABLES 39 THROUGH 43 ARE COMPLETED BY THE ZONE CENTER**

39. Time to Death 0 0
____Code number of hours from time of accident to time of death up through 24 hours. If time of death is greater than 24 hours, code number of days. (Note: 1 day = 31, 2 days = 32, ... n days = 30 +n up through 30 days = 60)
(00) Not fatal
(96) Fatal - ruled disease
(99) Unknown

40. 1st Medically Reported Cause of Death 0 0

41. 2nd Medically Reported Cause of Death 0 0

42. 3rd Medically Reported Cause of Death 0 0
____Code the Occupant Injury from line number(s) for the medically reported injury(s) which reportedly contributed to this occupant's death
(00) Not fatal or no additional causes
(96) Mode of death given but specific injuries are not linked to cause of death. (specify):

_____
(97) Other result (includes fatal ruled disease) (specify):

_____
(99) Unknown

43. Number of Recorded Injuries for This Occupant 0 6
____Code the actual number of injuries recorded for this occupant.
(00) No recorded injuries
(97) Injured, details unknown
(99) Unknown if injured

## AUTOMATIC BELT SYSTEM

44. Automatic (Passive) Belt System Availability/ Function — 0
(0) Not equipped/not available
(1) 2 point automatic belts
(2) 3 point automatic belts
(3) Automatic belts - type unknown

*Non-functional*
(4) Automatic belts destroyed or rendered inoperative
(9) Unknown

45. Automatic (Passive) Belt System Use — 0
(0) Not equipped/not available/destroyed or rendered inoperative
(1) Automatic belt in use
(2) Automatic belt not in use (manually disconnected, motorized track inoperative) (specify):

(3) Automatic belt use unknown
(9) Unknown

46. Automatic (Passive) Belt System Type — 0
(0) Not equipped/not available
(1) Non-motorized system
(2) Motorized system
(9) Unknown

47. Proper Use of Automatic (Passive) Belt System — 0
(0) Not equipped/not available/not used
(1) Automatic belt used properly
(2) Automatic belt used properly with child safety seat

*Automatic Belt Used Improperly*
(3) Automatic shoulder belt worn under arm
(4) Automatic shoulder belt worn behind back
(5) Automatic belt worn around more than one person
(6) Lap portion of automatic belt worn on abdomen
(7) Automatic lap and shoulder belt or automatic shoulder belt used improperly with child safety seat (specify):

(8) Other improper use of automatic belt system (specify):
(9) Unknown

48. Automatic (Passive) Belt Failure Modes During Accident — 0
(0) Not equipped/not available/not in use
(1) No automatic belt failure(s)
(2) Torn webbing (stretched webbing not included)
(3) Broken buckle or latchplate
(4) Upper anchorage separated
(5) Other anchorage separated (specify):

(6) Broken retractor
(7) Combination of above (specify):
(8) Other automatic belt failure (specify):

(9) Unknown

49. Seat Orientation (this Occupant Position) — 0
(0) Occupant not seated or no seat
(1) Forward facing seat
(2) Rear facing seat
(3) Side facing seat (inward)
(4) Side facing seat (outward)
(8) Other (specify):

(9) Unknown

Check the Primary Source Used In Determining Belt Use.

[ ] Not equipped/not available/destroyed or rendered inoperative
[✓] Vehicle inspection
[ ] Official injury data
[ ] Driver/occupant interview
[ ] Other (specify):

[ ] Unknown if belt used

ARE ALL APPLICABLE MEDICAL RECORDS INCLUDED WITH INITIAL SUBMISSION? NO [ ] YES [ ]

UPDATE CANDIDATE? NO [ ] YES [ ]

**STOP - VARIABLES 50 THROUGH 53 ARE COMPLETED BY THE ZONE CENTER**

## TRAUMA DATA

50. Glasgow Coma Scale (GCS) Score (at Medical Facility) 02
    (00) Not injured
    (01) Injured - not treated at medical facility
    (02) No GCS Score at medical facility
    (03-15) Code the actual value of the initial GCS Score recorded at medical facility.
    (97) Injured, details unknown
    (99) Unknown if injured

51. Was the Occupant Given Blood? 1
    (1) No - blood not given
    (2) Yes - blood given
    (specify units):_____
    (9) Unknown if blood given

52. Arterial Blood Gases (ABG) - $HCO_3$ 01
    (00) Not injured
    (01) Injured, ABGs not measured or reported
    (02-50) Code the actual value of the $HCO_3$
    (96) ABGs reported , $HCO_3$ unknown
    (97) Injured, details unknown
    (99) Unknown if injured

## BELT USE DETERMINATION

53. Primary Source of Belt Use Determination 1
    (0) Not equipped/not available/destroyed or rendered inoperative
    (1) Vehicle inspection
    (2) Official injury data
    (3) Driver/occupant interview
    (8) Other (specify):_____
    (9) Unknown if belt used

U.S. Department of Transportation

National Highway Traffic Safety Administration

# OCCUPANT INJURY FORM

Form Approved
O.M.B. No. 2127-0021

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

| | |
|---|---|
| 1. ~~Primary Sampling Unit Number~~ ___ | 3. Vehicle Number 01 |
| 2. Case Number - ~~Stratum~~ 94-35 | 4. Occupant Number 01 |

## INJURY DATA

Record below the actual injuries sustained by this occupant that were identified from the official and unofficial data sources. Remember not to double count an injury just because it was identified from two different sources. If greater than ten injuries have been documented, encode the balance on the Occupant Injury Supplement.

| | Source of Injury Data | A.I.S. - 90 Body Region | Type of Anatomic Structure | Specific Anatomic Structure | Level of Injury | A.I.S. Severity | Aspect | Injury Source | Injury Source Confidence Level | Direct/ Indirect Injury | Occupant Area Intrusion Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st | 5. 3 | 6. 4 | 7. 5 | 8. 02 | 9. 02 | 10. 1 | 11. 3 | 12. 41 | 13. 1 | 14. 1 | 15. 00 |
| 2nd | 16. 3 | 17. 7 | 18. 9 | 19. 04 | 20. 02 | 21. 1 | 22. 2 | 23. 41 | 24. 1 | 25. 1 | 26. 00 |
| 3rd | 27. 3 | 28. 4 | 29. 9 | 30. 04 | 31. 02 | 32. 1 | 33. 2 | 34. 41 | 35. 1 | 36. 1 | 37. 00 |
| 4th | 38. 3 | 39. 8 | 40. 9 | 41. 04 | 42. 02 | 43. 1 | 44. 1 | 45. 13 | 46. 1 | 47. 1 | 48. 00 |
| 5th | 49. 3 | 50. 8 | 51. 9 | 52. 04 | 53. 02 | 54. 1 | 55. 2 | 56. 13 | 57. 1 | 58. 1 | 59. 00 |
| 6th | 60. 3 | 61. 2 | 62. 9 | 63. 06 | 64. 02 | 65. 1 | 66. 8 | 67. 45 | 68. 1 | 69. 1 | 70. 00 |
| 7th | 71. ___ | 72. ___ | 73. ___ | 74. ___ | 75. ___ | 76. ___ | 77. ___ | 78. ___ | 79. ___ | 80. ___ | 81. ___ |
| 8th | 82. ___ | 83. ___ | 84. ___ | 85. ___ | 86. ___ | 87. ___ | 88. ___ | 89. ___ | 90. ___ | 91. ___ | 92. ___ |
| 9th | 93. ___ | 94. ___ | 95. ___ | 96. ___ | 97. ___ | 98. ___ | 99. ___ | 100. ___ | 101. ___ | 102. ___ | 103. ___ |
| 10th | 104. ___ | 105. ___ | 106. ___ | 107. ___ | 108. ___ | 109. ___ | 110. ___ | 111. ___ | 112. ___ | 113. ___ | 114. ___ |

## SOURCE OF INJURY DATA

OFFICIAL
(1) Autopsy records with or without hospital/ medical records
(2) Hospital/medical records other than emergency room (e.g., discharge summary)
(3) Emergency room records only (including associated X-rays or other lab reports)
(4) Private physician, walk-in or emergency clinic

UNOFFICIAL
(5) Lay coroner report
(6) E.M.S. personnel
(7) Interviewee
(8) Other source (specify):

(9) Police

## INJURY SOURCE

FRONT
(01) Windshield
(02) Mirror
(03) Sunvisor
(04) Steering wheel rim
(05) Steering wheel hub/spoke
(06) Steering wheel (combination of codes 04 and 05)
(07) Steering column, transmission selector lever, other attachment
(08) Add on equipment (e.g., CB, tape deck, air conditioner)
(09) Left instrument panel and below
(10) Center instrument panel and below
(11) Right instrument panel and below
(12) Glove compartment door
(13) Knee bolster
(14) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
(15) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or mirror (passenger side only)
(16) Driver side air bag compartment cover
(17) Passenger side air bag compartment cover
(18) Windshield reinforced by exterior object (specify):
(19) Other front object (specify):

LEFT SIDE
(20) Left side interior surface, excluding hardware or armrests
(21) Left side hardware or armrest
(22) Left A (A1/A2)-pillar
(23) Left B-pillar
(24) Other left pillar (specify):
(25) Left side window glass or frame
(26) Left side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
(27) Other left side object (specify):
(28) Left side window sill

RIGHT SIDE
(30) Right side interior surface, excluding hardware or armrests
(31) Right side hardware or armrest
(32) Right A (A1/A2)-pillar
(33) Right B-pillar
(34) Other right pillar (specify):
(35) Right side window glass or frame
(36) Right side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
(37) Other right side object (specify):
(38) Right side window sill

INTERIOR
(40) Seat, back support
(41) Belt restraint webbing/buckle
(42) Belt restraint B-pillar or door frame attachment point
(43) Other restraint system component (specify):
(44) Head restraint system
(45) Air bag (use codes "16" and "17" for injuries sustained from air bag compartment covers)
(46) Other occupants (specify):
(47) Interior loose objects
(48) Child safety seat (specify):
(49) Other interior object (specify):

ROOF
(50) Front header
(51) Rear header
(52) Roof left side rail
(53) Roof right side rail
(54) Roof or convertible top

FLOOR
(56) Floor (including toe pan)
(57) Floor or console mounted transmission lever, including console
(58) Parking brake handle
(59) Foot controls including parking brake

REAR
(60) Backlight (rear window)
(61) Backlight storage rack, door, etc.
(62) Other rear object (specify):

EXTERIOR of OCCUPANT'S VEHICLE
(65) Hood
(66) Outside hardware (e.g., outside mirror, antenna)
(67) Other exterior surface or tires (specify):
(68) Unknown exterior objects

EXTERIOR OF OTHER MOTOR VEHICLE
(70) Front bumper
(71) Hood edge
(72) Other front of vehicle (specify):
(73) Hood
(74) Hood ornament
(75) Windshield, roof rail, A-pillar
(76) Side surface
(77) Side mirrors
(78) Other side protrusions (specify)
(79) Rear surface
(80) Undercarriage
(81) Tires and wheels
(82) Other exterior of other motor vehicle (specify):
(83) Unknown exterior of other motor vehicle

OTHER VEHICLE OR OBJECT IN THE ENVIRONMENT
(84) Ground
(85) Other vehicle or object (specify)
(86) Unknown vehicle or object

NONCONTACT INJURY
(90) Fire in vehicle
(91) Flying glass
(92) Other noncontact injury source (specify):
(93) Air bag exhaust gases
(97) Injured, unknown source

## INJURY SOURCE CONFIDENCE LEVEL

(1) Certain
(2) Probable
(3) Possible
(9) Unknown

## DIRECT/INDIRECT INJURY

(1) Direct contact injury
(2) Indirect contact injury
(3) Noncontact injury
(7) Injured, unknown source

## OCCUPANT INJURY CLASSIFICATION

### Body Region

(1) Head
(2) Face
(3) Neck
(4) Thorax
(5) Abdomen
(6) Spine
(7) Upper Extremity
(8) Lower Extremity
(9) Unspecified

### Type of Anatomic Structure

(1) Whole Area
(2) Vessels
(3) Nerves
(4) Organs (includes muscles/ ligaments)
(5) Skeletal (includes joints)
(6) Head - LOC
(9) Skin

### Specific Anatomic Structure

Whole Area
(02) Skin - Abrasion
(04) Skin - Contusion
(06) Skin - Laceration
(08) Skin - Avulsion
(10) Amputation
(20) Burn
(30) Crush
(40) Degloving
(50) Injury - NFS
(90) Trauma, other than mechanical

Head - LOC
(02) Length of LOC
(04, 06, 08) Level of Consciousness
(10) Concussion

Spine
(02) Cervical
(04) Thoracic
(06) Lumbar

Vessels, Nerves, Organs. Bones, Joints are assigned consecutive two digit numbers beginning with 02

### Level of Injury

Specific injuries are assigned consecutive two-digit numbers beginning with 02.

To the extent possible, within the organizational framework of the AIS, 00 is assigned to an injury NFS as to severity or where only one injury is given in the dictionary for that anatomic structure. 99 is assigned to any injury NFS as to lesion or severity.

### Abbreviated Injury Scale

(1) Minor injury
(2) Moderate injury
(3) Serious injury
(4) Severe injury
(5) Critical injury
(6) Maximum (untreatable)
(7) Injured, unknown severity

### Aspect

(1) Right
(2) Left
(3) Bilateral
(4) Central
(5) Anterior
(6) Posterior
(7) Superior
(8) Inferior
(9) Unknown
(0) Whole region