

400 Seventh Street, S.W. Washington, D.C. 20590

U.S. Department of Transportation

National Highway Traffic Safety Administration

Dear Crash Data Researchers/Users:

Thank you for choosing crash data from the National Highway Traffic Safety Administration (NHTSA) for your research or other use. The information contained in this motor vehicle crash report is collected, maintained and distributed in accordance with Public Law 89-564. In accordance with this Public Law, NHTSA is required not to release any case information until completion of quality control procedures. These procedures include a review of the case material to extract all names, licenses and registration numbers, non-coded interview material, non-research related researcher comments in the margins, non-factual data, and the production number portion of the vehicle identification number (VIN).

If you requested NHTSA to query its database files in order to identify a specific crash, then that query was made using non-personal descriptors you provided for use in our search. This motor vehicle crash may have been identified from a data search and matches the general, non-personal descriptors you provided, but we cannot confirm that this is the specific crash report you requested.

If you have any questions with regard to the above procedures, please contact the Field Operations Branch, Crash Investigation Division, National Center for Statistics and Analysis at 202-366-4820. Again, please be advised that we cannot confirm that this is the case that you have specifically requested nor can we certify the information to be correct.

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# SwRI AIRBAG DEPLOYMENT INVESTIGATION FULL SCOPE

# CASE NO. 9001AB

FINAL REPORT

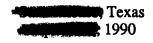
SwRI Project 06-1977 DTNH 22-87-C-37169

Prepared by:



### Prepared for:

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



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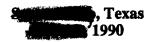
The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

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.

### SWRI AIRBAG DEPLOYMENT INVESTIGATION FULL SCOPE

### **CASE NO. 9001AB**



### SUMMARY

On **Market** 1990, at approximately 2300 hours, 1 1990 Toyota Celica was northbound on a local street in a residential area of **California**, Texas. The Toyota was stopped in the northbound lane prior to beginning a left turn to a private drive. The driver released the brakes, began the turn and struck a 1978 Datsun B210. The Datsun had been travelling southbound at a driver estimated speed of 35 mph. The driver of the Datsun applied full braking prior to the impact. The Toyota rotated 180 degrees and came to rest facing southbound in the Southbound lane a short distance from the point of impact. The Datsun continued forward in its original direction of travel and came to rest parallel to the Toyota in the southbound lane.

The accident occurred in the southbound lane of a two lane, undivided local street. The road surface was dry bituminous concrete, delineated by double yellow lines as a center stripe. Ambient conditions were clear nighttime with a temperature of approximately 78 degrees F. There were no traffic controls. The speed limit was 35 mph.

The 1990 Toyota Celica was a two door sedan, equipped with a factory installed driver side airbag system. It was also equipped with lap and shoulder belts in all seating positions. It sustained moderate frontal damage from the impact with the Datsun.

The 1978 Datsun B210 was a two door hatchback, equipped with lap and torso belt in the driver position. Other restraints available to occupants are unknown at this time. The Datsun sustained moderate frontal damage, according to the police report.

The driver of the Toyota was a thirty year old female, who was wearing the available lap and torso belts. She sustained a laceration to the left eyebrow, contusions around the left orbit, damage to the retina of the left eye, a scratch to the left cornea, abrasions to the ventral surface of the right forearm and swelling and tenderness to the dorsal aspect of the right hand. She was taken to a local hospital where she was treated and released. She sought further treatment later for her eye injury.

The right front occupant of the Toyota was a twenty-two year old male, who was not wearing the available lap and torso belt, according to the driver. He sustained a contusion to the right scalp, and did not seek any treatment.

The driver of the Datsun was a thirty-two year old male, who was wearing the available lap and torso belt. According to the police report, he sustained minor injuries. According to the police report, he accompanied his passenger to a local hospital, but did not seek treatment. The right front occupant of the Datsun was a twenty year old female who was not wearing any restraint. She sustained a laceration to the knee (unknown aspect). She was taken to a local hospital for treatment.

Local police were notified and arrived at the accident scene eight minutes later. EMS was also notified and responded. The police investigated the accident and completed a report.

### SWRI AIRBAG DEPLOYMENT INVESTIGATION FULL SCOPE

### CASE NO. 9001AB

Same Texas

## FINAL REPORT

## **ACCIDENT DATA**

Location:

Area/Type:

, Texas

Urban/Residential

Accident Date/Time:

1990

Investigating Police Agency:

Police Department

Notification Date:

1990

Accident Type:

Vehicle to vehicle/Head-on

Moderate (AIS 2)

Airbag Vehicle Occupant Injury Severity:

### AMBIENCE

Light Conditions:

Weather:

Precipitation:

Road Surface:

Temperature:

**TRAFFICWAY** 

Location:

Number of Lanes:

Surface:

Clear

Dark with street lights

· None

Dry

Approximately 78 degrees F.

Airbag Vehicle

Urban arterial

2

Bituminous concrete

Vehicle #2

Urban arterial

2

Bituminous concrete

TRAFFICWAY (CONT)	Airbag Vehicle	Vehicle #2				
Coefficient of Friction:	0.6	0.6				
Roadway Edge:	Edge lines with paved shoulders	Edge lines with paved shoulders				
Roadway Alignment:	Straight, upgrade	Straight, downgrade				
Traffic Density:	Light	Light				
TRAFFIC CONTROLS						
Signals:	None	None				
Signs:	None	None				
Markings:	Double yellow center line with edge lines	Double yellow center line with edge lines				
Speed Limit:	35 mph	35 mph				
VEHICLES						
Year:	1990	1978				
Make:	Toyota	Datsun				
Model:	Celica GT	B210				
Body Style:	Two door sedan	Two door hatchback				
VIN:	JT2ST87F6L0	HLB21CXXXXXX				
Color:	Blue	Blue				
Fleet:	Private	Private				
Tow Status:	Towed due to damage	Towed due to damage				
Reported Defects:	None	None				
Previous Repair:	None	Unknown				
Odometer Mileage:	2632	Over 100,000				
Securiflex Windshield:	Not equipped	Not equipped				

VEHICLES (CONT)	Airbag Vehicle	Vehicle #2				
Engine:	4 cyl./2.2 L EFI	4 cyl./				
Windshield Damage/Source:	None/Inspection	Cracked from occupant contact/Inspection				
Transmission:	Manual/5-Speed	Manual/5-Speed				
Steering:	Power assisted	Manual				
Brakes:	Power assisted	Manual hydraulic				
Interior Padding:	Padded upper and lower instrument panel, steering wheel rim and hub, sun visor, A-pillar, armrest, door surface and roof side rail	Padded upper and lower instrument panel, steering wheel rim, sun visor, A-pillar, armrest, door surface and roof side rail				
Active Restraints:	Lap and torso restraints, front and rear outboard positions, lap only in the front and rear center seat	Lap and torso restraints, front outboard positions, lap only in the two rear seat positions				
Passive Restraints:	Factory installed driver side airbag system	None				
VEHICLE DAMAGE						
Exterior	Airbag Vehicle	Vehicle #2				
Object Struck:	1978 Datsun	1990 Toyota				
Accident Event Number:	1	1				
Damage Location:	Front	Front				
CDC:	01FZEW1	11FDEW2				
Damage Description:	Moderate damage to the front including the grille, front bumper, hood, a/c condensing coils, radiator, right and left front fenders, battery and right front wheel and suspension	Moderate damage to the front including the grille, front bumper, hood, right and left front fenders, a/c coils and radiator core				

x

Interior	Airbag Vehicle	Vehicle #2				
Damage:	Passenger sun visor mirror broken	Cracked and broken a/c ducting, glove box cover, windshield and visors				
Repair Cost:	Totalled	Totalled				
VEHICLE VELOCITY ESTI	MATES					
Travel Speed:	5 mph (driver est.)	35 mph (driver est.)				
Reconstruction Algorithm						
Total:	Unknown	Unknown				
Longitudinal:	Unknown	Unknown				
Lateral:	Unknown	Unknown				
Energy Dissipated:	Unknown	Unknown				
<b>COLLISION SEQUENCE</b>						
Pre-Crash:	The Toyota was stopped in the northbound lane of travel, waiting to make a left turn. The driver observed no oncoming traffic and started the vehicle into the turn. The Datsun was southbound at a driver estimated speed of 35 mph. As the Datsun crested a small rise just north of the point of impact, the driver saw the Toyota entering the turn and applied full braking. The driver of the Toyota observed the Datsun, but had no time to react.					
Crash:	The front center of the Datsun struck the front right of the Toyo causing the Toyota to begin a counterclockwise rotation. As the impact continued, the Toyota rotated approximately 150 degree from its position at impact. The Datsun, because of its great speed at impact continued forward only slightly redirected from its original path and direction of travel.					
Post-Crash:	The Toyota came to rest facing south, 180 degrees from its orig path of travel. It was approximately 5 feet away from and para to the position of the Datsun at final rest. Both vehicles w approximately 20 feet south of the point of impact.					
Driver Activities:	The driver of the Toyota was dazed and remained seated in the driver She then exited the vehicle throug	seat for a short period of time.				

Police Activities:	The police were notified and arrived at the scene approximately 8 minutes after the accident occurred.
Rescue Activities:	EMS was called due to the injuries of the Toyota driver and the occupant of the Datsun.
Treatment Facilities:	All the injured were taken to a local hospital where they were treated and released.
Scene Clearance:	Both vehicles were towed from the scene due to damage and the scene was returned to normal approximately 45 minutes after the accident occurred.

# HUMAN FACTORS/OCCUPANT DATA - AIRBAG VEHICLE

	Driver	<u>Occupant</u>
Age:	30 years old	22 years old
Sex:	Female	Male
Height:	66.75 inches	72 inches
Weight:	125	220
Occupation:	Marketing trainer	Unknown
Active Restraint Usage:	Lap and torso belt	None
Source of Usage:	Driver and inspection	Driver interview
Eyeglasses:	None	None
Driver Experience:	14 years	
Driver Education:	High school driver education	
Vehicle Familiarity:	Daily use	
Previous Accidents:	None	
Previous Violations:	None	

# HUMAN FACTORS/OCCUPANT DATA (CON'T.) - AIRBAG VEHICLE

	Driver	<u>Occupant</u>
Trip Plan:	Drop off occupant and return home	
Route Familiarity:	Travelled weekly	
Type of Medical Treatment:	Treated and released from hospital, outpatient surgery two weeks later.	None
	<b>Driver Injury Data</b>	
Injury	Severity (AIS)	Source
Retina detachment	Moderate (AIS 2)	Impact with right hand
Severe contusion left orbit	Moderate (AIS 2)	n
Laceration left eyebrow	Minor (AIS 1)	"
Abrasion left cornea	Minor (AIS 1)	"
Injury (unspecified) to trigeminal nerve branch	Moderate (AIS 2)	"
Abrasions right forearm	Minor (AIS 1)	Airbag
Edema dorsum right hand	Minor (AIS 1)	Impact with left face
Contusion right thigh	Minor (AIS 1)	Console
Contusion left clavicle area	Minor (AIS 1)	Torso belt
Fracture upper left canine	Minor (AIS 1)	Unknown
Fracture upper left incisor	Minor (AIS 1)	Unknown
	Occupant Injury Data	
Contusion right scalp	Minor (AIS 1)	Sunvisor/windshield header

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### DRIVER KINEMATICS

The driver was seated in a normal position with her left hand on the steering wheel and her right hand on the gearshift. She started the vehicle into the turn, completed the shift from first to second gear, moved her right hand from the gearshift to the steering wheel and continued to turn the steering wheel. The driver suddenly saw the oncoming vehicle and turned her head slightly to the right.

The impact occurred at this point and the airbag deployed. The driver's right hand was at the 9-10 o'clock position on the steering wheel and her forearm was between her torso and the airbag module at deployment. When the bag deployed, it knocked her hand from the steering wheel rim toward her face causing abrasions to the ventral surface of the forearm. Her right hand continued toward her face striking the left orbit area, causing the retina detachment, cornea abrasion and contusion of the orbit area of the left eye and edema of the right hand. The driver's body moved forward and to the right and was restrained by the lap and torso belt and the airbag. She received contusions to the left clavicle area from the torso belt and to the right thigh from the center console.

The occupant, seated in the right front, moved forward and to the right at impact, striking the right sun visor and windshield header area. This caused a contusion of the right scalp.

	Driver	<u>Occupant</u>
Age:	32 years old	20 years old
Sex:	Male	Female
Height:	Unknown	Unknown
Weight:	Unknown	Unknown
Occupation:	Unemployed	Unemployed
Active Restraint Usage:	Lap and torso belt	None
Source of Usage:	PAR	PAR
	Driver Injury Data	
Injury	Severity (AIS)	Source
Contusion chest	Minor (AIS 1)	Steering column
Contusion both knees	Minor (AIS 1)	Instrument panel
Contusion both elbows		"

### HUMAN FACTORS/OCCUPANT DATA - VEHICLE #2

# HUMAN FACTORS/OCCUPANT DATA (CONT) - VEHICLE #2

# **Occupant Injury Data**

Injury	Severity (AIS)	Source
Laceration left knee into thigh	Minor (AIS 1)	Instrument panel
Laceration right knee	Minor (AIS 1)	"
Laceration forehead	Minor (AIS 1)	Windshield
Cervical muscle strain	Minor (AIS 1)	Unknown
Lumbar muscle strain	Minor (AIS 1)	"

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# ATTACHMENTS

- Police Accident Report
- Airbag Accident and Person Level Form
- Medical Records for Driver of Airbag Vehicle
- Photographic Index and Photographs

POLICE ACCIDENT REPORT .

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# AIRBAG ACCIDENT

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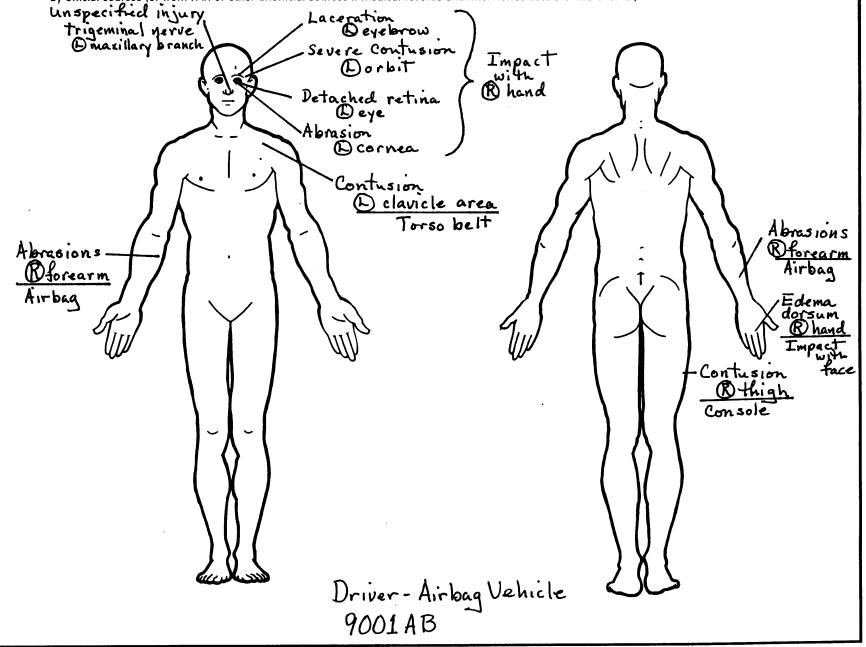
# PERSON LEVEL FORM

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# **OFFICIAL INJURY DATA – SOFT TISSUE INJURIES**

Indicate the Location, Lesion, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.)



Page 2

## SOURCE OF INJURY DATA

#### OFFICIAL

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

UNOFFICIAL

- (5) Lay coroner report
- (6) E.M.S. personnel

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-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A-pillar, instrument panel, or mirror (passenger side only)
- (16) Other front object (specify):

#### LEFT SIDE

- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A pillar
- (23) Left B pillar
- (24) Other left pillar (specify):
- (25) Left side window glass or frame
- **O.I.C. Body Region**
- (M) Abdomen
- (Q) Ankle - foot
- (A) Arm (upper)
- (B) Back-thoracolumbar spine (C) Chest
- (E) Elbow
- (F) Face
- (R) Forearm
- (H)Head-skull Injured, unknown region (U)
- (K) Knee
- (L) Leg (lower)
- (Y) Lower limb(s) (whole or unknown
- part) (N) Neck-cervical spine
- Pelvic hip  $(\mathbf{P})$
- (S) Shoulder
- (T) Thiah
- (X) Upper limb(s) (whole or unknown part)
- (0) Whole body

- (26) Left side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, or roof side rail
- (27) Other left side object (specify):

#### **RIGHT SIDE**

- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A 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-pillar, B-pillar, roof side rail
- (37) Other right side object (specify):

#### 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 cushion
- (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

**OCCUPANT INJURY CLASSIFICATION** 

(G)

(D)

(F)

(Z)

(U)

(L)

(0)

(P)

(R)

(S)

(T)

(E)

(W)

(A)

(R)

(D)

(E)

(0)

(H)

(U)

Detachment, separation

Fracture and dislocation

Injured, unknown lesion

Perforation, puncture

All systems in region

Injured, unknown system

Arteries-veins

Total severance, transection

Dislocation

Fracture

Laceration

Other

Rupture

Sprain

Strain

System/Organ

Brain

Ears

Eye

Heart

Digestive

- (58) Parking brake handle
- (59) Foot controls including parking brake

#### REAR

Wrist-hand

Anterior - front

Inferior-lower

Posterior - back

Superior-upper

Whole region

Abrasion

Avuision

Burn

Crush

Amputation

Concussion

Contusion

Bilateral (rib fracture only).

Injured, unknown aspect

Aspect of Injury

Central

Left

Right

(W)

(A)

(B)

(C)

(1)

(U)

(L)

(P)

(R)

(S)

(W)

(A)

(M)

(V)

(B)

(K)

(C)

(N)

Lesion

- (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

(72) Other front of vehicle (specify):

(75) Windshield, roof rail, A-pillar

(78) Other side protrusions (specify):

(82) Other exterior of other motor vehicle (specify):

OTHER VEHICLE OR OBJECT IN THE ENVIRONMENT

(83) Unknown exterior of other motor vehicle

(92) Other noncontact injury source (specify)

**DIRECT/INDIRECT INJURY** 

(1)

(J)

(K)

(L)

(M)

(N)

(P)

(R)

(S)

(C)

 $(\mathbf{Q})$ 

(T)

(G)

(V)

(1)

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(3)

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(6)

(7)

Integumentary

Nervous system

Pulmonary-lungs

Thyroid, other endocrine gland

Joints

Liver

Kidneys

Muscles \*

Respiratory

Spinal cord

Urogenital

Vertebrae

Abbreviated Injury Scale

Minor injury

Moderate injury

Serious injury

Severe injury

Critical injury

Maximum (untreatable)

Injured, unknown severity

Skeletal

Soleen

**INJURY SOURCE CONFIDENCE** 

(85) Other vehicle or object (specify)

(86) Unknown vehicle or object

(97) Injured, unknown source

NONCONTACT INJURY

(90) Fire in vehicle

(91) Flying glass

LEVEL

(1) Certain

(2) Probable

(3) Possible

(9) Unknown

(1) Direct contact injury

(2) Indirect contact injury

(7) Injured, unknown source

(3) Noncontact injury

(70) Front bumper (71) Hood edge

(73) Hood

(74) Hood ornament

(76) Side surface

(77) Side mirrors

(79) Rear surface

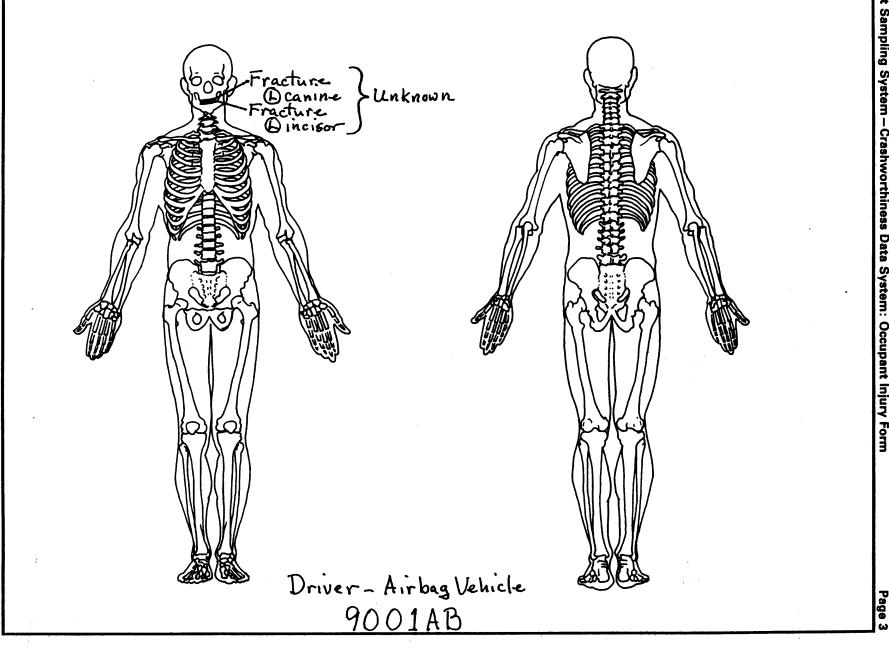
(84) Ground

(80) Undercarriage

(81) Tires and wheels

# **OFFICIAL INJURY DATA – SKELETAL INJURIES**

Indicate the Location, Lesion, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.)

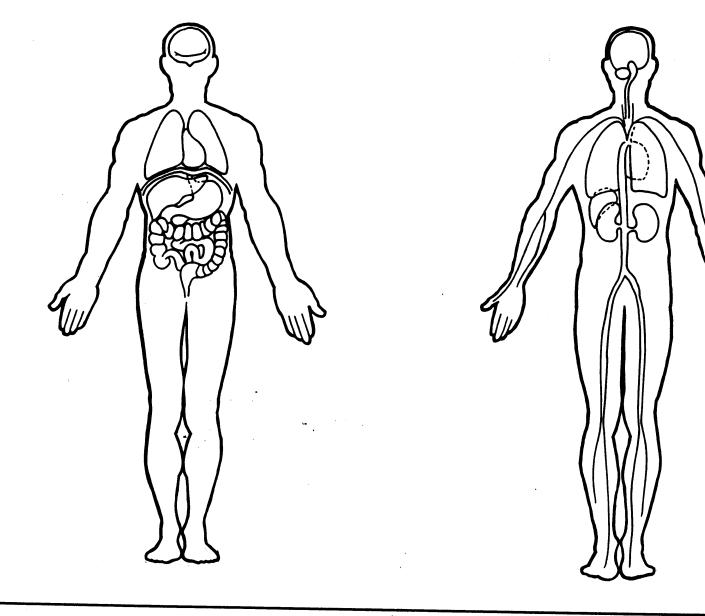


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# OFFICIAL INJURY DATA-INTERNAL INJURIES

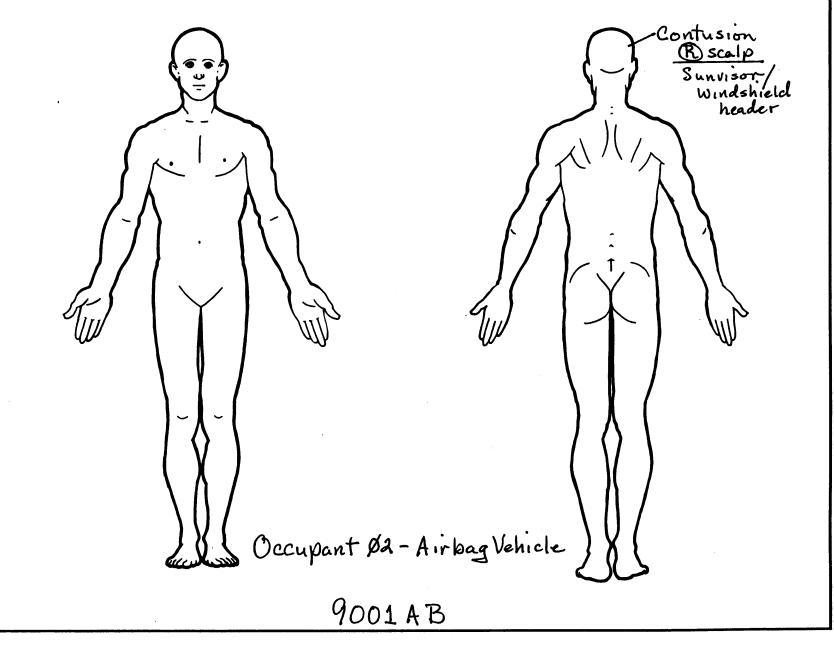
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Indicate the Location, Lesion, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.)



# **OFFICIAL INJURY DATA – SOFT TISSUE INJURIES**

Indicate the Location, Lesion, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.)



Page 2

# SOURCE OF INJURY DATA

### OFFICIAL

- (1) Autopsy records with or without hospital medical records
- (2) Hospital medical records other than emergency room (eg. discharge summary)
- (3) Emergency room records only (including associated Xrays 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-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A-pillar, instrument panel, or mirror (passenger side only)
- (16) Other front object (specify):

#### LEFT SIDE

- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A pillar
- (23) Left B pillar

**O.I.C. Body Region** 

Chest

Elbow

Forearm

Head-skull

Leg (lower)

Pelvic-hip

Whole body

Shoulder

Thigh

part)

Face

Knee

part)

Abdomen

Ankle-foot

Arm (upper)

Back-thoracolumbar spine

Injured, unknown region

Neck-cervical spine

Lower limb(s) (whole or unknown

Upper limb(s) (whole or unknown

(M)

(0)

(A)

(B)

(C)

(E)

(F)

(R)

(H)

(U)

(K)

(1)

(Y)

(N)

(P)

(S)

(T)

(X)

(0)

- (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-pillar, B-pillar, or roof side rail
- (27) Other left side object (specify):

### RIGHT SIDE

- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A 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-pillar, B-pillar, roof side rail
- (37) Other right side object (specify):

#### 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 cushion
- (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

OCCUPANT INJURY CLASSIFICATION

(G)

(D)

(F)

(Z)

(U)

(L)

(0)

(P)

(R)

(S)

(T)

(E)

(W)

(A)

(B)

(D)

(E)

(O) (H)

(U)

Detachment, separation

Fracture and dislocation

Injured, unknown lesion

Perforation, puncture

All systems in region

Injured, unknown system

Arteries-veins

Total severance, transection

Dislocation

Fracture

Laceration

Other

Rupture

Sorain

Strain

System/Organ

Brain

Ears

Eye

Heart

Digestive

- (58) Parking brake handle
- (59) Foot controls including parking brake
- REAR

Wrist-hand

Anterior - front

Inferior-lower

Posterior-back

Superior-upper

Whole region

Abrasion

Avuision

8urn

Crush

Amputation

Concussion

Contusion

Bilateral (rib fracture only).

Injured, unknown aspect

Aspect of Injury

Central

1 eft

Right

(W)

(A)

(B)

(C)

(1)

Ü)

(L)

(P)

(R)

(S)

(W)

(M)

(V)

(B)

(K)

(C)

(N)

Lesion

- (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

(1) Certain

(2) Probable

(3) Possible

(9) Unknown

(1) Direct contact injury

(3) Noncontact injury

(2) Indirect contact injury

(7) Injured, unknown source

(92) Other noncontact injury source (specify)

**DIRECT/INDIRECT INJURY** 

(J)

(K)

(L)

(M)

(N)

(P)

(R)

(S)

(C)

(Q)

(T)

(G)

(V)

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(97) Injured, unknown source

#### **INJURY SOURCE CONFIDENCE** LEVEL

integumentary

Nervous system

Pulmonary-lungs

Thyroid, other endocrine gland

Joints

Liver

Kidneys

Muscles

Respiratory

Spinal cord

Urogenital

Abbreviated Injury Scale

Minor injury

Moderate injury

Serious injury

Severe injury

Critical injury

Maximum (untreatable)

Injured, unknown severity

Vertebrae

Skeletal

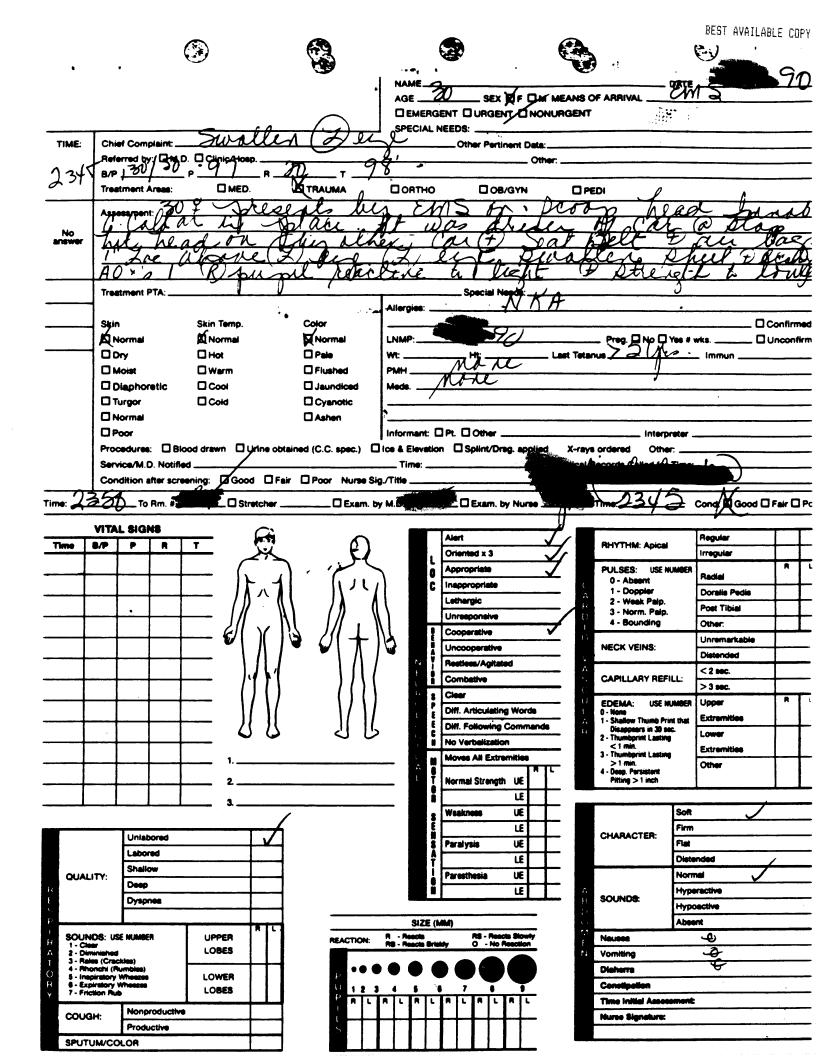
Spleen

# **MEDICAL RECORDS**

FOR

# **DRIVER OF AIRBAG VEHICLE**

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р Н				X R A	FACIAL BONES SKULL COMPLETE	PA & LAT	SPINE DORSAL SPINE UPRIGHT	SACRAL SP
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P H Y S 		Given		R A Y L A B C	BONES SKULL COMPLETE OTHER X-RAY EXAM DESIRED CBC Urine	Amylase SGOT	SPINE DORSAL SPINE UPRIGHT ABD BUN Creat.	EKG ABG
P H H Y S 		Given			BONES SKULL COMPLETE OTHER X-RAY EXAM DESIRED	PA & LAT RIBS KUB Amylase	SPINE DORSAL SPINE UPRIGHT ABD BUN	SACRAL SP PELVIS HIP EKG
P H Y S 		Given		R A Y L A B O R A	BONES SKULL COMPLETE OTHER X-RAY EXAM DESIRED CBC Urine Blood Suger	Amylase SGOT HCG	SPINE DORSAL SPINE UPRIGHT ABD BUN Creat. Alk. Phos.	EKG ACA-9
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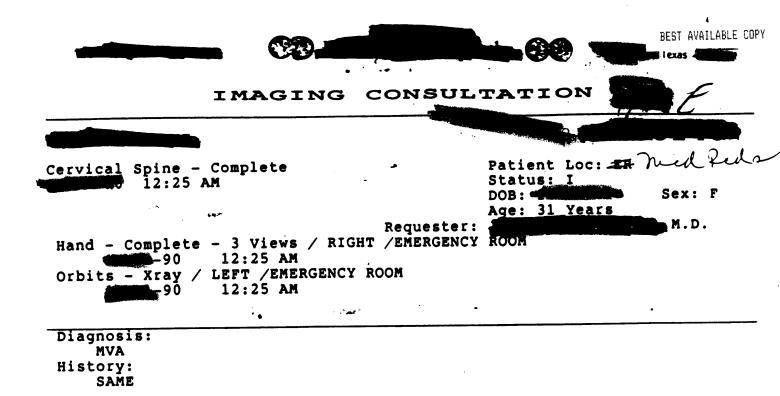
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### Final Report

#### **CERVICAL SPINE:**

Straightening on the lateral view consistent with muscle spasm or positioning to be correlated clinically. Prevertebral soft tissues are normal and disc spaces preserved. No fractures. Odontoid view normal.

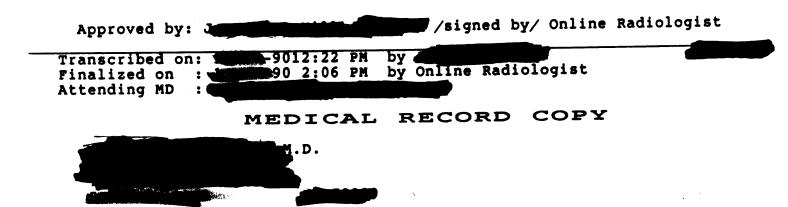
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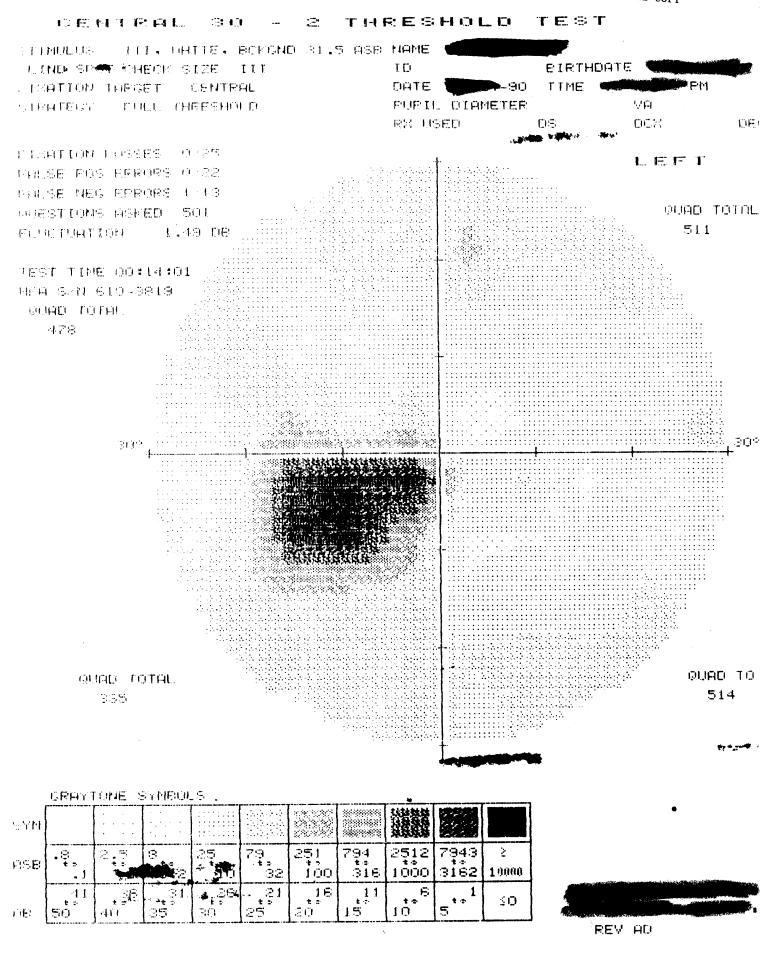
#### **ORBITS:**

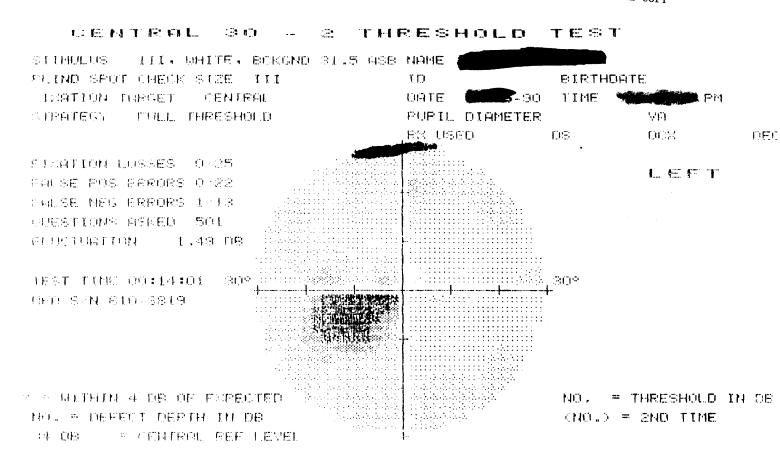
No emphysema. Soft tissues normal. Orbital margins intact. There is some soft tissue haziness in the region of the left ethmoid air cells possibily manifesting sinusitis.

#### **RIGHT HAND:**

Soft tissue swelling over the dorsum but no fracture or arthritic change.







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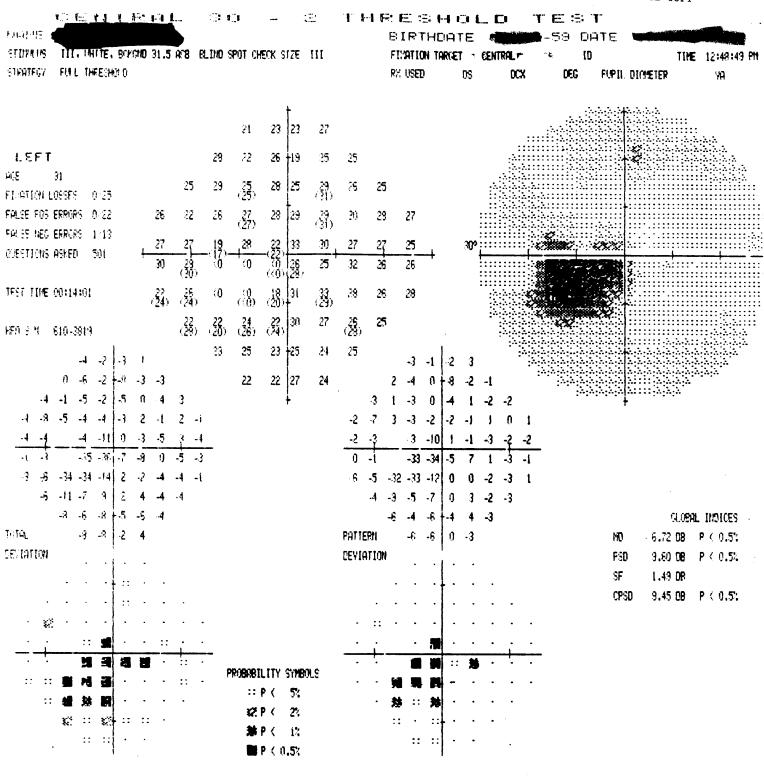
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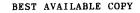


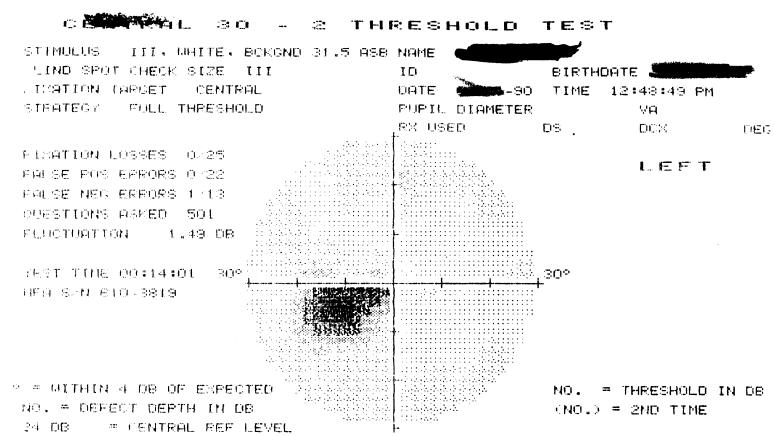
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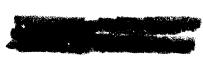


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# PHOTOGRAPHIC INDEX

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# **PHOTOGRAPHS**

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#### PHOTOGRAPHIC INDEX

#### CASE NO. 9001AB

Photo No.	Description of Subject Matter
1.	Overview accident scene in direction of airbag vehicle travel
2.	View of accident scene in direction of airbag vehicle travel
3.	Point of impact against view of airbag vehicle travel
4.	Vehicle #2 path of travel
5.	Final rest position looking south
6.	Overall view of airbag vehicle
7.	Damage to airbag vehicle
8.	Damage to airbag vehicle
9.	Damage to airbag vehicle
10.	Damage to airbag vehicle
11.	Damage to airbag vehicle
12.	Damage to airbag vehicle
13.	Damage to airbag vehicle
14.	Rear view of airbag vehicle
15.	Rear view of airbag vehicle
16.	Interior of airbag vehicle
17.	Note belt stretching just above buckle
18.	Lower instrument panel
19.	Dirt or flesh transfer
20.	Airbag
21.	Note blood and tissue smear

22. Note second blood and tissue smear

23. Right side occupant position

- 24. Interior airbag vehicle
- 25. Interior airbag vehicle, note broken visor
- 26. Vehicle #2 exterior
- 27. Vehicle #2 exterior
- 28. Vehicle #2 exterior
- 29. Vehicle #2 exterior
- 30. Vehicle #2 exterior
- 31. Vehicle #2 exterior
- 32. Vehicle #2 exterior
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- 34. Vehicle #2 exterior
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- 38. Vehicle #2 interior
- 39. Vehicle #2 interior



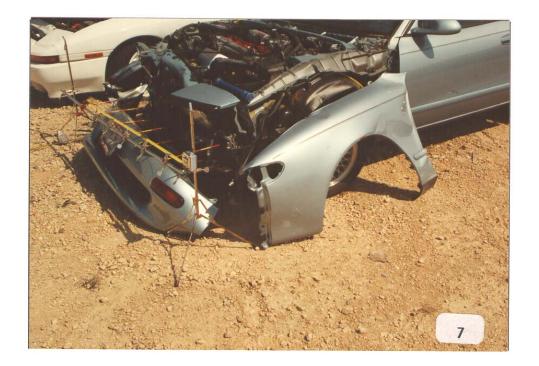


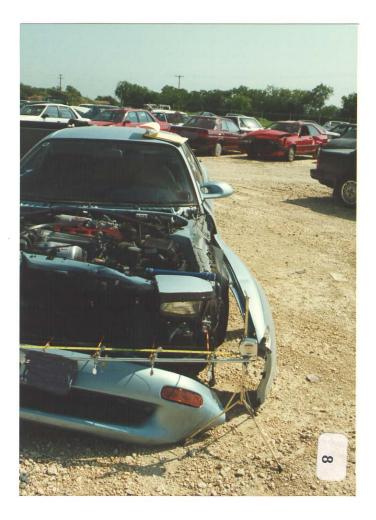


































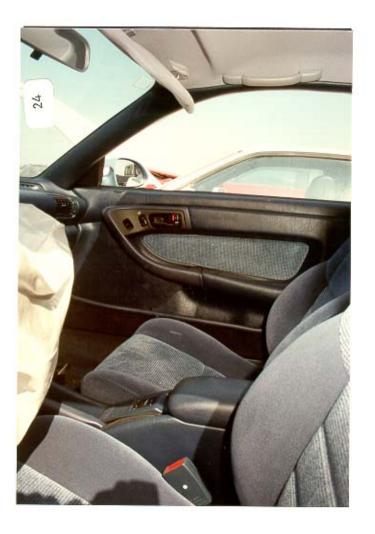






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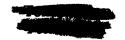
# SwRI AIRBAG DEPLOYMENT INVESTIGATION FULL SCOPE

# **CASE NO. 9001AB SUPPLEMENT**

FINAL REPORT

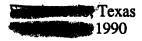
SwRI Project 06-1977 DTNH 22-87-C-37169

Prepared by:



**Prepared** for:

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



### **PHOTOGRAPHIC INDEX**

### **CASE NO. 9001AB Supplement**

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<u>Photo No.</u>	<b>Description of Subject Matter</b>
1.	Injuries to driver of airbag vehicle,
2.	Injuries to driver of airbag vehicle, 1990
3.	Injuries to driver of airbag vehicle,
4.	Injuries to driver of airbag vehicle,
5.	Injuries to driver of airbag vehicle
6.	Injuries to driver of airbag vehicle,

# **"GRAPHIC" PHOTOGRAPHS AND IMAGES**

The following "GRAPHIC" Photographs and Images have been removed from this case.

### Photo #1-0

If you would like a copy of these photographs and/or images please write to:

MARJORIE SACCOCCIO VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER 55 BROADWAY CAMBRIDGE, MA 02142

In the body of your request please include the case, photograph and image number(s).