National Automotive Sampling System

Crashworthiness
Data
System

2002 -- 2003
Expanded Data Set
Coding and Editing Manual

National Center for Statistics and Analysis
National Highway Traffic Safety Administration
U.S. Department of Transportation

Table of Contents

CASE FORM **16**
CRASH 16
Case Number *17*
Stratum *18*
Date of Crash (Month/Day/Year) *19*
Time ofCrash *20*
Police Jurisdiction *22*
PAR Number *23*
Did An Air Bag Deploy In The Crash? *24*
Researcher Assigned To Case *25*
Status of Case *26*
Special Studies *27*
Person Who Last Was Working On Case *29*
STRUCTURE / CASE 30
Date Scene Completed (Month/Day/Year) *31*
Total Number of Vehicles in Crash *32*
Number of CDS in Transport Vehicles in Crash *34*
Number of CDS not in Transport Vehicles in Crash *35*
Number of Non CDS in Transport Vehicles in Crash *36*
Total Number of Occupants in CDS Vehicles in transport *37*
Total Number of Medical Records in Case *38*
Case Due Date *39*
Case Identification Number *40*
Type of case *41*
STRUCTURE / VEHICLES 42
Vehicle Number *43*
Date of Vehicle Inspection *45*
Number of Occupants in this Vehicle *46*
STRUCTURE / OCCUPANTS 47
Vehicle Number *48*
Occupant Number *49*
Interview Required *50*
Interview Completion Date *51*
Interview Completed or Reason why it is not Completed *52*
STRUCTURE / MEDICAL RECORDS / SUMMARY 53
STRUCTURE / MEDICAL RECORDS / DETAIL 53
Vehicle Number *54*
Occupant Number *55*
Medical Record *56*
Medical Facility *57*
Medical Release *58*
Date that Medical Record was Requested *59*
Date that Medical Record was Received *60*
Date that Medical Record was Forwarded to the Zone Center *61*
Medical Record Obtained or Reason why not *62*
STRUCTURE / COMMENT 63
SUMMARY / CASE SUMMARY 64

Crash Type ... *65*
Crash Configuration ... *66*
Case Summary Overview ... *69*
[Data Entry Field FOR Case Summary] ... *70*
Case Summary ... *71*
EVENTS / SUMMARY ... 72
EVENTS / DETAIL ... 73
Crash Events Overview ... *74*
Page 1 of 2 ... *74*
Event Number ... *76*
Vehicle Number ... *77*
Class of Vehicle ... *78*
General Area of Damage ... *83*
Object Contacted ... *84*
Class of Vehicle Contacted ... *95*
General Area of Damage Of vehicle Contacted ... *96*
VEHICLES ... 97
Vehicle Number ... *98*
Vehicle Year ... *99*
Vehicle Make ... *100*
Vehicle Model ... *101*
Damage Plane ... *102*
Damage Severity ... *103*
Component Failure ... *104*
PERSONS ... 106
Vehicle Number ... *107*
Person Role ... *108*
Seat Position ... *109*
Restraints Use ... *110*
Restraints Use ... *110*
AIS Code ... *111*
Injury Severity ... *112*
Injury Source ... *113*
SCENE ... 114
CASE NOTE ... 115
ANNOTATION LIST ... 116
ANNOTATION / ANNOTATION DETAIL ... 117
GENERAL VEHICLE FORM ... 118
VEHICLE ... 118
Vehicle Number ... *119*
Vehicle Model Year ... *120*
Vehicle Make ... *121*
Vehicle Model ... *122*
Vehicle Body Category ... *123*
Body Type ... *125*
Class of Vehicle ... *136*
Vehicle Identification Number (VIN) ... *141*
In Transport ... *144*
Curb Weight ... *145*
Source of Curb Weight Information ... *146*

Cargo Weight *148*
Source of Cargo Weight Information *149*
Inspection Type *150*
Date of Inspection *151*
SPECIFICATIONS 152
Wheelbase *153*
Overall Length *154*
Maximum Width *155*
Curb Weight *156*
Average Track Width *157*
Front Overhang *158*
Rear Overhang *159*
Undeformed End Width *160*
Engine Cylinders *161*
Engine Displacement *162*
Researcher's Assessment of Vehicle Disposition *163*
Justification for Researcher's Assessment of Vehicle Disposition *164*
Multi-Stage or Altered Vehicle *165*
OFFICAL RECORDS 167
Police Reported Tow Status *168*
Police Reported Travel Speed *170*
Posted Speed Limit *171*
Is the Driver Present? *172*
Occupant Number *173*
[Number of Occupants] *174*
Police Reported Alcohol Presence *175*
Alcohol Test for Driver *177*
Alcohol Test Result *178*
Source of Alcohol Test Result *179*
Other Drugs Overview *180*
Police Reported Other Drug Presence *181*
Other Drug Test Result *183*
Driver's Zip Code *184*
Race/Ethnic Origin of Driver *186*
PRECRASH 189
PreCrash Data Overview *189*
Relation to Interchange or Junction *190*
Trafficway Flow *196*
Roadway Alignment *200*
Roadway Profile *201*
Roadway Surface Type *202*
Roadway Surface Type *203*
Page 1 of 2 .... *203*
Roadway Surface Condition *205*
Light Conditions *206*
Atmospheric Conditions *207*
Page 1 of 2 .... *207*
Atmospheric conditions cont'd *207*
Traffic Control Device Functioning *214*
DRIVER / GENERAL 215

- *Precrash Data Overview* *216*
  - Critical Crash Envelope 216
  - Simple Single Critical Crash Envelope 217
  - Complex Single Critical Crash Envelope 217
  - Multiple Critical Crash Envelopes 217
  - Precrash Methodology Flowchart 220
  - Precrash General Rules 221
  - Example 1 223
  - Example 2 225
  - Example 3 226
  - Example 4 228
  - Example 5 229
  - Example 6 231
  - Example 7 233
  - Example 8 235
- *Pre-Event Movement (Prior to Recognition of Critical Event)* *235*
- *Pre-Event Movement (Prior to Recognition of Critical Event)* *236*
- *Critical Pre Crash Category* *239*
- *Critical Pre-Crash Event* *241*
  - This Vehicle Loss Of Control 242
  - This Vehicle Traveling 243
  - Other Motor Vehicle In Lane 244
  - Other Motor Vehicle Encroaching Into Lane 245
  - Pedestrian or Pedalcyclist, or Other Nonmotorist 247
  - Object or Animal 247
  - Precrash Event Scenerios for Different Rear-End Collision Situations 249
- *Attempted Avoidance Maneuver* *251*
- *Pre-Impact Stability* *253*
- *Pre-Impact Location* *255*
- *Crash Type* *257*
- *Crash Category* *258*
- *Crash Configuration* *260*
  - Single Driver 260
  - Same Trafficway, Same Direction 261
  - Same Trafficway, Opposite Direction 261
  - Changing Trafficway, Vehicle Turning 261
  - Intersecting Paths (Vehicle Damage) 261
  - Miscellaneous 261
- *Crash Types* *262*
  - Crash Category: Single Driver 265
  - Crash Category: Same Trafficway, Same Direction 269
  - Crash Category: Same Trafficway, Opposite Direction 275
  - Crash Category: Changing Trafficway, Vehicle Turning 279
  - Crash Category: Intersecting Paths (Vehicle Damage) 282
  - Crash Category: Miscellaneous 283

DRIVER / DISTRACTIONS 285
- *Driver's Distraction/Inattention to Driving* *286*
- *Driver's DistractionS* *287*

AOPS 290
- *Is this an AOPS Vehicle?* *291*

  Air Bag(s) Deployment, First Seat Frontal ... 293
  Air Bag(s) Deployment, Other Than First Seat Frontal ... 295
ROLLOVER ... 297
  Rollover Data Overview ... 297
  Rollover Type ... 298
  Number of Quarter Turns ... 299
  Rollover Initiation Type ... 301
  Location of Rollover Initiation ... 306
  Rollover Initiation Object Contacted Class ... 308
  Rollover Initiation Object Contacted ... 309
  Location on Vehicle Where Initial Principal Tripping Force is Applied ... 315
  Direction of Initial Roll ... 317
RECONSTRUCTION ... 318
  Type of Impact for Highest Delta V ... 319
  Type of Impact for Highest Delta V ... 319
  Heading Angle for This Vehicle ... 320
  Heading Angle for Other Vehicle ... 320
  Heading Angle for Other Vehicle ... 321
  Towed Trailing Unit ... 321
  Towed Trailing Unit ... 322
  Documentation of Trajectory Data ... 323
  Post Collision Condition of Tree or Pole ... 324
DELTAV ... 326
  Event Number for Highest Severity Impact ... 327
  Basis for Computer Generated Delta V for Highest Severity Impact ... 328
  Total Delta V for Highest Severity Impact ... 330
  Longitudinal Delta V for Highest Severity Impact ... 331
  Lateral Delta V for Highest Severity Impact ... 332
  Energy Absorption for Highest Severity Impact ... 333
  Impact Speed for Highest Severity Impact ... 334
  Confidence Level for Highest Severity Impact ... 335
  Barrier Equivalent Speed for Highest Severity Impact ... 336
  Estimated Severity for Highest Severity Impact ... 337
VEHICLE EXTERIOR FORM ... 338
  Vehicle Number ... 339
  Vehicle Model Year ... 340
  Vehicle Make ... 341
  Vehicle Model ... 342
  Vehicle Body Category ... 343
  Body Type ... 345
  Class of Vehicle ... 356
  Vehicle Identification Number (VIN) ... 361
  In Transport ... 364
  Curb Weight ... 365
  Curb Weight ... 365
  Source of Curb Weight Information ... 366
  Cargo Weight ... 368
  Source of Cargo Weight Information ... 369
  Inspection Type ... 370
  Date of Inspection ... 371

TIRES GENERAL 372
- *Type of Transmission* *373*
- *Drive Wheels* *374*
- *Total Gross Vehicle Weight Rating (kgs)* *375*
- *Front Gross Axle Weight Rating (kgs)* *376*
- *Rear Gross Axle Weight Rating (kgs)* *377*
- *Manufacturer's Recommended Front/Rear Tire Size* *378*
- *Manufacturer's Recommended Front/Rear Tire Size* *379*
- *Manufacturer Recommended Tire Pressure – Cold – Front/Rear (kilopascals)* *381*

TIRE / TIRES / LIST 382

TIRE / TIRES / DETAIL 382
- *Tire Location* *383*
- *Tire manufacturer* *384*
- *Tire model* *386*
- *Tire Size On Vehicle* *387*
- *Tire Maximum Pressure (kilopascals)* *390*
- *Minimum Tread Depth (mm)* *391*
- *Tire Measured Pressure (kilopascals)* *392*
- *Tire Restricted* *393*
- *Tire Damage* *394*
- *Tire Damage* *395*

SPECIFICATIONS 396
- *Wheelbase* *397*
- *Overall Length* *398*
- *Maximum Width* *399*
- *Curb Weight* *400*
- *Average Track Width* *401*
- *Front Overhang* *402*
- *Rear Overhang* *403*
- *Undeformed End Width* *404*
- *Engine Cylinders* *405*
- *Engine Displacement* *406*
- *Researcher's Assessment of Vehicle Disposition* *407*
- *Justification for Researcher's Assessment of Vehicle Disposition* *408*
- *Multi-Stage or Altered Vehicle* *409*

FUEL SYSTEMS 411
- *Fuel System Number* *412*
- *Fuel Type* *413*
- *Location of Fuel Tank* *414*
- *Type of Fuel Tank* *416*
- *Location of Filler Cap* *421*
- *Precrash Condition of Fuel Tank* *423*
- *Damage to Fuel Tank* *424*
- *Fuel System Leakage Location* *426*

FIRE 428
- *Fire Occurrence* *429*
- *Origin of Fire* *431*

CRUSH LOCATION 434
- *Profile Number* *435*
- *Event Number* *436*

Direct Damage Location *437*
Location of Field L *438*
Location of Max Crush *439*
CRUSH PROFILE 440
Profile Number *441*
CDC Number *442*
Field L *443*
WinSMASH L *444*
Field L +/- D *445*
Direct +/- D *446*
Category *447*
Width (CDC) *448*
Vertical level at which crush measurements are taken for a particular crush profile. *449*
Maximum crush for this vertical level of crush measurements for this crush profile *450*
C1, C2, C3, C4, C5, C6 .... *451*
CDC / SUMMARY 452
CDC / DETAIL 452
Event Number *453*
[Deformation Number] *454*
General Area of Damage *455*
Object Contacted Category and Object *456*
Direction of Force *458*
[Clock] *459*
Increment of Clock Direction *460*
Override/Underride (this vehicle) *461*
Deformation Location *463*
Specific Longitudinal or Lateral Location *464*
Specific Vertical or Lateral Location *465*
Type of Damage Distribution *466*
Deformation Extent Guide *467*
WinSMASH Overview *468*
Table Of Weights To Be Used For Known Occupants With Unknown Weight 473
Male 473
Female 473
NASSMAIN WinSMASH *474*
DELTA V, BARRIER EQUIVALENT AND SPEED ESTIMATE DECISION RULES 474
NASSMAIN WinSMASH *475*
Definitions for Minor, Moderate, or Severe: 475
NASSMAIN WinSMASH *476*
Total Delta V *477*
Longitudinal Delta V *478*
Lateral Delta V *479*
Energy Absorption *480*
Impact Speed or change to Impact *481*
Barrier Equivalent Speed *482*
Estimated Severity *483*
Severity Rank *486*
Basis for Delta V Entry *487*
Instructions For Completion Of Vehicle Damage Sketch *490*
User Selections *491*

Size and Style *492*
End, Side or Top *493*
Side View Example *494*
End View Example *495*
Top View Example *496*
EDR DATA 497
EDR information obtained *499*
An attempt was made to read the EDR. (The minimum known information if an EDR is read by the researcher will be the EDR software version being useCDR/EDR Version Number499
CDR/EDR Version Number *500*
Warning Lamp Status *501*
Accident Event Sequence Number *502*
Type of event *503*
Number Of Ignition Cycles At Event Occurrence *504*
Number Of Ignition Cycles At Investigation *505*
Driver's Belt Status *506*
Time For Driver Pretensioner Actuation *507*
Driver Seat Track In Forward Position *508*
Passenger's Belt Status *509*
Passenger's Seat Weight Sensor Position *510*
Time For Passenger Pretensioner Actuation *511*
Passenger Air Bag Suppression Switch Position *512*
[Air Bag Number for this Vehicle] *513*
Air Bag Location *514*
Position *516*
Time For First Stage Air Bag Deployment *517*
Time For Second Stage Air Bag Deployment *518*
EDR PRE-CRASH DATA 519
[Accident Event Sequence Number] *520*
Number of seconds Prior to Crash *521*
Pre-crash Vehicle Speed Reading (-5, -4, -3, -2, -1) *522*
Pre-crash Engine Speed Reading (-5, -4, -3, -2, -1) *523*
Pre-crash Engine Throttle Percentage (-5, -4, -3, -2, -1) *524*
Pre-crash Brake Status (-5, -4, -3, -2, -1) *525*
EDR CRASH DATA 526
[Accident Event Sequence Number] *527*
[Accident Event Sequence Number] *528*
[Number of Milliseconds After Crash] *529*
[Delta V Reading] *530*
Time for Longitudinal Delta V reading *531*
Longitudinal Delta V reading *532*
Time for LATERAL Delta V reading *533*
LATERAL Delta V reading *534*
VEHICLE INTERIOR FORM *535*
INTEGRITY 535
[Is There Passenger Compartment Integrity Loss?] *536*
Passenger Compartment Integrity *537*
Door, Tailgate, or Hatch Location *540*
Door, Tailgate, or Hatch Opening *541*
Damage/Failure Associated with Door, Tailgate, or Hatch Opening in Collision *543*

GLAZING......545
Glazing Type and Damage Overview......*546*
Location of Window/Windshield Glazing......*547*
Type of Window/Windshield Glazing......*548*
Window Pre-crash Status......*550*
Glazing Damage From Impact Forces......*551*
Glazing Damage from Occupant Contact......*553*
INTRUSIONS......555
INTRUSION DETAIL......555
Occupant Area Intrusion Overview......*556*
[Intrusion Number]......*560*
Row......*561*
Position......*563*
[Intrusion Location]......*564*
Area......*566*
Intruded Component......*567*
Comparison Value (of intrusion)......*571*
Intruded Value (of intrusion)......*572*
Intrusion......*573*
Magnitude of Intrusion......*574*
Crush Direction......*575*
Intrusion / Sketch......*576*
Intrusion Sketch Completion......*577*
INSTRUMENT......578
Odometer Reading......*579*
Odometer Source......*580*
Instrument Panel Damage from Occupant Contact......*581*
Type of Knee Bolster Covering......*582*
Knee Bolsters Deformed from Occupant Contact......*583*
Did Glove Compartment Door Open During Collision(s)?......*584*
Adjustable Pedals......*585*
Adaptive (Assistive) Driving Equipment......*586*
Adaptive (Assistive) Driving Equipment......*587*
Steering Column......*589*
Steering Column Type......*590*
Tilt Steering Column Adjustment......*591*
Telescoping Steering Column Adjustment......*592*
Location of Rim / Spoke Deformation......*594*
COMPLETE STEERING WHEEL COLLAPSE......595
Steering Rim / Spoke Deformation......*596*
Comparison Value......*599*
Damage Value......*600*
Deformation......*601*
CONTACT / LIST......602
CONTACT/CONTACT......602
Overview / Instructions for Completion of Vehicle Interior Sketches And Point of Occupant Contact Pages......*603*
Contact......*604*
Contact Area Label......*605*
Contacted Component......*606*

Occupant Number............610
Body Region............611
Evidence............612
Confidence Level of Occupant Contact............613
Confidence Level of Occupant Contact............613
Contact / Sketch 1 and Sketch 2............614
Instructions for Completion of Vehicle Interior Sketches............615
EJECTION / LIST............617
Ejection List Tab............617
Ejection / Entrapment Overview............618
EJECTION DETAIL............620
Ejection Number............621
Ejection - Type............622
Ejection Area............623
Ejection Area............623
SAS VARIABLE: N/A............623
Ejection Medium............625
Ejection Medium Status............626
ENTRAPMENT............627
SAFETY SYSTEMS FORM............628
Safety Systems Form Overview............629
SEAT DEFINITION............630
Occupant's Seat Position............631
Head Restraint Type at This Occupant Position............633
Head Restraint Damage by Occupant at This Occupant Position............635
Active Head Restraint............636
Seat Type............637
Seat Orientation............639
Seat Track Position............640
Seat Performance............642
Does the Seat Have Integrated Passenger Belts?............644
LATCH Lower Anchor Availability............645
LATCH Tether Availability............646
Seat back Incline Prior to Impact............647
Seat Back Incline Position Post Impact............648
Air Bag ever Available............649
RESTRAINTS / MANUAL / BELT............650
Manual (Active) Belt System Availability............651
Historical Use of Manual (Active) Belt System............653
Manual (Active) Belt System Used in this Crash?............655
Proper Use of Manual (Active) Belts............657
Manual (Active) Belt Failure Modes During Crash............659
Manual Shoulder Belt Upper Anchorage Adjustment............660
RESTRAINTS / MANUAL / COMPONENTS............661
Pretensioner Presence/Actuation............662
Latch Plate Type............663
Belt Retractor Type............665
Seat Belt Positioning Device Presence............667
RESTRAINTS / AUTOMATIC............669
Automatic (Passive) Belt System Availability/Function............670

Automatic (Passive) Belt System Use ... *672*
Automatic (Passive) Belt System Type ... *674*
Proper Use of Automatic (Passive) Belt System ... *675*
Automatic (Passive) Belt Failure Modes During Crash ... *677*
AIR BAG ... 678
Air Bag Number for this Vehicle ... *679*
Seat Location for Air bag(s) Data ... *680*
Deployment Location of Air Bag ... *681*
Air Bag Status ... *683*
Type of Air Bag ... *684*
Redesigned Air Bag ... *685*
Air Bag Deployment ... *686*
Indications of Air Bag Failure ... *688*
Type of Cutoff Switch ... *689*
Cutoff Switch Position Status ... *690*
Did Air Bag Module Cover Flap(s) / SEAMS Open at Designated Tear Points? ... *691*
Were the Cover Flap(s) Damaged ... *692*
Was there damage to the air bag? ... *693*
Source of Air Bag Damage ... *695*
Was the Air Bag Tethered ... *697*
Did the Air Bag Have Vent Ports? ... *698*
Was the Air Bag in this Occupant's Position Contacted by Another Occupant? ... *699*
CHILD SEAT LIST ... 708
CHILD SEAT DETAIL ... 709
[Child Restraint Number] ... *710*
Child Restraint Make ... *711*
Child Restraint Model ... *712*
Child Restraint Type ... *713*
Date of manufacture ... *718*
Model Number ... *719*
Child Restraint Harness/Shield Design ... *720*
Child Restraint Harness Retainer Clip ... *722*
Child Restraint Tether Design ... *723*
Child Restraint LATCH Design ... *724*
Child Restraint Usage Orientation ... *725*
Child Restraint Harness/Shield Use ... *726*
Child Restraint Retainer Clip Use ... *727*
Child Restraint Tether Use ... *728*
Child Seat LATCH Use ... *729*
Belt Routing/Use ... *730*
Use of Locking Clip on Vehicle Belt ... *731*
Seat Location for Child Restraint ... *733*
Child Restraint Placement ... *734*
Child Position In Child Restraint ... *735*
OCCUPANT ... 736
Occupant Overview ... *737*
Occupant Number ... *738*
Occupant's Age ... *739*
Occupant's Height ... *740*
Occupant's Weight ... *741*

Occupant's Sex ... *742*
Occupant's Role ... *743*
Race/Ethnic Origin of Occupant ... *744*
Occupant's Eye Wear ... *746*
Police Reported Air Bag Availability/Function ... *747*
Police Reported Belt Use ... *748*
EJECTION LIST ... 749
EJECTION DETAIL ... 749
Ejection / Entrapment Overview ... *750*
Type of Ejection ... *753*
Ejection Area ... *754*
Ejection Medium ... *756*
Ejection Medium Status (Immediately Prior to Impact) ... *758*
EJECTION COMMENTS ... 759
ENTRAPMENT DETAILS ... 760
Entrapment ... *761*
Occupant Mobility ... *762*
ENTRAPMENT / COMMENT ... 764
SEAT DEFINITION ... 765
Occupant's Seat Position ... *766*
Occupant's Posture ... *768*
Occupant's Role ... *770*
Seat Type ... *771*
SEAT ATTRIBUTES ... 773
Head Restraint Type at This Occupant Position ... *774*
Head Restraint Damage by Occupant at This Occupant Position ... *776*
Active Head Restraint ... *777*
Seat Type ... *778*
Seat Orientation ... *780*
Seat Track Position ... *781*
Seat Performance ... *783*
Seat LATCH Anchor Availability ... *785*
Seat LATCH Tether Availability ... *787*
Does the Seat Have Integrated Passenger Belts? ... *789*
Seat back Incline Prior to Impact ... *790*
Seat Back Incline Position Post Impact ... *791*
Child Safety Seat Used ... *792*
Air Bag Ever Available ... *793*
AIR BAG FUNCTION ... 794
Air Bag Number for this Vehicle ... *795*
Location of Air Bag ... *796*
Air Bag Status ... *798*
Type of Air Bag ... *799*
Redesigned Air Bag ... *800*
Air Bag Deployment ... *801*
Indications of Air Bag Failure ... *803*
Type of Cutoff Switch ... *804*
Cutoff Switch Position Status ... *805*
AIR BAG DAMAGE ... 806
Did Air Bag Module Cover Flap(s)/Seam(s) Open at Designated Tear Points? ... *807*

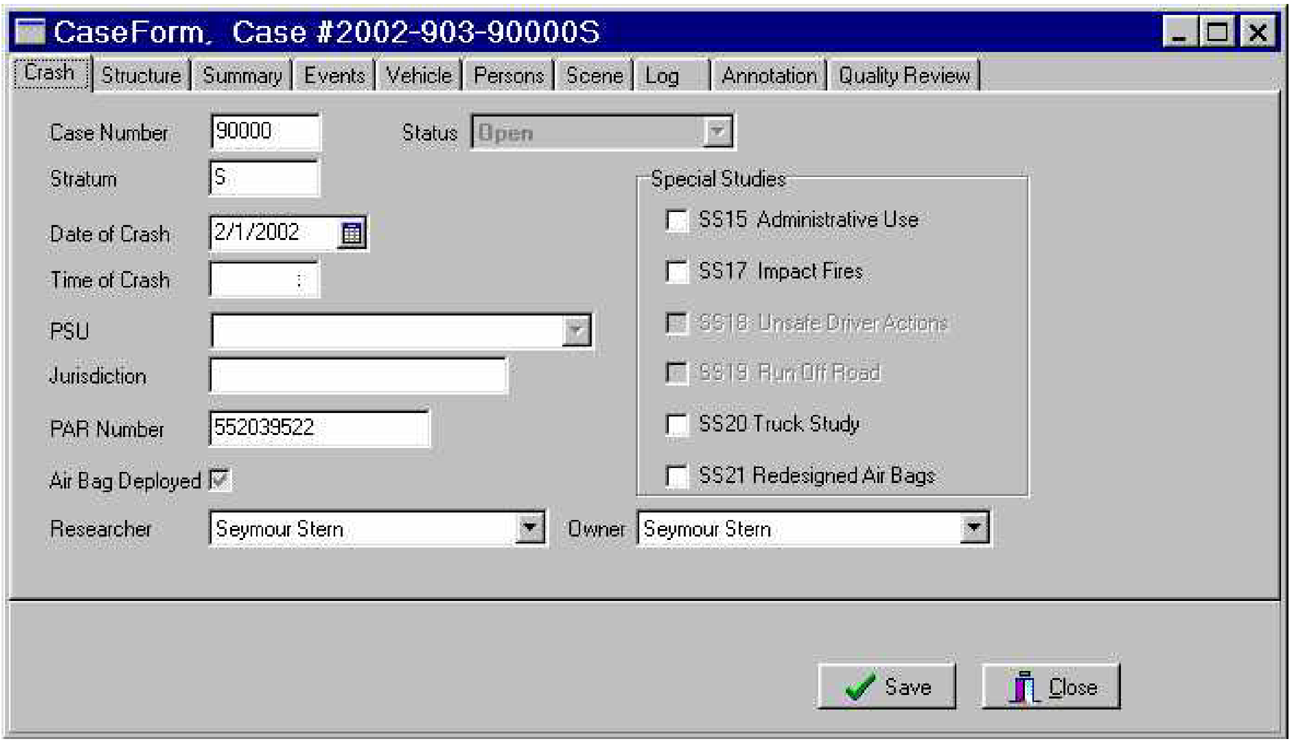
Were the Cover Flap(s) Damaged *808*
Was There Damage To The Air Bag? *809*
Source of Air Bag Damage *811*
Was the Air Bag Tethered *813*
Did the Air Bag Have Vent Ports? *814*
AIR BAG / EVALUATION 815
Had Any Prior Maintenance/Service Been Performed On This Air Bag System? *817*
Air Bag Deployment Accident Event Sequence Number *818*
CDC For Air Bag Deployment Impact *819*
Was the Air Bag in This Occupant's Position Contacted by Another Occupant? *820*
CHILD RESTRAINT LIST 821
CHILD RESTRAINT DETAIL 822
CHILD RESTRAINT OVERVIEW 823
[Child Restraint Number] *825*
Child Restraint Make *826*
Child Restraint Model *827*
Child Restraint Type *828*
Date of manufacture *833*
Model Number *834*
Child Restraint Harness/Shield Design *835*
Child Restraint Harness Retainer Clip *837*
Child Restraint Tether Design *838*
Child Restraint LATCH Design *839*
Child Restraint Usage Orientation *840*
Child Restraint Harness/Shield Use *841*
Child Restraint Retainer Clip Use *842*
Child Restraint Tether Use *843*
Child Seat LATCH Use *844*
Belt Routing/Use *845*
Use of Locking Clip on Vehicle Belt *846*
Seat Location for Child Restraint *848*
Child Restraint Placement *849*
Child Position In Child Restraint *850*
MANUAL SEAT BELT 851
Manual (Active) Belt System Availability *852*
Historical Use of Manual (Active) Belt System. *854*
is used if it cannot be determined whether or not a manual belt was in use by the occupant at the time of the crash.Manual (Active) Belt System Used in This Crash? *855*
Manual (Active) Belt System Used in This Crash? *856*
Manual (Active) Belt Failure Modes During Crash *859*
Manual Shoulder Belt Upper Anchorage Adjustment *861*
Source of Researcher's Determination of Belt Use *863*
Pretensioner Presence/Actuation *864*
Latch Plate Type *865*
Belt Retractor Type *867*
Seat Belt Positioning Device Presence *870*
Seat Belt Positioning Device Use *872*
AUTOMATIC SEAT BELT 873
Automatic (Passive) Belt System Availability/Function *874*
Automatic (Passive) Belt System Use *877*

Automatic (Passive) Belt System Type *879*
Automatic (Passive) Belt Failure Modes During Crash *880*
Source of Researcher's Determination of aUTOMATIC Belt Use *882*
INJURY/PSU 883
Police Injury Severity (Police Rating) *884*
Mortality *890*
Treatment *891*
Type of Medical Facility (for Initial Treatment) *893*
Hospital Stay *895*
Working Days Lost *896*
INJURY-ZONE 898
Death Date *899*
Death Time *900*
Death Time *901*
Number of Injuries for This Occupant *902*
Glasgow Coma Scale (GCS) Score (at Medical Facility) *903*
Was the Occupant Given Blood? *905*
Arterial Blood Gases -- ABG (HCO3) *907*
1st, 2nd, 3rd, 4TH, 5TH Medically Reported Cause of Death *910*
EMS *912*
INJURY LIST 913
INJURY DETAIL 913
Injury Number *914*
AIS Code *915*
Injury Description *916*
Injury Rank *917*
Source of Injury Data *918*
Body Region *920*
Type of Anatomic Structure *921*
Specific Anatomic Structure *922*
Level of Injury *923*
Abbreviated Injury Scale *924*
Aspect *925*
Injury Source *926*
Injury Source Confidence Level *931*
Direct/Indirect Injury *932*
Occupant Area Intrusion Number *934*
EMERGENCY MEDICAL SERVICE (EMS) OVERVIEW 935
VEHICLES 936
[EMS Unit Number] *937*
Responding Agency *938*
Responding Emergency Vehicle Type *940*
Transportation Mode *941*
FIRST Notification Time *942*
FIRST Arrival Time *943*
Time of Departure From the Scene *944*
Arrived at Medical Facility *945*
EMS CARE 946
Vehicle #. *947*
Occupant # *948*

Type of EMS Care Administered *949*
VITAL SIGNS 950
[Vital Sign Number] *951*
Date of Reading *952*
Time of Reading *953*
Pulse *954*
Systolic Blood Pressure *955*
Diastolic Blood Pressure *956*
Respiratory Rate *957*
Source of Vital Signs *958*

CASE FORM

Crash


CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Save
Close

Case Number 90000

Status Open

Stratum S

Date of Crash 2/1/2002

Time of Crash

PSU

Jurisdiction

PAR Number 552039522

Air Bag Deployed ☑

Researcher Seymour Stern

Owner Seymour Stern

Special Studies
- ☐ SS15 Administrative Use
- ☐ SS17 Impact Fires
- ☐ SS18 Unsafe Driver Actions
- ☐ SS19 Run Off Road
- ☐ SS20 Truck Study
- ☐ SS21 Redesigned Air Bags

CASE NUMBER

Screen Name: Case Number

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range:

001-499
501-599 (Fire)
801-899 (Redesigned Air Bags)

Source: Assigned by Automated Case Selection System

Remarks:

This variable is assigned by ACSS (Automated Case Selection System) and cannot be changed.

The three digits are numbers ranging from 001 to 499. No numbers will be skipped. If a case must be dropped, the number will not be reused.

Cases sampled within the NASS CDS sampling frame are numbered 001-499. Cases selected outside of the NASS CDS sampling frame as part of a special study data collection effort are numbered 501-599 or 801-899 by the ACSS

STRATUM

Screen Name: **Stratum**

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range: CDS Sampling Stratum — A, B, C, D, E, F, G, H, J, K

Source: Assigned by Automated Case Selection System

Remarks:

This variable is generated by the ACSS (Automated Case Selection System) and cannot be changed.

The Stratum is the letter identifying which CDS sampling classification the case is assigned.

DATE OF CRASH (MONTH/DAY/YEAR)

Screen Name: **Date of Crash**

SAS Data Set: **ACCIDENT**
SAS Variable: **MONTH, DAYWEEK, YEAR**

Element Attributes:

Month: 01-12
Weekday: 01 through 07
Year: 2002

Source: Assigned by Automated Case Selection System

Remarks:

This variable is assigned by the ACSS (Automated Case Selection System) and cannot be changed.

DAY OF WEEK (SAS Label: DAYWEEK)
This two place numeric value indicates on which day of the week the accident occurred. To protect the confidentiality of records concerning specific accidents used by NASS, the accident date is not provided. Instead, the accident record indicates year, month and DAY OF WEEK of accident occurrence.

DAY OF WEEK values are coded as follows:
01 Sunday
02 Monday
03 Tuesday
04 Wednesday
05 Thursday
06 Friday
07 Saturday

TIME OF CRASH

Screen Name: **Time of Crash**

SAS Data Set: **ACCIDENT**
SAS Variable: **TIME**

Element Attributes:

0001-2400	
9999	Unknown

Source: Police Report

Remarks:

This variable is assigned by the ACSS (Automated Case Selection System) and cannot be changed.

PSU

Screen Name: PSU

SAS Data Set: **ACCIDENT**
SAS Variable: **PSU**

Element Attributes:

PSU number

Source: Assigned by Automated Case Selection System.

Remarks:

This variable reports the PSU (Primary Sampling Unit) that selected the case. This variable is assigned by the ACSS and cannot be changed at the PSU.

POLICE JURISDICTION

Screen Name: Jurisdiction

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

PSU specific list of sampled Police Jurisdiction

Source: Police Report

Remarks:

This variable reports the sampled police jurisdiction from which the case was selected. This variable is selected in the ACSS and cannot be changed at the PSU.

This is an administrative variable.

PAR NUMBER

Screen Name: PAR Number

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Police report number recorded from the PARS

Source: Police Report

Remarks:

This variable reports the police report number as entered into the ACSS and cannot be changed at the PSU.

This is an administrative variable.

DID AN AIR BAG DEPLOY IN THE CRASH?

Screen Name: Air Bag Deployed

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Check box

Source: Police Report

Remarks:

This variable reports the air bag deployment status as entered into the ACSS and cannot be changed at the PSU.

A check in the box indicates a police reported air bag deployment.

RESEARCHER ASSIGNED TO CASE

Screen Name: Researcher

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
PSU Specific

Source: NASS Personnel Roster.

Remarks:

Select the name of the Researcher assigned the case.

This is an administrative variable.

STATUS OF CASE

Screen Name: Status

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Open

Source: NASSMAIN Program

Remarks:

The NASSMAIN Program determines the status of the case.

This is an administrative variable.

Screen Name: Special Studies

SAS Data Set: **SPECSTDY**
SAS Variable: **STUDY**

Element Attributes:

SS17	Impact Fires
SS21	Advanced Air Bags

Administative Use
Redesigned Airbag Study
Fire Study
Truck Study

Source: Special study procedures.

Remarks:

A checkmark in the box adjacent to the Special Study identifier means the case qualifies for that special study.

The vehicle qualifying for the special study must be inspected.

A blank box adjacent to the Special Study identifier means the case does not qualify for this special study.

Definition of SS17 (Impact Fires)

The goal of the SS17 (Impact Fire) identifier is to locate complete cases involving impact fires for clinical review.

Impact Fire cases selected within the CDS case sample
NASS CDS cases involving a vehicle fire that originated in a late model year vehicle (LMY), which resulted from an impact with another vehicle or object, and the cases are selected by the automated case selection system (ACSS) as regular CDS cases. In addition, to qualify for the special study the burned vehicle must be inspected. These cases are to be investigated and entered into the EDCS.

Impact Fires selected as a special study case (outside of the CDS sample)
NASS CDS crashes involving a vehicle fire that originated in a late model year (LMY) vehicle which resulted from an impact with another vehicle or object and the crashes are listed but not selected as part of the CDS case sample. In addition, to qualify for the special study the burned vehicle must be inspected. These crashes are to be investigated and entered into EDCS. Case numbers shall be from 501-599

Definition of SS21 Redesigned Air Bag Special Study (RABSS)

The primary objective of this special study is to collect data on crashes of high interest (children, out of position occupants, high damage severity, and multiple injured occupants) involving vehicles equipped with a redesigned air bag system in which the air bag deployed. For inclusion in this study the case must meet the following minimum criteria:

- 1998 or newer model year vehicle equipped with a redesigned air bag.
- The crash configuration to this vehicle must be an impact where the air bag is designed to protect the occupants (e.g., 11, 12, or 1 o'clock PDOFs). Do not include side or back plane impacts. In addition, exclude rollovers with or without ejection.
- An occupant must be seated in a position in which a redesigned air bag has deployed.

Within Sample

All RABSS cases selected within the normal CDS case selection process, are to be completed following normal CDS procedures.

Outside of Sample

All RABSS cases selected outside of the normal CDS sample must have a vehicle inspection. In addition, all normal CDS procedures are to be followed in data collection.

PERSON WHO LAST WAS WORKING ON CASE

Screen Name: Owner

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

PSU and Zone

Source: NASS Personnel Roster.

Remarks:

This is an administrative variable.

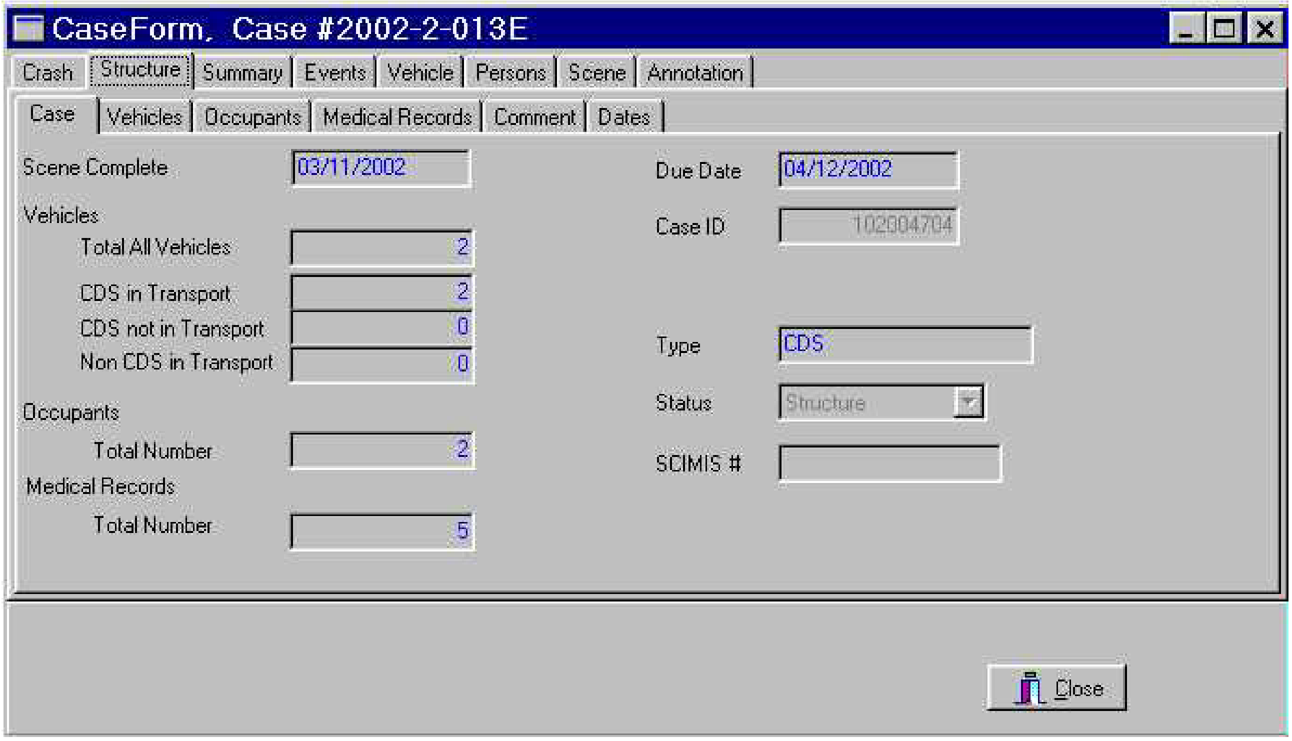
At the PSU level:

Select the name of the Researcher who has the responsibility for the case.

At the Zone Center level:

Select the name of the person who has the primary responsibility for the case review.

Structure / Case


CaseForm, Case #2002-2-013E
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Annotation
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Close

Scene Complete 03/11/2002

Vehicles

Total All Vehicles 2

CDS in Transport 2

CDS not in Transport 0

Non CDS in Transport 0

Occupants

Total Number 2

Medical Records

Total Number 5

Due Date 04/12/2002

Case ID 102004704

Type CDS

Status Structure

SCIMIS #

DATE SCENE COMPLETED (MONTH/DAY/YEAR)

Screen Name: Scene Complete

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	Calendar year of data collection

Source: Researcher

Remarks:

Enter the date that the required scene inspection (including field sketch) was completed.

TOTAL NUMBER OF VEHICLES IN CRASH

Page 1 of2

Screen Name: Vehicles – Total All Vehicles

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of vehicles (in-transport, CDS, and non-CDS) in the crash

Source: Researcher determined

Remarks:

All in-transport vehicles involved in the crash must be counted. Any not-in-transport CDS applicable inspected vehicles that are struck by any CDS applicable in-transport vehicle must also be counted.

Examples:
The PAR stated that Vehicle 1, a CDS applicable vehicle, struck Vehicle 2, another CDS applicable vehicle. Vehicle 2 then rebounded into vehicle 3, a legally parked CDS applicable inspected vehicle. All inspected vehicles are included in the case.

Vehicle 1, a heavy truck, struck Vehicle 2, a CDS applicable vehicle, and the truck then continued on to strike a legally parked CDS applicable vehicle. The parked vehicle is not included in the case.

Each case must have at least one in-transport/towed CDS applicable vehicle.

Vehicle information must be entered for each in-transport motor vehicle involved in the crash. For example, one CDS applicable vehicle is towing another by a nonfixed linkage (e.g., rope, chain, etc.). Assuming both vehicles are involved in the crash, data are required for both vehicles. If the linkage was fixed (see below for "fixed linkage"), only the power unit would be considered in-transport and only one form required.

When one motor vehicle is towing another, the number of vehicles depends on the crash circumstances and the type of linkage between the vehicles. A fixed linkage is defined as one which has the purpose of keeping the towed unit separated from the power unit by a distance which is essentially constant. Included within this definition are cradle linkages where the towed unit has two or more wheels off the ground. A nonfixed linkage (such as a rope or a chain) requires the towed unit to be manually controlled.

If the linkage between the units is fixed, consider only the vehicle that is the power (i.e., towing) unit and consider the towed unit as cargo throughout the entire crash sequence, regardless of subsequent events/impacts sustained by the towed unit. In other words, a vehicle towed by a fixed linkage: (1) is

Total Number Of Vehicles In Crash cont'd

never considered as an in-transport vehicle, (2) will not have vehicle information entered, and (3) will be considered as cargo associated with the power unit.

If the linkage between the units is nonfixed, each vehicle is considered in-transport, and all vehicle(s) involved in the crash sequence should be recorded individually. Hit-and-run crashes occasionally cause some confusion. Vehicle information is entered for each in-transport motor vehicle involved in the crash independent of the amount of information collected on the vehicles by the police.

NUMBER OF CDS IN TRANSPORT VEHICLES IN CRASH

Screen Name: Vehicles -- CDS in Transport

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of CDS in Transport vehicles in the crash

Source: Researcher determined

Remarks:

The number of CDS in transport vehicles is rolled up from the Structure/Vehicles screen.

NUMBER OF CDS NOT IN TRANSPORT VEHICLES IN CRASH

Screen Name: Vehicles -- CDS not in Transport

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of CDS not in Transport vehicles in the crash

Source: Researcher determined

Remarks:

The number of CDS not in transport vehicles is rolled up from the Structure/Vehicles screen.

NUMBER OF NON CDS IN TRANSPORT VEHICLES IN CRASH

Screen Name: Vehicles -- Non CDS in Transport

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of Non CDS in Transport vehicles in the crash

Source: Researcher determined

Remarks:

The number of non CDS in transport vehicles is rolled up from the Structure/Vehicles screen.

TOTAL NUMBER OF OCCUPANTS IN CDS VEHICLES IN TRANSPORT

Screen Name: Occupants – Total Number Total Number of Occupants in CDS Vehicles in transport

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of Occupants in vehicles in the crash

Source: Researcher determined

Remarks:

This total number of occupants in vehicles is rolled up from the Structure/Occupants screen.

TOTAL NUMBER OF MEDICAL RECORDS IN CASE

Screen Name: Medical Records – Total Number

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

The total number of Medical Records required for occupants of CDS in Transport vehicles in the crash

Source: Researcher determined

Remarks:

This total number of medical records requested or received for occupants of CDS vehicles in transport is rolled up from the Structure/Medical Records screens.

CASE DUE DATE

Screen Name: Due Date

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Date generated Automated Case Selection System

Source: Automated Case Selection System

Remarks:

This variable is generated by the ACSS (Automated Case Selection System) and cannot be changed.

CASE IDENTIFICATION NUMBER

Screen Name: Case ID

SAS Data Set: **ALL**
SAS Variable: **SCASEID**

Element Attributes:

Unique Number generated by the NASSMAIN Program

Source: NASSMAIN Program

Remarks:

This variable is generated by the NASSMAIN Program and cannot be changed.

TYPE OF CASE

Screen Name: Type

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

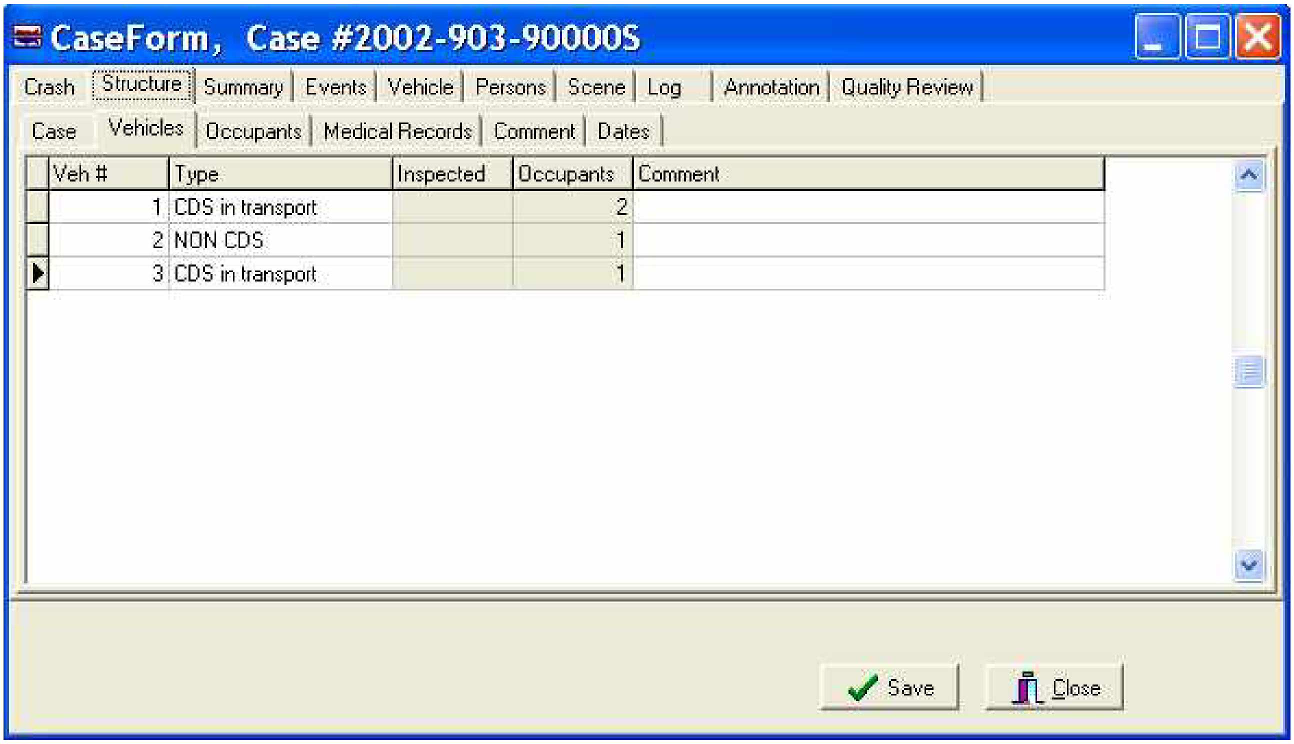
CDS
SCI-CDS
TRUCK-CDS

Source: NASSMAIN Program

Remarks:

This variable is generated by the NASSMAIN Program and cannot be changed.

Structure / Vehicles


CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Save
Close

Veh #	Type	Inspected	Occupants	Comment
1	CDS in transport		2	
2	NON CDS		1	
3	CDS in transport		1	

VEHICLE NUMBER

Screen Name: Veh #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes: As numbered

Source: Researcher determined

Remarks:

Vehicles are numbered starting with "1". Each in-transport motor vehicle is assigned a unique number. Vehicle numbers are to be assigned consecutively according to the order NASS vehicles are listed on the PAR except in the following circumstances: 1) If there are any in-transport NASS vehicles not listed on the PAR, then use the next consecutive number. 2) If there are any CDS or non-CDS applicable and not-in-transport vehicles that are struck by an in-transport CDS applicable vehicle then assign them to the last vehicle numbers in the case (i.e. parked car).

> Example:
>
> The PAR stated that Vehicle 3, a Honda Accord, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In the NASS CDS case the Accord is Vehicle 2, the Impala is Vehicle 1, and the Corolla, if inspected, must be assigned as Vehicle 3.

Do not assign a number to an uninspected not in-transport vehicle

Type of Vehicle

Screen Name: Type

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

CDS in transport
NON CDS
CDS NOT in transport

Source: Researcher determined

Remarks:

All vehicles involved in the crash must be counted. All in-transport CDS, Non CDS, and inspected not-in-transport vehicles that are struck by any CDC- applicable in-transport vehicle must be counted.

CDS in transport

A vehicle is counted when the vehicle has been determined to be a CDS applicable vehicle that is in-transport. This is researcher determined and may not necessarily agree with the police report. For example, the PAR may list a “parked vehicle” as a struck vehicle: upon inspecting the scene the researcher determines there is no “legal’ parking at the scene, so the PAR-reported parked vehicle becomes an in-transport vehicle.

NON CDS

Is used when the in-transport vehicle is not a CDS applicable vehicle.

CDS NOT-in-transport

Is used when the inspected vehicle has been determined to be a CDS applicable vehicle that is not-in-transport. This is researcher determined and may not necessarily agree with the police report. For example, the PAR may list a “parked vehicle” as a struck vehicle: upon inspecting the scene the researcher determines there is no “legal’ parking at the scene, so the PAR-reported parked vehicle becomes an in-transport vehicle. Only those inspected vehicles that are struck by an in-transport vehicle are to be included. If an in-transport CDS applicable vehicle impacts a legally parked car, which then strikes another legally, parked car, only the first parked car will be included (if inspected). However, if this second parked car is also struck it also would be included (if inspected).

DATE OF VEHICLE INSPECTION

Screen Name: Inspected

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	As appropriate

Source: Date is rolled up from the Vehicle Exterior Form, Vehicle screen.

Remarks:

When researcher completes the vehicle inspection he enters the date on the Vehicle Exterior Form, Vehicle screen and it automatically rolls up to this variable.

NUMBER OF OCCUPANTS IN THIS VEHICLE

Screen Name: Occupants

SAS Data Set: **N/A**
SAS Variable: **N/A**

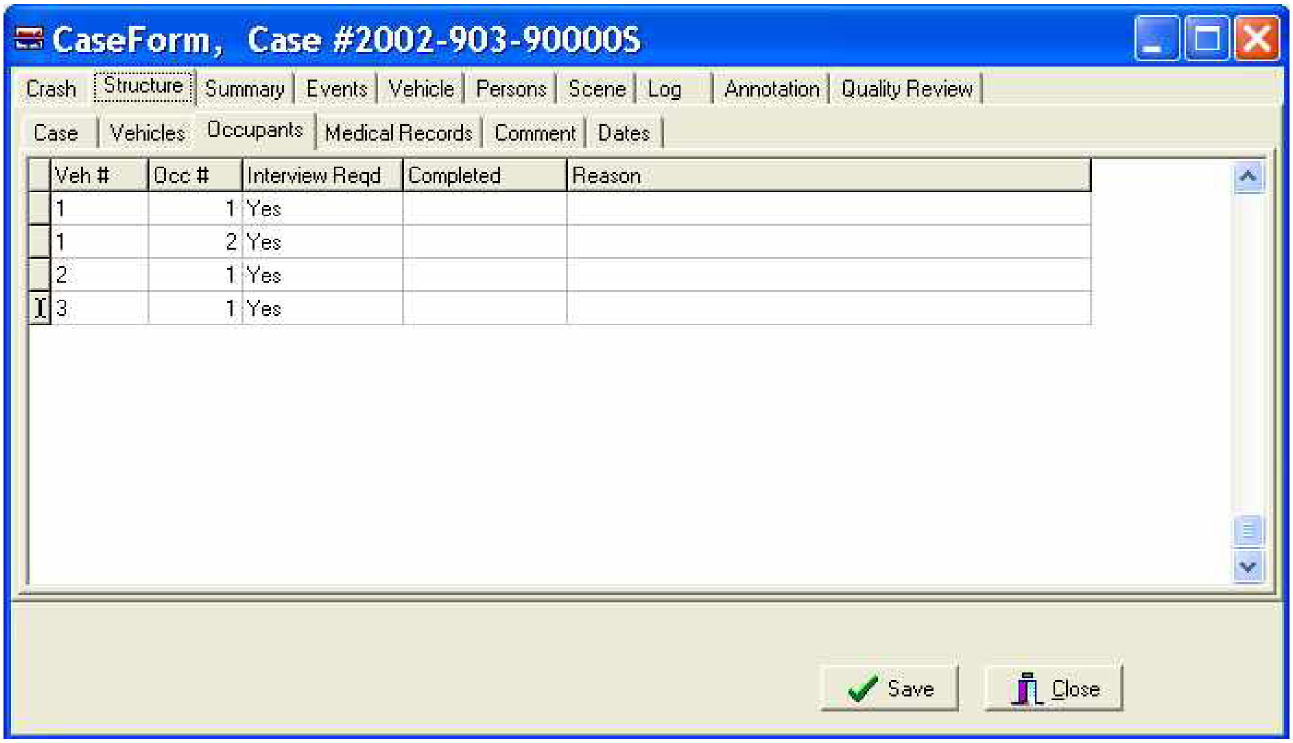
Element Attributes:

Total number of occupants in this vehicle

Source: The number of Occupants is rolled up from the Case Form, Structure, and Occupants screen.

Remarks:

Structure / Occupants



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Save
Close

Veh #	Occ #	Interview Reqd	Completed	Reason
1	1	Yes		
1	2	Yes		
2	1	Yes		
3	1	Yes		

VEHICLE NUMBER

Screen Name:	Veh #
SAS Data Set:	**N/A**
SAS Variable:	**N/A**
Element Attributes:	As numbered from vehicle tab
Source:	Researcher determined

Remarks:

Researcher selects edit/insert from main menu. This opens a drop down list of all the vehicles entered on the Structure/Vehicles screen. The researcher then selects the vehicle number for which to enter the rest of the data.

OCCUPANT NUMBER

Screen Name: Occ #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

As numbered

Source: Researcher determined

Remarks:

Researcher selects edit/insert from main menu. This opens a drop down list of all the vehicles entered on the Structure/Vehicles screen. The researcher then selects the vehicle number for which to enter the rest of the data. This automatically inserts the next available occupant number for this vehicle.

INTERVIEW REQUIRED

Screen Name: Interview Reqd

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Yes
No

Source: Researcher determined

Remarks:

This automatically places a "Yes" in this variable. To change it to "No" the researcher must click on the variable box, a drop down list will appear.

INTERVIEW COMPLETION DATE

Screen Name: Completed

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	As appropriate

Source: Researcher determined

Remarks:

When researcher completes the interview the date of completion is entered here.

INTERVIEW COMPLETED OR REASON WHY IT IS NOT COMPLETED

Screen Name: Reason

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

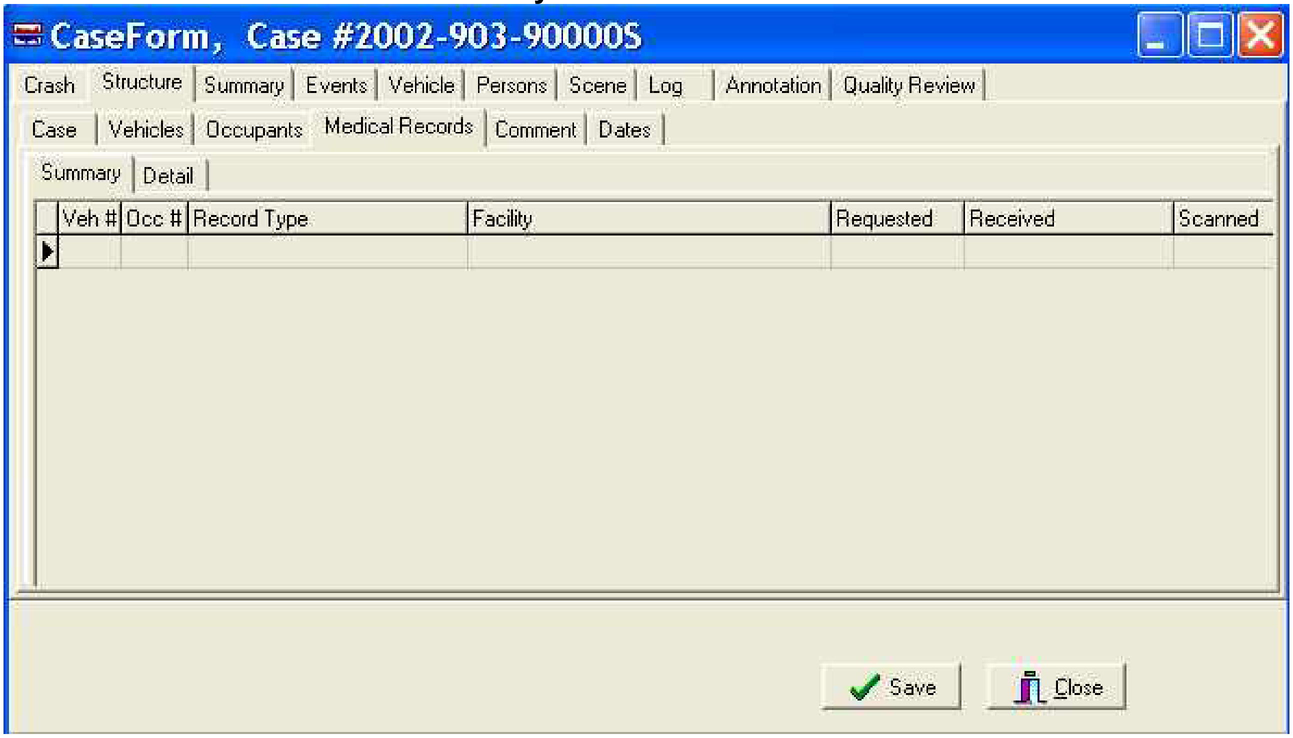
Unable to contact or locate
Hit and Run
Fatal - surrogate not available
In intensive care - surrogate not available
Out-of-state resident
Refused interview
Insurance company refusal
Attorney refusal or litigation
No return of questionnaire
Other (specify)
Partial interview
Complete interview

Source: Researcher determined

Remarks:

Select the attribute that best fits the results of the completed interview or Reason of the last interview attempt.

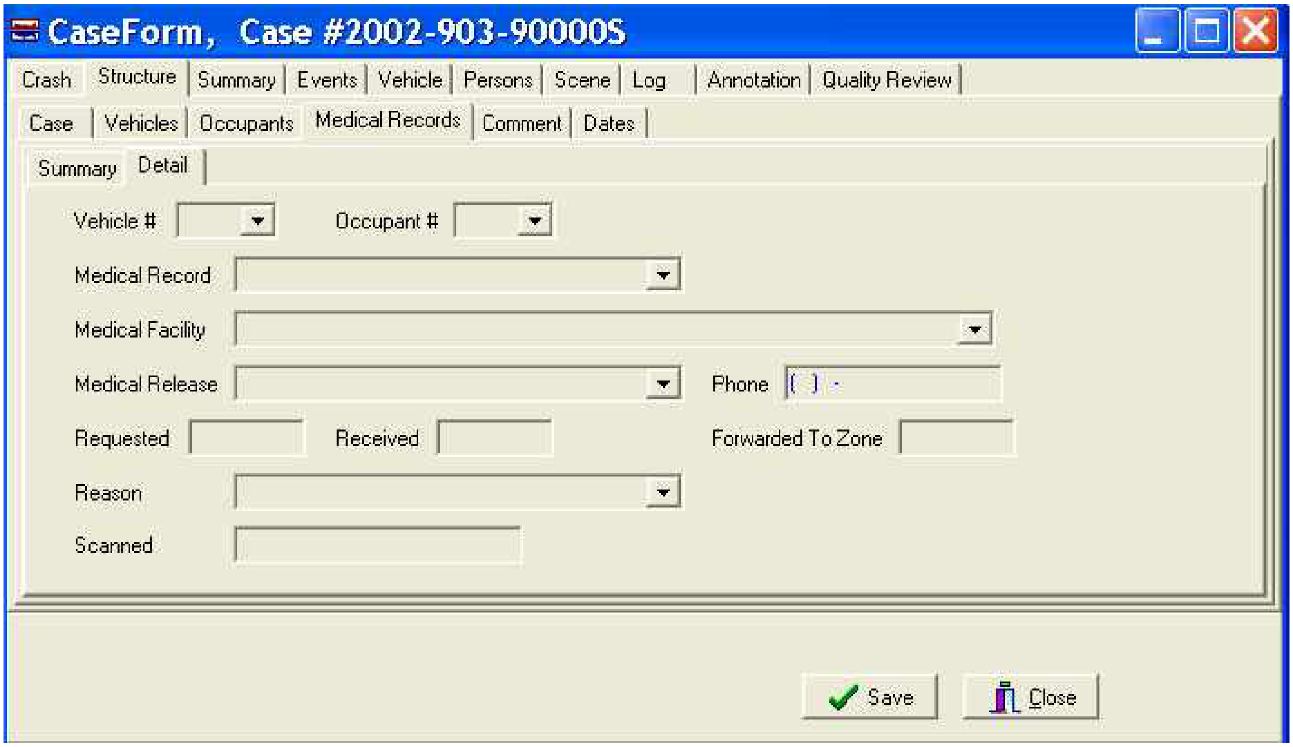
Structure / Medical Records / Summary



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Summary
Detail
Save
Close

Veh #	Occ #	Record Type	Facility	Requested	Received	Scanned

Structure / Medical Records / Detail



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Summary
Detail
Save
Close

Vehicle #
Occupant #
Medical Record
Medical Facility
Medical Release
Phone ( ) -
Requested
Received
Forwarded To Zone
Reason
Scanned

VEHICLE NUMBER

Screen Name: Vehicle #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

As numbered

Source: Researcher determined

Remarks:

Researcher selects the appropriate vehicle from the drop down list which lists a number for each CDS vehicle in transport in the case.

OCCUPANT NUMBER

Screen Name: Occupant #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

As numbered

Source: Researcher determined

Remarks:

Researcher selects the appropriate occupant from the drop down list which lists a number for each occupant in the vehicle selected in the previous variable.

MEDICAL RECORD

Screen Name: Medical Record

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Autopsy
Post-ER Medical Record
Admission Records
Discharge Summary
Operative Report
Radiographic
History/Physical Examination
Emergency Room records
Private Physician
Lay Coroner
EMS Record
Interviewee
Police Report
Other (specify)

Source: Researcher determined

Remarks:

Researcher selects the medical record(s) from the drop down list that are needed for this occupant. If more than one type medical record is needed the researcher must select Edit/Insert for each additional record.

MEDICAL FACILITY

Screen Name: Medical Facility

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

A list of medical facilities specific for each PSU drops down.

Source: Researcher determined

Remarks:

Researcher selects the appropriate medical facility from the drop down list. If more than one facility is used by this occupant, the researcher must select Edit/Insert for each additional facility.

MEDICAL RELEASE

Screen Name: Medical Release

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Not Required
Required-not obtained
Required-obtained

Source: Researcher determined

Remarks:

The researcher selects the appropriate response from the drop down list.

DATE THAT MEDICAL RECORD WAS REQUESTED

Screen Name: Requested

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	As appropriate

Source: Researcher determined

Remarks:

Researcher enters the date that the medical record was requested.

DATE THAT MEDICAL RECORD WAS RECEIVED

Screen Name: Received

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	As appropriate

Source: Researcher determined

Remarks:

Researcher enters the date that the medical record was received.

DATE THAT MEDICAL RECORD WAS FORWARDED TO THE ZONE CENTER

Screen Name: Forwarded to Zone

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Month:	01-12
Day:	01 through 31
Year:	As appropriate

Source: Researcher determined

Remarks:

Researcher enters the date that the medical record was forwarded to the Zone Center.

MEDICAL RECORD OBTAINED OR REASON WHY NOT

Screen Name: Reason

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

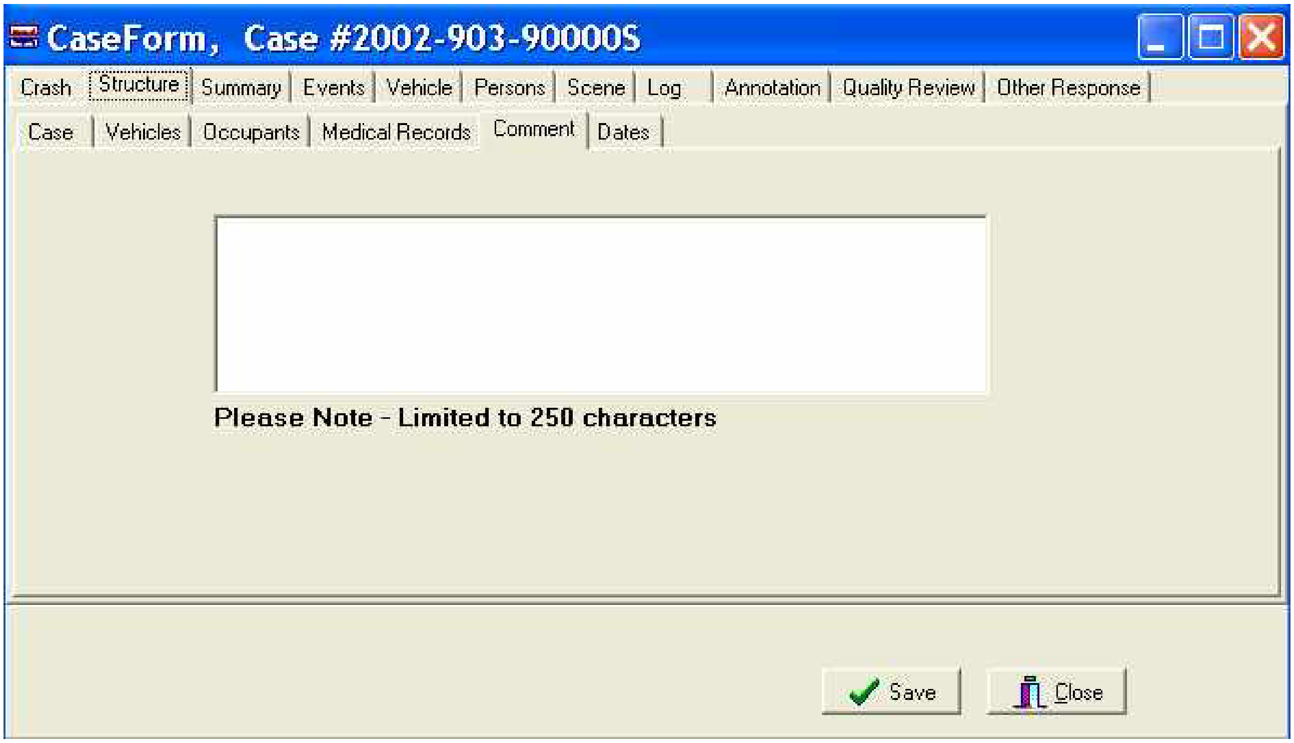
No record of treatment at medical facility
Medical release required-not obtained
Injury not related to crash
Noncooperative hospital
Hospital out-of-study area
Private Physician would not release data
Unknown if medically treated
Update pending
Record not received before file closeout
Record not obtained
Record obtained
Partial record obtained - no update pending
Partial record obtained - update pending

Source: Researcher determined

Remarks:

Researcher selects the appropriate response from the drop down list.

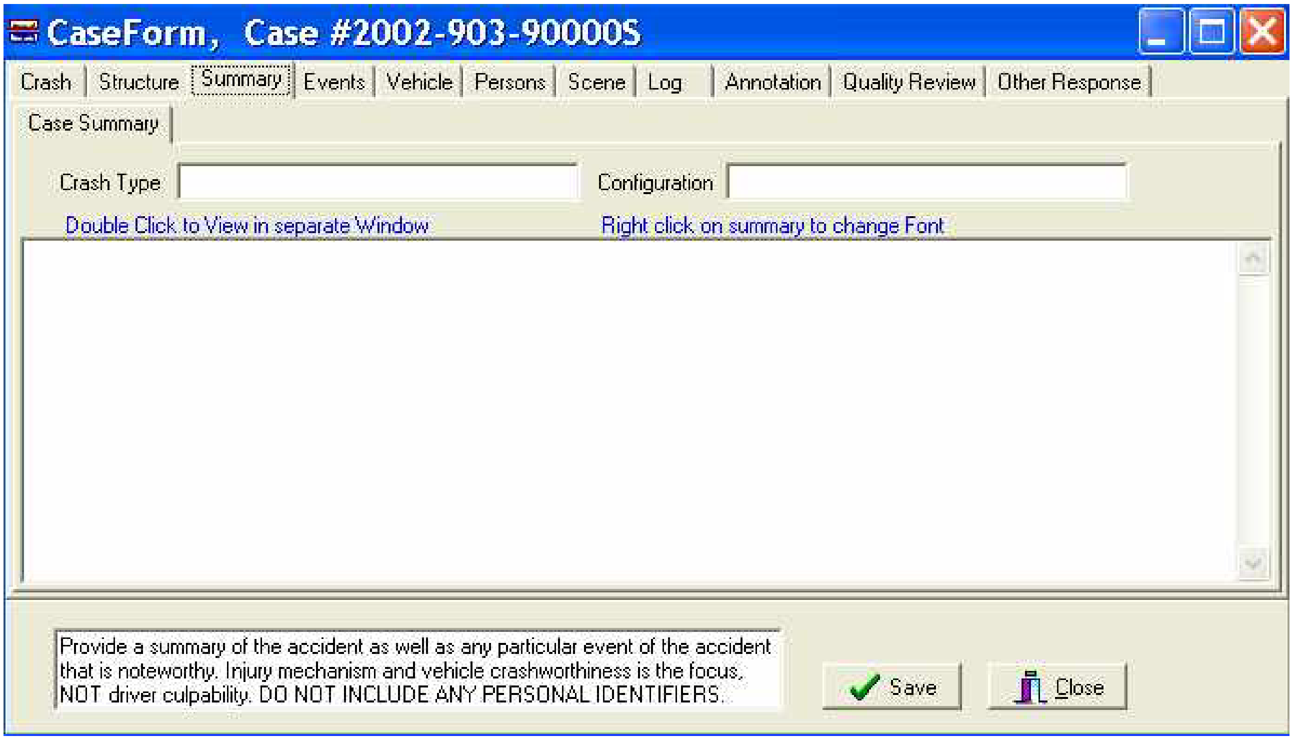
Structure / Comment



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Case
Vehicles
Occupants
Medical Records
Comment
Dates
Please Note - Limited to 250 characters
Save
Close

Any comments about the case structure should be entered on this screen.

Summary / Case Summary



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Case Summary
Crash Type
Configuration
Double Click to View in separate Window
Right click on summary to change Font
Save
Close

Provide a summary of the accident as well as any particular event of the accident that is noteworthy. Injury mechanism and vehicle crashworthiness is the focus, NOT driver culpability. DO NOT INCLUDE ANY PERSONAL IDENTIFIERS.

CRASH TYPE

Screen Name: Crash Type

SAS Data Set: **ACCIDENT**
SAS Variable: **CRSHDSC1**

Element Attributes:

Vehicle to vehicle
Vehicle to object(s)
Multi-vehicle
Multi-vehicle to object(s)

Source: Researcher determined

Remarks:

The researcher selects the crash type which best describes the overall crash scenario.

Vehicle to vehicle
is selected when the overall configuration of the crash is limited to interaction between two vehicles.

Vehicle to object(s)
is selected when a single vehicle is involved and has interaction with one or more fixed or non-fixed objects.

Multi-vehicles
is selected when there are two or more vehicles involved

Multi-vehicles to object(s)
is selected when there are two or more vehicles involved **AND** there is an impact with at least one object

CRASH CONFIGURATION

Page 1 of 2

Screen Name: Configuration

SAS Data Set: **ACCIDENT**
SAS Variable: **CRSHDSC2**

Element Attributes:

Head-on
Angle / sideswipe
Rear end
Rollover
Object off road
Object on road
Noncollision

Source: Researcher determined

Remarks:

The Researcher selects the attribute which best describes the type of collision for this crash. The attributes are prioritized in descending order, so if two apply, select the first one on the list. For example, two vehicles collide in an intersection at an angle, then one of the vehicles rolls over. The Researcher selects "**Angle / sideswipe**" for the configuration.

Head-on
is selected when two vehicles impact each other, and generally the front of one vehicle contacts the front of the other vehicle.

Angle / sideswipe
is selected when two vehicles impact each other, and generally:

- the front of one vehicle contacts the side of the other vehicle

OR

- the two vehicles are involved in a "swiping" type configuration (either sideswipe or endswipe)

Rear end
is selected when two vehicles impact each other, and generally the front of one vehicle contacts the rear of the other vehicle.

Rollover
is selected for single vehicle crashes when the vehicle rolls over either on the road or off the road. For crashes involving a vehicle contacting an object off the roadway, and then rolling over, select this attribute based on the above referenced prioritization.

Object off road
is selected when a vehicle strikes a fixed or non-fixed object that is located off the road.

Object on road

is selected when a vehicle strikes a non-fixed object on the road.

Crash Configuration cont'd

Page 2 of 2

Noncollision

is selected when the crash configuration involves some type of noncollision event (i.e., jackknife).

CASE SUMMARY OVERVIEW

Through the summary, the researcher is able to provide the zone center, a clinical user, or any other person interested in the NASS CDS case a quick reference of crash particulars by providing a non-jargon account of the crash.

The summary should provide a brief synopsis of the crash sequence as reconstructed by the researcher. Do not identify vehicle/driver culpability. For example, suppose vehicle #1 ran a stop sign and struck vehicle #2 in its left side. This situation should be described as follows:

> *Vehicle #1 was going north and vehicle # 2 was going east on an intersecting roadway. The front of vehicle #1 impacted the right side of vehicle #2.*

Thus, the impact configuration is emphasized rather than who was at fault. Any particulars concerning vehicle crashworthiness should be highlighted. Include any abnormal crash occurrences that may be of interest to quality control or the data user. Make sure personal identifiers are not used (i.e., highway/road/street names or names of persons).

Items that are listed on the vehicle and person summary screens should not be included unless unusual circumstances are involved.

[DATA ENTRY FIELD FOR CASE SUMMARY]

Screen Name: N/A

SAS Data Set: **ACCDESC**
SAS Variable: **LINENO**

Element Attributes:

The LINENO by LINENO narrative summary of the crash as developed by the researcher.

Source: Researcher determined

Remarks:

CASE SUMMARY

Screen Name: Case Summary

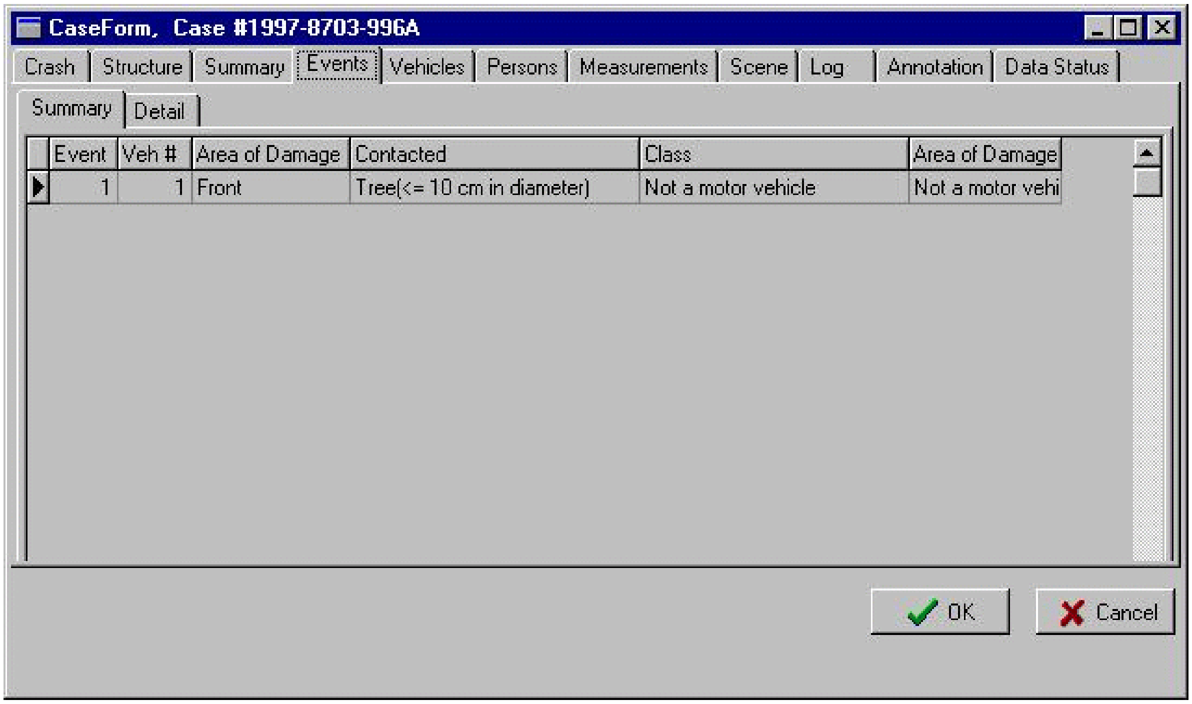
SAS Data Set: **ACCDESC**
SAS Variable: **SUMTEXT**

Element Attributes:
The narrative summary of the crash as developed by the researcher.

Source: Researcher determined

Remarks:

Events / Summary

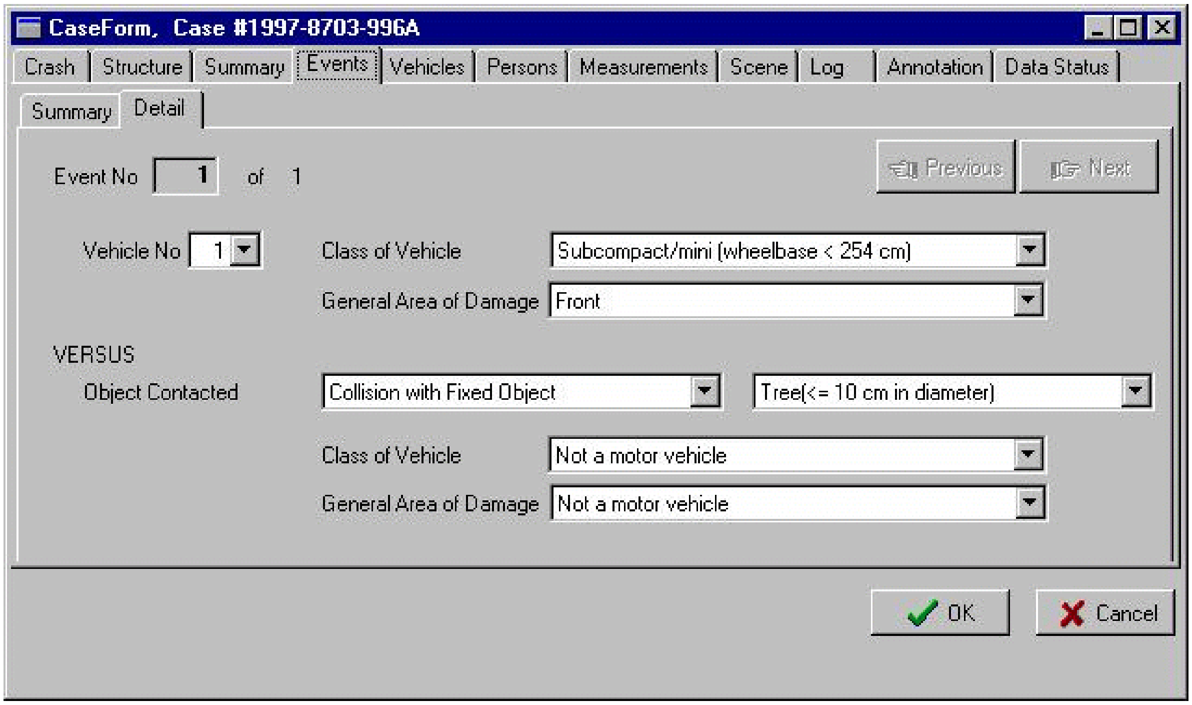

CaseForm, Case #1997-8703-996A
Crash
Structure
Summary
Events
Vehicles
Persons
Measurements
Scene
Log
Annotation
Data Status
Summary
Detail
OK
Cancel

Event	Veh #	Area of Damage	Contacted	Class	Area of Damage
1	1	Front	Tree(<= 10 cm in diameter)	Not a motor vehicle	Not a motor vehi

Information rolls up from the “detail” tab to the “summary” tab. Use the arrow to the left of the event to highlight an event to focus on the “Detail” screen.

Note: If impact is between two vehicles, double click on the event line to view the vehicle angles, accident types, and CDC for this event.

Events / Detail



CaseForm, Case #1997-8703-996A
Crash
Structure
Summary
Events
Vehicles
Persons
Measurements
Scene
Log
Annotation
Data Status
Summary
Detail
Previous
Next
OK
Cancel

Event No 1 of 1

Vehicle No 1

Class of Vehicle: Subcompact/mini (wheelbase < 254 cm)

General Area of Damage: Front

VERSUS

Object Contacted: Collision with Fixed Object | Tree(<= 10 cm in diameter)

Class of Vehicle: Not a motor vehicle

General Area of Damage: Not a motor vehicle

CRASH EVENTS OVERVIEW

A "crash" is the total set of "events" (one or more) that results from an unstabilized situation such that at least one harmful event occurs not directly resulting from a cataclysm. The "crash" is concluded in time when all events which originated from the unstabilized situation have stabilized.

A crash is considered applicable to the NASS CDS if one of its events resulted in harm (except for nonqualifying noncollision events); and that event involved an in-transport CDS applicable vehicle which was reported on a police report as being towed from the scene of the crash due to damage.

Harm can be either an impact or a noncollision event. An impact is defined as any vehicle-to-vehicle or vehicle to object (fixed or nonfixed, stationary or nonstationary) contact which may or may not result in vehicle damage. Noncollision events such as fire/explosion, occupant fell from vehicle, occupant injury without vehicle impact, etc., are included in these variables unless this noncollision event is the only event in the case.

The NASS CDS is only interested in those events that involve in-transport motor vehicles. The motor vehicle can be a: towed CDS applicable vehicle, nontowed CDS applicable vehicle, or a non-CDS applicable vehicle. Events that involve only not in-transport motor vehicles and/or pedestrians and/or nonmotorists are not considered; they are dropped by the researcher from the crash sequence. Below are some examples of nonqualifying events and the researcher should not include them in the crash sequence
:

Not in-transport vehicle impacts pedestrian, pedalcyclist, or other nonmotorist

Not in-transport vehicle impacts an object (fixed or nonfixed)

Not in-transport vehicle impacts another not in-transport vehicle

Pedestrian (pedalcyclist, other nonmotorist) impacts an object

Pedestrian (pedalcyclist, other nonmotorist) impacts a not in-transport vehicle

Pedestrian, pedalcyclist, or other nonmotorist inter-impact.

The crash events variables are designed to provide a description of all qualifying events which occurred in the crash sequence. Events are listed in chronological sequence. In events involving impacts with objects, the object is identified subsequent to the vehicle.

With this chronological sequence of qualified crash events in the CDS database, analysts can review the entire series of events involving in-transport motor vehicles. Various areas of concern to the highway safety community will be easily assessed using these variables. For instance, the injury severity in crashes can be assessed relative to the number and type of impacts involved.

Likewise, certain collision configurations may create a greater hazardous condition for the occupants. A possible area of analysis would be the mix of vehicle classes or the type(s) of object(s) the vehicles impact.

Complete these variables based upon an accurate and complete reconstruction of the vehicle dynamics involved in the crash. All of the injury or damage producing qualifying events or circumstances for the in-transport motor vehicle(s) are coded.

An example of a crash sequence follows:

> Vehicle 1 (a compact passenger car) went out of control on a wet roadway and struck a median guardrail with its front {Event 1}. The vehicle was redirected by the guardrail and reentered the roadway, where it struck vehicle 2 (a large pickup truck) {Event 2} in the left side with its front. Vehicle 1 spun to a stop in the roadway. During event 2 the driver hit his head on the door pillar breaking his neck {not a coded event}. Vehicle 2, out-of-control, ran off the roadway and struck a pedestrian with its front {Event 3}.

Note: For the driver of vehicle 1, breaking his neck is not a separate codeable event. Rather, this injury, and almost all occupant injuries resulting from occupant interior contact, is a result of a collision event.

EVENT NUMBER

Screen Name: Event No

SAS Data Set: **EVENT**
SAS Variable: **ACCSEQ**

Element Attributes:

As assigned

Source: Researcher Determined

Remarks:

Events in the crash should be listed in chronological sequence.

This number is automatically assigned by the EDCS as each event is entered. Events may be renumbered. The events will be displayed in chronological sequence.

VEHICLE NUMBER

Screen Name: Vehicle No

SAS Data Set: **EVENT**
SAS Variable: **VEHNUM**

Element Attributes:

As entered into Case Form/Structure/Case Summary/Total All Vehicles

Source: Researcher determined

Remarks:

Vehicle numbers must be consecutive beginning with “1". Vehicle numbers are selected from those listed in the vehicle structure. A vehicle may be listed in more than one event.

CLASS OF VEHICLE

Screen Name: Class of Vehicle

SAS Data Set: **EVENT**
SAS Variable: **CLASS1**

Element Attributes:

0	Not a motor vehicle
1	Subcompact/mini (wheelbase < 254 cm)
2	Compact (wheelbase ≥ 254 but < 265 cm)
3	Intermediate (wheelbase ≥ 265 but < 278 cm)
4	Full size (wheelbase ≥ 278 but < 291 cm)
5	Largest (wheelbase ≥ 291 cm)
9	Unknown passenger car size
14	Compact utility vehicle
15	Large utility vehicle (≤ 4,536 kgs GVWR)
16	Utility station wagon (≤ 4,536 kgs GVWR)
19	Unknown utility type
20	Minivan (≤ 4,536 kgs GVWR)
21	Large van (≤ 4,536 kgs GVWR)
24	Van based school bus (≤ 4,536 kgs GVWR)
28	Other van type (≤ 4,536 kgs GVWR)
29	Unknown van type (≤ 4,536 kgs GVWR)
30	Compact pickup truck (≤ 4,536 kgs GVWR)
31	Large pickup truck (≤ 4,536 kgs GVWR)
38	Other pickup truck (≤ 4,536 kgs GVWR)
39	Unknown pickup truck type (≤ 4,536 kgs GVWR)
45	Other light truck (≤ 4,536 kgs GVWR)
48	Unknown light truck type (≤ 4,536 kgs GVWR)
49	Unknown light vehicle type
50	School bus (excludes van based) (> 4,536 kgs GVWR)
58	Other bus (> 4,536 kgs GVWR)
59	Unknown bus type
60	Truck (> 4,536 kgs GVWR)
67	Tractor without trailer
68	Tractor - trailer(s)
78	Unknown medium/heavy truck type
79	Unknown light/medium/heavy truck type
80	Motored cycle
90	Other vehicle
99	Unknown

Source: Researcher determined — inputs include police report, vehicle inspection, VIN breakdown, and interviews.

Class of Vehicle (cont'd)

Remarks:

The Passenger Car Classification Subcommittee, A3B11(1), of the Transportation Research Board, Traffic Records and Accident Analysis Committee, A3B11, assessed size based on the vehicle wheelbase. The guidelines for this classification can be found in the report entitled Recommended Definitions for Passenger Car Size Classification by Wheelbase and Weight, August 1984 by the previously mentioned subcommittee. This variable is the same variable that appears in the Identification section of the Vehicle Tab on the General Vehicle Form and Vehicle Exterior Form.

Subcompact/mini (wheelbase < 254 cm)
Choose based upon wheelbase

Compact (wheelbase >= **254 but < 265 cm)**
Choose based upon wheelbase

Intermediate (wheelbase >= **265 but < 278 cm)**
Choose based upon wheelbase

Full size (wheelbase >= **278 but < 291 cm)**
Choose based upon wheelbase

Largest (wheelbase >= **291 cm)**
Choose based upon wheelbase

Unknown passenger car size
is used when it is known that a vehicle is a passenger car but the wheelbase is unknown

Compact utility vehicle
refers to vehicle models defined as **Compact utility** under Body Type. Use this attribute if the size of the utility vehicle is unknown.

Large utility vehicle (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Large utility** under Body Type. Refers to full-size multipurpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon body style, some models are equipped with a removable top.

Utility station wagon (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Utility station wagon** under Body Type. Refers primarily to a pickup truck based chassis enlarged to a station wagon.

Unknown Utility type
is defined as **Utility, unknown body type** under Body Type. This attribute is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type.

Class of Vehicle (cont'd)

Minivan (<= 4536 kgs. GVWR)
Refers to vehicle models defined as **Minivan** under Body Type. Refers to down-sized passenger or cargo vans.

Large van (<= 4536 kgs. GVWR)
Refers vehicle models defined as **Large van** under Body Type. Refers to a standard size cargo or passenger van.

Van based school bus (<= 4,536 kgs GVWR)
is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van based school buses converted for other uses (e.g., church bus) also take this attribute . Refers to vehicles defined as **Van based school bus** under Body Type.

Other van type (<= 4,536 kgs GVWR)
Refers to vehicle models defined as **Step van or walk-in van, Van based motorhome, Van based other bus and code Other van type** under Body Type.

Unknown van type (<= 4,536 kgs GVWR)
is used when it is known that this vehicle is a light van, but its specific type cannot be determined. Refers to vehicles described as **Unknown van type** under Body Type.

Compact pickup truck
Refers to vehicle models defined as attributes of **Compact pickup truck** in Body Type. Used to describe a pickup truck having a width of 178 centimeters or less.

Large pickup truck
Refers to vehicle models defined as **Large pickup truck** under Body Type. Used to describe a pickup truck having a width greater than 178 centimeters.

Other pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Pickup with slide-in camper** and **Convertible pickup** under Body Type.

Unknown pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Unknown pickup style light conventional truck type** under Body Type.

Other light truck (<= 4536 kgs GVWR)
Refers to vehicle models defined **as Cab, chassis based (includes rescue vehicles, light stake, dump, and tow truck), Truck based panel, Light truck based motorhome (chassis mounted),** and **Other light conventional truck type** under Body Type.

Class of Vehicle (cont'd)

Unknown light truck type

Refers to vehicle models defined as **Unknown light truck type** under Body Type.

Unknown light vehicle type (automobile, utility, van, or light truck)

Refers to vehicle models defined as Unknown light vehicle type (automobile, utility, van, or light truck) under Body Type.

School bus (excludes van based) (> 4536 kgs GVWR)

Refers to those vehicle models defined as **School bus (designed to carry students, not cross country or transit)** under Body Type.

Other bus (>4,536 kgs GVWR)

describes those vehicle models included in **Other bus type (e.g., transit, intercity, bus based motorhome)** under Body Type.

Unknown bus type

Refers to those vehicle models described as **Unknown bus type** under Body Type.

Truck (> 4,536 kgs GVWR)

is defined under Body Type, as **Step van (>4,536 kgs GVWR), Single unit straight truck (4,536 kgs < GVWR = 8,845), Single unit straight truck (8,845 kgs < GVWR = 11,793), Single unit straight truck (>11,793 kgs GVWR), Single unit straight truck, GVWR unknown** and **Medium/heavy truck based motorhome.**

Tractor without trailer

refers to **Truck-tractor with no cargo trailer** under Body Type.

Tractor-trailer(s)

is defined in attributes **Truck-tractor pulling one trailer, Truck-tractor pulling two or more trailers** and **Truck-tractor (unknown if pulling trailer)** under Body Type.

Unknown medium/heavy truck type)

is used when the only available information indicates a truck of medium/heavy size. Refer to **Unknown medium/heavy truck type** under Body Type.

Unknown truck type (light/medium/heavy)

Refers to those vehicles described by **Unknown truck type (light/medium/heavy)** under Body Type.

Motored cycle

refers to Body Type, **Motorcycle, Moped (motorized bicycle), Three-wheel motorcycle or moped, Other motored cycle (minibike, motorscooter)** and **Unknown motored cycle type**.

Other vehicle

refers to all vehicles described by **ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle), Snowmobile, Farm equipment other than trucks,** or **Other vehicle type** under Body Type.

Unknown

is used when there is a lack of information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle using one of the preceding codes. This attribute is equivalent to Body Type, **Unknown body type.**

GENERAL AREA OF DAMAGE

Screen Name: General Area of Damage

SAS Data Set: **EVENT**
SAS Variable: **GADEV1**

Element Attributes:

0	Not a motor vehicle
N	Noncollision
9	Unknown

CDC Applicable and Other Vehicles		TDC Applicable Vehicles	
F	Front	F	Front
R	Right side	R	Right side
L	Left side	L	Left side
B	Back of unit with cargo area	B	Back of unit with cargo area (rear of trailer or straight truck)
T	Top	D	Back (rear of tractor)
U	Undercarriage	C	Rear of cab
		V	Front of cargo area
		T	Top
		U	Undercarriage

Source: Researcher determined.

Remarks:

Noncollision
must be used whenever the corresponding Vehicle Number or Object Contacted Category is coded Noncollision.

Unknown
must be coded when the General Area of Damage — 1st on a vehicle is not known from any reliable source.

For vehicles which are CDC applicable (e.g., pickups, light vans, and passenger cars) the guidelines from J224MAR80 must be applied, and the attributes provided under the "CDC Applicable and Other Vehicles" category must be used. This includes rollovers.

For vehicles which are TDC applicable (i.e., medium/heavy trucks) use the guidelines and the attributes provided under the "TDC Applicable Vehicles" category.

OBJECT CONTACTED

Screen Name: Object Contacted

SAS Data Set: **EVENT**
SAS Variable: **OBJCONT**

Element Attributes:

01-30 — Vehicle Number

Noncollision
31 Overturn — rollover (excludes end-over-end)
32 Rollover - end-over-end
33 Fire or explosion
34 Jackknife
35 Other intraunit damage (specify):
36 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)
50 Nonbreakaway Pole or post (≤ 10 cm in diameter)
51 Nonbreakaway Pole or post (> 10 cm but ≤ 30 cm in diameter)
52 Nonbreakaway Pole or post (> 30 cm in diameter)
53 Nonbreakaway 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
70 Passenger car, light truck, van,or other vehicle not in-transport
71 Medium/heavy truck or bus not in-transport
72 Pedestrian
73 Cyclist or cycle
74 Other nonmotorist or conveyance (specify)
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

Other event (specify)
98 Other event (specify):

Unknown event or object
99 Unknown event or object

Source: Researcher determined: primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Object Contacted (cont'd)

Page 2 of 11

Remarks:

Vehicle Number

If the object contacted by the vehicle under consideration was a motor vehicle in-transport, select the Vehicle Number assigned to that vehicle.

Noncollision

crash circumstances, which result in nonimpact related damage or harm.

Overturn — rollover (excludes end-over-end)

is used whenever a vehicle rolls over or overturns primarily about the longitudinal axis.. This event is reported in the crash sequence variables on the Case Form. It is assumed a rollover will generally involve contact with the road surface or ground. In this situation, the object contacted is encoded **Overturn - rollover** and not **Ground**. In the event another object in the environment is contacted during the rollover sequence, the rollover event is, but may not be encoded in the CDC unless the rollover is applicable to CDC.

Rollover — end-over-end

is used whenever a vehicle rolls over or overturns primarily about the lateral axis of the vehicle.

Fire or explosion

is used whenever a vehicle fire or explosion occurs during the crash sequence or as a result of the crash.

Jackknife

is used whenever there is sufficient uncontrolled rotation (articulation) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit. Jackknife may occur to any vehicle which is pulling a trailing unit by a fixed linkage so long as the trailing unit and the pulling vehicle are capable of rotating (articulating) with respect to each other.

Other intraunit damage (specify):

is used whenever there is sufficient uncontrolled motion (other than **Jackknife**) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit.

Remarks:

Noncollision (cont'd)

Noncollision Injury
is used when the event is a noncollision injury (e.g., fell from vehicle)

Other noncollision (specify)
is used only in consultation with the zone center.

Noncollision — details unknown
is used when it is known that the event was a noncollision but specifics are not known.

Collision With Fixed Object
When a vehicle impacts a tree, shrubbery, bush, pole or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object contacted attribute for the object in its dislodged or airborne state is the same as when the object was initially.

Tree (<= **10 centimeters in diameter)** and **Tree (> 10 centimeters in diameter)**
refer to the diameter of the tree measured on the horizontal plane at the point of impact.

Shrubbery or bush
refers to vegetation which is usually of a woody multi-stemmed variety and in most instances is low growing rather than tall. Some common examples are boxwood, hawthorn, and mountain laurel.

Embankment
is used only when damage or injury results from a vehicle impacting an embankment.

Breakaway pole or post (any diameter)
refers to a pole or post which is mounted on a base designed to readily disengage or fracture from an impacting vehicle above a predetermined force level. A pole or post fitted with such a device is a breakaway pole or post; otherwise, it is a nonbreakaway pole. Common types of breakaway bases are illustrated on the following pages.

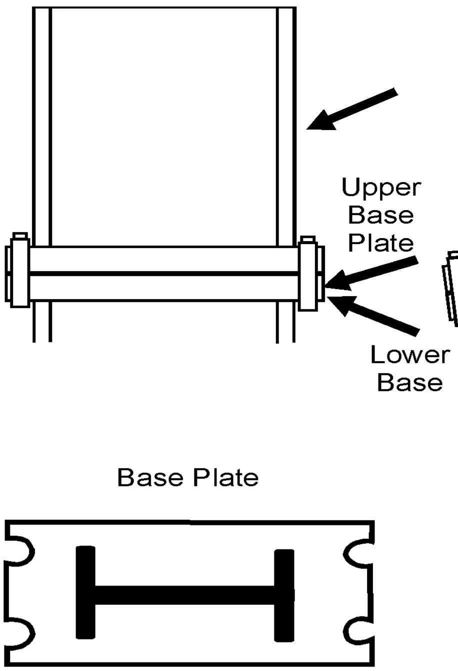
Examples of breakaway poles or posts follow:

Object Contacted (cont'd)

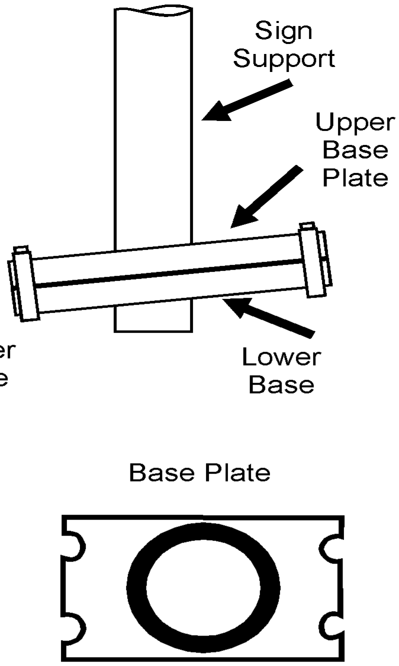
Page 4 of 11

Collision With Fixed Object (cont'd)

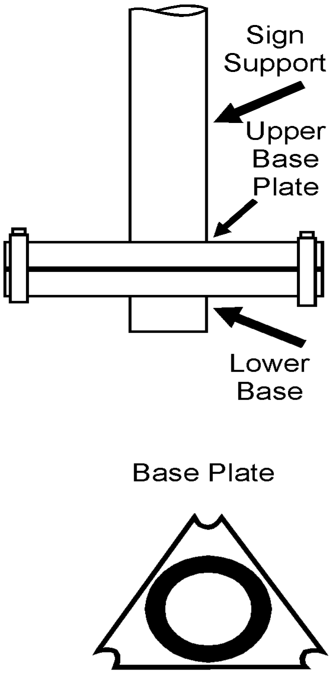
Breakaway pole or post (any diameter)


Upper
Base
Plate
Lower
Base
Base Plate

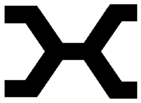
HORIZONTAL
SLIP BASE


Sign
Support
Upper
Base
Plate
Lower
Base
Base Plate

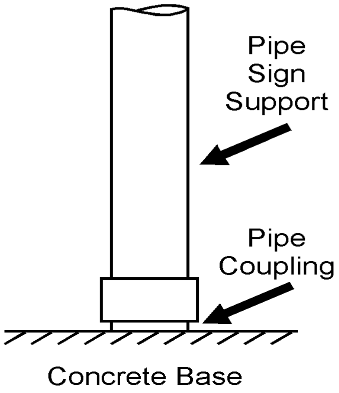
INCLINED
SLIP BASE


Sign
Support
Upper
Base
Plate
Lower
Base
Base Plate

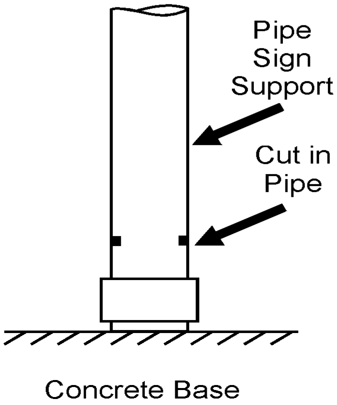
TRIANGULAR
SLIP BASE



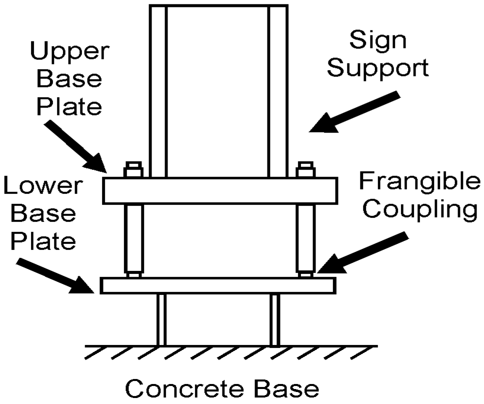
Aluminum


Pipe
Sign
Support
Pipe
Coupling
Concrete Base

PIPE WITH
PIPE COUPLING


Pipe
Sign
Support
Cut in
Pipe
Concrete Base

BASE BENDING

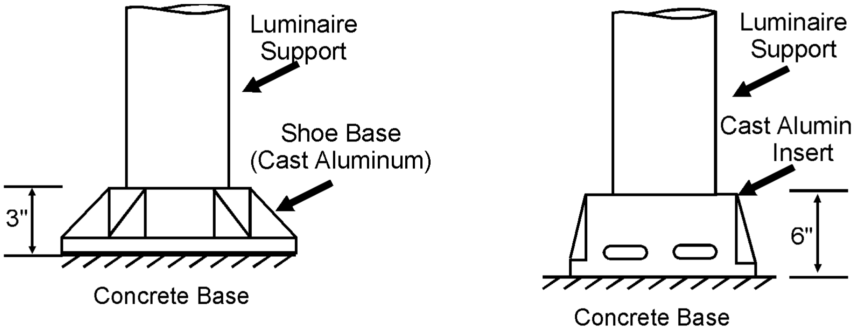

Upper
Base
Plate
Sign
Support
Lower
Base
Plate
Frangible
Coupling
Concrete Base

OTHER

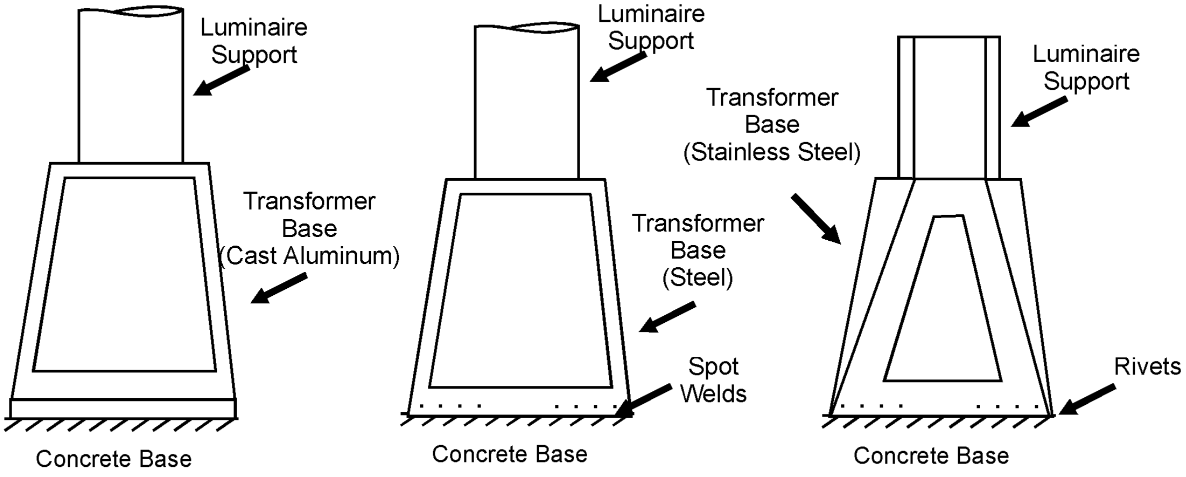
Page 5 of 11

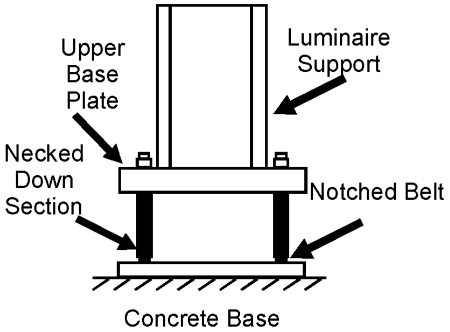
Collision With Fixed Object (cont'd)

Breakaway pole or post (any diameter)

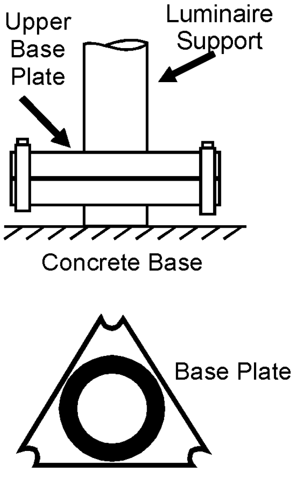

Luminaire Support
Shoe Base (Cast Aluminum)
3"
Concrete Base
Luminaire Support
Cast Aluminum Insert
6"
Concrete Base

CAST ALUMINUM SHOE BASE/INSERT (FRANGIBLE)

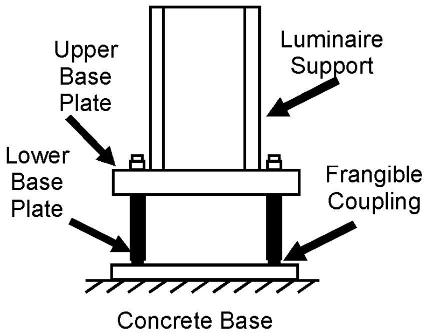

Luminaire Support
Transformer Base (Cast Aluminum)
Concrete Base
Luminaire Support
Transformer Base (Steel)
Spot Welds
Concrete Base
Transformer Base (Stainless Steel)
Luminaire Support
Rivets
Concrete Base


Upper Base Plate
Luminaire Support
Necked Down Section
Notched Belt
Concrete Base

NOTCHED BOLT INSERT


Upper Base Plate
Luminaire Support
Concrete Base
Base Plate

TRIANGULAR SLIP BASE

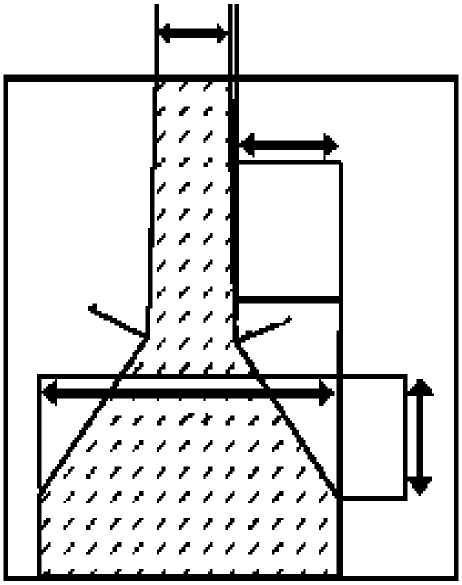

Upper Base Plate
Luminaire Support
Lower Base Plate
Frangible Coupling
Concrete Base

FLUTED ALUMINUM BREAKAWAY COUPLING

Collision With Fixed Object (cont'd)

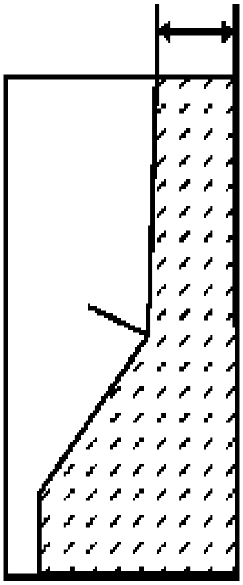
Concrete traffic barrier

refers to the longitudinal traffic barriers constructed of concrete and located: on the outside of the road surface, in a median, or in gore areas. This includes all temporary concrete barriers regardless of location (*e.g.*, temporary Jersey barrier on a bridge being used to control traffic during bridge repair/construction). Concrete walls (vertical side surfaces) do not apply here, see Wall. Below are a few of the common designs of concrete traffic barriers.



(Footing & Reinforcing Varies)
MB 5
Concrete Median Barrier

Continuously poured, reinforced, sloped faced, concrete section. Barrier can be anchored by dowels or an asphalt key.



Concrete
Safety
Shape

Impact attenuator

refers to crash cushions which are barriers placed in front of fixed objects on the highway to absorb energy, and thus, to mitigate the injury effects of collisions at such sites. A number of common impact attenuating devices may be encountered; therefore, be sure to photograph them when encountered.

Other traffic barrier

refers to any longitudinal barrier not constructed of concrete. This includes all permanent guardrails and median barriers not on a bridge.

Collision With Fixed Object (cont'd)

Fence
includes both the fence material and the support posts.

Wall
refers to solid, vertical faced, concrete, brick, stone, or other structurally sound roadside devices which may act as a traffic barrier in some locations. Do not confuse this attribute with **Fence** or **Building**. In most instances a wall will be backfilled with soil and will act as a vertically faced embankment.

Building
is used when the vehicle impacts a roofed and walled structure built for permanent use. The type of construction material used is not of interest, nor is the use of the building.

Ditch or culvert
refers to: (1) a man-made structure for drainage purposes, or (2) a man-made structure that allows passage over a drainage area and is that part of the structure which is intended to channel flow through the structure and maintain the stability/integrity of the road bed. If the culvert structure has a portion above the road surface which is of sufficient height to engage above the wheels of an errant CDS applicable vehicle and redirect it, that part of the structure is considered an **Other traffic barrier**. When the sides of the ditch are approximately of equal height, it makes no difference which side of the ditch was struck; however, if the struck side is substantially higher than the other side, enter **Embankment** as the object contacted. Substantial means that an embankment exists with or without a ditch

Ground
refers to an impact with the ground. Collisions which may be classified using this attribute include (but are not limited to) vehicles which sustain undercarriage damage by (1) straddling the pavement and shoulder and impacting a prominent pavement lip, or (2) free falls or vaults from the road surface to the ground.

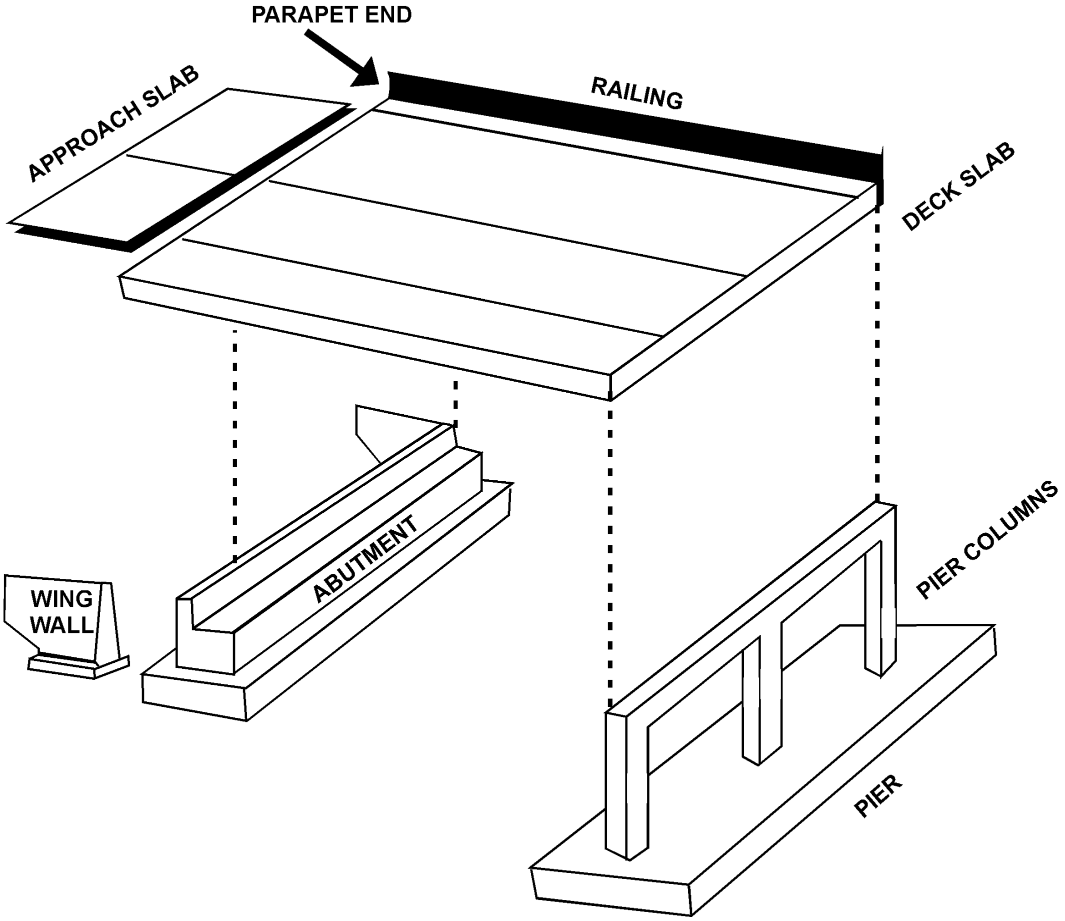
Fire hydrant
refers to the roadside device used by fire departments to provide water for fighting fires. Usually made of steel, these devices are also referred to as fire plugs or fire stand pipes in some areas.

Curb
is used when the vehicle contacts a raised element at the edge of a roadway. Curbs are used to: control drainage, act as deterrents to vehicles leaving the pavement at hazardous points, delineate the edge of the pavement, present a more finished appearance, and assist in the orderly development of the roadway edge. Often a curb serves two or more of these purposes.

Collision With Fixed Object (cont'd)

Bridge
encompasses all structural members of an overpass structure used for vehicular or pedestrian traffic. This attribute includes guardrails, permanent concrete barriers, bridge rail/walls, bridge piers, bridge abutments, bridge parapet ends, wing walls associated with bridge abutments, and support columns.

Bridge Components



bridge.

Other fixed object
is used for any other object of sufficient mass or anchored such that it is not readily movable; compare with **Other nonfixed object**. Examples include large boulders, large logs (fallen trees), etc.

Unknown fixed object
is used when it is known that the vehicle struck a fixed object but the specific type of object is not known.

Object Contacted (cont'd)

Nonbreakaway Pole or Post

When a vehicle impacts a tree, shrubbery, bush, pole or post and causes the fixed object or any portion thereof to become dislodged or airborne such that the object or portion thereof subsequently falls on the vehicle, the appropriate object contacted attribute for the object in its dislodged or airborne state is the same as when the object was initially.

Pole or post (≤ 10 centimeters in diameter)
refers to a pole or post whose diameter, when measured using the method shown above, is less than or equal to ten centimeters, and the pole or post is not mounted on a breakaway base.

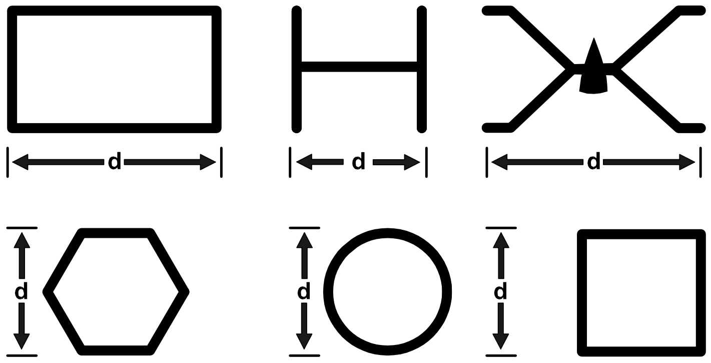
Pole or post (> 10 but ≤ 30 centimeters in diameter)
refers to a pole or post which is not mounted on a breakaway base and whose diameter is within the range specified.

Pole or post (> 30 centimeters in diameter)
refers to poles or posts which are of the correct size and are not mounted on a breakaway base.

Pole, post — diameter unknown
is used for any pole or post, not on a breakaway base, of unknown diameter.

Use the words "pole" and "post" in a general sense and include all types of supports for utility lines, light standards, post mounted mailboxes, warning devices, signs, and traffic control signals. Privately owned, as well as publicly owned, highway devices are included in these attributes. They may be made of wood, metal, or concrete and may have various cross-sectional shapes and dimensions. The pole or post must be nontemporary (i.e., have a permanent base or be anchored in the ground). Fence posts are not included in these attributes.

The following diagrams indicate the proper measurement for determining the "diameter" for use in coding pole/post



Collision with Nonfixed Object

Passenger car, light truck, van, or other vehicle not in-transport
refers to a motor vehicle other than a medium/heavy truck or bus which is not on the roadway **and** not in motion (e.g., vehicle located in parking lane).

Medium/heavy truck or bus not in-transport
refers to a medium/heavy truck or bus which is not on the roadway **and** not in motion (e.g., vehicle located in parking lane).

Pedestrian
is defined as any person who is on a traffic way or on a sidewalk or path contiguous with a traffic way, and who is not in or on a nonmotorist conveyance. This includes persons who are in contact with the ground, roadway, etc., but who are holding onto a vehicle. A nonmotorist conveyance is defined as any human-powered device by which a nonmotorist may move, or by which a pedestrian or nonmotorist may move another nonmotorist, other than by pedaling. A nonmotorist conveyance includes the following: baby carriage, coaster wagon, ice skates, roller skates, push cart, scooter, skate board, skis, sled, wheelchair, rickshaw, etc. This includes those persons in a nonmotorist conveyance who hold onto a motor vehicle in motion. Excluded are pedalcyclists.

Cyclist or cycle
refers to any occupant of a pedalcycle, the cycle, or both. This includes those cyclists who hold onto a motor vehicle in motion.

Other nonmotorist or conveyance
refers to a person who is not an occupant of a motor vehicle in-transport, a pedestrian, or a cyclist. Use this attribute if the impact was with a nonmotorist conveyance or a nonmotorist associated with a nonmotorist conveyance [if an animal is associated with this impact, see **Animal**]. This attribute also would be used for the occupants of a motor vehicle not in-transport, but only if they become separated from the not in- transport vehicle [see **Passenger car, light truck, van, or other vehicle not in transport** and **Medium/heavy truck or bus not in-transport**].

Vehicle occupant
is used when the object contacted was any person who was an occupant of a motor vehicle in-transport; two examples follow. Use this attribute for an occupant who falls from a vehicle and is subsequently run over before stabilization occurred. In addition, use this attribute for any motorcyclist who separates from his/her motorcycle during impact and subsequently impacts a motor vehicle before stabilization occurred.

Animal
is used if the object contacted was an animal (stationary or nonstationary). Where a nonmotorist was associated with the animal (i.e., on the animal, or on or in an animal powered nonmotor vehicle transport device) use the following scheme. If the contact is to:

(1) the animal; the animal and the person; the animal and the conveyance; or the animal, conveyance, and the person; attribute **Animal**;
(2) the conveyance, or to the person, or to both the conveyance and the person, **Other nonmotorist or conveyance**.

Train
refers to any railway train, moving or not moving.

Collision with Nonfixed Object (cont'd)

Trailer, disconnected in transport
is used when the vehicle is contacted by or contacts a trailer which has become detached from its towing unit while the towing unit was in-transport. The type of trailer is not of interest; the only factors to consider are the detachment of the trailer and the transport status of the towing unit.

Object fell from vehicle in-transport
is used when the vehicle is contacted by or contacts an object that was being carried by or was attached to a vehicle in-transport but fell from or became detached from that vehicle. For example, a detached side mirror, spare tire, cargo, etc. Detached trailers are entered under trailer, disconnected in transport.

Other nonfixed object
refers to any moveable object that is either readily moveable or is moving and is not specifically named above. Examples include trash cans, grocery carts, unoccupied pedalcycles, small boulders, sheared poles, etc.

Other Event (specify)
is used when an event occurs which cannot be classified using one of the existing attributes or definitions. A complete description should be given as well as describing the event in the Case Summary.

Unknown Event or Object
is used whenever the object contacted is not known or if an unknown event occurs and the researcher cannot determine what the event consisted of and how to enter it.

**** These two stand alone categories/attributes in red need to be added to NASSMAIN. ****

CLASS OF VEHICLE CONTACTED

Screen Name: Object Contacted-Class of Vehicle

SAS Data Set: **EVENT**
SAS Variable: **CLASS2**

Element Attributes:

0	Not a motor vehicle
1	Subcompact/mini (wheelbase < 254 cm)
2	Compact (wheelbase ≥ 254 but < 265 cm)
3	Intermediate (wheelbase ≥ 265 but < 278 cm)
4	Full size (wheelbase ≥ 278 but < 291 cm)
5	Largest (wheelbase ≥ 291 cm)
9	Unknown passenger car size
14	Compact utility vehicle
15	Large utility vehicle (≤ 4,536 kgs GVWR)
16	Utility station wagon (≤ 4,536 kgs GVWR)
19	Unknown utility type
20	Minivan (≤ 4,536 kgs GVWR)
21	Large van (≤ 4,536 kgs GVWR)
24	Van based school bus (≤ 4,536 kgs GVWR)
28	Other van type (≤ 4,536 kgs GVWR)
29	Unknown van type (≤ 4,536 kgs GVWR)
30	Compact pickup truck (≤ 4,536 kgs GVWR)
31	Large pickup truck (≤ 4,536 kgs GVWR)
38	Other pickup truck (≤ 4,536 kgs GVWR)
39	Unknown pickup truck type (≤ 4,536 kgs GVWR)
45	Other light truck (≤ 4,536 kgs GVWR)
48	Unknown light truck type (≤ 4,536 kgs GVWR)
49	Unknown light vehicle type
50	School bus (excludes van based) (> 4,536 kgs GVWR)
58	Other bus (> 4,536 kgs GVWR)
59	Unknown bus type
60	Truck (> 4,536 kgs GVWR)
67	Tractor without trailer
68	Tractor - trailer(s)
78	Unknown medium/heavy truck type
79	Unknown light/medium/heavy truck type
80	Motored cycle
90	Other vehicle
99	Unknown

Source: Researcher determined — inputs include police report, vehicle inspection, VIN breakdown, and interviews.

Remarks:

See the descriptions listed under Class of Vehicle.

Not a motor Vehicle
Is used when an object is struck.

GENERAL AREA OF DAMAGE OF VEHICLE CONTACTED

Screen Name: Object Contacted-General Area of Damage

SAS Data Set: **EVENT**
SAS Variable: **GADEV2**

Element Attributes:

Element Attributes:

0	Not a motor vehicle
N	Noncollision
9	Unknown

CDC Applicable and Other Vehicles

F	Front
R	Right side
L	Left side
B	Back
T	Top (rear of trailer or straight truck)
U	Undercarriage

TDC Applicable Vehicles

F	Front
R	Right side
L	Left side
B	Back of unit with cargo area
D	Back (rear of tractor)
C	Rear of cab
V	Front of cargo area
T	Top
U	Undercarriage

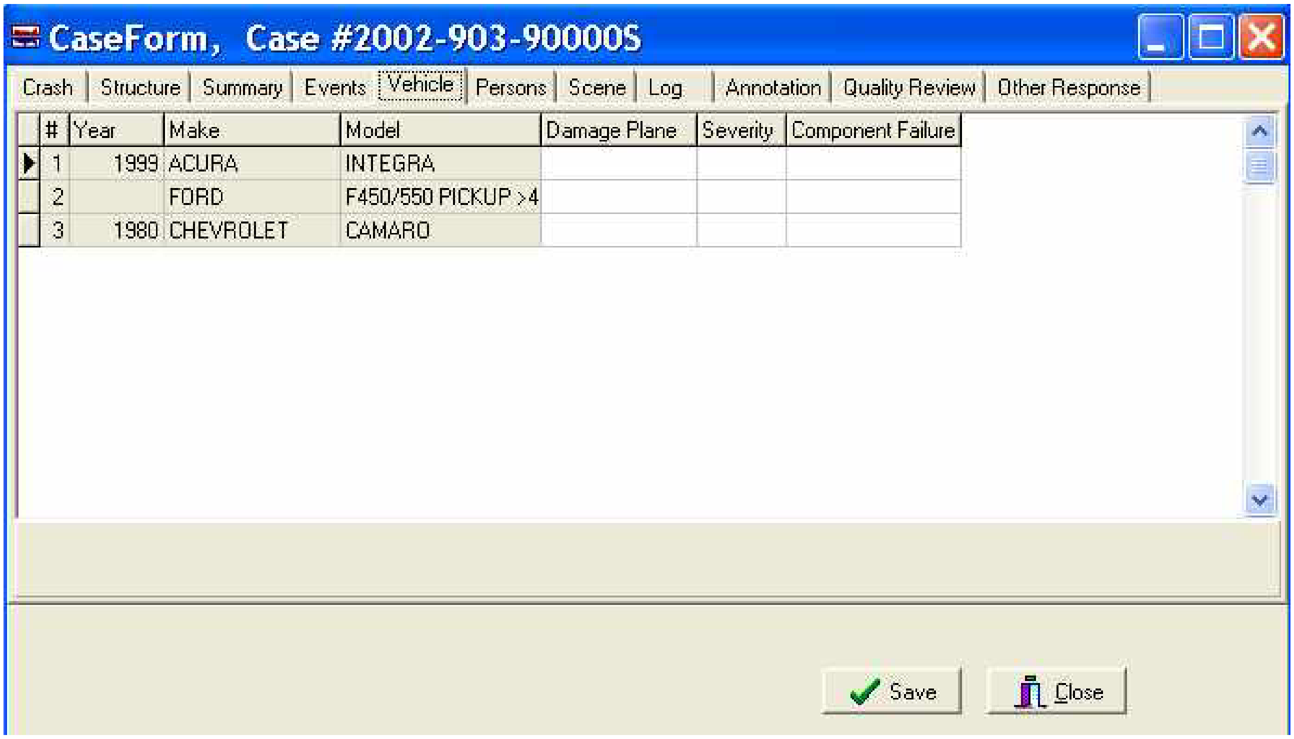
Source: Researcher determined.

Remarks:

See the choices listed under General Area of Damage

Not a motor Vehicle
Is used when an object is struck.

Vehicles


CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Save
Close

#	Year	Make	Model	Damage Plane	Severity	Component Failure
1	1999	ACURA	INTEGRA			
2		FORD	F450/550 PICKUP >4			
3	1980	CHEVROLET	CAMARO			

VEHICLE NUMBER

Screen Name: #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Source: Rolled up from elsewhere in case

Remarks:

The vehicle number of each in-transport vehicle and inspected not in-transport vehicle in the crash is indicated.

VEHICLE YEAR

Screen Name: Year

SAS Data Set: **ACCIDENT**
SAS Variable: **YEAR**

Element Attributes:

Source: Rolled up from vehicle table

Remarks:

The year for which vehicle was manufactured is indicated here.

VEHICLE MAKE

Screen Name: Make

SAS Data Set: **GV**
SAS Variable: **MAKE**

Element Attributes:

Source: Rolled up from vehicle table

Remarks:

The make of each vehicle involved in the crash is indicated here.

VEHICLE MODEL

Screen Name: Model

SAS Data Set: **GV**
SAS Variable: **MODEL**

Element Attributes:

Source: Rolled up from vehicle table

Remarks:

The model of each vehicle involved in the crash is indicated.

DAMAGE PLANE

Screen Name: Damage Plane

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Front
Left
Right
Back
Top
Undercarriage
Unknown

Source: Researcher determined

Remarks:

The Researcher must determine the most sever impact and choose the associated damage plane.

All efforts should be made to determine the plane of damage. The vehicle inspection, occupant interview, police report, towyard operator, damage to other vehicles or objects should be considered.

If there is absolutely no information available, then “Unknown” may be used. However, it should rarely be selected.

DAMAGE SEVERITY

Screen Name: Severity

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Light
Moderate
Severe
Unknown

Source: Vehicle Inspection

Remarks:

The Researcher must determine the damage severity for the most severe **Damage Plane**.

All efforts should be made to determine the damage severity when a vehicle inspection is obtained. If pictures or damaged parts are available, examine and photograph them in an effort to document a "rough" Damage Severity for this vehicle.

If there is absolutely no information available, or no vehicle inspection, then "Unknown" may be used.

Light
includes vehicle generally would not require towing (although this vehicle may have been towed).

Moderate
includes damage to vehicles that may or may not require towing and have less than 60 cm of maximum crush.

Severe
includes towed vehicles with greater than 60 cm of maximum crush.

COMPONENT FAILURE

Page 1 of 2

Screen Name: Component Failure

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Source: Researcher determined

Remarks:

Any vehicular component that failed during the crash sequence should be noted. The components of special interest to the user may be noted by reviewing the field form variables (*e.g.*, steering columns, seat backs, restraints, glazing, etc.).

Below is an additional list of special interest component failure crashes:

NEED TO UPDATE LIST

SPECIFIC AREAS OF INTEREST TO NHTSA RULE MAKING

CRASH AVOIDANCE

1. Crashes involving vehicles driven by handicapped drivers.
2. Crashes involving vehicles equipped with adaptive aids.
3. Crashes in which failure of a multi piece rim (not a tire failure) caused or contributed to the severity of the crash.
4. Crashes involving malfunction of a speed governor or speed control unit.
5. Crashes where the driver reported confusion about the location of display or control elements of the vehicle.
6. Crashes where under inflation of tires caused or contributed to the severity of crash.
7. Crashes involving pedestrian and/or cyclist injured by impact with outside mirrors.
8. Crashes involving injury to motorcycle drivers due to impact with the motorcycle mirrors.
9. Crashes where driver reported that distortion of image in convex mirror confused him (especially late model GM cars).
10. Crashes where commercial vehicle drivers reported that they could not see car, pedestrian, or cycle in a specific blind spot (such as in the right front area of large truck-tractors).
11. Crashes where driver or a passenger car or light truck reported that they could not see because of an obstruction of view by some part of the vehicle (such as inside mirror or roof support pillar).

12. Crashes where the vehicle's defrost/defog system or wiper system could not provide an adequate view of the traffic scene through the windshield.

13. Crashes involving pickup trucks pulling fifth-wheel type trailer.

14. Crashes involving stalled vehicles

CRASHWORTHINESS

1. Seat and/or seat back failures in crashes and their contributions to occupant injury.

2. Identify external vehicle components (i.e., hood, grill, windshield wiper, etc.) that penetrate the windshield and the degree of such penetration in crashes involving vans and light trucks.

3. Ejections through the hatchback or station wagon rear doors in rear impacts. Identify whether ejection was through window opening or through door or hatchback opening because of latch failure.

4. Cars involving child restraints that break or involve injury. Identify the restraint by make and model, how and which position used.

CORROSION

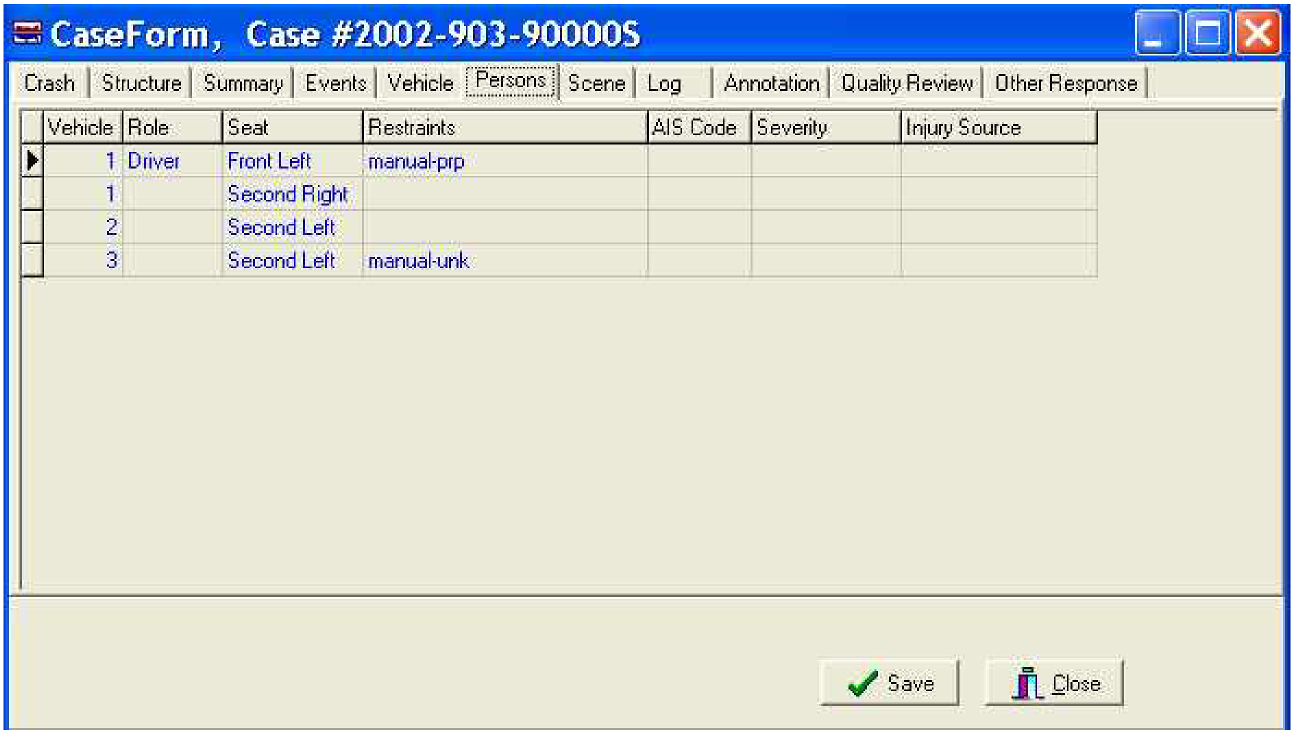
1. Structural rust of uni-body undercarriage, vehicle chassis frames, floor boards in areas of seat belt attachment points, seat or seat track anchorages.

2. Rust which develops in areas where the owner can observe the rust and therefore be forewarned, but which might have safety implications such as cowl area and wipers, around windshield or backlight.

3. Rust on weight bearing or vehicle guidance components, the failure of which could affect vehicle safety and do not normally wear out in service, such as tie rods, control arms, strut rods.

4. Rust of areas where the owners report exhaust intrusion such as wheel wells, wagon tire wells and rear floor pans.

Persons



CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Save
Close

Vehicle	Role	Seat	Restraints	AIS Code	Severity	Injury Source
1	Driver	Front Left	manual-prp			
1		Second Right				
2		Second Left				
3		Second Left	manual-unk			

VEHICLE NUMBER

Screen Name: Vehicle

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range: Numeric value

Source: Rolled up from vehicle table

Remarks:

The vehicle number for each person of an in-transport CDS vehicle involved in the crash is indicated here.

PERSON ROLE

Screen Name: Role

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Driver
Passenger
Unknown

Source: Rolled up from occupant table

Remarks:

Person Role indicates if the person was the ***driver*** or a ***passenger***, or **unknown.**

SEAT POSITION

Screen Name: Seat

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range*:*

Source: Look up table from elsewhere in case

Remarks:

The seat position of each person in the vehicle is indicated here. Seat position is indicated as "front left", "second middle", etc.

RESTRAINTS USE

Screen Name: Restraints

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range*:*

Source: Rolled up from elsewhere in case

Remarks:

The type of restraint "used" by the person during the crash (e.g., combinations of manual belts, automatic belts, air bags, and/or child seats) is indicated.

AIS CODE

Screen Name: AIS Code

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Source: Rolled up from elsewhere in case

Remarks:

The most severe (*i.e.*, highest AIS) injury to the person is indicated by the seven digit AIS90 code.

INJURY SEVERITY

Screen Name: Severity

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Source: Rolled up from elsewhere in case

Remarks:

The most severe (*i.e.*, highest AIS) injury to the person is indicated as minor, moderate, serious, severe, critical, maximum, or injured unknown severity.

INJURY SOURCE

Screen Name: Injury Source

SAS Data Set: **N/A**
SAS Variable: **N/A**

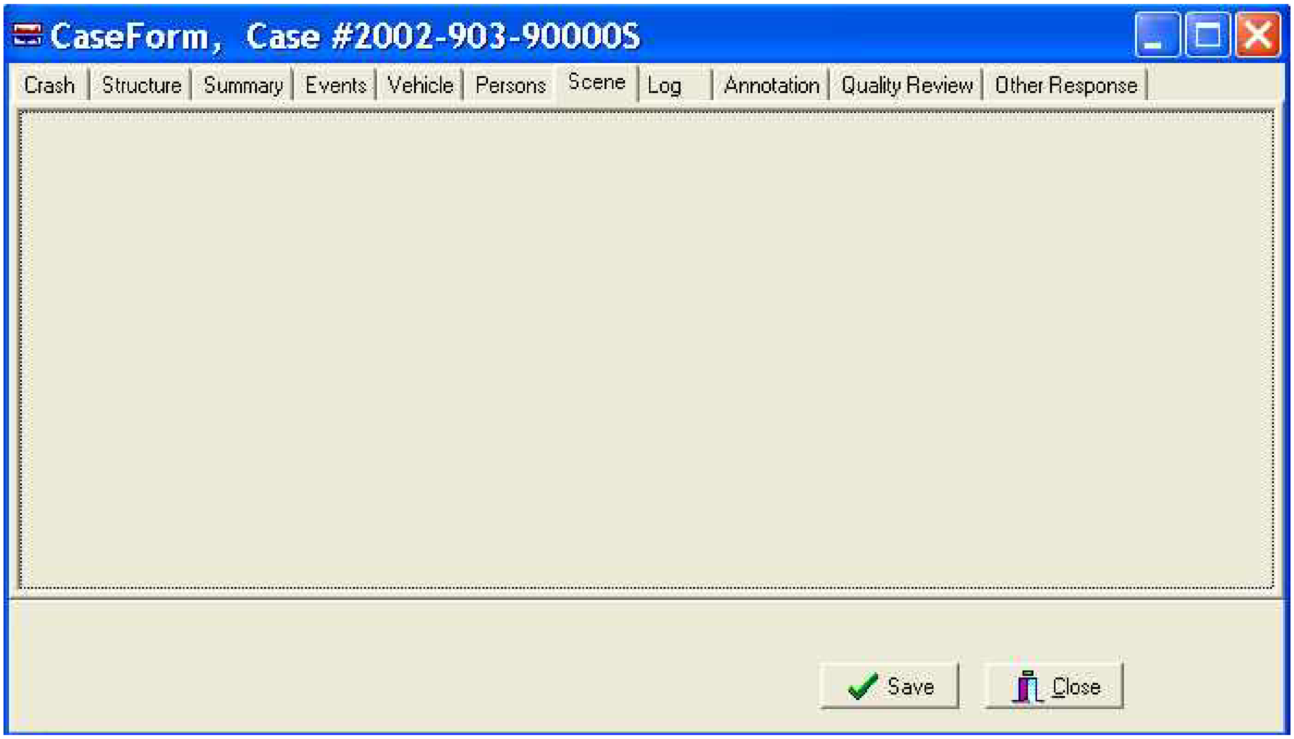
Element Attributes:

Source: Rolled up from elsewhere in case

Remarks:

The source of the most severe (*i.e.*, highest AIS) injury to the person is indicated.

Scene


CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Save
Close

Scene Diagram

1. Once you have clicked on the Scene tab to open up a grey window, double click on the window to start Visio.

2. Before you start drawing, consider the size of your scene and all the physical evidence and then set the page size of your drawing, scale (1/100, 1/250, etc.), and whether you want to draw it in portrait or landscape mode.

3. Use Visio reference materials or “Help” in Visio, for various techniques.

4. Begin the drawing using NASS techniques, be sure to include:

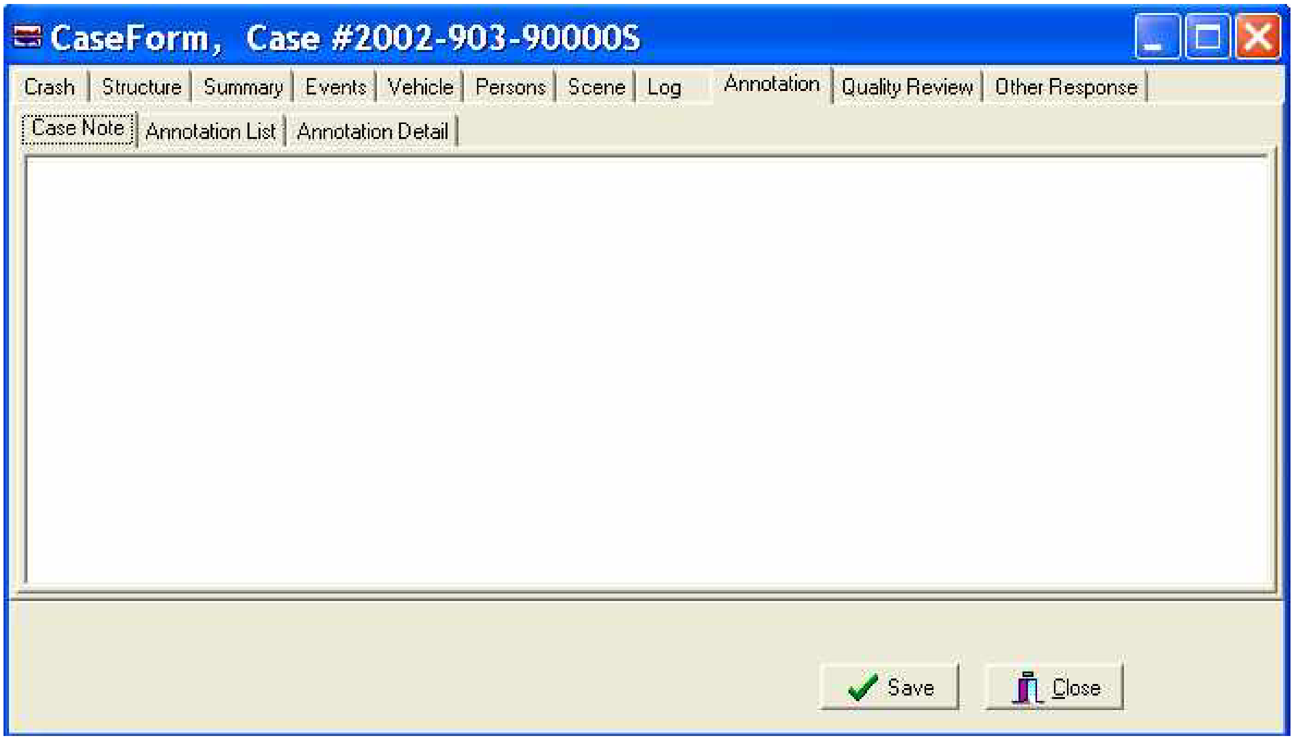
Document the physical plant:

- All appropriate road/roadway delineation (e.g., curbs/edge lines, lane markings, median markings, pavement markings, parked vehicles, poles, signs, etc.)
- All appropriate traffic controls (e.g., signs/signals, etc.)
- North arrow placed on diagram

Document vehicle dynamics including:

- Reference Point (RP) and Reference Line (RL) relative to the physical features present at the scene
- Scaled documentation of all crash induced physical evidence.
- Scaled documentation of all roadside objects contacted
- Scaled representations of the vehicle(s) at pre-impact, impact, and final rest based upon either physical evidence, and/or reconstructed crash dynamics.

Case Note


CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Case Note
Annotation List
Annotation Detail
Save
Close

Any general notes about the case should be annotated here.

Annotation List

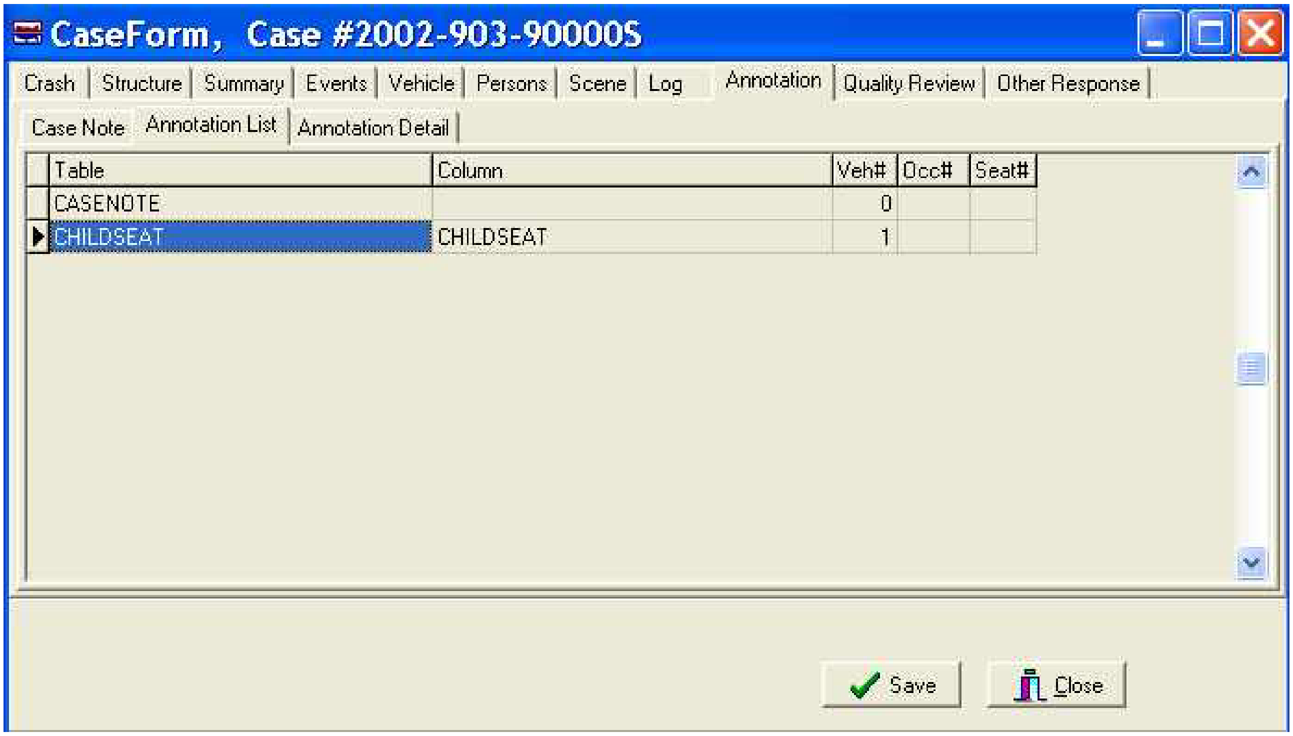
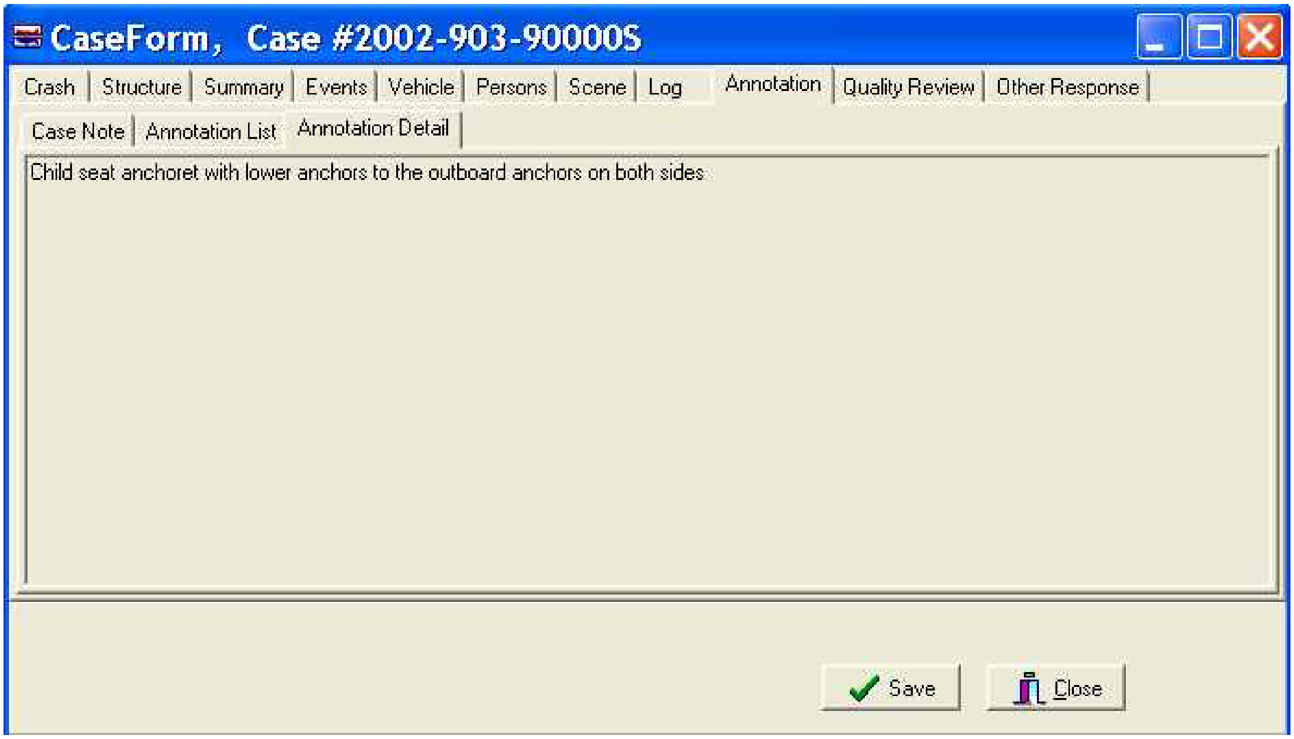

CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Case Note
Annotation List
Annotation Detail
Save
Close

Table	Column	Veh#	Occ#	Seat#
CASENOTE		0		
CHILDSEAT	CHILDSEAT	1		

Annotation List

All annotations to the case are maintained here.

Annotation / Annotation Detail

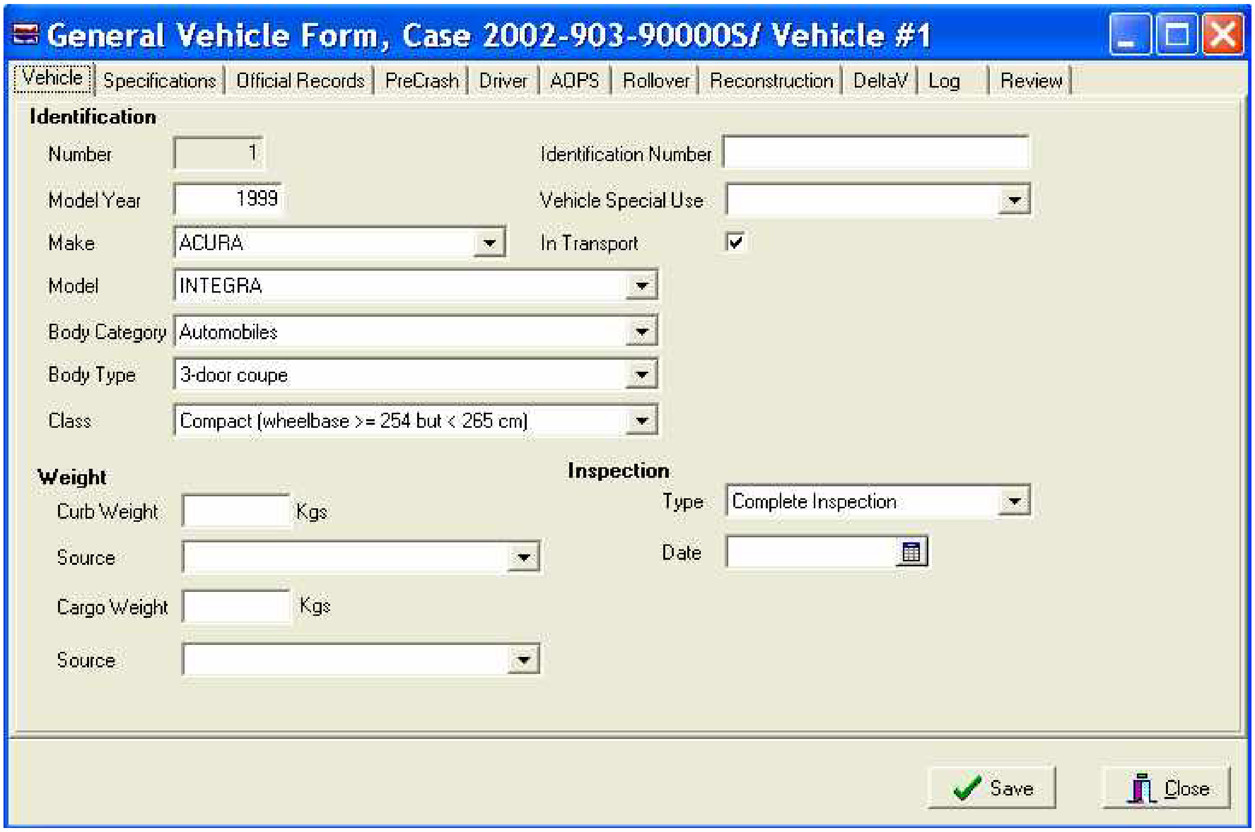

CaseForm, Case #2002-903-90000S
Crash
Structure
Summary
Events
Vehicle
Persons
Scene
Log
Annotation
Quality Review
Other Response
Case Note
Annotation List
Annotation Detail
Save
Close

Child seat anchoret with lower anchors to the outboard anchors on both sides

An annotation highlighted on the list on the previous screen will show up in detail on this screen.

GENERAL VEHICLE FORM

Vehicle



General Vehicle Form, Case 2002-903-90000S/ Vehicle #1

Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review

Identification

Number: 1

Model Year: 1999

Make: ACURA

Model: INTEGRA

Body Category: Automobiles

Body Type: 3-door coupe

Class: Compact (wheelbase >= 254 but < 265 cm)

Identification Number:

Vehicle Special Use:

In Transport ☑

Weight

Curb Weight: Kgs

Source:

Cargo Weight: Kgs

Source:

Inspection

Type: Complete Inspection

Date:

Save
Close

VEHICLE NUMBER

Screen Name: Number

SAS Data Set: **GV**
SAS Variable: **VEHNO**

Element Attributes:
Generated Number

Range:

Source: Generated when vehicle is selected to open General Vehicle Form

Remarks:

Note: Vehicles are entered on the Case Form / Structure Tab / Vehicles sub-tab.

Vehicles are numbered starting with "1". Each in-transport motor vehicle is assigned a unique number. Vehicle numbers are to be assigned consecutively according to the order NASS vehicles are listed on the PAR except in the following circumstances: 1) If there are any in-transport NASS vehicles not listed on the PAR, then use the next consecutive number. 2) If there are any CDS or non-CDS applicable and not-in-transport vehicles that are struck by an in-transport CDS applicable vehicle then assign them to the last vehicle numbers in the case (i.e. parked car).

Example:

The PAR stated that Vehicle 3, a Honda Accord, struck Vehicle 2, a Chevrolet Impala, and the Impala rebounded into vehicle 1, a legally parked Toyota Corolla. In the NASS CDS case the Accord is Vehicle 2, the Impala is Vehicle 1, and the Corolla, if inspected, must be assigned as Vehicle 3.

Do not assign a number to an uninspected not in-transport vehicle

VEHICLE MODEL YEAR

Screen Name: Identification--Model Year

SAS Data Set: **GV**
SAS Variable: **MODELYR**

Element Attributes:

1900 - current data collection year plus one
9999 - Unknown

Range: 1900-current year+1

Source: Primary source is the VIN during vehicle inspection; secondary sources include the police report and interviews.

Remarks:

Select the model year for which the vehicle was manufactured.

Unknown if the vehicle model year cannot be determined.

VEHICLE MAKE

Screen Name: Identification--Make

SAS Data Set: **GV**
SAS Variable: **MAKE (for SAS code); OMAKE (for Oracle code)**

Element Attributes:

	Vehicle Make-as Selected
99	Unknown
	(add codes)

Source: Vehicle inspection, police report, and interview

Remarks:

Select the vehicle make for this vehicle.

Unknown is used for a "hit-and-run" vehicle unless reliable evidence indicates the make of the vehicle.

See appendix for list of makes.

VEHICLE MODEL

Screen Name: Identification—Model

SAS Data Set: **GV**
SAS Variable: **MODEL (for SAS code); OMODEL (for Oracle code)**

Element Attributes:

Vehicle Model-as Selected
999 Unknown

Source: Vehicle inspection, police report, and interview

Remarks:

Select the vehicle model for this vehicle.

Unknown is used for a "hit-and-run" vehicle unless reliable evidence indicates the make of the vehicle.

See appendix for list of Models

VEHICLE BODY CATEGORY

Screen Name: Body Category

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Automobiles
Automobile Derivatives
Utility Vehicles
Van Based Light Trucks
Light Conventional Trucks
Other Light Trucks
Buses (Excludes Van Based)
Medium/heavy Trucks
Motored Cycles
Other Vehicles
Unknown Body Type

Source: Vehicle inspection, police report, interview, VIN

Remarks:

Automobiles
These light vehicles referred to as automobiles, are designed primarily to transport passengers.

Automobile Derivatives
This describes certain passenger cars that have been modified to perform cargo-related tasks.

Utility Vehicles (< 4,536 kgs GVWR)

Van Based Light Trucks (< 4,536 kgs GVWR)

Light Conventional Trucks (Pickup Style Cab, < 4,536 kgs GVWR)

Other Light Trucks (< 4,536 kgs. GVWR)
Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

Buses (Excludes Van Based)
Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

Vehicle Body Category cont'd

Page 1 of 2

Medium/Heavy Trucks (> 4,536 kgs GVWR)

Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab. They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

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

Other Vehicles

Other Vehicles describe all motored vehicles that are designed primarily for off-road use. It is also selected when the body type of the vehicle is unknown

Screen Name: Body Type

SAS Data Set: **GV**
SAS Variable: **BODYTYPE**

Element Attributes:
CDS APPLICABLE VEHICLES

Automobiles

01 Convertible (excludes sun-roof, t-bar)
02 2-door sedan, hardtop, coupe
03 3-door/2-door hatchback
17 3-DOOR COUPE
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 (<=4,536 kgs GVWR)

14 Compact utility (examples include: 4-Runner, Amigo, Bravada, Bronco [76 and before], Bronco II, Cherokee [84 and after], Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)
15 Large utility (examples include: Bronco-full-size [78 and after], full-size Blazer, full-size Jimmy, Hummer, Jeep Cherokee [83 and before], Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon)
16 Utility station wagon (examples include: Chevrolet Suburban, Expedition, Excursion, GMC Suburban, Grand Wagoneer includes suburban limousine, Travelall)
19 Utility, unknown body type

Body Type cont'd

Van Based Light Trucks (<=4,536 kgs GVWR)

20 Minivan (examples include: Aerostar, Astro, Caravan, Expo Wagon, Grand Caravan, Grand Voyager, Lumina APV, Mazda MPV, Mini-Ram, Mitsubishi Minivan, Nissan Minivan, Odyssey, Previa, Quest, Safari, Sienna, Silhouette, Town and Country, Toyota Minivan, Toyota Van, Trans Sport, Vanagon/Camper, Venture, Villager, Vista, Voyager, Windstar)
21 Large van (examples include: B150-B350, Beauville, Chateau, Chevy Van, Clubwagon, E150- E350, Econoline, G10-G30, G15-G35, Maxiwagon, Rally Van, Ram, Royal, Sport Van, Sportsman, Tradesman, Vandura, Voyager [83 and before].)
22 Step van or walk-in van (<=4,536 kgs GVWR)
23 Van based motorhome (<=4,536 kgs GVWR)
24 Van based school bus (<=4,536 kgs GVWR)
25 Van based other bus (<=4,536 kgs GVWR)
28 Other van type (Hi-Cube Van, Kary) (specify):
29 Unknown van type

Light Conventional Trucks (Pickup style cab, <=4,536 kgs GVWR)

30 Compact pickup (examples include: Arrow Pickup [foreign], Colt P/U, Courier, D50, Dakota, Datsun/Nissan Pickup, Frontier, Hombre, LUV, Mazda Pickup, Mitsubishi Pickup, Pup, Ram 50, Ranger, S-10 , S-15, Sonoma, Sport Trac, T-10, T-15, Tacoma, Toyota Pickup)
31 Large Pickup (examples include: C10-C35, Comanche, D100-D350, F100-F350, Jeep Pickup, K10-K35, R100-R500, R10-R35, Ram Pickup, Sierra, Silverado, T100, V10-V35, W100-W350)
32 Pickup with slide-in camper
33 Convertible pickup
39 Unknown pickup style light conventional truck type

Other Light Trucks (<=4,536 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)

Body Type cont'd

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 (> 4,536 kgs GVWR)

60 Step van (> 4,536 kgs GVWR)
61 Single unit straight truck (4,536 kgs <GVWR<=8,845 kgs)
62 Single unit straight truck (8,8845 kgs <GVWR<=11,793 kgs)
63 Single unit straight truck (> 11,793 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)
74 Medium / Heavy Pickyo >=4,536 kgs
78 Unknown medium/heavy truck type

Unknown truck type (light / medium / heavy)

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, motor scooter) (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

Unknown Vehicle Type

99 Unknown body type

Body Type cont'd

Source: Vehicle inspection, police report, and interview

Remarks:

Automobiles
These light vehicles referred to as automobiles, are designed primarily to transport passengers.

01 Convertible (excludes sun-roof, t-bar)
refers to a passenger car equipped with a removable or retractable roof. To qualify for this attribute, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This attribute takes priority over 2-door or 4-door attributes.

02 2-door sedan, hardtop, coupe
refers to a passenger car equipped with two doors for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

03 3-door/2-door hatchback
refers to a passenger car equipped with two doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

17 3-door coupe
refers to a passenger car equipped with three doors (two front seat and one rear seat) for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

04 4-door sedan, hardtop
refers to a passenger car equipped with four doors for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

05 5-door/4-door hatchback
refers to a passenger car equipped with four doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

06 Station wagon (excluding van and truck based)
refers to a passenger car with an enlarged cargo area. The entire roof covering the cargo area is generally equal in height from front to rear and full height side glass is installed between the C and D-pillars. The rearmost area is not permanently partitioned from the forward passenger compartment area (*e.g.*, "horizontal window shades" to hide cargo do not constitute partitions).

Hatchback, number of doors unknown
refers to a passenger car with an unknown number of doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

08 Other automobile type
refers to any passenger car that cannot be described by other automobile attributes.

09 Unknown automobile type
is used when it is known that the vehicle is a passenger car, but there is insufficient data to determine the type.

Automobile Derivatives
This describes certain passenger cars that have been modified to perform cargo-related tasks.

10 Auto based pickup
refers to a passenger car based, pickup type vehicle (includes El Camino, Caballero, Ranchero, Brat, and Rabbit pickup). The roof area (and side glass) rearward of the front seats on a station wagon have been removed and converted into a pickup-type cargo box.

11 Auto based panel
refers an automotive station wagon that may have sheet metal rearward of the B-pillar rather than glass (cargo station wagon, auto based ambulance/hearse).

12 Large limousine
refers to an automobile that has sections added within its wheelbase (more than four side doors) or stretched chassis to increase length and passenger/cargo carrying capacity .

13 Three-wheel automobile or automobile derivative
refers to three-wheel vehicles with an enclosed passenger compartment.

Utility Vehicles (<=4,536 kgs GVWR)

Multi-purpose vehicles (MPV)
are designed to have off-road capabilities. These vehicles are generally four wheel drive (4 x 4), have increased ground clearance, and are equipped with a strong frame. Four wheel drive automobiles are not considered MPVs.

14 Compact utility
refers to a short wheelbase and narrow tracked multi-purpose vehicle designed to operate in rugged terrain (examples include: 4-Runner, Amigo, Bravada, Bronco [76 and before], Bronco II, Cherokee [84 and after], Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)

Body Type cont'd

15 Large utility
refers to full-size multi-purpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon style body, some models are equipped with a removable top (examples include: Bronco-full-size [78 and after], full-size Blazer, full-size Jimmy, Hummer, Jeep Cherokee [83 and before], Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon),

16 Utility station wagon
refers primarily to a pickup truck based chassis enlarged to a station wagon (examples include: Chevrolet Suburban, Excursion, GMC Suburban, Travelall, Grand Wagoneer, includes suburban limousine)

Utility, unknown body type
is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type. Class of Vehicle is entered as **(Compact utility vehicle)**.

Van Based Light Trucks (<=4,536 kgs GVWR)
Light trucks (<=4,536 kgs GVWR) are designed to maximize cargo/passenger area versus overall length. Basically a "box on wheels" these vehicles are identifiable by their enclosed cargo/passenger area and relatively short (or non-existent) hood.

20 Minivan
refers to down-sized cargo or passenger vans examples include: Aerostar, Astro, Caravan, Expo Wagon, Grand Caravan, Grand Voyager, Lumina APV, Mazda MPV, Mini-Ram, Mitsubishi Minivan, Nissan Minivan, Odyssey, Previa, Quest, Safari, Sienna, Silhouette, Town and Country, Toyota Minivan, Toyota Van, Trans Sport, Vanagon/Camper, Venture, Villager, Vista, Voyager, Windstar)

21 Large van
refers to a standard cargo or passenger van (examples include: 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). These vans will generally have a larger capacity in both volume and GVWR.

22 Step van or walk-in van (<=4,536 kgs GVWR)
refers to a multi-stop delivery vehicle with a GVWR less than or equal to 4,536 kilograms. Examples are the Grumman LLV used by the US Postal Service or the Aeromate manufactured by Utilimaster Motor Corporation.

23 Van based motorhome (<=4,536 kgs GVWR)
refers to a van where the chassis and cab portions from the B-pillar forward of this vehicle are the same as in attributes minivan, large van, step van, however, a frame mounted recreational unit is added behind the driver/cab area. This attribute takes priority over attributes minivan and large van.

Body Type cont'd

24 Van based school bus (<=4,536 kgs GVWR)
is a passenger van desiged to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van based school buses converted for other uses (*e.g.*, church bus) also take this attribute.

25 Van based other bus (<=4,536 kgs GVWR)
is a van derivative (*e.g.*, taxi, small local transit) designed to carry passengers for low occupancy functions or purposes. Van based school buses do not use this attribute.

28 Other van type (Hi-Cube Van, Kary)
refers to a cargo or delivery van where that chassis and cab portions from the B-pillar forward of this vehicle are the same as in Minivans and Large Vans with a frame mounted cargo area unit added behind the driver/cab area, or if the van cannot be described as a Minivan, Large Van, Step-van or a Van-based motorhome. Annotate the van type when using this attribute. This attribute takes priority over Minivans and Large Vans.

29 Unknown van type
is used when it is known that this vehicle is a light van, but its specific type cannot be determined.

Light Conventional Trucks (Pickup Style Cab, <=4,536 kgs GVWR)
Light Conventional Trucks are used to describe vehicles commonly referred to as pickup trucks and some of their derivatives. These light trucks are characteristically designed with a small cab containing a single row of seats (extended cabs with additional seats are available for some models), a large hood covering a conventional engine placement, and a separate open box area (approximately 180 to 240 centimeters long) for cargo.

30 Compact pickup
is used to describe a pickup truck having a width of 178 centimeters or less. (examples include: Arrow Pickup [foreign], Colt P/U, Courier, D50, Dakota, Datsun/Nissan Pickup, Frontier, Hombre, LUV, Mazda Pickup, Mitsubishi Pickup, Pup, Ram 50, Ranger, S-10 , S-15, Sonoma, T-10, T-15, Tacoma, Toyota Pickup)

31 Large Pickup
is used to describe a pickup truck having a width of greater than 178 centimeters (examples include: C10-C35, Comanche, D100-D350, F100-F350, Jeep Pickup, K10-K35, R100-R500, R10-R35, Ram Pickup, Sierra, Silverado, T100, V10-V35, W100-W350)

32 Pickup with slide-in camper
is used to describe any pickup truck that is equipped with a slide-in camper. A slide-in camper is a unit that mounts within a pickup bed. Pickup bed caps, tonneau covers, or frame mounted campers are not applicable for this attribute.

Body Type cont'd

33 Convertible pickup
refers to a pickup truck equipped with a removable or retractable roof. To qualify for this attribute, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This attribute takes priority over compact and large pickups.

39 Unknown pickup style light conventional truck
is used when this vehicle is a Light Conventional Trucks, but there is insufficient data to determine the specific attribute.

Other Light Trucks (<=4,536 kgs. GVWR)
Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

40 Cab chassis based (includes rescue vehicles, light stake, dump, and tow truck)
is used to describe a light vehicle with a pickup style cab and a commercial (non-pickup) body attached to the frame. Included are pickup based ambulances and tow trucks.

41 Truck based panel
is used to describe a truck based station wagon that has sheet metal rather than glass above the beltline rearward of the B-pillars.

42 Light truck based motorhome (chassis mounted)
is used to describe a frame mounted recreational unit attached to a light van or conventional chassis.

45 Other light conventional truck type
is used for light conventional trucks that cannot be described elsewhere.

48 Unknown light truck type
is used when it is known that the vehicle is a light truck chassis based vehicle but insufficient data exist to specify what type of light truck it is.

49 Unknown light vehicle type (automobile, utility, van, or light truck)
is used when it is known that the vehicle is a light vehicle, but insufficient data exists to specify what type of light truck it is.

Buses (Excludes Van Based)
Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

Body Type cont'd

50 School bus
(designed to carry students, not cross country or transit) is a bus designed to carry passengers to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. School buses converted for other uses (*e.g.*, church bus) also take this attribute.

58 Other bus type
(e.g., transit, intercity, bus based motorhome) is a transport device designed to carry passengers for longer periods of time. These vehicles may be classified as over-the-road, transit, intercity, bus related motorhome (other than school bus based), or other.

59 Unknown bus type
is used when it is known the transport device is a bus but there is insufficient data to choose between attributes School bus and Other bus type.

Medium/Heavy Trucks (> 4,536 kgs GVWR)
Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab.

They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

60 Step van (> 4,536 kgs GVWR)
defines a single unit enclosed body with a GVWR greater than 4,536 kilograms and an integral driver's compartment and cargo area. Step vans are generally equipped with a folding driver seat mounted on a pedestal and a sliding door for easy ingress/egress.

61 Single unit straight truck (4,536 kgs <=GVWR <= 8,845 kgs)
describes a non-articulated truck designed to carry cargo. The gross vehicle weight rating of the vehicle must exceed 4,536 kilograms and be less than or equal to 8,845 kilograms.

62 Single unit straight truck (8,845 kgs <= GVWR <= 11,793 kgs)
describes a non-articulated truck designed to carry cargo. The gross vehicle weight rating of the vehicle must exceed 8,845 kilograms and be less than or equal to 11,793 kilograms.

63 Single unit straight truck (> 11,793 kgs GVWR)
describes a non-articulated truck designed to transport cargo with a gross vehicle weight rating in excess of 11,793 kilograms. Use this attribute if it is known that the GVWR of a single unit straight truck is greater than 4,536 kilograms but there is insufficient data to specify the type of single unit truck.

Body Type cont'd

64 Single unit straight truck, GVWR unknown
is used when the transport vehicle is a single unit straight truck but the GVWR is unknown.

65 Medium/heavy truck based motorhome
describes a recreational vehicle mounted on a single unit medium/heavy truck chassis.

67 Truck-tractor with no cargo trailer
describes a fifth wheel equipped tractor/trailer power unit with no trailer attached.

68 Truck-tractor pulling one trailer
describes a fifth wheel equipped tractor (*i.e.*, power unit of a tractor/trailer combination) pulling one semi-trailer.

69 Truck-tractor pulling two or more trailers
describes a fifth wheel equipped tractor (*i.e.*, power unit of a tractor/trailer combination) pulling a semi-trailer plus one or more trailers. These additional trailers may be attached with a standard hitch or a converter dolly (for semi-trailers).

70 Truck-tractor (unknown if pulling trailer)
is used when the vehicle is known to be a truck-tractor, but it is unknown if a trailer was being towed or if more than one trailer was being towed.

78 Unknown medium/heavy truck type
is used when the only available information indicates a truck of medium/heavy size.

79 Unknown truck type (light/medium/heavy)
is used when it is known that this vehicle is a truck, but there is insufficient data to classify the vehicle further.

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

80 Motorcycle
is used when the vehicle is a two-wheeled open (*i.e.*, no enclosed body) vehicle propelled by an internal combustion engine. Motorcycles equipped with a side car also take this attribute.

81 Moped (motorized bicycle)
is used when the vehicle is a motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

82 Three-wheel motorcycle or moped
is used when the vehicle is a three-wheeled open vehicle propelled by an internal combustion engine or a three-wheeled motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

88 Other motored cycle (minibike, motor scooter)
is used when the vehicle in question does not qualify for attributes **Motorcycles, moped, three wheeled motorcycle or moped** (*e.g.*, motor scooter).

89 Unknown motored cycle type
is used when it is known that the vehicle is a motored cycle, but no further data is available.

Other Vehicles
Other Vehicles describe all motored vehicles that are designed primarily for off-road use.

90 ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
is used for off-road recreational vehicles which cannot be licensed for use on public roadways. ATVs have 4 or more wheels and ATCs have 2 or 3 wheels. Generally, the tires have low pressure and wide profile (*i.e.*, flotation/balloon).

91 Snowmobile
refers to a vehicle designed to be operated over snow propelled by an internal combustion engine.

92 Farm equipment other than trucks
refers to farming implements other than trucks propelled by an internal combustion engine (*e.g.*, farm tractors, combines, etc.).

93 Construction equipment other than trucks
refers to construction equipment other than trucks propelled by an internal combustion engine (*e.g.*, bulldozer, road grader, etc.).

97 Other vehicle type
is used when the motorized vehicle in question does not qualify for **Construction equipment other than trucks, Farm equipment other than trucks, Snowmobile, ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)** (*e.g.*, go-cart, dune buggy, "kit" car, etc.).

Unknown Vehicle Type
Unknown Vehicle Type describes all motored vehicles where the body type cannot be differentiated among a light vehicle type, bus, medium/heavy truck, motored cycle, or any other motored vehicle type.

99 Unknown body type
is used when there is no available information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle within one of the preceding attributes.

CLASS OF VEHICLE

Page 1 of 11

Screen Name: Class of Vehicle

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

1	Subcompact/mini (wheelbase < 254 cm)
2	Compact (wheelbase ≥ 254 but < 265 cm)
3	Intermediate (wheelbase ≥ 265 but < 278 cm)
4	Full size (wheelbase ≥ 278 but < 291 cm)
5	Largest (wheelbase ≥ 291 cm)
9	Unknown passenger car size
14	Compact utility vehicle
15	Large utility vehicle (≤ 4,536 kgs GVWR)
16	Utility station wagon (≤ 4,536 kgs GVWR)
19	Unknown utility type
20	inivan (≤ 4,536 kgs GVWR)
21	arge van (≤ 4,536 kgs GVWR)
24	Van based school bus (≤ 4,536 kgs GVWR)
28	Other van type (≤ 4,536 kgs GVWR)
29	Unknown van type (≤ 4,536 kgs GVWR)
30	Compact pickup truck (≤ 4,536 kgs GVWR)
31	Large pickup truck (≤ 4,536 kgs GVWR)
38	Other pickup truck (≤ 4,536 kgs GVWR)
39	Unknown pickup truck type (≤ 4,536 kgs GVWR)
45	Other light truck (≤ 4,536 kgs GVWR)
48	Unknown light truck type (≤ 4,536 kgs GVWR)
49	Unknown light vehicle type
50	School bus (excludes van based) (> 4,536 kgs GVWR)
58	Other bus (> 4,536 kgs GVWR)
59	Unknown bus type
60	Truck (> 4,536 kgs GVWR)
67	Tractor without trailer
68	Tractor - trailer(s)
78	Unknown medium/heavy truck type
79	Unknown light/medium/heavy truck type
80	Motored cycle
90	Other vehicle
99	Unknown

Source: Researcher determined — inputs include police report, vehicle inspection, VIN breakdown, and interviews.

Class of vehicle cont'd

Remarks:

The Passenger Car Classification Subcommittee, A3B11(1), of the Transportation Research Board, Traffic Records and Accident Analysis Committee, A3B11, assessed size based on the vehicle wheelbase. The guidelines for this classification can be found in the report entitled Recommended Definitions for Passenger Car Size Classification by Wheelbase and Weight, August 1984 by the previously mentioned subcommittee. This variable is the same variable that appears in the Identification section of the Vehicle Tab on the General Vehicle Form and Vehicle Exterior Form.

Subcompact/mini (wheelbase < 254 cm)
Choose based upon wheelbase

Compact (wheelbase >= 254 but < 265 cm)
Choose based upon wheelbase

Intermediate (wheelbase >= 265 but < 278 cm)
Choose based upon wheelbase

Full size (wheelbase >= 278 but < 291 cm)
Choose based upon wheelbase

Largest (wheelbase >= 291 cm)
Choose based upon wheelbase

Unknown passenger car size
is used when it is known that a vehicle is a passenger car but the wheelbase is unknown

Compact utility vehicle
refers to vehicle models defined as **Compact utility** under Body Type. Use this attribute if the size of the utility vehicle is unknown.

Large utility vehicle (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Large utility** under Body Type. Refers to full-size multipurpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon body style, some models are equipped with a removable top.

Utility station wagon (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Utility station wagon** under Body Type. Refers primarily to a pickup truck based chassis enlarged to a station wagon.

Unknown Utility type
is defined as **Utility, unknown body type** under Body Type. This attribute is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type.

Class of vehicle cont'd

Minivan (<= 4536 kgs. GVWR)
Refers to vehicle models defined as **Minivan** under Body Type. Refers to down-sized passenger or cargo vans.

Large van (<= 4536 kgs. GVWR)
Refers vehicle models defined as **Large van** under Body Type. Refers to a standard size cargo or passenger van.

Van based school bus (<= 4,536 kgs GVWR)
is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van based school buses converted for other uses (e.g., church bus) also take this attribute refers to vehicles defined as **Van based school bus** under Body Type.

Other van type (<= 4,536 kgs GVWR)
Refers to vehicle models defined as Step van or walk-in van, Van based motorhome, Van based other bus and code Other van type under Body Type.

Unknown van type (<= 4,536 kgs GVWR)
is used when it is known that this vehicle is a light van, but its specific type cannot be determined. Refers to vehicles described as **Unknown van type** under Body Type.

Compact pickup truck
Refers to vehicle models defined as attributes of **Compact pickup truck** in Body Type. Used to describe a pickup truck having a width of 178 centimeters or less.

Large pickup truck
Refers to vehicle models defined as **Large pickup truck** under Body Type. Used to describe a pickup truck having a width greater than 178 centimeters.

Other pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Pickup with slide-in camper** and **Convertible pickup** under Body Type.

Unknown pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Unknown pickup style light conventional truck type** under Body Type.

Other light truck (<= 4536 kgs GVWR)
Refers to vehicle models defined **as Cab, chassis based (includes rescue vehicles, light stake, dump, and tow truck), Truck based panel, Light truck based motorhome (chassis mounted),** and **Other light conventional truck type** under Body Type.

Class of vehicle cont'd

Unknown light truck type

Refers to vehicle models defined as **Unknown light truck type** under Body Type.

Unknown light vehicle type (automobile, utility, van, or light truck)

Refers to vehicle models defined as Unknown light vehicle type (automobile, utility, van, or light truck) under Body Type.

School bus (excludes van based) (> 4536 kgs GVWR)

Refers to those vehicle models defined as School bus (designed to carry students, not cross country or transit) under Body Type.

Other bus (>4,536 kgs GVWR)

describes those vehicle models included in Other bus type (e.g., transit, intercity, bus based motorhome) under Body Type.

Unknown bus type

Refers to those vehicle models described as **Unknown bus type** under Body Type.

Truck (> 4,536 kgs GVWR)

is defined under Body Type, as **Step van (>4,536 kgs GVWR), Single unit straight truck (4,536 kgs < GVWR <= 8,845), Single unit straight truck (8,845 kgs < GVWR <= 11,793), Single unit straight truck (>11,793 kgs GVWR), Single unit straight truck, GVWR unknown** and **Medium/heavy truck based motorhome.**

Tractor without trailer

refers to **Truck-tractor with no cargo trailer** under Body Type.

Tractor-trailer(s)

is defined in attributes **Truck-tractor pulling one trailer, Truck-tractor pulling two or more trailers** and **Truck-tractor (unknown if pulling trailer)** under Body Type.

Unknown medium/heavy truck type)

is used when the only available information indicates a truck of medium/heavy size. Refer to **Unknown medium/heavy truck type** under Body Type.

Unknown truck type (light/medium/heavy)

Refers to those vehicles described by **Unknown truck type (light/medium/heavy)** under Body Type.

Motored cycle

refers to Body Type, **Motorcycle, Moped (motorized bicycle), Three-wheel motorcycle or moped, Other motored cycle (minibike, motorscooter)** and **Unknown motored cycle type**.

Other vehicle

refers to all vehicles described by **ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle), Snowmobile, Farm equipment other than trucks,** or **Other vehicle type** under Body Type.

Class of vehicle cont'd

Unknown
is used when there is a lack of information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle using one of the preceding codes. This attribute is equivalent to Body Type, **Unknown body type.**

Not a motor Vehicle
Is used when an object is struck.

VEHICLE IDENTIFICATION NUMBER (VIN)

Screen Name: Identification--Identification Number

SAS Data Set: **GV**
SAS Variable: **VIN**

Element Attributes:
[11 character field in SAS]
00000000000000000
Enter the entire or partial VIN, left justify
99999999999999999.
00000000000 VIN not required on vehicle

Source: Primary source is vehicle inspection; a secondary source is the police report.

Remarks:

If a vehicle is inspected, the VIN must be obtained from the vehicle. The PAR may be used to obtain a VIN when a vehicle inspection is not required (*i.e.*, non-tow CDS applicable ***and*** WinSMASH is not applicable; or Body Category, equals **Buses, Medium/Heavy Trucks, Motorcycles,** or **Other Vehicles.**

Enter the entire VIN; leave **"blank"** any column which does not have a VIN character. If part of the VIN is missing or not decipherable, leave the column any such character would ordinarily occupy **"blank"**. Use VIN Assist to check the VIN. Additionally, in NASSMAIN the VIN can be checked on the GV Form by going to ***Process / VIN Check Routine.***

00000000000000000
enter a “0" in each position for vehicles not required to have a VIN (e.g., go cart).

99999999999999999
if the entire VIN is unknown, or missing enter a “9" in each position.

If the vehicle is a motor home or school bus, the vehicle chassis VIN is coded and the secondary manufacturer's number should be annotated if indicated on the PAR.

If the vehicle is manufactured by the Ford Motor Company (prior to 1980) and the VIN begins or ends with a script, "*F*", the "*F*" is not entered. Proceed to the next character, as in the example below.

VIN: *F* 3 U 6 2 S 1 0 0 9 3 2 *F*
CODE: 3 U 6 2 S 1 0 0 9 3 2

In addition, if any hyphens, periods, or blank spaces are contained in the string of alphanumeric characters, ignore them as in the example below.

VIN: S M - E 3 0 7 6 4 2 1
CODE: S M E 3 0 7 6 4 2 1

Page 1 of 2

Screen Name: Vehicle Special Use

SAS Data Set: **GV**
SAS Variable: **VEHUSE**

Element Attribute:

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
9	Unknown

Source: Researcher determined; primary source is the police report; secondary sources include vehicle inspection, and interviewees.

Remarks:

No special use
is used when no source indicates or implies that this vehicle was applicable to any of the special uses listed below.

Taxi, **Vehicle used as school bus**, and **Vehicle used as other bus**
are ***"this trip"*** specific. The vehicle must be "on duty" as either a taxi or as a bus. External identification on the vehicle as a bus or taxi is not sufficient to determine its special use.

Taxi
is used when this vehicle was being used during this trip (at the time of the crash) on a "fee-for-hire" basis to transport persons. Most of these vehicles will be marked and formally registered as taxis; however, vehicles which are used as taxis, even though they are not registered (*e.g.*, "Gypsy Cabs"), are included here. ***Taxis and drivers which are off-duty*** at the time of the crash ***are not included***.

Vehicle used as school bus
is used if this motor vehicle (**Body Type**, need not equal **School Bus**) satisfies all of the following criteria:

- ☞ externally identifiable to other traffic units as a school/pupil transport vehicle. The vehicle may be equipped with flashing lights and/or a sway stop arm, and traffic may be required to stop for the vehicle when occupants enter or exit;
- ☞ operated, leased, owned, or contracted by a public or private school-type institution;
- ☞ whose occupants, if any, are associated with the institution; and,
- ☞ the vehicle is in operation at the time of the crash to and from the school or on a school-sponsored activity or trip.

Vehicle Special Use cont'd

Vehicle used as other bus
is used when this motor vehicle is designed for transporting more than ten persons and does not satisfy all of the above criteria of a school bus.

Military, Police, Ambulance, and **Fire truck or car**
are considered to be in use at all times. Special use means **"in use"** and not necessarily emergency use. External identification to the normal driving public is the sole criterion.

Military
is used for any vehicle which is owned by any of the Armed Forces regardless of body type. This attribute includes:

- military police vehicles;
- military ambulances;
- military hearses; and
- military fire vehicles

Police
is used for any readily identifiable (lights or markings) vehicle which is owned by any local, county, state, or federal police agency. Vehicles not owned by the agency or not readily identifiable which are used by officers or agents (*e.g.*, undercover) are excluded.

Ambulance
is used for any readily identifiable (lights or markings) vehicles: (1) whose sole purpose is to provide ambulance service, or (2) who serve the dual purposes of a hearse--used for funeral services, and an ambulance--used for emergency services. For these dual purpose vehicles (ambulance/hearse), use this attribute only when the vehicle is used as an ambulance.

Fire truck or car
is used for any readily identifiable (lights or markings) vehicle which is owned by any government (typically local) or cooperative agency for the purpose of fire protection. For volunteer fire companies, fire fighting apparatus and other vehicles owned by the company or government qualify for this attribute. Privately owned vehicles, which are not in authorized use, even if equipped with lights, do not qualify (the volunteer firefighter's vehicle).

Unknown
is used when no information is available to determine special use for this trip (e.g., a hit-and-run vehicle).

IN TRANSPORT

Screen Name: Is the vehicle in-transport?

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Check Box

Range:

Source: Researcher determined

Remarks:

A check in this box indicates that the vehicle is in transport. Any changes to the check box will effect the variable **Type** on the **Case Form/Structure/Vehicle Tab**.

CURB WEIGHT

Screen Name: Weight--Curb Weight

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBWGT**

Element Attributes:

	Curb weight of vehicle (kgs)
999999	Unknown

Range: 450 – 100,000

Source: Researcher determined

Remarks:

Enter this vehicle's curb weight.

Do not confuse the rated Gross Vehicle Weight Rating (GVWR) with the curb weight since it is likely to be significantly greater than the curb weight.

"Vehicle" is defined in this variable to mean the same vehicle identified under **Body Type**.

If the **vehicle model** is known, but the engine size is unknown (*e.g.*, 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the "average" was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. to 6 cyl. - subtract 100lb/45 kilograms; 6 cyl. to 4 cyl. - subtract 75lb/34 kilograms.

Add 100lb/45 kilograms to the shipping weight to obtain a curb weight on all CDS applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight

Unknown
is selected when the curb weight of this vehicle cannot be determined.

SOURCE OF CURB WEIGHT INFORMATION

Page 1 of 2

Screen Name: Curb Weight Source

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBSRC**

Element Attributes:

0 [Curb weight unknown]
1 AAMA
2 Automotive News
3 Branham Automobile Reference Book
4 Gasoline Truck, Import, Truck and Diesel Truck Index
5 Canadian Specifications
8 Other (specify)

Source: See Remarks

Remarks:

The sources for obtaining curb weight information are listed below:

Passenger Vehicle Specifications
American Automobile Manufacturers Association (AAMA)
of the U.S., Inc.
300 New Center Building
Detroit, Michigan 48202

Automotive News
Crain Automotive Group, Inc.
965 East Jefferson Avenue
Detroit, Michigan 48207

Branham Automobile Reference Book
Branham Publishing Company
Post Office Box 1948
Santa Monica, California 90406-1948

Gasoline Truck Index, Import Truck Index, and
Diesel Truck Index
Truck Index, Inc.
Post Office Box 10291
Santa Anna, California 92711

If the specification is not available in the sources listed above, then the automated Canadian specifications may be used for this variable.

If not other information is available, data from brochures obtained from vehicle dealers may be used. This will be entered under the "**Other**" attribute. This should then be listed in the "**Specify**" field.

Source of Curb Weight Information cont'd

Annotate the source used in the space provided in the General Vehicle Form Data Screen Vehicle this variable.

CARGO WEIGHT

Screen Name: Weight--Cargo Weight

SAS Data Set: **GV**
SAS Variable: **CARGOWGT**

Element Attributes:

	Cargo weight of vehicle (kgs)
8888	[Non CDS vehicle]
9999	Unknown

Source: Researcher determined — inputs include Vehicle Inspection, Interview, PAR, Tow Yard Operator

Remarks:

If Towed Trailing Unit, is Yes – towed trailing unit, then the weight of the trailer and its cargo is coded here. Cargo may also be located in the passenger compartment area and/or trunk.

If there is no cargo then enter the value as zero.

Do not include the weight of the occupants in the cargo weight. The weight of the occupants is included (along with cargo and vehicle curb weight) as a component of the single value which represents the vehicle's combined weight in the WinSMASH Program, if used.

Unknown
is selected if the cargo weight is unknown or if it is unknown if there is cargo in the vehicle.

SOURCE OF CARGO WEIGHT INFORMATION

Screen Name: Weight--Cargo Weight Source

SAS Data Set: **GV**
SAS Variable: **CARGOSRC**

Element Attributes:

0 [Cargo weight unknown]
1 Vehicle Inspection
2 Interview
3 PAR
4 Tow Yard Operator
7 [Non CDS vehicle]
8 Other (specify)

Source: Researcher determined

Remarks:

This reports the source from which the estimate of the cargo weight, in the vehicle at the time of the crash, was obtained.

INSPECTION TYPE

Screen Name: Inspection - Type of Inspection

SAS Data Set: **GV**
SAS Variable: **INSPTYPE**

Element Attributes:

0 No inspection
1 Vehicle fully repaired — no damage evident
2 Partial inspection (specify)
3 Complete inspection
8 Non CDS vehicle

Source: Researcher determined.

This variable is designed to allow users to identify cases with complete documentation of required damage data (exterior and interior).

No inspection
is selected when neither a complete nor a partial inspection of this vehicle was obtained, irrespective of the reason (*e.g.*, refusal, not required, etc.)

Vehicle fully repaired — no damage evident
is selected when a vehicle is inspected, but is completely repaired and no exterior or interior damage data is available.

Partial inspection (Specify)
is selected when any phase of the inspection is not completed. This includes inspection of partially repaired vehicles and non-towed CDS applicable vehicles. The reason for the partial inspection must be annotated in the “Specify” box.

If the vehicle interior is completely burned out and restraint use cannot be determined then **Partial Inspection** should be selected.

Complete inspection
is selected when both the exterior and the interior of the unrepaired vehicle were inspected and all applicable measurements and photographs were obtained.

DATE OF INSPECTION

Screen Name: Inspection-Date of Inspection

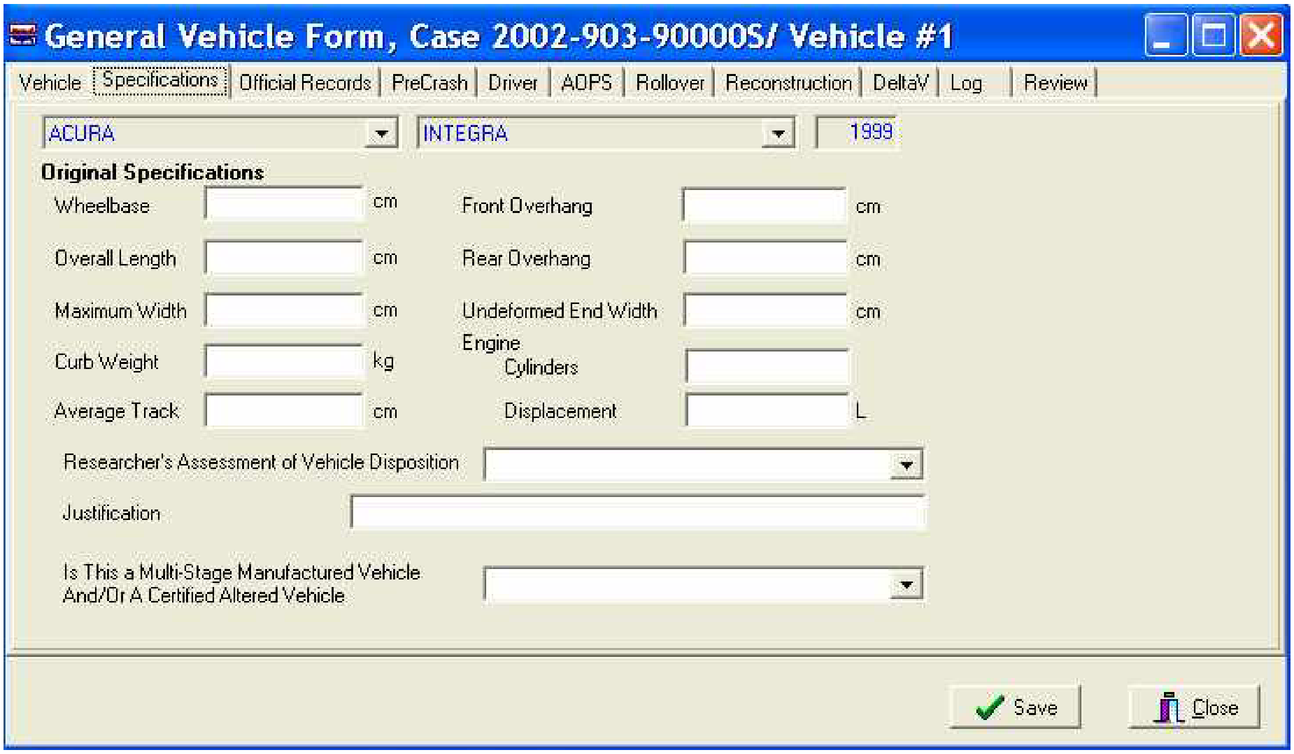
SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Date that vehicle was inspected

Source: Researcher determined.

This variable is designed to allow quality control personnel to evaluate researcher performance in obtaining vehicle inspections.

Specifications


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Original Specifications
Wheelbase
cm
Front Overhang
cm
Overall Length
cm
Rear Overhang
cm
Maximum Width
cm
Undeformed End Width
cm
Curb Weight
kg
Engine
Cylinders
Average Track
cm
Displacement
L
Researcher's Assessment of Vehicle Disposition
Justification
Is This a Multi-Stage Manufactured Vehicle And/Or A Certified Altered Vehicle
Save
Close

ACURA
INTEGRA
1999

WHEELBASE

Screen Name: Original Specifications—Wheelbase

SAS Data Set: **VEHSPEC**
SAS Variable: **WHEELBAS**

Element Attributes:
Enter to the nearest centimeter.

999	Unknown

Range: 100 – 650 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

The wheelbase dimension is obtained from source materials and not from vehicle measurements. If written vehicle specifications cannot be found, after consultation of the zone center, the researcher may take the measurements from an exemplar vehicle.

The coding of this variable reflects the length of the vehicle's original or undamaged wheelbase to the nearest centimeter.

Unknown
is used when this vehicle's original wheelbase cannot be determined.

OVERALL LENGTH

Screen Name: Original Specifications—Overall Length

SAS Data Set: **VEHSPEC**
SAS Variable: **OVERALL**

Element Attributes:
Enter to the nearest centimeter
9999 Unknown

Range: 100 – 850 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

Enter the overall length of the vehicle, as determined from source materials, to the nearest centimeter.

Any add-on equipment is excluded from the overall length of the vehicle (i.e., a pick-up with an after-market bumper added).

Unknown
is used when this vehicle's original overall length cannot be determined.

MAXIMUM WIDTH

Screen Name: Original Specifications—Maximum Width

SAS Data Set: **VEHSPEC**
SAS Variable: **MAXWIDTH**

Element Attributes:

Enter to the nearest centimeter
999 Unknown

Range: 100 – 350 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

Enter the overall/maximum width of the vehicle, as determined from source materials, to the nearest centimeter.

Unknown
is used when this vehicle's original overall width cannot be determined.

CURB WEIGHT

Screen Name: Original Specifications—Curb Weight

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBWGT**

Element Attributes:

Curb weight of vehicle (kgs)
999999 Unknown

Range: 450 – 100,000

Source: Researcher determined

Remarks:

Enter this vehicle's curb weight.

Do not confuse the rated Gross Vehicle Weight Rating (GVWR) with the curb weight since it is likely to be significantly greater than the curb weight.

"Vehicle" is defined in this variable to mean the same vehicle identified under Body Type.

If the vehicle model is known, but the engine size is unknown (*e.g.*, 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the "average" was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. to 6 cyl. - subtract 100lb/45 kilograms; 6 cyl. to 4 cyl. - subtract 75lb/34 kilograms.

If a source material reports “shipping weight” add 100lb/45 kilograms to obtain a curb weight on all CDS applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight.

Unknown
is entered when the curb weight of this vehicle cannot be determined.

AVERAGE TRACK WIDTH

Screen Name: Original Specifications—Average Track

SAS Data Set: **VEHSPEC**
SAS Variable: **ORIGAVTW**

Element Attributes:

Code to the nearest centimeter	
999	Unknown

Range: 100-200, 999

Source: Vehicle specifications, undamaged measurements

Remarks:

Enter the average track width of the vehicle to the nearest centimeter.

If vehicle specifications cannot be obtained, and there are no post manufacture modifications, and there is no significant damage to the axles, then you can get the value from the case vehicle. Measure both undamaged track widths on the vehicle and record the average.

If an axle is damaged such that an average value cannot be determined, use the measurement of the undamaged axle as the average encoded value.

If both axles are significantly damaged record the value from an exemplar vehicle.

If the vehicle is equipped with dual rear wheels (*i.e.*, some full-size pickup trucks); the track width is measured from the center of the space between the wheels on both sides.

Unknown
is used in the following situations:

- ☞ The axles are significantly damaged and there are no specifications available for this vehicle, and an exemplar vehicle was not measured.
- ☞ The axle is significantly damaged *and* there were post-manufacture modifications that would alter the track width.
- ☞ The measurements were not obtained from this vehicle or and exemplar vehicle and there are no specifications available.

FRONT OVERHANG

Screen Name: Original Specifications—Front Overhang

SAS Data Set: **VEHSPEC**
SAS Variable: **FTOVHANG**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 25-150, 999

Source: Vehicle specifications

Remarks:

Enter the front overhang, as determined from source materials, of the vehicle to the nearest centimeter.

NOTE: the researcher should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

Unknown
If no written specifications can be found, then enter unknown.

REAR OVERHANG

Screen Name: Original Specifications—Rear Overhang

SAS Data Set: **VEHSPEC**
SAS Variable: **RROVHANG**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 25-200, 999

Source: Vehicle specifications

Remarks:

Enter the rear overhang, as determined from source materials, of the vehicle to the nearest centimeter.

NOTE: the researcher should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

Unknown
If no written specifications can be found, then enter unknown.

UNDEFORMED END WIDTH

Screen Name: Original Specifications—Undeformed End Width

SAS Data Set: **VEHSPEC**
SAS Variable: **UNENDW**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 100-250, 999

Source: Vehicle inspection, secondary source of an exemplar vehicle

Remarks:

The undeformed end width is the undamaged dimension of:
1) the contacted end plane or
2) the front undamaged plane if the side plane is contacted.

Measure between the apex of both bumper corners.

Unknown
If the vehicle cannot be directly measured and an exemplar vehicle cannot be found, then enter unknown.

ENGINE CYLINDERS

Screen Name: Original Specifications—Engine Cylinders

SAS Data Set: **VEHSPEC**
SAS Variable: **ENGCYL**

Element Attributes:

	Code the number of cylinders
99	Unknown

Range: 1-14, 99

Source: Vehicle inspection, specifications, VIN

Remarks:

The coding of this variable reflects the number of cylinders in the vehicle. The information can be found in vehicle specifications. It may also be found in owner's manuals.

Unknown
If the number of engine cylinders cannot be determined, then enter unknown.

ENGINE DISPLACEMENT

Screen Name: Original Specifications—Engine Displacement

SAS Data Set: **VEHSPEC**
SAS Variable: **ENGDISP**

Element Attributes:

	Code to the nearest liter
99	Unknown

Range: 0.0-10.0, 99

Source: Vehicle inspection, specifications, VIN

Remarks:

The coding of this variable reflects the vehicle's engine displacement. The information can be found in vehicle specifications. It may also be found in owner's manuals, or from the vehicle inspection.

Enter the vehicle's engine displacement. It is recorded to the nearest tenth of a liter.

Unknown
If the displacement cannot be determined, then enter unknown.

RESEARCHER'S ASSESSMENT OF VEHICLE DISPOSITION

Screen Name: Researcher's Assessment of Vehicle Disposition

SAS Data Set: **GV**
SAS Variable: **TOWRES**

Element Attributes:

0	Not towed due to vehicle damage
1	Towed due to vehicle damage
7	Vehicle not inspected
8	Not a CDS vehicle
9	Unknown

Source: Primary source is the vehicle inspection; secondary source is interviewee(s).

Remarks:

Determine this variable based on vehicle inspection (which is supplemented by interview data for a repaired vehicle). **Under no circumstance should the PAR be used as a source for coding this variable.** **"Towing"** is defined identically to the definition in variable **Police Reported-Vehicle Disposition** (*i.e.*, towing must be a result of event-related disabling damage; towing must occur directly from the scene, etc.). A gray area exists, however, when attempting to define the term **"disabling damage"**.

Determine the severity of the damage during the vehicle's inspection. Not towed due to vehicle damage if the damage is **"minor"** (*i.e.*, minor mechanical repairs ***could*** have been completed at the scene). **"Minor mechanical repairs"** refers to items such as: replacing headlights or taillights, changing tires, pulling sheet metal away which may be restricting a wheel, etc.

NOTE: These repairs need not have been completed at the scene. They are merely examples of situations which do *not* require the vehicle to be categorized "disabled" for the NASS CDS study.

Not towed due to vehicle damage
when the vehicle was driven from the scene, or when the vehicle was unnecessarily towed from the scene (*i.e.*, could have been driven).

Towed due to vehicle damage
when the vehicle sustained damage from the crash such that towing was required.

Unknown
when the vehicle was towed from the scene but the reason for the towing cannot be determined

JUSTIFICATION FOR RESEARCHER'S ASSESSMENT OF VEHICLE DISPOSITION

Screen Name: Researcher's Assessment of Vehicle Disposition Justification

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter justification for tow status

Source: Primary source is the vehicle inspection; secondary source is interviewee(s).

Remarks:

Indicate the reason for the determination that the vehicle was or was not towed (i.e., severe damage, restricted tires, etc.)

When there is a conflict between Police reported tow status and the researcher's assessment of tow status, include the reason for the choice. For example, a researcher selects Not towed due to vehicle damage and provides the following annotation: "The vehicle received only broken headlights in the collision; police required that the vehicle be towed".

Screen Name: Is This a Multi-Stage Manufactured Vehicle And/Or A Certified Altered Vehicle?

SAS Data Set: **VEHSPEC**
SAS Variable: **ALTVEH**

Element Attributes:

0	No post manufacturer modifications
1	Yes — post manufacturer modifications (specify)
9	Unknown if vehicle is modified

Source: Vehicle Inspection.

Remarks:

Under the "Code of Federal Regulations, Title 49 - Transportation" Chapter V Part 567, Sections 567.5 and 567.7, a label certifying compliance with all Federal Motor Vehicle Safety Standards must be affixed to a multi-stage manufactured vehicle or altered (post manufactured) vehicle.

A multi-stage manufactured vehicle will generally begin as a chassis-cab (incomplete vehicle) and subsequently end up in final-stage as a pickup based utility truck (dump truck, flat bed, stake body, tow truck, etc.) or a van derivative (*i.e.*, van conversion, Hi-cube, motor home, etc.).

Altered vehicles will generally involve a major modification of basic components such as suspension, frame, power plants, etc., with work generally performed by a recognized auto body shop. The lengthening of a standard automobile chassis to create a limousine would be one example of the type of alteration which would qualify for certification.

To determine if the vehicle qualifies, locate the certification label which should include one of the following statements:

Multi-stage vehicle
Incomplete manufactured vehicle (chassis-cab) certification label should include the statement: **"CHASSIS-CAB MANUFACTURED BY"** or **"CHASSIS-CAB MFD. BY"**.

Intermediate manufactured vehicle certification label should have the following statement: **"INTERMEDIATE MANUFACTURED BY"** or **"INTERMEDIATE MFD. BY"**.

Final manufactured vehicle certification label should have the following statements: **"MANUFACTURED BY"** or **"MFD. BY"** and **"INCOMPLETE VEHICLE MANUFACTURED BY"** or **"INC VEH MFD. BY"**.

Altered vehicle
An altered vehicle certification label should include the statement: **"This vehicle was altered by (individual or corporate name) in (month and year in which alterations were completed) and as altered it conforms to all applicable Federal Motor Vehicle Safety Standards affected by the alteration and in effect in (month, year)."**

These labels are generally affixed in one of the following areas on the driver's side of the vehicle:

- hinge pillar
- door-latch post
- door edge that meets the door-latch post
- left side of the instrument panel
- inward-facing surface of driver's door

No post manufacturer modifications
is used when this vehicle was a full-line manufactured vehicle. Full-line is interpreted as a vehicle that is completely assembled at the end of a plant assembly line of its original manufacturer. This would include vehicles which only require cosmetic additions such as additional paint, mirrors, wheels, etc., to be customer ready.

Yes — post manufacturer modifications
is used for multi-stage vehicles and/or altered certified vehicles. This includes vehicles which were in various stages of completion (*i.e.*, incomplete, intermediate, final).

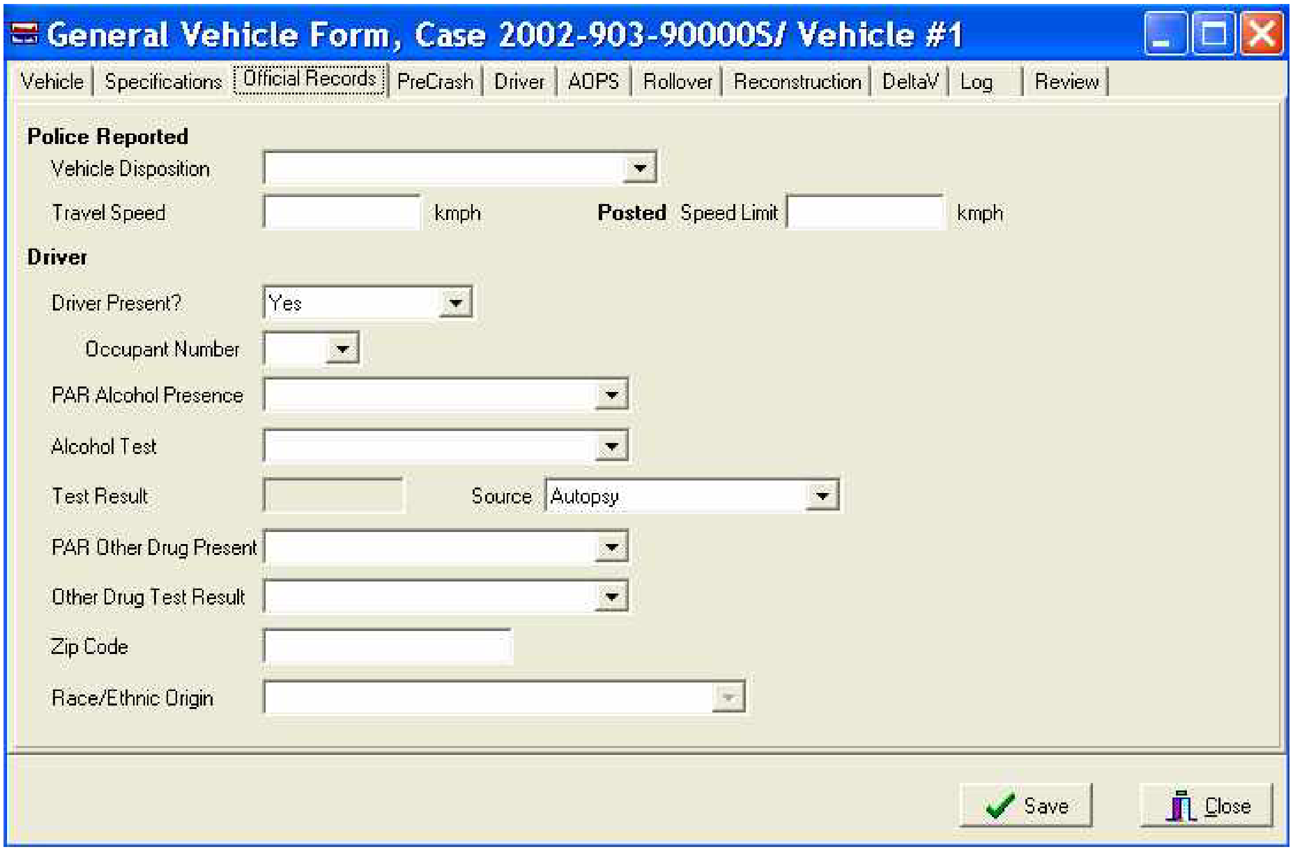
Vehicles that are altered via "backyard modification (*i.e.*, addition of air shocks, spring spacers, cosmetic alteration including sheet metal and paint, etc.) are not identified as certified altered vehicles. Only those businesses which specialize in vehicle alterations (*i.e.*, limo body shops, etc.) where a label of alteration is required by federal regulations and is present on the vehicle are identified in this element.

An image of the certification label(s) is essential and must be included with the case. **Categorize this image in the Miscellaneous Category.** Refer to the following illustrations for examples of certifying labels.

Unknown
is used in the following situations.

- The vehicle fits the description of a multi-stage or altered vehicle, but the researcher was not able to view the label(s) for positive identification.
- The label(s) was removed/destroyed so a clear determination of whether the vehicle was a certified multi-stage or altered vehicle could not be made.

Offical Records



General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Save
Close

Police Reported

Vehicle Disposition

Travel Speed kmph **Posted** Speed Limit kmph

Driver

Driver Present? Yes

Occupant Number

PAR Alcohol Presence

Alcohol Test

Test Result Source Autopsy

PAR Other Drug Present

Other Drug Test Result

Zip Code

Race/Ethnic Origin

POLICE REPORTED TOW STATUS

Screen Name: Police Reported-Tow Status

SAS Data Set: **GV**
SAS Variable: **TOWPAR**

Element Attributes:

0	Not towed due to vehicle damage
1	Towed due to vehicle damage
9	Unknown

Source: Police report

Remarks:

The tow status as indicated in this variable is the same tow status that was used in determining the case stratification.

A **"towed"** vehicle is defined as a vehicle which is removed from the crash scene other than by means of its own power. For example, a vehicle which is reported by the police as towed out of a ditch and subsequently driven away, is ***not*** considered a towed vehicle. A vehicle which is driven from the scene and subsequently becomes disabled due to crash-related damage, such that towing is then required, is ***not*** a towed vehicle (even though that towing may be reported on the police report). Carefully scrutinize the PAR to determine the disposition of the vehicle directly from the scene and, if towing is indicated, the reason for the towing.

If after the crash, a vehicle is pushed (by hand or by another vehicle) then consider the vehicle as a towed vehicle.

When a police report indicates that more than one event has occurred (*i.e.*, stabilization is apparent), the disposition of this vehicle is based upon the event sequence selected for stratification. In other words, if the PAR indicates this vehicle was towed from the scene, and a researcher determines from the PAR that towing was ***not*** due to the damage sustained during ***this*** sequence, the correct response for this variable is **Not towed due to vehicle damage**.

When the PAR indicates that this vehicle was towed from the scene and it ***cannot*** be determined whether or not the towing was due to damage, the default response for this variable is **Towed due to vehicle damage**.

Not towed due to vehicle damage
is selected when:

- ☞ the PAR indicates this vehicle was not towed from the scene, or
- ☞ the PAR indicates this vehicle was towed from the scene but ***not*** due to crash-related disabling damage.

Police Reported Tow Status cont'd

Towed due to vehicle damage
is selected when:

☞ the PAR indicates this vehicle was towed from the scene due to crash-related disabling damage,

or

☞ the PAR indicates this vehicle was towed from the scene and a researcher cannot determine (from the PAR data) if the towing was due to crash-related disabling damage.

Unknown
is selected when the investigating officer reported that the disposition of the vehicle was unknown at the time the PAR was completed. Also, use this attribute if the PAR indicates the vehicle was abandoned. However, if the police report specifies that the vehicle was disabled due to crash-related damage, as well as indicating "unknown" , "abandoned" or blank for the disposition, it can be **assumed** that the vehicle will eventually be towed from the scene. In these instances, **enter Towed due to vehicle damage**

POLICE REPORTED TRAVEL SPEED

Screen Name: Police Reported-Travel Speed

SAS Data Set: **GV**
SAS Variable: **TRAVELSP**

Element Attributes:

	Enter police reported travel speed
999	Unknown

Range: 0-240, 999

Source: Police report only

Remarks:

Enter the travel speed for this vehicle if indicated on the police report by the investigating officer. ***Do not*** use estimates by drivers or witnesses.

Enter the nearest mph/kmph, or if the travel speed is reported as a range, enter the average.

000 kmph
is entered if this vehicle is stopped or indicated by the police as traveling less than 0.5 mph.

Unknown
is selected if the estimated travel speed is unknown.

POSTED SPEED LIMIT

Screen Name: Posted Speed Limit

SAS Data Set: **GV**
SAS Variable: **SPLIMIT**

Element Attributes:

	Enter posted speed limit in kmph
000	No statutory limit
999	Unknown

Range: 0-122, 999

Source: Primary sources are scene inspection or statutory law. ***Do not*** use the police report for selecting this variable's value.

Remarks:

A speed limit must be identified for all known crash scene locations.

If no speed limit sign is posted within a reasonable distance from the location of the first crash event along the approach leg of the roadway this vehicle was traveling on, then reference state statutes to obtain the applicable statutory maximum speed limit for the location (local or state).

Disregard advisory or other speed signs which do not indicate the legal speed limit. ***Do not confuse*** advisory signs on entrance/exit ramps or near intersections with the actual legal maximum speed limit.

If a state has a statute that uniformly reduces the maximum allowable speed within or near a construction zone, then code the indicated reduced limit.

No statutory limit
is selected for roadways which are neither posted nor have a statutory limit (*e.g.*, parking lot roadways or entrance/exits, service station entrance/exits, or driveways, etc.).

Unknown
is selected only in rare situations where a crash scene cannot be located.

IS THE DRIVER PRESENT?

Screen Name: Driver Present?

SAS Data Set: **GV**
SAS Variable: **DRPRES**

Element Attributes:

0	No Driver Present
1	Yes
9	Unknown

Source: Researcher determined - inputs include the police report and interviews.

Remarks:

This variable serves as a flag to identify driverless motor vehicles in-transport.

No Driver Present
is selected if no driver was physically in the vehicle at the time that it was involved in the crash.

Selecting this attribute will preclude you from entering alcohol presence, other drug presence and precrash information for this vehicle.

Yes
includes those instances when the motor vehicle was a "hit-and-run" vehicle.

Unknown
Is selected when it is not known if the driver was in the vehicle at the time of the crash.

OCCUPANT NUMBER

Screen Name: Occupant Number

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Occupant Number

Source: Researcher determined

Remarks:

Select the occupant number of the person who is the driver.

Note: Occupants are entered on the Case Form / Structure Tab / Occupants sub-tab.

[NUMBER OF OCCUPANTS]

Screen Name: N/A

SAS Data Set: **GV**
SAS Variable: **OCUPANTS**

Element Attributes:

This information rolls up from the number of occupants structured into the case for this vehicle.
88 Non CDS vehicle

Source: This information rolls up from the number of occupants

Remarks:

This information rolls up from the number of occupants and is NOT entered in the field.

POLICE REPORTED ALCOHOL PRESENCE

Screen Name: PAR Alcohol Presence

SAS Data Set: **GV**
SAS Variable: **DRINKING**

Element Attributes:

0	No alcohol present
1	Yes - alcohol present
7	Not reported
8	[No driver present]
9	Unknown

Source: Police report

Remarks:

The phrase "alcohol present" means that the police report indicates that the driver ha/d consumed an alcoholic beverage. Presence is not an indication that alcohol was in any way a cause of the crash, even though it may have been. Finding opened or unopened alcoholic beverages in the vehicle does not by itself constitute presence.

No alcohol present
is selected if the investigating officer's assessment (as reported on the police report) is that no alcohol was present in the driver.

Yes alcohol present
is selected if the police indicate alcohol presence in the driver via: (1) a specific data element on the police report form, (2) the police charge the driver with DWI/DUI, (3) the police mention in the narrative section of the report that the driver had been drinking (or alcohol was present or involved), or (4) the police report has a positive blood alcohol concentration (BAC) test result (BAC > .00).

Not reported
is selected if there is a specific location on the police report for assessment of alcohol presence but the investigating officer fails to make either a positive or negative assessment.

Unknown
is selected if alcohol presence is indicated as unknown. In general, police reports have blocks to check either positive or negative alcohol presence. However, if a police report has a provision for the investigating officer to respond "unknown presence", then use unknown. In addition, use unknown for hit-and-run drivers unless clear evidence to the contrary exists.

Some PARs have a block labeled **"Alcohol/Drugs"**. If "presence" is indicated, and it cannot be determined which was used (*e.g.*, narrative, arrest/charged section, etc.), then assume alcohol presence. If the police report indicates that a driver was charged with DWI (driving while intoxicated or driving while impaired) and no clarification is offered to indicate if the DWI was alcohol related or other drug related (*i.e.*, a specific data element; mentioned in the narrative section; BAC results), then assume alcohol presence.

ALCOHOL TEST FOR DRIVER

Screen Name: Alcohol Test

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Test Given
Test Refused
None Given
BAC test performed, results unknown
[No driver present]
Unknown if test given

Source: Police report, medical reports, or other official sources.

Remarks:

No psychomotor (police observation of driver actions) test results are coded here. Also, be aware of preliminary test results. These preliminary tests, including an instrumented field screening test, indicate the presence of alcohol, but not necessarily the particular content level. Preliminary tests are designed to segregate candidates for further testing from those persons where the suspected presence of alcohol is either nonexistent or too low for additional tests.

If an instrumented field screening test was given and it was determined that:

Test Performed
when a test for Blood Alcohol Concentration (BAC) is administered either by the police or at a treatment facility.

Test Refused
when the person refuses to voluntarily take a BAC test, and no subsequent test is given.

None Given
when no BAC test is administered.

BAC test performed, results unknown
when the BAC test has been administered, but the results are unknown. Selecting this attribute will automatically blank out the Test Result variable and the Source variable.

Unknown
is selected when it is not known if a test was administered.

ALCOHOL TEST RESULT

Screen Name: Test Result

SAS Data Set: **GV**
SAS Variable: **ALCTEST**

Element Attributes:

	Enter BAC
[95	Test Refused]
[96	None Given]
[97	BAC test performed, results unknown]
[98	No driver present]
[99	Unknown if test given]

Range: 0-49 (0-.49), 95-99

Source: Police report, medical reports, or other official sources.

Remarks:

Blood Alcohol Concentration (BAC) measures, analytically, the mass of alcohol per unit volume of blood. The standard measure is expressed as the number of **milligrams per deciliter** (tenth of a liter) expressed as a decimal. (*e.g.*, .05 = 50 mg/100 ml; .15 = 150 mg/100 ml) . A blood alcohol concentration (BAC) test could be a blood, breath, or urine test.

If the BAC was given on the police report or subsequently added after the case was initiated, enter the reported value. In essence, if any BAC is obtained, enter the reported value. For example, a BAC of 117 mg/dl is coded as 0.117.

For drivers of nontowed CDS applicable and non-CDS applicable vehicles, use only PAR information when coding test results. However, **all** available sources should be used for drivers of non-towed CDS applicable vehicles with deployed airbags.

Blank If the previous variable Driver– Alcohol Test is coded as “AC Test Performed, results unknown” then this field is blank and cannot be edited.

SOURCE OF ALCOHOL TEST RESULT

Screen Name: Source

SAS Data Set: **GV**
SAS Variable: **ALCSRC**

Element Attributes:

0	[No alcohol test result]
1	Police reported
2	Company reported
3	Medical record
4	Autopsy
5	Lay coroner
6	[No driver present]
8	Other (specify)

Source: Police report, medical reports, or other official sources.

Remarks:

Enter source of data used to code the Blood Alcohol Concentration (BAC) . Examples include PAR and Medical Reports. Medical Reports include Autopsy Report, ER report, discharge summary, nurses notes, etc.

Police reported
is used when the BAC information is obtained from any record associated with the police.

Medical Report
is used when the BAC information was obtained from any medical report (i.e., Autopsy Report, ER report, discharge summary, nurses notes, etc.).

Other (Specify)
is used when the BAC information is obtained from some source other than those listed above. An example is a verbal BAC from an **official** source.

Verbal BACs obtained from an official source are acceptable, if written approval has been obtained from the team’s zone center.

OTHER DRUGS OVERVIEW

These variables focus upon "other drugs". For the purpose of these variables the word "drug" is defined in nonmedical terms. A "drug" is any chemical substance, natural or synthetic which, when taken into the human body, can impair the ability of the person to operate a motor vehicle safely. The word "other" in this phrase means all "drugs" except alcohol, nicotine, aspirin, and drugs administered post-crash.

No laboratory, no matter how modern its equipment or competent its staff, can identify all drugs that are currently abused. Add to this the fact that new drugs, both licit and illicit, become available every week, and it soon becomes evident that the capacity for drug abuse always stays ahead of the capacity for chemical drug detection. Even if the laboratory does have the capability of identifying a particular drug, it will require that the drug be present at a specific minimum **concentration** before it can conclude that a "real" chemical detection has occurred. This is referred to as the **detection threshold**, and it varies from drug to drug, and from one chemical analytic method to another. Some of the analytic methods used by some laboratories to detect certain drugs do not actually seek to find the drug itself, but look instead for a **metabolite** of the drug. A metabolite is a chemical breakdown product of the drug.

POLICE REPORTED OTHER DRUG PRESENCE

Screen Name: PAR Other Drug Presence

SAS Data Set: **GV**
SAS Variable: **DRUGS**

Element Attributes:

0	No other drug(s) present
1	Yes other drug(s) present
7	Not reported
8	[No driver present]
9	Unknown

Source: Police report.

Remarks:

The phrase "other drug present" includes all prescription, "over-the-counter" medications, as well as "illicit" substances (*e.g.*, in most cases, marijuana, cocaine, heroin), . Also, "other drug present" means that the driver had ingested an other drug prior to the crash, but it is not an indication that the drug usage was in any way the cause of the crash (or event), even though it may have been. Finding other drugs in the vehicle does not by itself constitute presence.

No other drug(s) present
is selected if the investigating officer's assessment (as reported on the police report) is that no other drugs were present in the driver.

Yes other drug(s) present
is selected if the police indicate an other drug presence in the driver via: (1) a specific data element on the PAR, or (2) the police mention in the narrative section of the report that the driver had ingested an other drug.

Not reported
is selected if there is a specific location on the police report for assessment of other drug presence but the investigating officer fails to make either a positive or negative assessment. In addition, use this attribute if the PAR does not have a specific location for reporting other drugs and the police do not mention other drugs in the narrative section.

Unknown
is selected if other drug presence is indicated as unknown on the PAR. A growing number of police reports have blocks to check either positive or negative other drug presence. However, if a police report has a provision for the investigating officer to respond "unknown presence", then use this attribute. In addition, use this attribute for hit-and-run drivers unless clear evidence to the contrary exists.

Police Reported Other Drug Presence cont'd

Page 2 of 2

NOTE: The police report must have a specific block on the PAR to report “Other Drug” presence, or it must be specifically mentioned in the narrative section. Some PARs have a block labeled **"Alcohol/Drugs"**. If "presence" is indicated, and it cannot be determined which was used (*e.g.*, narrative, arrest/charged section, etc.), then assume alcohol presence. If the police report indicates that a driver was charged with DWI (driving while intoxicated or driving while impaired) and no clarification. is offered to indicate if the DWI was alcohol related or other drug related (*i.e.*, a specific data element; mentioned in the narrative section; BAC results), then assume alcohol presence.

OTHER DRUG TEST RESULT

Screen Name: Other Drug Test Result

SAS Data Set: **GV**
SAS Variable: **SPECOTH**

Element Attributes:

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

Source: Police report, medical reports, or other official sources.

Remarks:

If a medical, police report, or other official source says that a certain drug was "screened for" or that it was "not detected", then you know that a specimen test was used. In addition, the presence of a measured quantity of an "other drug(s)" means that a specimen test was given. The specimen used in the test that obtained the measurement could be blood, urine, or an other specimen (*e.g.*, nasal swab, saliva). Some drugs are tested using a particular type of specimen; others can be tested in multiple ways. Researchers need to review toxicology (or other official) records carefully to determine which specimen or specimens were used for the driver's evaluation. Specimens are hierarchically ordered with a blood test taking preference over a urine test and urine over other.

Drug(s) not found in specimen
is selected if it is known that the driver had at least one type of specimen tested for other drugs *and* the test results came back "negative".

Drug(s) found in specimen, specify
is selected if it is known that the driver had at least one type of specimen tested for other drugs (excluding alcohol, nicotine, aspirin and drugs administered post-crash) and that the driver had a positive test result. A positive test result is any measured quantity that exceeds the detection threshold of the laboratory which performed the test.

Specimen test given, results unknown or not obtained
is selected if it is known that the driver had at least one type of specimen tested for other drugs, but the results of that test are unknown or not reported.

Unknown if specimen test given
is selected when it cannot be determined if the driver was administered a specimen test for other drugs. This attribute should also be selected if it is known that the driver received treatment at a medical facility but the medical records have not been obtained.

DRIVER'S ZIP CODE

Screen Name: ZIP Code

SAS Data Set: DRZIP
SAS Variable: DRZIP

Element Attributes:

Enter driver's zip code

00001	Driver not a resident of U.S. or territories
99998	[No driver present]
99999	Unknown

Range: Range is a compilation of Sections 6 and 12 of the National Five Digit Zip Code & Post Office Directory, Volume 2 N-W

Source: Primary source is the police report; secondary sources include interviewees, medical records, and other official documents.

Remarks:

Prioritization of data sources:

First, use the PAR. For the purposes of this variable, a driver is considered to reside at the address listed on the police crash report. This address was most likely taken from the driver's license given to the police officer and/or from the licensing state's drivers license file.

If the driver's address is present and the ZIP code is missing or not available, then determine the correct ZIP code by using the two volume National Five Digit Zip Code & Post Office Directory. Of the seventeen (17) NASS CDS states, five (5) currently do not list the driver's ZIP code (*i.e.*, Arizona, Michigan, New Jersey, Pennsylvania, and Texas).

Second, use official records (*e.g.*, medical). If the driver's ZIP code cannot be obtained from the PAR, then use official records, if available, to determine the correct ZIP code.

Third, use interviewee data. When no address (*i.e.*, street number/name, city, state) is present on the PAR, ask the interviewee the driver's ZIP code as a "specific question" during the interview (page one of the Interview Form). If the interviewee does not know the driver's ZIP but does know the driver's address, then use this information to determine the ZIP code. When obtaining address information, determine what the driver considers his/her current permanent mailing address to be.

Driver's Zip Code

Page 1 of 2

During the process of obtaining the interview, the vehicle inspection, or the associated medical records, researchers will discover, for some drivers, a conflict between the address listed on the PAR and the driver's current address. In conflict situations, always enter the ZIP code for the address given on the

PAR or on an official document before entering the ZIP code from the information obtained during the interview.

Driver not a resident of U.S. or territories
is selected when the address found on the PAR or obtained from medical records, or during the interview indicates that the driver resides at an address which has not been assigned a ZIP code by the U.S. Post Office.

Unknown
is selected whenever the ZIP cannot be determined. For example, use **Unknown** for "hit-and-run" drivers and for any driver's address that you discover is fictitious. In addition, use **Unknown** if the driver, licensed or not, has no permanent address. For example, the driver could be living out of his/her vehicle (camper, motorhome, etc.), or the driver could be "homeless".

RACE/ETHNIC ORIGIN OF DRIVER

Page 1 of 3

Screen Name: Race / Ethnic Origin

SAS Data Set: **GV**
SAS Variable: **DRRACE**

Element Attributes:

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
7	Other (specify):
8	[No driver present]
9	Unknown

Source: Researcher determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks:

Note: Although this variable is on the **Official Records Tab**, this variable is a “self identification” by the occupant. This information can be obtained from any of the above sources, however is not always an “official record”.

The concept of race as used by the U.S. Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the race with which they identify themselves. For drivers with parents of different races who cannot provide a single response, use the race of the driver's mother; however, if a single response cannot be provided for the driver's mother, the first race reported by the driver is encoded.

Hispanic is not a race but rather an ethnic origin. Persons of Spanish origin may be of any race. For the purpose of this variable, race and Hispanic origin have been combined using the elements listed above.

Prioritization of data sources:

First, use interviewee data. Ask the interviewee what the driver considers their race and ethnic origin to be. If the response does not clearly fit into one of the race and ethnic origin categories, then use the information provided by the interviewee concerning the driver's nationality/ethnic origin to select the correct element value.

Second, use the PAR. If race is given on the PAR and the PAR scheme is compatible with this variable, then use the PAR information.

If the PAR only indicates White/Caucasian, Black/Negro, Hispanic/Spanish, or Other, then the PAR contains insufficient information for this variable. Additional information is required to determine the combination of race and ethnic origin. In addition, the driver's ***name*** is not a reliable indicator of either race or ethnic origin and ***cannot be used*** when selecting the applicable element value for this variable. For example, a name such as: Mary Perez, tells you neither race (*e.g.*, white or black) nor ethnic origin since the person may or may not consider themselves to be of Hispanic descent.

Third, use official records (***e.g., medical)***. If the data needed cannot be obtained from the interviewee and is not available or usable from the PAR, then use official records, if available, to determine the correct element attribute.

White (non-Hispanic)
is selected for drivers who consider themselves as having origins in any of the original peoples of Europe, North Africa, or the Middle East. The person may consider his/her race to be white ***and*** not of Hispanic origin.

Black (non-Hispanic)
is selected for drivers who consider themselves as having origins in any of the black racial groups of Africa. The person may consider his/her race to be Black, Negro, or Afro-American ***and*** not of Hispanic origin.

White (Hispanic)
is selected for drivers who consider themselves as having origins in any of the original peoples of Europe, North Africa, or the Middle East. The person may consider his/her race to be white ***and*** of Hispanic origin.

Black (Hispanic)
is selected for drivers who consider themselves as having origins in any of the black racial groups of Africa. The person may consider his/her race to be Black, Negro, or Afro-American ***and*** of Hispanic origin.

American Indian, Eskimo or Aleut
is selected for drivers who consider themselves as having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition. For example, if a specific (or named) Indian tribe is given, then use this attribute.

Asian or Pacific Islander
is selected for drivers who consider themselves as having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

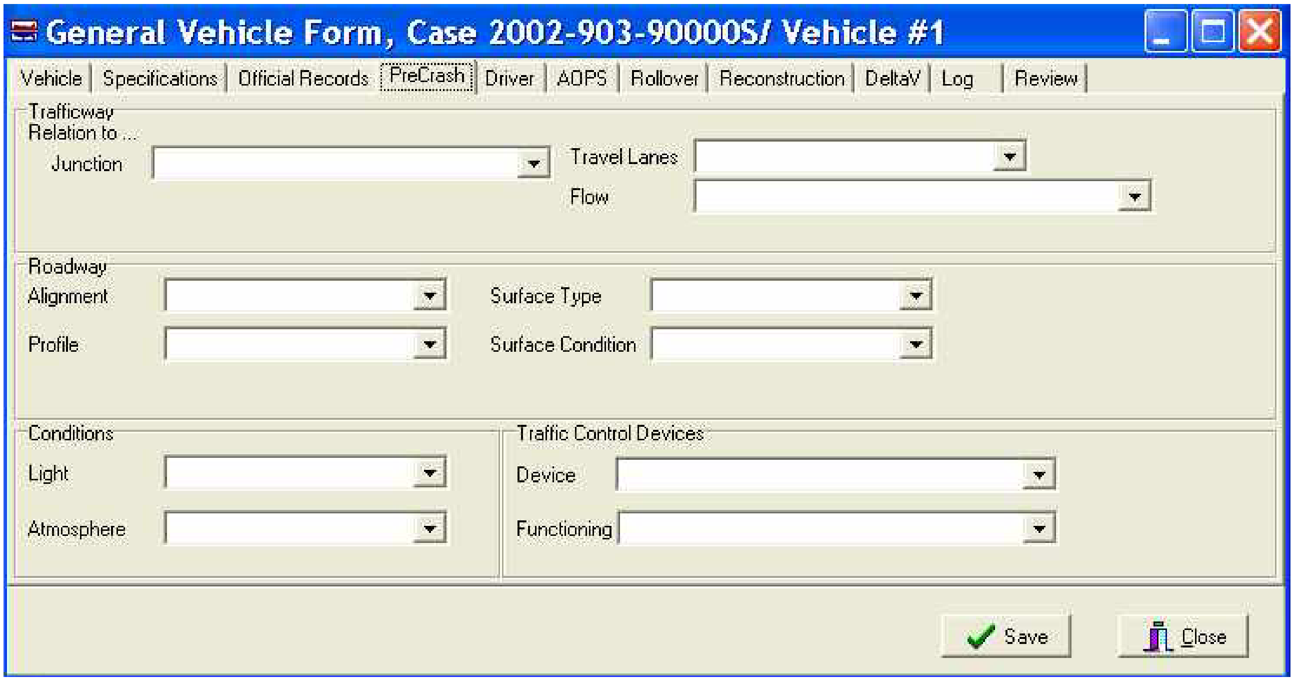
Other
is selected for drivers who consider themselves to be of a race or ethnic origin not described above. Use this attribute for descriptions such as: Eurasian, Cosmopolitan, inter-racial, etc. In addition, if the driver considers him/herself to be of Hispanic origin but not white or black, then use this attribute.

Race/Ethnic Origin of Driver Race/Ethnic Origin of Driver

Page 2 of 3

Unknown
is selected when the source(s) available do not provide sufficient information to classify the driver's race **and** ethnic origin. In addition, use this attribute when Hispanic origin is known, but race is not; and when race is known, but Hispanic origin is not.

PreCrash


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Trafficway
Relation to ...
Junction
Travel Lanes
Flow
Roadway
Alignment
Profile
Surface Type
Surface Condition
Conditions
Light
Atmosphere
Traffic Control Devices
Device
Functioning
Save
Close

PRECRASH DATA OVERVIEW

The PreCrash variables are selected separately for each vehicle involved in the crash. They should be coded for the characteristics of their roadway environment just prior to the critical precrash event

RELATION TO INTERCHANGE OR JUNCTION

Screen Name: Trafficway-Relation to Junction

SAS Data Set: **GV**
SAS Variable: **RELINTER**

Element Attributes:

0	Non-interchange area and non-junction
1	Interchange area related
2	Intersection related/non-interchange
3	Driveway, alley access related/non-interchange
4	Other junction (specify) **/** non-interchange
5	Unknown type of junction / non interchange
9	Unknown

Source: Researcher determined — Primary source is the scene inspection, secondary sources include the police report and interviews.

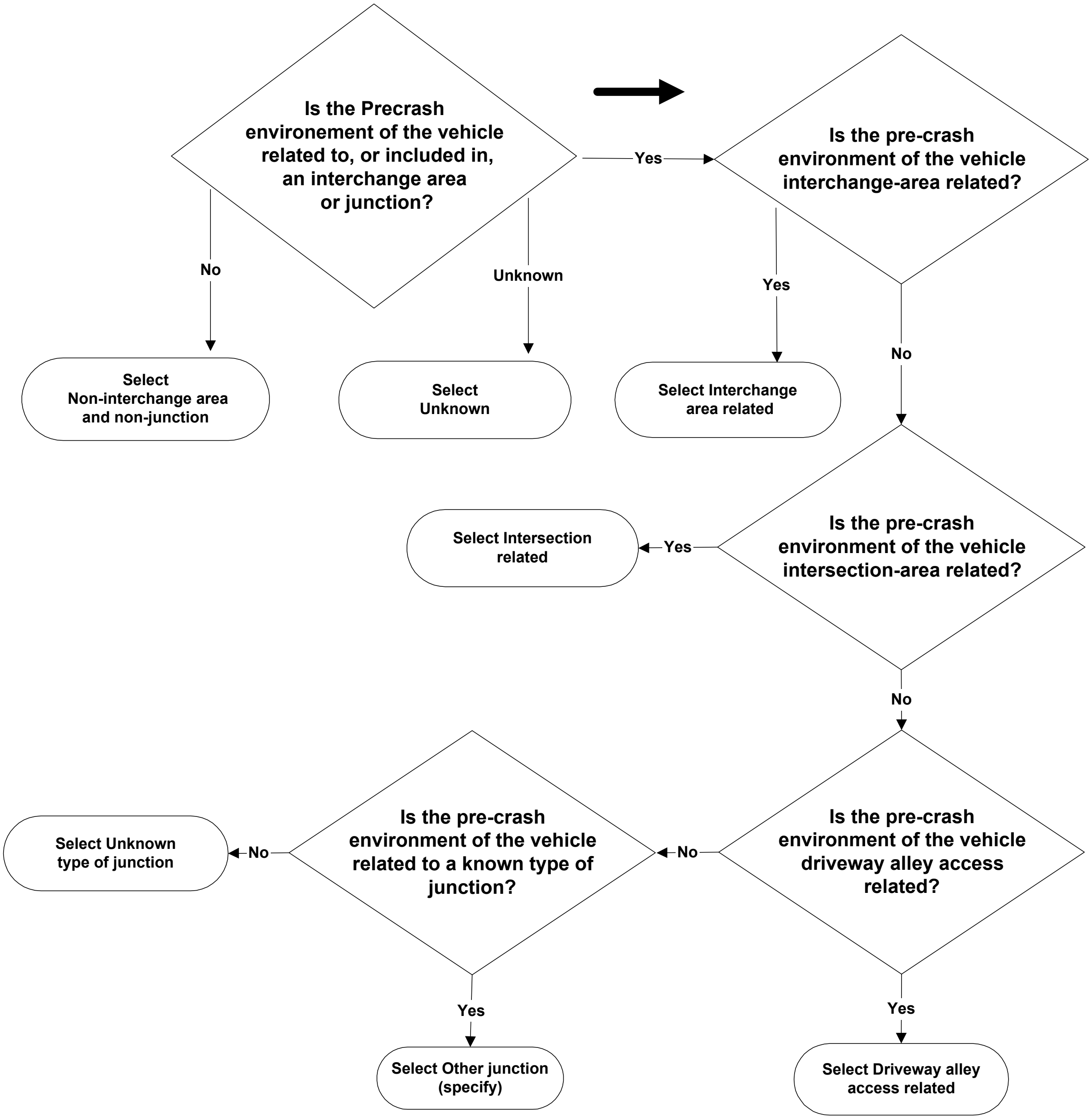
Remarks:

The attribute selected is based on the characteristics of the roadway environment just prior to the critical precrash event for this vehicle

ANSI D16.1 should be referred to for additional information about the characteristics of junctions and interchanges.

A junction is, in general, the area formed by the connection of two roadways. It includes: (1) all at-grade intersections, (2) connections between a driveway access or alley access and a roadway which is not a driveway access or an alley access, (3) connections between two alley accesses or driveway accesses, or (4) a connection between a driveway access and an alley access.

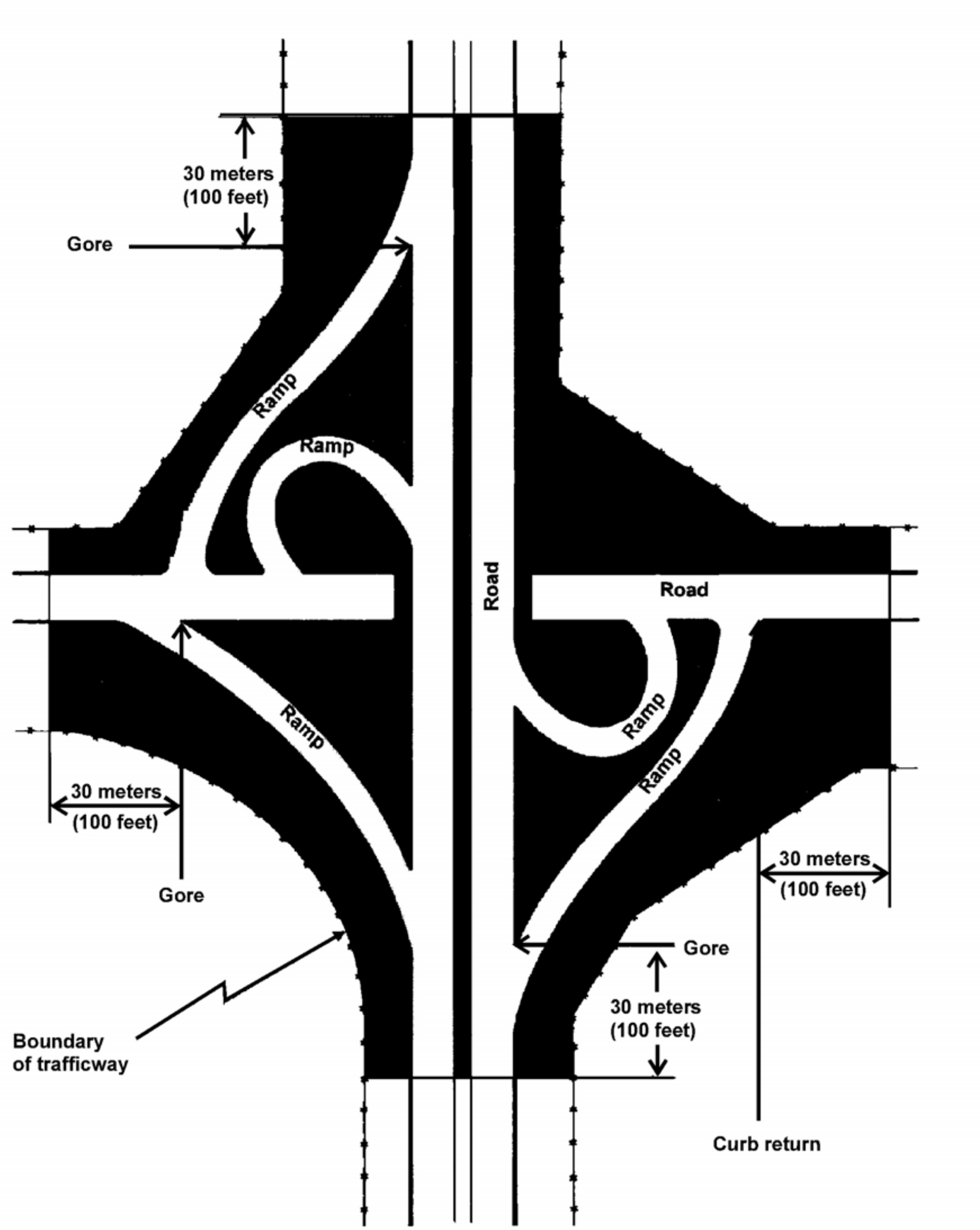
Figure GV- 1: Flowchart for Determining Interchange or Junction


Is the Precrash environement of the vehicle related to, or included in, an interchange area or junction?
Yes
Is the pre-crash environment of the vehicle interchange-area related?
No
Unknown
Yes
No
Select Non-interchange area and non-junction
Select Unknown
Select Interchange area related
Select Intersection related
Yes
Is the pre-crash environment of the vehicle intersection-area related?
No
Select Unknown type of junction
No
Is the pre-crash environment of the vehicle related to a known type of junction?
No
Is the pre-crash environment of the vehicle driveway alley access related?
Yes
Yes
Select Other junction (specify)
Select Driveway alley access related

Non-interchange area and non-junction
is selected when the vehicle's environment just prior to the critical precrash event does not occur within an interchange area or within a junction.

Interchange area related
is selected when the vehicle's environment just prior to the critical precrash event occurs within an interchange area. An interchange is the area around a grade separation which involves at least two trafficways. Included within its boundaries are: (1) all ramps which connect the roadways, and (2) each roadway entering or leaving the interchange to a point 30 meters (100 feet) beyond the gore or curb return at the outermost ramp connection for the roadway. One may find included within an interchange area intersections, driveway accesses, and, of course, roadway sections which are non-junction. See Figure.

Relation to Interchange or Junction cont'd


30 meters
(100 feet)
Gore
Ramp
Ramp
Road
Road
Ramp
Ramp
Ramp
30 meters
(100 feet)
Gore
30 meters
(100 feet)
Gore
30 meters
(100 feet)
Boundary
of trafficway
Curb return

Intersection Related
is selected when the vehicle's environment just prior to the critical precrash event: (1) is in an intersection or is in an approach to or exit from an intersection; ***and*** (2) results from an activity, behavior, or control related to the movement of traffic units through the intersection.

"Traffic units" above means any traffic unit (involved or not involved in the crash). If the vehicle's environment just prior to the critical precrash event occurs outside but near an intersection and involves a vehicle which was engaged or should have been engaged in making an intersection-related maneuver such as turning, then **Intersection Related** must be selected. However, if the loss of control is unrelated to the intersection, then select **Non-interchange area and non-junction**.

An intersection is a type of junction which contains a crossing or connection of two or more roadways not classified as a driveway access or alley access.

Intersection related also includes any two leg intersections. To qualify for inclusion at least one of the two legs must be controlled by a regulatory sign (see **Traffic Control Device**) or traffic signal; otherwise, treat the area as a sharp curve.

A rotary or traffic circle is a specialized form of at-grade intersection. Traffic flows by entering and leaving a one-way roadway connecting all intersection approach legs and running continuously around a central island. Rotary intersections are commonly called *traffic circles*, but proper design can result in central islands of various rounded shapes.

Driveway, alley access related
is selected when the vehicle's environment just prior to the critical precrash event: (1) is an approach to or exit from the driveway or alley access; ***and*** (2) results from an activity, behavior, or control related to the movement of traffic units through the driveway or alley access. Use this attribute when the vehicle's environment just prior to the critical precrash event occurs on a NASS roadway which approaches or exits from the driveway or alley access junction and at least one involved pedestrian, other nonmotorist associated with a nonmotorist conveyance or road vehicle was entering or exiting from the driveway or alley. Do not use this attribute if the crash was precipitated by the action of a noncontact road vehicle or person.

Other junction (specify) / non-interchange
is selected when the vehicle's environment just prior to the critical precrash event is not interchange related, is not intersection related, is not driveway, alley access related, but does occur in a junction. The type of junction must be specified when this attribute is selected.

The following are examples of ***non-interchange junctions:***

- A ***channel*** refers to any traffic lane that is directed into a path different than the through lanes by a traffic island. An ***island*** is defined as a raised or painted paved surface. The channel begins and ends at the extension of the island's lateral boundaries unless the channel is preceded or followed by an area of mergence or divergence (see below). Select **Other junction**, specify- ***channel*** if the vehicle's roadway environment just prior to the critical precrash event was in the channel or on the traffic island (if the vehicle enters or strikes the island from within the channel).

- A ***crossover*** is a designated opening within a median used primarily for "U" turns". To be considered, the nearest lateral boundary line of the crossover must be greater than 10 meters (33 feet) from the nearest lateral boundary line of any roadway (highway, street, ramp, driveway, or alley) which intersects with either side of the roadways which the median divides. Select **Other junction**, specify-***crossover*** if the characteristics of the vehicle's roadway environment just prior to the critical precrash event were in the junction of a crossover and a roadway. Do not use this attribute if the crash was precipitated by the actions of a noncontact road vehicle or person.

- ***An area of mergence or divergence*** is in, and adjacent to an auxiliary lane, which is adjacent to the through lane(s) and follows an entrance ramp or channel or precedes an exit ramp or channel. A mergence area extends longitudinally from where the ramp or channel ends and ends where the auxiliary lane ends. A divergence area extends longitudinally from where the auxiliary lane begins and ends where the ramp or channel begins. The area extends laterally across the through lane(s), for traffic in the same direction, ending at a centerline, median, or road edge/curb.

Unknown type of junction / non interchange
is selected when it is known that the vehicle's environment just prior to the critical event is in a junction, but the type of junction is unknown.

Unknown
is selected when the environment of the vehicle just prior to the critical event is unknown.

TRAFFICWAY FLOW

Screen Name: Trafficway-Flow

SAS Data Set: **GV**
SAS Variable: **TRAFFLOW**

Element Attributes:

1	Divided trafficway-median strip without positive barrier
2	Divided trafficway-median strip with positive barrier
3	One way traffic
4	Not physically divided (two way traffic)
5	Not physically divided - center 2-way left turn lane
9	Unknown

Source: Researcher determined-Primary source is the scene inspection; secondary sources include the police report and interviews.

Remarks:

If the collision occurred other than in a junction, select the attribute on the basis of the most representative description of the characteristics of the vehicle's roadway environment just prior to the critical precrash event. If this is off the roadway, select the attribute on the basis of the most representative description of the roadway leading to the point of departure.

If the characteristics of the vehicle's roadway environment just prior to the critical precrash event is represented by the junction of two or more roadways, choose the trafficway flow on the basis of the most representative description of the approach leg to the junction for this vehicle.

A roadway is that part of a trafficway where vehicles travel. A divided trafficway is composed of two or more roadways. A trafficway which has a median that is designed as a two-way left turn lane is considered to be one roadway for lane identification purposes.

The Researcher selects the descriptor that best represents the vehicle's environment just prior to the critical precrash event. If the flow is designed to separate traffic, then choose accordingly.

Not physically divided (two way traffic)
is selected whenever there is no median. Generally, medians are not designed to legally carry traffic. **NOTE:** Although gores separate roadways, and traffic islands (associated with channels) separate travel lanes, neither is involved in the determination of trafficway division.

Not physically divided - center 2-way left turn lane
is used whenever the trafficway is physically divided by a two-way left turn lane which is designed to allow left turns to driveways, shopping centers, businesses, etc., while at the same time providing a separation of opposing straight-through travel lanes.

Trafficway Flow cont'd

Divided trafficway-median strip without positive barrier
is selected whenever the trafficway is physically divided, however, the division is unprotected [*e.g.*, vegetation, gravel, paved medians, trees, water, embankments and ravines that separate a trafficway (*i.e.*, all non-manufactured barriers). NOTE: Raised curbed medians ***DO NOT*** constitute a positive barrier in and by themselves. The unprotected medians can be of any width, however, painted paved flush areas, must be 1.2 meters in width to constitute a median strip.

Divided trafficway — median strip with positive barrier
is selected whenever the traffic is physically divided and the division is protected by any concrete, metal, or other type of longitudinal barrier (*i.e.*, all manufactured barriers). Also bridges or underpass support structures and bridge rails take this attribute.

One way trafficway
is selected primarily whenever the trafficway is undivided and traffic flows in one direction (*e.g.*, one- way streets). However, this attribute can also be selected where a median is present so long as all the traffic on the trafficway goes in the same direction. An example occurs where the opposing roadway of the same named trafficway had to be split by such a distance that the right-of-way divides to accommodate other property. If (rare) one of the trafficways is further divided into multiple roadways by a median, then in this instance **One way trafficway** should be selected. Included are entrance and exit ramps.

Unknown
is selected if the trafficway flow cannot determined (*e.g.*, ongoing construction and movable traffic barriers moved or removed since the crash date).

Number of Travel Lanes

Screen Name: Roadway-Number of Travel Lanes

SAS Data Set: **GV**
SAS Variable: **LANES**

Element Attributes:

1	One
2	Two
3	Three
4	Four
5	Five
6	Six
7	Seven or more
9	Unknown

Source: Researcher determined--Primary source is the scene inspection — secondary sources include the police report and interviews.

Remarks:

The attribute is determined from the same roadway which was used to determine the **Trafficway Flow**. If traffic flows in both directions and is undivided, select the number of lanes in both directions. If the trafficway is divided into two or more roadways, select only the number of lanes for the roadway on which the vehicle under consideration was traveling.

If turn bays, acceleration, deceleration, or center 2-way left turn lanes exist and are physically located within the cross section of the roadway, and these lanes are the most representative of the driver's environment just prior to the critical precrash event, then they are to be included in the number of lanes. Channelized lanes are separated from other through or turn related lanes. (NOTE: The separation normally will not involve a physical barrier.) Because a channelized lane is separated, it should not be included unless it is preceded by a turn bay or turn lane and this bay or lane is felt to be most representative of the driver's environment just prior to impact.

The number of lanes counted does not include any of which are rendered unusable by restriction of the right-of-way (*e.g.*, closed due to construction). Show lanes on the scaled diagrams and annotate why a lane is closed.

Only those lanes ordinarily used for motor vehicle travel should be considered when completing this variable (*i.e.*, pedestrian/bicycle lanes are excluded).

In a number of instances, there will be uncertainty as to the number of lanes due to: (1) nonstandard roadway widths; (2) variability of width in the same roadway due to disrepair and other reasons; or (3) absence of lane, center, and edge lines, etc. The number selected in these cases should represent the number of operational lanes based on customary or observed usage.

On a road that has legal parking such that the legal parking area ends short of the junction of the roadway with another roadway or drive; and the space left between the end of the legal parking area and the beginning of the junction can be utilized for turning by a vehicle on the roadway, do not consider this additional area as another travel lane (regardless of customary or observed usage in this instance).

This area should be construed as additional width to the existing travel lane(s). The only time that another lane will be counted at a junction is when that space is expressly designated for turning, *e.g.*, by lane (line or turn arrow) marking, signs or signals.

The number of lanes for driveways, wide-mouth parking lots, etc. should be selected as follows:

- If it is possible to determine the number of lanes through either lane markings or observed or customary use, select the actual number of lanes present.
- If the number of lanes cannot be accurately established, select **Unknown**.

If the vehicle was on or in a driveway [see Relation to Junction, definitions for **Driveway, alley access related**, or in a crossover (primarily designed as an opening in a median used for "U" turns)] which is in essence a private way, select the number of lanes for that vehicle.

ROADWAY ALIGNMENT

Screen Name: Roadway-Alignment

SAS Data Set: **GV**
SAS Variable: **ALIGNMNT**

Element Attributes:

1	Straight
2	Curve Right
3	Curve Left
9	Unknown

Source: Researcher determined--Primary source is scene inspection; secondary sources include the police report and interviews.

Remarks:

This element is determined from the same roadway which was used to determine Trafficway Flow. Select the descriptor that best represents the vehicle's environment just prior to this vehicle's critical pre-crash event.

Any perceptually determined curvature of a roadway constitutes a curve.

Straight
Refers to a roadway which has no perceptually determined curvature.

Curve right and Curve left
Refer to a perceptually determined curvature of a roadway. The vehicle's direction of travel determines whether the curvature is right or left.

ROADWAY PROFILE

Page 1 of 2

Screen Name: Roadway-Profile

SAS Data Set: **GV**
SAS Variable: **PROFILE**

Element Attributes:

1	Level
2	Uphill grade (> 2%)
3	Hillcrest
4	Downhill grade (> 2%)
5	Sag
9	Unknown

Source: Researcher determined--Primary source is scene inspection; secondary sources include police report and interviews.

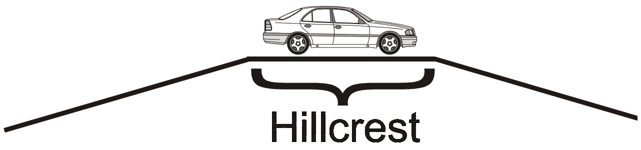
Remarks:

The element attribute is determined from the same roadway which was used to determine **Trafficway Flow**. Measure the area most representative of the pre-crash environment. To determine the grade, the vertical measurement is divided by the horizontal value; the result is a percentage value of the grade.

Level
is selected when the roadway surface tangent gradient is less than or equal to 2%. [i.e. vertical divided by horizontal (vertical **/** horizontal)]

Uphill grade (> 2%)
is selected when the roadway profile is uphill or positive, relative to the direction of travel of this vehicle.

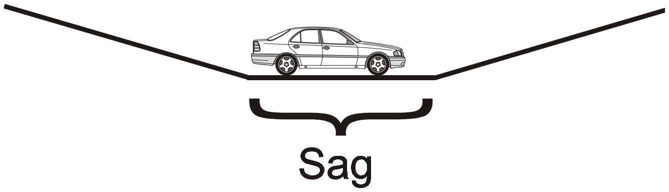
Hillcrest
refers to a surface in vertical transition between two points of tangency.



Downhill grade (> 2%)
is used when the roadway profile is downhill or negative, relative to the direction of travel for this vehicle.

Sag

refers to a surface in vertical transition between two points of tangency.



ROADWAY SURFACE TYPE

Page 1 of 2

Screen Name: Roadway-Surface Type

SAS Data Set: **GV**
SAS Variable: **SURTYPE**

Element Attributes:

1	Concrete
2	Bituminous (asphalt)
3	Brick or block
4	Slag, gravel or stone
5	Dirt
8	Other, specify:
9	Unknown

Source: Researcher determined Primary source is scene inspection; secondary sources include police report and interviews.

Remarks:

This element attribute is determined from the same roadway which was used to determine the **Trafficway Flow**. If the lateral cross section contains lanes of more than one surface type, select the surface type of the lane the driver's vehicle was traveling on just prior to this vehicle’s critical precrash event.

Concrete
is selected when the road surface is made of a material consisting of a conglomerate of gravel, pebbles, broken stone or slag, in a mortar or cement matrix.

Bituminous (asphalt)
is selected when the road surface is made of a product obtained by the distillation of coal and petroleum. Also referred to in non-technical terms as "blacktop".

Brick or block
is selected when the road surface is constructed of paving stone (*e.g.* cobblestone, paving bricks, etc.).

Slag, gravel or stone
is selected when the road surface is constructed of a loose material primarily consisting of the elements of slag, gravel or stone.

Dirt
is selected when the improved road surface is made of a natural earthen surface.

Other specify
Is selected for an other type of surface such as wood.

Roadway Surface Type cont’d

Unknown

Is selected when the surface type is unknown.

ROADWAY SURFACE CONDITION

Screen Name: Surface Condition

SAS Data Set: **GV**
SAS Variable: **SURCOND**

Element Attributes:

1	Dry
2	Wet
3	Snow or slush
4	Ice
5	Sand, dirt or oil
8	Other, (specify):
9	Unknown

Source: Researcher determined Primary source is the police report; secondary sources include interviews, and scene inspection.

Remarks:

This element attribute is based on the location which best represents the Pre-Crash Environment data. The element should be selected based on the same lanes used to select Trafficway Flow.

It is possible for different surface conditions to exist on the same roadway (*e.g.*, intermittent wet and dry sections). The researcher should consider the condition most representative of the roadway immediately prior to this vehicle's critical precrash event.

Sand, dirt or oil
is selected when this attribute is present on another road surface. (*i.e.* a dirt road would not receive this attribute solely due to presence). If the sand, dirt or oil occurs in combination with moisture conditions **Wet**, **Snow** or **Slush**, or **Ice**, then select the moisture condition.

LIGHT CONDITIONS

Screen Name: Conditions--Light

SAS Data Set: **GV**
SAS Variable: **LGTCOND**

Element Attributes:

1	Daylight
2	Dark
3	Dark, but lighted
4	Dawn
5	Dusk
9	Unknown

Source: Researcher determined — Primary source is the police report; secondary sources include interviews and scene inspection.

Remarks:

The light condition best representing the precrash conditions at the time of the crash is selected based on ambient and artificial sources.

Dark
should be selected when the crash occurred after dusk and before dawn, and no artificial light source is present at the scene.

Dark but lighted
should be selected when the crash occurred after dusk and before dawn, and artificial light source(s) are present at the scene.

NOTE: **Dark** and **Dark, but lighted** include crashes occurring in tunnels or in underpasses.

Unknown
should be selected when it cannot be reasonably determined what the light conditions were at the time of the crash.

ATMOSPHERIC CONDITIONS

Page 1 of 2

Screen Name: Conditions--Atmospheric

SAS Data Set: **GV**
SAS Variable: **WEATHER**

Element Attributes:

0	No adverse atmospheric-related driving conditions.
1	Rain
2	Sleet/hail
3	Snow
4	Fog
5	Rain and fog
6	Sleet and fog
8	Other (*e.g.*, smog, smoke, blowing sand or dust, etc.) (specify):
9	Unknown

Source: Researcher determined — primary source is the police report; secondary sources include interviews and scene inspection.

Remarks:

The atmospheric condition is selected with respect to the conditions just prior to the critical event. The element attributes are oriented toward precipitation, or particle dispersion, which may affect the driver's visual ability or the vehicle's control.

It is possible for different drivers to experience different conditions.

Rain
is selected when the precipitation falling at the time of the crash is predominately in the form of water droplets.

Sleet/hail
is selected when the precipitation falling at the time of the crash is predominately in the form of frozen or partially frozen raindrops.

Snow
is selected when the precipitation falling at the time of the crash is predominately in the form of translucent ice crystals originating in the upper atmosphere as frozen particles of water vapor. This attribute includes rain mixed with snow. Accumulation is not necessary to select this attribute.

Fog
is selected when condensed water vapor, in cloud-like masses, is close to the ground limiting visibility at the time of the crash scene.

Other (*e.g.*, smog, smoke, blowing sand or dust, etc.) specify:

Atmospheric conditions cont'd

is selected when the particular condition was present at the time of the crash. This attribute should not be used solely because of cloudy or overcast skies. Additionally, strong winds will be coded under **Other**, and specified as such.

Screen Name: Traffic Control--Device

SAS Data Set: **GV**
SAS Variable: **TRAFCONT**

Element Attributes:

0 No traffic control(s)
1 Traffic control signal (not RR crossing)

Regulatory:

2 Stop sign
3 Yield sign
4 School zone sign
5 Other regulatory sign (specify):
6 Warning sign (not RR crossing)
7 Unknown sign
8 Miscellaneous/other controls including RR controls (specify):
9 Unknown

Source: Researcher determined — primary source is scene inspection; secondary sources include the police report and interviews.

Remarks:

This attribute is determined from the same roadway used to define the Trafficway Flow. The Researcher should select the descriptor that best controls traffic in the vehicle's environment just prior to this vehicle's critical precrash event.

This variable measures the above-ground traffic control(s) which regulate vehicular traffic. Excluded are any controls which ***solely*** regulate pedestrians (*e.g.*, wait/walk signals).

Focus on the road segment just prior to the location of the critical pre-crash event and select the traffic control device(s) which is (are) ***most related*** to this event. In-junction crashes should be based on the presence of a traffic control device for the roadway on which the vehicle is traveling. For non-junction crashes, traffic control devices should be selected based on their relationship to the crash circumstances and ***not*** be based merely on presence.

Regulatory signs	Give notice of traffic laws or regulations.
Warning signs	Call attention to conditions on, or adjacent to, a highway or street that are potentially hazardous to traffic operations.
Guide signs	Show route designations, destinations, directions, distances, services, points of interest, and other geographical recreational or cultural information.

Signs come in standard shapes. The ***octagon*** is exclusively used for the STOP sign. The ***equilateral triangle****,* with one point downward, is used exclusively for the YIELD sign. The *round* shape is used for the advance warning of a railroad crossing and for the civil defense evacuation route marker. The *pennant* shape, an isosceles triangle, with its longest axis horizontal, is used to warn of no passing zones. The *diamond* shape is used only to warn of existing or possible hazards either on or adjacent to the roadway or adjacent thereto. The *(vertical) rectangle*, ordinarily with the longer dimension vertical, is used for regulatory signs, with the exception of STOP signs and Traffic Control Device
YIELD signs. The ***(horizontal) rectangle***, ordinarily with the longer dimension horizontal is used for route markers and recreational area guide signs.

The ***pentagon***, point up, is used for School Advance and School Crossing signs. ***Other*** shapes are reserved for special purposes; for example, the shield or other characteristic design for route markers and crossbuck for railroad crossings.

Signs can be distinguished by their color. The following general rules apply. ***Red*** is used as a background color on prohibitory type regulatory signs (*e.g.*, STOP, Do Not Enter, Wrong Way). It is also used as the circular outline and diagonal bar prohibitory symbol. ***BLACK*** may be used as a background (*e.g.*, ONE WAY); it is used as a message on white, yellow and orange signs. ***WHITE*** is used as the background for route markers, guide signs, and regulatory signs (except STOP). It is used as the legend for brown, green, blue, black and red signs. ***Orange*** is used only as a background color for construction and maintenance signs. ***Yellow*** is used as a background color for warning signs and for school signs. ***Brown***, ***green***, and ***Blue*** are used as a background color for guide signs.

Pavement markings are used to supplement the regulations or warnings of other devices such as traffic signs or signals. In other instances, they are used alone and produce results that cannot be obtained by the use of any other device. Pavement markings can convey warnings or information to the driver without diverting his attention form the roadway. **Pavement markings are not considered when completing this variable.**

Guide signs do not constitute traffic controls.

The Researcher should consider the intent of this question. If at the time of the crash there was no intent to control (regulate or warn) vehicle traffic, then select **No traffic controls**; otherwise, select the appropriate value.

For example, if the intersection is channelized and controlled differently on the channel than on the through lanes (*e.g.*, signal and yield sign), report the traffic controls depending on whether the roadway (Number of Travel Lanes) was chosen based on its through lanes or its channelized lanes.

The attributes are in prioritized order. This means that **Traffic Control Signal** takes precedence over **school zone signs, other regulatory signs,** and **warning signs**.

If a school guard, police officer, or other officially designated person controls both pedestrian and vehicular traffic, select **miscellaneous/other controls, including RR controls** .
Traffic Control Device cont'd

NOTE: The only exception to the prioritization rule is that any ***Officially-designated*** person (**miscellaneous controls**) takes precedence over any other attribute.

No Traffic Control
is selected when there is no above ground sign or signal to regulate traffic flow. If a traffic control device has been deactivated (e.g. traffic signal that emits no signal) during certain times of the day, and was deactivated at the time of the crash select **No** used for regulatory signs,

Traffic Control Signal (Not RR crossing)
Includes a traffic control that has been recently installed, but not activated as of the time of the crash.

Use **Traffic Control Signal (Not RR crossing)** for all of the following:

- Any signal which processes through the green, amber, and red cycles. The source of the actuation is of no concern.
- A green, amber and red cycling signal which a signal is missing or inoperable.
- A green, amber, and red cycle capability, but is being used to flash amber/red or red/red.
- A flashing beacon — capable of only flashing amber/red or red/red signals.
- Lane use control signals including turn arrows and controls which govern the direction of traffic flow in lanes (*e.g.*, electrically controlled overhead "X" or arrow used at different times of the day or on bridges to govern the direction of traffic flow in the lane.)

Any portable signal that controls traffic flow (*i.e.*, gas-powered directional signal to divert traffic for an impending lane closure).

A traffic control signal that is out (*e.g.* due to a power failure) and was related to the crash, should be indicated as present , unless a temporary control [*e.g.*, stop sign , police officer, miscellaneous controls etc.] has been inserted, in which case the temporary control should be selected.

NOTE: Regulatory signs which are ***enhanced*** by flashing lights should be selected based on their regulatory design. (*e.g.*, a stop sign with a flashing light should be coded as a stop sign - disregard the flashing light).

Stop sign
is selected when a trafficway is controlled by an octagon-shaped sign, with white letters and border on a red background.

Yield sign
is selected when a trafficway is controlled by an equilateral-shaped triangle, with one point downward, having a red border band and white interior and the word "YIELD" in red inside the border band.

School zone sign
is selected when a school zone warning sign is present. These signs may include a 5-sided sign with the point at the top, a rectangular, school speed zone sign, or some other black printing on a yellow background sign.

A school zone sign is selected only if the crash occurred during the time the sign was in effect (i.e, school must be in-session). If the sign was in effect it does not matter whether or not children were present. The time of the crash should also be correlated to the day of the week and the effect of holidays, vacations, etc.

Other regulatory sign (Specify):
is selected when a regulatory sign other than a "stop" or "yield" sign is present. "Other" signs include speed limit signs, movement signs (*e.g.*, NO TURN, LEFT TURN ONLY, DO NOT ENTER, WRONG WAY, ONE WAY,), parking signs (*e.g.*, NO PARKING, EMERGENCY PARKING ONLY), and other miscellaneous signs (*e.g.*, ROAD CLOSED TO THROUGH TRAFFIC, WEIGHT LIMIT, etc.)

Warning sign (Not RR crossing)
is selected when a sign is used to warn of an existing or potentially hazardous condition on or adjacent to a highway or street. Generally warning signs are diamond-shaped with black legend and a border on a yellow background. Examples include TURN SIGNS, CURVE SIGNS, WINDING ROAD SIGN, STOP AHEAD SIGN, "T" SYMBOL SIGNS, etc. Some warning signs are horizontal rectangles, for example, a large arrow sign intended to give notice of a sharp change in alignment in the direction of travel.

Unknown sign
is used when a regulatory sign ***was present*** at the time of collision but was removed or not available during the scene inspection to determine its type and the PAR is not specific about a traffic control presence.

Miscellaneous/other controls including RR controls (Specify):
is selected when the following are present:

- A construction warning sign(any black on orange diamond shaped sign).
  - Railroad crossing controls are present (e.g., any gates, flashing lights, bells, crossbuck, or railroad crossing sign, circle with a black "X" on a yellow background).
  - ***Officially designated*** person controls both pedestrian and vehicular traffic (*e.g.*, police officer, crossing guard, flag person, etc.)

Traffic Control Device cont'd

NOTE: An ***officially designated*** person controlling traffic takes precedence over any other attributes.

TRAFFIC CONTROL DEVICE FUNCTIONING

Screen Name: Traffic Control--Functioning

SAS Data Set: **GV**
SAS Variable: **TRCTLFCT**

Element Attributes:

[0 No traffic control(s)]
1 Traffic control device not functioning (specify):
2 Traffic control device functioning properly
9 Unknown

Source: Researcher determined--inputs include scene inspection, interviews, and police report.

Remarks:

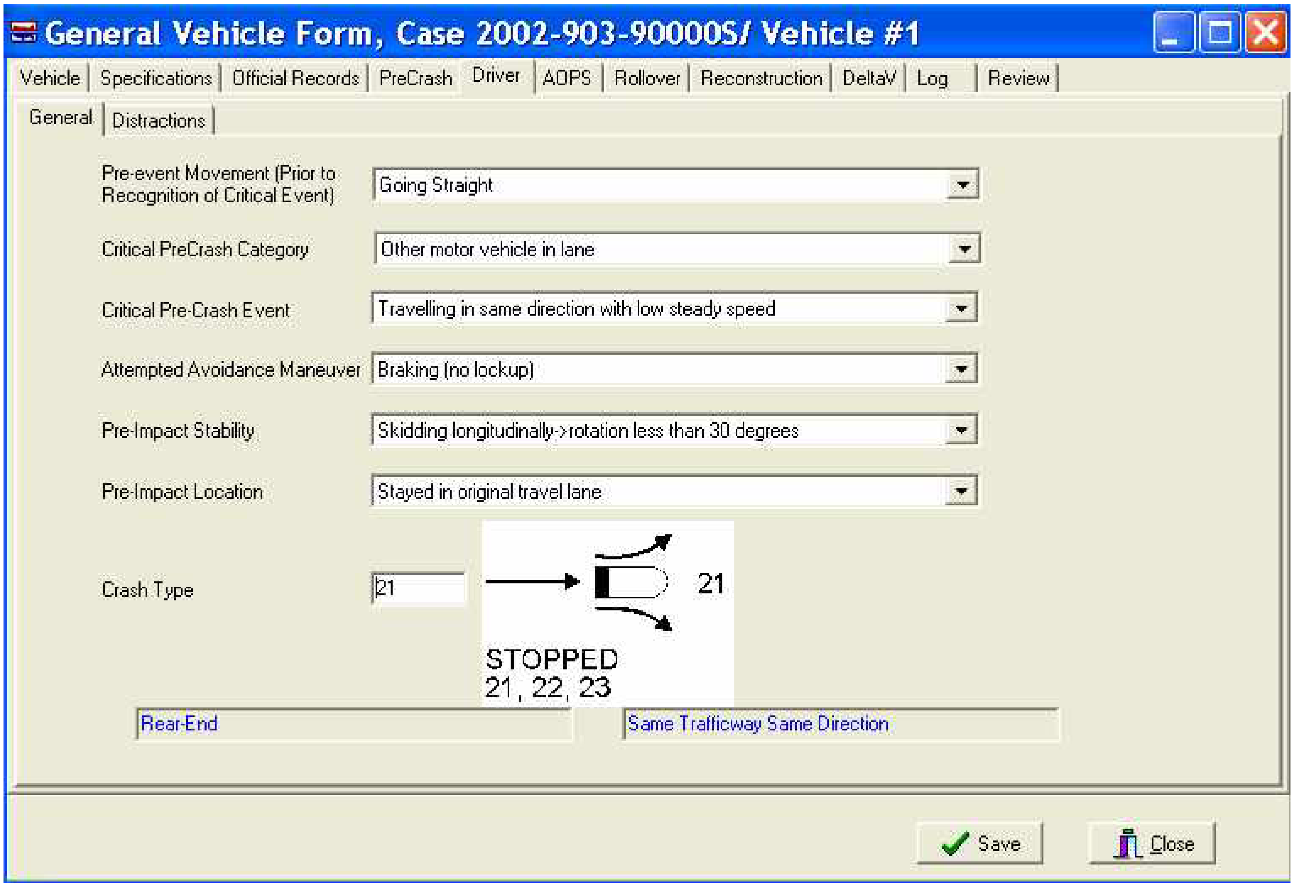
Traffic control device not functioning (specify):
is selected in the following situations:

- The traffic control device was not operating.
- The traffic control device reported has some function, but the function was improper, inadequate, or operating erratically. (*e.g.*, signal works but was stuck on red).
- The traffic control device was defaced, badly worn, rotated so it could not be seen, covered with snow, lying on ground, etc.

Traffic control device functioning properly
is selected when the traffic control device was functioning as designed at the time of the crash.

Unknown
is selected when the status of the traffic control device, at the time of the crash, cannot be determined.

Driver / General


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle | Specifications | Official Records | PreCrash | Driver | AOPS | Rollover | Reconstruction | DeltaV | Log | Review
General | Distractions
STOPPED
21, 22, 23
21
Save
Close

Pre-event Movement (Prior to Recognition of Critical Event)	Going Straight
Critical PreCrash Category	Other motor vehicle in lane
Critical Pre-Crash Event	Travelling in same direction with low steady speed
Attempted Avoidance Maneuver	Braking (no lockup)
Pre-Impact Stability	Skidding longitudinally->rotation less than 30 degrees
Pre-Impact Location	Stayed in original travel lane
Crash Type	21

Rear-End

Same Trafficway Same Direction

Precrash variables are completed for each of the in-transport vehicles in the case. This means that the entire crash is first completed from the perspective of one vehicle, then from the perspective of a second vehicle, if any, and so forth. The precrash variables are:

Driver's Distraction/Inattention To Driving (Prior To Recognition Of Critical Event)
Pre-Event Movement (Prior to Recognition of Critical Event),
Critical Precrash Category
Critical Precrash Event,
Attempted Avoidance Maneuver,
Pre-Impact Stability
Pre-Impact Location
Crash Type

The precrash variables are designed to identify the following:

what was this vehicle doing just prior to the critical precrash event,
what made this vehicle's situation critical,
what was the avoidance response, if any, to this critical situation, and
what was the movement of the vehicle just prior to impact?

The most important determination that must be made for each in-transport vehicle is: what was this vehicle's Critical Precrash Event, (*i.e.*, what action by this vehicle, another vehicle, person, animal, or nonfixed object was critical to this vehicle's crash?). Once the critical event is determined, the remaining precrash variables are coded relative to this selected **Critical Precrash Event.**.

Do not consider culpability as a factor for determining precrash data. Many crash scenarios will suggest fault, but this is considered coincidental rather than by design.

Critical Crash Envelope

The critical crash envelope begins at the point where:

(1) the driver recognizes an impending danger (*e.g.*, deer runs into the roadway), or

(2) the vehicle is in an imminent path of collision with another vehicle, pedestrian, pedalcyclist, other nonmotorist, object, or animal.

The critical crash envelope ends when:

(1) (a) the driver has made a successful avoidance maneuver
(b) has full steering control, and

(c) the vehicle is tracking; or

(2) the driver's vehicle impacts another vehicle, pedestrian, pedalcyclist, other nonmotorist, object, or animal.

Simple Single Critical Crash Envelope

Most crashes involve only a single critical crash envelope in which the object contacted is captured under the Critical Precrash Event, (*e.g.*, a vehicle is traveling straight on a roadway and a deer runs into the roadway and is struck by the vehicle). This scenario, and similar ones, are very straightforward and will not present many problems.

Complex Single Critical Crash Envelope

However, some single critical crash envelopes are more complex.

Example A: A driver avoids one obstacle and ***immediately*** impacts another vehicle, person, object, or animal. Because ***immediate*** is defined as **not** having an opportunity, or sufficient time, to take any additional avoidance actions, the Critical Precrash Event is related to the vehicle, person, object, or animal which the driver successfully avoided instead of the vehicle's first harmful event (*i.e.*, its impact); see examples 4 and 7 below.

Example B: The driver avoids an obstacle only to (a) lose steering control and/or (b) have the vehicle stop tracking, and the vehicle subsequently impacts another vehicle, person, object, or animal. Regardless of whether the driver:

1) attempted to regain steering control
2) caused the vehicle to resume a tracking posture or
3) avoided the impacted vehicle, person, object, or animal

the Critical Precrash Event is similarly related to the vehicle, person, object, or animal which the driver successfully avoided because the driver's critical crash envelope was never stabilized.

In both examples above, the Attempted Avoidance Maneuver records the successful action taken to avoid the Critical Precrash Event.

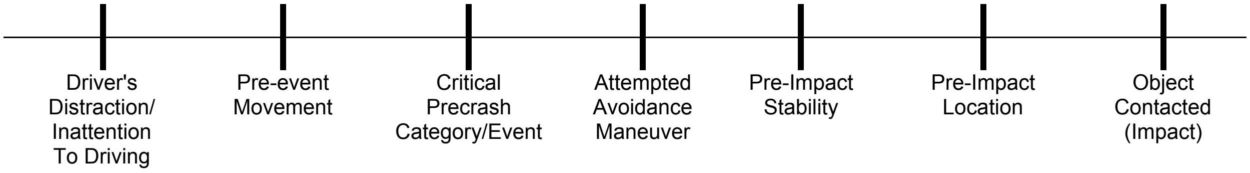
Vehicles that are not involved in an impact with another vehicle, person, object, or animal in the sequence of crash events (that define this crash) are not included in the CDS; data is not collected for these vehicles. However, these vehicles are included in the Crash Collision Diagram.

The coding order for a single critical crash envelope is illustrated below.

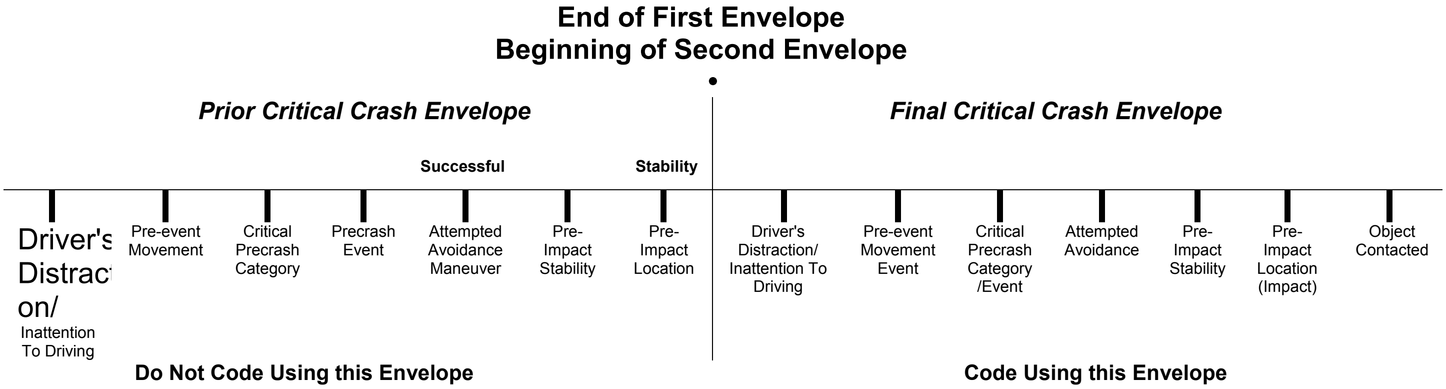
Multiple Critical Crash Envelopes

When a case involves multiple critical crash envelopes, select only the final critical crash envelope. In this situation, encode the variable Pre-Event Movement (Prior to Recognition of Critical Event) as: **Successful avoidance maneuver to a previous critical event**. The final critical crash envelope is the one that resulted in this vehicle's first harmful event (*i.e.*, its impact) as shown in the following illustration.

Typical Order of a Single Critical Crash Envelope


Driver's Distraction/ Inattention To Driving
Pre-event Movement
Critical Precrash Category/Event
Attempted Avoidance Maneuver
Pre-Impact Stability
Pre-Impact Location
Object Contacted (Impact)

Typical Order of Multiple Critical Crash Envelopes


End of First Envelope
Beginning of Second Envelope
Prior Critical Crash Envelope
Final Critical Crash Envelope
Successful
Stability
Driver's Distraction/ Inattention To Driving
Pre-event Movement
Critical Precrash Category
Precrash Event
Attempted Avoidance Maneuver
Pre-Impact Stability
Pre-Impact Location
Driver's Distraction/ Inattention To Driving
Pre-event Movement Event
Critical Precrash Category /Event
Attempted Avoidance
Pre-Impact Stability
Pre-Impact Location (Impact)
Object Contacted
Do Not Code Using this Envelope
Code Using this Envelope

When there is doubt as to whether this vehicle had experienced a complex single, or multiple critical crash envelopes, choose the Critical Precrash Category/Event, to the vehicle, person, object, or animal which the driver successfully avoided (i.e., default to Complex Single). See Complex Single Critical Crash Envelope examples A and B above.

The following pages have: a method protocol, a flowchart illustrating the proper method and protocol for determining the precrash variables, and eight examples of various crash event sequences which contain one or more critical crash envelopes.

Method Protocol

Consider the information obtained from the Police Report, scene and vehicle inspections, and from the interviewee(s) as inputs to your decision making process.

1. Determine Critical Precrash Category / Critical Precrash Event.

   What action by this vehicle, another vehicle, person, animal, or object was critical to this driver becoming involved in the crash (*i.e.*, use the "BUT FOR"* test)?

   ASK yourself questions (a) through (f) below. Proceed through each question that applies to the crash you are researching. Stop when the answer to the questions is "Yes". This is the Critical Precrash Category.

   (a) Did the vehicle exhibit a control loss?
   (b) Does the evidence suggest that the vehicle was in an environmentally dangerous position?
   (c) Was another vehicle "in" this vehicle's lane?
   (d) Was another vehicle entering into this vehicle's lane?
   (e) Was a pedestrian, pedalcyclist, or other nonmotorist in or approaching this vehicle's path?
   (f) Was an animal in or approaching this vehicle's path or was an object in this vehicle's path?

2. Determine Attempted Avoidance Maneuver.

   What does your information indicate that the driver tried to do to avoid the crash?

3. Determine Pre-Impact Stability, and Pre-Impact Location

4. Determine Driver's Distraction/Inattention and Pre-Event Movement (Prior to Recognition of Critical Event).

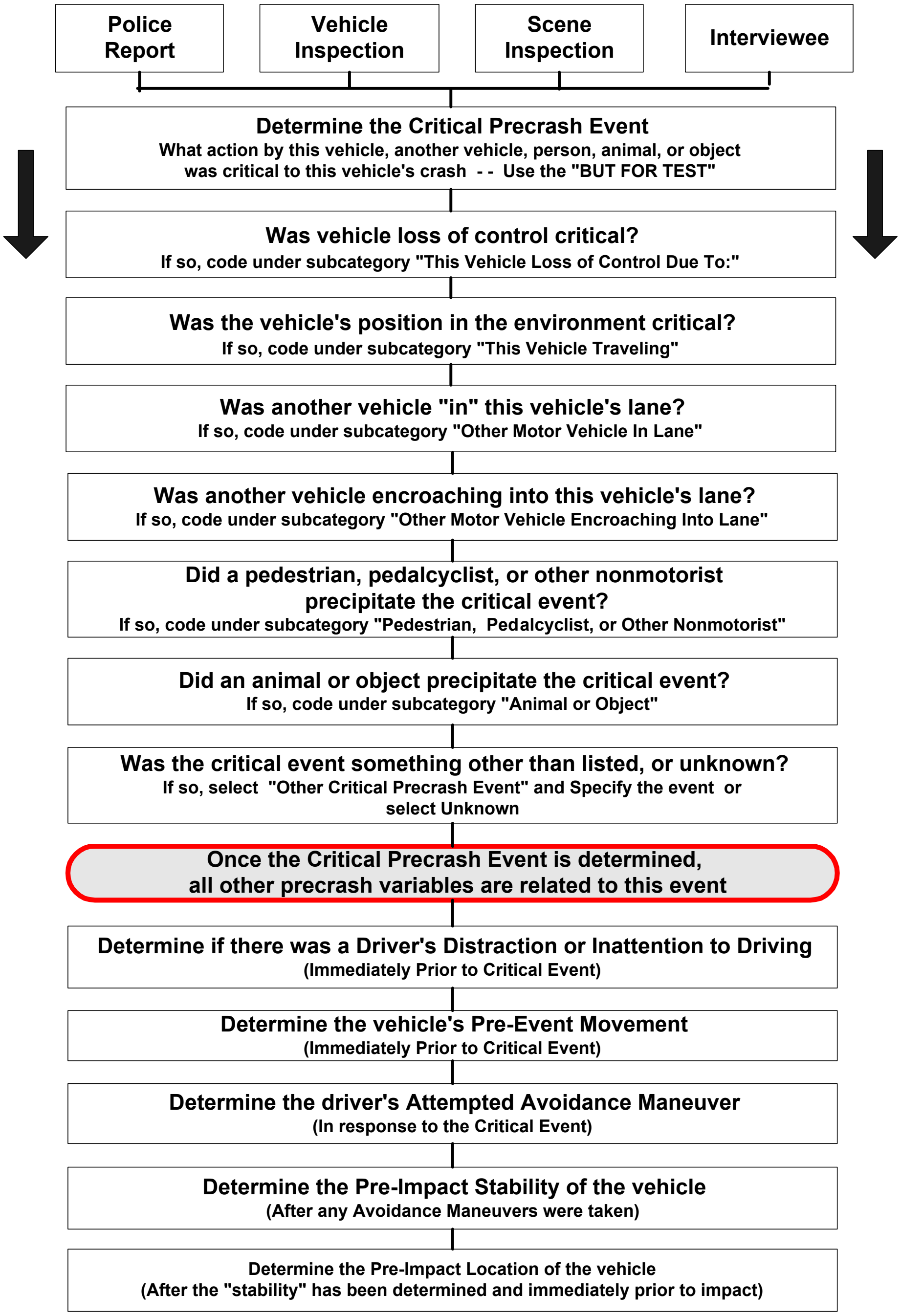
* **FOR EXAMPLE :**

"But for" Vehicle # going left-of-center, this vehicle would not have been involved in this crash.

"But for" having entered into the intersection, this vehicle would not have been involved in this crash.

Precrash Methodology Flowchart

*** FOR EXAMPLE** :


Police Report
Vehicle Inspection
Scene Inspection
Interviewee
Determine the Critical Precrash Event
What action by this vehicle, another vehicle, person, animal, or object was critical to this vehicle's crash - - Use the "BUT FOR TEST"
Was vehicle loss of control critical?
If so, code under subcategory "This Vehicle Loss of Control Due To:"
Was the vehicle's position in the environment critical?
If so, code under subcategory "This Vehicle Traveling"
Was another vehicle "in" this vehicle's lane?
If so, code under subcategory "Other Motor Vehicle In Lane"
Was another vehicle encroaching into this vehicle's lane?
If so, code under subcategory "Other Motor Vehicle Encroaching Into Lane"
Did a pedestrian, pedalcyclist, or other nonmotorist precipitate the critical event?
If so, code under subcategory "Pedestrian, Pedalcyclist, or Other Nonmotorist"
Did an animal or object precipitate the critical event?
If so, code under subcategory "Animal or Object"
Was the critical event something other than listed, or unknown?
If so, select "Other Critical Precrash Event" and Specify the event or select Unknown
Once the Critical Precrash Event is determined, all other precrash variables are related to this event
Determine if there was a Driver's Distraction or Inattention to Driving
(Immediately Prior to Critical Event)
Determine the vehicle's Pre-Event Movement
(Immediately Prior to Critical Event)
Determine the driver's Attempted Avoidance Maneuver
(In response to the Critical Event)
Determine the Pre-Impact Stability of the vehicle
(After any Avoidance Maneuvers were taken)
Determine the Pre-Impact Location of the vehicle
(After the "stability" has been determined and immediately prior to impact)

"***But for***" Vehicle # going left-of-center, this vehicle would not have been involved in this crash.

"***But for***" having entered into the intersection, this vehicle would not have been involved in this crash.

Precrash General Rules

1. Attempted Avoidance Maneuver assesses what the vehicle did rather than what the driver stated he/she tried to do.

2. A traffic control signal/sign can never make the situation critical when determining Critical Precrash Event.

3. When you know what the Critical Precrash Category, but are unable to select a specific Critical Precrash Event, use the following guideline:

   Default to one of the "Other Specify" or unknown attributes within each Critical Precrash Event category, rather than coding the entire Critical Precrash Category as "Other critical precrash event".

4. If control is loss due to driver illness such as heart attacks, diabetic comas, etc., then Critical Precrash Event should be coded as Other cause of control loss.

5. When coding Critical Precrash Category as "This vehicle loss of control", the loss of control must have occurred prior to the driver doing any avoidance maneuver. If the driver attempts a maneuver (*i.e.*, brakes, steers, etc.) as a result of the driver's perception of a vehicle, object, pedestrian, or nonmotorist, then select the vehicle, object, pedestrian, or nonmotorist as the critical event because that is what made the situation critical. If the vehicle is in a yaw prior to the driver taking an avoidance action, then loss-of-control is what made it critical (*e.g.*, critical curve scuff, hydroplaning, etc.).

6. The Critical Precrash Category/Event can not be determined from available sources (*e.g.*, PAR, scene inspections, interviews, etc.) which driver had the right-of-way at a controlled or uncontrolled intersection, then use the following as a guideline:

   a. If the junction is controlled by a 3-way / 4-way stop sign, or is uncontrolled, then use the common rule that ***the vehicle on the right has the right-of-way*** for determining encroachment.

   b. If the junction is controlled by an on-colors traffic control device, and both drivers claim a green light, then both vehicles are in an environmentally dangerous position, and Critical Precrash Event for both vehicles should be **This Vehicle Traveling** (Critical Precrash category) Crossing over (passing through) intersection (Critical Precrash Event).

7. For vehicles executing a left turn with the right-of-way, use **Other Motor Vehicle Encroaching Into Lane - From opposite direction-over left lane line,** or **Other Motor Vehicle Encroaching Into Lane - From opposite direction-over right lane line**.

8. "Fixed" objects (e.g., trees, poles, fire hydrants, etc.,) cannot be in the roadway.

9. A motor vehicle is stopped in a travel lane and is impacted by another motor vehicle ricocheting off a vehicle. The Critical Precrash Event for the vehicle stuck by the ricocheting vehicle is in the category of either: **Other Motor Vehicle In Lane** or **Other Motor Vehicle Encroaching Into Lane**.

10. Pre-Impact stability should be indicated as "**Tracking**" if the following are met:
    a. no skid marks are present at the scene
    b. the PAR or the interviewee does not indicate skidding ***AND***
    c. the vehicle did not rotate 30 degrees or more (either clockwise or counterclockwise).

Example 1

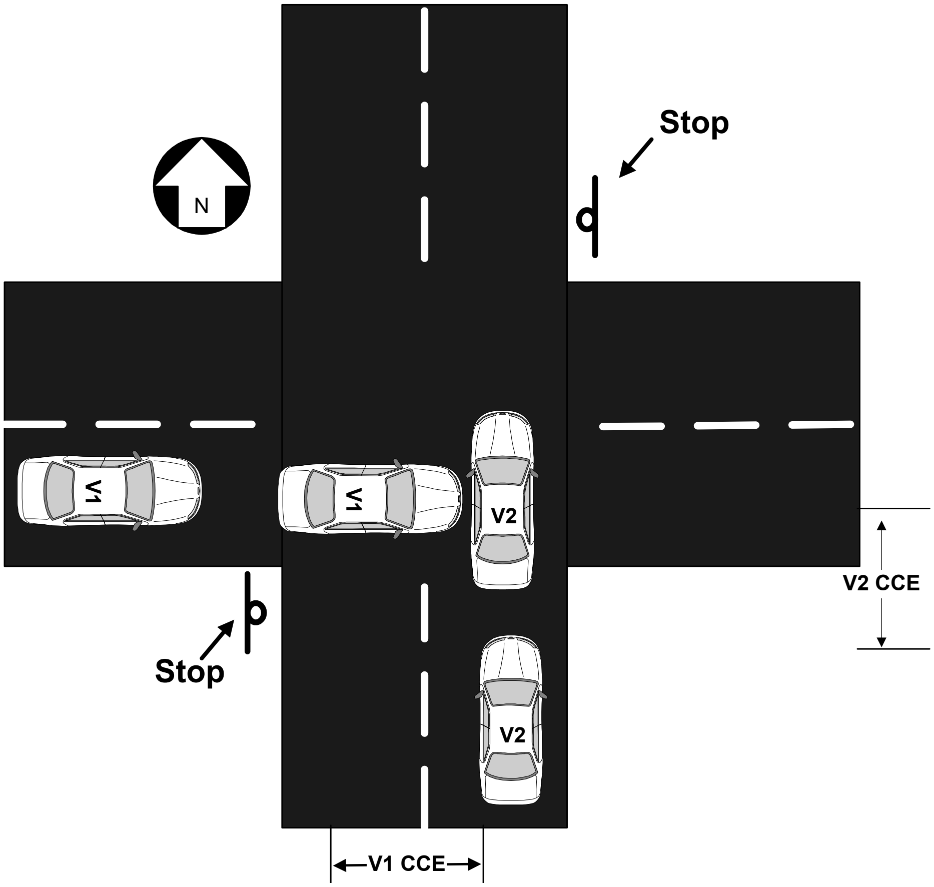
Vehicle 2 is northbound and passing through an intersection on a roadway without a traffic control. The driver of vehicle 1 is dialing on a cellular phone. Vehicle 1 is eastbound on a crossing roadway with a stop sign but did see it or stop or slow down. Driver of Vehicle 2 was attentive but did not see Vehicle 1 approaching. Vehicle 1 crashes into the side of vehicle 2. Vehicle 1 braked (leaving skid marks) just prior to impact, without any steering.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	(Distracted) while dialing cellular phone	Looked but did not see
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This Vehicle Traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Crossing over (passing through) intersection	From crossing street across path
Attempted Avoidance Maneuver	Braking (lockup)	No avoidance maneuver
Pre-Impact Stability	Skidding longitudinally - rotation less than 30 degrees	Tracking
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane

Example 1 (cont'd)

In this example, vehicle 1 has one ***critical crash envelope*** (V_1CCE) which begins at the point where driver 1 recognizes that vehicle 1 is in an imminent collision path with vehicle 2. Vehicle 1's critical crash envelope ends at the point of impact with vehicle 2.

Vehicle 2 has one ***critical crash envelope*** (V_2CCE). Although the driver of vehicle 2 did not recognize the danger, vehicle 2's critical crash envelope begins at the point where vehicle 2 is in an imminent path of collision with vehicle 1. Vehicle 2's critical crash envelope ends at the point of impact with vehicle 1.



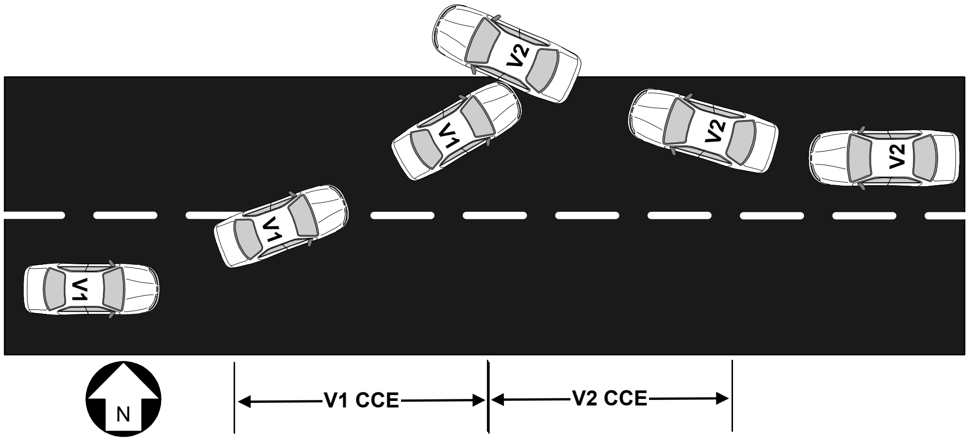
Example 2

Vehicle 1 and vehicle 2 are traveling in opposite directions on the same roadway. The driver of vehicle 1 falls asleep and crosses over the center line into the travel lane of vehicle 2. Vehicle 2 attempted to avoid vehicle 1 by steering right onto the shoulder and accelerating. Vehicle 1 impacted vehicle 2 in the side.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Sleepy or fell asleep	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Over the lane line on left side of travel lane	From opposite direction over left lane line
Attempted Avoidance Maneuver	No avoidance maneuver	Accelerating and steering right
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed on roadway, but left original travel lane	Departed roadway

In this example, vehicle 1 has one ***critical crash envelope*** (V_1CCE) which begins at the point where vehicle 1 crosses over the lane line and ends at the point of impact with vehicle 2.

Vehicle 2 has one ***critical crash envelope*** (V_2CCE) which begins at the point where driver 2 recognizes vehicle 1 encroaching into his/her travel lane. Vehicle 2's critical crash envelope ends at the point of impact with vehicle 1.



Example 3

Vehicle 1 is eastbound and passing through an intersection on a roadway without a traffic control. The noncontact vehicle (NCV) is northbound and stopped at the intersection on a crossing roadway with a stop sign. The noncontact vehicle turns right into the travel path of Vehicle 1. Vehicle 1 braked (without lockup) and steered left to avoid the noncontact vehicle. The driver of vehicle 1 successfully avoided the noncontact vehicle, maintained full control of vehicle 1, but consequently put vehicle 1 in the travel path of vehicle 2. Vehicle 2 attempted to avoid vehicle 1 by steering right and braking (with lockup). Vehicle 1 attempted to avoid vehicle 2 by steering right and braking (with lockup). Vehicle 1 and vehicle 2 crashed front left corner to front left corner.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Successful avoidance maneuver to a previous critical event	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle in lane
Critical Pre-Crash Event	Over the lane line on left side of travel lane	Traveling in opposite direction
Attempted Avoidance Maneuver	Braking and steering right	Braking and steering right
Pre-Impact Stability	Skidding longitudinally - rotation less than 30 degrees	Skidding longitudinally - rotation less than 30 degrees
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane

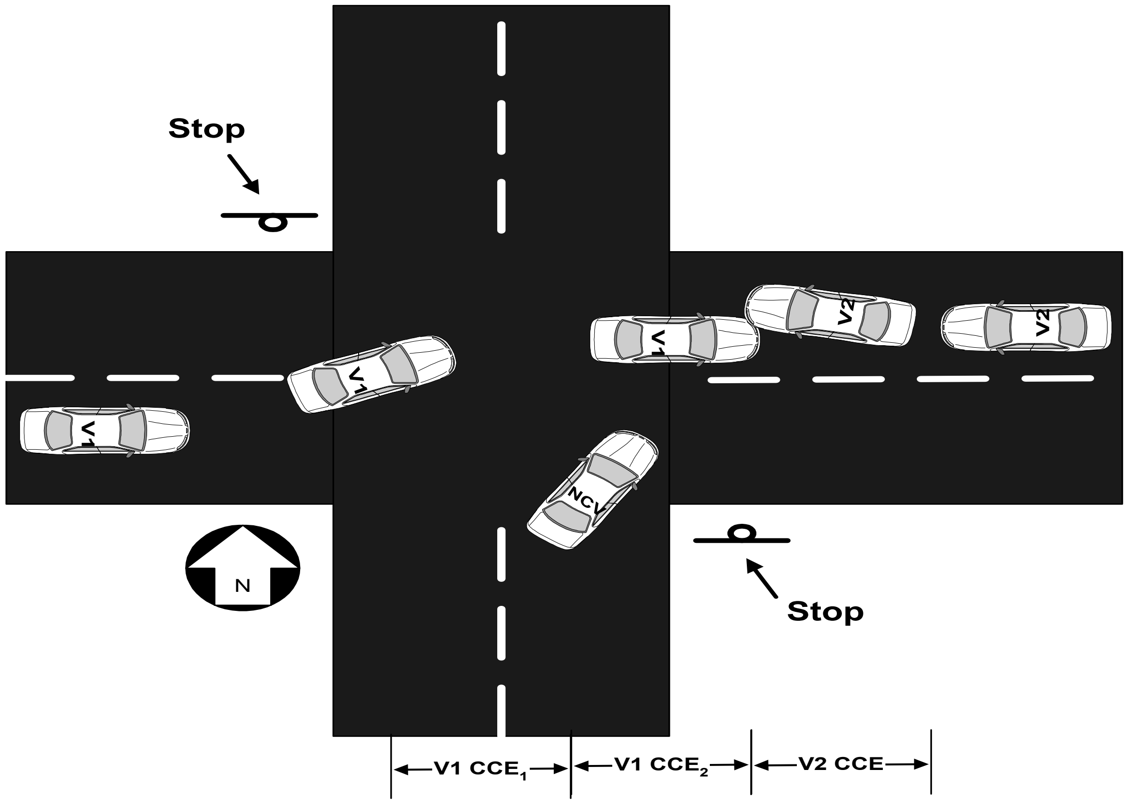
In this example, vehicle 1 has two critical crash envelopes (V_1CCE_1 and V_1CCE_2). Vehicle 1's first ***critical crash envelope*** (V_1CCE_1) ends at the point where the driver of vehicle 1 made a successful avoidance maneuver and maintained full control of the vehicle. Vehicle 1's second ***critical crash envelope*** (V_1CCE_2) begins immediately following the successful avoidance maneuver and ends at the point of impact with vehicle 2. Use the critical crash envelope which resulted in vehicle 1's first impact (V_1CCE_2).

Vehicle 2 has one ***critical crash envelope*** (V_2CCE) which begins at the point where driver 2 recognizes vehicle 1 in his/her travel lane and ends at the point of impact with vehicle 1.

The noncontact vehicle was not involved in an impact with another vehicle, person, animal, or object in the sequence of crash events and is therefore not included in the Crashworthiness Data System. However, the noncontact vehicle must be shown on the Crash Collision Diagram.

Precrash Data Overview cont'd

Example 3 (cont'd)

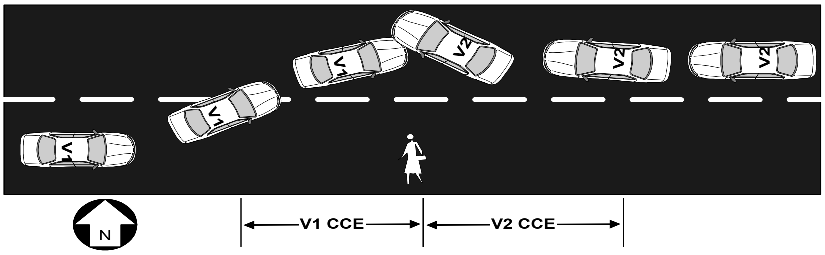

Stop
V1
V1
V1
V2
V2
NCV
N
Stop
V1 CCE$_1$
V1 CCE$_2$
V2 CCE

Example 4
Vehicle 1 and vehicle 2 are traveling in opposite directions on the same roadway. The driver of vehicle 1 brakes (without lockup) and steers left to avoid a pedestrian who darted into his/her travel lane. Vehicle 1 crosses over the center line into the travel path of vehicle 2. The driver of vehicle 2 was talking with a passenger and not paying close attention to driving and at the last second attempted to avoid vehicle 1 by braking and steering right onto the shoulder. Vehicle 2 skids and rotates clockwise about 45 degrees before it is impacted in the side by vehicle 1.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Attentive or not distracted	(Distracted) by other object, occupant or event
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	Pedestrian, Pedacyclist, or other nonmotorist	Other Motor Vehicle encroaching into lane
Critical Pre-Crash Event	Pedestrian in roadway	From opposite direction over left lane line
Attempted Avoidance Maneuver	Braking and steering left	Braking and steering right
Pre-Impact Stability	Tracking	Skidding laterally - clockwise rotation
Pre-Impact Location	Stayed on roadway but left original travel lane	Stayed in original travel lane

In this example, vehicle 1 has one critical crash envelope (V_1CCE). Vehicle 1's critical crash envelope involved a successful avoidance of a pedestrian [*i.e.*, Critical Precrash Event equals **Pedestrian in roadway**"] which resulted in an ***immediate*** impact to vehicle 2. Therefore, the pedestrian is coded as the critical precrash event for vehicle 1. Vehicle 1's avoidance maneuver is for this example, the action taken to avoid the pedestrian.

Vehicle 2 has one ***critical crash envelope*** (V_2CCE) which begins at the point where driver 2 recognized and reacted to vehicle 1 in his/her travel lane and ends at the point of impact with vehicle 1.



Example 5

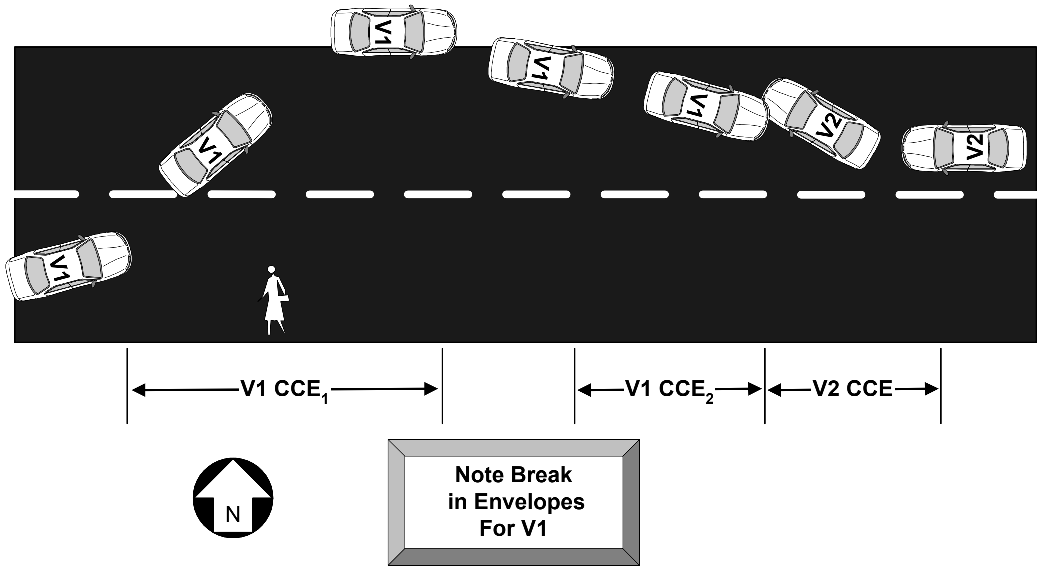
Vehicle 1 and vehicle 2 are traveling in opposite directions on the same roadway. The driver of vehicle 1 steers left to avoid a pedestrian who darted into his/her travel lane. Vehicle 1 crosses over the center line and the adjacent travel lane, departing the roadway. Then driver 1 reenters the roadway, in full control of the vehicle but traveling in the lane of opposing traffic. Vehicle 2 attempted to avoid vehicle 1 by steering right and braking (with skidding and clockwise rotation of about 45 degrees). Vehicle 1 attempted to avoid vehicle 2 by steering right without braking. Vehicle 1 impacted vehicle 2 in the side.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Successful avoidance maneuver to a previous critical event	Going straight
Critical Pre-Crash Category	This Vehicle Traveling	Other Motor Vehicle In Lane
Critical Pre-Crash Event	Over the lane line on left side of travel lane	Traveling in opposite direction
Attempted Avoidance Maneuver	Steering right	Braking and steering right
Pre-Impact Stability	Tracking	Skidding laterally - clockwise rotation
Pre-Impact Location	Stayed in original travel lane	Stayed in original travel lane

Example 5 (cont'd)

In this example, vehicle 1 has two critical crash envelopes (V_1CCE_1 and V_1CCE_2). Vehicle 1's first ***critical crash envelope*** (V_1CCE_1) begins at the point where driver 1 recognizes the pedestrian coming into his/her travel path and ends at the point where the driver of vehicle 1, having made a successful avoidance maneuver, regains full control of the vehicle. Vehicle 1's second ***critical crash envelope*** (V_1CCE_2) begins when driver 1, in full control of vehicle 1, reenters the roadway in the travel lane of opposing traffic and ends at the point of impact with vehicle 2. Use the critical crash envelope which resulted in vehicle 1's first impact (V_1CCE_2).

Vehicle 2 has one critical crash envelope (V_2CCE) which begins at the point where driver 2 recognized and reacted to vehicle 1 in his/her travel lane and ends at the point of impact with vehicle 1.



Example 6

Vehicle 1 and vehicle 2 are traveling in the same direction in adjacent lanes on a divided highway (with a painted median). While the driver of vehicle 1 was using an electric razor, the vehicle has a blow out, driver 1 loses control, crosses the left lane line and impacts the right rear of vehicle 2. Vehicle 2 is redirected across the painted median, skidding and rotating clockwise, and subsequently impacts vehicle 3. Vehicle 3 attempted to avoid vehicle 2 by steering right and accelerating.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	[Distracted] while using or reaching for device/object brought into in vehicle	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle loss control due to	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	Blow out or flat tire	From adjacent lane (same direction) - over right lane line
Attempted Avoidance Maneuver	No avoidance maneuver	No avoidance maneuver
Pre-Impact Stability	Tracking	Tracking
Pre-Impact Location	Stayed on roadway, but left original travel lane	Stayed in original travel lane

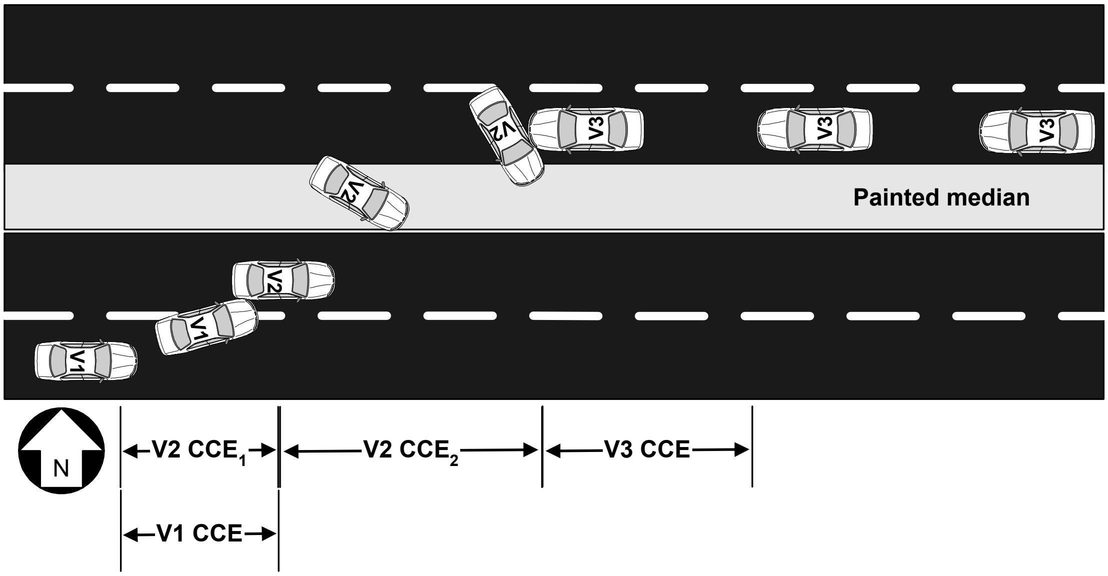
	Vehicle 3
Driver's Distraction/Inattention to Driving	Attentive or not distracted
Pre-Event Movement	Going straight
Critical Pre-Crash Category	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	From opposite direction - over left lane line
Attempted Avoidance Maneuver	Accelerating and steering right
Pre-Impact Stability	Tracking
Pre-Impact Location	Stayed in original travel lane

Example 6 (cont'd)

In this example, vehicle 1 has one ***critical crash envelope*** (V_1CCE) which begins with control loss due to the blow out and ends at the point of impact with vehicle 2. The blow out is the critical precrash event.

Vehicle 2 has two critical crash envelopes (V_2CCE_1 and V_2CCE_2). Vehicle 2's first ***critical crash envelope*** (V_2CCE_1) begins when vehicle 1 enters vehicle 2's travel lane and ends at the point of impact with vehicle 1. Vehicle 2's second ***critical crash envelope*** (V_2CCE_2) begins immediately after the first impact and ends at the point of impact with vehicle 3. Use the critical crash envelope which resulted in vehicle 2's first impact (V_2CCE_1), because the NASS CDS is only interested in coding the critical crash envelope which leads to a vehicle's first harmful event.

For this example, Vehicle 3 has one critical crash envelope (V_3CCE) which begins when driver 3 recognizes and reacts to vehicle 2 which is in an imminent path of collision with vehicle 3 and ends at the point of impact with vehicle 2.



Example 7

Vehicle 1 and vehicle 2 are traveling in opposite directions on the same roadway. A noncontact vehicle is parked in front of a noncontact truck-tractor (with a trailer) on the road shoulder and suddenly enters the roadway into vehicle 1's travel lane. The driver of vehicle 1 instantly brakes (with lockup) and steers left (with counterclockwise rotation) to avoid the noncontact vehicle. Vehicle 1 crosses over the center line and ***immediately*** impacts vehicle 2. Vehicle 2 had no avoidance maneuvers.

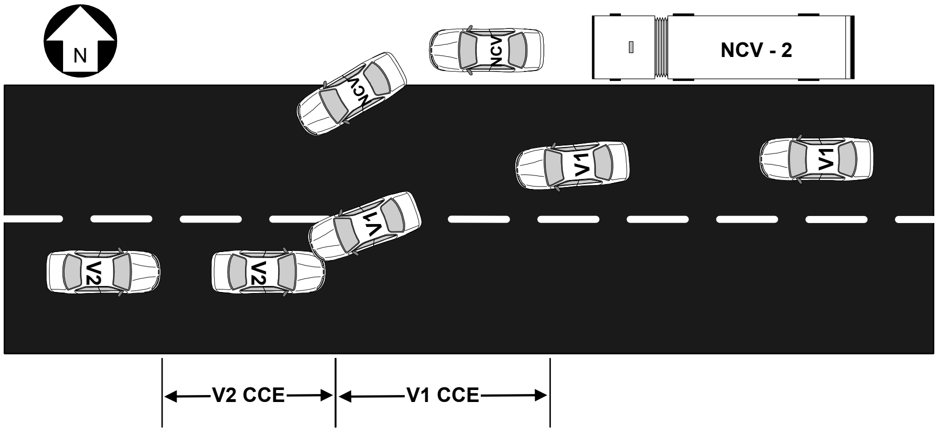
	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Attentive or not distracted	Attentive or not distracted
Pre-Event Movement	Going Straight	Going Straight
Critical Pre-Crash Category	Other motor vehicle encroaching into lane	Other motor vehicle encroaching into lane
Critical Pre-Crash Event	From parking lane	From opposite direction over left lane line
Attempted Avoidance Maneuver	Braking and steering left	No avoidance actions
Pre-Impact Stability	Skidding laterally - counterclockwise rotation	Tracking
Pre-Impact Location	Stayed on roadway but left original travel lane	Stayed in original travel lane

In this example, vehicle 1 has one critical crash envelope (V_1CCE). Vehicle 1's critical crash envelope involved a successful avoidance of a noncontact vehicle and resulted in an ***immediate*** impact to vehicle 2. Vehicle 1's critical crash envelope was initiated by the noncontact vehicle, afterwards there was no opportunity for subsequent avoidance actions. Therefore, the encroachment of the noncontact vehicle into vehicle 1's travel lane is coded as the critical precrash event for vehicle 1. Vehicle 1's avoidance maneuver is coded as the action taken to avoid the noncontact vehicle.

Example 7 (cont'd)

Vehicle 2 has one ***critical crash envelope*** (V_2CCE) which begins at the point where vehicle 1 is in an imminent path of collision with vehicle 2 and ends at the point of impact with vehicle 1.

The noncontact vehicle and the noncontact truck were not involved in an impact in the sequence of crash events and are therefore not coded in the Crashworthiness Data System. However, the noncontact vehicle and truck must be shown on the Crash Collision diagram.

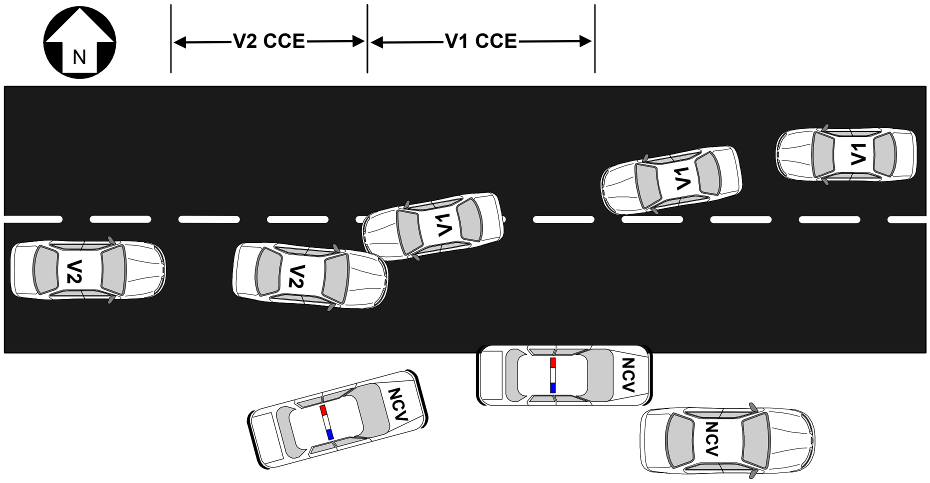


Precrash Data Overview cont'd

Example 8

Vehicle 1 and vehicle 2 are traveling in opposite directions on the same roadway. Emergency vehicles (with lights activated) are stopped next to a vehicle on the side of the road. The driver of vehicle 1 is looking at the activity going on to his left. Before he is able to react, the front of vehicle 1 contacts the front of vehicle 2. The driver of vehicle 2 also briefly noticed the emergency activity, however, he was attentive to the slowing traffic in front of him. The driver of vehicle 2 noticed vehicle 1 crossing the centerline and slammed on his brakes (with lockup) while attempting to turn to the right. The front of vehicle 1 contacted the front of vehicle 2 in vehicle 2's travel lane.

	Vehicle 1	***Vehicle 2***
Driver's Distraction/Inattention to Driving	Distracted by outside person, object, or event	Attentive or not distracted
Pre-Event Movement	Going straight	Going straight
Critical Pre-Crash Category	This vehicle traveling	Other motor vehicle in lane
Critical Pre-Crash Event	Over the lane line on left side of travel lane	Traveling in opposite direction.
Attempted Avoidance Maneuver	No avoidance maneuver	Braking and steering right
Pre-Impact Stability	Tracking	Skidding longitudinally rotation less than 30 degrees
Pre-Impact Location	Stayed on roadway but left original travel lane	Stayed in original travel lane



PRE-EVENT MOVEMENT (PRIOR TO RECOGNITION OF CRITICAL EVENT)

Screen Name: Pre-Event Movement (Prior to Recognition of Critical Event)

SAS Data Set: **GV**
SAS Variable: **PREMOVE**

Element Attributes:

0	[No Driver Present]
1	Going straight
2	Decelerating in traffic lane
3	Accelerating in traffic lane
4	Starting in traffic lane
5	Stopped in traffic lane
6	Passing or overtaking another vehicle
7	Disabled or parked in travel lane
8	Leaving a parking position
9	Entering a parking position
10	Turning right
11	Turning left
12	Making a U-turn
13	Backing up (other than for parking position)
14	Negotiating a curve
15	Changing lanes
16	Merging
17	Successful avoidance maneuver to a previous critical event
98	Other (specify):
99	Unknown

Source: Researcher determined — inputs include scene, interviews and police report.

Remarks:

Record the attribute which best describes this vehicle's activity prior to the driver's realization of an impending critical event or just prior to impact if the driver took no action or had no time to attempt any evasive maneuvers.

Actions taken by the driver, of this vehicle, ***after realization*** of an impending danger are captured in Attempted Avoidance Maneuver.

[No Driver Present]
is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver Present”.

Going straight
is selected when this vehicle's path of travel was straight ahead without any attempted or intended changes.

Decelerating in traffic lane
is selected when this vehicle was traveling straight ahead within the traffic lane and was decelerating.

Accelerating in traffic lane
is selected when this vehicle was traveling straight ahead within the traffic lane and was accelerating.

Starting in traffic lane
is selected when this vehicle was in the process of starting forward from a stopped position within the traffic lane (*e.g.*, start up from traffic signal).

Stopped in traffic lane
is selected when this vehicle was stopped momentarily, with the motor running within the traffic lane (*e.g.*, stopped for traffic signal).

Passing or overtaking another vehicle
is selected when this vehicle was traveling straight ahead and was in the process of passing or overtaking another vehicle on the left or right.

Disabled or parked in travel lane
is selected when this vehicle was parked in a travel lane (*e.g.*, double parked, disabled) with a driver present in the vehicle.

Leaving a parking position
is selected when this vehicle was entering the travel lane from a parking area adjacent to the traffic lanes.

Entering a parking position
is selected when this vehicle was leaving the travel lane to a parking area adjacent to the traffic lanes (*i.e.*, in the process of parking).

Turning right
is selected when this vehicle was moving forward and turned right, changing lanes from one roadway to a different roadway (*e.g.*, from or to a driveway, parking lot, or intersection).

Turning left
is selected when this vehicle was moving forward and turned left, changing lanes from one roadway to a different roadway (*e.g.*, from or to a driveway, parking lot, or intersection).

Making a U-turn
is selected when this vehicle was making a U-turn on the trafficway.

Backing up (other than for parking position)
is selected when this vehicle was traveling backwards within the trafficway. Do not use this attribute if the vehicle was backing into a parking space (See **Entering parking position**)

Negotiating a curve

is selected when this vehicle was continuing along a roadway that curved to the right or left.

Changing lanes

is selected when this vehicle was traveling straight ahead and changed travel lanes to the right or left while on the same roadway.

Merging

is selected when this vehicle was moving forward and merging from the left or right into a traffic lane (*e.g.*, roadway narrows, exit/entrance ramps).

Successful avoidance maneuver to a previous critical event

is selected when this vehicle responded to a previous critical event and successfully avoided an impact. However, this maneuver precipitated a subsequent critical crash envelope, which resulted in this vehicle's first impact.

Other (specify)

is selected when this vehicle's pre-event movement is known but none of the specified attributes are applicable. The movement must be specified in the "specify box"

Unknown

is selected when the vehicle's movement prior to the driver's realization of an impending critical event is unknown.

CRITICAL PRE CRASH CATEGORY

Screen Name: Critical Pre Crash Category

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
This Vehicle Loss of Control
This Vehicle Traveling
Other Motor Vehicle In Lane
Other Motor Vehicle Encroaching Into Lane
Pedestrian or Pedalcyclist, or Other Nonmotorist
Object or Animal
Other (Specify)
Unknown

Source: Researcher determined — inputs include scene inspection, vehicle inspection, driver interview, and police report.

Remarks:

When more than one condition applies and it cannot be determined which one had a greater effect, choose the higher listed element (i.e., **This Vehicle Loss of Control** takes precedence over **This Vehicle Traveling).**

This Vehicle Loss of Control
These identify situations where the critical factor leading to the collision involved control loss of this vehicle. Control loss can be related to either mechanical failure or environmentally induced vehicle instability.

This Vehicle Traveling
These identify situations where the critical factor leading to the collision involvs the travel path of this vehicle.

Other Motor Vehicle In Lane
These identify situations where the critical factor leading to the collision involved the travel of the other vehicle in the same lane as this vehicle.

Other Motor Vehicle Encroaching Into Lane
These identify situations where the critical factor leading to the collision involves the other vehicle's movement into or across this vehicle's travel lane from another lane, intersection, driveway, or ramp.

Pedestrian or Pedalcyclist, or Other Nonmotorist
These identify situations where the critical factor leading to the collision for this vehicle involved a pedestrian, pedalcyclist, or other nonmotorist. A pedalcyclist is defined as a person riding a pedal power conveyance (*e.g.*, bicycle, tricycle, etc.). A nonmotorist is defined as a person riding on or in a conveyance which is not motorized or propelled by pedaling (*e.g.*, baby carriage, skate board, roller blades, etc.).

Critical Pre Crash Category cont'd

Page 2 of 2

Object or Animal
These identify situations where the critical factor leading to the collision for this vehicle involved an object or animal.

Other (Specify)
is selected when a critical factor not previously listed resulted in the collision for this vehicle. Previous impacts in the crash are not considered as other critical precrash events. For example, use this attribute if the critical event developed from this vehicle's departure from a driveway.

Unknown
is selected when the critical precrash event which resulted in the collision is not known. Missing interviews do not automatically result in the use of the "Unknown" attribute.

CRITICAL PRE-CRASH EVENT

Screen Name: Critical Pre-Crash Event

SAS Data Set: **GV**
SAS Variable: **PREEVENT**

Element Attributes:

This Vehicle Loss of Control Due To:

1 Blow out or flat tire
2 Stalled engine
3 Disabling vehicle failure (*e.g.*, wheel fell off) (specify):
4 Non-disabling vehicle problem (*e.g.*, hood flew up) (specify)
5 Poor road conditions (puddle, pot hole, ice, etc.) (specify)
6 Traveling too fast for conditions
8 Other cause of control loss (specify)
9 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
18 This vehicle decelerating
19 Unknown travel direction

Other Motor Vehicle In Lane

50 Other vehicle stopped
51 Traveling in same direction with lower steady speed
52 Traveling in same direction while decelerating
53 Traveling in same direction with higher speed
54 Traveling in opposite direction
55 In crossover
56 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

Other MV Encroaching Into Lane cont'd

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

Other (specify)

98 Other critical precrash event (specify):
99 Unknown

Critical Pre-Crash Event cont'd

Source: Researcher determined — inputs include scene inspection, vehicle inspection, driver interview, and police report.

Remarks:

The selection of the **Critical Precrash Category** will determine what **Critical Precrash Events** are available to select.

When more than one condition applies and it cannot be determined which one had a greater effect, choose the higher listed element.

This variable identifies the critical event which made the crash imminent (*i.e.*, something occurred which made the collision possible). Responsive actions to this situation, if any, are coded under **Attempted Avoidance Maneuver**.

A precrash event is coded for each vehicle and identifies the circumstances leading to this vehicle's first impact in the crash.

Do not refer to culpability. Many crash scenarios will suggest fault, but this should be coincidental rather than by design. As an example, vehicle 1 was speeding when vehicle 2 crossed vehicle 1's path from a driveway. The situation which made the precrash event critical for vehicle 1 (since it did not lose control) was vehicle 2's movement across vehicle 1's path **and not** vehicle 1's speed.

This Vehicle Loss Of Control

Blow out or flat tire
is used when a vehicle in motion loses control as the result of a tire "air out".

Stalled engine
refers to a vehicle which is in motion and loses engine power. A stalled engine situation must precipitate a collision to be coded in this variable. A vehicle which is stopped as the result of an engine malfunction does not take this attribute.

Disabling vehicle failure (*e.g.*, wheel fell off)
is selected when a mechanical malfunction, such as a component of the vehicle suspension or steering system, leads to the critical reason for the collision. Specify which component failure was involved in the space provided under this element.

Non-disabling vehicle problem (*e.g.*, hood flew up)
is selected when some mechanical abnormality occurred to this vehicle which leads to the critical reason for the collision. The abnormality must not be disabling damage. A space is provided under this element to specify the non-disabling vehicle problem.

Poor road conditions (puddle, pot hole, ice, etc.)
captures control loss due to environmental conditions of the roadway. These conditions must have initiated the precrash event which resulted in the collision. A space is provided under this element to specify the road condition attributed to initiating the precrash event.

Traveling too fast for conditions
identifies this vehicle's movement relative to its surroundings in which the subsequent loss of control lead to the collision. An example is a roadway departure on a curve where the driver failed to negotiate and departed the roadway resulting in an impact. If the driver merely steered straight while in a curve and departed the roadway, then the category **This Vehicle Traveling** may apply.

Other cause of control loss, specify
is selected when it was determined that this vehicle's loss of control was the primary reason which made the event critical and the above attributes do not adequately identify the control loss condition. The condition cited should be annotated in the space provided.

Unknown cause of control loss
is selected when it is known control loss made the situation critical, but it is not known whether the vehicle or the environment caused the control loss.

This Vehicle Traveling
The attributes identify situations where the critical factor leading to the collision involving the travel path of this vehicle.

Over the lane line on left side of travel lane
is selected when this vehicle departs its lane to the left and is entering or had entered the adjoining lane or shoulder. The change of travel path by this vehicle must precipitate the critical event for the collision. As an example, this vehicle attempts to pass another vehicle on the other vehicle's left and is struck by a vehicle traveling within its travel lane in the opposite direction.

However, by modifying the scenario slightly, the lane change may not always be the factor leading to the precrash event. Consider the same situation where this vehicle is passing to the left of the lead vehicle. If an animal runs into the roadway and is struck by this vehicle, then the correct choice would be **Animal in roadway**.

Over the lane line on right side of travel lane
is selected when this vehicle departs its lane to the right and is entering or had entered the adjoining lane or shoulder. To use this attribute, change of travel path by this vehicle must precipitate the critical event for the collision. As an example, this vehicle attempts to pass another vehicle on the other vehicle's right and is struck in the rear by a vehicle traveling within its travel lane in the same direction. The correct choice for this vehicle would be Over the lane line on right side of travel lane.

However, by modifying the scenario slightly the lane change may not always be the factor leading to the precrash event. Consider the same situation where this vehicle is passing to the right of the lead vehicle. If an animal runs into the roadway and is struck by this vehicle, then the correct choice would be **Animal in roadway**.

Off the edge of the road on the left side
identifies a situation where the initial precrash event occurred beyond the left side shoulder area. This also includes departure into a median.

Off the edge of the road on the right side
identifies a situation where the initial precrash event occurred beyond the right side shoulder area.

End departure
is selected when the vehicle departs the end of the roadway (*e.g.*, "T" intersection).

Turning left at intersection
is selected when this vehicle attempts a left turn from its roadway to another roadway or driveway.

Turning right at intersection
is selected when this vehicle attempts a right turn from its roadway to another roadway or driveway.

Crossing over (passing through) intersection
identifies this vehicle's travel as proceeding through the intersection without any planned turning.

This vehicle decelerating
is selected when the vehicle is decelerating, or has just stopped and was immediately struck.

Unknown travel direction
is selected for those occasions where this vehicle's travel made the situation critical, but it is unknown which travel direction this vehicle was moving.

Other Motor Vehicle In Lane
These attributes identify situations where the critical factor leading to the collision involved the travel of the other vehicle in the same lane as this vehicle.

Other vehicle stopped
identifies a situation where the other vehicle is not in motion (*i.e.*, stopped, parked, disabled) and in this vehicle's travel lane. This attribute should not be used if the other vehicle just stopped and was immediately struck.

Traveling in same direction with lower steady speed
is selected when the other vehicle was the lead vehicle in the same travel lane, traveling in the same direction, and was traveling slower than this vehicle

Traveling in same direction while decelerating
is selected when the other vehicle was the lead vehicle in the same travel lane, traveling in the same direction, and was decelerating.

Traveling in same direction with higher speed
is selected when the speed of the other vehicle was higher than this vehicle or accelerating. The other vehicle must be overtaking this vehicle.

Traveling in opposite direction
is selected when the other vehicle was in this vehicle's travel lane and traveling head-on in the opposite direction of this vehicle.

In crossover
is selected when the other vehicle enters a crossover already occupied by this vehicle. A crossover is defined as a designated opening within a median used primarily for "U-turns".

Backing
identifies a situation where the other vehicle was in the process of backing up while in this vehicle's travel lane.

Unknown travel direction of other motor vehicle in lane
is selected for situations where the other vehicle's activity (while in the same lane as this vehicle) precipitated the precrash event, but the travel direction and/or speed could not be determined.

Other Motor Vehicle Encroaching Into Lane
These attributes identify situations where the critical factor leading to the collision involves the other vehicle's movement into or across this vehicle's travel lane from another lane, intersection, driveway, or ramp.

From adjacent lane (same direction)—over left lane line
is selected when the other vehicle was traveling in the same direction as this vehicle and crosses the left lane line with respect to this vehicle's travel lane (*i.e.*, other vehicle crosses its right lane line).

From adjacent lane (same direction) — over right lane line
is selected when the other vehicle was traveling in the same direction as this vehicle and crosses the right lane line with respect to this vehicle's travel lane (*i.e.*, other vehicle crosses its left lane line).

Critical Pre-Crash Event cont'd

From opposite direction — over left lane line
identifies a situation where the other vehicle crosses the left lane line while traveling in the opposite direction from this vehicle.

From opposite direction — over right lane line
identifies a situation where the other vehicle crosses the right lane line while traveling in the opposite direction from this vehicle.

From parking lane
is selected when the other vehicle was departing a parking lane and entering the travel lane of this vehicle.

From crossing street, turning into same direction
is selected when the other vehicle was turning from another roadway onto this vehicle's roadway and attempted to travel in the same direction as this vehicle. Use this attribute for entrance ramps leading onto limited access highways.

From crossing street, across path
is selected when the other vehicle was continuing straight through the intersection and attempted to cross over this vehicle's roadway.

From crossing street, turning into opposite direction
is selected when the other vehicle was entering an intersection from another roadway and was turning or attempting to turn onto this vehicle's roadway in the opposite travel direction of this vehicle.

From crossing street, intended path not known
is selected when the other vehicle's entrance into the intersection was the critical factor which led to the collision, however, the other vehicle's travel direction could not be determined.

From driveway, turning into same direction
is selected when the other vehicle was turning from a driveway onto this vehicle's roadway and attempted to travel in the same direction as this vehicle.

From driveway, across path
is selected when the other vehicle was entering this vehicle's roadway from a driveway and was continuing straight across to another driveway or roadway.

From driveway, turning into opposite direction
is selected when the other vehicle was entering this vehicle's roadway from a driveway and was attempting to turn into the opposite travel direction of this vehicle.

From driveway, intended path not known
is used to identify driveway-related precrash events where details surrounding the other vehicle's intended path are not known.

From entrance to limited access highway
is selected for entrance ramp situations where the other vehicle was attempting to enter (merge) onto the limited access highway which was being traveled by this vehicle.

Encroachment by other vehicle — details unknown
is selected for situations where the other vehicle initiated the critical precrash event, but circumstances surrounding the other vehicle's encroachment are not known.

Pedestrian or Pedalcyclist, or Other Nonmotorist

These attributes identify situations where the critical factor leading to the collision for this vehicle involved a pedestrian, pedalcyclist, or other nonmotorist. A pedalcyclist is defined as a person riding a pedal power conveyance (*e.g.*, bicycle, tricycle, etc.). A nonmotorist is defined as a person riding on or in a conveyance which is not motorized or propelled by pedaling (*e.g.*, baby carriage, skate board, roller blades, etc.).

Pedestrian in roadway
is selected when a pedestrian was present (*e.g.*, sitting, standing, walking, or running, etc.) in the roadway.

Pedestrian approaching roadway
identifies situations where a pedestrian was within the trafficway and moving toward the roadway or attempting to enter the roadway, but was not on the roadway.

Pedestrian — unknown location
is selected when it was determined the presence or action of a pedestrian was the critical factor which lead to this vehicle's collision, but the location or action of the pedestrian was not known.

Pedalcyclist or other nonmotorist in roadway
is selected when a pedalcyclist or other nonmotorist was present in the roadway (irrespective of relative motion).

Pedalcyclist or other nonmotorist approaching roadway
identifies situations where the pedalcyclist or other nonmotorist was within the trafficway and moving toward the roadway or attempting to enter the roadway, but was not on the roadway.

Pedalcyclist or other nonmotorist — unknown location
is selected when it was determined the presence or action of a pedalcyclist or other nonmotorist was the critical factor which led to this vehicle's collision, but the action of the pedalcyclist or other nonmotorist was not known.

Object or Animal
These attributes identify situations where the critical factor leading to the collision for this vehicle involved an object or animal.

Animal in roadway
is selected when an animal was present (*i.e.*, stationary or moving) in the roadway.

Animal approaching roadway
identifies situations where an animal was within the trafficway and moving toward the roadway or attempting to enter the roadway, but not on the roadway.

Animal - unknown location
is selected when it was determined the presence or action of an animal was the critical factor which led to this vehicle's collision, but the action of the animal was not known.

Object in roadway
is used when an object was present in the roadway. An object is defined as being either fixed or nonfixed **(only non-fixed objects are captured in this attribute).**

Object approaching roadway
identifies situations where an object was within the trafficway and moving toward the roadway, but not on the roadway.

Object — unknown location
is selected when it was determined the presence or movement of an object was the critical factor which led to this vehicle's collision, but details surrounding the location of the object were not known.

Other (specify)
These attributes identify situations where the critical factor leading to the collision for this vehicle was not previously listed.

Other (specify)
is selected when a critical factor not previously listed resulted in the collision for this vehicle. Previous impacts in the crash **are not** considered as "other critical precrash events". For example, use this code if the critical event developed from this vehicle's departure from a driveway.

Unknown
is selected when the critical precrash event which resulted in the collision is not known. Missing interviews **do not** automatically result in the use of this "Unknown" code.

Critical Pre-Crash Event cont'd

Precrash Event Scenerios for Different Rear-End Collision Situations

Two Vehicle Collisions

			Trail Vehicle	Lead Vehicle
1)	Both vehicles in motion. Leading vehicle, traveling at steady speed, is struck from behind by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Traveling in same direction with lower steady speed	Traveling in same direction with higher speed
2)	Both vehicles traveling at same speed. Lead vehicle decelerates and trailing vehicle continues at initial speed. Trailing vehicle eventually applies brakes before striking the lead vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Precrash Category	Other Motor Vehicle In Lane	This Vehicle Traveling
		Critical Precrash Event	Traveling in same direction while decelerating	This vehicle decelerating
3)	Both vehicles traveling at same speed. Lead vehicle stops and is immediately struck by trailing vehicle.	Pre-Event Movement	Going straight	Going straight
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed
4)	Lead vehicle is stopped on roadway and is struck by a trailing vehicle.	Pre-Event Movement	Going straight	Stopped in traffic
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Other vehicle stopped	Traveling in same direction with higher speed
5)	Lead and trailing vehicle stopped on roadway. Lead vehicle backs into trailing vehicle.	Pre-Event Movement	Stopped in traffic lane	Stopped in traffic lane
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Backing	Other vehicle stopped

Coding Critical Precrash Event Scenerios for Different Rear-End Collision Situations cont'd

Three Vehicle Collisions

			Trail Vehicle	**Middle Vehicle**	**Lead Vehicle**
6)	Two vehicles stopped in traffic, struck by decelerating trailing vehicle	Pre-Event Movement	Decelerating	Stopped in traffic	Stopped in traffic
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Other vehicle stopped	Traveling in same direction while decelerating	Traveling in same direction with higher speed
7)	Lead vehicle stopped in traffic, middle vehicle decelerating, trailing vehicle strikes middle vehicle which strikes lead vehicle.	Pre-Event Movement	Going straight	Decelerating	Stopped in traffic
		Critical Precrash Category	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane	Other Motor Vehicle In Lane
		Critical Precrash Event	Traveling in same direction while decelerating	Traveling in same direction with higher speed	Traveling in same direction with higher speed

ATTEMPTED AVOIDANCE MANEUVER

Screen Name: Attempted Avoidance Maneuver

SAS Data Set: **GV**
SAS Variable: **MANEUVER**

Element Attributes:

0	[No driver present]
1	No avoidance maneuver
2	Braking (no lockup)
3	Braking (lockup)
4	Braking (lockup unknown)
5	Releasing brakes
6	Steering left
7	Steering right
8	Braking and steering left
9	Braking and steering right
10	Accelerating
11	Accelerating and steering left
12	Accelerating and steering right
98	Other action (specify)
99	Unknown

Source: Researcher determined — inputs include the driver interview, police report, and the scene inspection.

Remarks:

Attempted avoidance maneuvers are movements/actions taken by the driver, within a *critical crash envelope*, in response to a Critical Precrash Event,. See **Precrash Data Overview** for an expanded discussion on precrash definitions. Attempted avoidance maneuvers occur *after* the driver has *realization* of an impending danger. This variable assesses what the driver's action(s) were in response to his/her realization.

Most crashes have only one critical crash envelope and thus only one Critical Precrash Event; however, multiple critical crash envelopes with their respective Critical Precrash Events, can exist.

This variable may be used independently: (1) of any maneuvers associated with this driver's Crash Type, and (2) this vehicle's first associated crash event.

Select the element value which best describes the actions taken by the driver in response to the Critical Precrash Event, within the *critical crash envelope* that occurred just prior to this vehicle's impact. When there was a known action (*e.g.*, braking), but you cannot determine whether there was more than one action (*e.g.*, braking and steering left), default to the known action (*e.g.*, braking).

[No Driver Present]
is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver Present”.

Attempted Avoidance Maneuver cont'd

Page 2 of 2

No avoidance maneuver

is selected whenever the driver did not attempt any evasive (pre-impact) maneuvers.

Braking (no lockup)

is selected when there is no indication that the brakes locked up. This attribute can be used with vehicles equipped with anti-lock braking systems (ABS), that perform as designed.

Braking (lockup)

is selected when there is indication that the brakes locked up. This code is generally not a valid choice for vehicles with anti-lock braking systems (ABS), unless definite evidence of lockup exists.

PRE-IMPACT STABILITY

Screen Name: Pre-Impact Stability

SAS Data Set: **GV**
SAS Variable: **PREISTAB**

Element Attributes:

0	[No driver present]
1	Tracking
2	Skidding longitudinally — rotation less than 30 degrees
3	Skidding laterally — clockwise rotation
4	Skidding laterally — counterclockwise rotation
8	Other vehicle loss-of-control (specify)
9	Precrash stability unknown

Source: Researcher determined — inputs include vehicle and scene evidence, interviews and police report.

Remarks:

The purpose of this variable is to assess the stability of the vehicle **after** the critical event, but before the impact. The stability of the vehicle prior to an avoidance action is not considered except in the following situation:

A vehicle that is out of control (*e.g.*, yawing clockwise) prior to an avoidance maneuver is indicated as **Other vehicle loss-of-control** only if an avoidance action was taken in response to an impending danger.

Thus, this variable focuses upon this vehicle's dynamics after the critical event.

[No Driver Present]
is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver Present”.

Tracking
is used when there is no brake lockup and the vehicle continued along its intended path without rotation. Stopped, slowing, turning, or accelerating to avoid a rear-end collision are examples.

Skidding longitudinally — rotation less than 30 degrees
is selected when there is brake lockup or whenever tire marks are apparent without brake lockup (braking or non-braking) and rotation is less than 30 degrees clockwise or counterclockwise. If there is no information to support rotation greater than or equal to 30 degrees, then use this attribute.

Skidding laterally — clockwise rotation
is selected when the vehicle rotates clockwise, relative to the driver's seating position. The vehicle must rotate 30 degrees or more. This attribute also applies when the driver attempts a steering input (*i.e.*, steers right), but the vehicle rotates clockwise.

Pre-Impact Stability cont'd

Skidding laterally — counterclockwise rotation
is selected when the vehicle rotates counterclockwise, relative to the driver's seating position. The vehicle must rotate 30 degrees or more. This attribute also applies when the driver attempts a steering input (*i.e.*, swerves left), but the vehicle rotates counterclockwise.

Other vehicle loss-of-control
is selected when a driver loses control of a vehicle prior to the critical event.

Precrash stability unknown
is selected when the stability of the vehicle, after the Critical Event, cannot be determined.

PRE-IMPACT LOCATION

Screen Name: Pre-Impact Location

SAS Data Set: **GV**
SAS Variable: **PREILOC**

Element Attributes:

0	[No driver present]
1	Stayed in original travel lane
2	Stayed on roadway but left original travel lane
3	Stayed on roadway, not known if left original travel lane
4	Departed roadway
5	Remained off roadway
6	Returned to roadway
7	Entered roadway
9	Unknown

Source: Researcher determined — inputs include vehicle and scene evidence, interviews and police report.

Remarks:

The purpose of this variable is to assess the location of the vehicle **after** the critical event, but before the impact. Select the attribute which best describes the location of the vehicle (i.e., perimeter of the vehicle from the case diagram).

[No Driver Present]
is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver Present”.

Stayed in original travel lane
is selected when the perimeter of the vehicle remained within the boundaries of its initial travel lane.

Stayed on roadway but left original travel lane
is selected when the "majority" of the perimeter of the vehicle departed its initial travel lane; however, the "majority" of the vehicle remained within the boundaries of the roadway (travel lanes).

Stayed on roadway, not known if left original travel lane
is selected when it cannot be ascertained whether the "majority" of the vehicle remained within its initial travel lane. To use this attribute, the "majority" of the vehicle must have remained within the boundaries of the roadway.

Departed roadway
is selected when the "majority" of the vehicle departed the roadway as a result of a precrash motion. The roadway departure must not be related to the post-impact trajectory of a crash within the roadway.

Pre-Impact Location cont'd

Remained off roadway
the precrash motion occurred outside the boundaries of the roadway. This includes traveling on the shoulders, within the median, on the roadside, or off the trafficway.

Returned to roadway
is selected when the "majority" of the vehicle was on the roadway, went off the roadway and then returned to the roadway during precrash motion.

Entered roadway
is selected when the vehicle was not previously on the roadway and then the majority of the vehicle enters the roadway during precrash motion.

Unknown
the precrash motion of the vehicle cannot be determined.

CRASH TYPE

Screen Name: Crash Type

SAS Data Set: **GV**
SAS Variable: **ACCTYPE**

Element Attributes:

As assigned by the selection on the next screens
00 - 93
98
99

SEE FOLLOWING VARIABLES FOR CODES

Source: Researcher determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks:

The Crash Type is a numeric value assigned by selecting the **Crash Category** and the **Crash Configuration** on the next screens/pages. The number can be directly entered or edited here, however, the two-step process of selecting the Crash Category And Crash Conguration is preferred to visualize the crash scenario.

The first harmful event may include a collision between a vehicle and some object, accompanied by property damage or human injury. The object may be another vehicle, a person, an animal, a fixed object, the road surface, or the ground. If the first collision is a rollover, the impact is with the ground or road surface. The collision may also involve plowing into soft ground, if severe vehicle deceleration results in damage or injury. A road departure without damage or injury is not defined as a harmful event.

To access the category choices double click on the white box next to Crash Type and the following window opens:

CRASH CATEGORY

Page 1 of 2

Screen Name: Crash Category

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Single Driver
Same Trafficway, Same Direction
Same Trafficway, Opposite Direction
Changing Trafficway, Vehicle Turning
Intersecting Paths (Vehicle Damage)
Miscellaneous

Remarks:

Variables CrashType (Category) and Crash Type (Configuration); are used for categorizing the collisions of drivers involved in crashes. A collision is defined here as the first harmful event in a crash between a vehicle and some object, accompanied by property damage or human injury. The object may be another vehicle, a person, an animal, a fixed object, the road surface, or the ground. The first harmful event may also involve plowing into soft ground, if severe vehicle deceleration results in damage or injury. A road departure without damage or injury is not defined as a collision.

To determine the proper crash type, refer to the three step decision process outlined below:

Step 1 - Determine the appropriate Crash Category.
Step 2 - Determine the appropriate Crash Configuration.
Step 3 - Determine the specific Crash Type from the graphic icons .

The attributes for this variable are the categories. The configuration and specific crash type attributes are further discussed under variables Crash Configuration, and Crash Type.

The definitions of each of the six categories are as follows:

Single Driver
The first harmful event involves a collision between an in-transport vehicle and an object, or an off roadway rollover. A harmful event involving two in-transport vehicles is excluded from this category. Note, the impact location on the vehicle is not a consideration for crash types in this category.

Same Trafficway, Same Direction
The first harmful event occurred while both vehicles were traveling in the same direction on the same trafficway.

Same Trafficway, Opposite Direction
The first harmful event occurred while both vehicles were traveling in opposite directions on the same trafficway.

Crash Category cont'd

Page 2 of 2

Change Trafficway, Vehicle Turning
The first harmful event occurred when the vehicle is either turning or merging while attempting to change from one trafficway to another trafficway. Trafficway for this variable is loosely defined to include driveways, alleys and parking lots when a vehicle is either entering or exiting a trafficway.

Intersecting Paths (Vehicle Damage)
The first harmful event involves situations where vehicle trajectories intersect. It is important to note the location of damage to each vehicle for crash typing. The location of damage to each vehicle is important to determine the correct crash type.

Miscellaneous
The first harmful event involves a crash type which cannot be described in the Categories above and thus is included in this category. Select this category, if there is insufficient information to choose between categories. Included are vehicles that are backing, third or subsequent vehicles involved in the crash, U-turns, etc.

Each category is subdivided into crash configuration(s). The configurations are described under **Crash Configuration**.

CRASH CONFIGURATION

Screen Name: Crash Configuration

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Single Driver
- Right Roadside Departure
- Left Roadside Departure
- Forward Impact

Same Trafficway, Same Direction
- Rear-End
- Forward Impact
- Sideswipe/Angle

Same Trafficway, Opposite Direction
- Head-On
- Forward Impact
- Sideswipe/Angle

Change Trafficway Vehicle Turning
- Turn Across Path
- Turn Into Path

Intersecting Paths (Vehicle Damage)
- Straight Paths

Miscellaneous
- Backing, Etc.

Source: Researcher determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks:

Each category is further defined by a Crash Configuration. The Configurations are discussed below.

Single Driver

Right Roadside Departure; Left Roadside Departure - The vehicle departed either the right or left side of road with the first harmful event occurring off the road. Right versus left is based on the side of the road departed immediately prior to the first harmful event.

Forward Impact - The vehicle struck an object on the road or off the end of a trafficway while moving forward.

Crash Configuration cont'd

Page 2 of 2

Same Trafficway, Same Direction

Rear-End — The front of the overtaking vehicle impacted the rear of the other vehicle. **Note**, even if the rear-impacted vehicle had started to make a turn, code here (not in **Change Trafficway Vehicle Turning**).

Forward Impact -— The front of the overtaking vehicle impacted the rear of the other vehicle, following a steering maneuver around a noninvolved vehicle or object.

Sideswipe/Angle — The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles. **Note**, CDC guidelines for sideswipes are not considered when assessing this configuration.

Same Trafficway, Opposite Direction

Head-On — The frontal area of one vehicle impacted the frontal area of another.

Forward Impact — The frontal area of one vehicle impacted the frontal area of another following a steering maneuver around a noninvolved vehicle or an object.

Sideswipe/Angle — The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles.

Changing Trafficway, Vehicle Turning

Turn Across Path — The two vehicles were initially on the same trafficway when one vehicle tried to turn onto another trafficway and pulled ***in front of*** the other vehicle. Vehicles making a "U" turn are identified in **Miscellaneous**.

Turn Into Path — The two vehicles were initially on different trafficways when one attempted to turn into the same trafficway as the other vehicle. **Note**, the focus of this configuration is on the turning maneuver from one trafficway to another and not on the vehicles' plane of contact.

Intersecting Paths (Vehicle Damage)

Straight Paths — The two vehicles were proceeding (or attempting to proceed) straight ahead.

Miscellaneous

Backing, Etc. — One of the two vehicles involved was a backing vehicle, regardless of its location on the trafficway or the damage location on the vehicles. Any crash configuration which cannot be described in the categories above is included here (e.g., U-turns, third or subsequent vehicles involved in the crash, etc.).

CRASH TYPES

Screen Name: Crash Types

SAS Data Set: **GV**
SAS Variable: **ACCTYPE**

Element Values:

Crash Category: Single Driver

Crash Configuration Right Roadside Departure:

01	Drive Off Road
02	Control/Traction Loss
03	Avoid Collision with Vehicle, Pedestrian, Animal
04	Specifics Other
05	Specifics Unknown

Crash Configuration Left Roadside Departure

06	Drive Off Road
07	Control/Traction Loss
08	Avoid Collision With Vehicle, Pedestrian, Animal
09	Specifics Other
10	Specifics Unknown

Crash Configuration Forward Impact

11	Parked Vehicle
12	Stationary Object
13	Pedestrian/Animal
14	End Departure
15	Specifics Other
16	Specifics Unknown

Crash Category: Same Trafficway, Same Direction

Crash Configuration Rear-End

20	Stopped
21	Stopped, Straight
22	Stopped, Left
23	Stopped, Right
24	Slower
25	Slower, Going Straight
26	Slower, Going Left
27	Slower, Going Right
28	Decelerating (Slowing)
29	Decelerating (Slowing), Going Straight
30	Decelerating (Slowing), Going Left
31	Decelerating (Slowing), Going Right
32	Specifics Other
33	Specifics Unknown

Crash Types cont'd

Crash Configuration: Forward Impact

34 This Vehicle's Frontal Area Impacts Another Vehicle
35 This Vehicle Is Impacted by Frontal Area of Another Vehicle
36 This Vehicle's Frontal Area Impacts Another Vehicle
37 This Vehicle Is Impacted by Frontal Area of Another Vehicle
38 This Vehicle's Frontal Area Impacts Another Vehicle
39 This Vehicle Is Impacted by Frontal Area of Another Vehicle
40 This Vehicle's Frontal Area Impacts Another Vehicle
41 This Vehicle Is Impacted by Frontal Area of Another Vehicle
42 Specifics Other
43 Specifics Unknown

Crash Configuration: Sideswipe/Angle

44 Straight Ahead on Left
45 Straight Ahead on Left/Right
46 Changing Lanes to the Right
47 Changing Lanes to the Left
48 Specifics Other
49 Specifics Unknown

Crash Category: Same Trafficway Opposite Direction

Crash Configuration: Head-On

50 Lateral Move (Left/Right)
51 Lateral Move (Going Straight)
52 Specifics Other
53 Specifics Unknown

Crash Configuration: Forward Impact

54 This Vehicle's Frontal Area Impacts Another Vehicle
55 This Vehicle Is Impacted by Frontal Area of Another Vehicle
56 This Vehicle's Frontal Area Impacts Another Vehicle
57 This Vehicle Is Impacted by Frontal Area of Another Vehicle
58 This Vehicle's Frontal Area Impacts Another Vehicle
59 This Vehicle Is Impacted by Frontal Area of Another Vehicle
60 This Vehicle's Frontal Area Impacts Another Vehicle
61 This Vehicle Is Impacted by Frontal Area of Another Vehicle
62 Specifics Other
63 Specifics Unknown

Crash Configuration: Sideswipe/Angle

64 Lateral Move (left/Right)
65 Lateral Move (Going Straight)
66 Specifics Other
67 Specifics Unknown

Crash Types cont'd

Crash Category: Change Trafficway Vehicle Turning

Crash Configuration: Turn Across Path

68	Initial Opposite Directions (Left/Right)
69	Initial Opposite Directions (Going Straight)
70	Initial Same Directions (Turning Right)
71	Initial Same Directions (Going Straight)
72	Initial Same Directions (Turning Left)
73	Initial Same Directions (Going Straight)
74	Specifics Other
75	Specifics Unknown

Crash Configuration: Turn Into Path

76	Turn Into Same Direction (Turning Left)
77	Turn Into Same Direction (Going Straight)
78	Turn Into Same Direction (Turning Right)
79	Turn Into Same Direction (Going Straight)
80	Turn Into Opposite Directions (Turning Right)
81	Turn Into Opposite Directions (Going Straight)
82	Turn Into Opposite Directions (Turning Left)
83	Turn Into Opposite Directions (Going Straight)
84	Specifics Other
85	Specifics Unknown

Crash Category: Intersecting Paths (Vehicle Damage)

Configuration Straight Paths

86	Striking from the Right
87	Struck on the Right
88	Striking from the Left
89	Struck on the Left
90	Specifics Other
91	Specifics Unknown

Crash Category: Miscellaneous

Crash Configuration: Backing, Etc.

92	Backing Vehicle
93	Other Vehicle or Object
98	Other Crash Type
99	Unknown Crash Type
00	No Impact

Source: Researcher determined — inputs include police report, scene inspection, vehicle inspection, and interview.

Remarks:

Crash Category: Single Driver

The crash types in **Single Driver** involve an impact between a vehicle and an object. The other Categories identify specific collision combinations which must be coded in specified pairs (*i.e.*, the pair attribute defines the Crash Type). As an example, the combination Rear-end, stopped and Rear-end, specifics other or Rear-end, stopped and Slower, straight ahead are not valid since

Rear-end, stopped only has meaning when linked to Stopped.

A crash involving a vehicle impacting a "driverless in-transport vehicle" is coded **"..., specifics other"** in the appropriate configuration-category. For example, a vehicle which impacts the rear of a driverless in-transport vehicle is encoded Rear-end, specifics other.

In crashes involving more than two vehicles or in collision sequences involving a combination of vehicle-to-object-to-vehicle impacts, code the Crash Type for the vehicle(s) involved in the first harmful event. All other vehicles are coded **Other Crash Type**.

Keep in mind that ***intended actions*** play an important role in the coding scheme. For example, crash type Slower, turning left is selected over type (Slower, straight ahead) if the subject vehicle was traveling slower with the ***intention*** of turning left. Note, the turning action need not have occurred prior to the collision. The driver's ***intent*** to turn is the key.

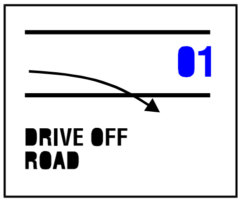
The ***configurations*** are delineated into specific crash types. These types can be identified by referring to the crash type diagrams.

Crash Category Single Driver cont'd

Crash Configuration: Right Roadside Departure

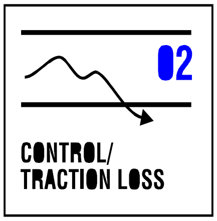
The vehicle departed the right side of the road with the first harmful event occurring off the road.

01 Right Roadside Departure: Drive Off Road



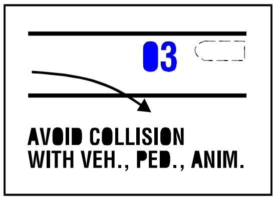
Enter "01" when the vehicle departed the road under a controlled situation (e.g., the driver was distracted, fell asleep, intentionally departed, etc.

02 Right Roadside Departure: Control/Traction Loss



Enter "02" when there is evidence that the vehicle lost traction or "got away" from the driver in some other way (e.g., the vehicle spun off the road as a result of surface conditions, oversteer phenomena, or mechanical malfunctions). If doubt exists, code "01" (Right Roadside Departure, Drive Off Road).

03 Right Roadside Departure: Avoid Collision With Vehicle, Pedestrian, Animal



Enter "03" when the vehicle departed the road to avoid something on the road. Phantom vehicle situations, pedestrians, bicyclists, and other cyclists and nonmotorists are included here.

04 Right Roadside Departure: Specifics Other

04
SPECIFICS OTHER

Enter "04" if the vehicle departed the road to avoid something on the road other than a vehicle, pedestrian, or animal. Also use "Specifics Other" for crashes involving a driverless in-transport vehicle.

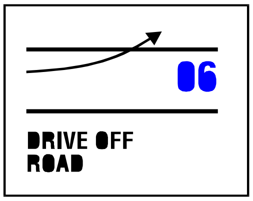
05 Right Roadside Departure: Specifics Unknown

05
SPECIFICS UNKNOWN

Enter "05" if the vehicle departed the right side of the road for unknown reasons.

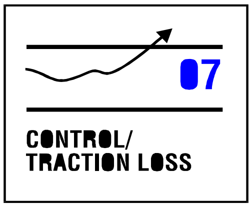
Crash Configuration: Left Roadside Departure

06 Left Roadside Departure: Drive Off Road



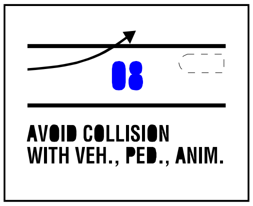
Enter "06" when the vehicle departed the road under a controlled situation (e.g., the driver was distracted, fell asleep, intentionally departed, etc.)

07 Left Roadside Departure: Control/Traction Loss



Enter "07" if there is evidence that the vehicle lost traction or "got away" from the driver ir way (e.g., the vehicle spun off the road as a result of surface conditions, oversteer pheno mechanical malfunctions.) If doubt exists, code "06" (Left Roadside Departure, Drive Off

08 Left Roadside Departure: Avoid Collision With Vehicle, Pedestrian, Animal



Enter "08" when the vehicle departed the road to avoid something on the road. Phantom vehicle situations, pedestrians, bicyclists, and other cyclists and nonmotorists are included here.

09 Left Roadside Departure: Specifics Other

09

SPECIFICS OTHER

Enter "09" if the vehicle departed the road to avoid something on the road other than a vehicle, pedestrian, or animal. Also, use "specifics Other" for crashes involving a driverless in-transport vehicle.

10 Left Roadside Departure: Specifics Unknown

10

SPECIFICS UNKNOWN

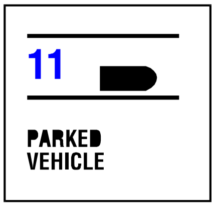
Enter "10" if the vehicle departed the left side of the road for unknown reasons.

Crash Configuration: Forward Impact

The vehicle struck an object on the road or off the end of a trafficway while moving forward.

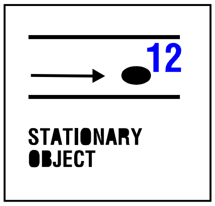
11 Forward Impact: Parked Vehicle

Enter "11" if the crash involves impact with a parked vehicle on either side of the road.



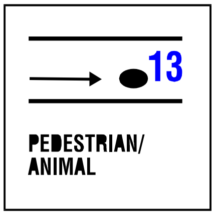
12 Forward Impact: Stationary Object

Enter "12" if the crash involves impact with a stationary object on either side of the road.



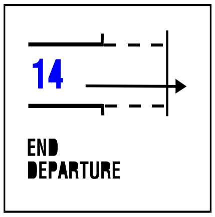
13 Forward Impact: Pedestrian/Animal

Enter "13" if the first harmful event involves impact with a pedestrian or animal on either side of the road. Pedestrians, bicyclists, and other cyclists and nonmotorists are included here. Vehicle plane of contact is NOT a consideration.



14 Forward Impact: End Departure

Enter "14" when the vehicle ran off the end of the road and crashed into something.



15 Forward Impact: Specifics Other

Enter "15" for impacted (striking or struck) trains and nonstationary objects on the road. Also use "Specifics Other" for crashes involving a driverless in-transport motor vehicles.

15
SPECIFICS
OTHER

16 Forward Impact: Specifics Unknown

Enter "16" when the PAR indicates a single driver was involved in a forward impact collision, but no further classification is possible.

16
SPECIFICS
UNKNOWN

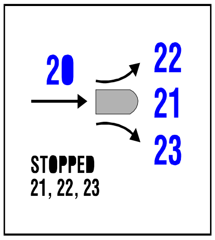
Crash Category: Same Trafficway, Same Direction

Crash Configuration: Rear-End

The front of the overtaking vehicle impacted the rear of the other vehicle. Note, even if the rear-impacted vehicle had started to make a turn, code here (**not** in Crash Category: Change in Trafficway, Vehicle Turning).

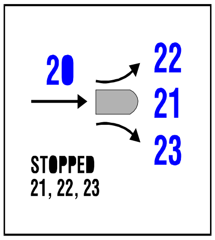
20 Rear-End: Stopped

Enter "20" for a vehicle that impacts another vehicle from the rear when the impacted vehicle was stopped in the trafficway.


20
22
21
23
STOPPED
21, 22, 23

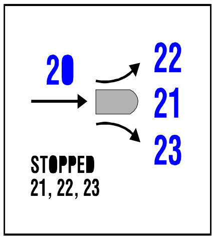
21 Rear-End: Stopped, Straight

Enter "21" for a rear-impacted vehicle that was stopped in the trafficway, and was intending to proceed straight ahead.


20
22
21
23
STOPPED
21, 22, 23

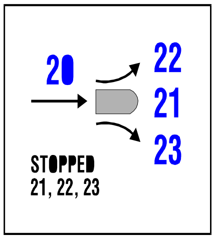
22 Rear-End: Stopped, Left

Enter "22" for a rear-impacted vehicle that was stopped in the trafficway, intending to make a left turn.


20
22
21
23
STOPPED
21, 22, 23

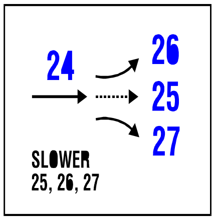
23 Rear-End: Stopped, Right

Enter "23" for a rear-impacted vehicle that was stopped in the trafficway, intending to make a right turn.


20
22
21
23
STOPPED
21, 22, 23

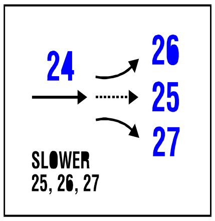
24 Rear-End: Slower

Enter "24" for a vehicle that impacts another vehicle from the rear when the impacted vehicle was going slower than the striking vehicle.


24
26
25
27
SLOWER
25, 26, 27

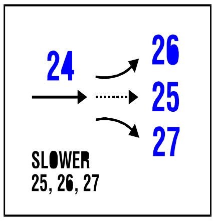
25 Rear-End: Slower, Going Straight

Enter "25" for a rear-impacted vehicle that was going slower than the other vehicle while proceeding straight ahead.


24
26
25
27
SLOWER
25, 26, 27

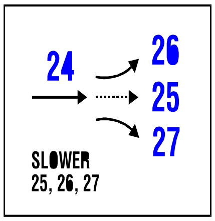
26 Rear-End: Slower, Going Left

Enter "26" for a rear-impacted vehicle that was going slower than the other vehicle while intending to turn left.


24
26
25
27
SLOWER
25, 26, 27

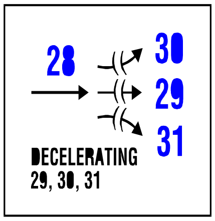
27 Rear-End: Slower, Going Right

Enter "27" for a rear-impacted vehicle that was going slower than the other vehicle while intending to turn right.


24
26
25
27
SLOWER
25, 26, 27

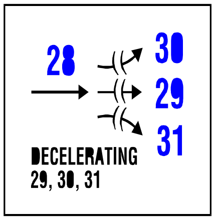
28 Rear-End: Decelerating (Slowing)

Enter "28" for a vehicle impacts another vehicle from the rear when the impacted vehicle was slowing down.


28
30
29
31
DECELERATING
29, 30, 31

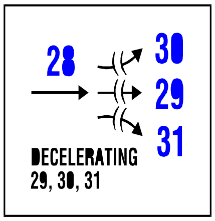
29 Rear-End: Decelerating (Slowing), Going Straight

Enter "29" for a rear-impacted vehicle that was slowing down while proceeding straight ahead.


28
30
29
31
DECELERATING
29, 30, 31

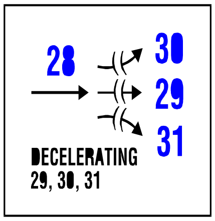
30 Rear-End: Decelerating (Slowing), Going Left

Enter "30" for a rear-impacted vehicle that was slowing down while intending to turn left.



31 Rear-End: Decelerating (Slowing), Going Right

Enter "31" for a rear-impacted vehicle that was slowing down while intending to turn right.



32 Rear-End: Specifics Other

Enter "32" for rear-end collisions which cannot be described in "20"-"31." Enter "Specifics Other" for crashess involving a driverless in-transport vehicle.

EACH: 32
SPECIFICS OTHER

33 Rear-End: Specifics Unknown

Enter "33" when the PAR indicates a rear-end collision occurred, but no further classification is possible.

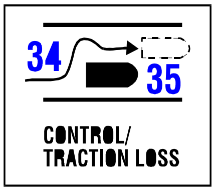
EACH: 33
SPECIFICS UNKNOWN

Crash Configuration: Forward Impact

The front of the overtaking vehicle impacted the rear of the other vehicle, following a steering maneuver around a noninvolved vehicle or object.

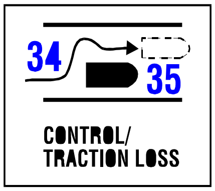
34 Forward Impact: Control/Traction Loss

Enter "34" for a vehicle that's frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a non-involved vehicle) while both are traveling on the same trafficway in the same direction.



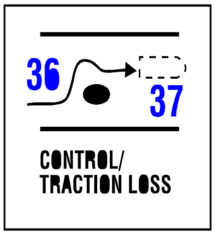
35 Forward Impact: Control/Traction Loss

Enter "35" for a vehicle which is impacted by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a non-involved vehicle) while both are traveling on the same trafficway in the same direction.



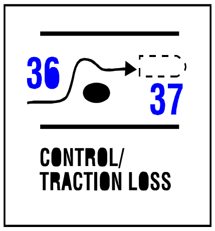
36 Forward Impact: Control/Traction Loss

Enter "36" for a vehicle that's frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while both are traveling on the same trafficway in the same direction.



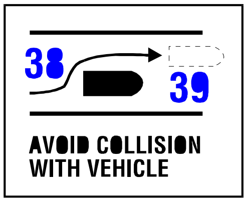
37 Forward Impact: Control/Traction Loss

Enter "37" for a vehicle which is impacted by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while both are traveling on the same trafficway in the same direction.



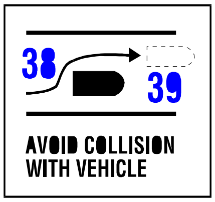
38 Forward Impact: Avoid Collision with Vehicle

Enter "38" for a vehicle that struck the rear of another vehicle with its front plane while maneuvering to avoid collision with a non-involved vehicle, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.



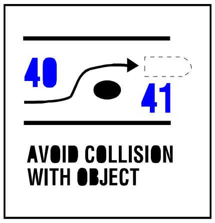
39 Forward Impact: Avoid Collision with Vehicle

Enter "39" for a vehicle that was impacted by the frontal area of another vehicle which was maneuvering to avoid a collision with a non-involved vehicle, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.



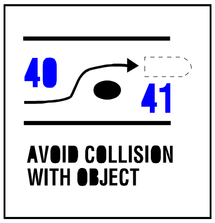
40 Forward Impact: Avoid Collision with Object

Enter "40" for a vehicle that struck the rear of another vehicle with its front plane while maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.



41 Forward Impact: Avoid Collision with Object

Enter "41" for a vehicle which was impacted by the frontal area of another vehicle which was maneuvering to avoid a collision with an object, when loss of control or traction was not a factor, and both were traveling on the same trafficway, in the same direction.



42 Forward Impact: Specifics Other

Enter "42" (for both vehicles) for a forward impact collision which occurred while both vehicles were traveling on the same trafficway, in the same direction, and the striking vehicle was attempting to avoid a vehicle or an object which cannot be described by "34" - "40."

Also, use this code for crashes involving a driverless in-transport vehicle which would otherwise qualify for this configuration.

EACH: 42
SPECIFICS OTHER

43 Forward Impact: Specifics Unknown

Enter "43" when the PAR indicates that a forward impact collision occurred while both vehicles were traveling on the same trafficway and in the same direction, but no further classification was possible.

EACH: 43
SPECIFICS UNKNOWN

Crash Configuration: Sideswipe/Angle

The two vehicles are involved in an impact involving the side of one or both vehicles.

The following four codes, "44" (Sideswipe/Angle, straight ahead on left), "45" (Sideswipe/Angle, straight ahead on left/right), "46" (Sideswipe/Angle, changing lanes to the right), "47" (Sideswipe/Angle, changing lanes to the left), identify relative vehicle positions (left versus right) and lane of travel intentions (straight ahead versus changing lanes). From these four codes, four combinations are permitted. They are:

1. "44" and "45"
2. "46" and "45"
3. "45" and "47"
4. "46" and "47".

When used in combination, these codes refer to a sideswipe or angle collision which involved a vehicle to the left of a vehicle to the right where:

1. neither vehicle (codes "44" and "45") intended to change its lane;
2. the vehicle on the left (code "46") was changing lanes to the right, and the vehicle on the right (code "45") was not intending to change its lane;
3. the vehicle on the left (code "45") was not intending to change its lane, and the vehicle on the right (code "47") was changing lanes to the left; and
4. the vehicle on the left (code "46") was changing lanes to the right, and the vehicle on the right (code "47") was changing lanes to the left.

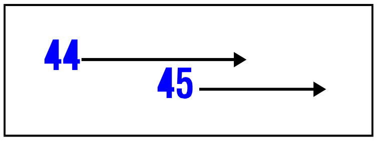
In addition, when:

1. the right sides of the two vehicles impact following a 180 degree rotation of the vehicle on the right, or
2. the left sides of the two vehicles impact following a 180 degree rotation of the vehicle on the left.

Select the appropriate combination depending upon:

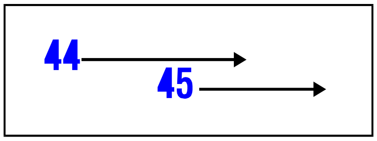
- their positions (i.e., left versus right) and
- the intended lane of travel (straight ahead versus changing lanes) of their drivers.

44 Sideswipe/Angle: Straight Ahead on Left



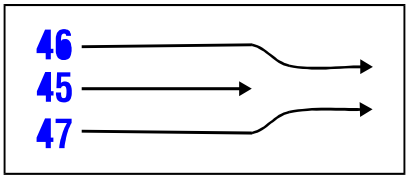
See discussion under Configuration F. Sideswipe/Angle, above for an explanation of when this attribute applies.

45 Sideswipe/Angle: Straight Ahead on Left/Right



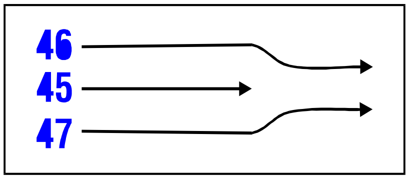
See discussion under Configuration F. Sideswipe/Angle, above for an explanation of when this attribute applies.

46 Sideswipe/Angle: Changing Lanes to the Right



See discussion under Configuration F. Sideswipe/Angle, above for an explanation of when this attribute applies.

47 Sideswipe/Angle: Changing Lanes to the Left



See discussion under Configuration F. Sideswipe/Angle, above for an explanation of when this attribute applies.

48 Sideswipe/Angle: Specifics Other

EACH: 48
SPECIFICS
OTHER

Enter "48" if one vehicle was behind the other prior to a sideswipe/angle collision occurring while both vehicles were traveling on the same trafficway and in the same direction.

For example, use this code when two vehicles are on the same trafficway and going the same direction, and one loses control and is struck in the side by the front of the other vehicle. However, if one vehicle rotates such that the impact is front to front, then use code "98" (Other crash type).

Use this code for crashes involving a driverless in-transport vehicle.

49 Sideswipe/Angle: Specifics Unknown

EACH: 49
SPECIFICS
UNKNOWN

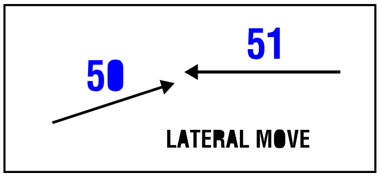
Enter "49" for sideswipe/angle collisions that occur while both vehicles are traveling on the same trafficway and in the same direction, when no further classification is possible.

Crash Category: Same Trafficway, Opposite Direction

Crash Configuration: Head-On

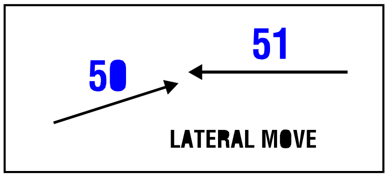
The frontal area of one vehicle impacted the frontal area of another.

50 Head-On: Lateral Move (Left/Right)



Enter "50" for a vehicle that LEAVES ITS LANE [moves laterally (sideways)] immediately before colliding head-on with another vehicle, when the vehicles are traveling on the same trafficway in opposite directions.

51 Head-On: Lateral Move (Going Straight)



Enter "51 " for a vehicle that collides head-on with another vehicle which has IMMEDIATELY LEFT ITS LANE (moved laterally), when the vehicles are traveling on the same trafficway in opposite directions.

52 Head-On: Specifics Other

EACH: 52
SPECIFICS
OTHER

Enter "52" for a head-on collision that cannot be described by "50"-"51", when the vehicl
on the same trafficway in opposite directions. Clarification: Enter “52" for both vehicles i
head-on collision when one is traveling the wrong way on a one way roadway.

Enter "Specifics Other" for crashes involving a driverless in-transport vehicle.

53 Head-On: Specifics Unknown

Enter "53" when the PAR indicates a head-on collision occurred between two vehicles traveling on the same trafficway in opposite directions, when no further classification is possible.

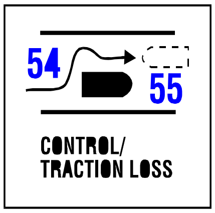
EACH: 53
SPECIFICS OTHER

Crash Configuration: Forward Impact

The frontal area of one vehicle impacted the frontal area of another following a steering maneuver around a noninvolved vehicle or an object.

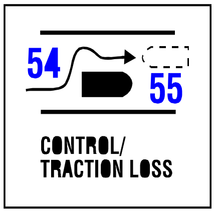
54 Forward Impact: Control/Traction Loss

Enter "54" for a vehicle whose frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a third vehicle) while the vehicles are traveling on the same trafficway in opposite directions.



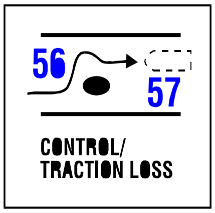
55 Forward Impact: Control/Traction Loss

Enter "55" for a vehicle which is impacted by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with a third vehicle) while the vehicles are traveling on the same trafficway in opposite directions.



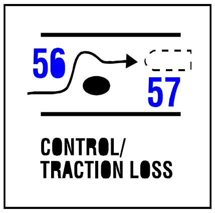
56 Forward Impact: Control/Traction Loss

Enter "56" for a vehicle whose frontal area impacts another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while the vehicles are traveling on the same trafficway in opposite directions.



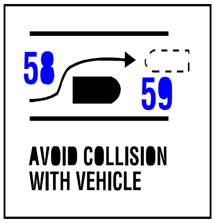
57 Forward Impact: Control/Traction Loss

Enter "57" for a vehicle which is impacted by the frontal area of another vehicle due to loss of control or traction (during a maneuver to avoid a collision with an object) while the vehicles are traveling on the same trafficway in opposite directions.



58 Forward Impact: Avoid Collision with Vehicle

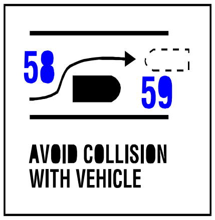
Enter "58" for a vehicle whose frontal area impacts another vehicle while maneuverin collision with a non-involved vehicle,



when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.

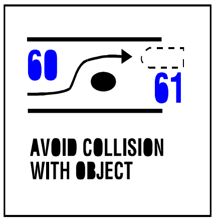
59 Forward Impact: Avoid Collision with Vehicle

Enter "59" for a vehicle which was impacted by the frontal area of another vehicle which was maneuvering to avoid collision with a non-involved vehicle, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.



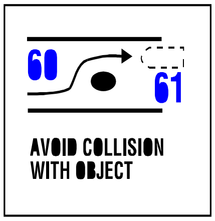
60 Forward Impact: Avoid Collision with Object

Enter "60" for a vehicle that struck the front of another vehicle with the frontal plane while maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.



61 Forward Impact: Avoid Collision with Object

Enter "61 " for a vehicle which was impacted by the frontal area of another vehicle which was maneuvering to avoid collision with an object, when loss of control or traction was not a factor, and the vehicles were traveling on the same trafficway, in opposite directions.



62 Forward Impact: Specifics Other

Enter "62" for forward impact collisions occurring while the vehicles were traveling on the same trafficway in opposite directions which cannot be described by "54"-"61 ". Enter "Specifics Other" for crashes involving a "driverless in-transport vehicle."

EACH: 62
SPECIFICS
OTHER

63 Forward Impact: Specifics Unknown

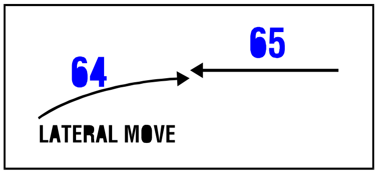
Enter "63" when the PAR indicates a forward impact collision occurred while the vehicles were traveling on the same trafficway in opposite directions, but no further classification is possible.

EACH: 63
SPECIFICS
UNKNOWN

Crash Configuration: Sideswipe/Angle

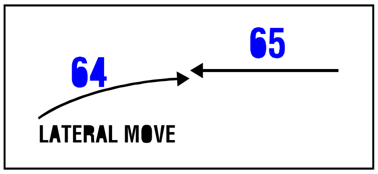
The two vehicles are involved in an impact involving the side of one or both vehicles.

64 Sideswipe/Angle: Lateral Move (Left/Right)



Code "64" identifies the vehicle which infringed upon the other vehicle (code "65") in a Crash Category: Change Trafficway Opposite Direction, Crash Configuration: Sideswipe/Angle collision. Enter "64" for the vehicle which left its lane (moved laterally) leading to the collision.

65 Sideswipe/Angle: Lateral Move (Going Straight)



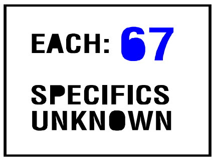
Enter "65" for the vehicle which was infringed upon by the other vehicle (code "64") in a Crash Category: Change Trafficway Opposite Direction, Crash Configuration: Sideswipe/Angle collision.

66 Sideswipe/Angle: Specifics Other

EACH: 66
SPECIFICS OTHER

Enter "66" for sideswipe/angle collisions occurring while both vehicles were traveling on the same trafficway in opposite directions which cannot be described by "64"-"65". Enter "Specifics Other" for crashes involving a "driverless in-transport vehicle."

67 Sideswipe/Angle: Specifics Unknown



Enter "67" when the PAR indicates a sideswipe/angle collision occurred while both vehicles were traveling on the same trafficway in opposite directions, but no further classification is possible.

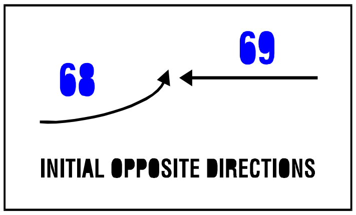
Crash Category: Changing Trafficway, Vehicle Turning

Configuration J. Turn Across Path

The two vehicles were initially on the same trafficway when one vehicle tried to turn onto another trafficway and pulled in front of the other vehicle. Vehicles making a "U" turn are identified in Category VI. Miscellaneous.

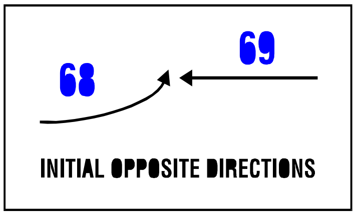
68 Turn Across Path: Initial Opposite Directions (Left/Right)

Code "68" identifies the vehicle which turned across the path of another vehicle (code) in a Category IV, Configuration J collision, in which the vehicles were initially traveling in opposite directions.



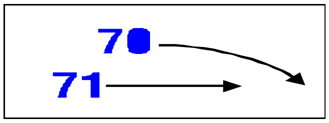
69 Turn Across Path: Initial Opposite Directions (Going Straight)

Enter "69" for a vehicle involved in a collision in which another vehicle (code "68" across its Path, and in which the vehicles were initially traveling in opposite directions.



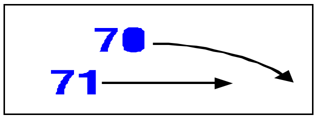
70 Turn Across Path: Initial Same Directions (Turning Right)

Enter "70" for a vehicle which turned right, across the path of another vehicle (code "71"), when both vehicles were initially traveling in the same direction.



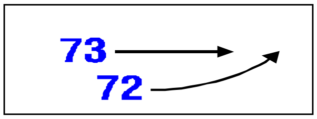
71 Turn Across Path: Initial Same Directions (Going Straight)

Enter "71 " for a vehicle whose path was crossed by a vehicle turning right (code "70"), when both vehicles were initially traveling in the same direction.

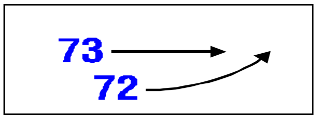


72 Turn Across Path: Initial Same Directions (Turning Left)

Enter "72" for a vehicle which turned left, across the path of another vehicle (code "73"), when both vehicles were initially traveling in the same direction.



73 Turn Across Path: Initial Same Directions (Going Straight)



Enter "73" for a vehicle whose path was crossed by a vehicle turning left (code "72"), when both vehicles were initially traveling in the same direction.

74 Turn Across Path: Specifics Other

EACH: 74
SPECIFICS OTHER

Enter "74" for collisions in which one vehicle turned across another's path, which cannot be described by "68"-"72". Enter "Specifics Other" for crashess involving a driverless in-transport vehicle.

75 Turn Across Path: Specifics Unknown

EACH: 75
SPECIFICS UNKNOWN

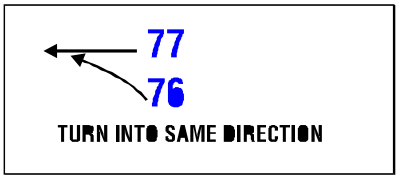
Enter "75" when the PAR indicates one vehicle turned across another's path, causing a collision, but no further classification is possible.

Crash Configuration: Turn Into Path

The two vehicles were initially on different trafficways when one attempted to turn into the same trafficway as the other vehicle.

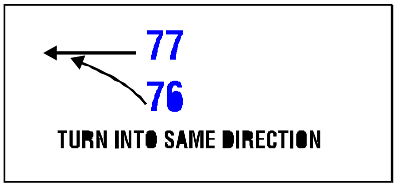
Note, the focus of this configuration is on the turning maneuver from one trafficway to another and not on the vehicles' plane of contact.

76 Turn Into Same Direction (Turning Left)



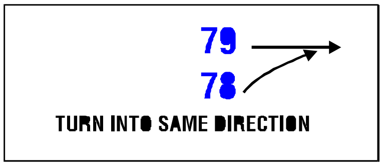
Enter "76" for a vehicle which turned left, into the path of another vehicle (code "77"), so that both vehicles were traveling in the same direction at the time of the collision.

77 Turn Into Same Direction (Going Straight)

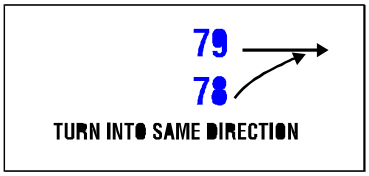


Enter "77" for a vehicle involved in a collision in which another vehicle (code "76") turned left, into its path, so that both vehicles were traveling in the same direction at the time of the collision.

78 Turn Into Same Direction (Turning Right)



Enter "78" for a vehicle which turned right, into the path of another vehicle (code "79"), so that both vehicles were traveling in the same direction at the time of the collision.

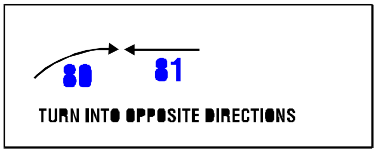


79 Turn Into Same Direction (Going Straight)

Enter "79" for a vehicle involved in a collision in which another vehicle (code "78") turned right, into its path, so that both vehicles were traveling in the same direction at the time of the collision.

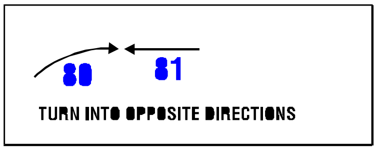
80 Turn Into Opposite Directions (Turning Right)

Enter "80" for a vehicle which turned right, into the path of another vehicle (code "81"), so that the vehicles were traveling in opposite directions at the time of the collision.



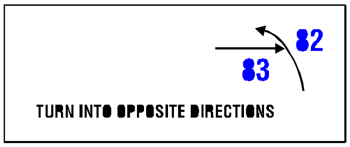
81 Turn Into Opposite Directions (Going Straight)

Enter "81" for a vehicle involved in a collision in which another vehicle (code "80") turned right, into its path, so that the vehicles were traveling in opposite directions at the time of the collision.



82 Turn Into Opposite Directions (Turning Left)

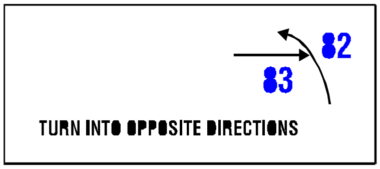
Enter "82" for a vehicle which turned left, into the path of another vehicle (code "83"), so that the vehicles were traveling in opposite directions at the time of the collision.



Code "82" is used when the driver's vehicle was in the act of making a left turn (e.g., from a driveway, parking lot or intersection). Do not confuse this situation with "**Crash Configuration: Straight Paths**." The driver's intended path is the prime concern.

83 Turn Into Opposite Directions (Going Straight)

Enter "83" for a vehicle involved in a collision in which another vehicle (code "82") turned left, into its path, so that the vehicles were traveling in opposite directions at the time of the collision.



84 Turn Into Path: Specifics Other

Enter "84" for collisions in which one vehicle turned across another's path, which cannot be described by "76"-"83". Enter "Specifics Other" for crashes involving a driverless in-transport vehicle.

EACH: 84

SPECIFICS OTHER

Crash Types cont'd

85 Turn Into Path: Specifics Unknown

Enter "85" when the PAR indicates one vehicle turned into another's path, causing a collision, but no further classification is possible.

EACH: 85
SPECIFICS
UNKNOWN

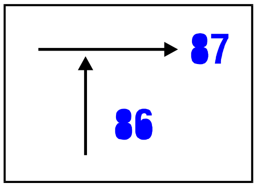
Crash Category: Intersecting Paths (Vehicle Damage)

Crash Configuration: Straight Paths

The two vehicles were proceeding (or attempting to proceed) straight ahead.

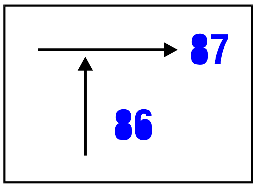
86 Straight Paths: Striking from the Right

Enter "86" for a vehicle which strikes the right side of another vehicle (code "87") from the right when both vehicles were going straight at the time of the collision, i.e., right side damage to 87, front damage to 86.



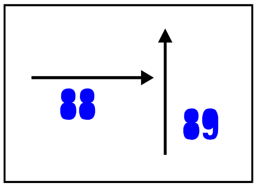
87 Straight Paths: Struck on the Right

Enter "87" for a vehicle which is struck on the right side by another vehicle (code "86") from the right when both vehicles were going straight at the time of the collision, i.e., right side damage to 87, front damage to 86.



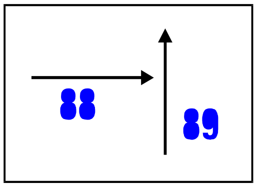
88 Straight Paths: Striking from the Left

Enter "88" for a vehicle which strikes another vehicle (code "89") from the left when both vehicles were going straight at the time of the collision, i.e., left side damage to 89, front damage to 88.



89 Straight Paths: Struck on the Left

Enter "89" for a vehicle which is struck on the left side by another vehicle (code "88") from the left when both vehicles were going straight at the time of the collision, i.e., left side damage to 89, front damage to 88.



90 Straight Paths: Specifics Other

Enter "90" for collisions in which two vehicles, both going straight, collide when their paths intersect, which cannot be described by "86"-"89". Enter "Specifics Other" for crashes involving a driverless in-transport vehicle.

EACH: 90
SPECIFICS
OTHER

91 Straight Paths: Specifics Unknown

EACH: 91
SPECIFICS UNKNOWN

Enter "91 " when the PAR indicates two vehicles, both going straight, collided when their paths intersected, but no further classification is possible.

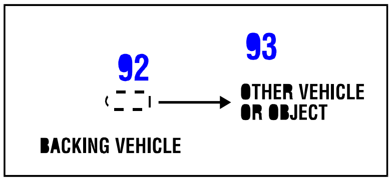
Crash Category: Miscellaneous

Crash Configuration: Backing, Etc.

One of the two vehicles involved was a backing vehicle, regardless of its location on the trafficway or the damage location on the vehicles.

Any crash configuration which cannot be described in the above Crash Categories is included here.

92 Backing, Etc.: Backing Vehicle

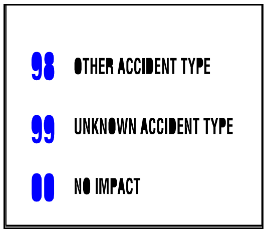

92
93
OTHER VEHICLE OR OBJECT
BACKING VEHICLE

Enter "92" for a backing vehicle which was involved with another vehicle (code 93) or object.

93 Backing, Etc.: Other Vehicle or Object

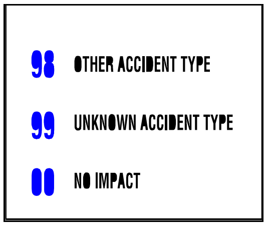
Enter "93" for the vehicle which was involved with the backing vehicle (code 92).

98 Backing, Etc.: Other Crash Type


98 OTHER ACCIDENT TYPE
99 UNKNOWN ACCIDENT TYPE
00 NO IMPACT

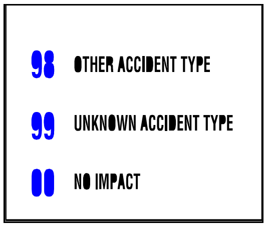
Code "98" is used for those events and collisions which do not reasonably fit any of the specified types. This code includes (but is not limited to):
- Rollovers on the road
- U-turns
- Third or subsequent vehicles involved in a crash or
- The second involved vehicle, when the first harmful event involved a vehicle-to-object collision or a non-collision.

99 Backing, Etc.: Unknown Crash Type


98 OTHER ACCIDENT TYPE
99 UNKNOWN ACCIDENT TYPE
00 NO IMPACT

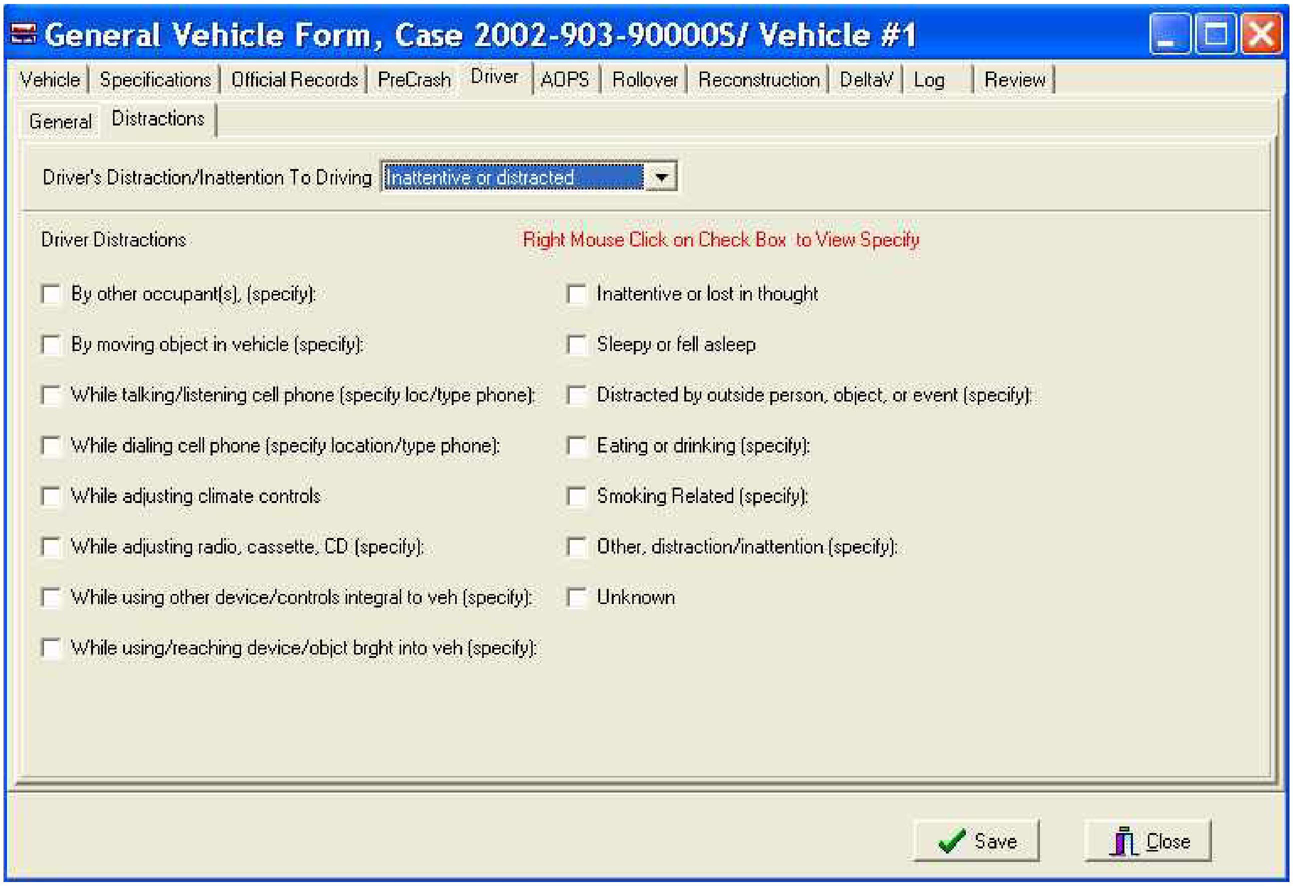
Code "99" when the crash category or configuration is unknown.

00 Backing, Etc.: No Impact


98 OTHER ACCIDENT TYPE
99 UNKNOWN ACCIDENT TYPE
00 NO IMPACT

Code “00" identifies non-collision events (fire, immersion, etc.) Rollovers on the road should be coded as Crash Type “98" **Other Accident Type**.

Driver / Distractions


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
General
Distractions
Save
Close

Driver's Distraction/Inattention To Driving: Inattentive or distracted

Driver Distractions

Right Mouse Click on Check Box to View Specify

☐ By other occupant(s), (specify):
☐ By moving object in vehicle (specify):
☐ While talking/listening cell phone (specify loc/type phone):
☐ While dialing cell phone (specify location/type phone):
☐ While adjusting climate controls
☐ While adjusting radio, cassette, CD (specify):
☐ While using other device/controls integral to veh (specify):
☐ While using/reaching device/objct brght into veh (specify):
☐ Inattentive or lost in thought
☐ Sleepy or fell asleep
☐ Distracted by outside person, object, or event (specify):
☐ Eating or drinking (specify):
☐ Smoking Related (specify):
☐ Other, distraction/inattention (specify):
☐ Unknown

DRIVER'S DISTRACTION/INATTENTION TO DRIVING

Screen Name: Driver's Distraction/Inattention to Driving

SAS Data Set: **GV**
SAS Variable: **DRATENTN**

Element Attributes:

0	[No driver present]
1	Attentive or not distracted
2	Looked but did not see
3	Inattentive or distracted
9	Unknown

Source: Researcher determined — inputs include interviews and police report.

Remarks:

[No Driver Present]
is pre-coded if on the Official Records Tab the “Driver Present?” variable is coded as “No driver Present”.

Attentive or not distracted
is selected when the driver is known to have been completely attentive to driving prior to realization of impending danger.

Looked but did not see
is selected when the driver is paying attention to driving, but does not see the relevant vehicle, object, etc. This attribute should be used when a driver has an opportunity to take some action prior to impact, but the driver takes no action and no other distractions apply. This situation frequently occurs when an overtaking vehicle is in the driver's "blind spot" or at intersections when you look both ways and a crossing vehicle is not noticed. If the driver sees the vehicle, object, etc., but does not consider it a danger then, and no other distractions apply then select Attentive or not distracted

Inattentive or distracted:
is selected when the driver was inattentive or distracted prior to the realization of an impending critical event. Once this attribute is selected, options come into view where the Researcher can select all distractions that apply.

Unknown
is selected when it is unknown if this driver was fully attentive to driving prior to realization of impending danger. Use this attribute if no interview is obtained and there is no other source of information regarding this driver's attention to driving prior to realization of impending danger.

DRIVER'S DISTRACTIONS

Page 1 of 3

Screen Name: Driver's Distraction/Inattention to Driving

SAS Data Set: **DISTRACT**
SAS Variable: **DRIVDIS**

Element Attributes:

Inattentive or distracted:

1	By other occupant(s), (specify):
2	By moving object in vehicle (specify):
3	While talking or listening to cellular phone (specify location and type of phone):
4	While dialing cellular phone (specify location and type of phone):
5	While adjusting climate controls
6	While adjusting radio, cassette, CD (specify):
7	While using other device/controls integral to vehicle (specify):
8	While using or reaching for device/object brought into vehicle (specify):
9	Sleepy or fell asleep
10	Distracted by outside person, object, or event (specify):
11	Eating or drinking (specify):
12	Smoking related (specify):
97	Inattentive or lost in thought
98	Other, distraction/inattention (specify):
99	Unknown

Source: Researcher determined — inputs include interviews and police report.

Remarks:

Select all the attributes which describe this driver's **inattention** to driving prior to the driver's realization of an impending critical event or just prior to impact if realization of an impending critical event does not occur. If this driver's vehicle has two critical crash envelopes, record the attribute(s) which best describe the driver's attention ***prior to the first Critical Precrash Event*** (*i.e.*, prior to realization of the impending danger which the driver successfully avoided). Intoxication is not considered a distraction.

All distractions which indicate "(specify)" require specific information to be annotated. To activate the "specify" window, press the F5 key.

By other occupant(s) (Specify):
is selected when the driver was distracted by another occupant in this driver's vehicle prior to realization of impending danger. Examples of other occupant distraction include conversing with or looking at another occupant. The specific occupant distraction *must be recorded in the "specified box"*

By moving object in vehicle (Specify):

Driver's Distraction/Inattention to Driving cont'd

Page 2 of 3

is selected when the driver was distracted by a moving object in this driver's vehicle prior to realization of impending danger. Examples include a dropped object, a moving pet, insect or cargo. The specific object *must be recorded in the "specified box".*

While talking or listening to cellular phone (specify location and type of phone)
is used when the driver is talking or listening on a cellular phone. Specify the type of phone (hands off, hand phone, etc.) and the location of the phone (installed in the console, held in the hand, etc.)

While dialing cellular phone (specify location and type of phone)
Specify the type of phone used (hands off, hand phone, etc.) and indicate where it is located (installed in the console, held in the hand, etc.).

While adjusting climate controls
is selected when someone is distracted from the driving task while adjusting the air conditioner heater, etc.

While adjusting radio, cassette, CD, (specify)
is selected when someone is distracted from the driving task while adjusting or using the radio, cassette, CD which are mounted in the vehicle.

While using other device/controls integral to vehicle, (specify)
is selected when the driver is distracted while using a device in the vehicle including adjusting windows (power or manual) adjusting door locks (power or manual), adjusting side view mirrors (power or manual), adjusting rear view mirror, adjusting seat (power or manual), adjusting steering wheel, and adjusting seat belt, using vehicle's cigarette lighter, etc. (Included here is **all** OEM equipment).

While using or reaching for device/object brought into vehicle (specify)
is selected when the driver is distracted while using or reaching for a device brought into the vehicle including: radar detectors, CB radios, razors, portable CD players, headphones, etc. The use of another device to light a cigarette other than the vehicle's cigarette lighter should be coded under "smoking related". Specify the device in the provided space.

Sleepy or fell asleep
is selected when the driver was sleeping or dozing prior to realization of impending danger or just prior to impact if realization did not occur.

Distracted by outside person, object, or event (Specify):
is selected when the driver was distracted by an outside person, object or event prior to realization of impending danger. Examples include animals on the roadside or a previous crash. The specific outside person, object, or event must be recorded in the provided space. Do not use this attribute for a person, object or event which the driver has recognized and for which the driver has taken some action (e.g. avoiding a pedestrian on the roadway).

Driver's Distraction/Inattention to Driving cont'd

Page 3 of 3

Eating or drinking
is used when the driver is eating or drinking, or involved in an activity related to these actions (*i.e.*, picking food from carton placed on passenger seat, reaching to throw out used food wrapper, etc.)

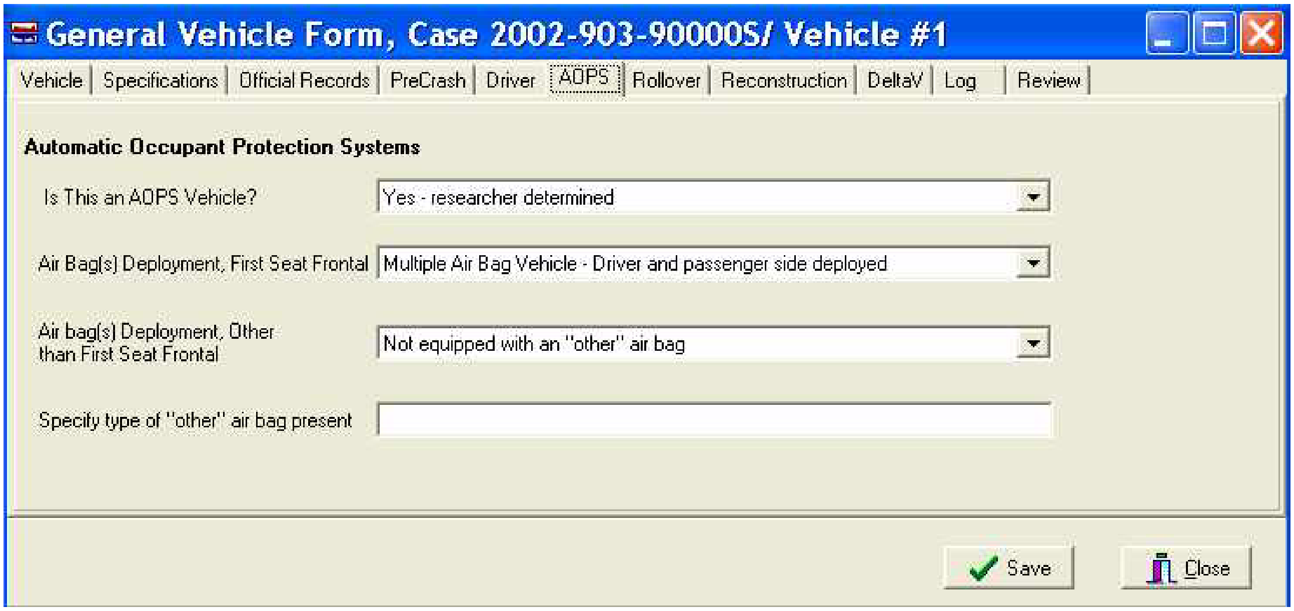
Smoking related
is selected when the driver is smoking or involved in an activity related to smoking, such as lighting cigarette, putting ashes in the ash tray, etc. The act of using the cigarette lighter of the vehicle, is selected as **While using other device/object in vehicle**.

Inattentive or lost in thought
Is selected when the driver is thinking about items other than the driving task (daydreaming).

Other distraction (Specify)
is selected when details regarding this driver's inattention are known but none of the specified attributes are applicable. The **Other Distraction** must be recorded in the provided space. This attribute includes incapacitating illness.

Unknown
is selected when it is known that this driver was inattentive prior to realization of impending danger but details of the distraction are unknown.

AOPS


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Save
Close

Automatic Occupant Protection Systems

Is This an AOPS Vehicle? Yes - researcher determined

Air Bag(s) Deployment, First Seat Frontal Multiple Air Bag Vehicle - Driver and passenger side deployed

Air bag(s) Deployment, Other than First Seat Frontal Not equipped with an "other" air bag

Specify type of "other" air bag present

IS THIS AN AOPS VEHICLE?

Page 1 of 2

Screen Name: Is this an AOPS Vehicle?

SAS Data Set: **GV**
SAS Variable: **AOPSVEH**

Element Attributes:

0	No (includes unknown)
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
8	[Not a CDS Vehicle]

Source: Primary source is the vehicle inspection. For uninspected vehicles, the vehicle VIN and year/make/model may be used. The secondary sources are the interviewee, medical records, and police report.

Remarks:
This variable allows users to identify vehicles that were originally equipped (or retro-fitted) with an automatic occupant protection system (AOPS). Automatic occupant protection systems include air bags or automatic (passive) belts. This variable is coded for all vehicle model years.

No (includes unknown)
is selected when it is determined that this vehicle is not equipped with an AOPS. In addition, use this attribute when it is unknown if this vehicle had an AOPS.

Yes — researcher determined
is selected when:

(1) the vehicle inspection reveals the presence of an AOPS **or**
(2) driver or other reliable interview information indicates that the vehicle is equipped with an AOPS.

NOTE: If there is a vehicle inspection and an air bag or automatic belt system is found than this element must be selected. **Without an interview or vehicle inspection, the PAR alone is insufficient to make this choice.**

VIN determined air bag system
is selected when:

(1) the vehicle is not inspected and
(2) there is no interview or medical record information with positive indication of air bag presence or deployment; and
(3) it can be determined from the VIN (or AOPS listing following **Air Bag System Failure** on the Occupant Form) that this vehicle was manufactured with an air bag system. Do not select availability based solely on this attribute.

Is this an AOPS Vehicle? cont'd

Page 2 of 2

VIN determined automatic (passive) belts
is selected when:

(1) the vehicle is not inspected and
(2) there is no interview or medical record information with positive indication of automatic belt presence or use; and
(3) it can be determined from the VIN (or AOPS listing) that this vehicle was manufactured with automatic (passive) belts. Do not select availability based solely on this attribute.

VIN determined air bag and automatic (passive) belts
is selected when:

(1) the vehicle is not inspected;
(2) there is no interview or medical record information with positive indication of the presence of an air bag system and automatic belts or deployment of an air bag and use of an automatic belt; and
(3) it can be determined from the VIN (or AOPS listing following **Air Bag System Failure** on the Occupant Form) that this vehicle was manufactured with an air bag and automatic belts. Do not select availability based solely on this attribute.

AIR BAG(S) DEPLOYMENT, FIRST SEAT FRONTAL

Page 1 of 2

Screen Name: Air Bag(s) Deployment, First Seat Frontal

SAS Data Set: **GV**
SAS Variable: **BAGDEPFV**

Element Attributes:

0	Not equipped or not available
1	No air bags deployed
	Single Air Bag Vehicle
2	Driver air bag deployed
3	Driver air bag, unknown if deployed
	Multiple Air Bag Vehicle
4	Driver side only deployed
5	Passenger side only deployed
6	Driver and passenger side deployed
7	Driver and passenger side, unknown if deployed
8	Air bag(s) deployed, details unknown
88	[Not a CDS Vehicle]
99	Unknown

Source: Researcher determined — primary source is the vehicle inspection; secondary sources include the interview, police report, and medical records.

NOTE: The use of the police report is limited. If there is no vehicle inspection and the only secondary source is the PAR, then the PAR must clearly indicate that an air bag deployed either in the "narrative" or in a "restraint system" block.

Remarks:

This variable allows users to identify vehicles that were originally equipped (or retro-fitted) with an air bag system. This variable is coded for all vehicle model years.

First seat frontal air bags are for occupants seated in the front outboard positions in post-1971 passenger cars or 1991 or newer vans or 1993 or newer pickup trucks and utility vehicles. Thus, use attribute **Not equipped/not available** for other vehicles.

Not equipped or not available
is selected when there is no first seat frontal air bag available in the vehicle. Additionally, select this attribute when the vehicle is a post-1971 passenger car; a 1991 or newer van, or 1993 or newer pickup and utility vehicle, but the vehicle was not equipped with an air bag.

No air bags deployed
is selected when an air bag equipped vehicle has one or more impacts, and the first seat frontal air bag(s) did not inflate during the crash.

Driver air bag deployed
is selected when the vehicle is equipped with a frontal driver air bag, and this air bag deployed.

Air Bag(s) Deployment, First Seat Frontal cont'd

Page 2 of 2

Driver air bag, unknown if deployed
is selected when it is known that the vehicle was equipped with a frontal driver air bag, but the researcher is unable to determine if the air bag deployed (for whatever reason).

Driver side only deployed
is selected when it is known that the vehicle was equipped with frontal driver and passenger side air bags, but only the driver side air bag deployed (for whatever reason).

Passenger side only deployed
is selected when it is known that the vehicle was equipped with driver and passenger side frontal air bags, but only the passenger side air bag deployed (for whatever reason).

Driver and passenger side deployed
is selected when it is known that the vehicle was equipped with driver and passenger side frontal air bags and both the driver and passenger side air bags deployed.

Driver and passenger side, unknown if deployed
is selected when it is known that the vehicle was equipped with driver and passenger side frontal air bags but the researcher is unable to determine if either of the air bags deployed.

Air bag(s) deployed, details unknown
is selected when it is known that the vehicle had a deployed frontal air bag, but the researcher is unable to determine if more than one frontal air bag deployed, or if the deployed frontal air bag was driver side or passenger side.

> **This code must also be used if information is known on one air bag, but it is not known for the other air bag.**

Unknown
is used when it is unknown if a first seat frontal air bag was available.

AIR BAG(S) DEPLOYMENT, OTHER THAN FIRST SEAT FRONTAL

Page 1 of 2

Screen Name: Air Bag(s) Deployment, Other Than First Seat Frontal

SAS Data Set: **GV**
SAS Variable: **BAGDEPOV**

Element Attributes:

0	Not equipped with an "other" air bag
1	Deployed during crash (as a result of impact)
2	Deployed inadvertently just prior to crash
3	Deployed, details unknown
4	Deployed as a result of a non-collision event during crash sequence (*e.g.*, fire, explosion, electrical)
5	Unknown if deployed
7	Nondeployed
8	[Not a CDS Vehicle]
9	Unknown

Source: Researcher determined — primary source is the vehicle inspection; secondary sources include the interview, police report, and medical records.

NOTE: The use of the police report is limited. If there is no vehicle inspection and the only secondary source is the PAR, then the PAR must clearly indicate that an air bag deployed either in the "narrative" or in a "restraint system" block.

Remarks:

This variable allows users to identify vehicles that were originally equipped (or retro-fitted) with an air bag system. This variable is coded for all vehicle model years.

"Other" air bags are for occupants in post-1994 passenger cars. Thus, if the vehicle is not a post-1994 passenger car, then use **Not equipped with an "other" air bag**. These air bags are air bags **other** than frontal air bags in the front seat positions. They may include but not be limited to side air bags that are designed to deploy in a side impact and frontal air bags equipped in other than the front seat positions.

Not equipped with an "other" air bag
is selected when the vehicle is a post-1994 passenger car but the vehicle was not equipped with an "other" air bag.

Deployed during crash (as a result of impact)
is used when the vehicle is equipped with an air bag and the "**other**" air bag deployed as a result of an impact. **Note**, an air bag is not designed to deploy in every collision.

Deployed inadvertently just prior to crash
is selected when an "**other**" air bag deploys without an impact having caused its deployment, and the vehicle is subsequently involved in a crash.

Air Bag(s) Deployment, Other Than First Seat Frontal cont'd

Page 2 of 2

Deployed, details unknown
is used when the researcher cannot determine if the "**other**" air bag deployed

(1) prior to the crash or
(2) during the crash as a result of an impact.

Deployed as a result of a Non-collision event during crash sequence (*e.g.*, fire, explosion, electrical)
is selected if the "**other**" air bag deploys during a crash but not as a result of an impact.

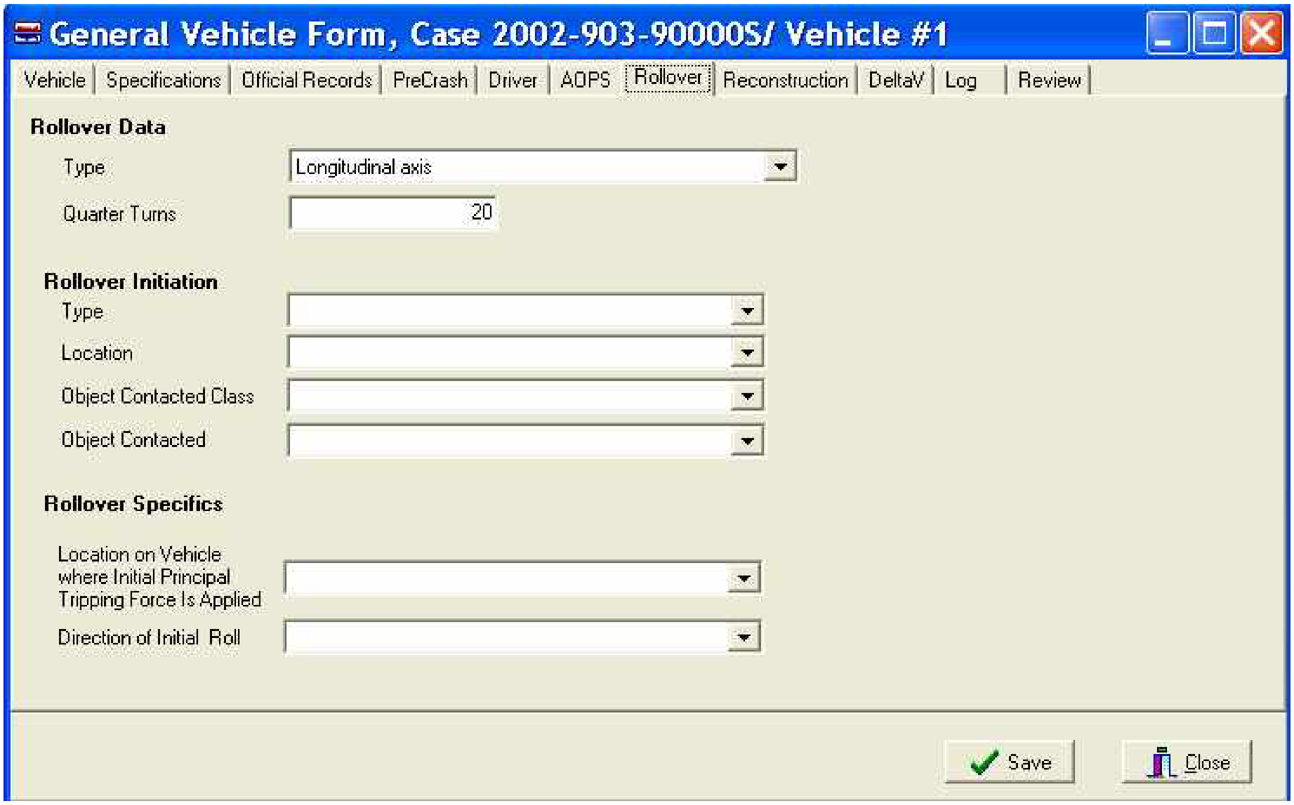
For example, a vehicular fire, occurring as a result of an impact or a Non-collision event prior to any impacts to this vehicle (i.e., fire or explosion), takes this attribute.

Unknown if deployed
is selected when it is known that the vehicle was equipped with an "**other**" air bag but the researcher is unable to determine if the air bag deployed (for whatever reason). For example, if the vehicle was not inspected and no interview was obtained and no mention of deployment is on the PAR or medical records and:

Nondeployed
is selected when a vehicle equipped with an "**other**" air bag has one or more impacts, and the air bag did not inflate during the crash.

Unknown
is selected when it is unknown if an "**other**" air bag was available.

Rollover


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Save
Close

Rollover Data

Type: Longitudinal axis

Quarter Turns: 20

Rollover Initiation

Type:

Location:

Object Contacted Class:

Object Contacted:

Rollover Specifics

Location on Vehicle where Initial Principal Tripping Force Is Applied:

Direction of Initial Roll:

ROLLOVER DATA OVERVIEW

The following variables provide a coded assessment of the occurrence of a rollover for this vehicle. A rollover is defined as any vehicle rotation of 90 degrees or more about any true longitudinal or lateral axis. A rollover may occur at any time during the crash sequence. When determining rollover presence, consider only the power unit, not any towed or trailing units. The variables also attempt to identify:

- What initiated the rollover
- At what plane of the vehicle exterior the tripping force was applied and
- The direction of the initial roll.

ROLLOVER TYPE

Screen Name: Rollover Data-Type

SAS Data Set: **GV**
SAS Variable: **ROLLTYPE**

Element Attributes:

0	No rollover (no overturning)
1	Rollover — Longitudinal axis
2	Rollover — end-over-end (*i.e.*, primarily about the lateral axis)
97	[Not a CDS Vehicle]
99	Rollover (overturn), details unknown

Source: Primary sources are the vehicle and scene inspections; secondary sources include photographs, police report, driver interviews, and other interviewees.

Remarks:

Rollover is defined as any vehicle rotation of 90 degrees or more about any true longitudinal or lateral axis. Rollover can occur at any time during the collision and is coded independently of other configuration questions.

No rollover (no overturning)
Select this code if uncertainty exists concerning whether or not this vehicle rolled over. In addition, use this attribute if a trailer attached to the vehicle rolled over but the vehicle itself did not.

Longitudinal axis
is selected when the vehicle rolls primarily from side-to-side (e.g., from left side, to top, to right side). If it is known that it rolled over the longitudinal axis, but the number of turns is unknown, then indicate **Longitudinal axis** and indicate **Unknown** on then next variable.

Rollover — end-over-end (*i.e.*, primarily about the lateral axis)
is selected when the rollover is mainly end-over-end. This attribute is used when a rollover is a combination of a side-to-side and end-over-end roll and it cannot be determined which type of rollover is most prevalent.

NOTE: Rollover Types indicated as Rollover – end-over-end (i.e., primarily about the lateral axis) will automatically code all of the rollover variables to reflect an end-over-end rollover.

Rollover (overturn), details unknown
is selected when it is known that the vehicle rolled over, but the rollover details cannot be determined. If it is known that it rolled over the longitudinal axis, but the number of turns is unknown, then indicate **Longitudinal axis** and indicate **Unknown** on then next variable.

NUMBER OF QUARTER TURNS

Screen Name: Rollover Data-Quarter Turns

SAS Data Set: **GV**
SAS Variable: **ROLLTURN**

Element Attributes:

Enter the number of quarter turns:

0	No rollover
88	Not a CDS Vehicle
99	Unknown

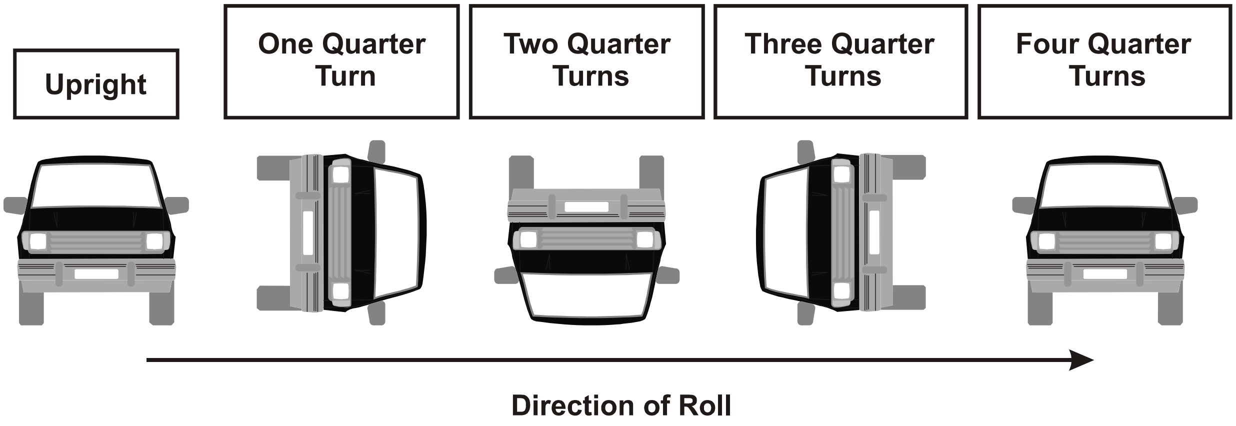
Range 1-20, Unknown

Source: Primary sources are the vehicle and scene inspections; secondary sources include photographs, police report, driver interviews, and other interviewees.

Remarks:

Enter the number of quarter turns
based on the researcher's crash reconstruction. A "quarter turn" is defined as a rotation of 90 degrees about the longitudinal axis of the vehicle; this does not include rotation about the vertical axis, commonly called yaw. Therefore, if a vehicle rolled about the longitudinal axis onto its roof (*i.e.*, side- to-side roll), then it rolled 180 degrees and entered as "2" quarter turns.

In the example below, the vehicle rolled from its upright position to left side, to top, then to the right side, and back onto its wheels. This would be indicated as “4" quarter turns.



Unknown
is selected when it cannot be determined the number of quarter turns the vehicle did during the rollover sequence.

ROLLOVER INITIATION TYPE

Screen Name: Rollover Iniation-Type

SAS Data Set: **GV**
SAS Variable: **ROLINTYP**

Element Attributes:

0	[No rollover (no overturning)]
1	Trip-over
2	Flip-over
3	Turn-over (justify)
4	Climb-over
5	Fall-over
6	Bounce-over
7	Collision with another vehicle
8	Other rollover initiation type (specify):
97	[Not a CDS Vehicle]
98	[End-over-end]
99	Unknown

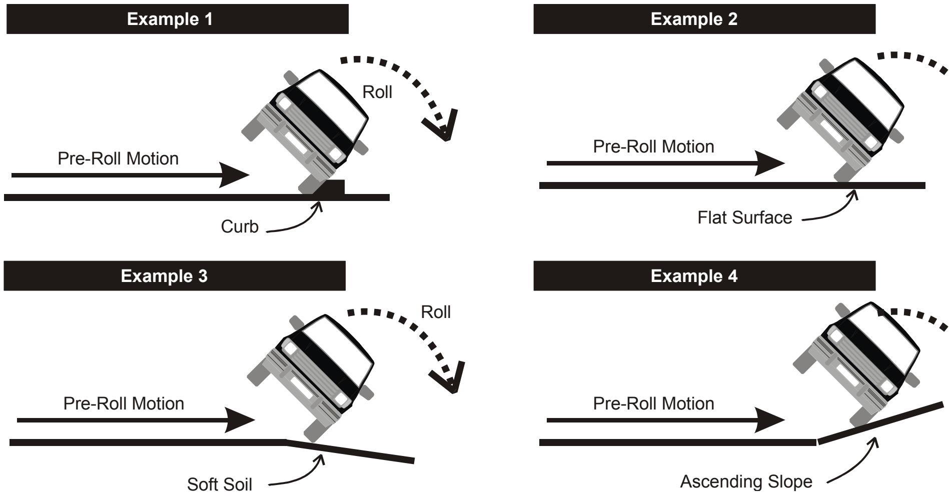
Source: Researcher determined — primary sources are the scene and vehicle inspections. Secondary sources are photographs, police report, driver interviews, and other interviewees.

Remarks:

Various types of rollovers are identified above. A vehicle action that cannot be categorized under any of the above elements should be coded **Other rollover initiation type** and specified in the space provided. The attributes below are used for rollovers initiated about the longitudinal axis. Rollover Types indicated as Rollover – end-over-end (i.e., primarily about the lateral axis) will automatically code all of the rollover variables to reflect an end-over-end rollover.

Trip-over
is selected when the vehicle's lateral motion is suddenly slowed or stopped, inducing a rollover. The opposing force may be produced by a curb, pot-holes, or pavement/soil dug into by a vehicle's wheels.

Trip-Over: The vehicle's lateral motion is resisted by opposing force, inducing roll moment.


Example 1
Roll
Pre-Roll Motion
Curb
Example 2
Roll
Pre-Roll Motion
Flat Surface
Example 3
Roll
Pre-Roll Motion
Soft Soil
Example 4
Roll
Pre-Roll Motion
Ascending Slope

Rollover Initiation Type cont'd

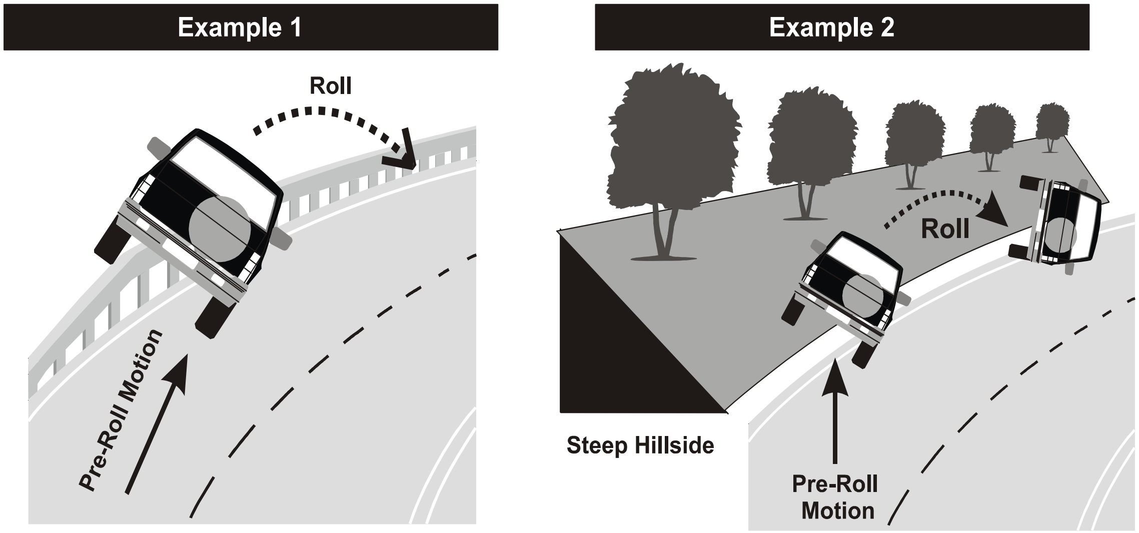
Page 2 of 5

Flip-Over

is selected when the vehicle is rotated about its longitudinal axis by a ramp-like object may be in a yaw when it comes in contact with the ramp-like object. For example, if the vehicle traveling forward climbs the down turned end of a guardrail and rolls over about its longitudinal axis, use this code. To use this, the vehicle's roll need not begin on the ramp-like structure or object, For example, if the vehicle transverses the turned-down end of a guardrail, continues along the level portion, then rolls back toward the side of the guardrail from which it came, use this code.

Flip-Over

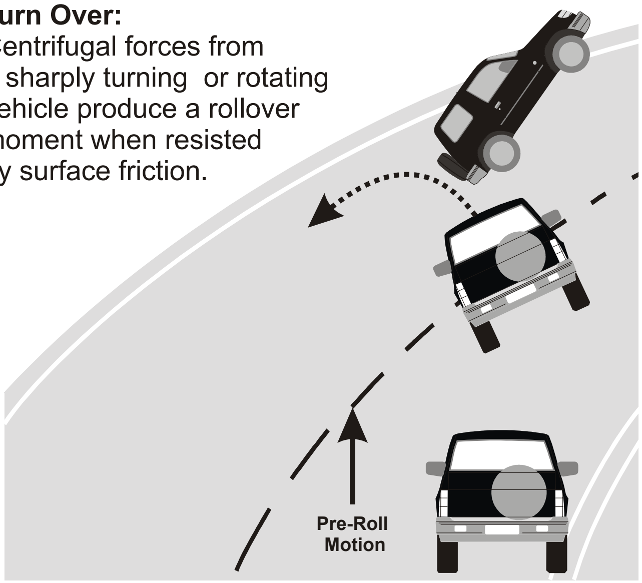
Forward moving vehicle is vigorously rotated about its longitudinal axis by a ramp-like object such as a guardrail taper or ditch back slope.



Rollover Initiation Type cont'd

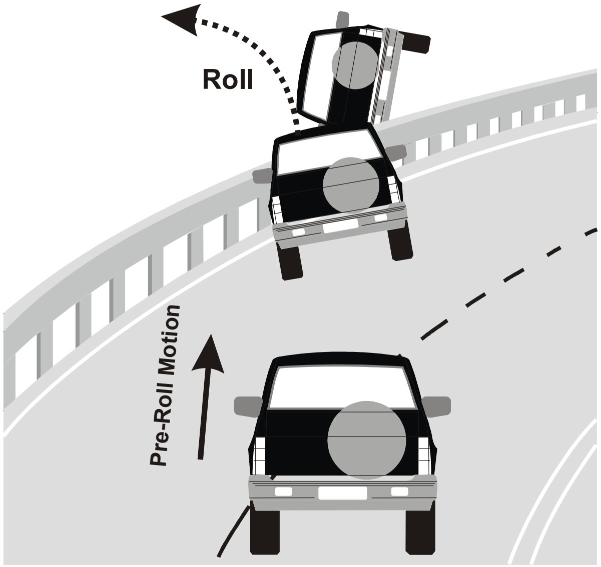
Turn-Over
is selected when centrifugal forces from a sharply turning or rotating vehicle produce a rollover when resisted by normal surface friction. This type of rollover is more likely to occur in vehicles with a higher center of gravity than most passenger vehicles. The surface type includes pavement surfaces plus gravel, grass, dirt, etc. The distinction between **Turn-over** and **Trip-over** is that no furrowing, gouging, etc. occurs to the surface at the point of trip. In addition, see remarks for **Fall-over** below. When turnover is selected, the justification **must be entered**.

Turn Over:
Centrifugal forces from a sharply turning or rotating vehicle produce a rollover moment when resisted by surface friction.



Climb-Over
is selected when a vehicle climbs up and over a fixed object such as a barrier or guardrail. The object should be high enough to lift the vehicle completely off the ground (*i.e.*, the height should exceed the radius of the vehicle's largest diameter wheel). The vehicle must roll to the opposite side from which it approached the object.

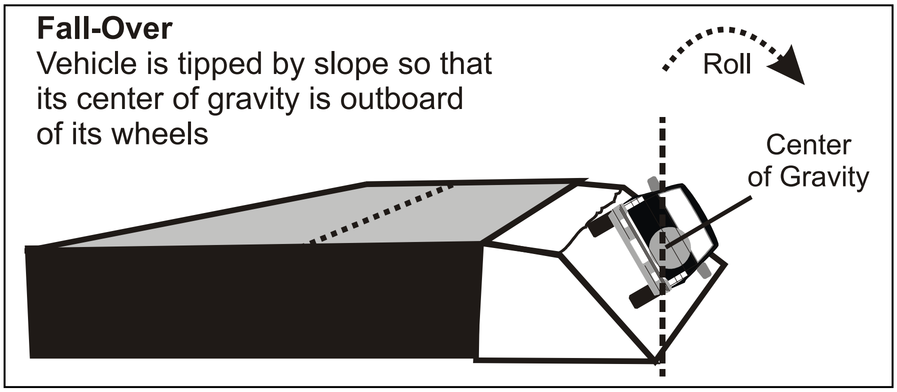
Climb-Over
Vehicle climbs up and over fixed object such as a guardrail



Rollover Initiation Type cont'd

Fall-Over

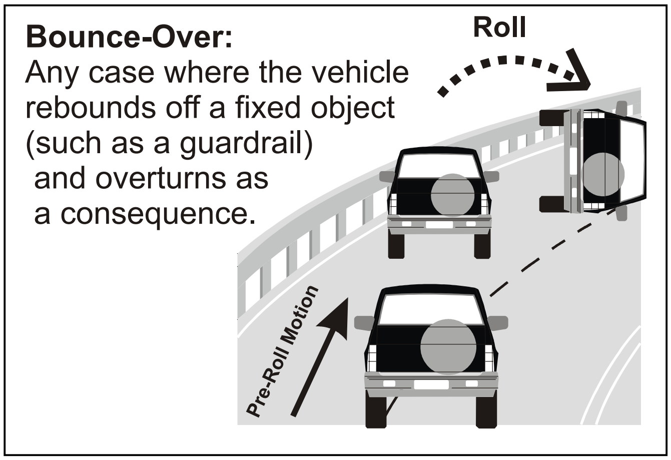
is selected when the surface the vehicle is traversing slopes downward in the direction of movement of the vehicle's center-of-gravity such that the vehicle's center of gravity becomes outboard of its wheels. The distinction between this and **Turn-over** above involves the negative slope of the traversed surface. If the rotation and/or the surface friction causes the trip, then use **Turn-over,** however, if the slope is so negative that a line straight downward through the vehicle's center-of-gravity (as shown in the illustration) would fall outside the vehicle's track, then use this attribute. For example, if a vehicle goes off the road and encounters a substantial surface drop off because of the elevated nature of the road in relation to its environment (*e.g.*, cliff, ditch, etc.), then use this attribute.



Fall-Over
Vehicle is tipped by slope so that its center of gravity is outboard of its wheels

Bounce-Over

is selected when a vehicle deflects off of a fixed object (such as a guardrail, barrier, tree, or pole) or a not-in-transport vehicle such that the vehicle's rotation causes it to overturn. The deflection momentum contributes to a rollover. To use this attribute, the rollover must occur in close proximity to the object from which it deflected. For example, if a vehicle strikes a center median barrier and rotates across two traffic lanes prior to the vehicle rolling over, then **Trip-over** or **Turn-over** would apply.



Bounce-Over:
Any case where the vehicle rebounds off a fixed object (such as a guardrail) and overturns as a consequence.

Collision with another vehicle

is selected when an impact with another vehicle causes the rollover. The rollover must be the immediate result of the impact between the vehicles (*e.g.*, intersection crashes where a vehicle is struck in the side and the momentum of the struck vehicle results in the rollover, or offset end-to-end type crashes when one vehicle will vault over the tapered end of another vehicle resulting in a rollover). Otherwise use attributes above. For example, if a vehicle is struck in the side ***and*** the vehicle rotates ***and*** does not produce any wheel/rim gouges or furrows in the surface nor encounters any prominent raised objects (*e.g.*, a high curb) ***and*** overturns in close proximity to the point of impact, then use this attribute.

Rollover Initiation Type cont'd

Other rollover initiation type
is selected when this vehicle's rollover initiation type cannot be described above. Whenever this is used, the researcher is required to ***specify*** the type of rollover which occurred.

Unknown
is selected when the type of rollover initiation is unknown

[End-over-end]
is automatically entered when the type of rollover is end-over-end.

LOCATION OF ROLLOVER INITIATION

Screen Name: Rollover Initiation-Location

SAS Data Set: **GV**
SAS Variable: **ROLINLOC**

Element Attributes:

0	[No rollover (no overturning)]
1	On roadway
2	On shoulder — paved
3	On shoulder — unpaved
4	On roadside or divided trafficway median
7	[Not a CDS Vehicle]
8	[End-over-end]
9	Unknown

Source: Researcher determined — primary source is the scene inspection. Secondary sources are vehicle inspection, photographs, police report, driver interviews, and other interviewees.

Remarks:

This variable defines the location of the trip point or start of the vehicle's roll that was identified in, Rollover Initiation Type. Physical evidence on and/or off the roadway should be used to identify the point of initial roll. Scenes with no physical evidence such as gouges in the pavement or ground may be determined by the secondary sources listed above.

On roadway
is selected when the rollover initiates in the travel lanes of the roadway (*i.e.*, between painted edgelines or between roadway edges when painted edgelines are absent). The median between roadways (divided highways such as thruways or expressways) is identified as codes On shoulder—paved, On shoulder—unpaved, or On roadside or divided trafficway median as described below. ANSI defines a ***roadway*** as that part of a trafficway designed, improved and ordinarily used for motor vehicle travel, and excludes any shoulder alongside the roadway.

On shoulder — paved
is selected when the rollover initiation occurs on a paved surface outside the painted edgeline or the outer edge or pavement seam of the roadway. A shoulder may exist within the median of a divided highway or on the outermost edge of the roadway. A shoulder is defined as that part of a trafficway contiguous with the roadway for emergency use, for accommodation of stopped road vehicles, and for lateral support of the roadway structure.

On shoulder — unpaved
is selected when the rollover initiation begins within the confines of the ***improved*** area (*i.e.*, gravel or stone) contiguous with the roadway. Unpaved shoulders, for NASS CDS purposes, are composed of loose gravel or stone. Combination gravel/stone and asphalt surfaces, such as macadam or "chip and seal", are considered as paved. Roadways without an improved, contiguous surface will be considered as not having shoulders.

Location of Rollover Initiation

Page 2 of 2

On roadside or divided trafficway median
is selected when the rollover initiation occurs outside the roadway and the shoulder. There are roads where sod or dirt will support the roadway edge. When the rollover initiation occurs within this area, use this attribute because this roadway does not have shoulders. In addition, shoulders end wherever most curbs or fixed objects begin. If the trip begins on a curb that is adjacent on one side to a sidewalk, turf, or dirt, then use this attribute. If the roll is initiated by a fixed object then use this attribute. Care must be exercised with some mountable curbs. If the mountable curb has paving on both sides and its primary function is to control water runoff, then use **On shoulder—paved**.

ROLLOVER INITIATION OBJECT CONTACTED CLASS

Screen Name: Rollover Initiation--Object Contacted Class

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Vehicle
Collision with Fixed Object
Nonbreakaway Pole or Post
Collision with Nonfixed Object
Other event
Unknown Event or Object

Source: Researcher determined — primary source is the scene inspection. Secondary sources are vehicle inspection, photographs, police report, driver interviews, and other interviewees.

Remarks:
The Object Contacted codes in the next variable are grouped into specific classes. The class is first selected, then the object lists are filtered for items in that specific class.

Vehicle
is selected when the object contacted that caused this vehicle to rollover is another vehicle.

Noncollision
is automatically entered by the program when a “Turn Over” or “Fall Over” is selected as the rollover initiation type, or when the rollover was initiated by a jacknife noncollision. Additionally this code is used for end-over-end rollovers.

Collision with a Fixed Object
is selected when an impact with a fixed object (e.g., a tree, breakaway pole or post, embankment, curb, etc.) Caused the rollover.

Nonbreakaway Pole or Post
is selected when the object contacted that caused the vehicle to rollover was a nonbreakaway pole or post.

Collision with a Non-Fixed Object
is selected when the collision that initiated the rollover is a non-fixed object (e.g., motor vehicle not in transport, animal, train, trailer disconnected in transport, etc.,)

ROLLOVER INITIATION OBJECT CONTACTED

Page 1 of 6

Screen Name: Rollover Initiation--Object Contacted

SAS Data Set: **GV**
SAS Variable: **ROLLOBJ**

Element Attributes:

[0 No rollover (no overturning)]

Vehicle number (1-30)

Non-collision
31 Turn-over — fall-over
32 No rollover impact initiation (end-over-end)
34 Jackknife

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

Nonbreakaway Pole or Post
50 Pole or post (<=10 centimeters in diameter)
51 Pole or post (> 10 centimeters but <= 30 centimeters diameter)
52 Pole or post (> 30 centimeters in diameter)
53 Pole or post (diameter unknown)
54 Concrete traffic barrier
55 Impact attenuator
56 Other traffic barrier (includes guardrail) (specify)
57 Fence

Nonbreakaway Pole or Post cont'd
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
70 Passenger car, light truck, van or othervehicle not in-transport
71 Medium/heavy truck or bus 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

Other Event
98 Other event (specify)

Unknown Event or Object
99 Unknown event or object

[97 Not a CDS Vehicle]

Source: Researcher determined — primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Remarks:

This variable is related to Rollover Initiation Type, and identifies the source of the force that acted upon the vehicle which resulted in the rollover. These attributes are obtained from the Exterior Rollover Initiation Object Contacted cont'd

Vehicle Form, CDC tab, Object Contacted attributes. If the rollover was initiated by an impact which was assigned a CDC, then the applicable element value will be selected for this variable. If the rollover was not initiated by a CDC applicable impact, then it is unlikely that the same value will be selected. Therefore, the researcher must determine the cause (*i.e.*, initiation force) of the rollover and consequently the object contacted during the rollover. For example, if a vehicle strikes a curb which trips the vehicle, then select **Curb** even though the CDC Object Contacted for the rollover would probably equal **Overturn- rollover.**

Similarly, if a vehicle vaults a longitudinal barrier (Climb-over), then select **Concrete traffic barrier** or **Other traffic barrier**, depending upon the longitudinal barrier design. If a yawing vehicle rolls as a result of centrifugal forces caused by normal surface friction or as a result of burrowing into soft soil, then select **Ground** because the ground applied the force that acted as the tripping mechanism for the rollover.

Vehicle number
select the vehicle number to report the vehicle that impacted this vehicle and caused the rollover to occur [*i.e.*, Rollover initiation type must equal Collision with another vehicle]. Select the vehicle number of the vehicle that initiated the rollover to this vehicle. This will be most common when one vehicle (generally with a high center of gravity) is involved in an offset head-on crash with a second vehicle (possibly with a lower sloping front end) resulting in a vaulting type rollover. Do not use these attributes if the vehicle rolls over subsequent to its impact with another vehicle but because of centrifugal force or a tripping mechanism. These latter two causes would take priority.

Turn-over — fall-over
excludes end-over-end and is used when the vehicle roll is precipitated by centrifugal or gravitational forces and Rollover Initiation Type, has been selected **Turn-over** or **Fall-over**.

Jackknife
is selected when a vehicle rolls over as result of a jackknife and the sole reason for the rollover is the force applied by the jackknifing trailer. For example, if a vehicle is pulling a trailer and the trailer jackknifes (*i.e.*, 90 degrees rotation and intraunit damage) and overturns, for whatever reason (*e.g.*, trailer tires furrow in soft earth, centrifugal force, trailer trips, loadshifts causing it to tip, etc.), ***and*** the trailer's overturning causes this vehicle to overturn, then use this. However, if a centrifugal force or tripping mechanism causes the vehicle to overturn with or without the trailer overturning, then use another attribute.

Tree (• 10 centimeters in diameter)
is selected when a vehicle impacts a tree which has a diameter of ten centimeters or less and the tree either (1) acts like a rigid barrier or (2) bends or breaks causing the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Trip-over, Flip-over, or Bounce-over]. Select another attribute when a vehicle impacts a tree and experiences a subsequent rollover due to centrifugal forces or other tripping mechanisms.

Tree (> 10 centimeters in diameter)
is selected when a vehicle impacts a tree with a diameter of greater than 10 centimeters and the tree either (1) acts like a rigid barrier or (2) bends or breaks causing the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Trip-over, Flip-over, or Bounce-over]. Select another attribute when

a vehicle impacts a tree and experiences a subsequent rollover due to centrifugal forces or other tripping mechanisms.

Shrubbery or bush
is selected when a vehicle impacts shrubbery or bushes and the contacted object causes the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Trip-over or Flip-over]. This will be a very rare occurrence. Subsequent rollovers that result from centrifugal forces or other tripping mechanisms take priority for this variable.

Embankment
is selected when a vehicle rides up or over an embankment and the vehicle rolls over as a result of the angle of the embankment [*i.e.*, Rollover Initiation Type equals Flip-over or Fall-over]. Vehicles which dig into the surface of an embankment and rollover as a result of this tripping mechanism are captured in **Ground**.

Breakaway pole or post (any diameter)
is selected whenever a vehicle impacts a breakaway pole or post (of any diameter) and that pole/post yields creating a ramping mechanism which causes a vehicle rollover. Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (• 10 centimeters in diameter)
is selected whenever a vehicle impacts a nonbreakaway pole with a diameter of 10 centimeters or less and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Flip-over or Bounce-over]. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (> 10 centimeters but • 30 centimeters in diameter)
is selected whenever a vehicle impacts a nonbreakaway pole with a diameter greater than ten centimeters but less than or equal to thirty centimeters and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover [*i.e.*, 6 equals Flip-over or Bounce-over]. Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post(> 30 centimeters in diameter)
is selected whenever a vehicle impacts a nonbreakaway pole with a diameter greater than thirty centimeters and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Flip-over or Bounce-over]. Select another attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Pole or post (diameter unknown)
is selected whenever a vehicle impacts a pole or post of an unknown diameter and that pole either (1) acts like a rigid barrier or (2) breaks or bends causing the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Flip-over or Bounce-over)]. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Concrete traffic barrier
is selected whenever a vehicle impacts a concrete traffic barrier and that impact causes a rollover [*i.e.*, Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over]. Rollovers which occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here. Refer to variable Objected Contacted for examples and definitions of concrete traffic barriers.

Impact Attenuator
is selected whenever a vehicle impacts a crash cushion (refer to variable Objected Contacted) and that impact causes a rollover [*i.e.*, Rollover Initiation Type equals Flip-over or Bounce-over]. Rollovers which occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here.

Other traffic barrier
is selected whenever a vehicle impacts a non-concrete longitudinal barrier (*e.g.*, a guardrail) as defined in variable Objected Contacted and that impact causes a rollover [*i.e.*, Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over Rollovers which occur subsequent to the impact as a result of centrifugal force or other tripping mechanisms are not considered here.

Fence, Wall, and Building
are selected whenever one of these objects is contacted and that impact causes a rollover [*i.e.*, Rollover Initiation Type equals Trip-over, Flip-over, Climb-over, or Bounce-over]. Definitions of these objects are defined in variable Object Contacted . Rollovers which occur subsequent to the impact as a result of centrifugal impacts and tripping mechanisms are not considered for these attributes.

Ditch or Culvert
is selected whenever a vehicle enters a ditch or culvert and the vehicle rolls over as a result of the slope of the ditch/culvert [*i.e.*, Rollover Initiation Type equals Flip-over or Fall-over]. Refer to variable Objected Contacted for definition of ditch or culvert. Vehicles in a ditch which dig into the surface and rollover as a result of this tripping mechanism are captured in **Ground**.

Ground
is selected when a vehicle rolls over as a result of contact with the ground [*i.e.*, Rollover Initiation Type equals Trip-over]. "Ground" applies whether the rollover resulted from digging into soft soil, tripping over an accumulation of dirt or gravel, or gouging into the pavement. Vehicles which dig into the ground on embankments or in ditches and rollover, as a result of that digging, take this attribute.

Fire Hydrant
is selected whenever a vehicle impacts a fire hydrant and that impact causes a rollover. A fire hydrant is defined as a roadside device used by fire departments to provide water for fighting fires. Vehicles which rollover subsequent to a fire hydrant impact but not as a direct result of that impact (*i.e.*, other tripping force) do not take this attribute.

Rollover Initiation Object Contacted cont'd

Curb
includes both mountable and barrier curbs as described for variable Objected Contacted. Curbs which act as a tripping mechanism will frequently have an impact (CDC) associated with them although this is not a criterion for using this attribute. When a curb acts as a tripping mechanism, Rollover Initiation Type is coded Trip over.

Bridge
is selected whenever a vehicle impacts a bridge and that impact causes a rollover [*i.e.*, Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over]. Refer to variable Objected Contacted for the definition of a bridge. Vehicles which rollover subsequent to a bridge impact but not as a direct result of that impact (*i.e.*, other tripping force) do not take this attribute.

Other fixed object
is selected when a fixed object, other than those previously identified impacted and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Unknown fixed object
is selected when an unknown fixed object is impacted and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Passenger car, light truck, van, or other vehicle not in-transport
is selected when a vehicle impacts a not-in-transport passenger car, light truck, van, or any other motor vehicle that is not a medium/heavy truck or bus and that impact causes the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over]. Vehicles which rotate and rollover as a result of centrifugal forces or other tripping mechanisms are not captured in this response.

Medium/heavy truck or bus not in-transport
is selected when a vehicle impacts a not-in-transport medium/heavy truck or bus and that impact causes the vehicle to rollover [*i.e.*, Rollover Initiation Type equals Flip-over, Climb-over, or Bounce-over]. Vehicles which rotate and rollover as a result of centrifugal forces or other tripping mechanisms are not captured in this response.

Animal
is selected when a vehicle impacts an animal and that impact causes the vehicle to rollover. This should be a very rare occurrence. Subsequent rollovers due to other tripping mechanisms are not captured in this response.

Train
is selected when a vehicle is involved in a crash with a train and the impact causes the vehicle to rollover.

Trailer, disconnected in transport
is selected to report a trailer that has been disconnected from its power unit and subsequently impacted this vehicle and caused the rollover to occur. This will likely occur when a small trailer is involved in a head-on crash with a larger vehicle resulting in a vaulting type rollover. Do not use this attribute if the vehicle rolls over subsequent to an initial impact as centrifugal forces or tripping mechanisms take priority.

Object fell from vehicle in-transport
is selected to report an object that was being carried by or was attached to a vehicle in-transport but fell from or became detached from that vehicle and subsequently impacted this vehicle and caused the rollover to occur. Do not use this attribute if the vehicle rolls over subsequent to an initial impact as centrifugal forces or tripping mechanisms take priority.

Other nonfixed object
is selected when a nonfixed object, other than those described in the above attributes is impacted and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Unknown nonfixed object
is selected when an unknown nonfixed object is impacted and that impact causes a rollover. Do not use this attribute if a vehicle rolls over subsequent to the impact as a result of centrifugal forces or other tripping mechanisms.

Other event
is selected when circumstances exist that cannot be captured in the element values above (*e.g.*, loadshift, high winds).

Unknown object
is selected when variable a vehicle rolled over and the cause of the rollover (tripping mechanism) cannot be determined.

LOCATION ON VEHICLE WHERE INITIAL PRINCIPAL TRIPPING FORCE IS APPLIED

Screen Name: Rollover Specifics -- Location on Vehicle Where Initial Principal Tripping Force is Applied

SAS Data Set: **GV**
SAS Variable: **TRIPLOC**

Element Attributes:

0	[No rollover (no overturning)]
1	Wheels/tires
2	Side plane
3	End plane
4	Undercarriage
5	Other location on vehicle (specify):
6	Non-contact rollover forces (specify):
7	[Not a CDS Vehicle]
8	[End-over-end]
9	Unknown

Source: Researcher determined — primary source is vehicle inspection. Secondary sources are scene inspection, photographs, police report, driver interviews, and other interviews.

Remarks:

Generally the tripping forces that initiate a rollover are applied at the wheels/tires. Occasionally the tripping force is applied at the undercarriage (*e.g.*, when a vehicle mounts a guardrail) or at the side or end plane (*e.g.*, when a barrier or another vehicle impacts the front or side plane of the vehicle and flips or initiates the rollover sequence). The purpose of this variable is to identify the specific point on the vehicle where the tripping force was applied.

Wheels/Tires
is selected whenever the tripping force is applied to the wheels or tires. The most common occurrences involve wheel/tire impacts to potholes and curbs, and wheels that gouge the pavement or dig into the earth.

Side plane
is selected whenever the side plane other than the wheels and tires is contacted and that contact initiates the rollover.

End plane
is selected whenever the end plane of the vehicle is contacted and sustained the rollover initiating force. For example, a vehicle was traveling at a high rate of speed when it impacted a concrete median barrier [*i.e.*, Rollover Initiation Object Contacted, equals Concrete traffic barrier] with its front left corner. The barrier redirects the vehicle upward and back towards the roadway. As a result, the vehicle rolls over; therefore use this attribute.

Location on Vehicle Where Initial Principal Tripping Force is Applied cont'd

Page 2 of 2

Undercarriage
is selected when the rollover was caused by a force acting primarily through the undercarriage plane. For example, a vehicle strikes a guardrail {*i.e.*, Rollover Initiation Object Contacted equals Other traffic barrier (includes guardrail)} with its front right. The vehicle climbs up and over the guardrail and rolls over; therefore use this attribute.

Other location on vehicle
is selected when the tripping force is applied at a location that cannot be captured above. This attribute should be rarely used and only after consultation with the zone center.

Non-contact rollover forces
is selected when the vehicle roll is precipitated by centrifugal or gravitational forces [*i.e.*, Rollover Initiation Type equals Turn-over or Fall-over]. Specify the non-contact rollover force on the line provided.

Undercarriage
is selected when the rollover was caused by a force acting primarily through the through the undercarriage plane. For example, a vehicle strikes a guardrail with its front right. The vehicle climbs up and over the guardrail and rolls over; therefore use this code.

DIRECTION OF INITIAL ROLL

Screen Name: Rollover Specifics--Direction of Initial Roll

SAS Data Set: **GV**
SAS Variable: **ROLINDIR**

Element Attributes:

0	[No rollover (no overturning)]
1	Roll right-primarily about the longitudinal axis
2	Roll left-primarily about the longitudinal axis
7	[Not a CDS Vehicle]
8	[End-over-end]
9	Unknown roll direction

Source: Researcher determined — primary sources are the scene and vehicle inspections. Secondary sources are the police report, driver and other interviews.

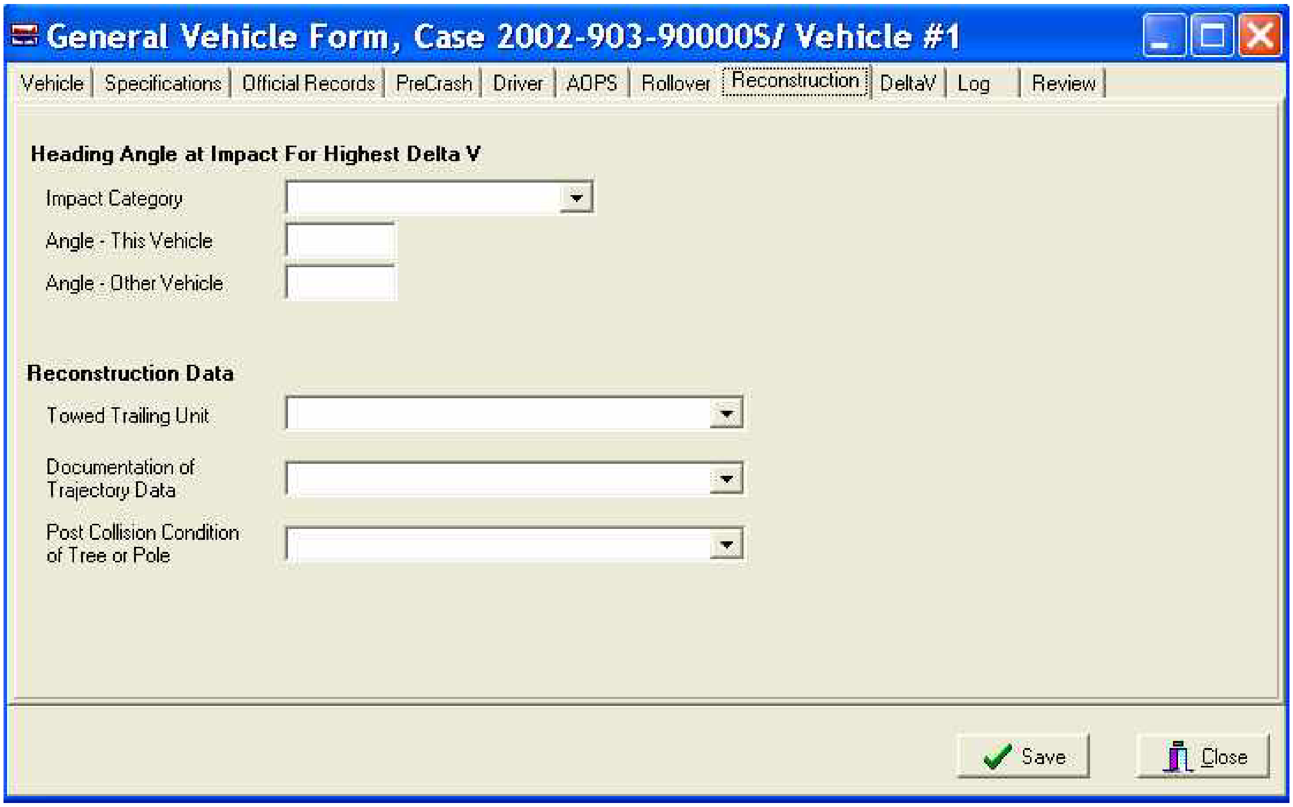
Remarks:

During a side-over-side rollover, generally the corner or roof rail with the maximum crush is the trailing side. This will be a good indication of a roll to the right or a roll to the left. Striations or directional gouge marks on the vehicle are a good indication of a vehicle's roll along the longitudinal or lateral axis. Physical evidence at the crash scene, including yaw marks, scuffing, or gouging will also provide insight into the direction of the initial roll. It will not be uncommon to combine both vehicle and scene evidence when determining the direction of the initial roll.

Roll right
is selected when the vehicle rolls over with the right side leading, a clockwise rollover from the driver's view.

Roll left
is selected when the vehicle rolls over with the left side leading, a counterclockwise rollover from the driver's view.

Reconstruction


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
Save
Close

Heading Angle at Impact For Highest Delta V

Impact Category

Angle - This Vehicle

Angle - Other Vehicle

Reconstruction Data

Towed Trailing Unit

Documentation of Trajectory Data

Post Collision Condition of Tree or Pole

TYPE OF IMPACT FOR HIGHEST DELTA V

Screen Name: Heading Angle at Impact for Highest Delta V--Impact Category

SAS Data Set: N/A
SAS Variable: N/A

Element Attributes:

Non-horizontal impact
Non-collision
Impact with object
Impact with vehicle
Unknown

Source: Researcher determined - inputs include vehicle inspection, scene diagram

Remarks:

Select the impact category that describes this vehicle’s most severe impact. **Note:** when selecting this attribute, parked vehicles are considered vehicles and not objects.

Non-horizontal impact
is selected when the Highest Delta V for this vehicle involves a non-horizontal impact. Though rollovers involve non-horizontal forces, select non-collision.

Non-collision
is selected when the Highest Delta V for this vehicle involves a Non-collision event.

Impact with an object
is selected when a collision with an object results in this vehicle's highest delta V. If this impact is a non-horizontal impact, then select **Non-horizontal impact**.

Impact with vehicle:
is selected when this vehicle’s highest Delta V impact is with another vehicle. If this impact is a non- horizontal impact, then select **Non-horizontal impact**.

Unknown
is selected only when you cannot determine which impact is the highest delta V.

HEADING ANGLE FOR THIS VEHICLE

Screen Name: Heading Angle at Impact for Highest Delta V--Angle - This Vehicle

SAS Data Set: GV
SAS Variable: ANGTHIS

Element Attributes:

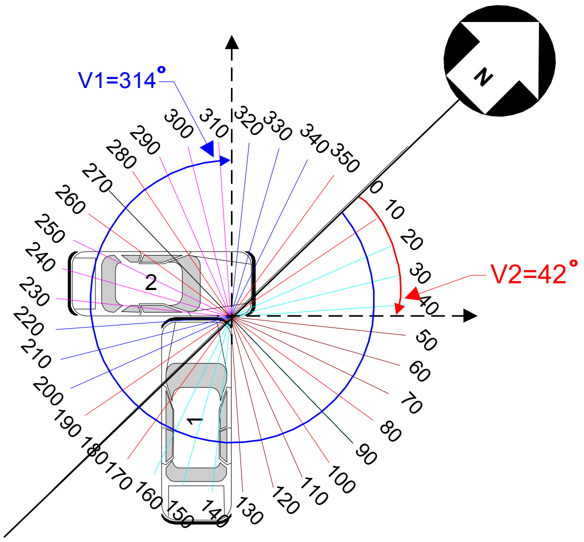
000-359	Code actual value
888	[Not a CDS Vehicle]
996	[Non-horizontal impact]
997	[Non-collision]
998	[Impact with object]
999	[Unknown]

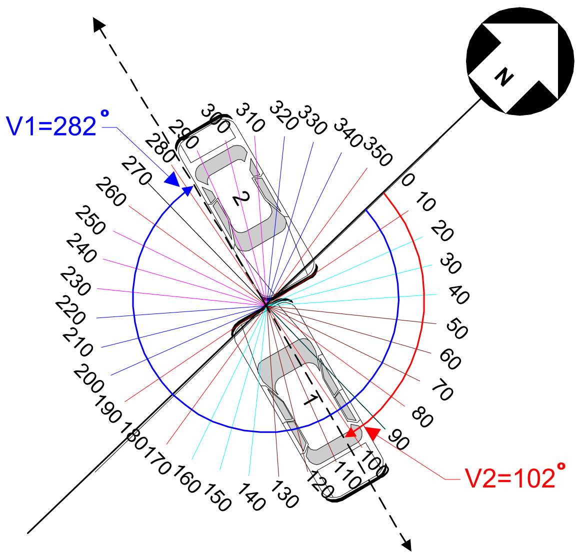
Source: Scene diagram.

Remarks:

Heading Angle for This Vehicle, records the heading angle for this vehicle's highest delta V when this impact was with another vehicle. Heading Angle for Other Vehicle, records the corresponding angle for the other vehicle. Parked vehicles are considered vehicles and not objects.

For vehicle-to-vehicle collisions, use your scene diagram referencing system to determine the heading angles at the point of impact for ***this vehicle's*** highest delta V. All measurements are referenced to the north arrow on the diagram. The heading angle of each vehicle is determined by projecting the longitudinal axis of the vehicle through the extension of the north arrow. The angle value is obtained by using a 360– protractor and measuring in a clockwise direction from the north arrow. The north arrow always represents 0– (degrees). The angle is a positive value.





The following diagrams exemplify the measurement technique.

HEADING ANGLE FOR OTHER VEHICLE

Screen Name: Heading Angle at Impact for Highest Delta V--Angle - Other Vehicle

SAS Data Set: GV
SAS Variable: ANGOTH

Element Attributes:

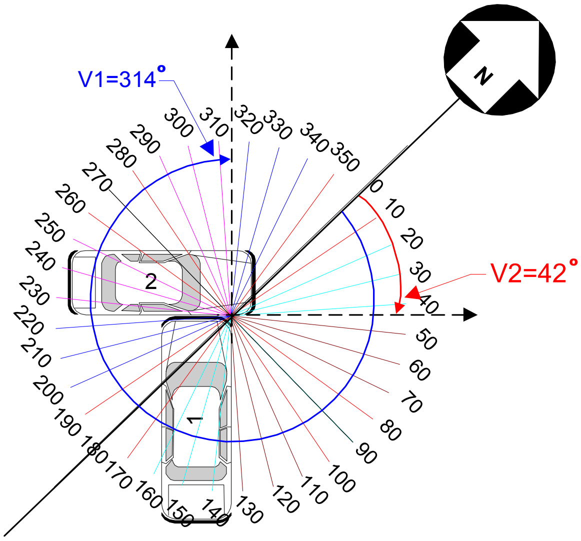
000-359	Code actual value
888	[Not a CDS Vehicle]
996	[Non-horizontal impact]
997	[Non-collision]
998	[Impact with object]
999	[Unknown]

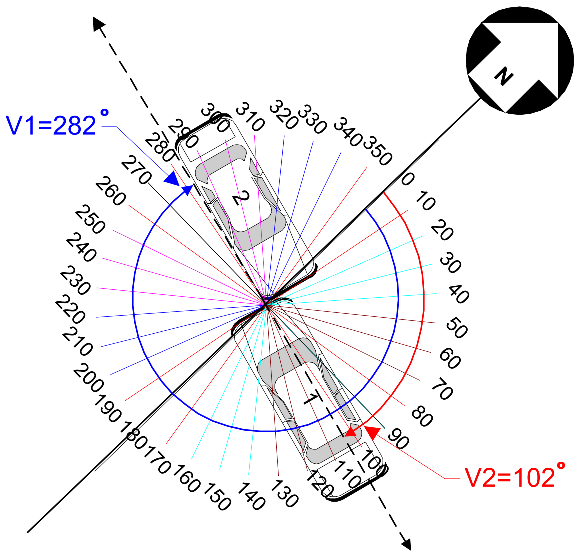
Source: Scene diagram.

Remarks:

Heading Angle for Other Vehicle, records the heading angle for the other vehicle's highest delta V when this impact was with another vehicle. Heading Angle for This Vehicle, records the corresponding angle for the other vehicle. Parked vehicles are considered vehicles and not objects.

For vehicle-to-vehicle collisions, use your scene diagram referencing system to determine the heading angles at the point of impact for ***the other vehicle's*** highest delta V. All measurements are referenced to the north arrow on the diagram. The heading angle of each vehicle is determined by projecting the longitudinal axis of the vehicle through the extension of the north arrow. The angle value is obtained by using a 360– protractor and measuring in a clockwise direction from the north arrow. The north arrow always represents 0– (degrees). The angle is a positive value.


V1=314°
V2=42°
N
1
2
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350


V1=282°
V2=102°
N
1
2
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350

The following diagrams exemplify the measurement technique.

TOWED TRAILING UNIT

Screen Name: Reconstruction Data--Towed Trailing Unit

SAS Data Set: **GV**
SAS Variable: **TOWHITCH**

Element Attributes:

0	No towed unit
1	Yes — towed trailing unit
8	[Not a CDS Vehicle]
9	Unknown

Source: Vehicle inspection, interviews, and police report.

Remarks:

A trailing unit attached by a fixed linkage includes horse trailers, fifth wheel trailers, travel trailers, camper trailers, boat trailers, truck trailers, towed motor vehicles, or any other trailer.

If this variable is **Yes — towed trailing unit**, then enter the weight of the trailer as well as any cargo it may be carrying in variable Vehicle Cargo Weight.

No towed unit
is selected when a trailing unit is not being towed by this CDS applicable vehicle.

Yes — towed trailing unit
is selected when a trailing unit is being towed by this CDS applicable vehicle.

Unknown
is selected when it is uncertain if there was a towed trailing unit.

DOCUMENTATION OF TRAJECTORY DATA

Screen Name: Reconstruction Data--Documentation of Trajectory Data

SAS Data Set: **GV**
SAS Variable: **DOCTRAJ**

Element Attributes:

0	No
1	Yes
88	[Not a CDS Vehicle]

Source: Researcher determined — inputs include scene inspection, vehicle inspection, police report, and interviews.

The purpose of this variable is to assess the availability of crash induced physical evidence for impact and final rest, including multiple impacts.

No
means there was insufficient crash induced physical evidence to **know or approximate** the point of impact and final rest position for this vehicle's Highest Delta V CDC.

Yes
is selected when sufficient crash induced physical evidence is available to **know or approximate** the point of impact and final rest position for this vehicle's Highest Delta V CDC, independently of whether the WinSMASH program trajectory algorithm could be used (*e.g.*, multiple impacts, missing vehicle, etc.).

For multiple impacts assess this variable with respect to the highest delta V impact. To code "Yes" the point of impact must be known as well its next point of impact or, if the highest delta V impact is the last impact for this vehicle, its final rest position.

When a non-horizontal and/or rollover type collision is the highest delta V impact for this vehicle, use **Yes** if the point of impact (trip point or first contact) and final rest position are known.

The word "approximated" as used above means that the impact and final rest positions do not need to be known precisely, but they are reasonably accurate based on the available physical evidence.

POST COLLISION CONDITION OF TREE OR POLE

Page 1 of 2

Screen Name: Reconstruction Data--Post Collision Condition of Tree or Pole

SAS Data Set: **GV**
SAS Variable: **CONDTREE**

Element Attributes:

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	Breakaway pole separated from base
7	Pole replaced
8	Other (specify):
88	[Not a CDS Vehicle]
99	Unknown

Source: Researcher determined - input includes vehicle and scene inspection, PAR, interviews, official records.

Remarks:

This variable records the condition of the struck **Tree, Pole** or **Post** for this vehicle's most severe impact.

Not collision (for highest Delta V) **with tree or pole**
is selected when the Object Contacted, that produced this vehicle's most severe impact was not with a tree or pole (*e.g.*, vehicle-to-vehicle collision).

Not damaged
is selected when the tree or pole has no visible damage or minor surface damage.

Cracked/sheared
is selected when the pole or tree is cracked (10% or more of the fibers), sheared, or bent. Bent and cracked poles may be tilted and the bending/cracking can be at any height. This **Tree, Pole** or **Post** attribute takes precedence over Tilted < 45 degrees, Tilted ≥ 45 degrees, and Uprooted tree. Fallen limbs do not constitute "cracked" for a tree; the assessment is made at the tree's trunk. This ***does not*** describe metal breakaway poles sheared at their base [see (Separated pole from base)].

Tilted < 45 degrees
is selected when the pole or tree that is inclined at less than a 45 degree angle as a result of this collision. If the tree/pole is also cracked, then use **Cracked/sheared**).

Tilted >= 45 degrees
is selected when the pole or tree that is inclined at a 45 degree angle or greater as a result of this collision. If the tree/pole is also cracked, then use **Cracked/sheared**).

Post Collision Condition of Tree or Pole cont'd

Uprooted tree
is selected when the tree was completely or partially torn out of the ground; the tree trunk remained intact; however, the root system was pulled from the soil.

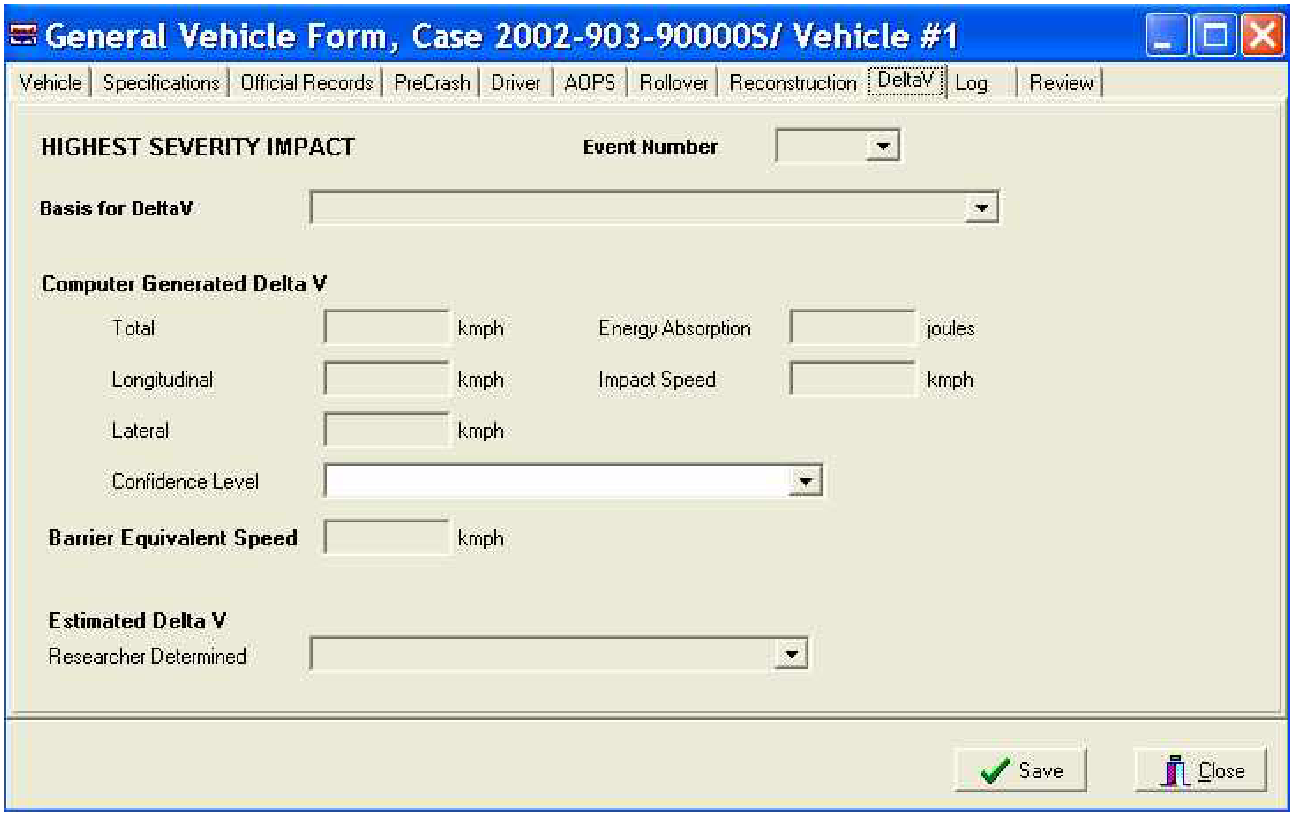
Breakaway pole separated from base
is selected when the breakaway pole has sheared or separated at the point where it was designed to do so.

Pole replaced
is selected when a replacement pole has been installed and insufficient data exist to categorize the damage to the original pole. This attribute takes precedence over **Unknown**.

Other (specify)
is selected when the **Tree, Pole** or **Post** damage cannot be captured by the preceding attributes.

Unknown
is selected when no data can be obtained regarding the **Tree, Pole** or **Post**.
Delta V

DeltaV


General Vehicle Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Specifications
Official Records
PreCrash
Driver
AOPS
Rollover
Reconstruction
DeltaV
Log
Review
HIGHEST SEVERITY IMPACT
Event Number
Basis for DeltaV
Computer Generated Delta V
Total
kmph
Energy Absorption
joules
Longitudinal
kmph
Impact Speed
kmph
Lateral
kmph
Confidence Level
Barrier Equivalent Speed
kmph
Estimated Delta V
Researcher Determined
Save
Close

The completion of the variables on the Delta V tab depends on whether or not the vehicle was inspected (i.e., General Vehicle Tab “Vehicle ”Type of Inspection”).

If the vehicle inspection is NOT completed, the Researcher will complete the variables on the Delta V tab of the General Vehicle Form.

If the vehicle is at least partially inspected, the delta V information will be entered on the Vehicle Exterior Form, CDC tab, Detail subtab.

EVENT NUMBER FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact--Event Number

SAS Data Set: **GV**
SAS Variable: **ACCSEQDV**

Element Attributes:

Code sequence number

88	[Not a CDS Vehicle]
99	Unknown event

Range: 1-as selected/roll-up

Source: Roll-up from Vehicle Exterior Form/CDC, Researcher determined

Remarks:

The Event Number that the Researcher selects as the highest severity impact is rolled-up from the Vehicle Exterior Form/CDC. If there is no Vehicle Exterior Form the researcher selects the Event Number for the highest severity impact.

BASIS FOR COMPUTER GENERATED DELTA V FOR HIGHEST SEVERITY IMPACT

Page 1 of 2

Screen Name: Highest Severity Impact--Basis for Delta V

SAS Data Set: **GV**
SAS Variable: **HDVBASIS**

Element Attributes:

When no Vehicle Inspection is completed:

0	Not Inspected
3	WinSMASH Missing Vehicle

When vehicle is inspected:
Delta V Calculated:

1	[WinSMASH - Damage and trajectory]
2	[WinSMASH - Damage only]
3	WinSMASH - Missing vehicle
4	[WinSMASH - Damage with CDC only]

Delta V Not Calculated

5	At least one vehicle is beyond scope of WinSMASH
6	Rollover
7	Other non-horizontal forces
8	Sideswipe type damage
9	Severe override
10	Yielding object
11	Overlapping damage
12	Insufficient data (specify):
88	[Not a CDS Vehicle]
98	Other
99	Unknown

Source: [Roll-up from Vehicle Exterior Form/CDC, or selected if vehicle was not inspected.] Researcher determined -- inputs include WinSMASH output (if applicable), vehicle inspection, scene inspection, police report, and photographs.

Remarks:
The Basis for Delta V for the highest severity impact is rolled-up from the Vehicle Exterior Form/CDC. If there is no Vehicle inspection, thus no Exterior Form, the researcher selects WinSMASH Missing vehicle to input reconstructed Delta V values. If there is no reconstruction for this vehicles highest delta V, select “not inspected” and the remaining variables on this tab will be disabled (precoded).

Basis for Computer Generated Delta V for Highest Severity Impact cont'd

Page 2 of 2

No Vehicle Inspection:

Not Inspected
means that this vehicle has no delta V data due to the vehicle not being inspected AND WinSMASH missing vehicle option is not applicable (i.e., other involved vehicle not inspected, or this is the only vehicle in the crash)

WinSMASH - missing vehicle
means that this vehicle was not inspected, and the delta V data was generated by the WinSMASH program using the inspected vehicle's known damage data.

Vehicle Inspection Completed:

WinSMASH - Damage and trajectory
means that the WinSMASH output is based on trajectory evidence documented at the scene, in addition to vehicle damage.

WinSMASH - Damage only
means the WinSMASH output is based upon complete vehicle damage only.

WinSMASH - Missing vehicle
means that in a two vehicle impact only this vehicle was inspected (damage measurements and CDC obtained), and for the other vehicle, the damage measurements (including CDC) are missing; however, enough data are available to use the WinSMASH Missing Vehicle algorithm.

WinSMASH - Damage with CDC only
means the WinSMASH output is based on a two vehicle collision with insufficient vehicle damage documentation. The two vehicle collision must include: one complete vehicle inspection and the other vehicle must have a complete CDC. Additional crush profile information such as the WinSMASH L, "D", etc may be entered to improve the results.

TOTAL DELTA V FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V--Total

SAS Data Set: **GV**
SAS Variable: **HDVTOTAL**

Element Attributes:

Range:

Nearest kmph
[888] – Not a CDS vehicle
[999] - Unknown

Source: Researcher determined -- Entered from WinSMASH program if vehicle not inspected; If inspected, Rolled-up from Vehicle Exterior Form/CDC,

Remarks:

The Total Delta V for the highest severity impact, automatically generated by the NASSMAIN WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999
is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

LONGITUDINAL DELTA V FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V--Longitudinal Component

SAS Data Set: **GV**
SAS Variable: **HDVLONG**

Element Attributes:

Range:

	Nearest KMPH
888	[Not a CDS Vehicle]
999	Unknown

Source: Researcher determined -- Entered from WinSMASH program if vehicle not inspected; If inspected, Rolled-up from Vehicle Exterior Form/CDC,

Remarks:

The Longitudinal Delta V for the highest severity impact, automatically generated by the NASSMAIN WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999
is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

LATERAL DELTA V FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V--Lateral Component

SAS Data Set: **GV**
SAS Variable: **HDVLAT**

Element Attributes:

Range:

	Nearest kmph
888	[Not a CDS Vehicle]
999	Unknown

Source: Researcher determined -- Entered from WinSMASH program if vehicle not inspected; If inspected, Rolled-up from Vehicle Exterior Form/CDC,

Remarks:

The Lateral Delta V for the highest severity impact, automatically generated by the NASSMAIN WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

999
is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

ENERGY ABSORPTION FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V--Energy Absorption

SAS Data Set: **GV**
SAS Variable: **HENERGY**

Element Attributes:

	Nearest joule
8888888	[Not a CDS Vehicle]
9999999	Unknown

Source: Researcher determined -- Entered from WinSMASH program if vehicle not inspected; If inspected, Rolled-up from Vehicle Exterior Form/CDC,

Remarks:

The Energy Absorption for the highest severity impact, automatically generated by the NASSMAIN WinSMASH, is rolled-up from the Vehicle Exterior Form/CDC. If this vehicle was not inspected, and a missing vehicle algorithm was used to calculate the delta V information, the data is entered here.

9999999
is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

IMPACT SPEED FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V—Impact Speed

SAS Data Set: **GV**
SAS Variable: **HIMPCTSP**

Element Attributes:

Range:

	Nearest kmph
998	Damage and Trajectory run not made
888	[Not a CDS Vehicle]
999	Unknown

Source: Researcher determined -- Rolled-up from Vehicle Exterior Form/CDC,

Remarks:

The Impact speed for the highest severity impact, automatically generated by the NASSMAIN WinSMASH (Damage and Trajectory), is rolled-up from the Vehicle Exterior Form/CDC.

998
is rolled up from the Vehicle Exterior Form / CDC tab when the impact did not include the Trajectory portion of the WinSMASH program.

999
is rolled-up from the Vehicle Exterior Form/CDC when the results for this impact are unobtainable.

CONFIDENCE LEVEL FOR HIGHEST SEVERITY IMPACT

Screen Name: Highest Severity Impact Computer Generated Delta V--Confidence Level

SAS Data Set: **GV**
SAS Variable: **DVCONFID**

Element Attributes:

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
8	[Not a CDS Vehicle]

Source: Researcher determined from WinSMASH program results, vehicle inspection, scene inspection, and injury data.

Remarks:
Select the Confidence Level of the NASSMAIN WinSMASH run that resulted in this vehicle’s highest Delta V. Determine the quality of this vehicle's WinSMASH program for the highest severity impact by evaluating the results of the WinSMASH program and the data used to create those results for this impact.

No reconstruction
is selected when WinSMASH is not used for the highest severity impact or it is used only to get a Barrier Equivalent Speed or an Estimated Delta V for the highest severity impact.

Collision fits model - results appear reasonable
is selected if the results of the WinSMASH in comparison to the actual collision are believed to be within an acceptable range for this impact

Collision fits model - results appear high
is selected if the results of the WinSMASH in comparison to the actual collision appear to over represent this impact. For example, vehicle damage is minor (bumper stroke only), and the total delta V is 25 kmph.

Collision fits model - results appear low
is selected if the results of the WinSMASH in comparison to the actual collision appear to under represent this impact. For example, vehicle damage is severe (60 centimeters of distributed frontal crush), injury level is high (AIS-3,4,5), and the total delta V is 25 kmph.

Borderline reconstruction - results appear reasonable
is selected if the results of the WinSMASH in comparison to the actual collision are within an acceptable range for this impact. However, some collision conditions were borderline for reconstruction.

Use this attribute for all ***uninspected*** vehicles whose delta V is determined by the WinSMASH Missing Vehicle and the results appear reasonable.

BARRIER EQUIVALENT SPEED FOR HIGHEST SEVERITY IMPACT

Screen Name: Barrier Equivalent Speed

SAS Data Set: **GV**
SAS Variable: **HBAREQSP**

Element Attributes:

	[Nearest kmph]
888	[Not a CDS Vehicle]
999	Unknown

Source: WinSMASH program.

Remarks:

Record the Barrier Equivalent speed from the WinSMASH results for this impact, if this vehicle was **not inspected and** a WinSMASH Missing Vehicle algorithm was run. If the vehicle **was inspected**, and WinSMASH was completed, the results will roll up to this screen from the Vehicle Exterior Form / CDC tab.

To generate Barrier Equivalent speed for car to object impacts the WinSMASH program is utilized. For these runs treat the struck object as an immovable barrier.

For car to object impacts where the object moves or sustains damage (poles, trees, large trucks, etc.) or the object is struck (horizontally) during a rollover use the WinSMASH program and treat the object as a rigid barrier.

ESTIMATED SEVERITY FOR HIGHEST SEVERITY IMPACT

Screen Name: Estimated Highest Delta V--Researcher Determined

SAS Data Set: **GV**
SAS Variable: **HDVEST**

Element Attributes:

0	Reconstruction delta V coded
Estimated Delta V	
1	Less than 10 kmph
2	Delta V >= 10 kmph < 25 kmph
3	Delta V >= 25 kmph < 40 kmph
4	Delta V >= 40 kmph < 55 kmph
5	Delta V >= 55 kmph
Other estimates of damage severities	
6	Minor
7	Moderate
8	Severe
88	[Not a CDS Vehicle]
99	Unknown

Source: Researcher determined.

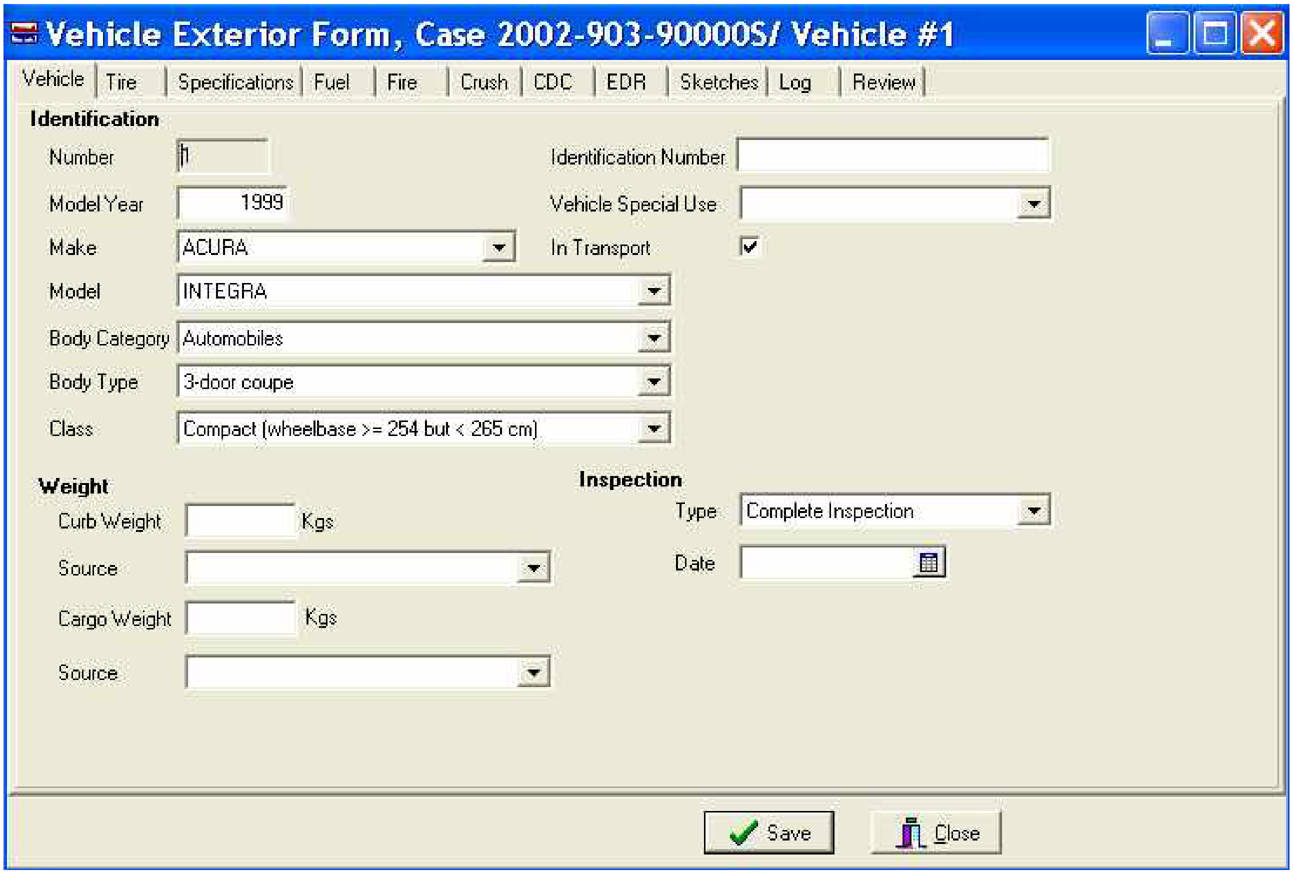
Remarks: The value that is in this variable is rolled up from the Vehicle Exterior Form, CDC tab.

If the vehicle was not inspected the variable is automatically precoded as either:

- Reconstruction Delta V coded or
- Unknown

based on which selection was made previously on **Basis for Delta V**.

VEHICLE EXTERIOR FORM


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Save
Close

Identification

Number: 1
Model Year: 1999
Make: ACURA
Model: INTEGRA
Body Category: Automobiles
Body Type: 3-door coupe
Class: Compact (wheelbase >= 254 but < 265 cm)
Identification Number:
Vehicle Special Use:
In Transport: ☑

Weight

Curb Weight: Kgs
Source:
Cargo Weight: Kgs
Source:

Inspection

Type: Complete Inspection
Date:

VEHICLE NUMBER

Screen Name: Number

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Generated Number

Range:

Source: Generated when vehicle is selected to open General Vehicle Form

Remarks:

Note: Vehicles are entered on the Case Form / Structure Tab / Vehicles sub-tab.

VEHICLE MODEL YEAR

Screen Name: Identification--Model Year

SAS Data Set: **GV**
SAS Variable: **MODELYR**

Element Attributes:
1900 - current data collection year plus one
9999 - Unknown

Range: 1900-current year+1

Source: Primary source is the VIN during vehicle inspection; secondary sources include the police report and interviews.

Remarks:

Select the model year for which the vehicle was manufactured.

Unknown if the vehicle model year cannot be determined.

VEHICLE MAKE

Screen Name: Identification--Make

SAS Data Set: **GV**
SAS Variable: **MAKE (for SAS code); OMAKE (for Oracle code)**

Element Attributes:
Vehicle Make-as Selected
Unknown

Source: Vehicle inspection, police report, and interview

Remarks:

Select the vehicle make for this vehicle.

Unknown is used for a "hit-and-run" vehicle unless reliable evidence indicates the make of the vehicle.

See appendix for list of makes.

VEHICLE MODEL

Screen Name: Identification—Model

SAS Data Set: **GV**
SAS Variable: **MODEL (for SAS code); OMODEL (for Oracle code)**

Element Attributes:
Vehicle Model-as Selected
Unknown

Source: Vehicle inspection, police report, and interview

Remarks:

Select the vehicle model for this vehicle.

Unknown is used for a "hit-and-run" vehicle unless reliable evidence indicates the make of the vehicle.

See appendix for list of Models

VEHICLE BODY CATEGORY

Page 1 of 2

Screen Name: Body Category

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Automobiles
Automobile Derivatives
Utility Vehicles
Van Based Light Trucks
Light Conventional Trucks
Other Light Trucks
Buses (Excludes Van Based)
Medium/heavy Trucks
Motored Cycles
Other Vehicles
Unknown Body Type

Source: Vehicle inspection, police report, interview, VIN

Remarks:

Automobiles
These light vehicles referred to as automobiles, are designed primarily to transport passengers.

Automobile Derivatives
This describes certain passenger cars that have been modified to perform cargo-related tasks.

Utility Vehicles (< 4,536 kgs GVWR)

Van Based Light Trucks (< 4,536 kgs GVWR)

Light Conventional Trucks (Pickup Style Cab, < 4,536 kgs GVWR)

Other Light Trucks (< 4,536 kgs. GVWR)
Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

Buses (Excludes Van Based)
Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

Vehicle Body Category cont'd

Medium/Heavy Trucks (> 4,536 kgs GVWR)

Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab. They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

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

Other Vehicles

Other Vehicles describe all motored vehicles that are designed primarily for off-road use. It is also selected when the body type of the vehicle is unknown

BODY TYPE

Screen Name: Body Type

SAS Data Set: **GV**
SAS Variable: **BODYTYPE**

Element Attributes:
CDS APPLICABLE VEHICLES

	Automobiles
01	Convertible (excludes sun-roof, t-bar)
02	2-door sedan, hardtop, coupe
03	3-door/2-door hatchback
17	**3-DOOR COUPE**
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 (<=4,536 kgs GVWR)
14	Compact utility (examples include: 4-Runner, Amigo, Bravada, Bronco [76 and before], Bronco II, Cherokee [84 and after], Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)
15	Large utility (examples include: Bronco-full-size [78 and after], full-size Blazer, full-size Jimmy, Hummer, Jeep Cherokee [83 and before], Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon)
16	Utility station wagon (examples include: Chevrolet Suburban, Expedition, Excursion, GMC Suburban, Grand Wagoneer includes suburban limousine, Travelall)
19	Utility, unknown body type

Body Type cont'd

Van Based Light Trucks (<=4,536 kgs GVWR)

20 Minivan (examples include: Aerostar, Astro, Caravan, Expo Wagon, Grand Caravan, Grand Voyager, Lumina APV, Mazda MPV, Mini-Ram, Mitsubishi Minivan, Nissan Minivan, Odyssey, Previa, Quest, Safari, Sienna, Silhouette, Town and Country, Toyota Minivan, Toyota Van, Trans Sport, Vanagon/Camper, Venture, Villager, Vista, Voyager, Windstar)
21 Large van (examples include: B150-B350, Beauville, Chateau, Chevy Van, Clubwagon, E150- E350, Econoline, G10-G30, G15-G35, Maxiwagon, Rally Van, Ram, Royal, Sport Van, Sportsman, Tradesman, Vandura, Voyager [83 and before].)
22 Step van or walk-in van (<=4,536 kgs GVWR)
23 Van based motorhome (<=4,536 kgs GVWR)
24 Van based school bus (<=4,536 kgs GVWR)
25 Van based other bus (<=4,536 kgs GVWR)
28 Other van type (Hi-Cube Van, Kary) (specify):
29 Unknown van type

Light Conventional Trucks (Pickup style cab, <=4,536 kgs GVWR)

30 Compact pickup (examples include: Arrow Pickup [foreign], Colt P/U, Courier, D50, Dakota, Datsun/Nissan Pickup, Frontier, Hombre, LUV, Mazda Pickup, Mitsubishi Pickup, Pup, Ram 50, Ranger, S-10 , S-15, Sonoma, Sport Trac, T-10, T-15, Tacoma, Toyota Pickup)
31 Large Pickup (examples include: C10-C35, Comanche, D100-D350, F100-F350, Jeep Pickup, K10-K35, R100-R500, R10-R35, Ram Pickup, Sierra, Silverado, T100, V10-V35, W100-W350)
32 Pickup with slide-in camper
33 Convertible pickup
39 Unknown pickup style light conventional truck type

Other Light Trucks (<=4,536 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)

Body Type cont’d

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 (> 4,536 kgs GVWR)

60	Step van (> 4,536 kgs GVWR)
61	Single unit straight truck (4,536 kgs <GVWR<=8,845 kgs)
62	Single unit straight truck (8,8845 kgs <GVWR<=11,793 kgs)
63	Single unit straight truck (> 11,793 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)
74	Medium / Heavy Pickup >=4,536 kgs
78	Unknown medium/heavy truck type

Unknown truck type (light / medium / heavy)

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, motor scooter) (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

Unknown Vehicle Type

99	Unknown body type

Body Type cont'd

Source: Vehicle inspection, police report, and interview

Remarks:

Automobiles
These light vehicles referred to as automobiles, are designed primarily to transport passengers.

01 Convertible (excludes sun-roof, t-bar)
refers to a passenger car equipped with a removable or retractable roof. To qualify for this attribute, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This attribute takes priority over 2-door or 4-door attributes.

02 2-door sedan, hardtop, coupe
refers to a passenger car equipped with two doors for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

03 3-door/2-door hatchback
refers to a passenger car equipped with two doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

17 3-door coupe
refers to a passenger car equipped with three doors (two front seat and one rear seat) for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

04 4-door sedan, hardtop
refers to a passenger car equipped with four doors for ingress/egress and a separate trunk area for cargo (*i.e.*, trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

05 5-door/4-door hatchback
refers to a passenger car equipped with four doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

06 Station wagon (excluding van and truck based)
refers to a passenger car with an enlarged cargo area. The entire roof covering the cargo area is generally equal in height from front to rear and full height side glass is installed between the C and D-pillars. The rearmost area is not permanently partitioned from the forward passenger compartment area (*e.g.*, "horizontal window shades" to hide cargo do not constitute partitions).

Hatchback, number of doors unknown
refers to a passenger car with an unknown number of doors for ingress/egress and a rear hatch opening for cargo (*i.e.*, hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

08 Other automobile type
refers to any passenger car that cannot be described by other automobile attributes.

09 Unknown automobile type
is used when it is known that the vehicle is a passenger car, but there is insufficient data to determine the type.

Automobile Derivatives
This describes certain passenger cars that have been modified to perform cargo-related tasks.

10 Auto based pickup
refers to a passenger car based, pickup type vehicle (includes El Camino, Caballero, Ranchero, Brat, and Rabbit pickup). The roof area (and side glass) rearward of the front seats on a station wagon have been removed and converted into a pickup-type cargo box.

11 Auto based panel
refers an automotive station wagon that may have sheet metal rearward of the B-pillar rather than glass (cargo station wagon, auto based ambulance/hearse).

12 Large limousine
refers to an automobile that has sections added within its wheelbase (more than four side doors) or stretched chassis to increase length and passenger/cargo carrying capacity .

13 Three-wheel automobile or automobile derivative
refers to three-wheel vehicles with an enclosed passenger compartment.

Utility Vehicles (<=4,536 kgs GVWR)

Multi-purpose vehicles (MPV)
are designed to have off-road capabilities. These vehicles are generally four wheel drive (4 x 4), have increased ground clearance, and are equipped with a strong frame. Four wheel drive automobiles are not considered MPVs.

14 Compact utility
refers to a short wheelbase and narrow tracked multi-purpose vehicle designed to operate in rugged terrain (examples include: 4-Runner, Amigo, Bravada, Bronco [76 and before], Bronco II, Cherokee [84 and after], Defender, Discovery, Dispatcher, Explorer, Geo Tracker, Golden Eagle, Grand Vitara, Jeep CJ-2 - CJ-7, Laredo, Montero, Mountaineer, Navajo, Passport, Pathfinder, Raider, RAV4, RX-300, Renegade, Rocky, Rodeo, S-10 Blazer, S-15 Jimmy, Samurai, Scrambler, Sidekick, Sportage, Thing, Trooper, Trooper II, Wrangler, Xterra, X-90)

Body Type cont'd

15 Large utility

refers to full-size multi-purpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon style body, some models are equipped with a removable top (examples include: Bronco-full-size [78 and after], full-size Blazer, full-size Jimmy, Hummer, Jeep Cherokee [83 and before], Durango, Escalade, Landcruiser, LX450, Navigator, Ramcharger, RangeRover, Scout, Tahoe, Trailduster, Yukon),

16 Utility station wagon

refers primarily to a pickup truck based chassis enlarged to a station wagon (examples include: Chevrolet Suburban, Excursion, GMC Suburban, Travelall, Grand Wagoneer, includes suburban limousine)

Utility, unknown body type

is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type. Class of Vehicle is entered as **(Compact utility vehicle)**.

Van Based Light Trucks (<=4,536 kgs GVWR)

Light trucks (<=4,536 kgs GVWR) are designed to maximize cargo/passenger area versus overall length. Basically a "box on wheels" these vehicles are identifiable by their enclosed cargo/passenger area and relatively short (or non-existent) hood.

20 Minivan

refers to down-sized cargo or passenger vans examples include: Aerostar, Astro, Caravan, Expo Wagon, Grand Caravan, Grand Voyager, Lumina APV, Mazda MPV, Mini-Ram, Mitsubishi Minivan, Nissan Minivan, Odyssey, Previa, Quest, Safari, Sienna, Silhouette, Town and Country, Toyota Minivan, Toyota Van, Trans Sport, Vanagon/Camper, Venture, Villager, Vista, Voyager, Windstar)

21 Large van

refers to a standard cargo or passenger van (examples include: 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). These vans will generally have a larger capacity in both volume and GVWR.

22 Step van or walk-in van (<=4,536 kgs GVWR)

refers to a multi-stop delivery vehicle with a GVWR less than or equal to 4,536 kilograms. Examples are the Grumman LLV used by the US Postal Service or the Aeromate manufactured by Utilimaster Motor Corporation.

23 Van based motorhome (<=4,536 kgs GVWR)

refers to a van where the chassis and cab portions from the B-pillar forward of this vehicle are the same as in attributes minivan, large van, step van, however, a frame mounted recreational unit is added behind the driver/cab area. This attribute takes priority over attributes minivan and large van.

Body Type cont'd

24 Van based school bus (<=4,536 kgs GVWR)
is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van based school buses converted for other uses (*e.g.*, church bus) also take this attribute.

25 Van based other bus (<=4,536 kgs GVWR)
is a van derivative (*e.g.*, taxi, small local transit) designed to carry passengers for low occupancy functions or purposes. Van based school buses do not use this attribute.

28 Other van type (Hi-Cube Van, Kary)
refers to a cargo or delivery van where that chassis and cab portions from the B-pillar forward of this vehicle are the same as in Minivans and Large Vans with a frame mounted cargo area unit added behind the driver/cab area, or if the van cannot be described as a Minivan, Large Van, Step-van or a Van-based motorhome. Annotate the van type when using this attribute. This attribute takes priority over Minivans and Large Vans.

29 Unknown van type
is used when it is known that this vehicle is a light van, but its specific type cannot be determined.

Light Conventional Trucks (Pickup Style Cab, <=4,536 kgs GVWR)
Light Conventional Trucks are used to describe vehicles commonly referred to as pickup trucks and some of their derivatives. These light trucks are characteristically designed with a small cab containing a single row of seats (extended cabs with additional seats are available for some models), a large hood covering a conventional engine placement, and a separate open box area (approximately 180 to 240 centimeters long) for cargo.

30 Compact pickup
is used to describe a pickup truck having a width of 178 centimeters or less. (examples include: Arrow Pickup [foreign], Colt P/U, Courier, D50, Dakota, Datsun/Nissan Pickup, Frontier, Hombre, LUV, Mazda Pickup, Mitsubishi Pickup, Pup, Ram 50, Ranger, S-10 , S-15, Sonoma, T-10, T-15, Tacoma, Toyota Pickup)

31 Large Pickup
is used to describe a pickup truck having a width of greater than 178 centimeters (examples include: C10-C35, Comanche, D100-D350, F100-F350, Jeep Pickup, K10-K35, R100-R500, R10-R35, Ram Pickup, Sierra, Silverado, T100, V10-V35, W100-W350)

32 Pickup with slide-in camper
is used to describe any pickup truck that is equipped with a slide-in camper. A slide-in camper is a unit that mounts within a pickup bed. Pickup bed caps, tonneau covers, or frame mounted campers are not applicable for this attribute.

Body Type cont'd

33 Convertible pickup
refers to a pickup truck equipped with a removable or retractable roof. To qualify for this attribute, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This attribute takes priority over compact and large pickups.

39 Unknown pickup style light conventional truck
is used when this vehicle is a Light Conventional Trucks, but there is insufficient data to determine the specific attribute.

Other Light Trucks (<=4,536 kgs. GVWR)
Other Light Trucks are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

40 Cab chassis based (includes rescue vehicles, light stake, dump, and tow truck)
is used to describe a light vehicle with a pickup style cab and a commercial (non-pickup) body attached to the frame. Included are pickup based ambulances and tow trucks.

41 Truck based panel
is used to describe a truck based station wagon that has sheet metal rather than glass above the beltline rearward of the B-pillars.

42 Light truck based motorhome (chassis mounted)
is used to describe a frame mounted recreational unit attached to a light van or conventional chassis.

45 Other light conventional truck type
is used for light conventional trucks that cannot be described elsewhere.

48 Unknown light truck type
is used when it is known that the vehicle is a light truck chassis based vehicle but insufficient data exist to specify what type of light truck it is.

49 Unknown light vehicle type (automobile, utility, van, or light truck)
is used when it is known that the vehicle is a light vehicle, but insufficient data exists to specify what type of light truck it is.

Buses (Excludes Van Based)
Buses are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

50 School bus
(designed to carry students, not cross country or transit) is a bus designed to carry passengers to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. School buses converted for other uses (*e.g.*, church bus) also take this attribute.

58 Other bus type
(e.g., transit, intercity, bus based motorhome) is a transport device designed to carry passengers for longer periods of time. These vehicles may be classified as over-the-road, transit, intercity, bus related motorhome (other than school bus based), or other.

59 Unknown bus type
is used when it is known the transport device is a bus but there is insufficient data to choose between attributes School bus and Other bus type.

Medium/Heavy Trucks (> 4,536 kgs GVWR)
Medium/Heavy Trucks describe a single unit truck specifically designed for carrying cargo on the same chassis as the cab.

They pertain to a truck-tractor designed for towing trailers or semi-trailers. Although towing is their primary purpose, some truck-tractors are equipped with cargo areas located rearward of the cab.

60 Step van (> 4,536 kgs GVWR)
defines a single unit enclosed body with a GVWR greater than 4,536 kilograms and an integral driver's compartment and cargo area. Step vans are generally equipped with a folding driver seat mounted on a pedestal and a sliding door for easy ingress/egress.

61 Single unit straight truck (4,536 kgs <=GVWR <= 8,845 kgs)
describes a non-articulated truck designed to carry cargo. The gross vehicle weight rating of the vehicle must exceed 4,536 kilograms and be less than or equal to 8,845 kilograms.

62 Single unit straight truck (8,845 kgs <= GVWR <= 11,793 kgs)
describes a non-articulated truck designed to carry cargo. The gross vehicle weight rating of the vehicle must exceed 8,845 kilograms and be less than or equal to 11,793 kilograms.

63 Single unit straight truck (> 11,793 kgs GVWR)
describes a non-articulated truck designed to transport cargo with a gross vehicle weight rating in excess of 11,793 kilograms. Use this attribute if it is known that the GVWR of a single unit straight truck is greater than 4,536 kilograms but there is insufficient data to specify the type of single unit truck.

64 Single unit straight truck, GVWR unknown
is used when the transport vehicle is a single unit straight truck but the GVWR is unknown.

65 Medium/heavy truck based motorhome
describes a recreational vehicle mounted on a single unit medium/heavy truck chassis.

67 Truck-tractor with no cargo trailer
describes a fifth wheel equipped tractor/trailer power unit with no trailer attached.

68 Truck-tractor pulling one trailer
describes a fifth wheel equipped tractor (*i.e.*, power unit of a tractor/trailer combination) pulling one semi-trailer.

69 Truck-tractor pulling two or more trailers
describes a fifth wheel equipped tractor (*i.e.*, power unit of a tractor/trailer combination) pulling a semi-trailer plus one or more trailers. These additional trailers may be attached with a standard hitch or a converter dolly (for semi-trailers).

70 Truck-tractor (unknown if pulling trailer)
is used when the vehicle is known to be a truck-tractor, but it is unknown if a trailer was being towed or if more than one trailer was being towed.

78 Unknown medium/heavy truck type
is used when the only available information indicates a truck of medium/heavy size.

79 Unknown truck type (light/medium/heavy)
is used when it is known that this vehicle is a truck, but there is insufficient data to classify the vehicle further.

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

80 Motorcycle
is used when the vehicle is a two-wheeled open (*i.e.*, no enclosed body) vehicle propelled by an internal combustion engine. Motorcycles equipped with a side car also take this attribute.

81 Moped (motorized bicycle)
is used when the vehicle is a motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

82 Three-wheel motorcycle or moped
is used when the vehicle is a three-wheeled open vehicle propelled by an internal combustion engine or a three-wheeled motorized bicycle capable of moving either by pedaling or by an internal combustion engine.

88 Other motored cycle (minibike, motor scooter)
is used when the vehicle in question does not qualify for attributes **Motorcycles, moped, three wheeled motorcycle or moped** (*e.g.*, motor scooter).

89 Unknown motored cycle type
is used when it is known that the vehicle is a motored cycle, but no further data is available.

Other Vehicles
Other Vehicles describe all motored vehicles that are designed primarily for off-road use.

90 ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
is used for off-road recreational vehicles which cannot be licensed for use on public roadways. ATVs have 4 or more wheels and ATCs have 2 or 3 wheels. Generally, the tires have low pressure and wide profile (*i.e.*, flotation/balloon).

91 Snowmobile
refers to a vehicle designed to be operated over snow propelled by an internal combustion engine.

92 Farm equipment other than trucks
refers to farming implements other than trucks propelled by an internal combustion engine (*e.g.*, farm tractors, combines, etc.).

93 Construction equipment other than trucks
refers to construction equipment other than trucks propelled by an internal combustion engine (*e.g.*, bulldozer, road grader, etc.).

97 Other vehicle type
is used when the motorized vehicle in question does not qualify for **Construction equipment other than trucks, Farm equipment other than trucks, Snowmobile, ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)** (*e.g.*, go-cart, dune buggy, "kit" car, etc.).

Unknown Vehicle Type
Unknown Vehicle Type describes all motored vehicles where the body type cannot be differentiated among a light vehicle type, bus, medium/heavy truck, motored cycle, or any other motored vehicle type.

99 Unknown body type
is used when there is no available information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle within one of the preceding attributes.

CLASS OF VEHICLE

Page 1 of 11

Screen Name: Class of Vehicle

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

1	Subcompact/mini (wheelbase < 254 cm)
2	Compact (wheelbase ≥ 254 but < 265 cm)
3	Intermediate (wheelbase ≥ 265 but < 278 cm)
4	Full size (wheelbase ≥ 278 but < 291 cm)
5	Largest (wheelbase ≥ 291 cm)
9	Unknown passenger car size
14	Compact utility vehicle
15	Large utility vehicle (≤ 4,536 kgs GVWR)
16	Utility station wagon (≤ 4,536 kgs GVWR)
19	Unknown utility type
20	Minivan (≤ 4,536 kgs GVWR)
21	Large van (≤ 4,536 kgs GVWR)
24	Van based school bus (≤ 4,536 kgs GVWR)
28	Other van type (≤ 4,536 kgs GVWR)
29	Unknown van type (≤ 4,536 kgs GVWR)
30	Compact pickup truck (≤ 4,536 kgs GVWR)
31	Large pickup truck (≤ 4,536 kgs GVWR)
38	Other pickup truck (≤ 4,536 kgs GVWR)
39	Unknown pickup truck type (≤ 4,536 kgs GVWR)
45	Other light truck (≤ 4,536 kgs GVWR)
48	Unknown light truck type (≤ 4,536 kgs GVWR)
49	Unknown light vehicle type
50	School bus (excludes van based) (> 4,536 kgs GVWR)
58	Other bus (> 4,536 kgs GVWR)
59	Unknown bus type
60	Truck (> 4,536 kgs GVWR)
67	Tractor without trailer
68	Tractor - trailer(s)
78	Unknown medium/heavy truck type
79	Unknown light/medium/heavy truck type
80	Motored cycle
90	Other vehicle
99	Unknown

Source: Researcher determined — inputs include police report, vehicle inspection, VIN breakdown, and interviews.

Class of vehicle cont'd

Remarks:

The Passenger Car Classification Subcommittee, A3B11(1), of the Transportation Research Board, Traffic Records and Accident Analysis Committee, A3B11, assessed size based on the vehicle wheelbase. The guidelines for this classification can be found in the report entitled Recommended Definitions for Passenger Car Size Classification by Wheelbase and Weight, August 1984 by the previously mentioned subcommittee. This variable is the same variable that appears in the Identification section of the Vehicle Tab on the General Vehicle Form and Vehicle Exterior Form.

Subcompact/mini (wheelbase < 254 cm)
Choose based upon wheelbase

Compact (wheelbase >= 254 but < 265 cm)
Choose based upon wheelbase

Intermediate (wheelbase >= 265 but < 278 cm)
Choose based upon wheelbase

Full size (wheelbase >= 278 but < 291 cm)
Choose based upon wheelbase

Largest (wheelbase >= 291 cm)
Choose based upon wheelbase

Unknown passenger car size
is used when it is known that a vehicle is a passenger car but the wheelbase is unknown

Compact utility vehicle
refers to vehicle models defined as **Compact utility** under Body Type. Use this attribute if the size of the utility vehicle is unknown.

Large utility vehicle (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Large utility** under Body Type. Refers to full-size multipurpose vehicles primarily designed around a shortened pickup truck chassis. While generally a station wagon body style, some models are equipped with a removable top.

Utility station wagon (<= 4,536 kgs GVWR)
refers to vehicle models defined as **Utility station wagon** under Body Type. Refers primarily to a pickup truck based chassis enlarged to a station wagon.

Unknown Utility type
is defined as **Utility, unknown body type** under Body Type. This attribute is used when it is known that the vehicle is a utility vehicle, but there is insufficient data to determine the specific type.

Class of vehicle cont'd

Minivan (<= 4536 kgs. GVWR)
Refers to vehicle models defined as **Minivan** under Body Type. Refers to down-sized passenger or cargo vans.

Large van (<= 4536 kgs. GVWR)
Refers vehicle models defined as **Large van** under Body Type. Refers to a standard size cargo or passenger van.

Van based school bus (<= 4,536 kgs GVWR)
is a passenger van designed to carry students (passengers) to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school buses. Use this attribute regardless of whether the vehicle is owned by a school system or a private company. Van based school buses converted for other uses (e.g., church bus) also take this attribute refers to vehicles defined as **Van based school bus** under Body Type.

Other van type (<= 4,536 kgs GVWR)
Refers to vehicle models defined as Step van or walk-in van, Van based motorhome, Van based other bus and code Other van type under Body Type.

Unknown van type (<= 4,536 kgs GVWR)
is used when it is known that this vehicle is a light van, but its specific type cannot be determined. Refers to vehicles described as **Unknown van type** under Body Type.

Compact pickup truck
Refers to vehicle models defined as attributes of **Compact pickup truck** in Body Type. Used to describe a pickup truck having a width of 178 centimeters or less.

Large pickup truck
Refers to vehicle models defined as **Large pickup truck** under Body Type. Used to describe a pickup truck having a width greater than 178 centimeters.

Other pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Pickup with slide-in camper** and **Convertible pickup** under Body Type.

Unknown pickup truck (<= 4536 kgs GVWR)
Refers to vehicle models defined as **Unknown pickup style light conventional truck type** under Body Type.

Other light truck (<= 4536 kgs GVWR)
Refers to vehicle models defined **as Cab, chassis based (includes rescue vehicles, light stake, dump, and tow truck), Truck based panel, Light truck based motorhome (chassis mounted),** and **Other light conventional truck type** under Body Type.

Class of vehicle cont'd

Unknown light truck type

Refers to vehicle models defined as **Unknown light truck type** under Body Type.

Unknown light vehicle type (automobile, utility, van, or light truck)

Refers to vehicle models defined as Unknown light vehicle type (automobile, utility, van, or light truck) under Body Type.

School bus (excludes van based) (> 4536 kgs GVWR)

Refers to those vehicle models defined as School bus (designed to carry students, not cross country or transit) under Body Type.

Other bus (>4,536 kgs GVWR)

describes those vehicle models included in Other bus type (e.g., transit, intercity, bus based motorhome) under Body Type.

Unknown bus type

Refers to those vehicle models described as **Unknown bus type** under Body Type.

Truck (> 4,536 kgs GVWR)

is defined under Body Type, as **Step van (>4,536 kgs GVWR), Single unit straight truck (4,536 kgs < GVWR <= 8,845), Single unit straight truck (8,845 kgs < GVWR <= 11,793), Single unit straight truck (>11,793 kgs GVWR), Single unit straight truck, GVWR unknown** and **Medium/heavy truck based motorhome.**

Tractor without trailer

refers to **Truck-tractor with no cargo trailer** under Body Type.

Tractor-trailer(s)

is defined in attributes **Truck-tractor pulling one trailer, Truck-tractor pulling two or more trailers** and **Truck-tractor (unknown if pulling trailer)** under Body Type.

Unknown medium/heavy truck type)

is used when the only available information indicates a truck of medium/heavy size. Refer to **Unknown medium/heavy truck type** under Body Type.

Unknown truck type (light/medium/heavy)

Refers to those vehicles described by **Unknown truck type (light/medium/heavy)** under Body Type.

Motored cycle

refers to Body Type, **Motorcycle, Moped (motorized bicycle), Three-wheel motorcycle or moped, Other motored cycle (minibike, motorscooter)** and **Unknown motored cycle type**.

Other vehicle

refers to all vehicles described by **ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle), Snowmobile, Farm equipment other than trucks,** or **Other vehicle type** under Body Type.

Class of vehicle cont'd

Unknown
is used when there is a lack of information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle using one of the preceding codes. This attribute is equivalent to Body Type, **Unknown body type.**

Not a motor Vehicle
Is used when an object is struck.

VEHICLE IDENTIFICATION NUMBER (VIN)

Screen Name: Identification--Identification Number

SAS Data Set: **GV**
SAS Variable: **VIN**

Element Attributes:
00000000000000000
Enter the entire or partial VIN, left justify
99999999999999999

Source: Primary source is vehicle inspection; a secondary source is the police report.

Remarks:

If a vehicle is inspected, the VIN must be obtained from the vehicle. The PAR may be used to obtain a VIN when a vehicle inspection is not required (*i.e.*, non-tow CDS applicable ***and*** WinSMASH is not applicable; or Body Category, equals **Buses, Medium/Heavy Trucks, Motorcycles,** or **Other Vehicles.**

Enter the entire VIN; leave **"blank"** any column which does not have a VIN character.

If part of the VIN is missing or not decipherable, leave the column any such character would ordinarily occupy **"blank"**.

Use VIN Assist to check the VIN. Additionally, in NASSMAIN the VIN can be checked on the GV Form by going to ***Process / VIN Check Routine.***

00000000000000000
enter a “0" in each position for vehicles not required to have a VIN (e.g., go cart).

99999999999999999
if the entire VIN is unknown, or missing enter a “9" in each position.

If the vehicle is a motor home or school bus, the vehicle chassis VIN is coded and the secondary manufacturer's number should be annotated if indicated on the PAR.

If the vehicle is manufactured by the Ford Motor Company (prior to 1980) and the VIN begins or ends with a script, "*F*", the "*F*" is not entered. Proceed to the next character, as in the example below.

VIN: *F* 3 U 6 2 S 1 0 0 9 3 2 *F*
CODE: 3 U 6 2 S 1 0 0 9 3 2

In addition, if any hyphens, periods, or blank spaces are contained in the string of alphanumeric characters, ignore them as in the example below.

VIN: S M - E 3 0 7 6 4 2 1
CODE: S M E 3 0 7 6 4 2 1

Vehicle Special Use

Page 1 of 2

Screen Name: Vehicle Special Use

SAS Data Set: **GV**
SAS Variable: **VEHUSE**

Element Attribute:
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
9 Unknown

Source: Researcher determined; primary source is the police report; secondary sources include vehicle inspection, and interviewees.

Remarks:

No special use
is used when no source indicates or implies that this vehicle was applicable to any of the special uses listed below.

Taxi, **Vehicle used as school bus**, and **Vehicle used as other bus**
are ***"this trip"*** specific. The vehicle must be "on duty" as either a taxi or as a bus. External identification on the vehicle as a bus or taxi is not sufficient to determine its special use.

Taxi
is used when this vehicle was being used during this trip (at the time of the crash) on a "fee-for-hire" basis to transport persons. Most of these vehicles will be marked and formally registered as taxis; however, vehicles which are used as taxis, even though they are not registered (*e.g.*, "Gypsy Cabs"), are included here. ***Taxis and drivers which are off-duty*** at the time of the crash ***are not included***.

Vehicle used as school bus
is used if this motor vehicle (**Body Type**, need not equal **School Bus**) satisfies all of the following criteria:

- externally identifiable to other traffic units as a school/pupil transport vehicle. The vehicle may be equipped with flashing lights and/or a sway stop arm, and traffic may be required to stop for the vehicle when occupants enter or exit;
- operated, leased, owned, or contracted by a public or private school-type institution;
- whose occupants, if any, are associated with the institution; and,
- the vehicle is in operation at the time of the crash to and from the school or on a school-sponsored activity or trip.

Vehicle Special Use cont'd

Vehicle used as other bus
is used when this motor vehicle is designed for transporting more than ten persons and does not satisfy all of the above criteria of a school bus.

Military, Police, Ambulance, and **Fire truck or car**
are considered to be in use at all times. Special use means **"in use"** and not necessarily emergency use. External identification to the normal driving public is the sole criterion.

Military
is used for any vehicle which is owned by any of the Armed Forces regardless of body type. This attribute includes:

- military police vehicles;
- military ambulances;
- military hearses; and
- military fire vehicles

Police
is used for any readily identifiable (lights or markings) vehicle which is owned by any local, county, state, or federal police agency. Vehicles not owned by the agency or not readily identifiable which are used by officers or agents (*e.g.*, undercover) are excluded.

Ambulance
is used for any readily identifiable (lights or markings) vehicles: (1) whose sole purpose is to provide ambulance service, or (2) who serve the dual purposes of a hearse--used for funeral services, and an ambulance--used for emergency services. For these dual purpose vehicles (ambulance/hearse), use this attribute only when the vehicle is used as an ambulance.

Fire truck or car
is used for any readily identifiable (lights or markings) vehicle which is owned by any government (typically local) or cooperative agency for the purpose of fire protection. For volunteer fire companies, fire fighting apparatus and other vehicles owned by the company or government qualify for this attribute. Privately owned vehicles, which are not in authorized use, even if equipped with lights, do not qualify (the volunteer firefighter's vehicle).

Unknown
is used when no information is available to determine special use for this trip (e.g., a hit-and-run vehicle).

IN TRANSPORT

Screen Name: Is the vehicle in-transport?

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Check Box

Range:

Source: Researcher determined

Remarks:

A check in this box indicates that the vehicle is in transport. Any changes to the check box will effect the variable **Type** on the **Case Form/Structure/Vehicle Tab**.

CURB WEIGHT

Screen Name: Weight--Curb Weight

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBWGT**

Element Attributes:

	Curb weight of vehicle (kgs)
999999	Unknown

Range: 450 – 100,000

Source: Researcher determined

Remarks:

Enter this vehicle's curb weight.

Do not confuse the rated Gross Vehicle Weight Rating (GVWR) with the curb weight since it is likely to be significantly greater than the curb weight.

"Vehicle" is defined in this variable to mean the same vehicle identified under **Body Type**.

If the **vehicle model** is known, but the engine size is unknown (*e.g.*, 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the "average" was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. to 6 cyl. - subtract 100lb/45 kilograms; 6 cyl. to 4 cyl. - subtract 75lb/34 kilograms.

Add 100lb/45 kilograms to the shipping weight to obtain a curb weight on all CDS applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight

Unknown
is selected when the curb weight of this vehicle cannot be determined.

SOURCE OF CURB WEIGHT INFORMATION

Page 1 of 2

Screen Name: Curb Weight Source

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBSRC**

Element Attributes:

0 [Curb weight unknown]
1 AAMA
2 Automotive News
3 Branham Automobile Reference Book
4 Gasoline Truck, Import, Truck and Diesel Truck Index
5 Canadian Specifications
8 Other (specify)

Source: See Remarks

Remarks:

The sources for obtaining curb weight information are listed below:

Passenger Vehicle Specifications
American Automobile Manufacturers Association (AAMA)
of the U.S., Inc.
300 New Center Building
Detroit, Michigan 48202

Automotive News
Crain Automotive Group, Inc.
965 East Jefferson Avenue
Detroit, Michigan 48207

Branham Automobile Reference Book
Branham Publishing Company
Post Office Box 1948
Santa Monica, California 90406-1948

Gasoline Truck Index, Import Truck Index, and
Diesel Truck Index
Truck Index, Inc.
Post Office Box 10291
Santa Anna, California 92711

If the specification is not available in the sources listed above, then the automated Canadian specifications may be used for this variable.

If not other information is available, data from brochures obtained from vehicle dealers may be used. This will be entered under the "**Other**" attribute. This should then be listed in the "**Specify**" field.

Source of Curb Weight Information cont'd

Page 2 of 2

Annotate the source used in the space provided in the General Vehicle Form Data Screen Vehicle this variable.

CARGO WEIGHT

Screen Name: Weight--Cargo Weight

SAS Data Set: **GV**
SAS Variable: **CARGOWGT**

Element Attributes:

	Cargo weight of vehicle (kgs)
9999	Unknown

Source: Researcher determined — inputs include Vehicle Inspection, Interview, PAR, Tow Yard Operator

Remarks:

If Towed Trailing Unit, is Yes – towed trailing unit, then the weight of the trailer and its cargo is coded here. Cargo may also be located in the passenger compartment area and/or trunk.

If there is no cargo then enter the value as zero.

Do not include the weight of the occupants in the cargo weight. The weight of the occupants is included (along with cargo and vehicle curb weight) as a component of the single value which represents the vehicle’s combined weight in the WinSMASH Program, if used.

Unknown
is selected if the cargo weight is unknown or if it is unknown if there is cargo in the vehicle.

SOURCE OF CARGO WEIGHT INFORMATION

Screen Name: Weight--Cargo Weight Source

SAS Data Set: **VEHSPEC**
SAS Variable: **CARGOSRC**

Element Attributes:

0	[Cargo weight unknown]
1	Vehicle Inspection
2	Interview
3	PAR
4	Tow Yard Operator
8	Other (specify)

Source: Researcher determined

Remarks:

This reports the source from which the estimate of the cargo weight, in the vehicle at the time of the crash, was obtained.

INSPECTION TYPE

Screen Name: Inspection - Type of Inspection

SAS Data Set: **GV**
SAS Variable: **INSPTYPE**

Element Attributes:

0	No inspection
1	Vehicle fully repaired — no damage evident
2	Partial inspection (specify)
3	Complete inspection

Source: Researcher determined.

This variable is designed to allow users to identify cases with complete documentation of required damage data (exterior and interior).

No inspection
is selected when neither a complete nor a partial inspection of this vehicle was obtained, irrespective of the reason (*e.g.*, refusal, not required, etc.)

Vehicle fully repaired — no damage evident
is selected when a vehicle is inspected, but is completely repaired and no exterior or interior damage data is available.

Partial inspection (Specify)
is selected when any phase of the inspection is not completed. This includes inspection of partially repaired vehicles and non-towed CDS applicable vehicles. The reason for the partial inspection must be annotated in the “Specify” box.

If the vehicle interior is completely burned out and restraint use cannot be determined then **Partial Inspection** should be selected.

Complete inspection
is selected when both the exterior and the interior of the unrepaired vehicle were inspected and all applicable measurements and photographs were obtained.

DATE OF INSPECTION

Screen Name: Inspection-Date of Inspection

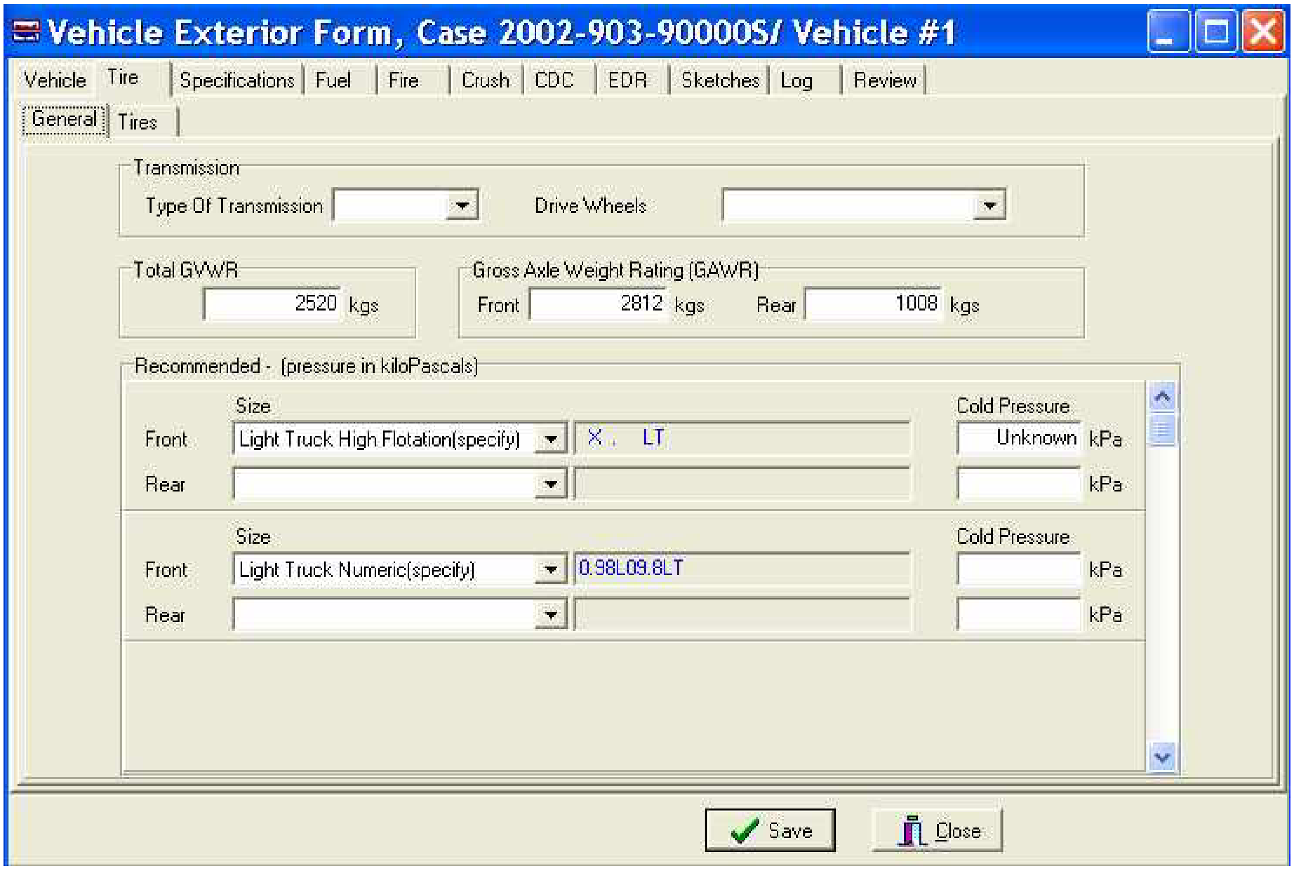
SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Date that vehicle was inspected

Source: Researcher determined.

This variable is designed to allow quality control personnel to evaluate researcher performance in obtaining vehicle inspections.

Tires General



Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
General
Tires
Save
Close

Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1

Transmission

Type Of Transmission:

Drive Wheels:

Total GVWR: 2520 kgs

Gross Axle Weight Rating (GAWR): Front 2812 kgs, Rear 1008 kgs

Recommended - (pressure in kiloPascals)

	Size		Cold Pressure	
Front	Light Truck High Flotation(specify)	X . LT	Unknown	kPa
Rear				kPa

	Size		Cold Pressure	
Front	Light Truck Numeric(specify)	0.98L09.8LT		kPa
Rear				kPa

TYPE OF TRANSMISSION

Screen Name: Type of Transmission

SAS Data Set: **VEHSPEC**
SAS Variable: **TRANS**

Element Attributes:

1	Manual
2	Automatic
9	Unknown

Source: Vehicle inspection

Remarks:

The coding of this variable reflects the type of transmission that is in the vehicle.
This variable is being collected for use in modifying input to the WINSMASH computer program.

Manual
The vehicle has a manual transmission

Automatic
The vehicle has an automatic transmission

Unknown
It cannot be determined what type of transmission is in the vehicle.

DRIVE WHEELS

Screen Name: Drive Wheels

SAS Data Set: **VEHSPEC**
SAS Variable: **DRIVE**

Element Attributes:

1	Front Wheel Drive
2	Rear Wheel Drive
3	Four Wheel Drive
4	All Wheel Drive
9	Unknown

Source: Vehicle inspection

Remarks:

The coding of this variable reflects the type of drive wheels power the vehicle.
This variable is being collected for use in modifying input to the WINSMASH computer program.

Front Wheel Drive
In a front-wheel drive vehicle, power from the engine is transferred to the front tires.

Rear Wheel Drive
In a rear-wheel drive vehicle, power from the engine is transferred to the rear tires.

4 Wheel Drive
In a four-wheel drive vehicle, power is delivered to all four wheels only when the driver requests it.

All Wheel Drive
In an all-wheel drive vehicle, power is distributed to all four of the vehicle's tires, all of the time.

Unknown
Use this when it cannot be determined what type of drive wheels power the vehicle.

TOTAL GROSS VEHICLE WEIGHT RATING (KGS)

Screen Name: Total GVWR (kgs)

SAS Data Set: **VEHSPEC**
SAS Variable: **GVWR**

Element Attributes:

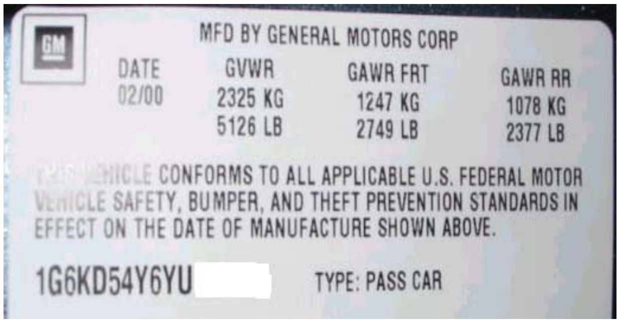
	Indicate the total GVWR as indicated on the tire or other placard.
9999	Unknown

Source: Vehicle inspection/placard

Remarks:

The Gross Vehicle Weight Rating (GVWR) is the maximum permissible total weight of the unit, including the vehicle itself plus all fluids, optional equipment, accessories, all cargo, driver and passengers.

Take a photo of the placard and categorize it in the vehicle identification category



MFD BY GENERAL MOTORS CORP

DATE	GVWR	GAWR FRT	GAWR RR
02/00	2325 KG 5126 LB	1247 KG 2749 LB	1078 KG 2377 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G6KD54Y6YU[redacted] TYPE: PASS CAR

FRONT GROSS AXLE WEIGHT RATING (KGS)

Screen Name: Gross Axle Weight Rating Front (kgs)

SAS Data Set: **VEHSPEC**
SAS Variable: **FGAWR**

Element Attributes:

	Indicate the front GAWR as indicated on the tire or other placard.
9999	Unknown

Source: Vehicle inspection

Remarks:

The Front Gross Axle Weight Rating (GAWR) is the maximum weight that the front axle, suspension and tire system is designed to carry.

If the placard only indicates the front GVWR instead, enter that information and annotate the entry.

REAR GROSS AXLE WEIGHT RATING (KGS)

Screen Name: Gross Axle Weight Rating Rear (kgs)

SAS Data Set: **VEHSPEC**
SAS Variable: **RGAWR**

Element Attributes:

	Indicate the rear GAWR as indicated on the tire placard.
9999	Unknown

Source: Vehicle inspection

Remarks:

The Rear Gross Axle Weight Rating (GAWR) is the maximum weight that the rear axle, suspension and tire system is designed to carry.

If the placard only indicates the rear GVWR instead, enter that information and annotate the entry.

MANUFACTURER'S RECOMMENDED FRONT/REAR TIRE SIZE

Screen Name: Recommended Front/Rear Size

SAS Data Set: **TIRE**
SAS Variable: **RECTIRE1, RECTIRE2, RECTIRE3**

Element Attributes:

1	P-Metric (specify)
2	Light Truck Metric (specify)
3	Light Truck High Flotation (specify)
4	Light Truck Numeric (specify)
8	Other (specify)
9	Unknown

Source: Vehicle inspection from placard on vehicle

Remarks:

MANUFACTURER'S RECOMMENDED FRONT/REAR TIRE SIZE

Screen Name: Recommended Front/Rear Size

SAS Data Set: **TIRE**
SAS Variable: **RECSIZE1, RECSIZE2, RECSIZE3**

Element Attributes:

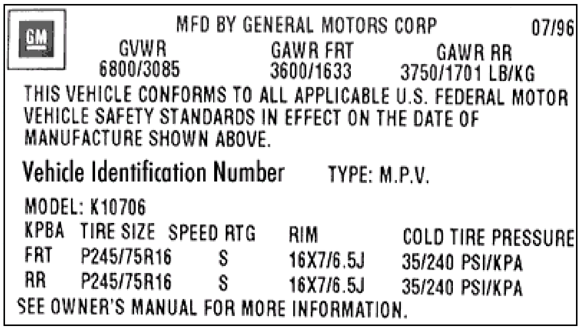
	P-Metric (specify)
	Light Truck Metric (specify)
	Light Truck High Flotation (specify)
	Light Truck Numeric (specify)
	Other (specify)
9	Unknown

Source: Vehicle inspection from placard on vehicle

Remarks:

The tire placard may be found in any number of places: B pillar, door, glove compartment door, center console door, trunk lid, etc.

Placards may list more than one tire size for a vehicle. Take a photo of the placard and categorize it in the vehicle identification category.



GM MFD BY GENERAL MOTORS CORP 07/96

GVWR	GAWR FRT	GAWR RR
6800/3085	3600/1633	3750/1701 LB/KG

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

Vehicle Identification Number TYPE: M.P.V.

MODEL: K10706

KPBA	TIRE SIZE	SPEED RTG	RIM	COLD TIRE PRESSURE
FRT	P245/75R16	S	16X7/6.5J	35/240 PSI/KPA
RR	P245/75R16	S	16X7/6.5J	35/240 PSI/KPA

SEE OWNER'S MANUAL FOR MORE INFORMATION.

If a character cannot be read then leave a blank space where the character belongs.

a=alpha value to enter **n=numeric value to enter**
P=P-Metric tire *precoded* **LT=Light Truck designation *precoded***
Blanks permitted at any location

P-Metric P n n n / n n a n n

P215/65R15, P215/65R15
P= Passenger Car Tire
215= Section Width in Millimeters
65= Aspect Ratio
R= Radial Construction
15= Rim Diameter in Inches

Variable Name: Manufacturer's Recommended Tire Size Front/Rear cont'd

Light Truck Metric L T n n n / n n a n n

LT235/75R15
LT= Light Truck Tire
235= Section Width in Millimeters
75= Aspect Ratio
R= Radial Construction
15= Rim Diameter in Inches

Light Truck High Flotation n n X n n . n n a n n L T

31X10.50R15LT
31= Tire Diameter in Inches
10.50= Section Width in Millimeters
R= Radial Construction
LT= Light Truck Tire
15= Rim Diameter in Inches

Light Truck Numeric n . n n a n n . n L T

8.75R16.5LT
8.75=Section Width in Inches
R=Radial Construction
16.5=Rim Diameter in Inches
LT=Light Truck Designation

MANUFACTURER RECOMMENDED TIRE PRESSURE – COLD – FRONT/REAR (KILOPASCALS)

Screen Name: Recommended (pressure in kilopascals) Front/Rear Cold Pressure

SAS Data Set: **TIRE**
SAS Variable: **RECPRES1, RECPRES2, RECPRES3**

Element Attributes:

	Indicate the recommended cold tire pressure for the front/rear tires
	Entry defaults to psi, but may also be entered in kPa
999	Unknown

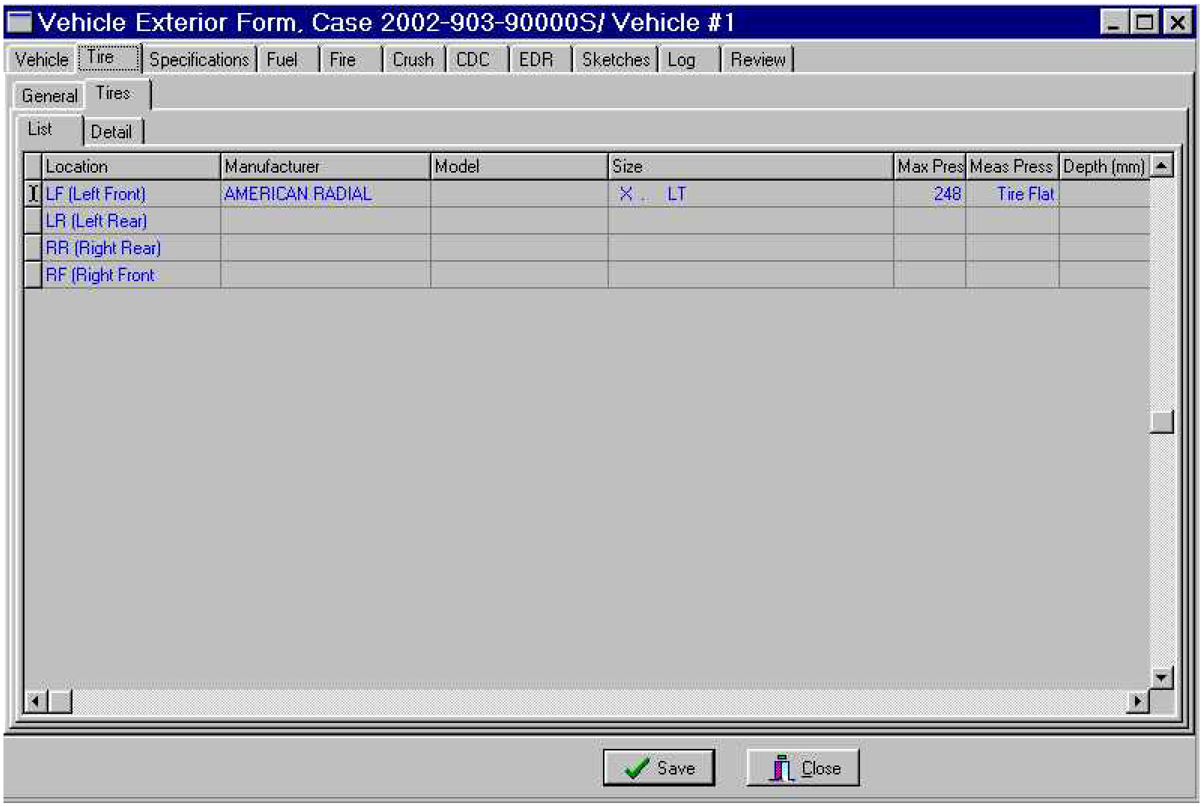
Source: Vehicle inspection

Remarks:

Enter recommended pressure in psi / kPa (program automatically converts psi to kPa).

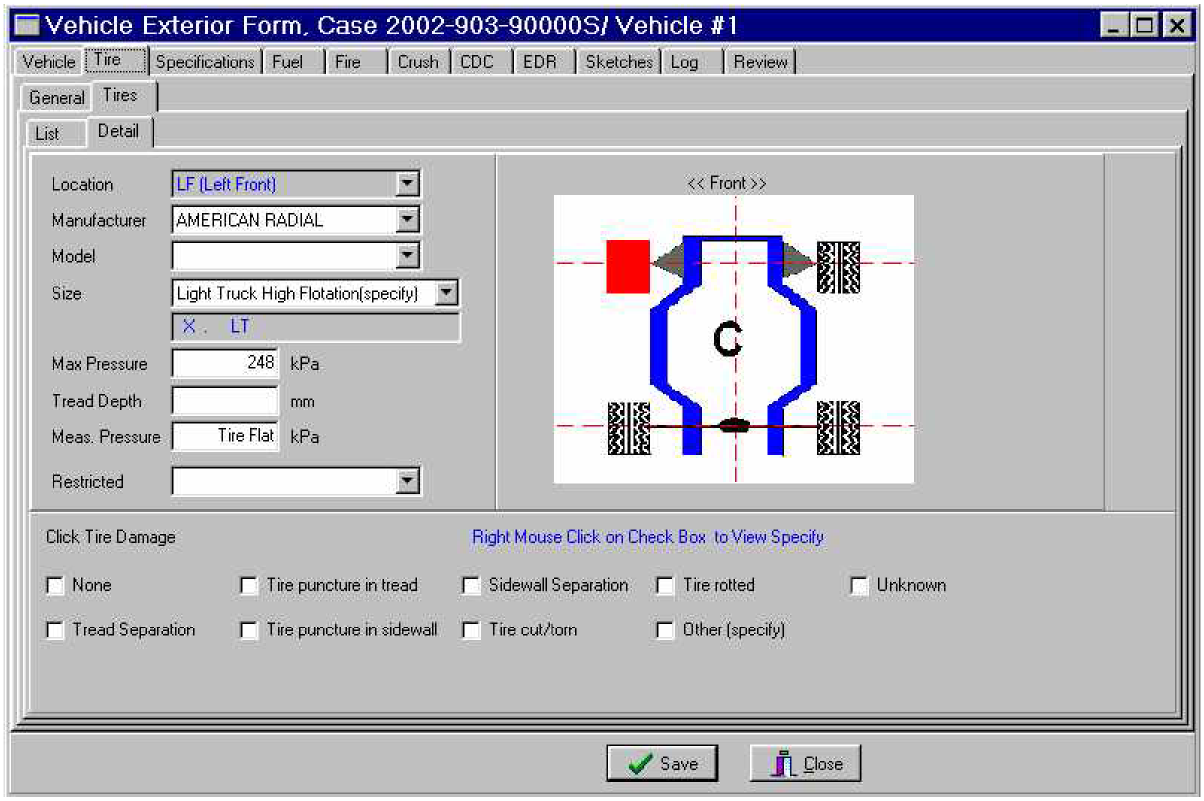
If the tire placard or owner's manual doesn't specify whether the recommended tire pressure is a hot or cold pressure, assume that it is a cold pressure.

Tire / Tires / List


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
General
Tires
List
Detail
Save
Close

Location	Manufacturer	Model	Size	Max Pres	Meas Press	Depth (mm)
LF (Left Front)	AMERICAN RADIAL		X . LT	248	Tire Flat	
LR (Left Rear)						
RR (Right Rear)						
RF (Right Front						

Tire / Tires / Detail


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
General
Tires
List
Detail
<< Front >>
C
Save
Close

Location: LF (Left Front)
Manufacturer: AMERICAN RADIAL
Model:
Size: Light Truck High Flotation(specify)
X . LT
Max Pressure: 248 kPa
Tread Depth: mm
Meas. Pressure: Tire Flat kPa
Restricted:

Click Tire Damage

Right Mouse Click on Check Box to View Specify

☐ None
☐ Tread Separation
☐ Tire puncture in tread
☐ Tire puncture in sidewall
☐ Sidewall Separation
☐ Tire cut/torn
☐ Tire rotted
☐ Other (specify)
☐ Unknown

TIRE LOCATION

Screen Name: Location

SAS Data Set: **TIRE**
SAS Variable: **TLOC**

Element Attributes:

1	RF (Right Front)
2	LF (Left Front)
3	RR (Right Rear)
4	LR (Rear)

Source: Vehicle inspection

Remarks:

Enter the location of the tire being examined. If there are double tires on a vehicle, only record information on the outer tires.

TIRE MANUFACTURER

Screen Name: Manufacturer

SAS Data Set: **TIRE**
SAS Variable: **TMAKE**

Element Attributes:

Choose manufacturer from drop down list

887	Tire missing
888	Other make (specify)
999	Unknown

Source: Vehicle inspection

Remarks:

The name of the manufacturer will be many found on the sidewall of the tire. If it cannot be read then indicate "Unknown".

If the tire is missing and cannot be examined then indicate "Tire missing". If the wheel hub is resting on the tire or the tire can be found elsewhere (i.e., in the bed of a pickup) and it can be ascertained that this is the "missing" tire for the vehicle, then indicate the appropriate information about the tire.

Manufacturers that are presently in the database can be found on the next page.

Tire manufacturer cont'd

AKURET	1
ALLEGIANCE IV	177
AMERICAN	2
AMERICAN RADIAL	3
APACHE	4
ARIZONIAN	5
ARMSTRONG	6
ASTRO	7
ATLAS	8
AURORA	9
AVON	10
BARUM	11
BFGOODRICH	12
BIG O	13
BILT-MOR	14
BRADLEY	15
BRIDGESTONE	16
BRIGADIER	17
BRUNSWICK	18
CARQUEST	19
CASCADE	20
CAVALIER	21
CEAT	22
CENTENNIAL	23
CHENG SHIN	24
CONCORDE	25
CONTENTAL/TAG	26
CONTINENTAL	27
CO-OP	28
COOPER	29
COOPER-EXPORT	30
CORDOVAN	31
CORNELL	32
COSMO	33
CRESTWOOD	34
CROWN	35
DANZIG	36
DAYTON	37
DEAN	38
DELTA	39
DENMAN	40
DIAMOND	41
DOMINATOR	42
DORAL	43
DOUBLE COIN	44
DOUGLAS	45
DUNLOP	46
DURALON	47
DYNASTAR	48
ELDORADO	49
ELECTRA	50
EMBASSY	51
ESCORT	52
EUROTECH	53
EXXON	54
FALKEN	55
FEDERAL	56
FIRESTONE	57
FISK	58
FORMULA	59
FRONTIER	60
FULDA	61
FUTURA	62
GENERAL	63
GILLETE	64
GISLAVED	65
GOODRICH	66
GOODYEAR	67
GT TIRE	68
GT TIRE US	69
GUARDIAN	70
GUARDSMAN	71
HALLMARK	72
HANKOOK	73
HERCULES	74
HIGH COUNTRY	75
HOOD	76
HOOSIER	77
JETZON	78
JUPITER	79
KELLY	80
KELLY-SPRINGFIELD	81
KINGSTAR	82
KIRKLAND	83
KIRKWOOD	84
K-MART	85
KUMHO	86
LARAMIE	87
LASSA	88
LEE	89
LEMANS	178
LIBERATOR	179
M&H	90
MABOR	91
MARSHAL	92
MASTERCRAFT	93
MAXXIS	94
MEDALIST	95
MENTOR	96
MERIT	97
MICHELIN	98
MICKEY THOMPSON	99
MILLER	100
MITAS	101
MODI	102
MOHAWK	103
MONARCH	104
MONTGOMERY WARD	105
MRF	106
MULTI-MILE	107
NANKANG/BRADLEY	108
NATIONAL	109
NITTO	110
NOKIAN	111
NTB	112
OHTSU	113
PACEMARK	114
PANTHER	115
PARKWAY	116
PARNELLI	117
PATHFINDER	181
PATRIOT	118
PEERLESS	119
PENSKE	120
PHILLIPS	121
PIRELLI	122
POLARIS	123
POS-A-TRAC	124
POS-A-TRACTION	125
REGUL	126
RELIANT	127
REMINGTON	128
REPUBLIC	129
REYNOLDS	130
RIKEN	131
ROAD KING	132
ROADMASTER	133
ROADPRO	134

Tire manufacturer cont'd

RUNWAY	135
SEARS	136
SEMPERIT	137
SHELL	138
SIDEWINDER	139
SIEBERLING	140
SIGMA	141
SOLO-TECH	142
SONIC	143
SPARTAN	144
SPORT IV	145
STAR	146
STARFIRE	147
SUMITOMO	148
SUMMIT	149
SUPER SPORT	150
TACOMA	151
TBC	152
TELSTAR	153
TEMCO	154
TIGAR	155
TNT	156
TOSCO 76	157
TOURING SUPREME	158
TOYO	159
TREDTECH	160
TRIBUNE	161
TURNPIKE USA	162
ULTRA-TECH	163
UNION 76	164
UNIROYAL	165
UNIVERSAL	166
VANDERBILT	167
VIKING	168
VISA	169
VOGUE	170
VREDESTEIN	171
WESTERN AUTO	172
WINSTON	173
WOOSUNG	174
WYNSTAR	180
YKS	175
YOKOHAMA	176
Tire missing	8887
Other (specify)	8888
Unknown	9999

TIRE MODEL

Screen Name: Model

SAS Data Set: **TIRE**
SAS Variable: **TMODEL**

Element Attributes:

8	Specify model
9	Unknown

Source: Vehicle inspection

Remarks:

The name of the model will be many found on the sidewall of the tire. If it cannot be read then indicate “Unknown”.

TIRE SIZE ON VEHICLE

Page 1 of 2

Screen Name: Size

SAS Data Set: **TIRE**
SAS Variable: **TYPE**

Element Attributes:

1	P-Metric (specify)
2	Light Truck Metric (specify)
3	Light Truck High Flotation (specify)
4	Light Truck Numeric (specify)
8	Other (specify)
9	"UNKNOWN"

Source: Vehicle inspection

Remarks:

Tire Size On Vehicle

Screen Name: Size

SAS Data Set: **TIRE**
SAS Variable: **SIZE**

Element Attributes:

	P-Metric (specify)
	Light Truck Metric (specify)
	Light Truck High Flotation (specify)
	Light Truck Numeric (specify)
	Other (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

There will be many characters on the tire sidewall that identify various characteristics of the tire. We are only interested in recording the tire size information. This information is demarked in various ways depending on the type of tire.

If a character cannot be read then leave a blank space where the character belongs.

a=alpha value to enter **n=numeric value to enter**
P=P-Metric tire *precoded* **LT=Light Truck designation *precoded***
Blanks permitted at any location

P-Metric P n n n / n n a n n
P215/65R15, P215/65R15
P= Passenger Car Tire
215= Section Width in Millimeters
65= Aspect Ratio
R= Radial Construction
15= Rim Diameter in Inches

Light Truck Metric L T n n n / n n a n n
LT235/75R15
LT= Light Truck Tire
235= Section Width in Millimeters
75= Aspect Ratio
R= Radial Construction
15= Rim Diameter in Inches

Variable Name: Tire Size On Vehicle cont'd

Page 2 of 2

Light Truck High Flotation n n X n n . n n a n n L T

31X10.50R15LT

31= Tire Diameter in Inches
10.50= Section Width in Millimeters
R= Radial Construction
LT= Light Truck Tire
15= Rim Diameter in Inches

Light Truck Numeric **n . n n a n n . n L T**

8.75R16.5LT

8.75=Section Width in Inches
R=Radial Construction
16.5=Rim Diameter in Inches
LT=Light Truck Designation

TIRE MAXIMUM PRESSURE (KILOPASCALS)

Screen Name: Max Pressure

SAS Data Set: **TIRE**
SAS Variable: **MAXPRES**

Element Attributes:

	Specify tire maximum pressure in psi
	Entry defaults to psi, but may also be entered in kPa
999	Unknown

Range: 172KPA – 621 KPA

Source: Vehicle inspection

Remarks:

Enter the maximum pressure in psi / kPa (program automatically converts psi to kPa) as indicated on the tire sidewall. If this information cannot be read that enter “Unknown”

MINIMUM TREAD DEPTH (MM)

Screen Name: Tread Depth

SAS Data Set: **TIRE**
SAS Variable: **DEPTH**

Element Attributes:

Specify tread depth
Entry defaults to 1/32 inch, but may also be entered in mm
99 Unknown

Range: 0mm – 25mm

Source: Vehicle inspection

Remarks:

Indicate the tread depth in 1/32 inch (program automatically converts 1/32 inch to mm).

The Minimum Tire Tread Depth is to be measured using the supplied tire tread depth indicator. The measurement should be taken on the shallowest groove of the tread. Be careful not to measure on a wear bar indicator. The measurement is to be documented to the nearest 32nd inch.

TIRE MEASURED PRESSURE (KILOPASCALS)

Screen Name: Meas. Pressure

SAS Data Set: **TIRE**
SAS Variable: **PRES**

Element Attributes:

	Specify measured pressure of the tire in psi
	Entry defaults to psi, but may also be entered in kPa
888	Tire flat
999	Unknown

Source: Vehicle inspection

Remarks:

Enter recommended pressure in psi / kPa (program automatically converts psi to kPa).
The PAR may be used as a source if it contains this data, but it is superseded if other data exists.

The *Measured Pressure* is to be documented using the supplied air pressure gauge. Adhere to the following instructions when taking and reading the pressure:

The pressure gauge should be cleared before taking the reading. It should be placed over the tire's valve stem and press firmly so that no escaping air is heard. If the vehicle is equipped with dual rear wheels, document only the outboard tires. NOTE: Testing has revealed that a tire will normally lose 0.1 psi for each reading.

Record the pressure of the tire at the time of inspection, regardless of whether the tire has been replaced or reinflated since the crash.

TIRE RESTRICTED

Screen Name: Restricted

SAS Data Set: **TIRE**
SAS Variable: **RESTRCT**

Element Attributes:

0	No
1	Yes
7	Not applicable
9	Unknown

Source: Vehicle inspection

Remarks:

The variable reflects the tire/wheel restriction that occurred as a result of the crash. This variable is being collected for use in modifying input to the WINSMASH computer program.

No
The wheel/tire was not restricted

Yes
The wheel/tire was physically restricted

N/A
There is no wheel/tire for this position

Unknown
Use this selection when it cannot be determined if the wheel/tire was restricted as a result of the crash

TIRE DAMAGE

Screen Name: Damage

SAS Data Set: **TIRE**
SAS Variable: **DAMAGE**

Element Attributes:

0	No
1	Yes
9	Unknown

Source: Vehicle inspection

Remarks:

TIRE DAMAGE

Screen Name: Damage

SAS Data Set: **TIREDMG**
SAS Variable: **DAMTYPE**

Element Attributes:

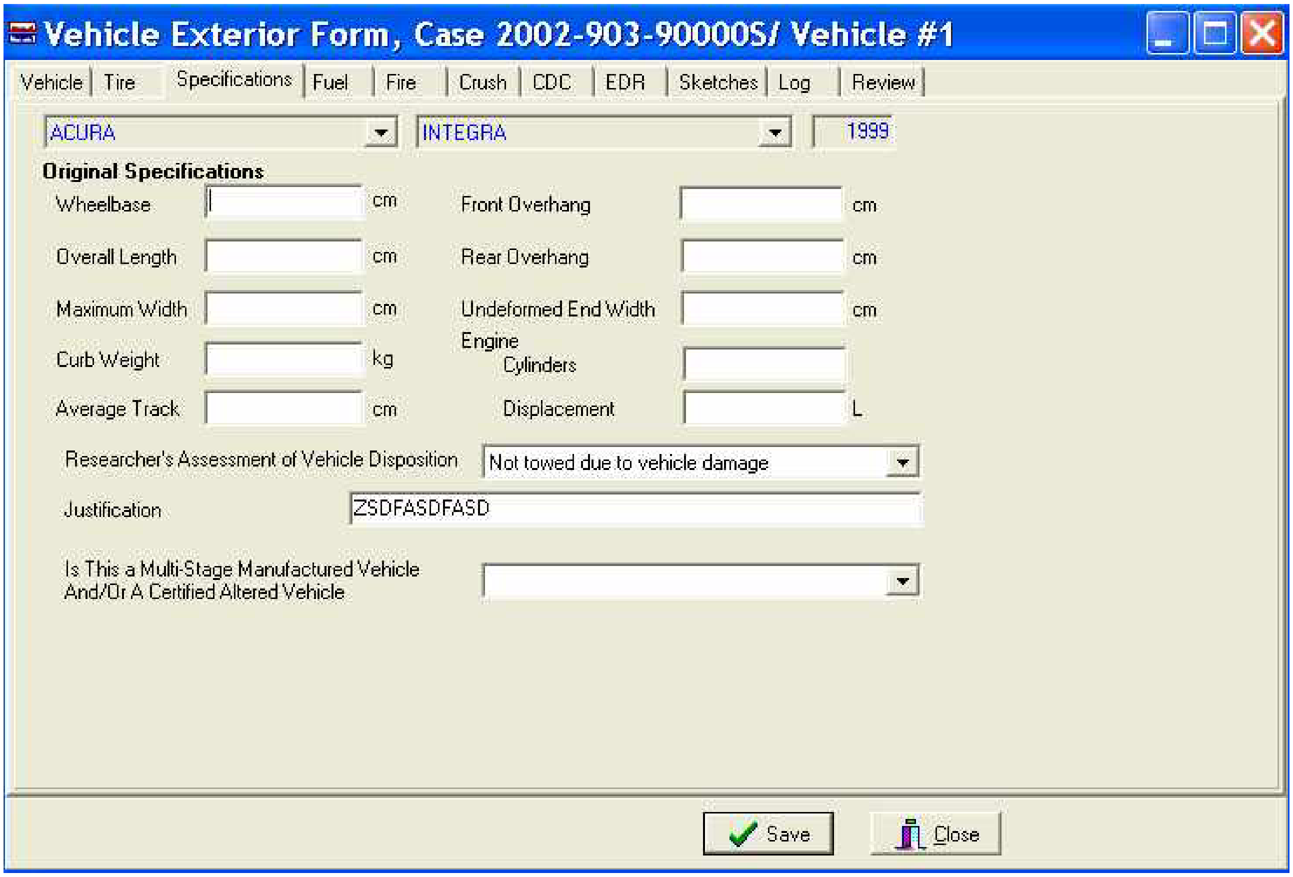
1	Tread separation
2	Sidewall separation
3	Tire puncture in tread
4	Tire puncture in sidewall
5	Tire cut/torn
6	Tire rotted
88	Other (specify)

Source: Vehicle inspection

Remarks:

PICK AS MANY TYPES OF DAMAGE AS APPLICABLE AND DOCUMENT WITH PHOTOS.

Specifications



Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Save
Close

ACURA
INTEGRA
1999

Original Specifications

Wheelbase		cm	Front Overhang		cm
Overall Length		cm	Rear Overhang		cm
Maximum Width		cm	Undeformed End Width		cm
Curb Weight		kg	Engine Cylinders		
Average Track		cm	Displacement		L

Researcher's Assessment of Vehicle Disposition: Not towed due to vehicle damage

Justification: ZSDFASDFASD

Is This a Multi-Stage Manufactured Vehicle And/Or A Certified Altered Vehicle:

WHEELBASE

Screen Name: Original Specifications—Wheelbase

SAS Data Set: **VEHSPEC**
SAS Variable: **WHEELBAS**

Element Attributes:

	Enter to the nearest centimeter.
999	Unknown

Range: 100 – 650 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

The wheelbase dimension is obtained from source materials and not from vehicle measurements. If written vehicle specifications cannot be found, after consultation of the zone center, the researcher may take the measurements from an exemplar vehicle.

The coding of this variable reflects the length of the vehicle's original or undamaged wheelbase to the nearest centimeter.

Unknown
is used when this vehicle's original wheelbase cannot be determined.

OVERALL LENGTH

Screen Name: Original Specifications—Overall Length

SAS Data Set: **VEHSPEC**
SAS Variable: **OVERALL**

Element Attributes:

	Enter to the nearest centimeter
9999	Unknown

Range: 100 – 850 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

Enter the overall length of the vehicle, as determined from source materials, to the nearest centimeter.

Any add-on equipment is excluded from the overall length of the vehicle (i.e., a pick-up with an after-market bumper added).

Unknown
is used when this vehicle's original overall length cannot be determined.

MAXIMUM WIDTH

Screen Name: Original Specifications—Maximum Width

SAS Data Set: **VEHSPEC**
SAS Variable: **MAXWIDTH**

Element Attributes:

	Enter to the nearest centimeter
999	Unknown

Range: 100 – 350 cms

Source: Vehicle specifications, exemplar vehicle

Remarks:

Enter the overall/maximum width of the vehicle, as determined from source materials, to the nearest centimeter.

Unknown
is used when this vehicle's original overall width cannot be determined.

CURB WEIGHT

Screen Name: Original Specifications—Curb Weight

SAS Data Set: **VEHSPEC**
SAS Variable: **CURBWGT**

Element Attributes:

	Curb weight of vehicle (kgs)
999999	Unknown

Range: 450 – 100,000

Source: Researcher determined

Remarks:

Enter this vehicle's curb weight.

Do not confuse the rated Gross Vehicle Weight Rating (GVWR) with the curb weight since it is likely to be significantly greater than the curb weight.

"Vehicle" is defined in this variable to mean the same vehicle identified under Body Type.

If the vehicle model is known, but the engine size is unknown (*e.g.*, 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the "average" was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. to 6 cyl. - subtract 100lb/45 kilograms; 6 cyl. to 4 cyl. - subtract 75lb/34 kilograms.

If a source material reports “shipping weight” add 100lb/45 kilograms to obtain a curb weight on all CDS applicable vehicles.

Towed trailing units are considered cargo weight and not included in the vehicle curb weight.

Unknown
is entered when the curb weight of this vehicle cannot be determined.

AVERAGE TRACK WIDTH

Screen Name: Original Specifications—Average Track

SAS Data Set: **VEHSPEC**
SAS Variable: **ORIGAVTW**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 100-200, 999

Source: Vehicle specifications, undamaged measurements

Remarks:

Enter the average track width of the vehicle to the nearest centimeter.

If vehicle specifications cannot be obtained, and there are no post manufacture modifications, and there is no significant damage to the axles, then you can get the value from the case vehicle. Measure both undamaged track widths on the vehicle and record the average.

If an axle is damaged such that an average value cannot be determined, use the measurement of the undamaged axle as the average encoded value.

If both axles are significantly damaged record the value from an exemplar vehicle.

If the vehicle is equipped with dual rear wheels (*i.e.*, some full-size pickup trucks); the track width is measured from the center of the space between the wheels on both sides.

Unknown
is used in the following situations:

- ☞ The axles are significantly damaged and there are no specifications available for this vehicle, and an exemplar vehicle was not measured.
- ☞ The axle is significantly damaged *and* there were post-manufacture modifications that would alter the track width.
- ☞ The measurements were not obtained from this vehicle or and exemplar vehicle and there are no specifications available.

FRONT OVERHANG

Screen Name: Original Specifications—Front Overhang

SAS Data Set: **VEHSPEC**
SAS Variable: **FTOVHANG**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 25-150, 999

Source: Vehicle specifications

Remarks:

Enter the front overhang, as determined from source materials, of the vehicle to the nearest centimeter.

NOTE: the researcher should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

Unknown
If no written specifications can be found, then enter unknown.

REAR OVERHANG

Screen Name: Original Specifications—Rear Overhang

SAS Data Set: **VEHSPEC**
SAS Variable: **RROVHANG**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 25-200, 999

Source: Vehicle specifications

Remarks:

Enter the rear overhang, as determined from source materials, of the vehicle to the nearest centimeter.

NOTE: the researcher should record, on the sketch page, the front and rear stringline measurements. These measurements will closely represent the original overhang measurements provided a reference line was established and the axles were not moved.

Unknown
If no written specifications can be found, then enter unknown.

UNDEFORMED END WIDTH

Screen Name: Original Specifications—Undeformed End Width

SAS Data Set: **VEHSPEC**
SAS Variable: **UNENDW**

Element Attributes:

	Code to the nearest centimeter
999	Unknown

Range: 100-250, 999

Source: Vehicle inspection, secondary source of an exemplar vehicle

Remarks:

The undeformed end width is the undamaged dimension of:
1) the contacted end plane or
2) the front undamaged plane if the side plane is contacted.

Measure between the apex of both bumper corners.

Unknown
If the vehicle cannot be directly measured and an exemplar vehicle cannot be found, then enter unknown.

ENGINE CYLINDERS

Screen Name: Original Specifications—Engine Cylinders

SAS Data Set: **VEHSPEC**
SAS Variable: **ENGCYL**

Element Attributes:

	Code the number of cylinders
99	Unknown

Range: 1-14, 99

Source: Vehicle inspection, specifications, VIN

Remarks:

The coding of this variable reflects the number of cylinders in the vehicle. The information can be found in vehicle specifications. It may also be found in owner's manuals.

Unknown
If the number of engine cylinders cannot be determined, then enter unknown.

ENGINE DISPLACEMENT

Screen Name: Original Specifications—Engine Displacement

SAS Data Set: **VEHSPEC**
SAS Variable: **ENGDISP**

Element Attributes:

	Code to the nearest liter
99	Unknown

Range: 0.0-10.0, 99

Source: Vehicle inspection, specifications, VIN

Remarks:

The coding of this variable reflects the vehicle's engine displacement. The information can be found in vehicle specifications. It may also be found in owner's manuals, or from the vehicle inspection.

Enter the vehicle's engine displacement. It is recorded to the nearest tenth of a liter.

Unknown
If the displacement cannot be determined, then enter unknown.

Screen Name: Researcher's Assessment of Vehicle Disposition

SAS Data Set: **GV**
SAS Variable: **TOWRES**

Element Attributes:

0	Not towed due to vehicle damage
1	Towed due to vehicle damage
9	Unknown

Source: Primary source is the vehicle inspection; secondary source is interviewee(s).

Remarks:

Determine this variable based on vehicle inspection (which is supplemented by interview data for a repaired vehicle). **Under no circumstance should the PAR be used as a source for coding this variable.** **"Towing"** is defined identically to the definition in variable **Police Reported-Vehicle Disposition** (*i.e.*, towing must be a result of event-related disabling damage; towing must occur directly from the scene, etc.). A gray area exists, however, when attempting to define the term **"disabling damage"**.

Determine the severity of the damage during the vehicle's inspection. Not towed due to vehicle damage if the damage is **"minor"** (*i.e.*, minor mechanical repairs ***could*** have been completed at the scene). **"Minor mechanical repairs"** refers to items such as: replacing headlights or taillights, changing tires, pulling sheet metal away which may be restricting a wheel, etc.

NOTE: These repairs need not have been completed at the scene. They are merely examples of situations which do *not* require the vehicle to be categorized "disabled" for the NASS CDS study.

Not towed due to vehicle damage
when the vehicle was driven from the scene, or when the vehicle was unnecessarily towed from the scene (*i.e.*, could have been driven).

Towed due to vehicle damage
when the vehicle sustained damage from the crash such that towing was required.

Unknown
when the vehicle was towed from the scene but the reason for the towing cannot be determined

JUSTIFICATION FOR RESEARCHER'S ASSESSMENT OF VEHICLE DISPOSITION

Screen Name: Researcher's Assessment of Vehicle Disposition Justification

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter justification for tow status

Source: Primary source is the vehicle inspection; secondary source is interviewee(s).

Remarks:

Indicate the reason for the determination that the vehicle was or was not towed (i.e., severe damage, restricted tires, etc.)

When there is a conflict between Police reported tow status and the researcher’s assessment of tow status, include the reason for the choice. For example, a researcher selects Not towed due to vehicle damage and provides the following annotation: "The vehicle received only broken headlights in the collision; police required that the vehicle be towed".

MULTI-STAGE OR ALTERED VEHICLE

Page 1 of 2

Screen Name: Is This a Multi-Stage Manufactured Vehicle And/Or A Certified Altered Vehicle?

SAS Data Set: **VEHSPEC**
SAS Variable: **ALTVEH**

Element Attributes:

0	No post manufacturer modifications
1	Yes — post manufacturer modifications (specify)
9	Unknown if vehicle is modified

Source: Vehicle Inspection.

Remarks:

Under the "Code of Federal Regulations, Title 49 - Transportation" Chapter V Part 567, Sections 567.5 and 567.7, a label certifying compliance with all Federal Motor Vehicle Safety Standards must be affixed to a multi-stage manufactured vehicle or altered (post manufactured) vehicle.

A multi-stage manufactured vehicle will generally begin as a chassis-cab (incomplete vehicle) and subsequently end up in final-stage as a pickup based utility truck (dump truck, flat bed, stake body, tow truck, etc.) or a van derivative (*i.e.*, van conversion, Hi-cube, motor home, etc.).

Altered vehicles will generally involve a major modification of basic components such as suspension, frame, power plants, etc., with work generally performed by a recognized auto body shop. The lengthening of a standard automobile chassis to create a limousine would be one example of the type of alteration which would qualify for certification.

To determine if the vehicle qualifies, locate the certification label which should include one of the following statements:

Multi-stage vehicle

Incomplete manufactured vehicle (chassis-cab) certification label should include the statement: **"CHASSIS-CAB MANUFACTURED BY"** or **"CHASSIS-CAB MFD. BY"**.

Intermediate manufactured vehicle certification label should have the following statement: **"INTERMEDIATE MANUFACTURED BY"** or **"INTERMEDIATE MFD. BY"**.

Final manufactured vehicle certification label should have the following statements: **"MANUFACTURED BY"** or **"MFD. BY"** and **"INCOMPLETE VEHICLE MANUFACTURED BY"** or **"INC VEH MFD. BY"**.

Altered vehicle

An altered vehicle certification label should include the statement: **"This vehicle was altered by (individual or corporate name) in (month and year in which alterations were completed) and as altered it conforms to all applicable Federal Motor Vehicle Safety Standards affected by the alteration and in effect in (month, year)."**

Multi-Stage or Altered Vehicle cont'd

These labels are generally affixed in one of the following areas on the driver's side of the vehicle:

- hinge pillar
- door-latch post
- door edge that meets the door-latch post
- left side of the instrument panel
- inward-facing surface of driver's door

No post manufacturer modifications
is used when this vehicle was a full-line manufactured vehicle. Full-line is interpreted as a vehicle that is completely assembled at the end of a plant assembly line of its original manufacturer. This would include vehicles which only require cosmetic additions such as additional paint, mirrors, wheels, etc., to be customer ready.

Yes — post manufacturer modifications
is used for multi-stage vehicles and/or altered certified vehicles. This includes vehicles which were in various stages of completion (*i.e.*, incomplete, intermediate, final).

Vehicles that are altered via "backyard modification (*i.e.*, addition of air shocks, spring spacers, cosmetic alteration including sheet metal and paint, etc.) are not identified as certified altered vehicles. Only those businesses which specialize in vehicle alterations (*i.e.*, limo body shops, etc.) where a label of alteration is required by federal regulations and is present on the vehicle are identified in this element.

***An image of the certification label(s) is essential and must be included with the case*. Categorize this image in the Miscellaneous Category.** Refer to the following illustrations for examples of certifying labels.

Unknown
is used in the following situations.

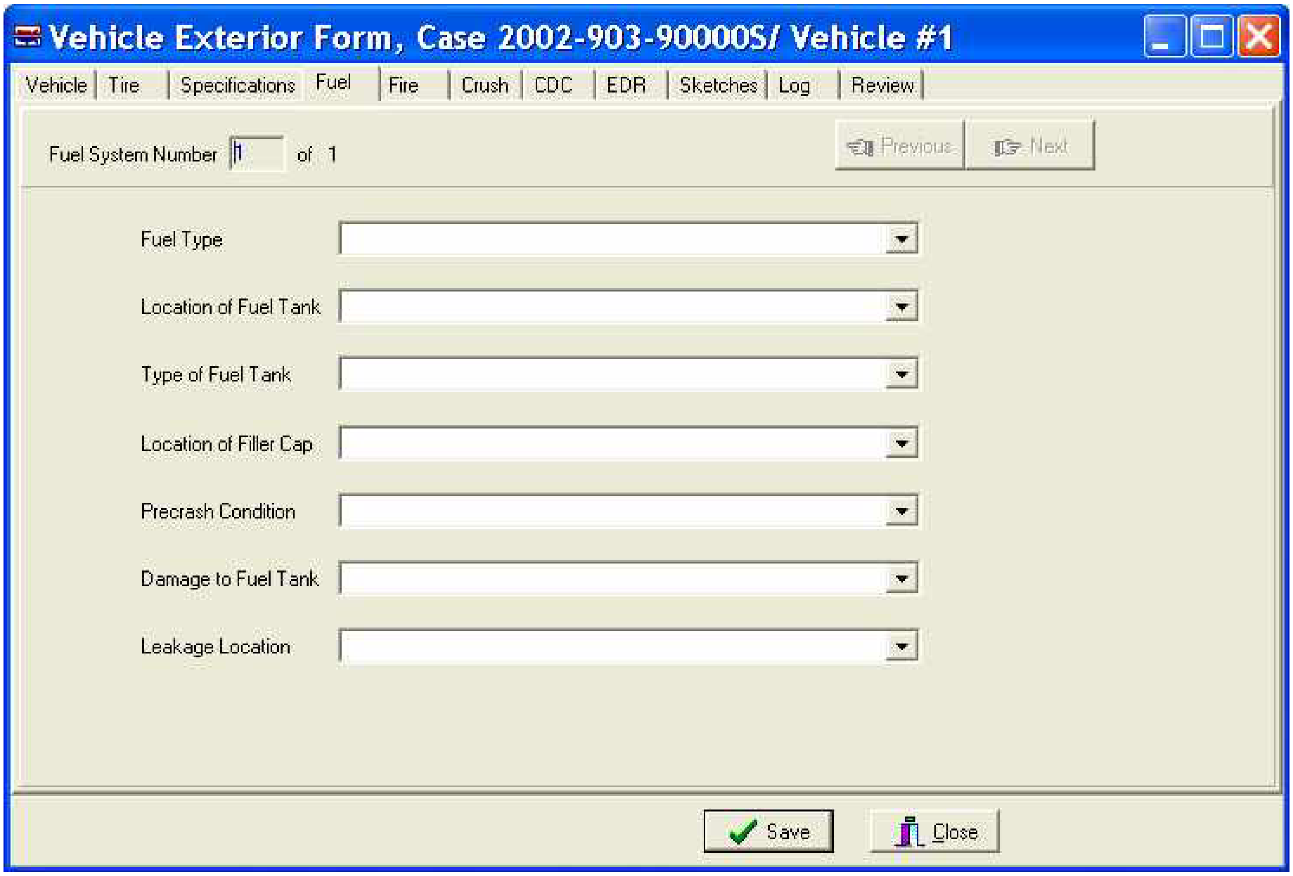
- The vehicle fits the description of a multi-stage or altered vehicle, but the researcher was not able to view the label(s) for positive identification.

- The label(s) was removed/destroyed so a clear determination of whether the vehicle was a certified multi-stage or altered vehicle could not be made.

Fuel Systems

Be sure to photograph all fuel tanks and surrounding area. Refer to the NASS CDS Digital Photography Guideline for a detailed description of the required photographs.

Record all fuel tank locations.


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Fuel System Number
1
of 1
Previous
Next
Fuel Type
Location of Fuel Tank
Type of Fuel Tank
Location of Filler Cap
Precrash Condition
Damage to Fuel Tank
Leakage Location
Save
Close

FUEL SYSTEM NUMBER

Screen Name: Fuel System Number

SAS Data Set: **FUELTANK**
SAS Variable: **TANKNO**

Element Attributes:
Number of fuel tank

Remarks:

Insert a fuel system for each fuel system in the vehicle.

This variable records those fuel tanks that are permanently affixed to the vehicle as an energy reservoir for the vehicle's engine. Some vehicles may be equipped with reserve tanks. (i.e., one or more tanks connected in series and controlled by the driver).

Extra fuel tanks on-board a vehicle which are not designed to supply fuel to the vehicle's engine are not considered for this variable. Some examples include: fuel cans, bottled gas, and ancillary tanks for occupational related work (*i.e.*, construction, etc.).

FUEL TYPE

Screen Name: Fuel Type

SAS Data Set: **FUELTANK**
SAS Variable: **FUELTYP**

Element Attributes:

1	Gasoline
2	Diesel
3	CNG (Compressed Natural Gas)
4	LPG (Liquid Petroleum Gas) also known as Propane
5	LNG (Liquid Natural Gas)
6	Methanol (M100 or M85)
7	Ethanol (E100 or E85)
8	Other (Hydrogen or others) (specify):
10	Lead Acid Battery
11	Nickel-Iron Battery
12	Nickel-Cadmium Battery
13	Sodium Metal Chloride Battery
14	Sodium Sulfur Battery
18	Other Battery (Specify):
98	Other Hybrid (specify):
99	Unknown fuel type

Source: Primary source is the vehicle inspection; secondary source is the interviewee(s).

Remarks:

These variables record the fuel type available in each fuel system during this crash sequence. The type of fuel the engine was operating on will normally be indicated on the vehicle. Typical locations include, but are limited to fuel door, filler cap, fuel gauge and vehicle owner's manual.

Other hybrid (specify)
is used when the vehicle is powered by an alternative energy source such as a "flywheel" technology.

Unknown fuel type
is used when:

- The vehicle was totally destroyed, or
- The fuel type can not be determined.

LOCATION OF FUEL TANK

Page 1 of 2

Screen Name: Location of Fuel Tank

SAS Data Set: **FUELTANK**
SAS Variable: **FUELLOC**

Element Attributes:

0	Electric/solar powered
1	Aft of rear axle centered
2	Aft of rear axle left side
3	Aft of rear axle right side
4	Forward of rear axle centered
5	Forward of rear axle left side
6	Forward of rear axle right side
7	Over center of the rear axle
8	Other (specify):
9	Unknown

Source: Vehicle Inspection.

Remarks:

This variable identifies the location(s) of this vehicle's fuel tank(s). Be sure to photograph the tank and surrounding area. Refer to the NASS CDS Digital Photography Guideline for a detailed description of the required photographs.

Aft of rear axle centered
is used to identify fuel tanks located in back of the center of the rear wheels (rear axle) and in the center of the vehicle (*e.g.*, between the frame rails if present).

Aft of rear axle left side
is used to identify fuel tanks located in back of the center of the rear wheels (rear axle) and on the left side of the vehicle (*e.g.*, between the frame rails and the outer body surface).

Aft of rear axle right side
is used to identify fuel tanks located in back of the center of the rear wheels (rear axle) and on the right side of the vehicle (*e.g.*, between the frame rails and the outer body surface).

Forward of center of the rear wheels (rear axle) centered
is used to identify fuel tanks located in front of the center of the rear wheels (rear axle) and in the center of the vehicle (*e.g.*, between the frame rails if present).

Forward of center of the rear wheels (rear axle) left side
is used to identify fuel tanks located in front of the center of the rear wheels (rear axle) and in the left side of the vehicle (*e.g.*, between the frame rails and the outer body surface).

Forward of center of the rear wheels (rear axle) right side
is used to identify fuel tanks located in front of the center of the rear wheels (rear axle) and in the right side of the vehicle (*e.g.*, between the frame rails and the outer body surface).

Location of Fuel Tank (cont'd)

Page 2 of 2

Over center of the rear axle

is used when any part of the fuel tank is located over the center of the rear wheels (rear axle). This attribute takes priority over the following attributes.

Other (specify)

is used when the fuel tank is in a location other than as specified in the previous attributes . Included in this attribute are fuel tanks located inside the passenger compartment, trunk, cargo area, pickup bed, etc. The location is specified in the space provided.

Unknown

is used when:

- the fuel tank location can not be determined and an exemplar vehicle can not be located.

Screen Name: Type of Fuel Tank

SAS Data Set: **FUELTANK**
SAS Variable: **FUELTNK**

Element Attributes:

0	Electric/solar powered
1	Metallic
2	Non-Metallic
9	Unknown

Source: Vehicle Inspection.

Remarks:

This variable records the composition of the fuel tank that is permanently affixed to the vehicle as an energy reservoir for the vehicle's engine.

Metallic
is used for fuel tanks made from metal. This would include steel, aluminum (alloys), stainless steel, etc.

Non-metallic
is used for fuel tanks which are made from plastic. Plastic tanks are composed of high density polyethylene (HDPE).

Unknown
is used when the type of tank material could not be determined:
-researcher could not make a determination due to inaccessibility, or
-vehicle was dismantled during inspection and the fuel tank(s) was not available.

The following information has been compiled from discussions with automobile manufacturers, service and parts representatives and the National Automotive History Collection. This information cannot be used to code this variable and must be confirmed by visual and/or mechanical means.

Vehicle Fuel Tank Material

HDPE (High Density Polyethylene)

(1) ***Ford Motor Co.***

Ford Aerostar Mini Van	HDPE
Ranger PU (89-on)	HDPE
Explorer	HDPE
Cougar/T-Bird (90-on)	Some have HDPE with steel reinforcement
F Series PU	Some of the earlier models may have HDPE
Escort (91-on)	Some have HDPE
Tracer (91-on)	Some have HDPE

Mustang (93-on)	Some have HDPE

Type of Fuel Tank (cont'd)

(2) ***General Motors Corp.***

Chevrolet	
Lumina Mini Van	HDPE
"B" Body (91-on)	HDPE
- Caprice	
- Impala	
- Station Wagons	
"L" Body (91-on)	HDPE
- Corsica	
- Beretta	
Pontiac	
Tran Sport Mini Van	HDPE
Parisienne	HDPE
Oldsmobile	
Silhouette Mini Van	HDPE
Custom Cruiser	HDPE
Buick	
LeSabre Estate (90-on)	HDPE
Roadmaster	HDPE
Saturn	HDPE - all models

(3) ***Chrysler Corp.***

Plymouth	
Voyager Wagon	HDPE in optional 20 gallon tank
Trailduster (80-on)	HDPE
Dodge	
Caravan Wagon	HDPE in optional 20 gallon tank
Sportsman(1980)	Optional tank was HDPE
(88-on)	HDPE
Ram Wagon(1980)	Optional tank was HDPE
(88-on)	HDPE
Tradesman(1980)	Optional tank was HDPE
(88-on)	HDPE
Ram Van(1980)	Optional tank was HDPE
(88-on)	HDPE
Ram PU(80-on)	HDPE
Power Ram PU(80-on)	HDPE
Ramcharger(80-on)	HDPE
Dakota(86-on)	HDPE
Monaco	HDPE

Type of Fuel Tank (cont'd)

	Eagle	
	Premier(88-on)	HDPE
	Jeep	
	CJ5 (83-91)	Optional tank was HDPE
	CJ7 (81-86)	Optional tank was HDPE
	CJ8 (81-86)/Scrambler	Optional tank was HDPE
	Wrangler (87-on)	Optional tank (22 gal) was HDPE
	Cherokee (80-on)	HDPE-some have steel tanks
	Wagoneer (80-on)	HDPE
	J10, J20 PU (80-on)	HDPE
	Grand Wagoneer (84-on)	HDPE
(4)	***Peugeot***	
	505	HDPE
	Station Wagon	HDPE
	Sedan	HDPE
(5)	***Volkswagen***	
	Golf (85-86, 89-on)	HDPE
	Jetta (90-on)	HDPE
	Passat (92-on)	HDPE
	Corrado (89-on)	HDPE
(6)	***Volvo***	
	700 Series (85-on)	HDPE
(7)	***Saab***	
	All Models (80-on)	HDPE
(8)	***Merkur***	
	Scorpio	HDPE
	XR4Ti	Some are HDPE
(9)	***Mitsubishi***	Trucks only are HDPE

Type of Fuel Tank (cont'd)

All Vehicles from the Following Manufacturers Have Steel Gas Tanks

- Acura
- Alfa Romeo
- Bentley
- BMW
- Cadillac
- Geo
- Honda
- Hyundai
- Infiniti
- Isuzu
- Lexus
- Lincoln
- Lotus
- Mazda
- Mercedes Benz
- Nissan
- Porsche
- Renault
- Sterling
- Subaru
- Suzuki
- Toyota
- Yugo

LOCATION OF FILLER CAP

Page 1 of 2

Screen Name: Location of Filler Cap

SAS Data Set: **FUELTANK**
SAS Variable: **FUELCAP**

Element Attributes:

0	Electric/solar powered
1	On back plane
2	Over the rear axle on left side plane
3	Over the rear axle on right side plane
4	Aft of rear axle on left side plane
5	Aft of rear axle on right side plane
6	Forward of rear axle on left side plane
7	Forward of rear axle on right side plane
8	Other (specify):
9	Unknown

Source: Vehicle Inspection, secondary source exemplar vehicle

Remarks:

These variables identify the location(s) of the fuel tank filler cap in its original undamaged position on the vehicle.

Be sure to photograph the tank and surrounding area. Refer to the NASS CDS Digital Photography Guideline for a detailed description of the required photographs.

On back plane
is used when the fuel tank filler cap is located on the back plane of the vehicle.

Over the rear axle on left side plane
is used when any part of the fuel tank filler cap is located over the center of the rear wheels (rear axle) on the left side plane. This attribute takes precedence over the following attributes.

Over the rear axle on right side plane
is used when any part of the fuel tank filler cap is located over the center of the rear wheels (rear axle) on the right side plane. This attribute takes precedence over the following attributes.

Aft of rear axle on left side plane
is used when the fuel tank filler cap is located behind the center of the rear wheels (rear axle) and on the left side plane of the vehicle.

Aft of rear axle on right side plane
is used when the fuel tank filler cap is located behind the center of the rear wheels (rear axle) and on the right side plane of the vehicle.

Location of Filler Cap (cont'd)

Forward of rear axle on left side plane

is used when the fuel tank filler cap is located in front of the center of the rear wheels (rear axle) on the left side plane of the vehicle.

Forward of rear axle on right side plane

is used when the fuel tank filler cap is located in front of the center of the rear wheel(s) (rear axle) on the right side plane of the vehicle.

Other (specify)

is used when the fuel tank filler cap is in a location other than as specified above. The location is specified in the space provided.

Unknown

is used when the fuel tank filler cap location can not be determined and an exemplar vehicle can not be located (e.g., the vehicle was totally destroyed).

PRECRASH CONDITION OF FUEL TANK

Screen Name: Precrash Condition

SAS Data Set: **FUELTANK**
SAS Variable: **FUELPRE**

Element Attributes:

0	Electric/solar powered
1	No damage
2	Corroded
3	Leaking
4	Abraded
8	Other (specify):
9	Unknown

Source: Vehicle Inspection, secondary source is the interview

Remarks:

These variables record the damage to the fuel tank(s) that was present prior to the crash. The objective of these variables is to identify damage to the fuel tank(s) that was not a result of the crash. When more than one damage is present select the choice that is higher on the list.

No damage
is used when the fuel tank was not damaged prior to the crash

Corroded
is used when corrosion damage is evident on the fuel tank.

Leaking
is used when there is evidence of leakage present and it can be determined that it is not a result of the collision sequence of events.

Abraded
is used when there is evidence of abrasion or scraping on the fuel tank not a result of the crash.

Other (specify)
is used to indicate other damage not listed above

Unknown
is used when the perish condition of the fuel tank cannot be determined

DAMAGE TO FUEL TANK

Page 1 of 2

Screen Name: Damage to Fuel Tank

SAS Data Set: **FUELTANK**
SAS Variable: **FUELDAM**

Element Attributes:

0	Electric/solar powered
1	No damage to 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

Source: Vehicle Inspection.

Remarks:

These variables record the damage to the fuel tank(s) that occurred during the sequence of crash events. The objective of these variables is to identify damage to the fuel tank(s) that may or may not result in a loss of fuel system integrity. If the fuel tank(s) has more than one form of damage, enter the damage that resulted in a fuel system integrity loss. If there were multiple types of integrity loss then select the first attribute which applies from the following prioritized list: Deformed, with a seam failure, Punctured, Lacerated (ripped), Abraded (scraped), Filler neck separation from the fuel tank, Other damage (specify). If there are multiple forms of damage and no fuel system integrity loss, then enter according to the following prioritized list: Deformed, no seam failure, Abraded (scraped), and Other damage (specify).

Be sure to photograph the tank and surrounding area. Refer to the NASS CDS Digital Photography Guideline for a detailed description of the required photographs.

In addition, annotate any pre-crash damage to the fuel tank.

No damage to fuel tank
is used when the fuel tank is not damaged during the sequence of crash events.

Deformed, no seam failure
is used when the fuel tank was deformed or crushed during the crash and the seam did not fail. Tanks which do not have a seam(s) (*e.g.*, extruded fuel tanks such as high density polyethylene HDPE) should be evaluated for deformation and encoded under this attribute if applicable.

Deformed, with a seam failure
is used when the fuel tank was deformed or crushed during the crash and the seam failed. Single piece extruded tanks (*i.e.* no seams, HDPE) which experience integrity loss are ***not***

entered here.

Punctured
is used when the fuel tank was punctured, perforated or pierced during the collision sequence.

Lacerated (ripped)
is used when the fuel tank was lacerated, cut, sliced, ripped or torn during the collision sequence.

Abraded (scraped)
is used when the fuel tank was abraded or scraped during the collision sequence.

Filler neck separation from the fuel tank
is used when the filler neck was separated from the fuel tank during the collision sequence.

Other damage (specify)
is used when damage to the fuel tank can not be described in other attributes. HDPE tanks that are crushed to the point that they crack, causing an integrity loss of the fuel cell, are included here.

Unknown
is used when the fuel tank damage can not be determined.

FUEL SYSTEM LEAKAGE LOCATION

Screen Name: Leakage Location

SAS Data Set: **FUELTANK**
SAS Variable: **FUELLEAK**

Element Attributes:

0	Electric/solar powered
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

Source: Vehicle Inspection.

Remarks:

These variables provide information on fuel retention by the fuel system during the crash sequence. The objective of these variables is to report fuel system leakage. If the fuel system has leakage from more than one source, enter the leakage that resulted in a fire. If there are multiple areas of leakage and no fire, then enter the most severe area of leakage. If the severity can not be determined, then use attributes in the priority listed.

Be sure to photograph the area of leakage and surrounding area(s). Refer to the NASS CDS Digital Photography Guideline for a detailed description of the required photographs.

If no fuel leakage was caused by the crash (record no fuel leakage) if the fuel system was leaking prior to the collision, (*i.e.*, corrosion to tank, loose fuel line, etc.) annotate the information.

No fuel leakage
is used when there has been no loss in fuel retention.

Tank
is used when the fuel tank was leaking as a result of an impact during the crash sequence. Also use this attribute when leakage occurs as a result of all the filler neck separating from the fuel tank.

Filler Neck
is used when the filler neck is the source of fuel leakage as a result of an impact during the crash sequence.

Cap
is used when the mouth of the filler neck or the filler cap is the source of fuel leakage that

occurred as a result of damage from an impact during this vehicle's crash sequence.

Lines/pump/filter
is used when fuel was leaking from the fuel system lines, pump and/or fuel filter as a result of an impact during the crash sequence.

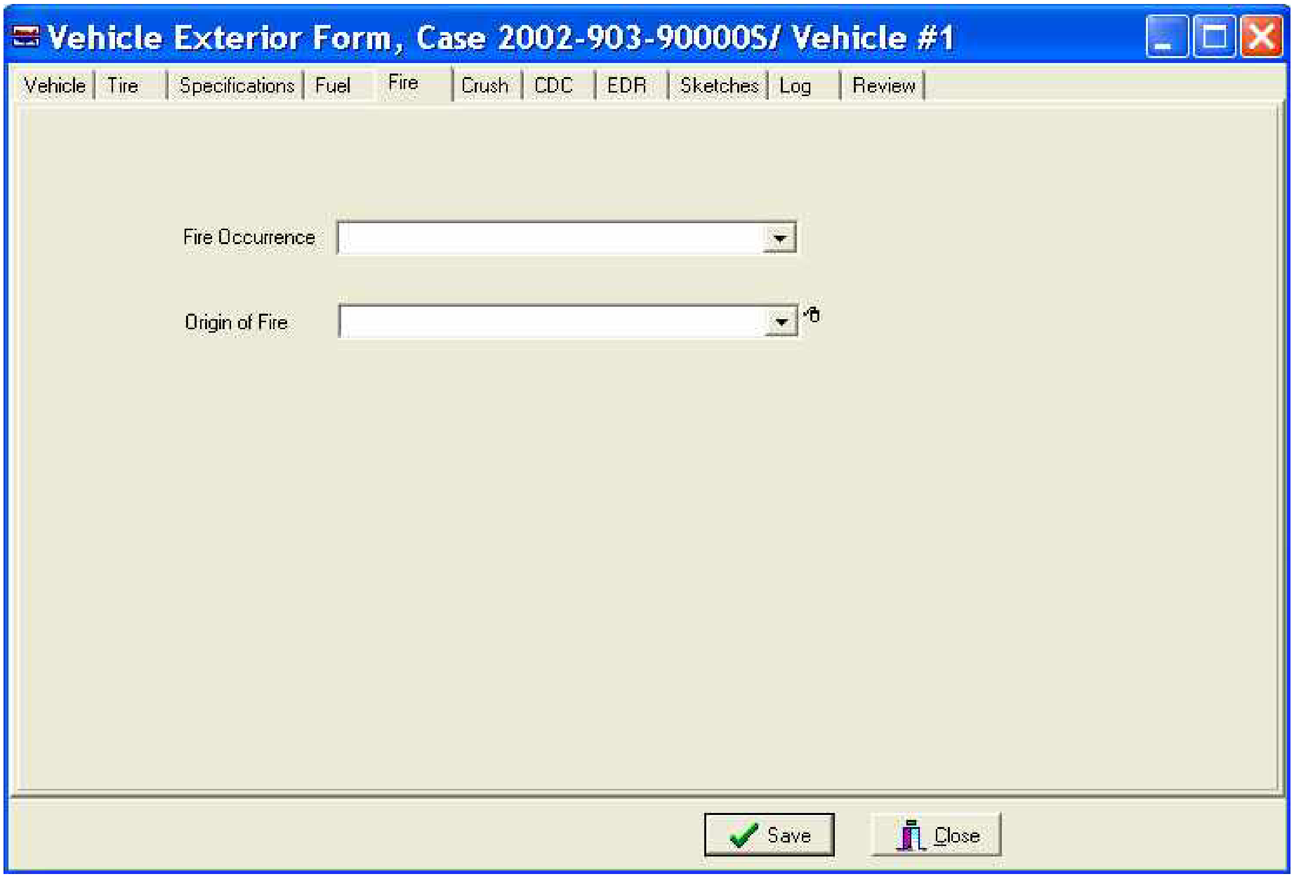
Vent/emission recovery
is used when fuel was leaking from the vent or emission recovery system as a result of an impact during the crash sequence.

Other (specify)
is used when fuel was leaking, as a result of the crash, from other than the sources specified above.

Unknown
is used when:

- It cannot be determined if the fuel system experienced any leakage, or
- The source of the fuel system leakage could not be determined.

Fire



Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1

Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Fire Occurrence
Origin of Fire
Save
Close

FIRE OCCURRENCE

Page 1 of 2

Screen Name: Fire Occurrence

SAS Data Set: **GV**
SAS Variable: **FIRE**

Element Attributes:

0	No fire
1	Minor fire
2	Major fire
7	Vehicle not inspected
8	Not a CDS vehicle
9	Unknown

Source: Primary source is the vehicle inspection; secondary sources include the interviewee(s), police report, and occupant medical records.

Remarks:

Fire events are added on the case form.

In order to classify fire damage, a fire must have occurred to this vehicle. (1) The fire could have resulted from an impact with another vehicle or object which consequently caused a fuel system integrity failure or electrical short circuit. (2) If the fire resulted from a noncollision event (*e.g.*, electrical short circuit, fuel leakage, etc.) that occurred prior to this vehicle impacting with another vehicle or object, and if the crash qualifies for the NASS CDS, then both the noncollision event and all subsequent events are entered on the Case Form Events Tab.

As it pertains to the occurrence of fire, the crash circumstances are not considered stabilized until the threat of damage to this vehicle, or injury consequences to this vehicle's occupants, has ceased. Therefore, the crash sequence is not considered stabilized until all occupants have exited the vehicle and the scene has been declared safe by police or other authority. Fires that occur at a later time to vehicles abandoned at the scene (*e.g.*, in open fields, on hillsides, etc) or to vehicles removed from the scene to another location (towyard, curbside, etc.) are not considered part of the crash sequence.

Minor

is a general term used to describe the degree of fire involvement and is used in the following situations:

- Engine compartment only fire
- Trunk compartment only fire
- Partial passenger compartment only fire
- Undercarriage only fire
- Tire(s) only fire

Fire Occurrence (cont'd)

Major

identifies those situations where the vehicle experienced a greater fire involvement than defined under "minor" above and is used in the following situations:

- Combined engine and passenger compartment fire (either partial or total passenger compartment involvement).
- Total passenger compartment fire.
- Combined trunk and passenger compartment fire (either partial or total passenger compartment involvement).
- Combined undercarriage and passenger compartment (either partial or total passenger compartment involvement).
- Combined tire(s) and passenger compartment (either partial or total passenger compartment involvement).

Unknown

is used when it cannot be determined if this vehicle sustained a fire related to the crash, e.g., a fire was reported, but this vehicle was repaired prior to inspection and it cannot be determined if this vehicle was involved in the fire.

ORIGIN OF FIRE

Page 1 of 3

Screen Name: Origin of Fire

SAS Data Set: **GV**
SAS Variable: **FIREORIG**

Element Attributes:

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):
77	Vehicle not inspected
88	Not a CDS vehicle
99	Unknown

Source: Primary source is the vehicle inspection; secondary sources include the interviewee(s), and police report.

Remarks:

This variable identifies the location of fire initiation and should not be confused with magnitude of fire. As an example, if the vehicle appeared totally "burned", Passenger compartment area would not necessarily be used unless the fire began in the vehicle's interior.

For many fires it will be difficult to determine fire origin especially when the entire vehicle was involved. The researcher should look for "hot" spots which generally appear lighter in coloration and are often accompanied by warped or melted metal. If multiple fires occur to the same vehicle, choose the fire that started within this vehicle (*i.e.*, choose an interior fire over an exterior fire), then choose the fire with the greater severity.

Vehicle exterior (front, side, back, top)
identifies fire source as occurring external to the vehicle. This generally occurs in a multiple vehicle collision where another vehicle initiates the fire and the fire is then introduced to this vehicle.

Exhaust system
is used when components of the exhaust system initiated the fire. Components of the exhaust system include: exhaust pipes, muffler/resonator, and catalytic converter.

Fuel tank (and other fuel retention system parts)
includes: the fuel tank(s), fuel supply and vent lines, tank filler neck, and fuel filler cap. Use this attribute when the fuel tank area (defined above) sustains damage such that fuel leaks and is ignited by sparks from contact with the surface of crushing metal components, or is ignited by hot surfaces of the vehicle or object that is involved in producing the damage (*e.g.*, lamp

Origin of Fire (cont'd)

filaments, hot engine components of an impacting vehicle).

Do not use this if fuel leakage occurs and is ignited in this vehicle's engine compartment [*i.e.*, use Engine compartment]. If fuel leakage occurs in the fuel tank area and spills onto and is ignited by hot exhaust system components, then use Exhaust system.

Engine compartment

is used when the fire initiates in the area (open or enclosed) which houses the engine. Generally, most engine compartments are located at the front end of the vehicle under the hood. However, some engines are mounted midway (referred to as mid- engine) on the chassis, and some are located at the rear of the vehicle.

The reason for fire initiation in these areas is inconsequential (whether fuel or electrical), but the fire's relative location to the engine is the important consideration.

Cargo/trunk compartment

identifies areas which are separated from the passenger compartment by a solid partition. In passenger automobiles, the partition will generally be formed by the seat back(s), package shelf, and trunk lid. However, areas designed to accommodate cargo (*e.g.*, the area behind the second seat of a station wagon) are not considered a cargo compartment unless these areas were walled off by a solid partition. Please note, a grate fencing is not considered a solid partition. A solid partition is generally composed of a material which limits air flow between areas.

Cargo boxes on pickup trucks are generally separated from the occupant compartment by the back wall of the cab and are classified as a cargo compartment. Please note, operable windows in backlights of pickup cabs are considered part of the solid partition, regardless of opening status.

Light vans will generally not have a separate cargo compartment unless a solid wall was installed.

Instrument panel

is used when the fire originated under the instrument panel. The instrument panel is defined as the panel extending horizontally from A-pillar to A-pillar and vertically from the lower part of the windshield to the lowest vertical edge of the panel.

Passenger Compartment area

is used when the fire initiated within the designated passenger area. This includes cargo areas adjacent to seating areas which were not separated by a solid partition.

Other location

is used when none of the other attributes apply . Included in this attribute are fires occurring with wheels or brakes.

Unknown

is used when the location of where the fire initiated cannot be determined, e.g.:

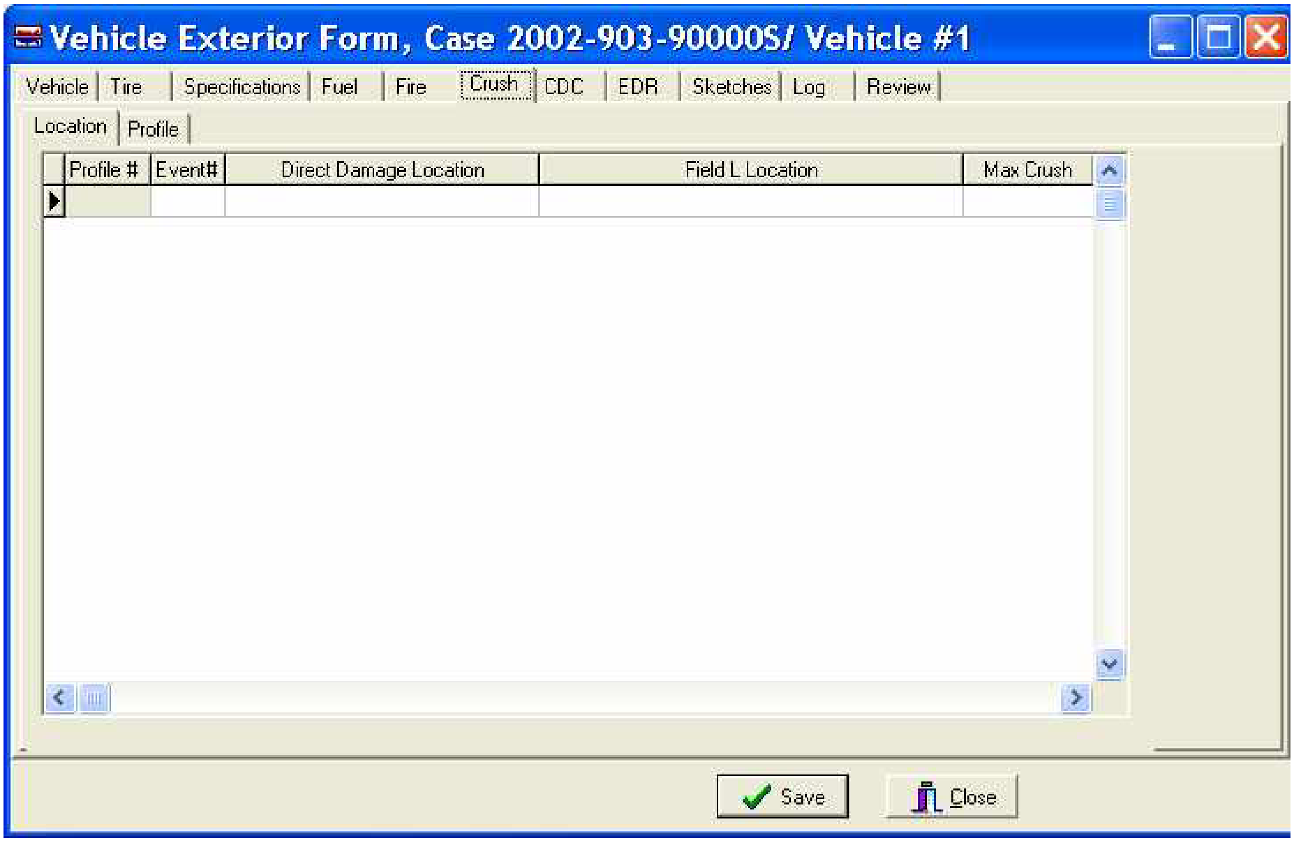
- The vehicle was totally destroyed by fire and the origin could not be determined.

Origin of Fire (cont'd

Page 3 of 3

- A combination of areas were involved but an estimate of point of origin could not be made.
- A fire was reported, but the vehicle was repaired prior to inspection.

Crush Location


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Location
Profile
Profile #
Event#
Direct Damage Location
Field L Location
Max Crush
Save
Close

The established protocol for obtaining crush data is defined in the *NASS Vehicle Measurement Techniques.*

PROFILE NUMBER

Screen Name: Profile #

SAS Data Set: N/A
SAS Variable: N/A

Element Attributes:

Range: 1-as assigned

Source: Vehicle inspection.

Remarks:

This field cannot be edited by the researcher. When the researcher selects an Event # (next variable) the system automatically assigns a Profile # for each profile documented for that event.

NOTE:

For each crush profile to be documented on the profile tab a specific location line must first be completed including:

Profile #
Event #
Direct Damage Location
Field L Location
Max Crush

NOTE: There can be more than one crush profile for each event. For corner type impacts where the researcher is unsure, in the field, whether it is an end impact or side impact, complete a location line for each plane so you can document the crush on both the end and the side plane. In this situation, there will be two profile numbers for the same event number.

EVENT NUMBER

Screen Name: Event #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range: 1-as selected

Source: Vehicle inspection.

Remarks:

The researcher chooses from the events that they have previously specified in the case structure for this vehicle.

NOTE:

For each crush profile to be documented on the profile tab a specific location line must first be completed including:

Profile #
Event #
Direct Damage Location
Field L Location
Max Crush

NOTE: There can be more than one crush profile for each event. For corner type impacts where the researcher is unsure, in the field, whether it is an end impact or side impact, complete a location line for each plane so you can document the crush on both the end and the side plane. In this situation, there will be two profile numbers for the same event number.

DIRECT DAMAGE LOCATION

Screen Name: Direct Damage Location

SAS Data Set: **CDCCRSH**
SAS Variable: **DMGLOC**

Element Attributes:

Source: Vehicle inspection.

Remarks:

This describes the location of the direct damage. This must be referenced to a retrievable point on the damaged plane. Locate an end of damage with respect to the post crash centerpoint or bumper corner of the end plane or, for side impacts, to an undamaged axle. These required measurements are used to assist with CDC assignments (direct) and to determine the "D" dimension if not measured on the vehicle. The following examples include the data that are required:

- The left end begins 4 centimeters right of post crash center of the end plane, or
- The rearmost end begins 48 centimeters rearward of the rear axle (side plane)

LOCATION OF FIELD L

Screen Name: Field L

SAS Data Set: **CDCCRSH**
SAS Variable: **FIELDLOC**

Element Attributes:

Range: 1-659, 997,999

Remarks:

This describes the location of the Field L. This must be referenced to a retrievable point on the damaged plane. Locate an end of damage with respect to the post crash centerpoint or bumper corner of the end plane or, for side impacts, to an undamaged axle. These required measurements are used to assist with CDC assignments (direct) and to determine the "D" dimension if not measured on the vehicle. The following examples include the data that are required:

- Entire end plane involved, or
- C_1 is 102 centimeters forward of the rear axle

LOCATION OF MAX CRUSH

Screen Name: Max Crush

SAS Data Set: **CDCCRSH**
SAS Variable: **CMAXLOC**

Element Attributes:

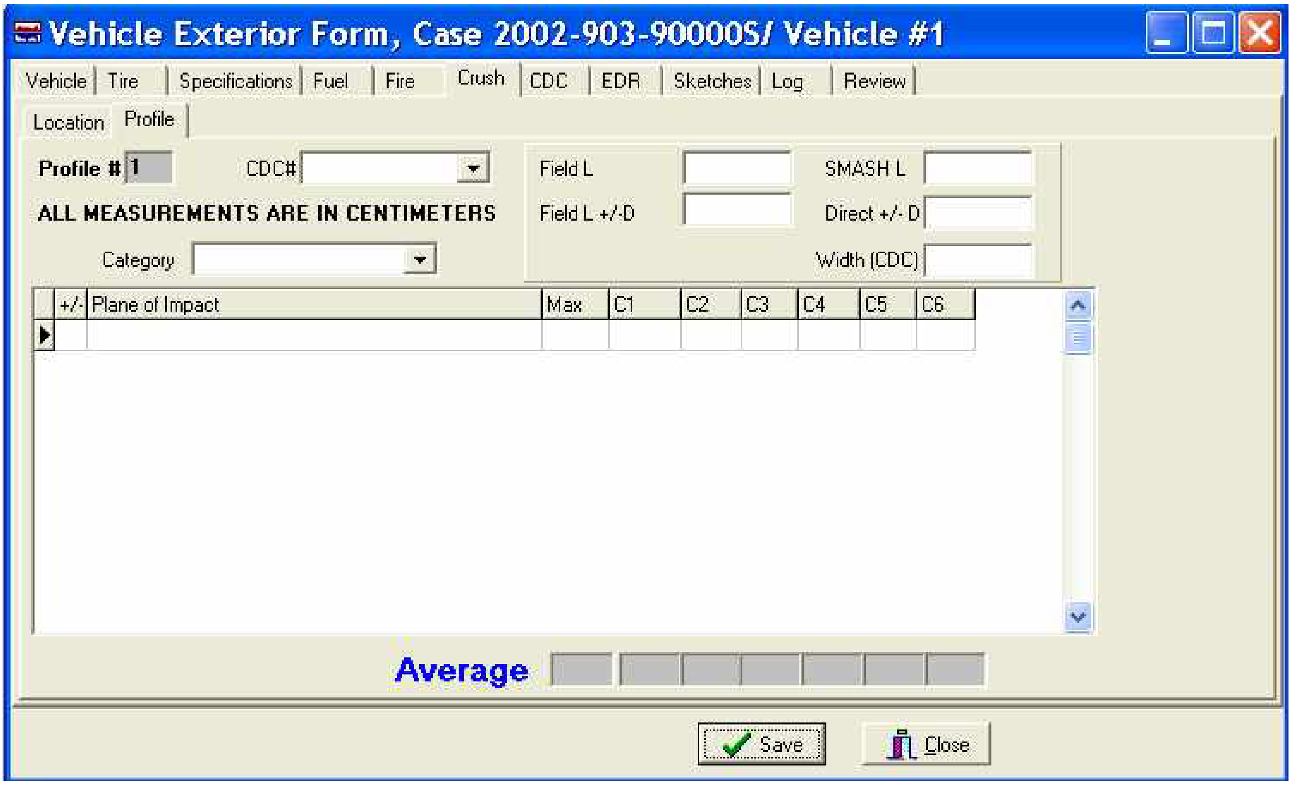
Source: Vehicle Inspection

Remarks:

This describes the location in the crush profile of the maximum crush. This must be referenced to a "C" value or a retrievable point on the damaged plane. Examples include:

- located 15 centimeters left of post crash center of the end plane, or
- located at C_3
- located 5 centimeters forward of the rear axle

Crush Profile


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Location
Profile
Profile # 1
CDC#
ALL MEASUREMENTS ARE IN CENTIMETERS
Category
Field L
Field L +/-D
SMASH L
Direct +/- D
Width (CDC)
+/-
Plane of Impact
Max
C1
C2
C3
C4
C5
C6
Average
Save
Close

PROFILE NUMBER

Screen Name: Profile #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range: 1-as assigned

Source: Vehicle inspection.

Remarks:

This contains the impact sequence number specific to this vehicle for which the data are being obtained. This field cannot be edited by the researcher. When the researcher selects an Event # the system automatically assigns a Profile # for each profile documented for that event.

To complete a second crush profile for the same event (e.g., corner impact) return to the crush profile location sub tab and select Edit/Insert and complete the location variables. With profile #2 still highlighted on the location sub tab, return to the profile sub tab to enter the crush data. Likewise, the researcher can complete a second CDC for the same event. Each crush profile should be initially linked to the corresponding CDC # on the crush profile tab, profile sub tab. Once researchers make a final decision on which is the correct CDC/crush profile for the corner impact, they should annotate the incorrect CDC to the correct CDC, by right clicking on the screen of the correct CDC. Then delete the incorrect CDC from the CDC/Detail screen by going to that screen and, on the main menu, select edit/delete. This blanks out the CDC # on the crush profile/profile sub tab of the incorrect crush profile and thus unlinks it from the data base. This leaves only the correct CDC and crush profile in the data base. However, it keeps the incorrect CDC annotated to the correct CDC screen and the incorrect crush profile on its screen (unlinked to a CDC #) for Zone Center use.

CDC NUMBER

Screen Name: CDC # Profile Number

SAS Data Set: **CDCCRSH**
SAS Variable: **DEFORMNO**

Element Attributes: Generated (# and plane of contact) from documented CDCs

Range: 1-as selected

Source: Vehicle inspection.

Remarks:

The element attributes are generated from the CDCs entered on the CDC/Detail Tab (e.g. 1-F Front, 2-L Left Side). Select the CDC number that matches the event/damage for which you are going to document the crush profile.

FIELD L

Screen Name: Field L

SAS Data Set: **CDCCRSH**
SAS Variable: **FIELDL**

Element Attributes:

	Entered number
997	Not applicable
999	Unknown

Range: 1-659, 997, 999

Source: Vehicle Inspection

Remarks:

Enter the Field L used during the vehicle inspection to measure the crush profile. Recall that the Field L represents both direct and induced damage as measured along the reference line (shock cord). This measurement is used to locate the position of the C-measurements.

WINSMASH L

Screen Name: WinSMASH L

SAS Data Set: **CDCCRSH**
SAS Variable: **L**

Element Attributes:
Entered number
Unknown

Range:

Source: Vehicle Inspection

Remarks:

The WinSMASH L is the “L” that will be used for the WinSMASH program. This equals the **Field L** for all side impacts and for minor end impacts where the direct and induced damage does **not** extend all the way across the endplane. Use the **Undeformed End Width** for all end impacts where the direct and induced damage **extends all** the way across the endplane.

FIELD L +/- D

Screen Name: Field L +/- D

SAS Data Set: **CDCCRSH**
SAS Variable: **FIELDD**

Element Attributes:

	Entered number
997	Not applicable
999	Unknown

Range: -300-300,997,999

Source: Vehicle Inspection

Remarks:

This is the Field L +/- D that will be used for the WinSMASH program. It is the measurement from the damaged center of the endplane or wheelbase to the center of the Field L, measured in the field on the damaged vehicle. Indicate whether "D" is a positive or negative value.

DIRECT +/- D

Screen Name: Direct +/- D

SAS Data Set: **CDCCRSH**
SAS Variable: **D**

Element Attributes:

	Entered number
997	Not applicable
999	Unknown

Range: -390-299,997,999

Source: Vehicle Inspection

Remarks:

This is the Direct +/- D that will be used for the WinSMASH program. It is the measurement from the damaged center of the endplane or wheelbase to the center of the direct damage, measured in the field on the damaged vehicle. Indicate whether "D" is a positive or negative value.

CATEGORY

Screen Name: Category

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Side
End
Top (specify)
Under (specify)

Range:

Source: Vehicle inspection

Remarks:

This is the impact plane on which measurements are being taken. This field must be selected in order to enter a crush profile.

WIDTH (CDC)

Screen Name: Width (CDC)

SAS Data Set: **CDCCRSH**
SAS Variable: **DIRDAMW**

Element Attributes:

	Entered number
999	Unknown

Range: 1-659, 999

Source: Vehicle inspection.

Remarks:

The direct damage width, measured on the vehicle, that is used in determining the CDC for this impact/event.

VERTICAL LEVEL AT WHICH CRUSH MEASUREMENTS ARE TAKEN FOR A PARTICULAR CRUSH PROFILE.

Screen Name: Plane of Impact

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

- END PLANE
  - (+) Bumper
  - (+) Above Bumper
  - (-) Free Space
  - (+) Stand Adjustment
  - (-) Stand Adjustment
- SIDE
  - (+) Sill
  - (+) Mid Door
  - (+) Upper Door
  - (+) Lower Door
  - (-) Free Space
  - (+) Stand Adjustment
  - (-) Stand Adjustment
- TOP
  - (+) Top
- UNDER
  - (+) Under

Source: Vehicle inspection.

Remarks:

On the first line select the vertical level at which the crush profile is measured (*i.e.*, bumper, above bumper, sill, mid-door, etc.). Use Edit/Insert at the top of the screen to insert another line. On the next line(s) select an operator (Free-space and/or Stand Adjustment) to adjust the measurements. The values are entered at the Max and C1 through C6 positions. Then insert another line and select Result for the computer to generate the actual crush. After the results are generated, if changes are made to Cs or freespace, you have to select result again to re-generate the new results. If more than one vertical level is measured for averaging (i.e., bumper and above bumper), then insert another line and select the second vertical level and follow the same procedures as above. After you get your second result, the computer will generate the average at the bottom of the screen.

Note: the operator column +/- is automatically assigned when the attribute is selected. All freespace is (-) subtracted from the C measurements measured to the stringline, while stand adjustments can be either (+) added or (-) subtracted from the C measurements measured to the stringline. If the stands had to be set out further than the overall length of the vehicle, a minus Stand Adjustment must be used. If the stands had to be set shorter than the overall length of the vehicle, a + Stand Adjustment must be used.

MAXIMUM CRUSH FOR THIS VERTICAL LEVEL OF CRUSH MEASUREMENTS FOR THIS CRUSH PROFILE

Screen Name: Max

SAS Data Set: **CDCCRSH**
SAS Variable: **CMAX**

Element Attributes:

Entered number
997 Not applicable
999 Unknown

Range: blank, 0-250,997,999

Source: Vehicle inspection.

Remarks:

This is the maximum crush measured at the vehicle for the profile being documented. Recall that maximum crush is determined after free space is subtracted and/or stand adjustment is added (+) or subtracted (minus) if appropriate.

If the Max crush falls at a C location, the values at that C location must also be entered here, along with any freespace or stand adjustments.

When averaging techniques are used, Max crush is NOT averaged.

C1, C2, C3, C4, C5, C6

Screen Name: C1, C2, C3, C4, C5, C6

SAS Data Set: **CDCCRSH**
SAS Variable: **C1, C2, C3, C4, C5, C6**

Element Attributes:

Entered number
997 Not applicable
999 Unknown

Range: blank, 0-250,997,999

Source: Vehicle inspection.

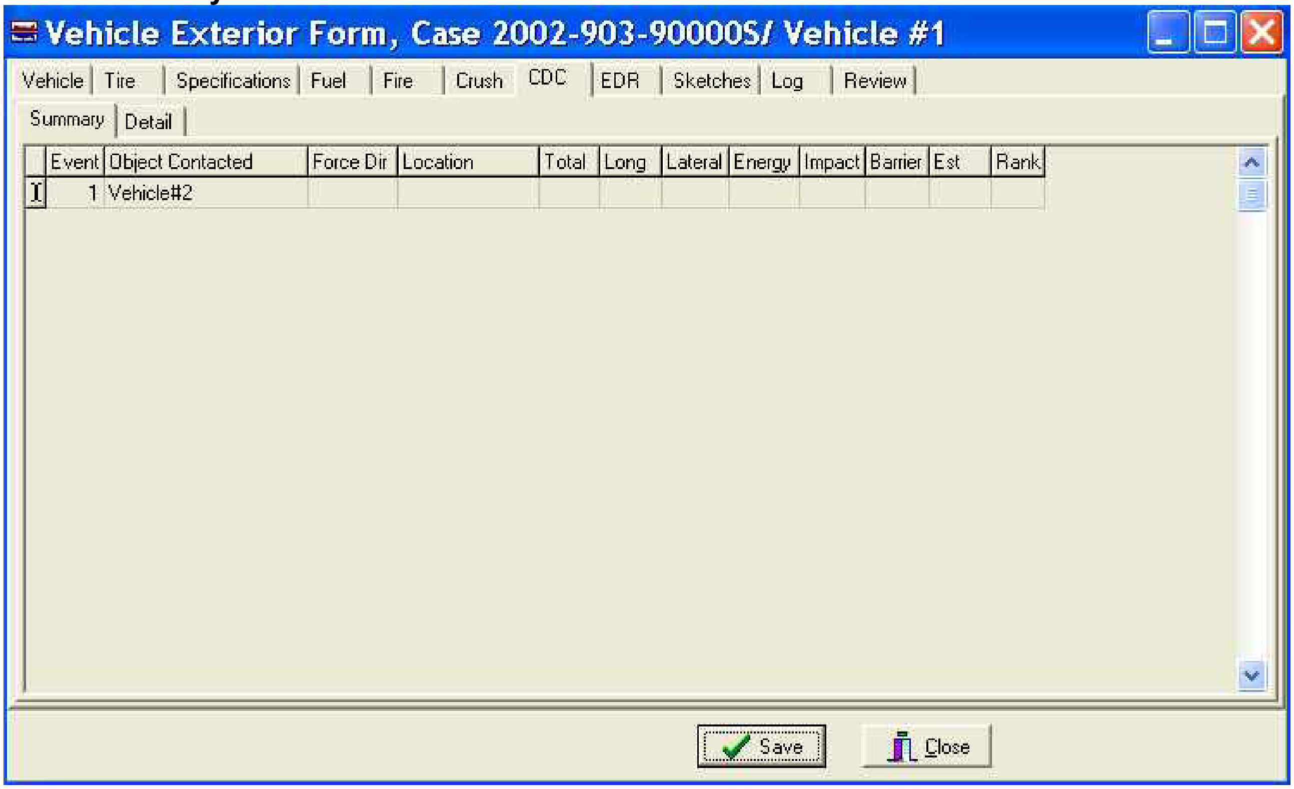
Remarks:

The damage measurements associated with a specific impact/CDC are entered regardless of the use of a reconstruction program. Record the C-values for each impact to the nearest centimeter.

Record two, four, or six C-measurements (as appropriate) on the line for the crush profile being documented. On the line beneath, annotate the free space to be subtracted and/or stand adjustment.

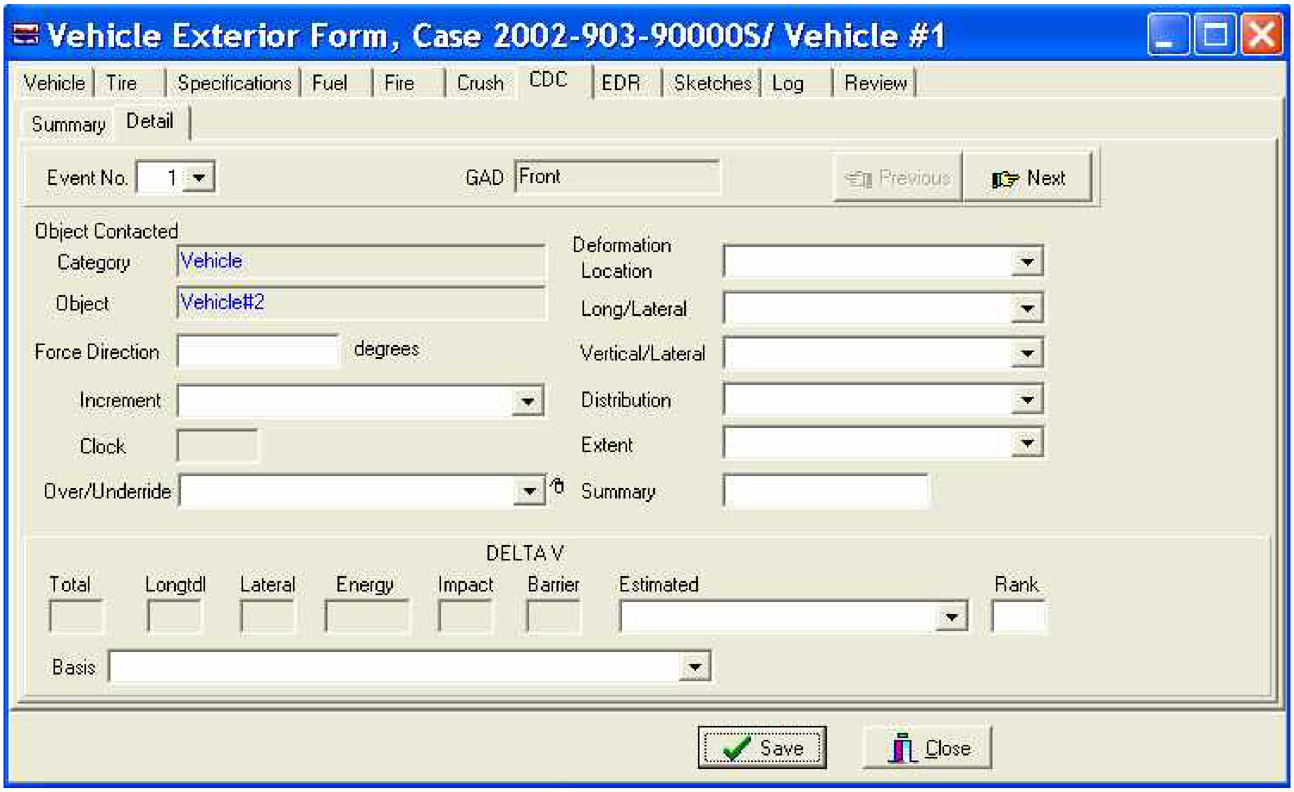
The NASSMAIN WinSMASH program will automatically use the resultant C values for each event on which you select to run WinSMASH. You run the WinSMASH while on the CDC tab after the available damage data for the vehicle or vehicles involved in this event has been recorded. Highlight the CDC of the impact you want to run, then click on “Process” from the main menu at the top of the screen. Then click on “Run WinSMASH”.

CDC / Summary


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Summary
Detail
Save
Close

Event	Object Contacted	Force Dir	Location	Total	Long	Lateral	Energy	Impact	Barrier	Est	Rank
1	Vehicle#2										

CDC / Detail


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
Summary
Detail
Previous
Next
Force Direction
degrees
Increment
Clock
Over/Underride
Deformation Location
Long/Lateral
Vertical/Lateral
Distribution
Extent
Summary
DELTA V
Total
Longtdl
Lateral
Energy
Impact
Barrier
Estimated
Rank
Basis
Save
Close

Event No. 1

GAD Front

Object Contacted

Category Vehicle

Object Vehicle#2

EVENT NUMBER

Screen Name: Event No.

SAS Data Set: **CDCCRSH**
SAS Variable: **ACCSEQ**

Element Attributes:
Entered number

Range: 1-as selected

Source: Vehicle inspection.

Remarks:

Once the CDC/Detail tab is selected the researcher must select Edit/Insert from the Main Menu at the top of the screen to activate the tab. This will automatically insert 1 of 1 for the CDC #.

The researcher chooses from the events that they have previously specified in the case structure for this vehicle.

There can be more than one CDC or crush profile for each event (e.g., a corner impact where the researcher is not sure, in the field, whether the end plane or the side plane is the initial plane of contact). See the next variable, CDC No., for details.

[DEFORMATION NUMBER]

Screen Name: N/A

SAS Data Set: **CDCCRSH**
SAS Variable: **DEFORMNO**

Element Attributes:
1 - 5

Range: 1-5

Source: Vehicle inspection.

Remarks:

Certain impacts to a vehicle require more than one CDC to describe the damage.

One example are impacts with an object such as a fence where there is continuous contact with the object as it contacts multiple planes of the vehicle. The fence initially contacts the front of the vehicle, then as the vehicle proceeds into the fence, it contacts the vehicle sides and the top of the vehicle. There will be a separate CDC entered for each of these planes.

The other situation involves an impact where the vehicle initially contacts another vehicle with its from then rotates and causes a slap the to the side of the vehicle. This would require to different CDCs to two different planes.

GENERAL AREA OF DAMAGE

Screen Name: GAD

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Range:

Source: Roll-up from Case Form/Events

Remarks:

The researcher CANNOT enter information in this field. It is entered on the Case Form/Events tab, and rolls-up to this screen.

OBJECT CONTACTED CATEGORY AND OBJECT

Screen Name: Object Contacted Category and Object

SAS Data Set: **CDCCRSH**
SAS Variable: **OBJCONT**

Source: Vehicle inspection.

Element Attributes:

01-30 — Vehicle Number

Noncollision
31 Overturn — rollover (excludes end-over-end)
32 Rollover - end-over-end
33 Fire or explosion
34 Jackknife
35 Other intraunit damage (specify):
36 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)
50 Nonbreakaway Pole or post (≤ 10 cm in diameter)
51 Nonbreakaway Pole or post (> 10 cm but ≤ 30 cm in diameter)
52 Nonbreakaway Pole or post (> 30 cm in diameter)
53 Nonbreakaway 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
70 Passenger car, light truck, van, or other vehicle not in-transport
71 Medium/heavy truck or bus not in-transport
72 Pedestrian
73 Cyclist or cycle
74 Other nonmotorist or conveyance (specify)
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

Other event (specify)
98 Other event (specify):

Unknown event or object
99 Unknown event or object

Source: Researcher determined: primary sources are the scene and vehicle inspections; secondary sources include the police report and interviewees.

Remarks:
Once the Event Number is selected the Object Contacted Category and Object will roll-up to these fields from the Case Form/Events Tab. If the event is not listed or incorrect, it must be entered on the Case Form/Events Tab.

SEE CASE FORM/EVENTS TAB FOR DETAILS ON CODING ATTRIBUTES.

DIRECTION OF FORCE

Screen Name: Force Direction

SAS Data Set: **CDCCRSH**
SAS Variable: **PDOF**

Element Attributes:

	Entered number (to nearest 10 deg)
998	Non horizontal force
999	Unknown

Range: 0 – 350, 998,999

Source: Restricted to vehicle inspection or photographs.

Remarks:

0-350

An estimated CDC is indicated for each impact. In this estimate, write the direction of principal force in positive increments of ten degrees. Thus, if the direction appeared to be approximately ten degrees to the right of straight-ahead, indicate "10". If the direction of force appeared to be ten degrees left of straight-ahead, indicate "350". The final coding of the CDC reflects the direction of force in clock positions.

Nonhorizontal Force

Select this any time a vehicle becomes inverted and impacts any object or vehicle while inverted. In addition, use this selection in any other circumstance which is consistent with the directions contained in SAE J224 MAR80.

Unknown

Select this when the force direction cannot be determined via vehicle inspection or images/photographs.

[CLOCK]

Screen Name: Clock

SAS Data Set: **CDCCRSH**
SAS Variable: **CLOCK**

Element Attributes:

1 – 12	Direction of clock force
99	Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

The clock direction rolls up from the **Direction of Force** previously entered.

INCREMENT OF CLOCK DIRECTION

Screen Name: Increment

SAS Data Set: **CDCCRSH**
SAS Variable: **SHIFT**

Element Attributes:

00	No shift
20	End shift vertical up; top shift up
40	End shift vertical down; top shift rearward
60	End, top, or bowing shift lateral right
80	End, top, or bowing shift lateral left
99	Unknown Shift

Source: Vehicle inspection

Remarks:

The coding of this variable reflects whether the end of the vehicle has been shifted >10 cm. This variable is being collected for use in modifying the CDC for the vehicle.

00 - No shift
Less than 10cm of shift or for roof shift, no visible shift

20 - Up
Upward shift of >10cm of at least 1 frame rail.

40 - Down
Downward shift of >10cm of at least 1 frame rail.

60 - Right
End or top shift lateral right. This includes bowing to the right

80 - Left
End or top shift lateral left. This includes bowing to the left

Unknown
Use this when it cannot be determined whether the vehicle has end shift or bowing >10 cm.

To select lateral end shift, both frame rails or the entire end (of a unibody) must shift >10cm.

To select vertical end shift, only one frame rail (nearest the direct damage) needs to shift >10cm.

To select lateral shift for bowing (side impact, measured on the opposite side of the impact) only one bumper corner has to bow (shift) laterally >10cm.

*** Proposed change to add the element Unknown has not yet taken place ***

OVERRIDE/UNDERRIDE (THIS VEHICLE)

Screen Name: Over/Underride

SAS Data Set: **CDCCRSH**
SAS Variable: **RIDEUP**

Element Attributes:

1	None
2	Override
3	Underride
4	Medium/heavy truck or bus override
9	Unknown

Source: Vehicle inspection (with exceptions as noted).

Remarks:

None

Is selected when both vehicles are inspected and there is no override/underride, or not an end-to-end impact between two CDS vehicles; or no medium/heavy truck or bus override.

Override

Is selected when 2 CDS applicable vehicles are involved in an end-to-end impact, and this vehicle overrides the other vehicle

Underride

Is selected when 2 CDS applicable vehicles impact (end-to-end), and this vehicle underrides the other vehicle .

Medium/heavy truck or bus override

Is selected when a CDS applicable vehicle's end impacts with the end or side a medium/heavy truck or bus and this CDS vehicle's end (front or back) underrides the medium/heavy truck or bus.

Unknown

It cannot be determined if an override/underride occurred, or the impact configuration for two CDS applicable vehicles cannot be determined.

Override/Underride is coded from the perspective of vehicle impact configuration and is ***not*** based on: coding in columns 5 and/or 6 of the CDC, or vehicle measurement techniques (*i.e.*, the "13-centimeters" rule for WinSMASH purposes). It is only relevant for end-to-end impacts between two CDS applicable vehicles, or any configuration impact between a CDS applicable vehicle and a Medium/heavy truck or bus.

This variable is intended to capture those instances where there is an uneven damage pattern caused by uneven amounts of crush at different vertical levels of the front and/or rear planes of the vehicle. Because of the different crush stiffness' involved in these locations, these variables are included to alert the vehicle safety analysts to uneven crush patterns in front and rear impacts, which are not identified in the CDC (*i.e.*, columns 5 and/or 6).

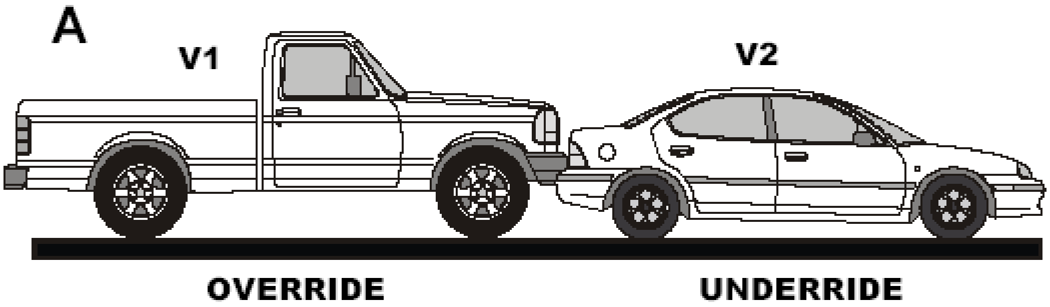
Variable Name: Override/Underride (this vehicle) (cont'd)

Page 2 of 2

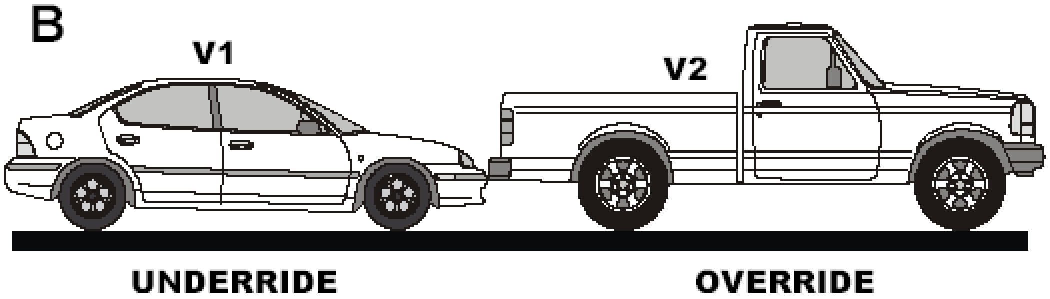
For this variable an impact with a not-in-transport vehicle (either CDS applicable or a medium/heavy truck) is considered a vehicle-to-vehicle impact and not a vehicle-to-object impact.

The term "override" means a vehicle overrode (*i.e.*, goes on top of) the bumper (front or rear) of the other vehicle (except for trucks/buses where the impact configuration does not matter.) The term "underride" means a vehicle underrode (*i.e.*, goes below) the bumper (front or rear) of the other vehicle (except for trucks/buses where the impact configuration does not matter.)

If a vehicle is not equipped with a bumper (*e.g.*, rear of some pickup trucks), then consider the equivalent end structure for coding these variables.



As indicated in **Situation A**, the trunk area of V2 is damaged (*i.e.*, "crushed") while the rear bumper is relatively undisturbed. Hence, the uneven damage pattern. Conversely, the front of V1 is "crushed" at bumper height only, or is crushed ***uniformly*** at the bumper and grille levels (*i.e.*, an "even" damage pattern). Even though V1 may not exhibit the uneven damage pattern, it would still receive an applicable override code due to the resultant underride damage to V2.



When the bumper receives measurable crush and the area above the bumper also receives measurable crush, the override/underride codes are applicable if the impact configuration applies. For example, (**Situation B**) the front bumper (V1) may be crushed 2" rearward and the grille area may be crushed 6" rearward. While the averaging technique rule for WINSMASH does not apply for the different levels of crush, the impact may in fact meet the configuration rule for the override/underride variables.

DEFORMATION LOCATION

Screen Name: Deformation Location

SAS Data Set: **CDCCRSH**
SAS Variable: **GAD**

Element Attributes:

F -- Front
R -- Right side
L -- Left side
B -- Back (rear)
T -- Top
U -- Undercarriage
9 -- Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the documents entitled: SAE J224MAR80 and "Collision Deformation Classification Training Program: Intermediate Level — Training/Reference Module", for detailed definitions of the Element Attributes as well as instruction on proper usage.

SPECIFIC LONGITUDINAL OR LATERAL LOCATION

Screen Name: Long/Lateral

SAS Data Set: **CDCCRSH**
SAS Variable: **SHL**

Element Attributes:

Front, Rear or Side Impacts	
D	Distributed- — side or end
L	Left — front or rear
C	Center — front or rear
R	Right- — front or rear
F	Side front — left or right
P	Side center section — L or R
B	Side rear — left or right
Y	Side (F + P) or end (L + C)
Z	Side (P + B) or end © + R)
9	Unknown

Top or Undercarriage	
D	Distributed (F+P+B)
F	Front Section
P	Center Section
B	Rear Section
Y	F+P
Z	P+B
9	Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Element Attributes **"F"**, **"P"**, **"B"**, **"Y"**, **"Z"**, and **"D"** must be used for vehicles with top or undercarriage deformation.

Refer to the documents entitled: SAE J224 MAR80 and "Collision Deformation Classification Training Program: Intermediate Level — Training/Reference Module", for detailed definitions of the Element Attributes as well as instruction on proper usage.

SPECIFIC VERTICAL OR LATERAL LOCATION

Screen Name: Vertical/Lateral

SAS Data Set: **CDCCRSH**
SAS Variable: **SVL**

Element Attributes:
CDC (Vertical - Front, Rear, or Side Impacts)

A	All
H	Top of frame to top
E	Everything below belt line
G	Belt line and above
M	Middle — top of frame to belt line or hood
L	Frame — top of frame, frame, bottom of frame (including undercarriage)
W	Below undercarriage level (wheels and tires only)
9	Unknown

CDC (Lateral - Top and Undercarriage Impacts)

D	Distributed
L	Left
C	Center
R	Right
Y	Left and Center (L + C)
Z	Right and Center (R + C)
9	Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the document entitled: SAE J224 MAR80 and "Collision Deformation Classification Training Program: Intermediate Level — Training/Reference Module", for detailed definitions of the Element Attributes as well as instruction on proper usage.

TYPE OF DAMAGE DISTRIBUTION

Screen Name: Distribution

SAS Data Set: **CDCCRSH**
SAS Variable: **TDD**

Element Attributes:

W	Wide impact area
N	Narrow impact area
S	Sideswipe
O	Rollover (includes side)
A	Overhanging structure
E	Corner
K	Conversion impact type
U	No residual deformation
9	Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the documents entitled: SAE J224 MAR80 and "Collision Deformation Classification Training Program: Intermediate Level — Training/Reference Module", for detailed definitions of the Element Attributes as well as instruction on proper usage.

Note: When recording a **"K"** conversion impact type enter the first half of the **"K"** conversion in one CDC and enter the second half of the **"K"** conversion in the next CDC.

DEFORMATION EXTENT GUIDE

Screen Name: Extent

SAS Data Set: **CDCCRSH**
SAS Variable: **EXTENT**

Element Attributes:

1	One
2	Two
3	Three
4	Four
5	Five
6	Six
7	Seven
8	Eight
9	Nine
99	Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Extent zone is based on direct damage only. When a body panel is torn loose from the vehicle frame due to impact; consider it as not representative of residual crush.

When you average two crush profiles, use the largest maximum crush for your extent zone (*i.e.*, do not average the maximum crush).

Refer to the documents entitled: SAE J224 MAR80 and "Collision Deformation Classification Training Program: Intermediate Level — Training/Reference Module", for detailed definitions of the Element Attributes as well as instruction on proper usage.

WINSMASH OVERVIEW

Page 1 of 4

The WinSMASH program reconstructs a single two dimensional vehicle-to-vehicle impact, or vehicle-to-large object impact that resembles a barrier collision. The impact must be instantaneous (80 to 150 milliseconds) and common velocity must be obtained during the impact. The vehicle's stiffness parameters must match the vehicle size and stiffness model, and the crush information must be known. Due to these assumptions, the following collisions cannot be run on WinSMASH:

- rollovers
- yielding fixed objects
- stiffness altered (e.g., snowplow blade, excessive corrosion, non-OEM bumpers).
- sideswipes
- non-horizontal forces
- severe override/underride
- undercarriage damage
- collisions with moving trains/large trucks
- towing trailers or vehicles
- collisions with animals/pedestrians/cyclists
- insufficient data (vehicle inspection required: see WinSMASH Missing Vehicle)
- multiple impacts to the same area.

Damage Algorithm (WinSMASH)

The damage algorithm is the most often used portion of WinSMASH. This subroutine can be used to generate a speed change, when scene data are not available . Because the Delta V is based entirely on vehicle deformation, care must be taken to provide accurate information. An example of a WinSMASH DAMAGE output follows:

Example A: SUMMARY OF WinSMASH RESULTS USING DAMAGE

```
                          SPEED CHANGE
                            (DAMAGE)
--------------------------------------------------------------------

VEHICLE #1
   TOTAL                  29 KMPH    ( 18 MPH)
   LONGITUDINAL          -29 KMPH    (-18 MPH)
   LATERAL                 0 KMPH    (  0 MPH)
   PDOF ANGLE              0 DEGREES
   ENERGY DISSIPATED =   50208 JOULES (  37026 FT-LB)

VEHICLE #2
   TOTAL                  38 KMPH    (24 MPH)
   LONGITUDINAL           38 KMPH    (24 MPH)
   LATERAL                 0 KMPH    (0 MPH)
   PDOF ANGLE           -180 DEGREES
   ENERGY DISSIPATED=    64964 JOULES (  47908 FT-LB)

--------------------------------------------------------------------
```

Damage & Trajectory Algorithm (WinSMASH)

In this method the scene data as well as vehicle data are used to estimate Delta V. This subroutine calculates either a damage and trajectory estimate in axial (velocity vectors are within ten degrees of parallel) collisions or a Conservation of Linear Momentum solution in angular collisions greater than ten degrees. Because the scene data are calculated separately in the Conservation of Linear Momentum solution, a separate Delta V is generated and a comparison with the damage Delta V can be made for accuracy.

Reconciliation Of Different Results Between Damage And Trajectory (WinSMASH)

1. The axial collision solution is used when the initial velocity vectors are within ten degrees of parallel. Examples of use in WinSMASH are: head-on collisions, rear-end collisions, vehicles sliding sideways traveling straight into an oncoming vehicle or a stationary barrier, barrier impacts, etc.

The transition between the axial and angular solutions (*i.e.*, a velocity vector change from within ten degrees of parallel to just outside ten degrees of parallel) may sometimes produce abrupt changes in Delta V results. Therefore, the researcher should remember when running these cases to examine their results carefully.

The axial collision printout will calculate impact speed (spinout and damage). and the SPEED CHANGE (DAMAGE) , which should be used, if reasonable.

Example B: SUMMARY OF WinSMASH RESULTS USING DAMAGE & TRAJECTORY FOR AN AXIAL COLLISION (<10°)

PSU99 CASE # 001B 1985 OLDS 98 AND 1985 OLDS Firenza Head on

	SPEED CHANGE (DAMAGE)		**IMPACT SPEED (DAMAGE AND SPINOUT)**	
VEHICLE #1				
TOTAL	41 KMPH	(26 MPH)	44 KMPH	(28 MPH)
LONGITUDINAL	-41 KMPH	(-25 MPH)	44 KMPH	(28 MPH)
LATERAL	7 KMPH	(4 MPH)	0 KMPH	(0 MPH)
PDOF	-10 DEGREES			
ENERGY DISSIPATED =	113645 JOULES (83809 FT-LB)			
VEHICLE #2				
TOTAL	53 KMPH	(33 MPH)	51 KMPH	(32 MPH)
LONGITUDINAL	-53 KMPH	(-33 MPH)	51 KMPH	(32 MPH)
LATERAL	9 KMPH	(6 MPH)	0 KMPH	(0 MPH)
PDOF ANGLE	-10 DEGREES			
ENERGY DISSIPATED =	116586 JOULES (85978 FT-LB)			

The conservation of linear momentum solution is used for angle collisions (greater than ten degrees from parallel). The reconstruction program produces two independent estimates of Delta V. The total, longitudinal, and lateral Delta Vs associated with "**speed change damage**" should be compared respectively to the Total, Longitudinal and lateral Delta Vs associated with ***"linear momentum and trajectory***". The results will seldom be precisely equal. Experience indicates that a satisfactory agreement exists between two estimates when their Delta V components differ by no more than 4 kmph or ten (10) percent, whichever is greater, and the angles are within the same o'clock direction. Be sure, when comparing Delta Vs, to compare the V_1 total Delta V due to "damage" with the V_1 total Delta V due to "linear momentum and trajectory". Likewise, make the same comparison for V_1 longitudinal Delta V, etc. When the agreement is not satisfactory, the data associated with each option should be reviewed for accuracy.

Example C: **SUMMARY OF WinSMASH RESULTS USING DAMAGE & TRAJECTORY FOR AND ANGLED COLLISION (>10°)**

PSU 99 Case No. 103D 1985 Olds 98 and 1985 Olds Firenza Angle

	SPEED CHANGE (DAMAGE)	**SPEED CHANGE (LINEAR MOMENTUM AND TRAJECTORY)**	**IMPACT SPEED (LINEAR MOMENTUM AND TRAJECTORY)**
VEHICLE #1			
TOTAL	27 KMPH (17 MPH)	29 KMPH (18 MPH)	41 KMPH (25 MPH)
LONGITUDINAL	-21 KMPH (-13 MPH)	-23 KMPH (-14 MPH)	41 KMPH (25 MPH)
LATITUDINAL	17 KMPH (11 MPH)	18 KMPH (11MPH)	0 KMPH (0 MPH)
PDOF ANGLE	-40 DEGREES	-39 DEGREES	

ENERGY DISSIPATED = 86522 JOULES (63807 FT-LB)

VEHICLE #2			
TOTAL	35 KMPH (22 MPH)	38 KMPH (23 MPH)	35 KMPH (22 MPH)
LONGITUDINAL	-22 KMPH (-14MPH)	-24 KMPH (-15 MPH)	35 KMPH (22 MPH)
LATITUDINAL	-27 KMPH (-16 MPH)	-29 KMPH (-18 MPH)	0 KMPH (0 MPH)
PDOF ANGLE	50 DEGREES	51 DEGREES	

ENERGY DISSIPATED = 40805 JOULES (30092 FT-LB)

In **Example C** a good match is present, so additional reruns would not be made to improve the accuracy. Once the speed changes agree satisfactorily, the results for Total, Longitudinal, and Lateral speed changes are each averaged and the averaged values must be entered on the General Vehicle Form. If agreement cannot be reached between the two methods, contact your zone center.

WinSMASH MISSING VEHICLE

This WinSMASH MISSING Vehicle program is designed to handle vehicle-to-vehicle impacts when data on one of the vehicles are missing.

Since the WinSMASH MISSING Vehicle program is based on the WinSMASH DAMAGE program the same basic WinSMASH assumptions must not be violated. Due to violations in the basic WinSMASH assumptions or the collision condition being outside of the scope of the WinSMASH MISSING Vehicle program, the following collision types are ***not*** applicable:

- ☐ Side-to-side collisions
- ☐ Sideswipe
- ☐ Severe underride/override
- ☐ Non-horizontal force
- ☐ Undercarriage damage
- ☐ Collisions with vehicles "out of scope" (stiffness, size)
- ☐ Multiple impacts to the same area on the known vehicle
- ☐ Insufficient data

Information required on "unknown vehicle"

1. Size and stiffness category
2. Curb weight (± 90 kilograms)
3. Heading angle at impact (approximate)
4. Area of damage (third character of CDC — "Area of Deformation")

Warnings:

1. When using The WinSMASH MISSING Vehicle program for pickups and vans, you must know additional information for a valid run.
    a. Wheelbase [to determine size and stiffness (side impacts)]
    b. Curb weight (± 90 kilograms)
    c. Stiffness
        - ☐ Rear impacts: Vehicles must have OEM (original equipment manufacturer) bumpers.
        - ☐ Front impacts: Vehicle cannot have add-on equipment (*e.g.*: plow, winch, Nerf bars, etc.).

2. The WinSMASH MISSING Vehicle program results that are too high or low are not to be entered on the file.

3. Do not confuse the heading angle with the PDOF.

4. Check the PDOF result for the unknown vehicle. This PDOF must be a reasonably collinear angle for this collision.

Table Of Weights To Be Used For Known Occupants With Unknown Weight

For known occupants with unknown weights, use the occupant's age or age group in the table below to determine the appropriate weight to add.*

(All Weights Are In Kilograms)

Age	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Male	8	12	14	16	18	20	22	25	28	30	35	37	43	49
Female	7	11	13	15	17	19	21	24	28	30	34	40	45	49

Age	14	15	16	17	18	19		20-24	25-34	35-44	45-54	55-64	65-97
Male	56	60	64	66	70	69		72	78	80	79	78	74
Female	53	54	56	59	57	57		58	61	64	66	65	65

Age Group	**Child (0-12)**	**Adolescent (13-17)**	**Adult (18-97)**
Male	23**	61**	77
Female	23***	54**	63

Sources of Information:

National Center for Health Statistics, M. F. Najjar and M. Rowland: Anthropometric Reference Data and Prevalence of Overweight: United States, 1976-1980. *Vital and Health Statistics*. Series 11, Number 238. DHHS Publication Number (PHS)87-1688. Public Health Service. Washington. U.S. Government Printing Office, October 1987. Data are from Tables 3-5, 12-14, and 18 on pages 14-16, 23-25, and 29; the original data are based on 50th percentile rounded to the nearest pound. All weights were subsequently converted to kilograms.

** *Originally based on 6 and 7 year olds rounded to the nearest 5 pounds. All weights were subsequently converted to kilograms.*

*** *Originally based on 15 year olds rounded to the nearest 5 pounds. All weights were subsequently converted to kilograms.*

The NASSMAIN WinSMASH program will automatically use the resultant C values for each event on which you select to run WinSMASH. You run the WinSMASH while on the CDC tab after the available damage data for the vehicle or vehicles involved in this event have been recorded. Highlight the CDC of the impact you want to run, then click on "Process" from the main menu at the top of the screen. Then click on "Run WinSMASH". Next select the WinSMASH Calculation Type (Standard, Barrier, Missing Damage, or Pole) you want to run using the following Delta V Decision Rules which are listed in order of precedence:

DELTA V, BARRIER EQUIVALENT AND SPEED ESTIMATE DECISION RULES

1. First, use the WinSmash program Standard or Barrier calculation type, if applicable. If the results look reasonable, complete the Delta V variables of the CDC tab of the Vehicle Exterior (VE) Form including the Barrier Equivalent Speed (BES) using the results from WinSmash. Record the Impact Speed **ONLY** when calculated by WinSmash using the Damage and Trajectory routine. Record the basis for delta V based on the routine used to get the results.

   If you have one known vehicle and one partially known vehicle use the WinSmash Standard calculation type entering all of the available information (e.g., CDC, WinSmash L, Ds, estimated crush) on the partially known vehicle. If the results are reasonable, complete the Delta V variables of the CDC tab of the Vehicle Exterior (VE) Form including the Barrier Equivalent Speed using the results from WinSmash. Since the Impact Speed was not calculated, leave it blank and the computer will put in A998". Record the basis for delta V for both vehicles as "Damage Only" or "Standard". If results are **NOT** reasonable use rule #2 and treat the partially know vehicle as an unknown vehicle.

2. If you have one known vehicle and one unknown vehicle, then use the WinSmash Missing Vehicle calculation type. If the results are reasonable, complete the Delta V variables of the CDC tab of the Vehicle Exterior (VE) Form including the Barrier Equivalent Speed using the results from WinSmash. Record the basis for delta V for both vehicles as Missing Vehicle. If the results look reasonable, **always** code the "Confidence Level" as "Borderline reconstruction ~ results look reasonable" for the **uninspected missing** vehicle.

3. For car to object impacts where the object moves or sustains damage (poles, trees, large trucks, etc.) or the object is struck (horizontally) during a rollover, use the WinSmash damage routine and treat the object as a rigid barrier. If the results look reasonable record only the barrier equivalent speed. Record the Basis for Total Delta V as appropriate (e.g. Yielding object, Vehicle out of scope, etc).

4 For car to car or car to object impacts where a crush profile is roughly estimated or you only have a CDC for all vehicles involved (*e.g.*, partially repaired vehicle, only have photos of damage, etc.), use the WinSmash damage routine to get an estimated Delta V. If the results look reasonable, then record the calculated Delta V as a range in the Estimated Highest Delta V. Record the Basis for Total Delta V as appropriate (e.g. insufficient data).

5 For large non-fixed objects such as large animals, where there is significant crush, use the WinSmash damage routine to get an estimated Delta V. If the results look reasonable, then use the calculated Delta V to select the range in the Estimated Highest Delta V. For smaller non-fixed objects record Estimated Highest Delta V as minor. Record the Basis for Total Delta V as appropriate (e.g. Non-fixed object).

6 For a CDS applicable vehicle that cannot be adequately represented by the parameters in an acceptable reconstruction size/stiffness category (*e.g.*, winch, non-standard bumper etc.) use the WinSmash damage routine to get an estimated Delta V. If the results look reasonable, then record the calculated Delta V as a range in the Estimated Highest Delta V. If a crush profile cannot be obtained then record Estimated Highest Delta V as minor, moderate or severe. Record the Basis for Total Delta V as appropriate (e.g. vehicle is beyond the scope).

7 For cases where there are two or more significant impacts with overlapping or masking of damage such that individual crush profiles cannot be obtained then record the Basis for Total Delta V as overlapping damage and record the Estimated Highest Delta V as minor moderate or severe.

NOTE: For car to car impacts where one car is known and the other has masked damage as described above, treat the masked vehicle as a missing vehicle and follow rule number 2 instructions.

8. For sideswipe, severe override/underride, undercarriage, non-horizontal and rollover type impacts record the Basis for Total Delta V as appropriate (e.g. Sideswipe, Non-horizontal etc). and record the Estimated Highest Delta V as minor, moderate or severe.

Definitions for Minor, Moderate, or Severe:

Rollover ☐ damage assessment priority shall be given to passenger compartment.

Top Plane
Minor is used when there is surface scratching or dents; includes CDC extent zones 1& 2.

Moderate is used when the passenger compartment maximum crush extends into CDC extent zone 3.

Severe is used when the passenger compartment maximum crush is greater than CDC extent zone 3.

Side Plane
Minor is used when there is surface scratching or dents with no passenger compartment intrusion.

Moderate is used when there is 25 cm (10 inches) or less passenger compartment intrusion.

Severe is used when there is greater than 25 cm (10 inches) passenger compartment intrusion.

Swiping Type Impacts

Minor is used when there is minor crush that does not result in passenger compartment intrusion.

Moderate is used when the maximum crush extends beyond the side door impact protection (*i.e.*, door beam) that can result in up to 25cm (10 inches) passenger compartment intrusion.

Severe is used when the maximum crush results in greater than 25 cm (10 inches) passenger compartment intrusion.

Severe Override/underride Impacts

Minor is used when only the hood/trunk and top of fenders are involved and there is no passenger compartment intrusion.

Moderate is used when only the hood/trunk and top of fenders are involved and there is minimal passenger compartment intrusion.

Severe is used when only the hood/trunk and top of fenders are involved and there is major passenger compartment intrusion.

Undercarriage Impacts

Minor is used when it is a swiping type impact with surface scratching or dents.

Moderate is used when modest crush or bending occurs.

Severe is used when significant crush or bending occurs.

Overlapping (Masked) Impacts

Minor is used when the maximum crush attributed to the most severe impact (estimate) is less than 10 cm.

Moderate is used when the maximum crush attributed to the most severe impact (estimate) is 10cm-35cm.

Severe is used when the maximum crush attributed to the most severe impact (estimate) is greater than 35cm.

Other Non-Horizontal Impacts

Minor is used when the maximum crush is less than 10 cm.

Moderate is used when the maximum crush is 10cm-35cm.

Severe is used when the maximum crush is greater than 35cm.

TOTAL DELTA V

Screen Name: DELTA V–Total

SAS Data Set: **CDCCRSH**
SAS Variable: **DVTOTAL**

Element Attributes:
Generated kmph
999-Unknown

Range: 1-160, 999

Source: WinSMASH program.

Remarks:

The Total Delta V is automatically generated by the NASSMAIN WinSMASH program for this impact.

The NASSMAIN WinSMASH program will automatically use the resultant C values for each event on which you select to run WinSMASH. You run the WinSMASH while on the CDC tab after the available damage data for the vehicle or vehicles involved in this event has been recorded. Highlight the CDC of the impact you want to run, then click on “Process” from the main menu at the top of the screen. Then click on “Run WinSMASH”. Next select the type of WinSMASH you want to run using the Delta V Decision Rules listed in the previous section.

Unknown
is used when the results for this impact are unobtainable or unreasonable.

Do not enter 999. It will be automatically generated by NASSMAIN based on your selection for the Basis for the Delta V Entry, except for when you use the Missing Vehicle option. Then you will have to enter 999.

LONGITUDINAL DELTA V

Screen Name: DELTA V -- Longtdl

SAS Data Set: **CDCCRSH**
SAS Variable: **DVLONG**

Element Attributes:

Generated kmph
999-Unknown

Range: -160-160, 999

Source: WinSMASH program.

Remarks:

The Longitudinal Component of Delta V is automatically generated by the NASSMAIN WinSMASH program for this impact.

Do not enter 999. It will be automatically generated by NASSMAIN based on your selection for the Basis for the Delta V Entry, except for when you use the Missing Vehicle option. Then you will have to enter 999.

LATERAL DELTA V

Screen Name: DELTA V -- Lateral

SAS Data Set: **CDCCRSH**
SAS Variable: **DVLAT**

Element Attributes:
Generated kmph
999-Unknown

Range: -160-160, 999

Source: WinSMASH program.

Remarks:

The Lateral Component of Delta V is automatically generated by the NASSMAIN WinSMASH program for this impact.

Do not enter 999. It will be automatically generated by NASSMAIN based on your selection for the Basis for the Delta V Entry, except for when you use the Missing Vehicle option. Then you will have to enter 999.

ENERGY ABSORPTION

Screen Name: Energy

SAS Data Set: **CDCCRSH**
SAS Variable: **ENERGY**

Element Attributes:
Generated joules
9,999,999 - Unknown

Range: 150 – 1,100,000, 9,999,999

Source: WinSMASH program.

Remarks:

Enter The Energy Absorption is automatically generated by the NASSMAIN WinSMASH program for this impact.

Do not enter 9,999,999. It will be automatically generated by NASSMAIN based on your selection for the Basis for the Delta V Entry, except for when you use the Missing Vehicle option. Then you will have to enter 9,999,999.

IMPACT SPEED OR CHANGE TO IMPACT

Screen Name: Impact

SAS Data Set: **CDCCRSH**
SAS Variable: **IMPACTSP**

Element Attributes:

Generated kmph
998 - Damage and Trajectory run not made
999 – Unknown

Range: 1 – 160, 998, 999

Source: WinSMASH program — damage and trajectory routine

Remarks:

The Impact Speed is automatically generated by the NASSMAIN WinSMASH damage and trajectory program for this impact.

Do not enter 998 or 999. They will be automatically generated by NASSMAIN based on your selection for the Basis for the Delta V Entry, except for when you use the Missing Vehicle option. Then you will have to enter 998.

BARRIER EQUIVALENT SPEED

Screen Name: Barrier

SAS Data Set: **CDCCRSH**
SAS Variable: **BAREQSP**

Element Attributes:

Generated kmph
999 - Unknown

Range: 1-160, 999

Source: WinSMASH program.

Remarks:

The Barrier Equivalent speed is automatically generated by the NASSMAIN WinSMASH for this impact.

For car to object impacts where the object moves or sustains damage (poles, trees, large trucks, etc.) or the object is struck (horizontally) during a rollover use the WinSMASH program and treat the object as a barrier.

ESTIMATED SEVERITY

Screen Name: Estimated

SAS Data Set: **CDCCRSH**
SAS Variable: **DVEST**

Element Attributes:

0 Reconstruction delta V]

Estimated Delta V

1 Less than 10 kmph
2 Delta V ≥ 10 kmph < 25 kmph
3 Delta V ≥ 25 kmph < 40 kmph
4 Delta V ≥ 40 kmph < 55 kmph
5 Delta V ≥ 55 kmph

Other estimates of damage severities

6 Minor
7 Moderate
8 Severe
9 Unknown

Source: Researcher determined.

Remarks:

Reconstruction delta V can not be selected, it is always generated by NASSMAIN when the Delta V variables are generated by the NASSMAIN WinSMASH.

The purpose of this variable is to record an estimate of the Delta V for those situations where the NASSMAIN WinSMASH program (including the Barrier Equivalent Speed) cannot be properly utilized (*e.g.*, overlapping damage, crush profile not measured, severe underride/override, swiping, or rollover type impacts).

For car-to-car or car-to-object impacts where a crush profile is roughly estimated or you only have a CDC for all vehicles involved (*e.g.*, partially repaired vehicle, only have photos of damage, etc.), use the WinSMASH damage routine to get an estimated Delta V. If the results look reasonable, then record the calculated Delta V as a range in the Estimated Highest Delta V. Record the Basis for Total Delta V as appropriate (e.g. insufficient data, etc).

For cases where there are two or more significant impacts with overlapping or masking of damage such that individual crush profiles cannot be obtained then record the Basis for Total Delta V as overlapping damage and record the Estimated Highest Delta V as minor, moderate or severe.

Minor, Moderate and Severe are defined below for different damage types:

Rollover — damage assessment priority shall be given to passenger compartment.

Top Plane

Minor	is used when there is surface scratching or dents; includes CDC extent zones 1 & 2.
Moderate	is used when the passenger compartment maximum crush extends into CDC extent zone 3.
Severe	is used when the passenger compartment maximum crush is greater than CDC extent zone 3.

Side Plane

Minor	is used when there is surface scratching or dents with no passenger compartment intrusion.
Moderate	is used when there is 25 cm or less passenger compartment intrusion.
Severe	is used when there is greater than 25 cm passenger compartment intrusion.

Swiping Type Impacts

Minor	is used when there is minor crush that does not result in passenger compartment intrusion.
Moderate	is used when the maximum crush extends beyond the side door impact protection (*i.e.*, door beam) that can result in up to 25cm passenger compartment intrusion.
Severe	is used when the maximum crush results in greater than 25 cm passenger compartment intrusion.

Severe Override/underride Impacts

Minor	is used when only the hood/trunk and top of fenders are involved and there is no passenger compartment intrusion.
Moderate	is used when only the hood/trunk and top of fenders are involved and there is minimal passenger compartment intrusion.
Severe	is used when only the hood/trunk and top of fenders are involved and there is major passenger compartment intrusion.

Estimated Severity (cont'd)

Page 3 of 3

Undercarriage Impacts

Minor	is used when it is a swiping type impact with surface scratching or dents.
Moderate	is used when modest crush or bending occurs.
Severe	is used when significant crush or bending occurs.

Overlapping (Masked) Impacts

Minor	is used when the maximum crush attributed to the most severe impact (via estimate) is less than 10 cm.
Moderate	is used when the maximum crush attributed to the most severe impact (via estimate) is 10cm -35cm.
Severe	is used when the maximum crush attributed to the most severe impact (via estimate) is greater than 35cm.

Other Non-Horizontal Impacts

Minor	is used when the maximum crush is less than 10 cm.
Moderate	is used when the maximum crush is 10cm -35cm.
Severe	is used when the maximum crush is greater than 35cm.

Other Non-Horizontal Impacts

Minor	is coded when the maximum crush is less than 10 cm .
Moderate	is coded when the maximum crush is 10cm -35cm.
Severe	is coded when the maximum crush is greater than 35cm.

SEVERITY RANK

Screen Name: Rank

SAS Data Set: **CDCCRSH**
SAS Variable: **RANK**

Range: 1-29

Element Attributes:
As selected

Source: Researcher determined

Remarks:

The severity assigned to each CDC must be ranked. Enter the **Rank** for every CDC that has been listed.

Indicate the **Rank** for the event that resulted in the seventy that has been coded. If a Delta V, Barrier Equivalent Speed, or estimate is known, than the **Rank** of the event must be entered.

If the vehicle is involved in multiple impacts/events, the corresponding CDCs are ranked in order of highest crash severity, based on energy management (Delta V), and amount of reduction of occupant space for non-collision events.

Use the NASSMAIN WinSMASH results, barrier equivalent speeds, and severity estimates to help rank CDCs.

BASIS FOR DELTA V ENTRY

Screen Name: Basis

SAS Data Set: **CDCCRSH**
SAS Variable: **DVBASIS**

Element Attributes:

Delta V Calculated

1 WinSMASH - Damage only
2 WinSMASH - Damage and trajectory
3 WinSMASH - Missing vehicle
4 WinSMASH - Damage with CDC only

Delta V Not Calculated

5 At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable WinSMASH program, regardless of collision conditions.

All vehicles within scope (CDC applicable) of WinSMASH program but one of the collision conditions is beyond the scope of the WinSMASH program or other acceptable reconstruction techniques, or there is insufficient damage data.

6 Rollover
7 Other non-horizontal forces
8 Sideswipe type damage
9 Severe override
10 Yielding object
11 Overlapping damage
12 Insufficient data available (specify):
98 Other (specify):

Source: Researcher determined — inputs include WinSMASH output (if applicable), vehicle inspection, scene inspection, police report, and photographs.

Remarks:

This variable is used to indicate: (1) which NASSMAIN WinSMASH program or routine was used to compute this vehicle's highest delta V or (2) the reason a NASSMAIN WinSMASH program was not applied to the most severe impact.

NASSMAIN WinSMASH - Damage and trajectory
means that the NASSMAIN WinSMASH output is based on trajectory evidence documented at the scene, in addition to complete vehicle damage data.

NASSMAIN WinSMASH - Damage only
means the WinSMASH output is based upon complete vehicle damage only.

Basis for Delta V Entry (cont'd)

NASSMAIN WinSMASH - Missing vehicle

means that in a two vehicle impact only one vehicle is inspected (damage measurements and CDC obtained), and for the other vehicle, the damage measurements (including CDC) are missing; however, enough data are available to use the WinSMASH Missing Vehicle algorithm.

WinSMASH - Damage with CDC only

means the WinSMASH output is based on a two vehicle collision with insufficient vehicle damage documentation. The two vehicle collision must include: one complete vehicle inspection and the other vehicle must have a complete CDC. Additional crush profile information such as the WinSMASH L, "D", etc may be entered to improve the results.

At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable WinSMASH program, regardless of collision conditions.

means that one of the vehicles (which may be this vehicle) involved in this impact cannot **be adequately represented** by the parameters in an acceptable reconstruction size/stiffness category (e.g., large truck, motorcycle, bus, etc.). As a general rule in CDS NASS, any vehicle that is not applicable for a CDC is not applicable for an the NASSMAIN WinSMASH program.

All vehicles within scope (CDC applicable) of WinSMASH program but one of the collision conditions is beyond the scope of the WinSMASH program or other acceptable reconstruction techniques, regardless of the adequacy of damage data.

Rollover

means that the involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the rollover collision is beyond the scope of the program.

Other non-horizontal force

means that the involved vehicle fits the vehicle parameter for an acceptable WinSMASH program; however, the other non-horizontal force is beyond the scope of the program e.g., large object falling on vehicle).

Sideswipe type damage

means that the involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the sideswipe type of collision is beyond the scope of the program.

Severe override

means that the involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the severe override type of collision is beyond the scope of the program.

Yielding object

means that the involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, the collision with a yielding object (e.g., sheared utility pole) is beyond the scope of the program.

Basis for Delta V Entry (cont'd)

Overlapping damage

means that the involved vehicle fits the vehicle parameters for an acceptable WinSMASH program; however, collisions involving overlapping damage (i.e., multiple impacts in the same area) are beyond the scope of the program.

All vehicle and collision conditions are within scope of one of the acceptable WinSMASH programs, but there is insufficient data available (specify):

means that the involved vehicles and the collision type are applicable for an acceptable WinSMASH program, but due to insufficient data on one or both of the vehicles or object, an acceptable WinSMASH program cannot be used.

Other (specify):

means that Delta V could not be calculated for a reason not identified in the current pick list. The reason must be specified on the line provided.

Instructions For Completion Of Vehicle Damage Sketch

The Vehicle Sketch enables researchers to report data that are not encoded and might otherwise be omitted from the case. Pertinent data such as scrapes, scratches, buckling, paint transfers, and other indications of engagement or relative motion are reported on this page. In addition, sketch the vehicle damage profile on the outlines provided, using the established protocol as below.

- Outline the damage profile produced by the impact.
- Use cross hatches to indicate direct damage.
- Highlight induced damage and/or remote buckling with diagonal lines.

Although researchers are reporting a vehicle's crash related damage, other damage may be observed which existed prior to the crash or is towing damage. This type of damage must also be indicated and annotated accordingly.

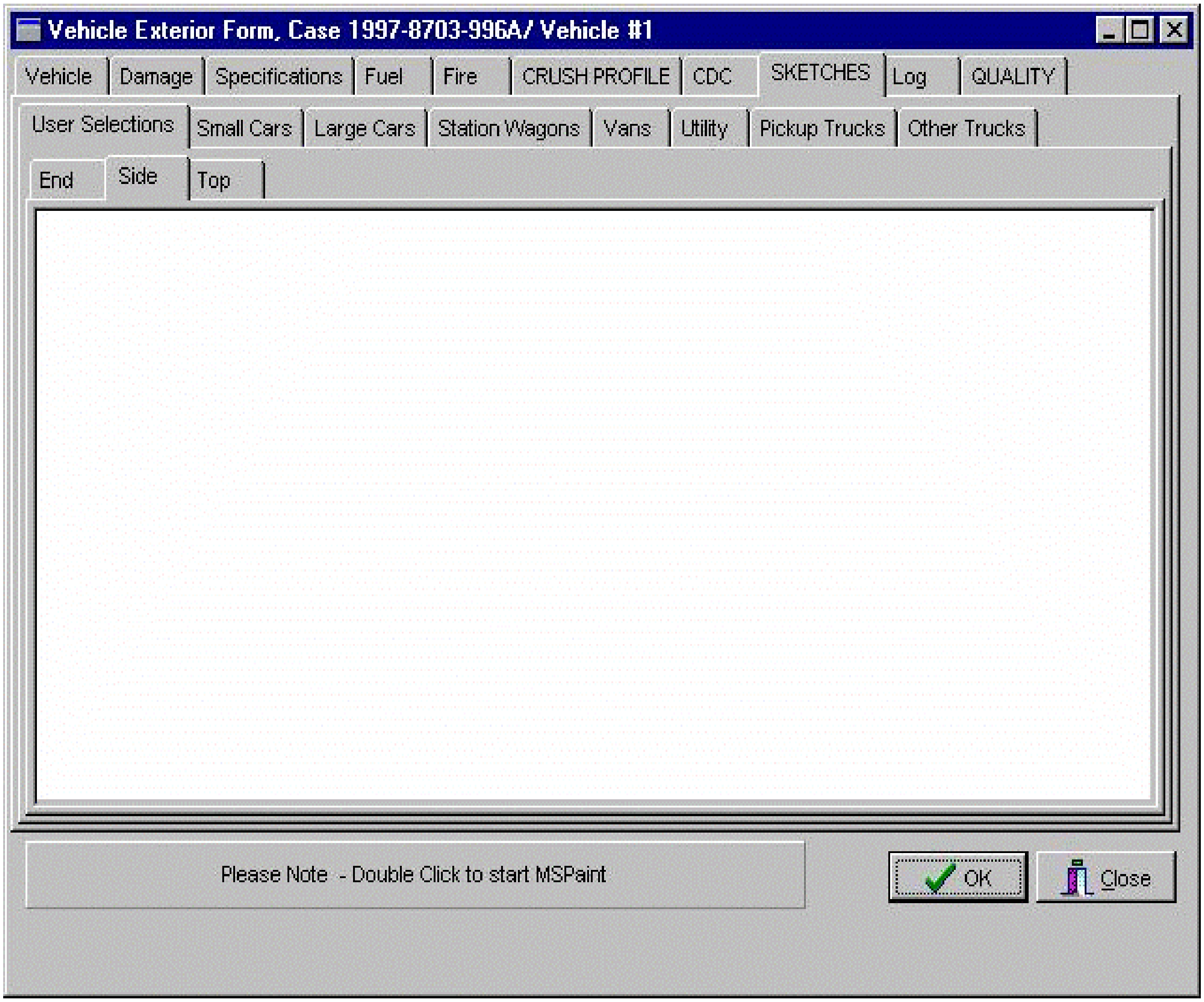
Relevant measurements are required on the Vehicle Sketch page in order to support other data elements.

CDC extent zone measurements are required; although, only the measurements which pertain to the damaged plane are needed (*i.e.*, hood length for frontal, side extents for side impacts, etc.). Obtain all measurements which may be needed when questions arise regarding the damaged plane. If doubt exists concerning whether an impact is to a front or a side plane, obtain both front and side extent zone measurements.

In addition, front and back pre-crash bumper height measurements must be obtained for vehicles sustaining any end plane impact with another vehicle (in-transport or not in-transport) [*i.e.*, column (3) of CDC (including nonselected CDCs) must equal "F" or "B"].

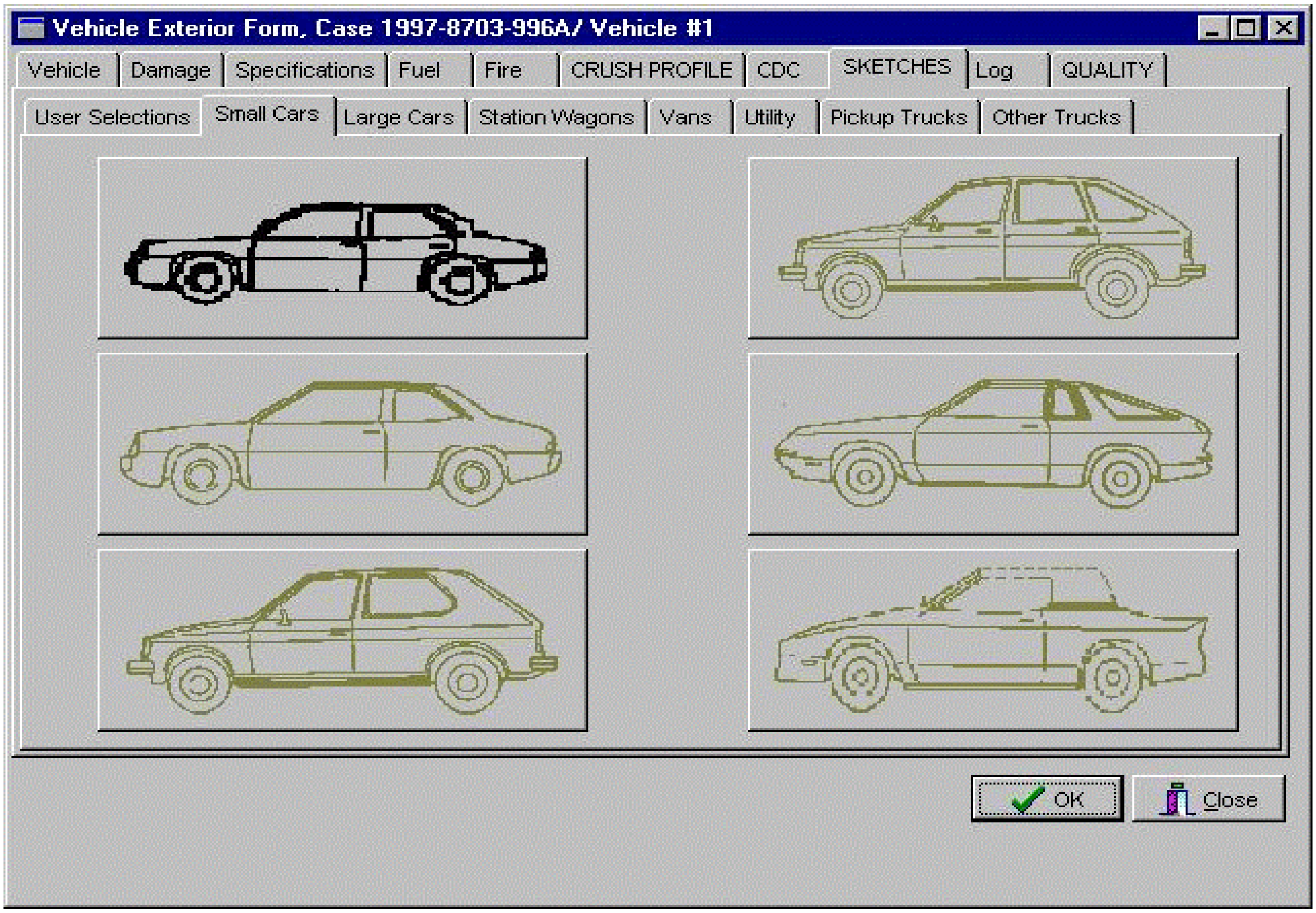
- Measure from the bottom of the bumper face (reinforcement bar) to the ground.
- Include a calibrated instrument (contour gauge rod or 1 meter scale) in the photographs of the vehicle's bumper height.

The following screens exemplify the procedures to complete the vehicle sketches.


Vehicle Exterior Form, Case 1997-8703-996A/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
End
Side
Top
OK
Close

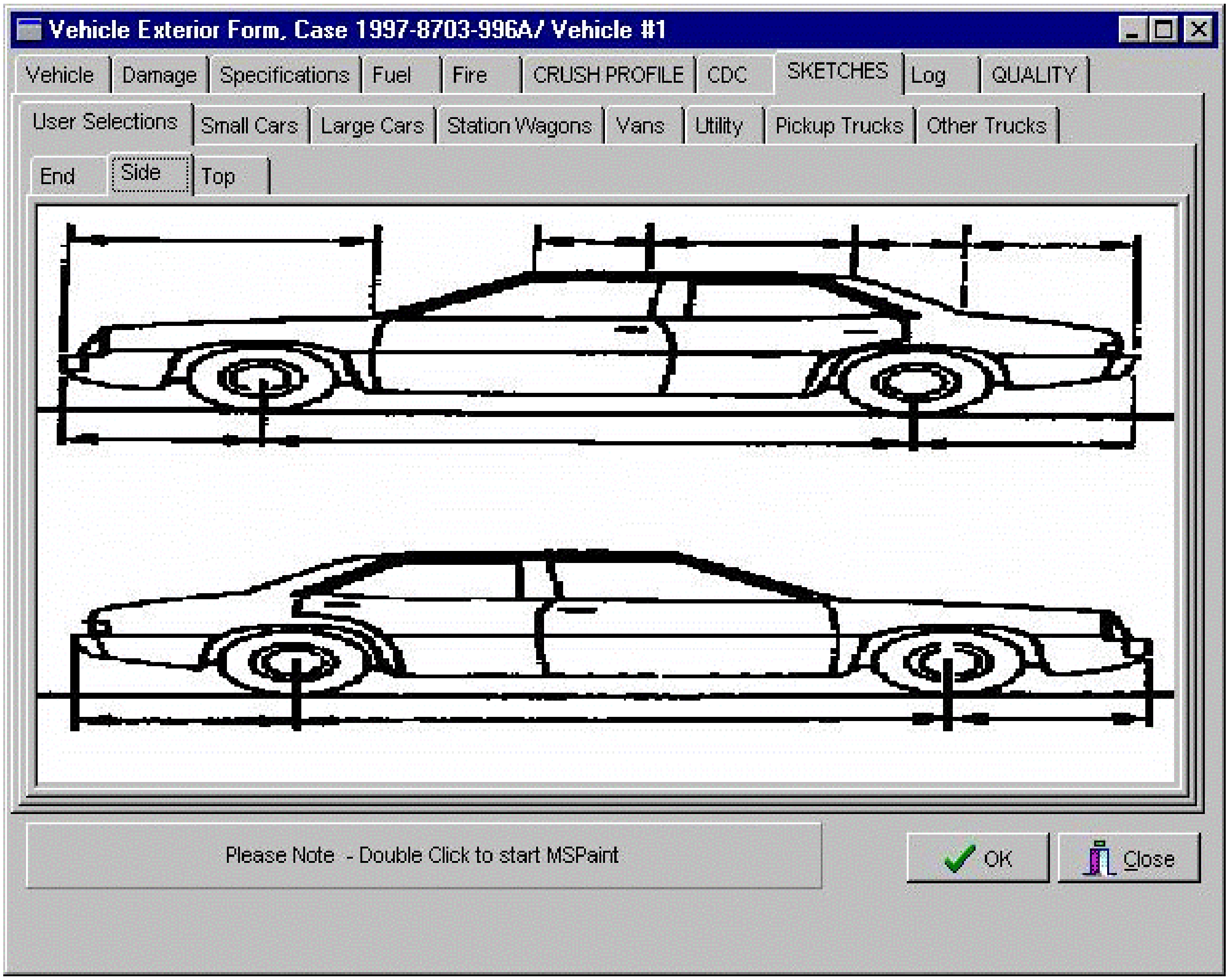
Please Note - Double Click to start MSPaint

First, select the SKETCHES Tab. Then select the User Selections sub-tab.


Vehicle Exterior Form, Case 1997-8703-996A/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
OK
Close

Next, select the size of the vehicle you are sketching. Then you select the style of vehicle that best matches the one you are sketching.

VEHICLE EXTERIOR FORM DAMAGE SKETCH



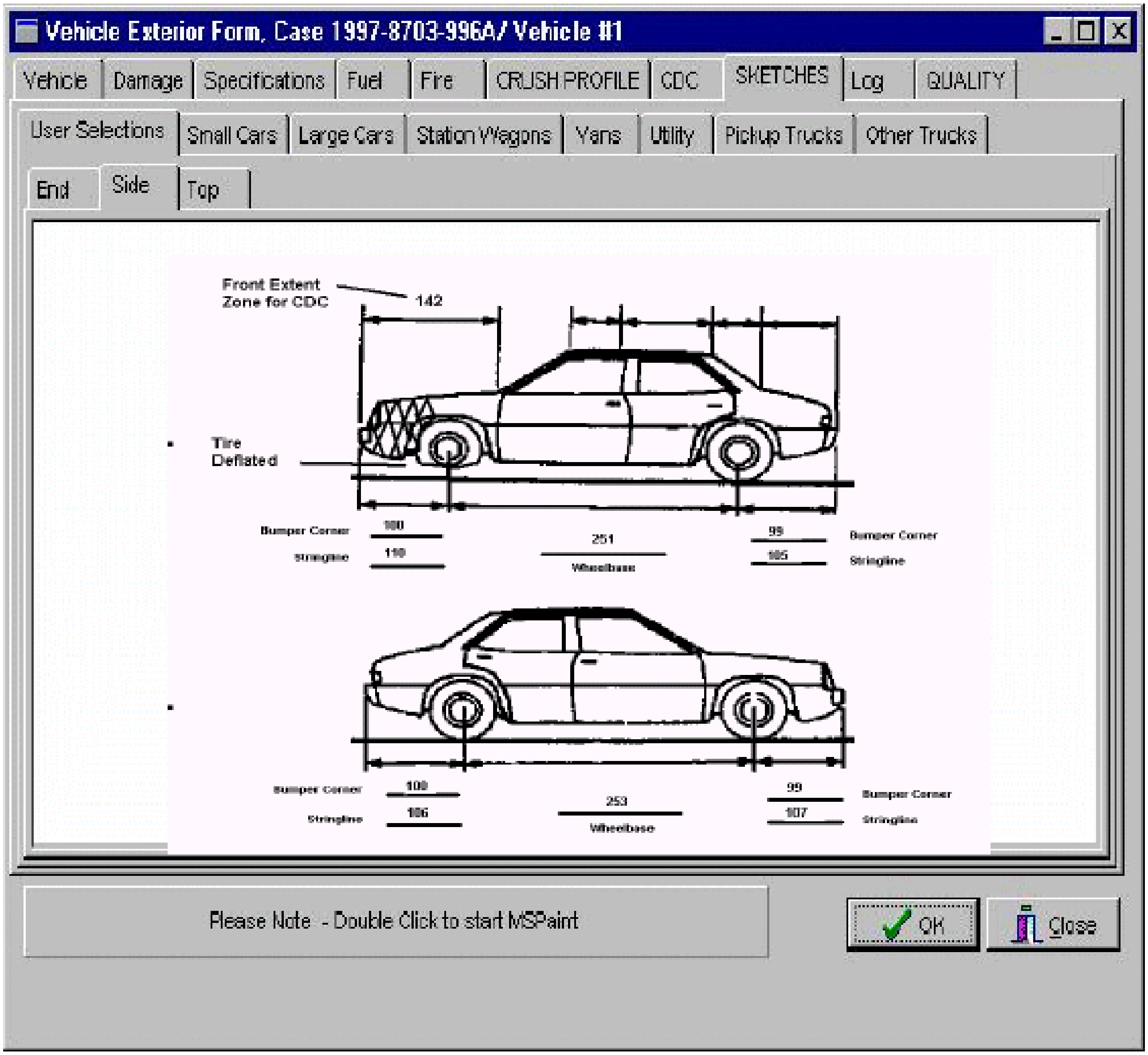
Vehicle Exterior Form, Case 1997-8703-996A/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
End
Side
Top
OK
Close

Please Note - Double Click to start MSPaint

Next, select the End, Side or Top tab for completing the sketches. Then you double click on the image to start MSPaint and begin sketching the damage and documenting the required measurements.

VEHICLE EXTERIOR FORM DAMAGE SKETCH

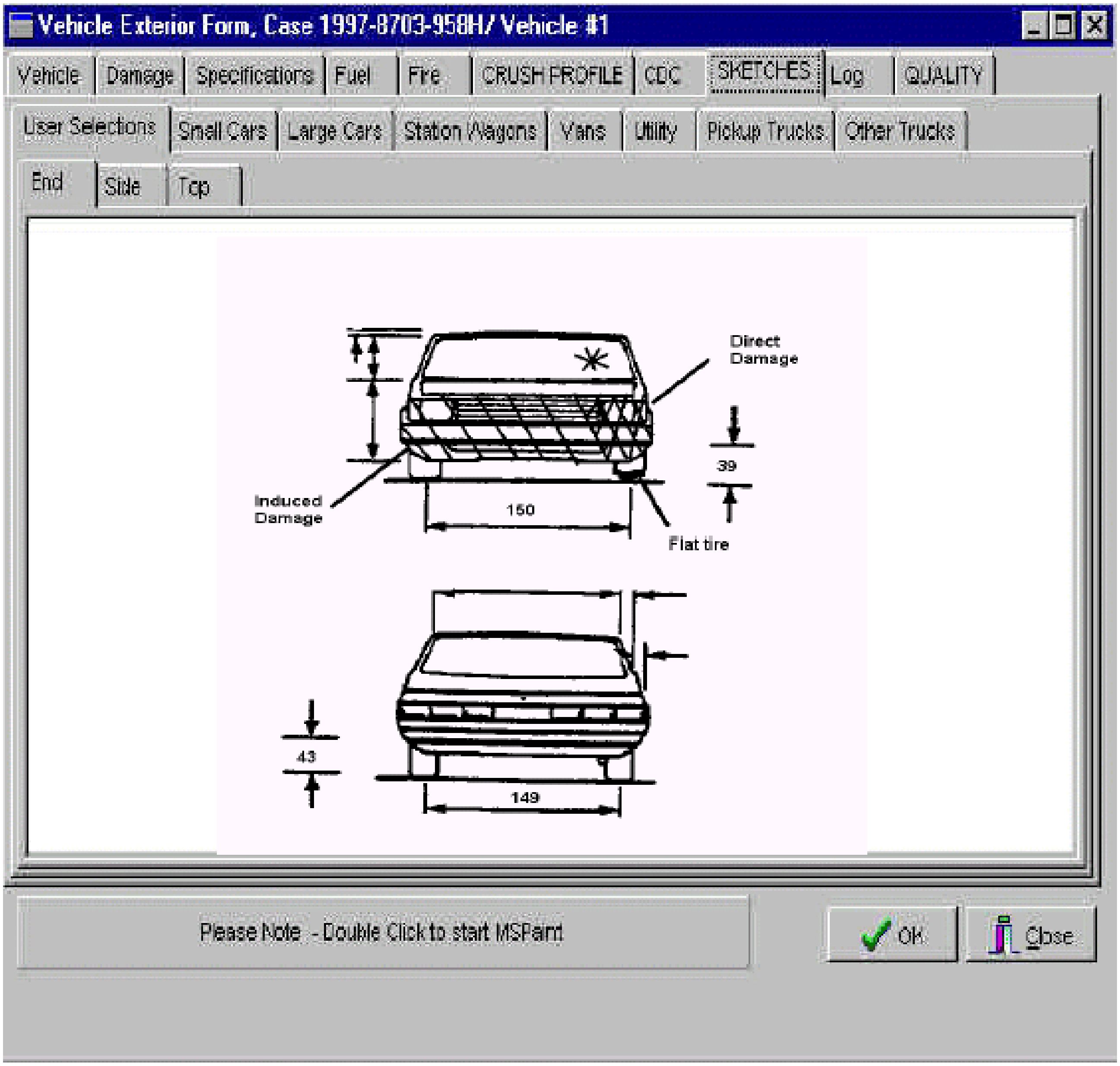
SIDE VIEW EXAMPLE


Vehicle Exterior Form, Case 1997-8703-996A/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
End
Side
Top
Front Extent
Zone for CDC
142
Tire
Deflated
Bumper Corner
100
Stringline
110
251
Wheelbase
99
105
Bumper Corner
Stringline
Bumper Corner
100
Stringline
106
253
Wheelbase
99
107
Bumper Corner
Stringline
OK
Close

Please Note - Double Click to start MSPaint

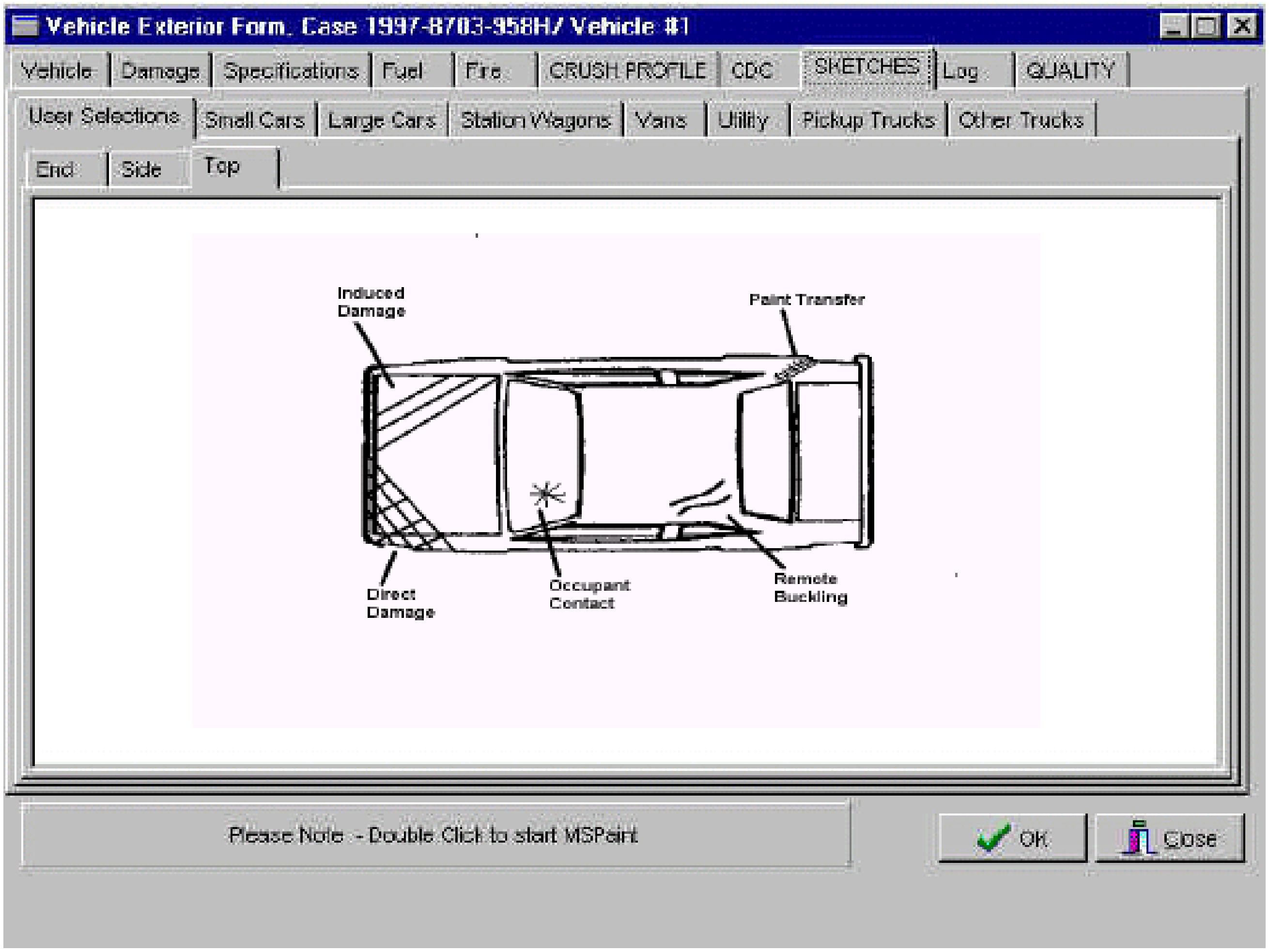
VEHICLE EXTERIOR FORM DAMAGE SKETCH

END VIEW EXAMPLE


Vehicle Exterior Form, Case 1997-8703-958H/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
End
Side
Top
Direct Damage
39
Induced Damage
150
Flat tire
43
149
OK
Close

Please Note - Double Click to start MSPaint

TOP VIEW EXAMPLE


Vehicle Exterior Form, Case 1997-8703-958H/ Vehicle #1
Vehicle
Damage
Specifications
Fuel
Fire
CRUSH PROFILE
CDC
SKETCHES
Log
QUALITY
User Selections
Small Cars
Large Cars
Station Wagons
Vans
Utility
Pickup Trucks
Other Trucks
End
Side
Top
Induced Damage
Paint Transfer
Direct Damage
Occupant Contact
Remote Buckling
OK
Close

Please Note - Double Click to start MSPaint

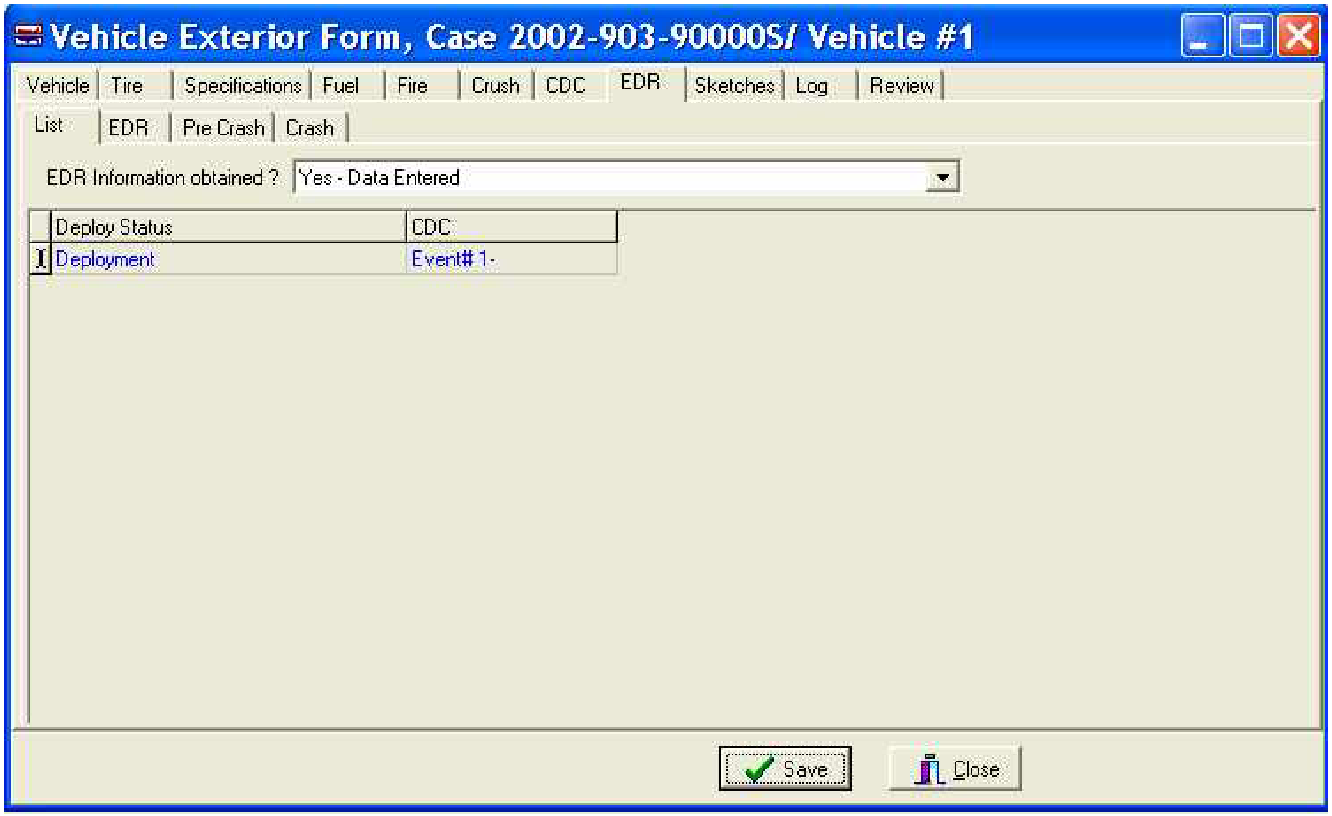
EDR DATA

EDR information will be entered whenever an EDR is read by the field researcher or by other personnel who provide information from the EDR to the researcher.

Information will be entered for as many events as the EDR has recorded. The event may be a deployment event, a near deployment event, or neither (just information from the latest ignition cycle).

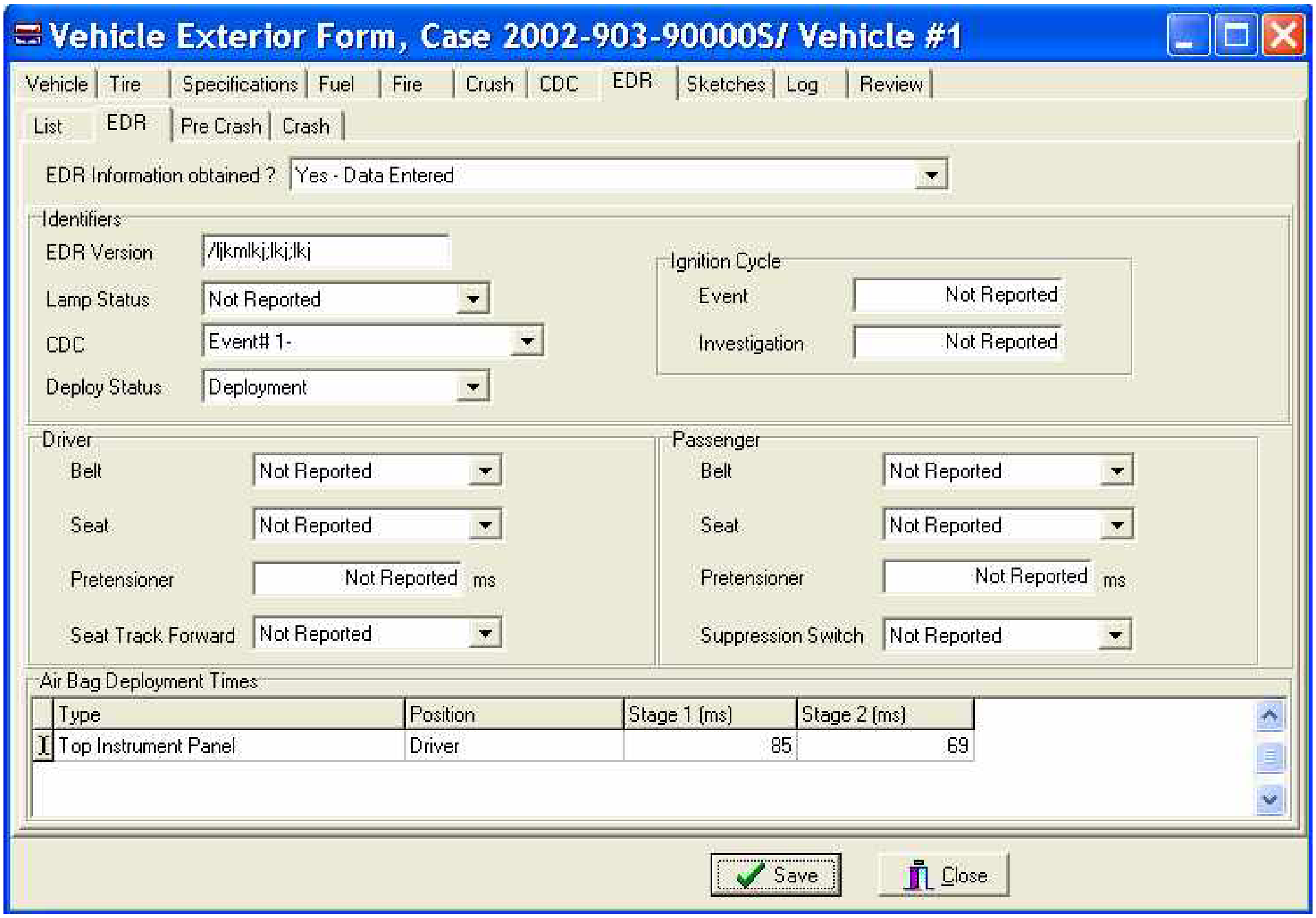
ONE VALUE WILL BE TAKEN FOR EACH EDR/EVENT
THERE MAY BE MORE THAN ONE EDR/EVENT PER EDR READING
THERE MAY BE MORE THAN EDR/EVENT PER CDC/EVENT

SEE THE
EVENT DATA RECORDER DATA COLLECTION GUIDELINE
FOR ADDITONAL INSTRUCTIONS.


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
List
EDR
Pre Crash
Crash
Save
Close

EDR Information obtained ? Yes - Data Entered

Deploy Status	CDC
Deployment	Event# 1-


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
List
EDR
Pre Crash
Crash
Save
Close

EDR Information obtained ? Yes - Data Entered

Identifiers

EDR Version /ljkmlkj;lkj;lkj

Lamp Status Not Reported

CDC Event# 1-

Deploy Status Deployment

Ignition Cycle

Event Not Reported

Investigation Not Reported

Driver

Belt Not Reported

Seat Not Reported

Pretensioner Not Reported ms

Seat Track Forward Not Reported

Passenger

Belt Not Reported

Seat Not Reported

Pretensioner Not Reported ms

Suppression Switch Not Reported

Air Bag Deployment Times

Type	Position	Stage 1 (ms)	Stage 2 (ms)
Top Instrument Panel	Driver	85	69

EDR INFORMATION OBTAINED

Screen Name: EDR information obtained?

SAS Data Set: **GV**
SAS Variable: **EDRINFO**

Element Attributes:

0 No
1 Yes – Scanned report
2 Yes – Data entered
7 [Vehicle not inspected]
8 [Not a CDS vehicle]
9 Unknown

Source: Researcher determined, vehicle inspection

Remarks:

No

No data was obtained because

- the researcher is not equipped to read the EDR for this vehicle make or model
- this vehicle is not equipped with an EDR
- the vehicle has been damaged so that the electrical system is compromised so that the researcher cannot read information from the on-board diagnostic plug and vehicle damage makes access to necessary connections to retrieve information from the EDR impossible.
- the researcher was refused permission to access and/or read the information from the EDR

Yes – Scanned report

A report was obtained elsewhere and scanned into the case file.

Yes – Data entered

AN ATTEMPT WAS MADE TO READ THE EDR. (THE MINIMUM KNOWN INFORMATION IF AN EDR IS READ BY THE RESEARCHER WILL BE THE EDR SOFTWARE VERSION BEING USE

CDR/EDR VERSION NUMBER

Screen Name: EDR Version

SAS Data Set: **EDRDATA**
SAS Variable: **EDRVER**

Element Attributes:

Specify version of software being used
Copy of EDR information provided by third party (specify)

Source: EDR/researcher

Remarks:

The minimum known information if an EDR is read by the researcher will be the EDR software version being used.

Specify version of software being used

Various versions of software for various makes/models of vehicles may be in use. Enter the version that was used to read the EDR in this car.

Copy of EDR information provided by third party

If the EDR was read by a third party (vehicle manufacturer, etc.) and only a hard copy is supplied indicate the source of the information.

WARNING LAMP STATUS

Screen Name: Lamp Status

SAS Data Set: **EDRDATA**
SAS Variable: **LAMPSTAT**

Element Attributes:

1	On
2	Off
8	Not reported
9	Unknown

Source: EDR

Remarks:

On
The EDR indicates that the warning lamp is on

Off
The EDR indicates that the warning lamp is off

Not reported
The information is not reported by the EDR

Unknown
The information is not known

ACCIDENT EVENT SEQUENCE NUMBER

Screen Name: CDC

SAS Data Set: **EDRCRASH**
SAS Variable: **EACCSEQ**

Element Attributes:

	Accident event sequence number
97	Non NASS event
98	Other, specify
99	Unknown or no corresponding EDR data record

Source: EDR

Remarks:

Screen Name: Deploy Status

SAS Data Set: **EDRDATA**
SAS Variable: **DPLYSTAT**

Element Attributes:

1	Non-Deployment
2	Deployment
8	Not Available / Specified
9	Unknown

Source: Researcher determined

Remarks:

Choose attribute based upon EDR output.

NUMBER OF IGNITION CYCLES AT EVENT OCCURRENCE

Screen Name: Ignition Cycle Event

SAS Data Set: **EDRDATA**
SAS Variable: **EVCYCLES**

Element Attributes:

	Enter the number of cycles
999998	Not reported
999999	Unknown

Source: EDR

Remarks:

Identifies how many times the ignition cycle ahs been cycled on and off.

NUMBER OF IGNITION CYCLES AT INVESTIGATION

Screen Name: Ignition Cycle Investigation

SAS Data Set: **EDRDATA**
SAS Variable: **INVCYCLE**

Element Attributes:

	Enter the number of cycles
999998	Not reported
999999	Unknown

Source: EDR

Remarks:

The number of ignition cycles when the module was downloaded for this report.

DRIVER'S BELT STATUS

Screen Name: Driver Belt

SAS Data Set: **EDRDATA**
SAS Variable: **DRVBELT**

Element Attributes:

1	Buckled
2	Unbuckled
8	Not reported
9	Unknown

Source: EDR

Remarks:

Records if the driver's restraint buckle was engaged in the latch.

TIME FOR DRIVER PRETENSIONER ACTUATION

Screen Name: Pretensioner

SAS Data Set: **EDRDATA**
SAS Variable: **DRPRTEN**

Element Attributes:

	Enter the time in milliseconds
85	Not actuated
86	Not reported
99	Unknown

Source: EDR

Remarks:

Records the time in milliseconds after algorithm enabled that the Pretensioner actuated.

DRIVER SEAT TRACK IN FORWARD POSITION

Screen Name: Seat Track Forward

SAS Data Set: **EDRDATA**
SAS Variable: **DRIVSEAT**

Element Attributes:

1	Yes
2	No
8	Not reported
9	Unknown

Source: EDR

Remarks:

Records if the seat track adjustment was forward of a predetermined point in its travel.

PASSENGER'S BELT STATUS

Screen Name: Passenger Belt

SAS Data Set: **EDRDATA**
SAS Variable: **PASBELT**

Element Attributes:

1	Buckled
2	Unbuckled
8	Not reported
9	Unknown

Source: EDR

Remarks:

Records if the passenger's restraint buckle was engaged in the latch.

PASSENGER'S SEAT WEIGHT SENSOR POSITION

Screen Name: Passenger Seat

SAS Data Set: **EDRDATA**
SAS Variable: **PASSSEAT**

Element Attributes:

1	On
2	Off
8	Not reported
9	Unknown

Source: EDR

Remarks:

If the vehicle was equipped with occupant weight sensing technologies, the system may record the data relative to this variables.

TIME FOR PASSENGER PRETENSIONER ACTUATION

Screen Name: Passenger Pretensioner

SAS Data Set: **EDRDATA**
SAS Variable: **PASPRTEN**

Element Attributes:

	Enter the time in milliseconds
85	Not actuated
86	Not reported
99	Unknown

Source: EDR

Remarks:

Records the time in milliseconds after algorithm enabled that the Pretensioner actuated.

PASSENGER AIR BAG SUPPRESSION SWITCH POSITION

Screen Name: Passenger Suppression Switch

SAS Data Set: **EDRDATA**
SAS Variable: **PSWSTAT**

Element Attributes:

1	Not suppressed
2	Suppressed
8	Not reported
9	Unknown

Source: EDR

Remarks:

Documents the presence of a passenger’s air bag cut off switch and its position.

[AIR BAG NUMBER FOR THIS VEHICLE]

Screen Name: Air Bag

SAS Data Set: **AIRBAG**
SAS Variable: **EBAGNO**

Element Attributes:
Air bag number

Source: Data entry system

Remarks:

Assigned by the system, one for every single air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select Edit / Insert, then indicate its location, and complete the information about the air bag.

AIR BAG LOCATION

Screen Name: Type

SAS Data Set: **EDRABAG**
SAS Variable: **EBAGLOC**

Element Attributes:

1	Steering Wheel Hub
2	Top Instrument Panel
3	Mid Instrument Panel
4	Bottom Instrument Panel
5	Seat Back
6	Door
7	Roof Side Rail
98	Other (specify)
99	Unknown

Source: EDR

Remarks:

Enter the location of the air bag. If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select **Edit / Insert**, then indicate its location, and complete the information about the air bag.

Steering Wheel
is used for an air bag that is designed to deploy from a module integrated with the steering wheel. It is designed to protect the vehicle's driver primarily from frontal impacts.

Top Instrument Panel
is used for those air bags that deploy rearward from a location on the top of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Mid Instrument Panel
is used for those air bags that deploy rearward from a location in the middle of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Bottom Instrument Panel
is used for those air bags that deploy rearward from a location in the bottom of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts. This includes "knee bags".

Seat Back
is located on the outside portion of the seat back and is designed to protect the torso of occupants primarily from side impacts.

Seat Cushion
is located on the outside portion of the seat cushion and is designed to protect the torso of occupants primarily from side impacts.

Air Bag Location (cont'd)

Pillar (A or B)

is primarily a tubular shaped bag that is tethered at the A pillar and is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Door

is located in the door is designed to protect the torso of occupants primarily from side impacts.

Roof Side Rail

is primarily a curtain type bag that is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Other (specify)

is used when the location of the air bag cannot be captured in the above attributes. This should be a rare occurrence. The location of the air bag must be specified.

POSITION

Screen Name: Position

SAS Data Set: **EDRABAG**
SAS Variable: **POSITION**

Element Attributes:

1	Driver
2	Position

Source: EDR

Remarks:

TIME FOR FIRST STAGE AIR BAG DEPLOYMENT

Screen Name: First Stage

SAS Data Set: **EDRABAG**
SAS Variable: **STAGE1**

Element Attributes:

	Enter the time in milliseconds
999	Unknown

Source: EDR

Remarks:

This is the time in milliseconds after the algorithm enabled documenting when the air bag deployed. Vehicles that are equipped with multi-stage inflators will record the time after algorithm enabled when each stage fires or is disposed.

TIME FOR SECOND STAGE AIR BAG DEPLOYMENT

Screen Name: Second Stage

SAS Data Set: **EDRABAG**
SAS Variable: **STAGE2**

Element Attributes:

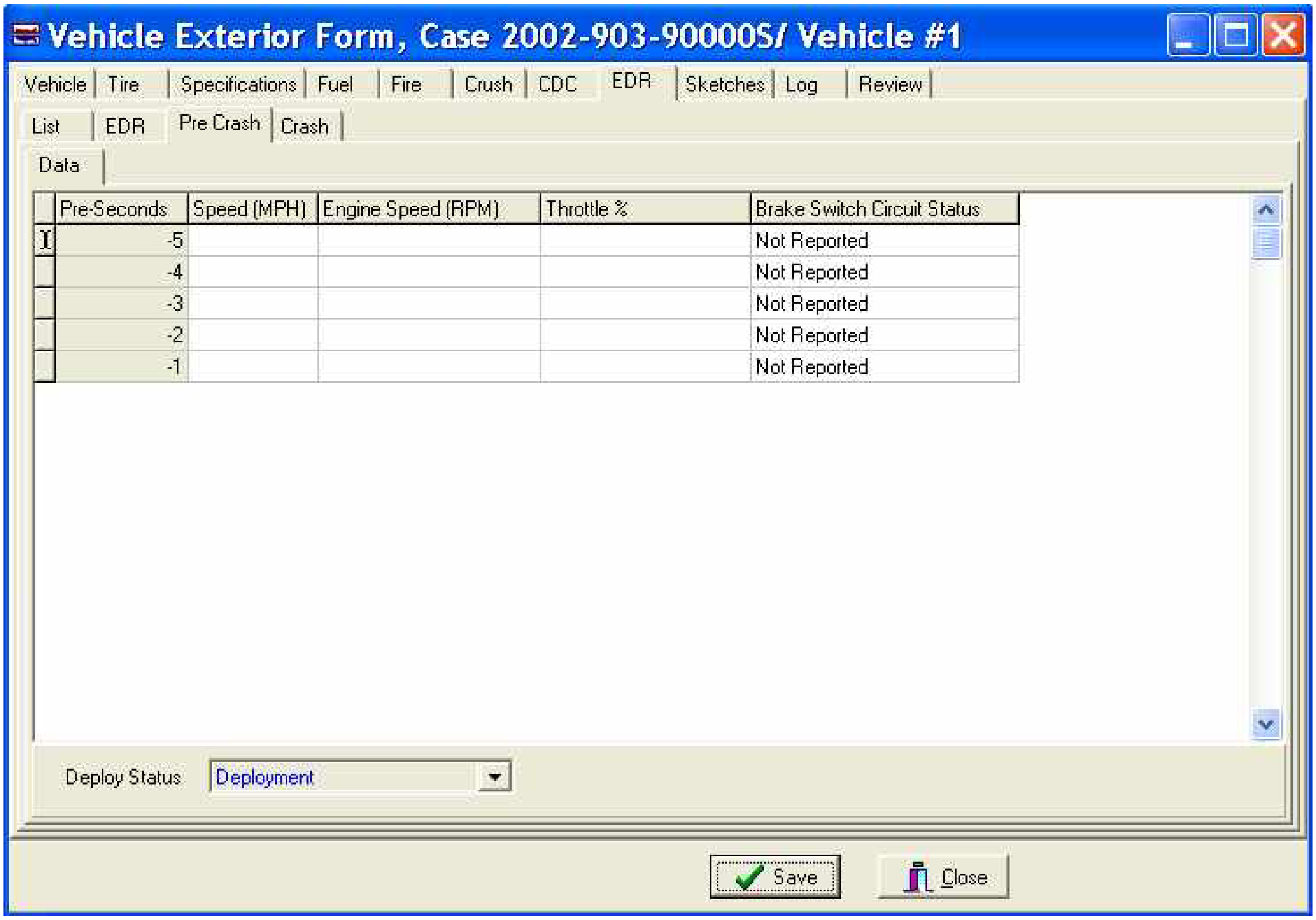
	Enter the time in milliseconds
996	Disposal
999	Unknown

Source: EDR

Remarks:

This is the time in milliseconds after the algorithm enabled documenting when the air bag deployed. Vehicles that are equipped with multi-stage inflators will record the time after algorithm enabled when each stage fires or is disposed.

EDR Pre-Crash Data


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
List
EDR
Pre Crash
Crash
Data
Save
Close

Pre-Seconds	Speed (MPH)	Engine Speed (RPM)	Throttle %	Brake Switch Circuit Status
-5				Not Reported
-4				Not Reported
-3				Not Reported
-2				Not Reported
-1				Not Reported

Deploy Status: Deployment

[ACCIDENT EVENT SEQUENCE NUMBER]

Screen Name: N/A

SAS Data Set: **EDRPRECR**
SAS Variable: **EACCSEQ**

Element Attributes:

	Accident event sequence number
97	Non NASS event
98	Other, specify
99	Unknown

Source: EDR

Remarks:

NUMBER OF SECONDS PRIOR TO CRASH

Screen Name: Pre-Seconds

SAS Data Set: **EDRPRECR**
SAS Variable: **PRESEC**

Element Attributes:
Enter / insert a new entry

Source: EDR

Remarks:

If recorded, there are five pre-crash speed readings at one second intervals.

PRE-CRASH VEHICLE SPEED READING (-5, -4, -3, -2, -1)

Screen Name: Speed

SAS Data Set: **EDRPRECR**
SAS Variable: **SPEED**

Element Attributes:

	Enter the pre-crash speed reading (mph)
998	Not reported
999	Unknown

Source: EDR

Remarks:

If recorded, there are five pre-crash speed readings at one second intervals.

PRE-CRASH ENGINE SPEED READING (-5, -4, -3, -2, -1)

Screen Name: Engine Speed

SAS Data Set: **EDRPRECR**
SAS Variable: **RPM**

Element Attributes:

	Enter the pre-crash engine speed reading (rpm)
9998	Not reported
9999	Unknown

Source: EDR

Remarks:

If recorded, there are five pre-crash speed readings at one second intervals.

PRE-CRASH ENGINE THROTTLE PERCENTAGE (-5, -4, -3, -2, -1)

Screen Name: Throttle %

SAS Data Set: **EDRPRECR**
SAS Variable: **THROT**

Element Attributes:

	Enter the pre-crash percent throttle reading
998	Not reported
999	Unknown

Source: EDR

Remarks:

If recorded, there are five pre-crash speed readings at one second intervals.

PRE-CRASH BRAKE STATUS (-5, -4, -3, -2, -1)

Screen Name: Brake Switch Circuit Status

SAS Data Set: **EDRPRECR**
SAS Variable: **BRKSWTCH**

Element Attributes:

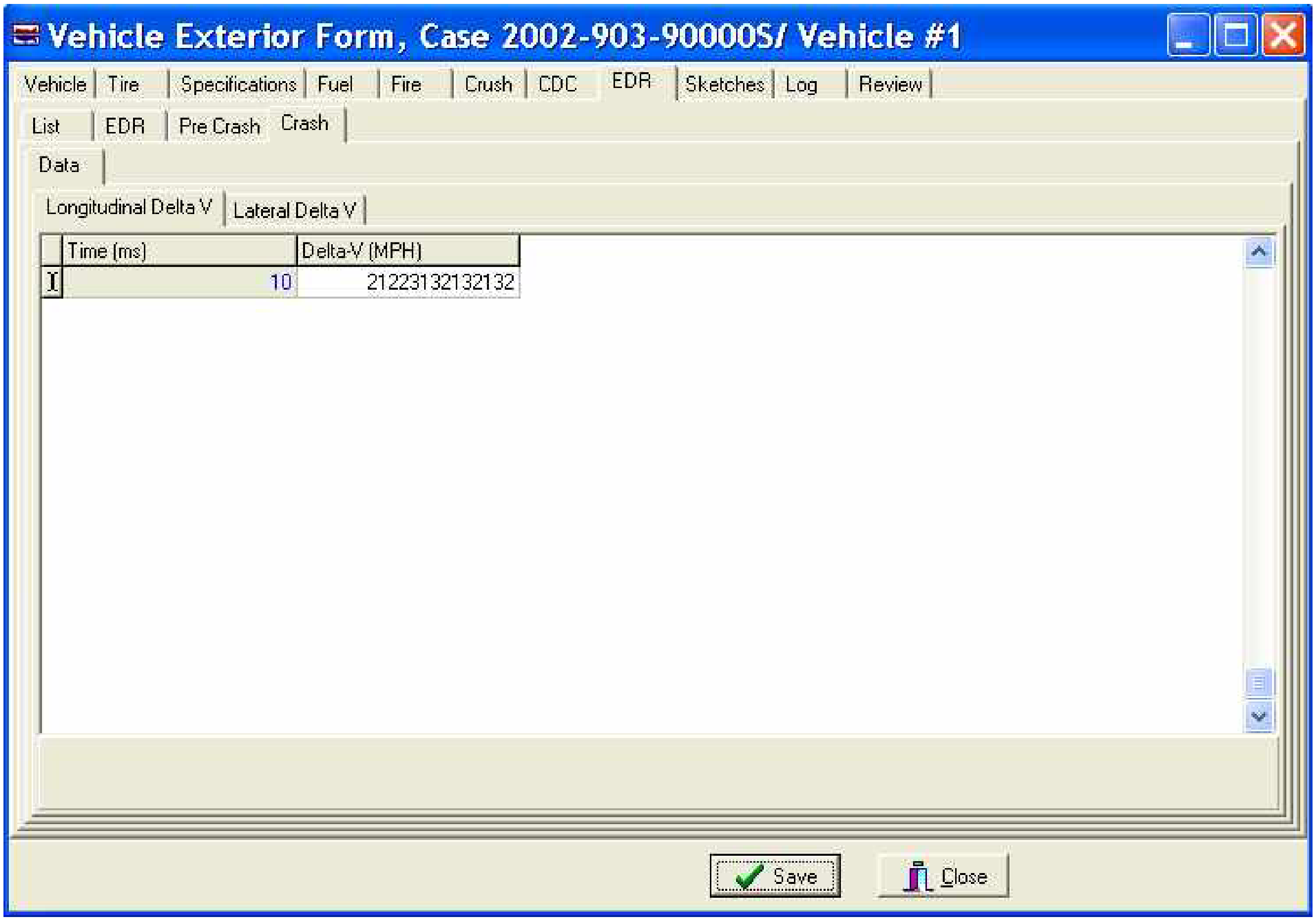
1	On
2	Off
8	Not reported
9	Unknown

Source: EDR

Remarks:

There are five pre-crash speed readings at one second intervals.

EDR Crash Data


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
List
EDR
Pre Crash
Crash
Data
Longitudinal Delta V
Lateral Delta V
Save
Close

Time (ms)	Delta-V (MPH)
10	21223132132132

[ACCIDENT EVENT SEQUENCE NUMBER]

Screen Name: N/A

SAS Data Set: **EDRCRASH**
SAS Variable: **EACCSEQ**

Element Attributes:

	Accident event sequence number
97	Non NASS event
98	Other, specify
99	Unknown or no corresponding EDR data record

Source: EDR

Remarks:

[ACCIDENT EVENT SEQUENCE NUMBER]

Screen Name: N/A

SAS Data Set: **EDRCRASH**
SAS Variable: **DVCLASS**

Element Attributes:

1	Total delta V
2	Longitudinal delta V
3	Lateral delta V

Source: EDR

Remarks:

[NUMBER OF MILLISECONDS AFTER CRASH]

Screen Name: N/A

SAS Data Set: **EDRCRASH**
SAS Variable: **MSECONDS**

Element Attributes:

The unit of time for the delta V readings in milliseconds.

Source: EDR

Remarks:

[DELTA V READING]

Screen Name: N/A

SAS Data Set: **EDRCRASH**
SAS Variable: **DELTA V**

Element Attributes:

	The value of the delta V
9999999	Unknown

Source: EDR

Remarks:

TIME FOR LONGITUDINAL DELTA V READING

Screen Name: Time

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Edit/Insert a new reading at10 millisecond intervals

Source: EDR

Remarks:

LONGITUDINAL DELTA V READING

Screen Name: Delta-V

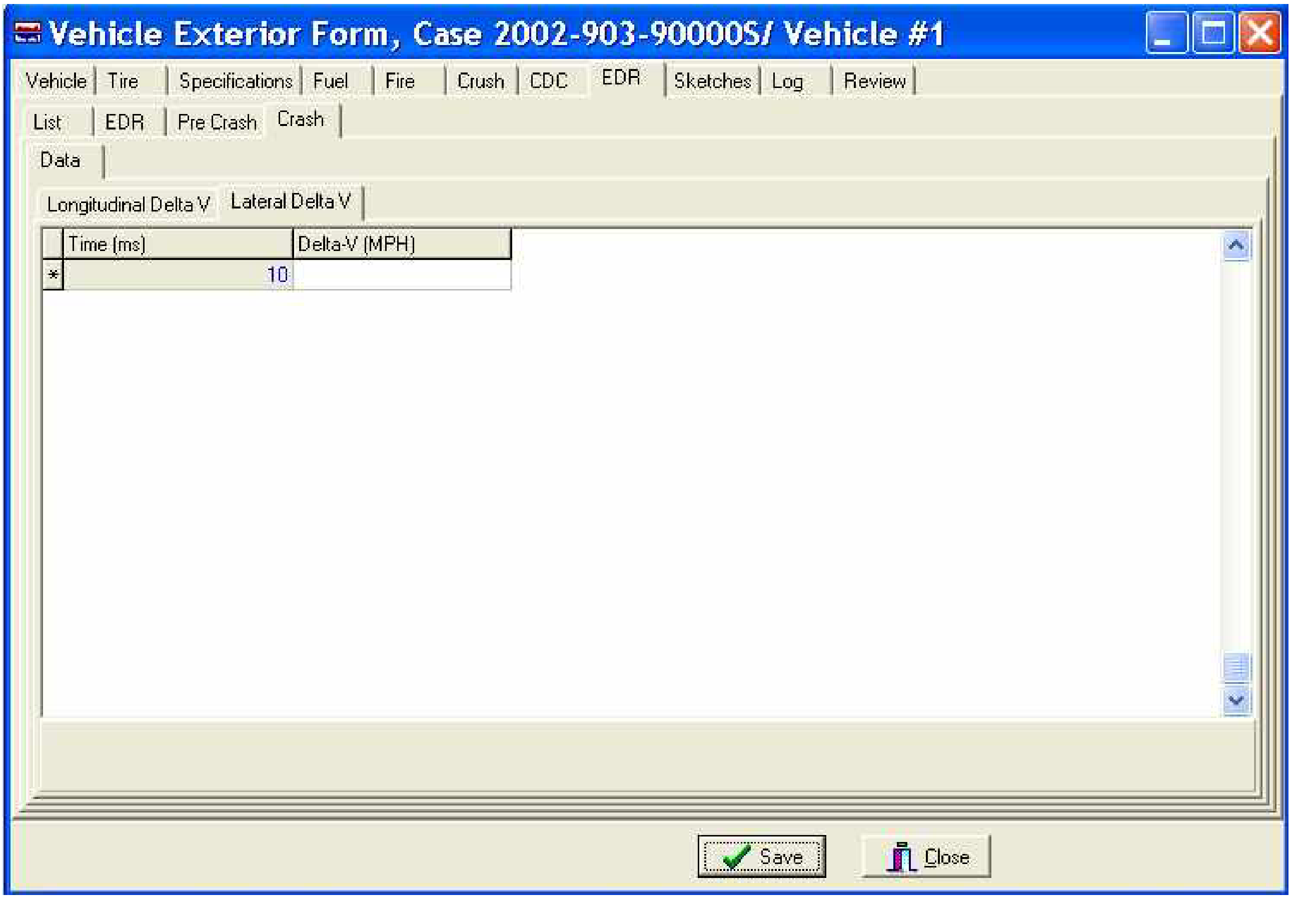
SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter Longitudinal Delta V reading
Not reported
Unknown

Source: EDR

Remarks:

Insert the Delta V reading at 10 millisecond intervals.


Vehicle Exterior Form, Case 2002-903-90000S/ Vehicle #1
Vehicle
Tire
Specifications
Fuel
Fire
Crush
CDC
EDR
Sketches
Log
Review
List
EDR
Pre Crash
Crash
Data
Longitudinal Delta V
Lateral Delta V
Save
Close

	Time (ms)	Delta-V (MPH)
*	10	

TIME FOR LATERAL DELTA V READING

Screen Name: Time

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Edit/Insert a new reading at 10 millisecond intervals

Source: EDR

Remarks:

LATERAL DELTA V READING

Screen Name: Delta-V

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

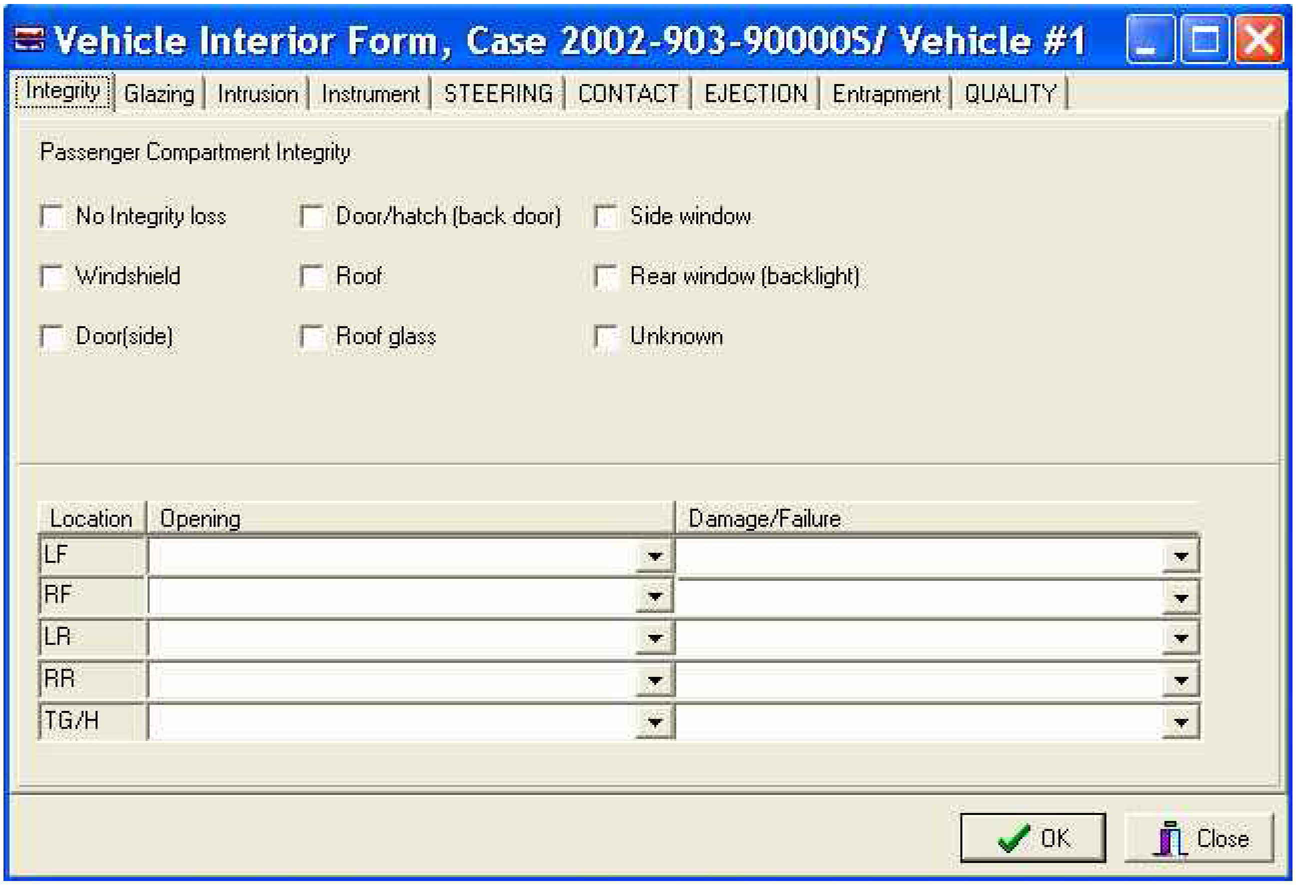
Enter Longitudinal Delta V reading
Not reported
Unknown

Source: EDR

Remarks:

Insert the Delta V reading at 10 millisecond intervals.

Integrity



Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1

Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY

Passenger Compartment Integrity

☐ No Integrity loss
☐ Windshield
☐ Door(side)
☐ Door/hatch (back door)
☐ Roof
☐ Roof glass
☐ Side window
☐ Rear window (backlight)
☐ Unknown

Location	Opening	Damage/Failure
LF		
RF		
LR		
RR		
TG/H		

OK
Close

[IS THERE PASSENGER COMPARTMENT INTEGRITY LOSS?]

Screen Name: Passenger Compartment Integrity

SAS Data Set: **VI**
SAS Variable: **INTGLOSS**

Element Attributes:

0	No integrity loss
1	Yes integrity loss
9	Unknown integrity loss

Source: Vehicle inspection.

Remarks:

No integrity loss
is selected when the doors, roof, and glazing (as listed below) remained intact during the impact sequence.

Unknown
is used in the following situations:

extrication damage masked integrity loss, and

integrity loss could not be determined due to circumstances beyond the researcher's control.

PASSENGER COMPARTMENT INTEGRITY

Screen Name: Passenger Compartment Integrity

SAS Data Set: **INTGRTY**
SAS Variable: **PASINTEG**

Element Attributes:

1	Windshield
2	Door (side)
3	Door/hatch (back door)
4	Roof
5	Roof glass
6	Side window
7	Rear window (backlight)

Source: Vehicle inspection.

Remarks:

Select all that apply.

Consider the passenger compartment as a "package" which is designed to contain the occupant. If an opening occurs of sufficient magnitude through which an occupant could have been ejected totally or partially (although it is not necessary for an occupant to have been ejected), the integrity of the compartment should be considered to have been lost. While it is difficult to define the magnitude of the opening in a universal manner, the minimum size of the opening would be equivalent to the head of most adults (approximately 15- 20 centimeters). Components which may lose their integrity are restricted to the windshield glazing, window glazing (side, rear, or roof), door or roof.

The question of integrity loss is assessed with respect to impact related damage. The damage can be either direct or induced. Damage which is not impact related (*e.g.*, fire, extrication) is not considered.

Doors which open upon impact or glazing that is broken during the impact sequence are considered integrity loss. However, doors which were left open prior to an impact do not constitute damage related loss of integrity and should be reported under **Door, Tailgate Or Hatch Opening**, select **Other**.

Windshield

is selected when the glazing is either holed/slit or displaced sufficiently to allow an adult size head to pass through.

Passenger Compartment Integrity (cont'd)

Door (side)
refers to the door structure and excludes glazing areas. All side doors, whether hinged or sliding are considered here.

Door/hatch (back door)
identifies integrity loss of the back door structure and not the glazing. Back doors include hatchback, tailgate, and liftback. In situations where the rear hatch or upper portion of the tailgate is made entirely of glazing material and secured with a latching mechanism, only the latching mechanism should be considered for this attribute. Integrity loss through shattered or displaced rear window glazing is identified in **Rear window**

Roof
refers only to the roof structure and not glazing areas. Roof structures containing metal panels (*e.g.*, "T" top roofs) are reported here as well as closed convertible tops.

Roof glass
reports glazing material in the roof structure which is broken or displaced.

Side window
refers to glazing which was broken or displaced during the crash sequence. Glazing which was totally open prior to the crash and broken (*i.e.*, sidelight rolled down into the door area) is not entered as integrity loss.

Rear window (backlight)
includes backlights, hatchbacks / tailgates / liftbacks, and rear door glazing which were broken or displaced.

Door, Tailgate, or Hatch Opening Overview

It is the intent of these variables to capture whether a passenger compartment door, tailgate, or hatch opened or remained closed during the crash sequence. The reason the doors came open during the crash is also reported.

The areas of interest include the left front, right front, left rear, right rear, and tailgate/hatch doors (*i.e.*, LF, RF, LR, LR2, RR,RR2, TG/H, respectively). The LF and RF doors are the forward most side doors on the left and right sides of a vehicle and the LR and RR doors are the next door (or set of doors) rearward of the LF and RF doors. There are situations where two adjacent doors are used to cover a single opening (*i.e.*, side or rear of a cargo van). These should be treated as a single door. Side doors are applicable whether hinged or on tracks.

Generally, hatch doors meet the following criteria:

provide access to the rear cargo area of a passenger car type vehicle, through a large opening backlight,

are composed primarily of glass and may or may not be framed,

are hinged at the top and latched at the bottom, and

are not used in conjunction with a lower door or tailgate.

Some vehicles are equipped with frame less glass hatches which may shatter as a result of an impact. This situation is considered a glazing loss (refer to **Glazing**) rather than a hatch opening unless the hatch did, in fact, open prior to the glass breaking (*i.e.*, release of the latching/hinging mechanism). Some glass hatches may be bordered by a narrow band of metal. The condition of this metal band is the focus of this variable group. These remarks also apply when the upper window of a tailgate assembly is being considered.

Generally, tailgates exist on the rear end plane of station wagon type vehicles. They may be one or two piece assemblies. In the instance of a two piece unit, they will be hinged at the top and bottom with a horizontal seam. One piece units may be hinged at the top for some vehicles or at the bottom with retracting rear windows for others. Pickup truck tailgates are not included in these variables.

Rear doors may be single or double units covering a single opening. The rear doors are hinged on one or both sides with a vertical seam present in dual door applications. Rear doors are most commonly found on van type vehicles and are indicated under descriptor - "TG/H".

DOOR, TAILGATE, OR HATCH LOCATION

Screen Name: Location

SAS Data Set: **DOORS**
SAS Variable: **DLOCAT**

Element Attributes:

LF	Left Front=1
RF	Right Front=2
LR	Left Rear=3
RR	Right Rear=4
TG/H	Tail Gate / Hatch=5

Source: Vehicle inspection.

Remarks:

Information is precoded and a choice is made for filling in subsequent variables

DOOR, TAILGATE, OR HATCH OPENING

Page 1 of 2

Screen Name: Opening

SAS Data Set: **DOORS**
SAS Variable: **DOPEN**

Element Attributes:

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

Source: Vehicle inspection.

Remarks:

This variable identifies the operational status of a door, tailgate or hatch during a crash sequence. Priority is given to doors which **"open"** during the collision. Doors which are pushed inwards and jammed, such that a gap or space occurs, are captured under this variable as **door / gate / hatch jammed shut.** The gap or space that occurs is coded under the variable **Integrity Loss.** Where multiple doors cover a single opening, and the disposition of each door was different, select the response for the door which is first identified in the following priority list:

Door/gate/hatch came open during collision
Door/gate/hatch jammed shut,
Other (specify):
Door/gate/hatch remained closed and operational
Unknown

As an example, if one door came open and the other was jammed shut, the proper response would be Door/gate/hatch came open during collision. Gaps caused by body deformation are not selected as door opening events. These gaps will be selected in Passenger Compartment Integrity.

No door/gate/hatch
is selected when no OEM door, tailgate, or hatch exists in the appropriate area (*i.e.*, LF, RF, LR, RR, TG/H).

Door/gate/hatch remained closed and operational
for any door, tailgate, or hatch which did not open during the crash sequence and remained operational.

Door, Tailgate, or Hatch Opening (cont'd)

Door/gate/hatch came open during collision
is selected when the door assembly opened during the crash sequence, irrespective of the cause. Further, the magnitude of the opening created is inconsequential when selecting this response. Note, if this response is selected then the **Damage/Failure** responses for the next variable, must be indicated, based on what caused the door / hatch to come open. The researcher must consider the potential that a sprung-mass situation may exist. In this condition, the door may have been opened after the crash, but due to vehicle body stresses the door cannot be shut. This is an important consideration when assessing whether the door came open during the collision.

Door/gate/hatch jammed shut
is selected when a door is rendered inoperable due to being jammed shut. Inoperable is defined as the inability of the researcher to open the door wide enough (through the use of reasonable force) to allow passage of an adult head. It is irrelevant whether the jamming is a result of latch or hinge failure, the displacement of adjacent body panels, or direct damage. Undamaged locked doors should not be considered as jammed or inoperable. Doors which were pried open following the crash are an indication of jamming and should be closely examined. In this situation, the researcher should thoroughly annotate and photograph the door area to support this conclusion.

Other
is selected for those situations which cannot be identified with other elements. Doors which are open prior to the crash are reported here (*e.g.*, hatchbacks open for cargo reasons, ventilation, etc.).

Unknown
is used when the researcher could not make a performance assessment of the door, tailgate or hatch.

DAMAGE/FAILURE ASSOCIATED WITH DOOR, TAILGATE, OR HATCH OPENING IN COLLISION

Page 1 of 2

Screen Name: Damage/Failure

SAS Data Set: **DOORS**
SAS Variable: **DFAILURE**

Element Attributes:

	[No door/gate/hatch]
1	[Door not opened/failure not assessed]
2	Door operational (no damage)
3	Latch/striker failure due to damage
4	Hinge failure due to damage
5	Door structure failure due to damage
6	Door support (*i.e.*, pillar, sill, roof side rail, etc.) failure due to damage
7	Latch/striker and hinge failure due to damage
8	Other failure (specify):
9	Unknown

Source: Vehicle inspection.

Remarks:

This variable is designed to capture the reason a door opened during the collision sequence.

[No door/gate/hatch]
is automatically selected when:
no door, tailgate, or hatch exists
the door/tailgate/hatch did not open during the crash sequence or
the door/tailgate/hatch is jammed shut

Doors which were open prior to the crash (hatchbacks open for cargo reasons, ventilation, etc.) also are reported here.

[Door not opened]
is automatically selected when:
the door/tailgate/hatch did not open during the crash sequence or
the door/tailgate/hatch is jammed shut

Door operational (no damage)
is selected when the door, tailgate, or hatch opened during the crash sequence, but the unit was undamaged and remained operational.

Latch/striker failure due to damage
is selected when the door, tailgate, or hatch opened as a result of a failure of the latch/striker assembly. The failure must be due to damage, either direct or induced, and must result in the forced unlatching of the latch/striker assembly or shearing of the striker post.

Damage/Failure Associated with Door, Tailgate, or Hatch Opening in Collision (cont'd)

Page 2 of 2

Hinge failure due to damage
is selected to indicate that a hinge failure exists as a result of either direct or induced damage. A hinge failure includes the complete separation of the hinge assembly from the door structure, pillar or of the two or more components which comprise the hinge assembly.

Door structure failure due to damage
is selected anytime the door structure sustained damage which allowed the latch, striker, or hinge to separate from the mounting surface (*i.e.*, torn metal). The door structure is defined as all components of the door assembly exclusive of the door skin.

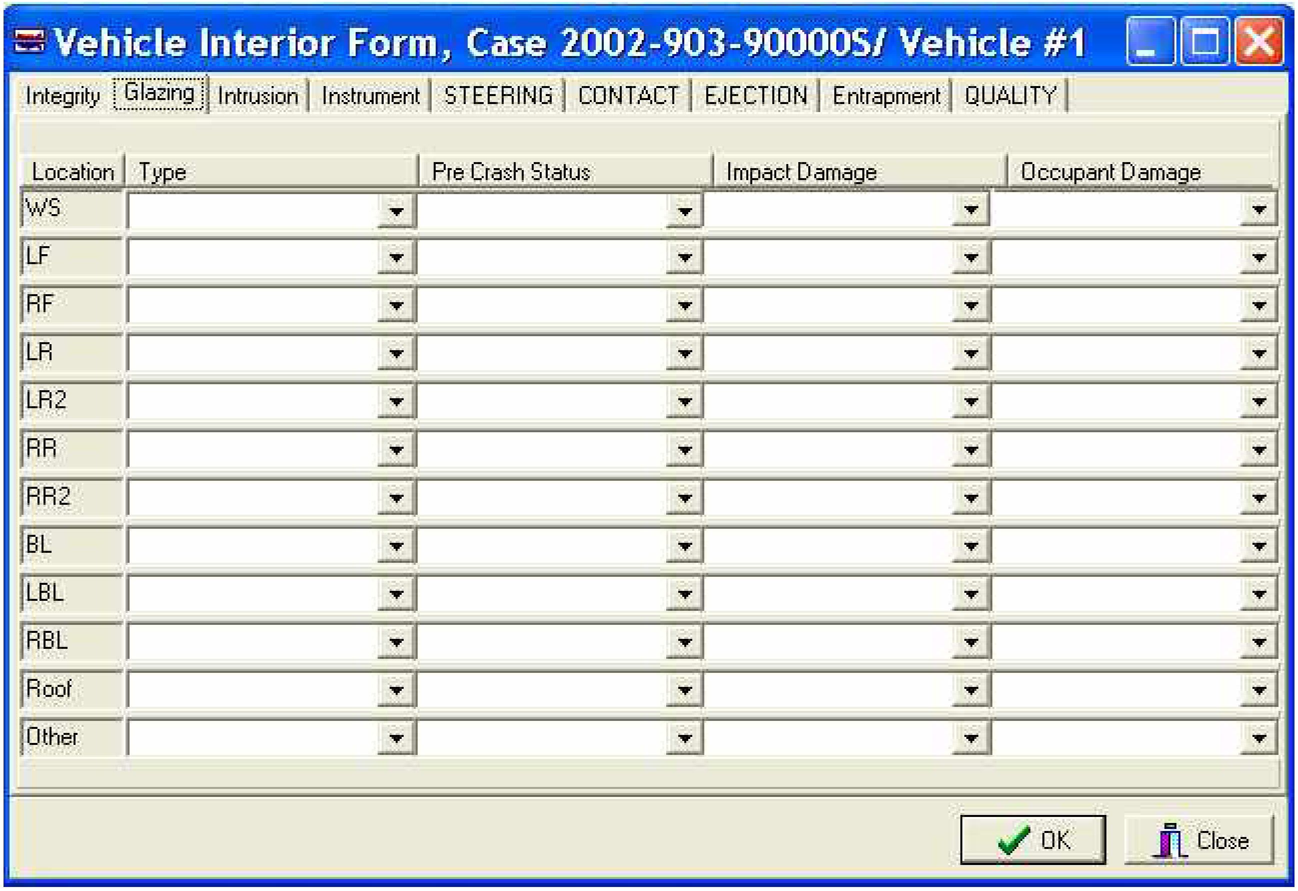
Door support (*i.e.*, pillar, sill, roof side rail, etc.)
is selected to define situations where the latch/striker assembly did not fail, but the door support areas are damaged sufficiently to allow for the door to open. This includes, but is not limited to, the failure of pillars, sills and/or roof side rails at its most severe level.

Latch/striker and hinge failure due to damage
Latch/striker and hinge failure due to damage is used to describe situations where the entire door and adjacent components (*i.e.*, pillars) are torn away by an impact. Failure must be present to the latch/striker and at least one hinge, resulting in the door opening (*i.e.*, door partially or completely torn off).

Other failure
is used to indicate that an opening exists which cannot be described with the attributes above. This includes vehicles with a canvas roof and door structure (*i.e.*, Jeeps, etc.).

Unknown
is used when it cannot be determined which attribute applies.

Glazing


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
OK
Close

Location	Type	Pre Crash Status	Impact Damage	Occupant Damage
WS				
LF				
RF				
LR				
LR2				
RR				
RR2				
BL				
LBL				
RBL				
Roof				
Other				

GLAZING TYPE AND DAMAGE OVERVIEW

Glazing is defined for these variables as a covering for openings in the vehicle's structure which has the ability to allow light to pass. The areas of interest include: the windshield, sidelight windows, backlight (hatchback, tailgate, liftback, rear window), and roof. Composition of glazing materials in use include: glass, plastic, and glass-plastic.

The potential for occupant ejection is a major concern of rulemakers at NHTSA. These variables are designed to record the successes and failures of occupant containment by glazing when there is an occurrence of occupant contact to the glazing, or glazing damage by impact forces or vehicle damage.

There is glass that involves a plastic anti-lacerative layer applied to the inner surface of windshields (such as Inner Shield, Securiflex, etc.). Glass - plastic should not be confused with the current design of laminate windshields which are made with a layer of plastic (Polyvinyl Butyral) between two layers of annealed glass.

Researchers are required to thoroughly inspect all glazing for direct occupant contact / damage and encode their findings. This information is recorded independent of occupant ejection.

Glazing variables are divided into four sections.

Type
Precrash Glazing Status
Impact Damage
Occupant Damage

These sections are further divided into twelve specific areas of interest or Locations:

WS = windshield
LF = left front window (driver's window)
RF = right front window
LR = left rear window (adjacent to LF window)
LR2 = 2nd left rear window (adjacent to LR window)
RR = right rear window (adjacent to RF window)
RR2 = 2nd right rear window (adjacent to RR window)
BL = backlight, tailgate / hatchback / liftgate window
LBL = left backlight (left side of a divided backlight, i.e., rear doors on some vans)
RBL = right backlight (right side of a divided backlight, i.e., rear doors on some vans)
Roof = sun roof, moon roof, "T" roof, etc.
Other = other sidelights, door wing windows, and any other light not identified above

The "other" category (as noted) encompasses areas where glazing may be directly contacted by occupants or damaged from impact forces and not identified by a specific location. This would include wing windows located in door areas. In the event more than one "other" area was involved, select the area with the highest priority number as ranked above. When more than one glazing has priority, the researcher should select the glazing which is closest to the front of the vehicle with the left side taking precedence over the right side. The researcher must specify the selected glazing in the space provided.

LOCATION OF WINDOW/WINDSHIELD GLAZING

Screen Name: Location

SAS Data Set: **GLAZING**
SAS Variable: **GLOC**

Element Attributes:

1	windshield
2	left front window (driver's window)
3	right front window
4	left rear window (adjacent to LF window)
5	2nd left rear window (adjacent to LR window)
6	right rear window (adjacent to RF window)
7	2nd right rear window (adjacent to RR window)
8	backlight, tailgate / hatchback / liftgate window
9	left backlight (left side of a divided backlight, i.e., rear doors on some vans)
10	right backlight (right side of a divided backlight, i.e., rear doors on some vans)
11	sun roof, moon roof, "T" roof, etc.
98	other sidelights, door wing windows, and any other light not identified above

Source: Vehicle inspection.

Remarks:

Information is precoded and a choice is made for filling in subsequent variables

TYPE OF WINDOW/WINDSHIELD GLAZING

Screen Name: Type

SAS Data Set: **GLAZING**
SAS Variable: **GLTYPE**

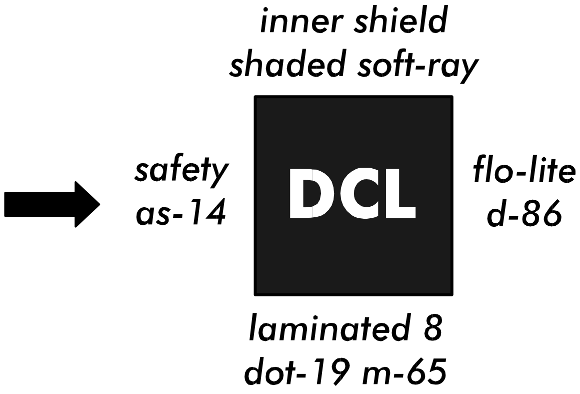
Element Attributes:

	No glazing
1	AS-1 - Laminated
2	AS-2 - Tempered
3	AS-3 - Tempered-tinted (original)
4	AS-2 - Tempered-with after market tint
5	AS-3 - Tempered-tinted (with additional after market tint)
6	AS-14 - Glass / Plastic (Anti-Lacerative) not plastic
7	Glazing removed prior to crash
98	Other (specify):
99	Unknown

Source: Vehicle inspection.

Remarks:

Glazing types are identified by unique AS (American Standard) numbers which are etched in the glazing surface. The AS numbers are generally grouped with other glazing information and together make up an informational symbol referred to as a "watermark" (see diagram below). The arrow indicates the “AS number” within the watermark.



Glazing types are used whether or not the glazing area was identified as damaged from impact forces or direct occupant contact. When all side and rear windows have been broken out, examine the window track or frame for remnants of broken glass. If glass is present and the remnants are small clear granules (or cracked in granule size pieces), then it is permissible to select (AS-2 — Tempered). If these remnants are tinted, then it is permissible to select [AS-3 — Tempered – tinted (original)]. If these remnants have any plastic tint shield clinging to them, then it is permissible to select (AS-2 — Tempered – with after market tint) or [AS-3 — Tempered – tinted (with additional after market tint)].

Type of Window/Windshield Glazing (cont'd)

No glazing
is selected for specific areas where the body structure was not designed to accept glazing (*i.e.*, solid roof structure, etc.).

AS-1 — Laminated
refers to a layer of plastic between two layers of glass. This type of glazing is widely used in current windshield installations.

AS-2 — Tempered
refers to glass which is designed to break into small glass granules when damaged.

AS-3 — Tempered – tinted (original)
refers to manufactured tinted (privacy) glass which has the ability to break into small glass granules when damaged. Glazing which has an aftermarket plastic tint shield applied should be listed as **AS-2 — Tempered – with after market tint**.

AS-2 — Tempered – with after market tint
refers to AS-2 glazing which has an aftermarket plastic tint shield applied.

AS-3 — Tempered – tinted (with additional after market tint)
refers to AS-3 glazing which has an additional aftermarket plastic tint shield applied.

AS-14
refers to glazing which uses plastic on its inner surface. This is used in anti-Lacerative windshields (*i.e.*, Inner Shield, Securiflex, etc.).

Glazing removed prior to crash
includes sun roofs, "T" tops, etc. which were removed from their respective areas prior to the crash.

Other (specify)
refers to any glazing which has an AS number different from AS-1, AS-2, AS-3 and AS-14. Write the AS number of the glazing in the "specify" space provided. This includes plastic (AS-11C), and bullet proof (AS-10). Plastic side and rear windows in convertibles and Jeeps are examples of glazing that will be entered here.

Unknown
is used in the following situations.

Due to factors beyond the researcher's control, an adequate determination of glazing presence could not be made.

A reasonable determination of the "AS" number could not be made.

WINDOW PRE-CRASH STATUS

Screen Name: Pre Crash Status

SAS Data Set: **GLAZING**
SAS Variable: **GLPRCRSH**

Element Attributes:

	[No glazing]
1	Fixed
2	Closed
3	Partially opened
4	Fully opened
7	[Glazing removed prior to crash]
9	Unknown

Source: Vehicle inspection with verification from interview, if possible.

Remarks: This variable records the operational modes of the glazing prior to the crash.

No glazing
is used for specific areas where the body structure was not designed to accept glazing (*i.e.*, solid roof structure, etc.).

Fixed
identifies glazing which is not designed to open (*e.g.* windshields, etc.).

Closed
refers to any operable glazing which was fully closed (*i.e.*, no air gaps).

Partially opened
refers to any operable glazing which is not firmly closed (*i.e.*, air gaps present) and not fully opened. Note, the researcher should select the placement of the window in relationship to the opening and not by window design limitations (i.e., rear sedan windows designed not to fully open).

Fully opened
refers to any operable glazing which is attached to the vehicle (*i.e.*, window tracks) and was placed in the open position such that the glazing was not restricting the opening of the vehicle structure. This element is assessed independently of window design limitations (*i.e.*, side windows designed to only roll down halfway cannot receive this attribute).

Glazing removed prior to crash
includes sun roofs, "T" tops, etc. which were removed from their respective areas prior to the crash.

Unknown
is used in the following situations.

Due to factors beyond the researcher's control, an adequate determination of glazing presence could not be made.

GLAZING DAMAGE FROM IMPACT FORCES

Page 1 of 2

Screen Name: Impact Damage

SAS Data Set: **GLAZING**
SAS Variable: **GLIMPACT**

Element Attributes:

	[No glazing]
1	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 crash]
9	Unknown if damaged

Source: Vehicle inspection

Remarks:

This variable identifies damage to the glazing as a result of impact forces and/or vehicle damage (including damage from interior loose objects). Damage caused by direct occupant contact should be recorded in the variable **Occupant Damage**.

NOTE: glazing(s) which are retracted into vehicle body panels (*i.e.*, fully open) are to be assessed and coded as best as possible by the Researcher.

No glazing
is used for specific areas where the body structure was not designed to accept glazing (*i.e.*, solid roof structure, etc.).

No glazing damage from impact forces
is selected when there was no damage to the glazing from impact forces. Glazing damage for these variables is defined as cracking, holed, out-of-place or disintegrated. Glazing which is scratched is considered not damaged.

Glazing in place and cracked from impact forces
is selected when the glazing remained within the confines of its specific area and was cracked. Displaced glazing which was not totally separated from the vehicle should be treated as "in place". This would include windshields with partial bond separation and dislodged side glazing(s).

Glazing in place and holed from impact forces
is selected when the glazing was "holed". "Holed" refers to a hole or slit in the glazing which is large enough in size to allow passage of an adult head (approximately 15-20 centimeters). For the purpose of this variable, the hole or slit must have been produced by impact force and/or vehicle damage and not by direct occupant contact.

Glazing Damage From Impact Forces (cont'd)

Glazing out-of-place (cracked or not) and not holed from impact forces
refers to glazing which was totally separated from the vehicle as the result of impact forces and/or vehicle damage. Windshields with 100 percent bond separation should receive this attribute. Caution must be exercised by the researcher not to consider shattered tempered glass (*i.e.*, sidelights, etc.) as out-of-place. This situation should be identified as **Glazing disintegrated from impact forces**.

Glazing out-of-place and holed from impact forces
refers to glazing that was totally separated from the vehicle during the crash sequence and was holed/slit as the result of impact forces or vehicle damage. "Holed" refers to either a hole or slit in the glazing which is large enough in size to allow passage of an adult head (approximately 15-20 centimeters).

Glazing disintegrated from impact forces
refers to glazing that was totally destroyed by impact forces or vehicle damage. This usually occurs with shattered tempered glass (*i.e.*, sidelights, etc.). Windshields that are separated from the vehicle should not be considered disintegrated. Uncertainty may exist when determining the cause of shattered sidelight glazing when the collision occurred adjacent to an occupied seat. As a rule of thumb, impact forces and/or vehicle damage generally cause disintegration of the sidelight prior to occupant contact.

Glazing removed prior to crash
includes sun roofs, "T" tops, etc. which were removed from their respective areas prior to the crash.

Unknown if damaged
is selected in the following situations.

The degree of damage could not be determined as the result of post impact damage (*i.e.*, extrication, towing operations, etc.).

Due to factors beyond the researcher's control, an adequate determination of glazing damage could not be made (*i.e.*, catastrophic type vehicle damage, etc.). This should be a rare occurrence.

The cause of glazing damage (*i.e.*, impact forces versus occupant contact) could not be determined by the researcher. Caution, it is anticipated this reason will be rarely used. When confronted with this dilemma, every effort must be made to select a known value for damaged glazing.

GLAZING DAMAGE FROM OCCUPANT CONTACT

Screen Name: Occupant Damage

SAS Data Set: **GLAZING**
SAS Variable: **GLOCCUPT**

Element Attributes:

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

Source: Vehicle inspection.

Remarks:

These variables report direct occupant contact to the glazing during the crash sequence. The responses are prioritized, the further you go down the list, the higher the priority, [*i.e.*, **Glazing in place and holed by occupant contact** takes precedence over **Glazing in place and cracked by occupant contact**, etc.].

NOTE: glazing(s) which are retracted into vehicle body panels (*i.e.*, fully open) are to be assessed and coded as best as possible by the Researcher.

No occupant contact
is selected when there are no direct occupant contact(s) detected on the glazing.

Glazing contacted by occupant but no glazing damage
is selected when an occupant directly contacted the glazing, but the contact did not result in glazing damage.

Glazing in place and cracked by occupant contact
refers to glazing that was damaged (not holed) by direct occupant contact. The term "in place" describes glazing which has remained within the confines of its specific area. Displaced glazing which was not totally separated from the vehicle should be treated as "in place". This would include windshields with partial bond separation and dislodged side glazing.

Glazing in place and holed by occupant contact
is selected when the glazing was "holed". "Holed" refers to a hole or slit in the glazing which was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head (approximately 15 -20 centimeters).

Glazing Damage from Occupant Contact (cont'd)

Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact
refers to glazing which was directly contacted by an occupant and was totally separated from the vehicle during the crash sequence. Windshields with 100 percent bond separation are reported here. Caution must be exercised by the researcher not to consider shattered tempered glass (*i.e.*, sidelights, etc.) as out-of-place. This situation is reported as **Glazing disintegrated by occupant contact**

Glazing out-of-place by occupant contact and holed by occupant contact
refers to glazing which was contacted and holed by direct occupant contact and totally separated from the vehicle during the crash sequence. "Holed" refers to a hole or slit in the glazing which was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head (approximately 15 -20 centimeters).

Glazing removed prior to crash
includes sun roofs, "T" tops, etc. which were removed from their respective areas prior to the crash. Glazing retracted into vehicle body panels (*i.e.*, fully open) is not considered in this element.

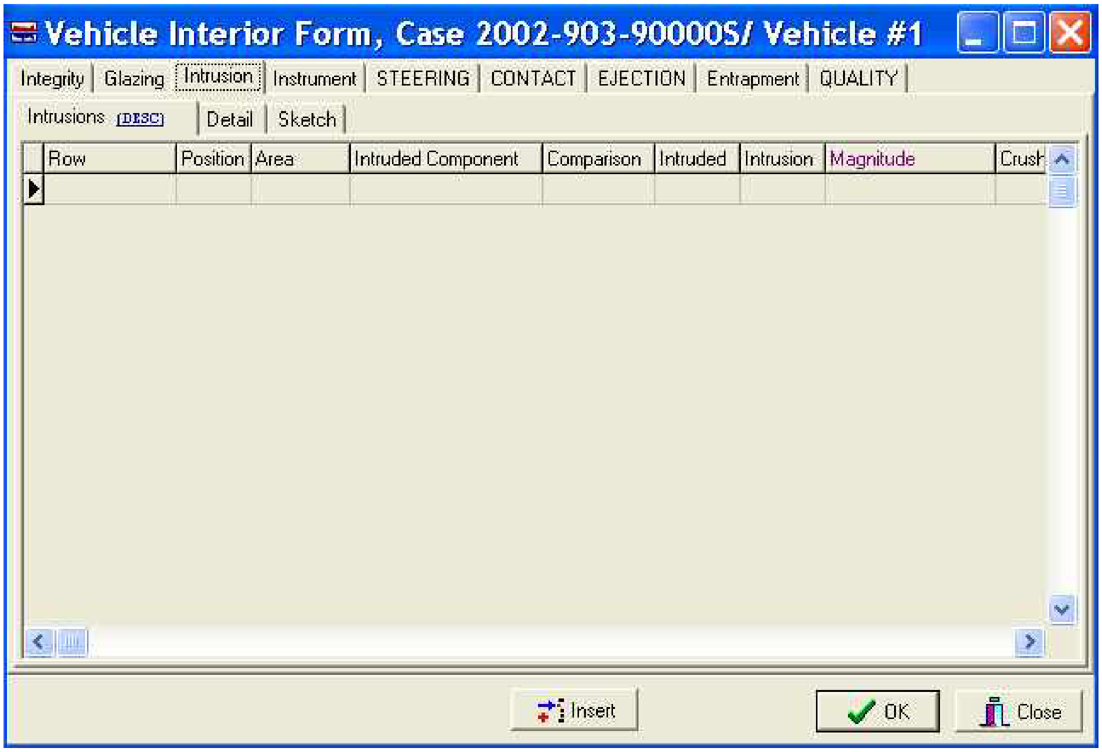
Glazing disintegrated by occupant contact
refers to glazing that was totally destroyed by direct occupant contact. This usually occurs with shattered tempered glass (*i.e.*, sidelights, etc.). Windshields that were separated from the vehicle should not be considered disintegrated. Uncertainty may exist when determining the cause of shattered sidelight glazing when the collision occurred adjacent to an occupied seat. As a rule of thumb, impact forces and/or vehicle damage generally cause disintegration of the sidelight prior to occupant contact. If the glazing is indicated in **Impact Damage** as "Disintegrated by Impact Forces" this variable must be coded as **No Occupant Contact**.

Unknown if contacted by occupant
is selected in the following situations.

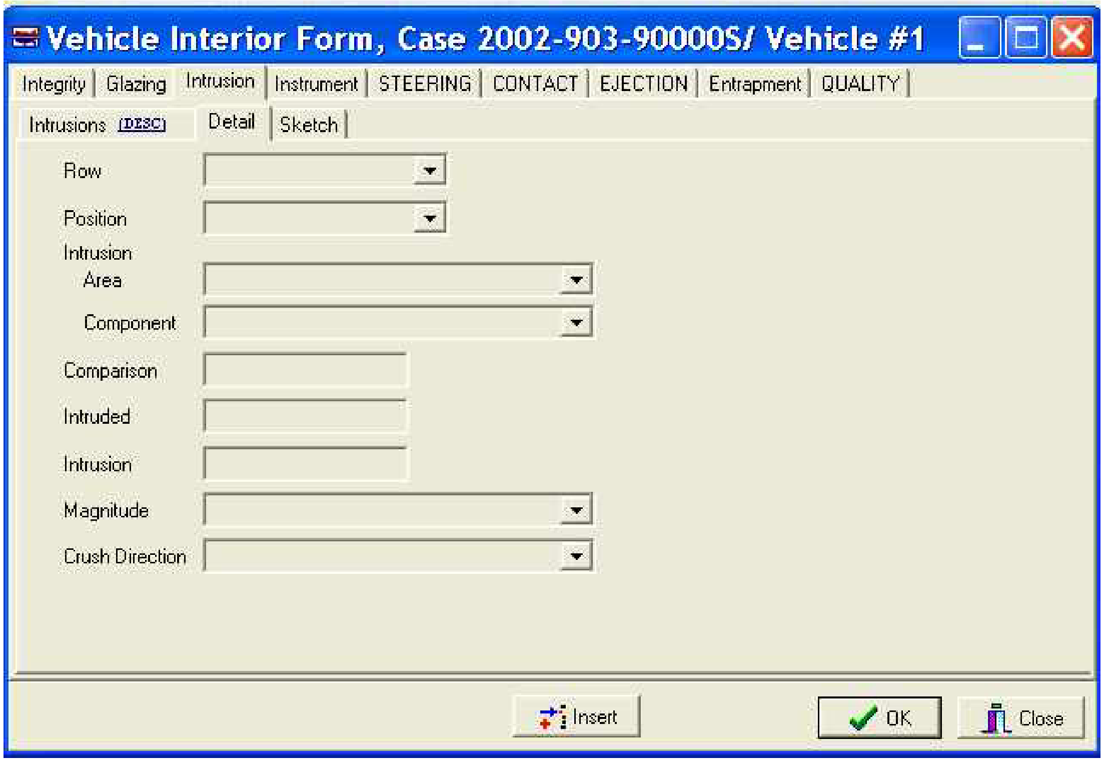
Direct occupant contact/damage could not be determined due to post impact damage (*i.e.*, extrication, towing operations, etc.).

Due to factors beyond the researcher's control, an adequate determination of direct occupant contact/damage could not be made.

Intrusions


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
Intrusions (DESC)
Detail
Sketch
Row
Position
Area
Intruded Component
Comparison
Intruded
Intrusion
Magnitude
Crush
Insert
OK
Close

Intrusion Detail


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
Intrusions (DESC)
Detail
Sketch
Row
Position
Intrusion
Area
Component
Comparison
Intruded
Intrusion
Magnitude
Crush Direction
Insert
OK
Close

OCCUPANT AREA INTRUSION OVERVIEW

If there is no intrusion leave the Intrusion Worksheet **blank.**

Displacement of less than three centimeters is not considered to be an intrusion.

Intrusion results whenever the internal boundary surface of the passenger compartment is moved inward due to direct or indirect damage resulting from the application of a crushing force to the exterior surface of a vehicle. A passenger compartment is defined as that interior occupant space which is normally available for occupant seating, based upon both the vehicle design and seat configuration at the time of the crash. Adjacent cargo areas and other enclosed areas are included for consideration in the following situations.

The area behind the last row of seats designed by the manufacturer for cargo is integral with the passenger compartment.

An area where a seat row was either removed or folded down to accommodate cargo.

Intrusion can occur from the vertical, longitudinal, or lateral direction. Intrusion can also occur from the displacement of interior seatbacks and/or seat cushions.

Measurement of Passenger Compartment Intrusion

Types of Intrusion

Two types of intrusions occur most often in crashes. They are:

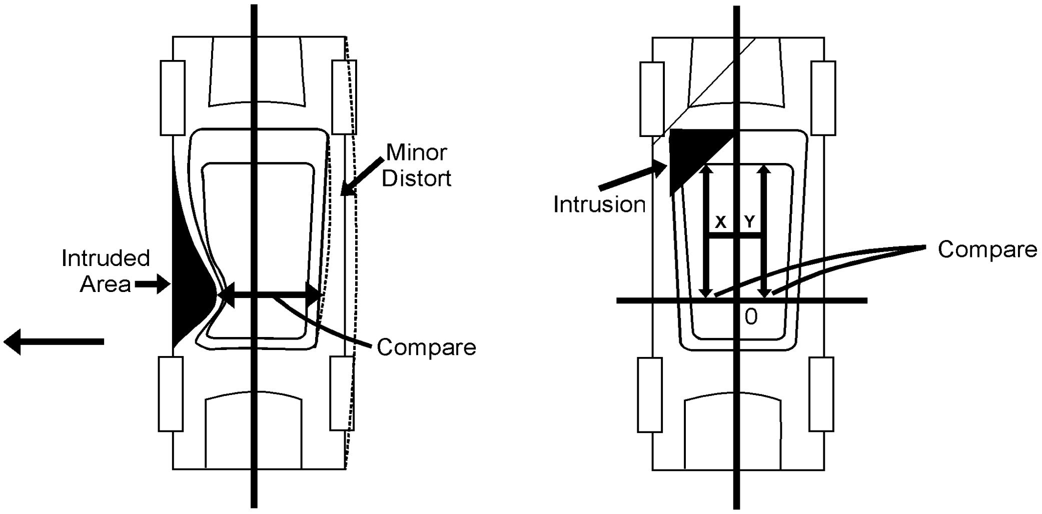
Type A: Intrusion which is limited to one part of the passenger compartment and where the other side of the vehicle remains relatively free of distortion. This is likely to be the case in the majority of crashes. In many cases it will be possible to obtain undeformed vehicle dimensions as the vehicle is symmetrical about the longitudinal centerline.

Type B: Intrusion which occurs in many sections of the passenger compartment with little of the vehicle remaining free of distortion. In this case, it will be necessary to obtain "original" dimensions by comparison with a second (unintruded) vehicle of the same type.

FIGURE 1

Establishment of Reference Axis. In order to compare one side of a vehicle with the other or compare two vehicles, a coordinate system within the vehicle is required. An example of Type A and Type B intrusions are shown in Figure 1.

TYPE A INTRUSION:


Minor
Distort
Intruded
Area
Compare
Intrusion
X
Y
Compare
0

TYPE B INTRUSION:

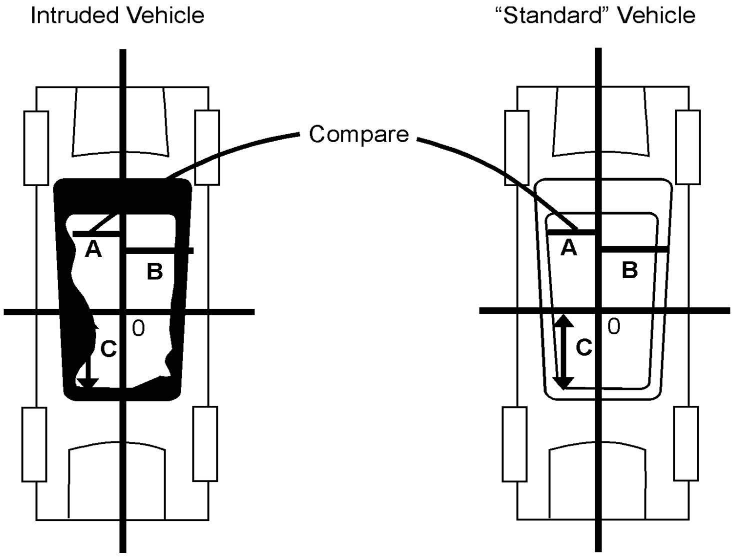
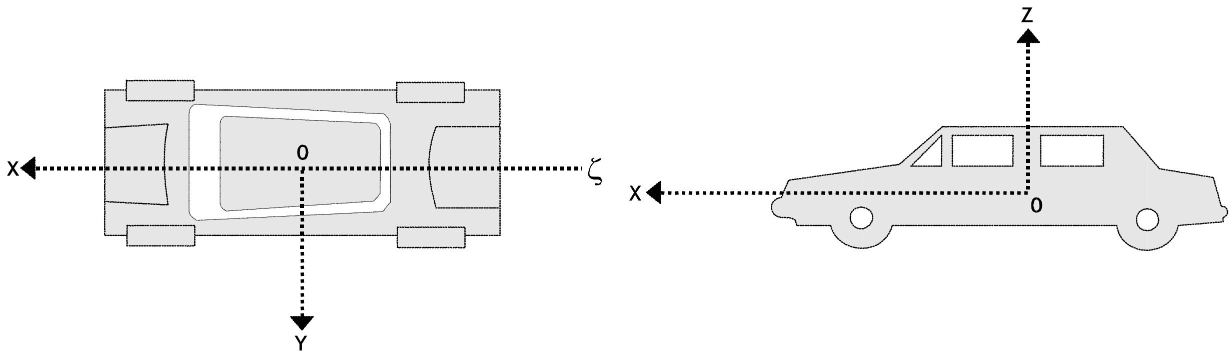

Intruded Vehicle
"Standard" Vehicle
Compare
A
B
0
C
A
B
0
C

FIGURE 2



The x-axis is on the longitudinal centerline of the vehicle. This could be set up along the transmission drive shaft tunnel for a rear wheel drive vehicle or along a centerline which is equidistant from the sides of the vehicle in a front wheel drive vehicle.

The y-axis is in a side-to-side or lateral direction. This plane may be set up in any convenient location which can be readily established in the "reference" vehicle.

The z-axis is the vertical axis. A location at the top of the transmission drive shaft tunnel may be convenient to reference roof collapse in many cases. The point established by these intersecting planes defines the origin **(O)**.

Establishing a frame of reference and measuring intrusion can be simplified.

In a frontal collision, there is rarely intrusion at the rear, and vice-versa for a rear collision.

Side impacts generally damage only one side of the vehicle.

Roof impacts leave the floor pan undistorted.

Not all intrusions require the establishment of all three axes.

The ordering of intrusions reflects the intrusion severity as recorded in column three (*i.e.*, Magnitude of Intrusion variables).

An intruded component is assessed for its Dominant Crush Direction as determined from the Magnitude of Intrusion. For example, an instrument panel may intrude both longitudinally and vertically. The coded intrusion will reflect the instrument panel with the dominant crush direction (vertical or longitudinally). If the dominant intrusion can not be determined in the field (i.e., an exemplar vehicle is required for comparison measurements) the Researcher should document the component (i.e., instrument panel) in both directions. However, during final completion of the case, only the instrument panel intrusion with the greater magnitude is coded, the other intrusion row is deleted.

This system is defined by an orthogonal set of axes (x-y-z) and an origin (**O**) as shown in Figure 2. The position of the origin is typically on the longitudinal centerline of the vehicle and has an arbitrary location, both vertically and longitudinally. However, its location must be identical for the intruded and "reference" vehicle. Note, the axes are referenced to the floor plane of the vehicle.

NOTE: The extent of a component intrusion into a row sector should not exceed the pre-impact dimension of that sector. For example, if the front row width is 150 centimeters, each sector is equal to 50 centimeters. If the driver-side door panel intrudes 60 centimeters laterally, the intrusion is listed as:

Front Row Left (sector 11) Intrusion Magnitude = 50cm (maximum amount for that sector)
Front Row Middle (sector 12) Intrusion Magnitude = 10cm (the remaining amount for the door panel intrusion).

Catastrophic should only be used to describe intrusion damage which is so severe that the researcher is unable to discern any of the following:

specific occupant locations
intruding components
magnitude of intrusions and
dominant crush

[INTRUSION NUMBER]

Screen Name: N/A

SAS Data Set: **INTRSN**
SAS Variable: **INTNUM**

Element Attributes:

Automatically generated by data entry system, sequential numbers

Source: Vehicle inspection.

Remarks:

ROW

Page 1 of 2

Screen Name: Row

SAS Data Set: **N/A**
SAS Variable: **N/A**

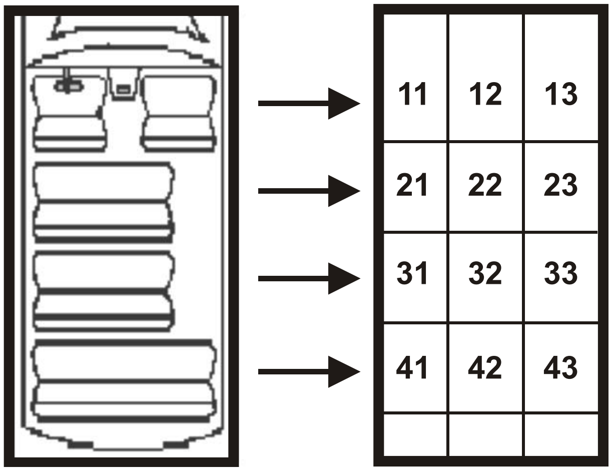
Element Attributes:

Front Row
Second Row
Third Row
Fourth Row
Fifth Row
Catastrophic
Other (specify):
Unknown

Source: Vehicle inspection.

Remarks:

The interior space of a vehicle is divided into specific sectors as outlined in the following diagram. These sectors are based upon seat rows and **not** occupant seat locations. Cargo areas open to the passenger area (*i.e.*, station wagons, vans, etc.) are assessed in these variables. Intrusion into the trunk area of an automobile with a rear seat position or into a cargo area covered by a privacy curtain/shelf is excluded.



Front Row, Second Row, Third Row, Fourth Row are identified by the presence of an installed seat.

When the entire seat row is folded down or removed prior to the crash, this area is considered an **Other** enclosed area.

The following rules guide us in the determination of "seat rows" versus "other enclosed areas" and in the derivation of the lateral dimension of each row sector.

Cargo areas in passenger cars which are separated from the passenger compartment are not considered for intrusion. This would include trunk areas and rear cargo areas of hatchbacks and station wagons, which were covered by a privacy curtain/shelf. The area above the privacy curtain/shelf is considered for intrusion and would be listed under **Other** enclosed area.

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (*i.e.*, open) at the time of the crash, the entire area is listed as row 2. Otherwise, this area is assessed under **Other** enclosed area.

A problematic area in vans is the situation where a row was removed prior to the crash. A seat row area that was removed prior to an crash should be selected as an **Other** enclosed area; however, it should be tabulated as a seat row to identify any sequential rows.

Vans with single seating positions behind the Front Row (usually high back swivel chairs) are compressed into a single seat row.

The fifth row in a van (envisioned as a rare occurrence) is identified as an **Other** enclosed area.

Catastrophic
is used when the intrusion damage to the occupant compartment is so devastating that the researcher is not able to discern any of the following: specific occupant locations, intruding components, magnitude of intrusions, and dominant crush. When catastrophic is selected, the program automatically encodes the **Area** as "other"; the **Magnitude** as "Catastrophic"; and the **Crush Direction** as "Catastrophic". **The Researcher must** select the **Intruded Component** as "Catastrophic"; **AND** leave the columns for **Comparison, Intruded**, and **Intrusion** blank.

Other (Specify):
is an area where no defined row exists. This would include an area where the entire seat row was folded down prior to the crash. Occasionally, the middle seat row in a passenger van will be removed leaving only the front and rearmost seat rows. If intrusion occurs within this area, the location should be identified here and specified.

Unknown
is used for the following situations.

The researcher cannot determine if there was any intrusion.
The vehicle was under repair (or repaired) at the time of inspection.

POSITION

Screen Name: Position

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Left
Middle
Right
[Catastrophic]
Unknown

Source: Vehicle inspection.

Remarks:

Each row is equally divided into three sectors regardless of the seating configuration.

In the situation where half of the row is folded down (*i.e.*, split back seats) to accommodate cargo, the entire lateral area (wall-to-wall) is divided into three equal sectors.

The following rules guide us in the determination of "seat rows" versus "other enclosed areas" and in the derivation of the lateral dimension of each row sector.

The lateral occupant space dimension for the front seat row is obtained by measuring the distance from the vehicle's side-surface to side-surface (undamaged dimension) and dividing by three. **Note, there is no implied correlation between seating capacity and sectors.**

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (*i.e.*, open) at the time of the crash, the entire area is divided into three sectors.

Left
is defined as the left sector of the row (i.e., sectors 11, 21, 31, 41). The lateral dimension of this area is mathematically determined by dividing the original wall-to-wall dimension by three.

Middle
is defined as the center sector of the row (i.e., sectors 12, 22, 32, 42).

Right
is defined as the right sector of the row (i.e., sectors 13, 23, 33, 43).

[INTRUSION LOCATION]

Page 1 of 2

Screen Name: N/A

SAS Data Set: **INTRSN**
SAS Variable: **INLOC**

Element Attributes: **See diagram / codes below**

Source: Vehicle inspection.

Remarks:
The interior space of a vehicle is divided into specific sectors as outlined in the following diagram. These sectors are based upon seat rows and **NOT OCCUPANT SEAT LOCATIONS**. Cargo areas open to the passenger area (*i.e.*, station wagons, vans, etc.) are assessed in these variables. Intrusion into the trunk area of an automobile with a rear seat position or into a cargo area covered by a privacy curtain/shelf is excluded.

11	12	13
21	22	23
31	32	33
41	42	43
51	52	53

When the entire seat row is folded down or removed prior to the crash, this area is considered an **Other** enclosed area**.**
The following rules guide us in the determination of "seat rows" versus "other enclosed areas" and in the derivation of the lateral dimension of each row sector.

Cargo areas in passenger cars which are separated from the passenger compartment are not considered for intrusion. This would include trunk areas and rear cargo areas of hatchbacks and station wagons which were covered by a privacy curtain/shelf. The area above the privacy curtain/shelf is considered for intrusion and would be listed under **Other** enclosed area.

The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the crash. When at least one seat was in the operational mode (*i.e.*, open) at the time of the crash, the entire area is listed as row 2. Otherwise, this area is assessed under **Other** enclosed area.

Intrusion Location (cont'd)

A problematic area in vans is the situation where a row was removed prior to the crash. A seat row area that was removed prior to an crash should be selected as an **Other** enclosed area; however, it should be tabulated as a seat row to identify any sequential rows.

Catastrophic
is used when the intrusion damage to the occupant compartment is so devastating that the researcher is not able to discern any of the following: specific occupant locations, intruding components, magnitude of intrusions, and dominant crush. When catastrophic is selected, the program automatically encodes the **Area** as "other"; the **Magnitude** as "Catastrophic"; and the **Crush Direction** as "Catastrophic". **The Researcher must** select the **Intruded Component** as "Catastrophic"; **AND** leave the columns for **Comparison, Intruded**, and **Intrusion** blank.

Other (Specify):
is an area where no defined row exists. This would include an area where the entire seat row was folded down prior to the crash. Occasionally, the middle seat row in a passenger van will be removed leaving only the front and rearmost seat rows. If intrusion occurs within this area, the location should be identified here and specified.

Unknown
is used for the following situations.

The researcher cannot determine if there was any intrusion.
The vehicle was under repair (or repaired) at the time of inspection.

AREA

Screen Name: Area

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Interior Components
Exterior Components
Other

Source: Vehicle inspection.

Remarks:

This variable filters the forthcoming intruding components with respect to whether they were internal or external to the occupant compartment.

INTRUDED COMPONENT

Page 1 of 4

Screen Name: Intruded Component

SAS Data Set: **INTRSN**
SAS Variable: **INCOMP**

Element Attributes:

	Interior Components
1	Steering assembly
2	Instrument panel left
3	Instrument panel center
4	Instrument panel right
5	Toe pan
6	A (A1/A2)-pillar
7	B-pillar
8	C-pillar
9	D-pillar
10	Side panel - forward of the A1/A2-pillar
11	Door panel (side)
12	Side panel - rear of the B-pillar
13	Roof (or convertible top)
14	Roof side rail
15	Windshield
16	Windshield header
17	Window frame
18	Floor pan (includes sill)
19	Backlight header

	Interior components cont'd
20	Front seat back
21	Second seat back
22	Third seat back
23	Fourth seat back
24	Fifth seat back
25	Seat cushion
26	Back door/panel (*e.g.*, tailgate)
27	Other interior component (specify):
	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)
99	[Unknown]

Source: Vehicle inspection.

Remarks:

Select the component which has reduced the occupant space for that sector. An intruded component is assessed for its Dominant Crush Direction as determined from the Magnitude of Intrusion. For example, an instrument panel may intrude both longitudinally and vertically. The final coded intrusion will reflect the instrument panel with the dominant crush direction (vertical or longitudinally). If the dominant intrusion cannot be determined in the field (i.e., an exemplar vehicle is required for comparison measurements) the Researcher should document the component (i.e., instrument panel) in both directions. However, during final completion of the case, only the instrument panel intrusion with the greater magnitude is coded, the other intrusion row is deleted.

Intruded Component (cont'd)

INTERIOR COMPONENTS:

Steering assembly
consists of the entire steering column which includes the steering rim, hub, and spokes.

Instrument panel left
refers to the left one-third of the panel. This should correlate with the same lateral dimension generated for the sector “11" (Front Seat Left) in variables Row and Position.

Instrument panel center
refers to the center one-third area of the instrument panel. This should correlate with the same lateral dimension generated for the sector “12" (Front Seat Middle) in variable Row and Position.

Instrument panel right
refers to the right one-third of the instrument panel. This should correlate with the same lateral dimension generated for the sector “13" (Front Seat Right) in variables Row and Position.

Toe pan
refers to the front portion of the floor that angles up to meet the dash panel.

A (A1/A2)-pillar
refers to the upper and lower portion of the forward most structural post of the passenger compartment on both side planes. Some vehicles (*e.g.*, GM APV minivan) are designed with two upper A-pillars on each side. The forward most pillar is called an A1-pillar which is primarily designed to secure the windshield to the vehicle. The second pillar is labeled as an A2-pillar. This pillar generally lends support to the roof and also helps to establish the front door opening. Annotation should be provided on the Interior Vehicle Form specifying which pillar was most severely intruded.

B-pillar
refers to the upper and lower portion of the structural post located at the rear edge of the front doors on both side planes. It should be noted, some vehicles do not have upper B-pillars.

C-pillar
refers to the upper and lower portion of the structural side post located at the rearmost edge of the rear door of a four door vehicle or the upper portion of the structural side post located between the backlight and side window glass on two door vehicles.

D-pillar
refers to the upper and lower portion of the structural post rearward of the C-pillar. D-pillars are usually available on station wagons, vans, or utility vehicles. The D-pillar is not to be confused with the C-pillar which is the rearmost pillar of the passenger compartment on most two and four door vehicles.

Intruded Component (cont'd)

Side panel forward of the A1/A2-pillar
refers to the interior panel located on the side of the vehicle and forward of the front doors. This includes areas directly below the instrument panel sometimes referred to as a "kickpanel".
See **A-pillar** for A1/A2 definition.

Door panel (side)
refers to the side interior surface and related components of a door.

Side panel rear of the B-pillar
refers to any side surface area excluding doors, window frames, and associated glazing rearward of the B-pillar, below the roof rail, above the sill, and in front of any back door or wall.

Roof (or convertible top)
refers to the top structural member of the greenhouse supported by the side pillars, windshield header and backlight header.

Roof side rail
refers to the longitudinal horizontal stiffeners located along the edge of the roof.

Windshield
refers to the lateral glazing located at the forward most surface of the greenhouse.

Windshield header
refers to the front forward lateral edge of the roof directly above the windshield.

Window frame
refers to the longitudinal frame that encloses the side window glazings and composes that portion of the door above the window sill.

Floor pan (includes sill)
refers to the floor of the vehicle. This includes the lower portion of the passenger compartment (*e.g.*, door sills).

Backlight header
refers to the rear most lateral edge of the roof directly above the backlight.

Front seat back
refers to the back support of the front seat.

Second seat back
refers to the back support of any second-row seat.

Third seat back
refers to the back support of any third-row seat.

Intruded Component (cont'd)

Fourth seat back
refers to the back support of any fourth-row seat.

Fifth seat back
refers to the back support of any fifth-row seat.

Seat cushion
refers to the horizontal portion of the seat assembly that was designed for seating.

Back door / panel (*e.g.*, tailgate)
refers to the interior surface and related components of the back door or if no door exists, the interior surface of the back wall.

Other interior component
refers to any interior component that may intrude into an occupant seating position.

EXTERIOR COMPONENTS:

Hood
refers to the horizontal structure covering the front compartment of the vehicle located forward of the windshield.

Outside surface of this vehicle
is selected when any outside surface of this vehicle not mentioned above has violated the internal boundary surface of the passenger compartment (*e.g.*, spare tire, jack, outside mirror, etc.).

Other exterior object in the environment
refers to an object external to the vehicle (trees, poles, other vehicle, etc.) which penetrates the internal boundary of this vehicle.

Unknown exterior object
is selected if there is evidence that an object intruded but it's unknown what that object was.

Intrusion of unlisted component(s)
is used if there is intrusion of any component not listed above.

Unknown
is used for the following situations.

The researcher cannot determine if there was any intrusion.
The vehicle was under repair at the time of inspection.

COMPARISON VALUE (OF INTRUSION)

Screen Name: Comparison

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Record to the nearest centimeter
[Catastrophic]
[Unknown]

Source: Vehicle inspection.

Remarks:

Follow the instructions for determining vehicle intrusions, establishing axes, and determining comparison values found in **Occupant Area Intrusion Overview**.

Enter the Comparison value for the intruded component.

INTRUDED VALUE (OF INTRUSION)

Screen Name: Intruded

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Record to the nearest centimeter
[Catastrophic]
[Unknown]

Range:

Source: Vehicle inspection.

Remarks:

Follow the instructions for determining vehicle intrusions, establishing axes, and determining intruded values found in **Occupant Area Intrusion Overview**.

Enter the Comparison value for the intruded component.

INTRUSION

Screen Name: Intrusion

SAS Data Set: **INTRSN**
SAS Variable: **INMEAS**

Element Attributes:

	Record to the nearest centimeter
77	[Catastrophic]
99	[Unknown]

Source: Vehicle inspection.

Remarks:

Follow the instructions for determining vehicle intrusions, establishing axes, and determining Intrusion values found in **Occupant Area Intrusion Overview**.

The Intrusion value is computed if the Researcher enters both an **Intruded** value and a **Comparison** value.

The extent of a component intrusion into a row sector should not exceed the pre-impact dimension of that sector. For example, if the front row width is 150 centimeters, each sector is equal to 50 centimeters. If the driver-side door panel intrudes 60 centimeters laterally, the intrusion is listed as:

Front Row Left (sector 11) Intrusion Magnitude = 50cm (maximum amount for that sector)
Front Row Middle (sector 12) Intrusion Magnitude = 10cm (the remaining amount for the door panel intrusion).

If the magnitude cannot be measured, but can be visibly seen, estimate the intrusion in the Magnitude variable that follows this variable.

Unknown
is used in the following situations.
The researcher cannot determine if there was any intrusion.
The vehicle was under repair at the time of inspection.
The researcher was not able to measure or reasonably estimate the intrusion.

MAGNITUDE OF INTRUSION

Screen Name: Magnitude

SAS Data Set: **INTRSN**
SAS Variable: **INMAG**

Element Attributes:

0	<= 2 cm
1	>= 3 cm but < 8 cm
2	>= 8 cm but < 15 cm
3	>= 15 cm but < 30 cm
4	>= 30 cm but < 46 cm
5	>= 46 cm but < 61 cm
6	>=61 cm
7	[Catastrophic]
9	[Unknown]

Source: Vehicle inspection.

Remarks:

When the **Intrusion** is calculated by the program, is automatically assigns a magnitude or range to the intrusion. The researcher may select a magnitude for an intruded component while awaiting comparison values. If the magnitude cannot be measured, due to physical limitations but can be visibly seen, estimate the magnitude of the intrusion.

Unknown
is used in the following situations.
The researcher cannot determine if there was any intrusion.
The vehicle was under repair at the time of inspection.
The researcher was not able to measure or reasonably estimate the intrusion.

Screen Name: Crush Direction

SAS Data Set: **INTRSN**
SAS Variable: **CDRIR**

Element Attributes:

1	Vertical
2	Longitudinal
3	Lateral
7	[Catastrophic]
9	[Unknown]

Source: Vehicle inspection.

Remarks:

This variable assesses the direction of displacement for the intruded component. The direction of movement is determined independently from the PDOF applied to the vehicle.

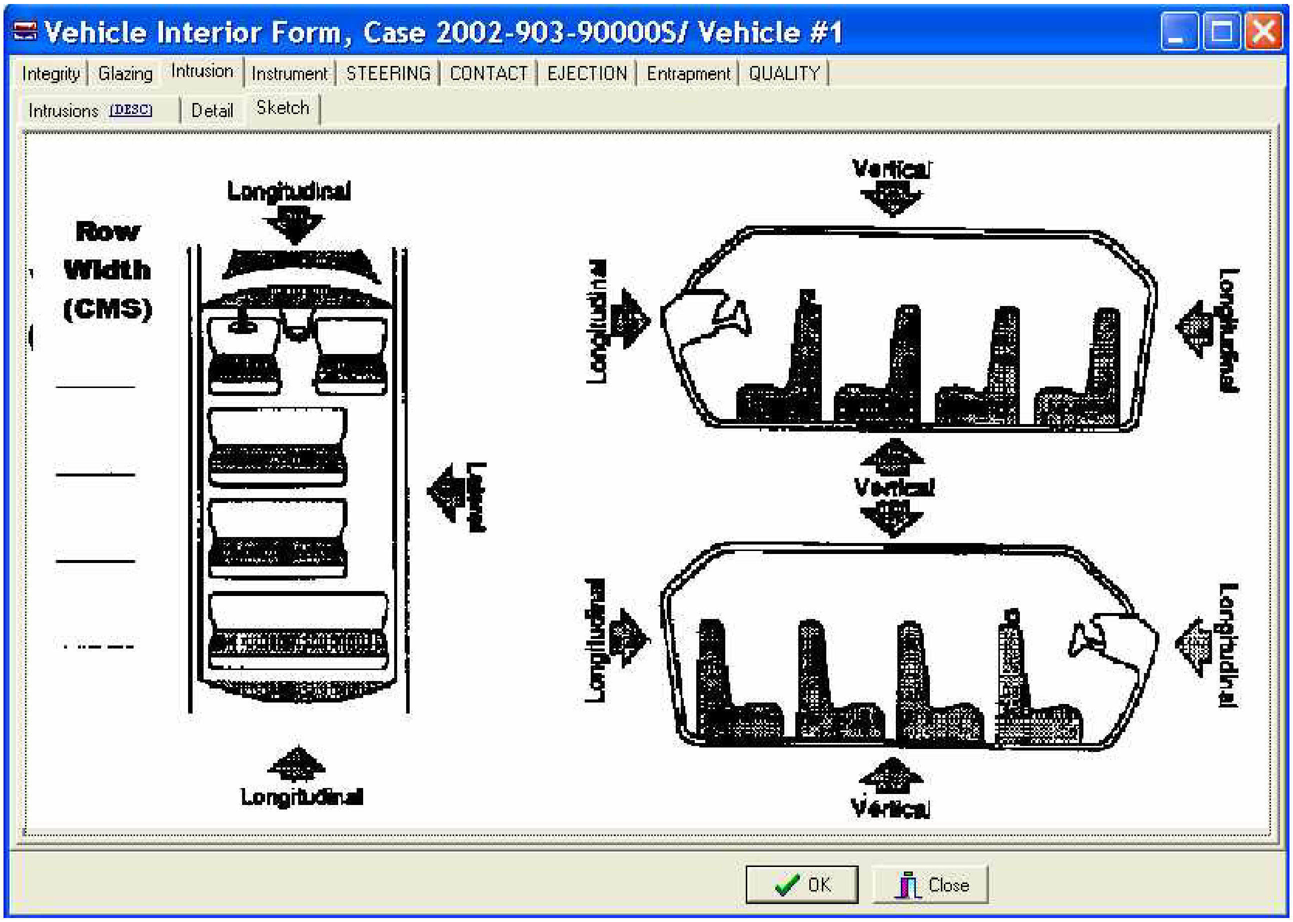
Vertical
refers to components which intrude into the passenger compartment from either an upward or downward direction.

Longitudinal
refers to components which move forward or rearward into the passenger compartment.

Lateral
refers to components which are displaced either left or right within the passenger compartment.

Unknown
is used for the following situations.
The researcher cannot determine if there was any intrusion.
The vehicle was under repair at the time of inspection.

INTRUSION / SKETCH


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
Intrusions (DESC)
Detail
Sketch
Row
Width
(CMS)
Longitudinal
Longitudinal
Longitudinal
Vertical
Vertical
Vertical
Longitudinal
Longitudinal
Longitudinal
Longitudinal
OK
Close

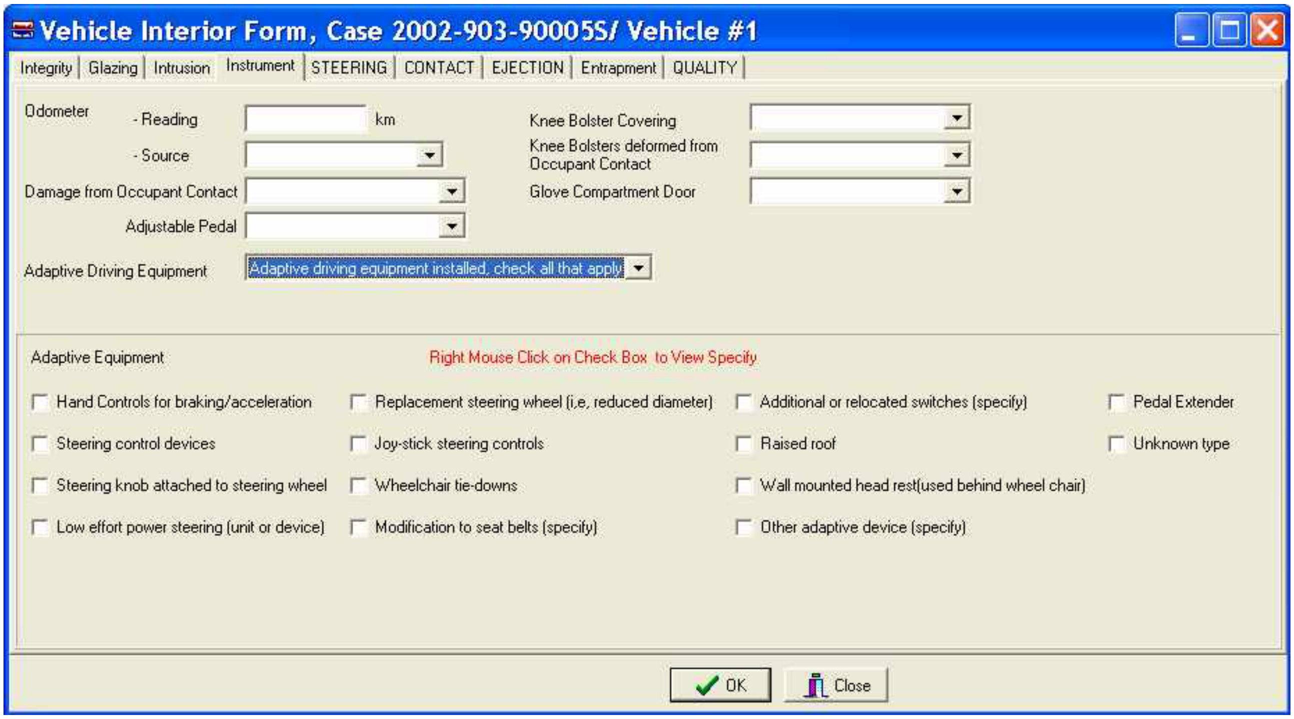
INTRUSION SKETCH COMPLETION

The following should be included for all intrusion sketches:

Row width for all rows in the vehicle
A rough sketch of the Intruded components and their approximate displacement
Cross out or erase rows which are not present in the vehicle
Applicable annotations

An example sketch is provided below:

Instrument


Vehicle Interior Form, Case 2002-903-90005S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
OK
Close

Odometer - Reading km

- Source

Damage from Occupant Contact

Adjustable Pedal

Adaptive Driving Equipment: Adaptive driving equipment installed, check all that apply

Knee Bolster Covering

Knee Bolsters deformed from Occupant Contact

Glove Compartment Door

Adaptive Equipment

Right Mouse Click on Check Box to View Specify

☐ Hand Controls for braking/acceleration
☐ Steering control devices
☐ Steering knob attached to steering wheel
☐ Low effort power steering (unit or device)
☐ Replacement steering wheel (i,e, reduced diameter)
☐ Joy-stick steering controls
☐ Wheelchair tie-downs
☐ Modification to seat belts (specify)
☐ Additional or relocated switches (specify)
☐ Raised roof
☐ Wall mounted head rest(used behind wheel chair)
☐ Other adaptive device (specify)
☐ Pedal Extender
☐ Unknown type

ODOMETER READING

Screen Name: Odometer Reading

SAS Data Set: **VI**
SAS Variable: **ODOMETER**

Element Attributes:

Range: 000,001 through 1,000,000
Enter odometer reading
9999999 Unknown

Source: Primary source is the vehicle inspection, secondary sources include the interviewee, and repair facility.

Remarks:

Enter the number of miles displayed on the odometer.

This variable measures the distance the vehicle has traveled. However, in cases where it is known that the odometer was working but had turned over (*i.e.*, recycled) the recorded value represents the total distance traveled by the vehicle rather than the reading on the odometer. Annotate in **Odometer Source** the source of information when it is determined that the odometer had turned over.

Unknown
is used when:

it is known that the odometer was disconnected or broken before the collision;

the vehicle is equipped with an electronic instrument cluster and an analog "back-up" odometer is not present; or

the vehicle's odometer reading is unknown.

the vehicle was manufactured without an odometer.

ODOMETER SOURCE

Screen Name: Odometer - - Source

SAS Data Set: **VI**
SAS Variable: **ODOMSRC**

Element Attributes:

0	[Unknown odometer reading]
1	Vehicle Inspection
2	Interview
3	Repair Facility
8	Other

Source: Primary source is the vehicle inspection; secondary sources include Interviewees and repair facilities

Remarks:

Indicate the source that was used to make the vehicle's mileage determination. For example: if it is evident from the vehicle inspection that the vehicle has gone over 100,000 miles, and the odometer indicates 2,300 miles, code the mileage as 102,300 (164,636 kilometers) and indicate the source as **Vehicle Inspection.**

INSTRUMENT PANEL DAMAGE FROM OCCUPANT CONTACT

Screen Name: Damage from Occupant Contact

SAS Data Set: **VI**
SAS Variable: **PANELDAM**

Element Attributes:

0	No
1	Yes
9	Unknown

Source: Vehicle inspection only.

Remarks:

Instrument panel damage is defined as damage caused by occupant contact during the impact sequence. This damage includes: breakage, dents, scratches, and abrasions. Deformities resulting from impact forces such as lateral shift or buckling are excluded.

On vehicles without knee bolsters, The instrument panel is defined as that panel extending

o

er

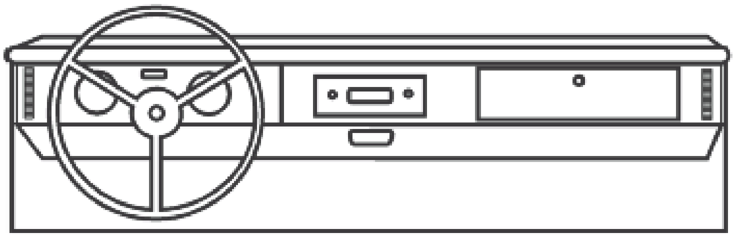


FIGURE 1

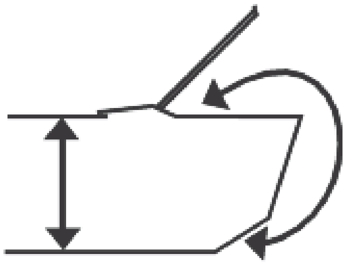


FIGURE 2

No
is selected when the instrument panel was not damaged by occupant contact.

Yes
is selected when the instrument panel was damaged by occupant contact.

Unknown
is selected when:

the instrument panel is under repair or replaced.
it cannot be determined if there was occupant contact to the instrument panel.

TYPE OF KNEE BOLSTER COVERING

Screen Name: Knee Bolster Covering

SAS Data Set: **VI**
SAS Variable: **BOLSTYPE**

Element Attributes:

0	No Knee Bolster
1	Padded
2	Rigid Plastic
8	Other (specify):________
9	Unknown

Source: Vehicle inspection.

Remarks:

Knee bolsters are generally present in vehicles equipped with air bags.

More recent vehicles have bolsters which are not so obvious. Generally, presence of an air bag or a two point automatic belt system would be a solid indicator of bolster presence. When in doubt, **and** in the presence of either an air bag or two point belt, record bolster presence.

The most obvious of this device is the "parcel tray" type of bolster in the Volkswagen Rabbit which was equipped with the two point shoulder belt that was anchored in the top of the door frame and at the console.

No knee bolster
is selected when no knee bolster is present.

Padded
refers to a knee bolster which is covered with a soft, pliable or padded surface.

Rigid plastic
refers to a knee bolster that is either constructed of or covered by a hard, rigid plastic surface.

Other
is selected when a knee bolster is present but it is constructed of or covered by some other material such as metal.

Unknown
is selected when it cannot be determined if a knee bolster is present or the covering cannot be identified (*e.g.* burned vehicles). This should be a rare occurrence.

KNEE BOLSTERS DEFORMED FROM OCCUPANT CONTACT

Screen Name: Knee Bolsters Deformed from Occupant Contact

SAS Data Set: **VI**
SAS Variable: **BOLSTDEF**

Element Attributes:

0	[No knee bolster]
1	No- deformation
2	Yes - deformation
9	Unknown

Source: Vehicle inspection.

Remarks:

Knee bolsters are defined as energy absorbing panels fitted to the lower portion of the instrument panel to help restrict forward movement of the front seat occupant's lower body during an crash. Knee bolsters may or may not extend from A-pillar to A-pillar depending on the vehicle make and model. Vehicles equipped with an air bag are generally equipped with a knee bolster.

Vehicles equipped ***ONLY*** with a passive restraint system using **only** an upper torso (shoulder) belt (such as certain Volkswagen Rabbits) generally are equipped with a knee bolster. This padded attachment is designed to prevent the occupant from submarining under the shoulder belt and instrument panel during an impact. This variable reports deformation (indentation) of the knee bolster as a result of occupant contact and not as a result of impact related damage.

[No knee bolster]
is automatically selected when no knee bolster is present.

No deformation
is selected when a knee bolster is present but is not deformed by occupant contact.

Yes — deformation
is selected when occupant caused deformation is present on the knee bolster. Minor dents are considered deformation; however, scuffing and transfers are not deformation. Occupant contact evidence is included on the Vehicle Interior Sketches, Point of Contact Sketches, and highlighted in the photographs.

Unknown
is selected when knee bolster deformation is present but it is unknown if it was caused by an occupant .

DID GLOVE COMPARTMENT DOOR OPEN DURING COLLISION(S)?

Screen Name: Glove Compartment Door

SAS Data Set: **VI**
SAS Variable: **GLOVOPEN**

Element Attributes:

0	No glove compartment door
1	No — door did not open
2	Yes — door opened
9	Unknown

Source: Researcher determined — inputs include the vehicle inspection and interview.

Remarks:

This variable reports the status of the glove compartment door (if present) during the crash. The primary objective is to determine whether the door latch mechanism released during a collision(s).

No glove compartment door
is selected when no glove compartment door is available

No — door did not open
is selected when the door did not open or the door opened but the latch mechanism did not fail (*e.g.*, body of door separates from the latch mechanism which is intact and engaged).

Yes — door opened
is selected when the door opened because the latch mechanism released. Reasons may include: occupant contact, shifting or buckling of vehicle components, or impact forces.

Unknown
is selected when:

that portion of the instrument panel is under repair, or

the glove box door is known to be open but it is unknown whether the door opened as a result of the crash [*i.e.*, door could have been open prior to the crash, or it could have been opened after the crash (*e.g.*, to remove driver registration information)].

ADJUSTABLE PEDALS

Screen Name: Adjustable Pedal

SAS Data Set: **VI**
SAS Variable: **ADJPED**

Element Attributes:

1	No adjustable pedals
2	Full forward (toward toe pan)
3	Mid position
4	Full rearward (toward driver)
8	Position unknown
9	Unknown if adjustable pedals present

Source: Investigator determined — primary source is the vehicle inspection, secondary source is driver interview.

Remarks:

ADAPTIVE (ASSISTIVE) DRIVING EQUIPMENT

Screen Name: Adaptive Driving Equipment

SAS Data Set: **VI**
SAS Variable: **ADAPTEQ**

Element Attributes:

0	No adaptive driving equipment installed
1	Yes, adaptive driving equipment installed
9	Unknown if adaptive driving equipment installed

Source: Investigator determined — primary source is the vehicle inspection, secondary source is driver interview.

Remarks:
Adaptive driving equipment is defined as equipment whose primary purpose is to assist persons with disabilities in the operation of a vehicle. This variable is designed to capture those vehicles that have this type of after-market adaptive driving equipment installed. Use of the equipment at the time of the crash is irrelevant. Be alert for evidence of equipment that may have been removed between the time of the crash and the time of inspection. The device(s) must be present at the driving position (e.g., wheelchair tie downs).

No adaptive driving equipment
is used when it is determined that no adaptive equipment was present in the vehicle at the time of the crash.

Yes, adaptive driving equipment installed
is used when it is determined that adaptive equipment was present in the vehicle at the time of the crash. Use of the equipment at the time of the crash is not to be considered.

Unknown if adaptive device installed
is used when it cannot be determined if any adaptive driving devices were installed in the vehicle at the time of the crash.

ADAPTIVE (ASSISTIVE) DRIVING EQUIPMENT

Screen Name: Adaptive Driving Equipment

SAS Data Set: **ADAPTEQ**
SAS Variable: **EQUIPTYP**

Element Attributes:

1	Hand controls for braking/acceleration
2	Steering control devices (attached to OEM steering wheel)
3	Steering knob attached to steering wheel
4	Low effort power steering (unit or device)
5	Replacement steering wheel (*i.e.* reduced diameter)
6	Joy-stick steering controls
7	Wheelchair tie-downs
8	Modifications to seat belts (specify)
9	Additional or relocated switches (specify)
10	Raised roof
11	Wall mounted head rest (used behind wheelchair)
12	Pedal extender
98	Other adaptive device (specify)
99	Unknown type of adaptive device
	Unknown if adaptive driving equipment installed

Source: Investigator determined — primary source is the vehicle inspection, secondary source is driver interview.

Remarks:
Adaptive driving equipment is defined as equipment whose primary purpose is to assist persons with disabilities in the operation of a vehicle. This variable is designed to capture those vehicles that have this type of after-market adaptive driving equipment installed. Use of the equipment at the time of the crash is irrelevant. Be alert for evidence of equipment that may have been removed between the time of the crash and the time of inspection. The device(s) must be present at the driving position (e.g., wheelchair tie downs).

ADAPTIVE EQUIPMENT INSTALLED, CHECK ALL THAT APPLY
is used when it is determined that adaptive equipment was present in the vehicle at the time of the crash. Use of the equipment at the time of the crash is not to be considered.

Hand controls for braking / acceleration
does not include normal cruise control

Adaptive (Assistive) Driving Equipment (cont'd)

Steering control devices (attached to OEM steering wheel)
includes handles and arms used to assist in the operation of the vehicle

Steering knob attached to steering wheel
is used to help in the turning of the vehicle. May sometimes be referred to as a "suicide knob".

Low effort power steering (unit or device)
can possibly be identified by looking under the hood for an enhanced pump.

Replacement steering wheel (i.e. reduced diameter)
some after-market suppliers have “chain-link” type steering wheels, they are **NOT** considered as adaptive equipment for persons with disabilities.

Joy-stick steering controls

Wheelchair tie-downs
are selected ONLY if they are present at the drivers' location.

Modifications to seat belts (specify)
comfort devices such as lambs wool coverings are NOT considered here.

Additional or relocated switches (specify)

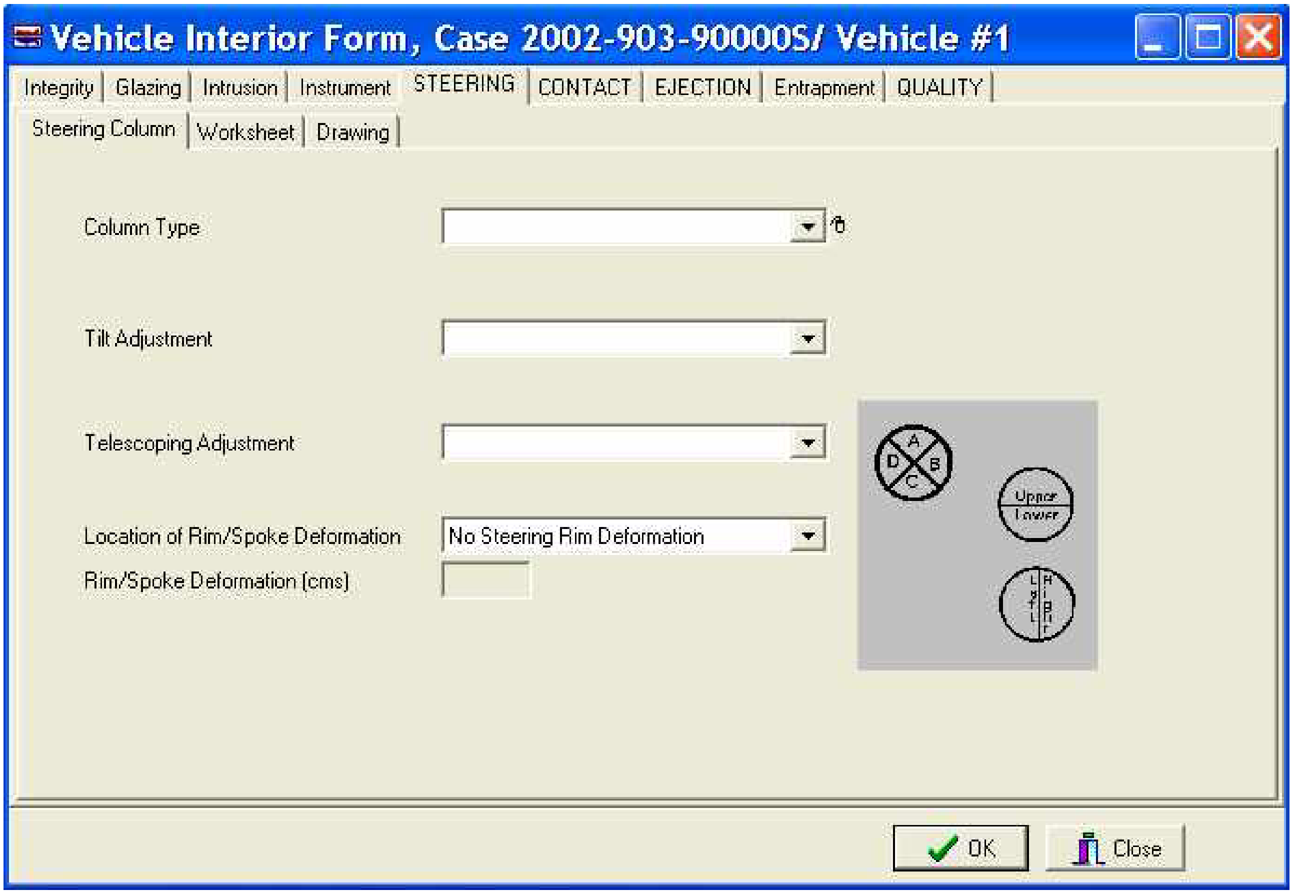
Raised Roof
will look like a second roof, not a camper-van type

Wall mounted head rest (used behind wheelchair)
are selected ONLY if they are present at the drivers' location

Other adaptive device (specify)
must be specified and sketched if possible. As an example, after-market pedal extenders used specifically for assist persons with disabilities in the operation of the foot controls would be included in this element.

Unknown type of adaptive device
is used when it is known there is an adaptive device for the driver, but the type of device is unknown

STEERING COLUMN


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1

Column Type

Tilt Adjustment

Telescoping Adjustment

Location of Rim/Spoke Deformation: No Steering Rim Deformation

Rim/Spoke Deformation (cms)

Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
Steering Column
Worksheet
Drawing
A
B
C
D
Upper
Lower
Left
Right
OK
Close

STEERING COLUMN TYPE

Screen Name: Column Type

SAS Data Set: **VI**
SAS Variable: **COLUMTYP**

Element Attributes:

1	Fixed column
2	Tilt column
3	Telescoping column
4	Tilt and telescoping column
8	Other column type (specify):
9	Unknown

Source: Vehicle inspection.

Fixed column
refers to a non-adjustable steering column. Note if “Fixed column” is selected the variables **Tilt Adjustment** and **Telescoping Adjustment** will be pre-coded as “No tilt steering column” and “No telescoping column”, respectively.

Tilt column
refers to a steering column designed to allow the steering wheel or column to be tilted at an angle selected by the operator to improve driving comfort. The presence of these types can generally be verified by the existence of an extra control stalk on the column. This stalk is separate from the turn signal, headlight, or wiper controls and is usually mounted near the bend point of the tilt wheel, or near the lower part of the instrument panel for the tilt column. Characteristically, the control stalk is unmarked and may be located on the left or right side of the column in relative proximity to the steering wheel end. Some vehicles are equipped with a “lever” device on the underside of the column, which allows placement of the entire column for driver comfort.

Telescoping column
refers to a steering column that has an adjustable length. The column can be shortened or lengthened to suit operator comfort. The telescoping feature can generally be identified by the presence of a knurled ring around the column. Rotating this ring allows the column to be lengthened or shortened, while re-tightening the ring locks the column at the desired adjustment.

Tilt and telescoping column
refers to a column that has both the tilt wheel and adjustable length features.

Other column type (specify)
includes steering columns which cannot be described above. This would include swing away columns, etc.

Unknown
Unknown is used if the column type cannot be determined.

TILT STEERING COLUMN ADJUSTMENT

Screen Name: Tilt Adjustment

SAS Data Set: **VI**
SAS Variable: **COLMTILT**

Element Attributes:

0	[No tilt steering column]
1	Full up
2	Between full up and center
3	Center
4	Between center and full down
5	Full down
9	Unknown

Source: Investigator determined; primary source is the vehicle inspection, other input is driver interview.

Remarks:

This variable is used to describe the pre-impact tilt position of adjustable steering columns.

Full up
refers to a vertically adjustable steering column that was in its highest position possible at the time of the crash.

Between full up and center
refers to a vertically adjustable steering column that was somewhere between full up and the center position at the time of the crash.

Center
refers to a vertically adjustable steering column that was in the center-most position (*e.g.* equal amounts of adjustment both above and below this position) at the time of the crash.

Between center and full down
refers to a vertically adjustable steering column that was somewhere between the center and full down position at the time of the crash.

Full down
refers to a vertically adjustable steering column that in its lowest possible position at the time of the crash.

Unknown
is selected when: it cannot be determined if the vehicle was equipped with a vertically adjustable steering column or the researcher cannot determine the pre-impact position of the vertically adjustable steering column.

TELESCOPING STEERING COLUMN ADJUSTMENT

Page 1 of 2

Screen Name: Telescoping Adjustment

SAS Data Set: **VI**
SAS Variable: **COLMTELE**

Element Attributes:

0	[No telescoping steering column]
1	Full back
2	Between full back and midpoint
3	Midpoint
4	Between midpoint and full forward
5	Full forward
9	Unknown

Source: Investigator determined; primary source is the vehicle inspection, other input is driver interview.

Remarks:

This variable is used to describe the pre-impact telescoping position of adjustable steering columns.

No telescoping steering column
is selected when the steering column does not have an adjustment to move the steering column/wheel longitudinally (forward and backward).

Full back
refers to a longitudinally adjustable steering column that was in its rearward-most position (toward the rear of the vehicle) at the time of the crash.

Between full back and midpoint
refers to a longitudinally adjustable steering column that was somewhere between the full back position (toward the rear of the vehicle) and the center position at the time of the crash.

Midpoint
refers to a longitudinally adjustable steering column that was in the center-most position (mid-point of the overall movement range) at the time of the crash.

Between midpoint and full forward
refers to a longitudinally adjustable steering column that was somewhere between the center position and the full forward position (toward the front of the vehicle) at the time of the crash.

Full forward
refers to a longitudinally adjustable steering column that was in the forward most position (toward the front of the vehicle) at the time of the crash.

Unknown
is selected when it cannot be determined if the vehicle was equipped with a longitudinally adjustable steering column or the researcher cannot determine the pre-impact position of the longitudinally adjustable steering column.

LOCATION OF RIM / SPOKE DEFORMATION

Page 1 of 2

Screen Name: Location of Rim / Spoke Deformation

SAS Data Set: **VI**
SAS Variable: **RDEFLOC**

Element Attributes:

0	No steering rim deformation
	Quarter Sections
1	Section A
2	Section B
3	Section C
4	Section D
	Half Sections
5	Upper half of rim/spoke
6	Lower half of rim/spoke
7	Left half of rim/spoke
8	Right half of rim/spoke
9	Complete steering wheel collapse
10	Undetermined location
99	Unknown

Source: Vehicle inspection.

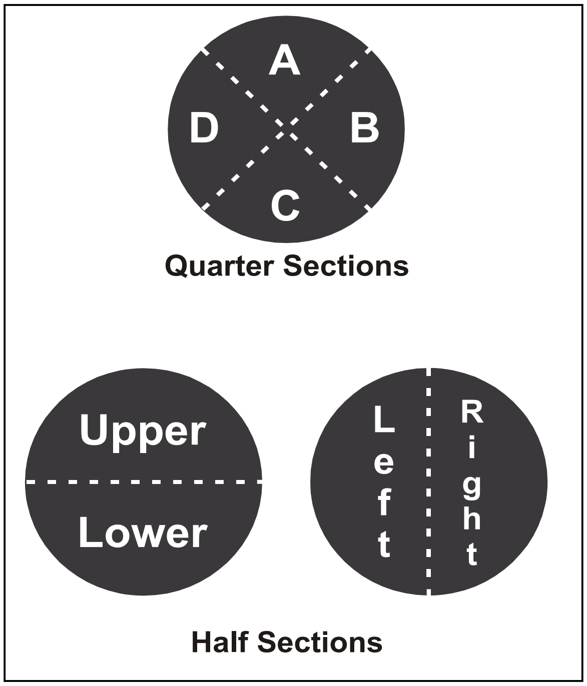
Remarks:

The variable **Rim / Spoke Deformation** must be coded with a value, in order to classify the **Location of Rim / Spoke Deformation**.

The steering wheel rim is divided into four quarter sections (A through D) and four half sections (upper half, lower half, left half, right half).

Note, the half designation should not be considered as a grouping of quarter sections.

The accompanying diagrams identify the location of the quarter and half sections.



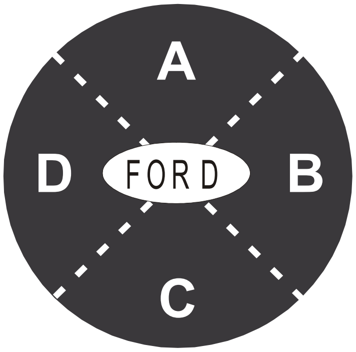
Quarter Sections

Half Sections

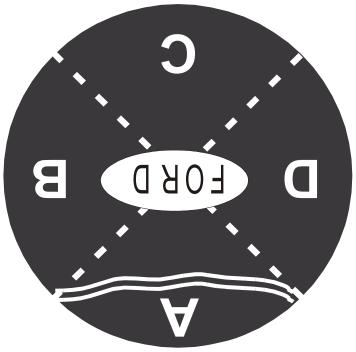
Location of Rim / Spoke Deformation (cont'd)

Page 1 of 2

Evaluate the deformation of the rim with respect to the wheel design and not the wheel position observed during the vehicle inspection. For example, if the designed top section was deformed and rotated to the bottom position, then the correct response for this variable is Quarter Sections - Section A; see below.



Straight Ahead Position



Post-Impact Position

When evaluating which quarter or half to encode, place primary emphasis upon downward deflection (toward the instrument panel) since the coding captures occupant-caused deformation. When two half sections are deformed, select the half with the greatest deformation.

Complete steering wheel collapse
is selected in the event two half sections are deformed axially downward (toward the instrument panel) beyond the hub.

Undetermined location
is selected when it is known the rim was deformed, but as the result of extrication or other post-impact activity the original deformed section could not be determined.

Unknown
is selected in the following situations.

It is not known if the rim was deformed by occupant contact.

An assessment of rim damage could not be made as the vehicle was repaired.

STEERING RIM / SPOKE DEFORMATION

Page 1 of 2

Screen Name: Rim /Spoke Deformation

SAS Data Set: **VI**
SAS Variable: **RIMDEF**

Element Attributes:

	Record actual measured deformation to the nearest centimeter
98	Indeterminate - Observed
99	Unknown

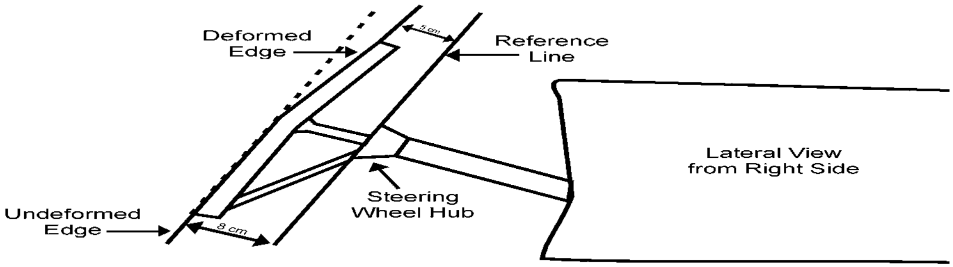
Source: Vehicle inspection.

Remarks:

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim which has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

The following diagram illustrates this measurement procedure. The undeformed edge is 8 centimeters from the reference line. The deformed edge is 5 centimeters from the reference line. Therefore, 3 centimeters of deformation occurred.



The coded value equals 3 cm

Value of Zero

is entered when there was no deformation caused by occupant contact of the rim or spokes. Check your observation by placing a flat object (*i.e.*, clipboard) across the plane of the steering rim prior to selecting this attribute.

Steering Rim / Spoke Deformation (cont'd)

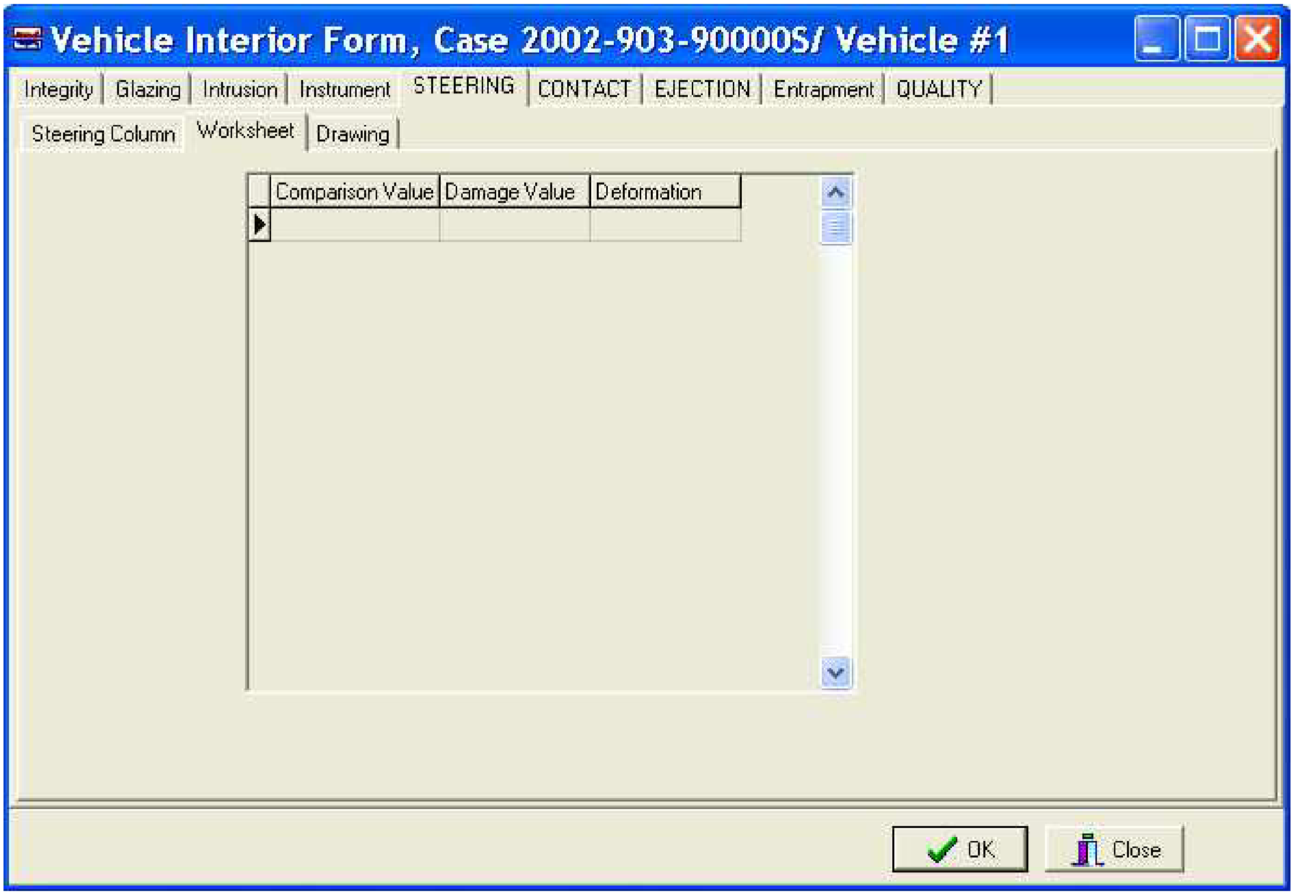
Value of 1
is entered when the deformation is greater than zero but less than 1.5 centimeters.

Indeterminate - Observed
is selected when the situation does not permit the direct measurement of a deformed rim.

Unknown
is selected in the following situations:

It is not known if the rim was deformed by occupant contact.
An assessment of rim damage cannot be made because the vehicle is repaired.

Steering / Worksheet


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
Steering Column
Worksheet
Drawing
OK
Close

Comparison Value	Damage Value	Deformation

COMPARISON VALUE

Screen Name: Comparison Value

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
No steering rim deformation
Record actual measured deformation to the nearest centimeters.
Actual measured value in centimeters

Source: Vehicle inspection.

Remarks:

Refer to the measurement diagram illustrated in **Rim / Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim which has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

DAMAGE VALUE

Screen Name: Damage Value

SAS Data Set: N/A
SAS Variable: N/A

Element Attributes:
No steering rim deformation
Record actual measured deformation to the nearest centimeters.
Actual measured value in centimeters

Source: Vehicle inspection.

Remarks:

Refer to the measurement diagram illustrated in **Rim / Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim which has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

DEFORMATION

Screen Name: Deformation

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
No steering rim deformation
Record actual measured deformation to the nearest centimeters.
Actual measured value in centimeters

Source: Vehicle inspection.

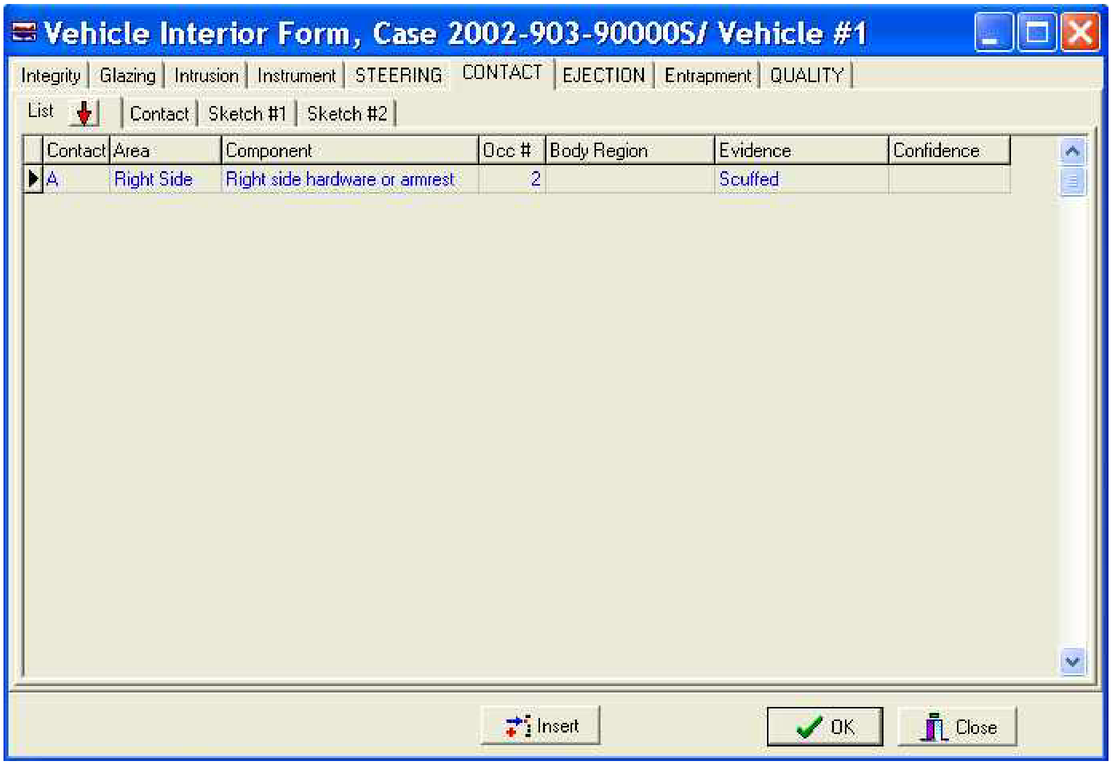
Remarks:

Refer to the measurement diagram illustrated in **Rim / Spoke Deformation**.

The intent is to capture deformation caused by occupant contact rather than induced damage.

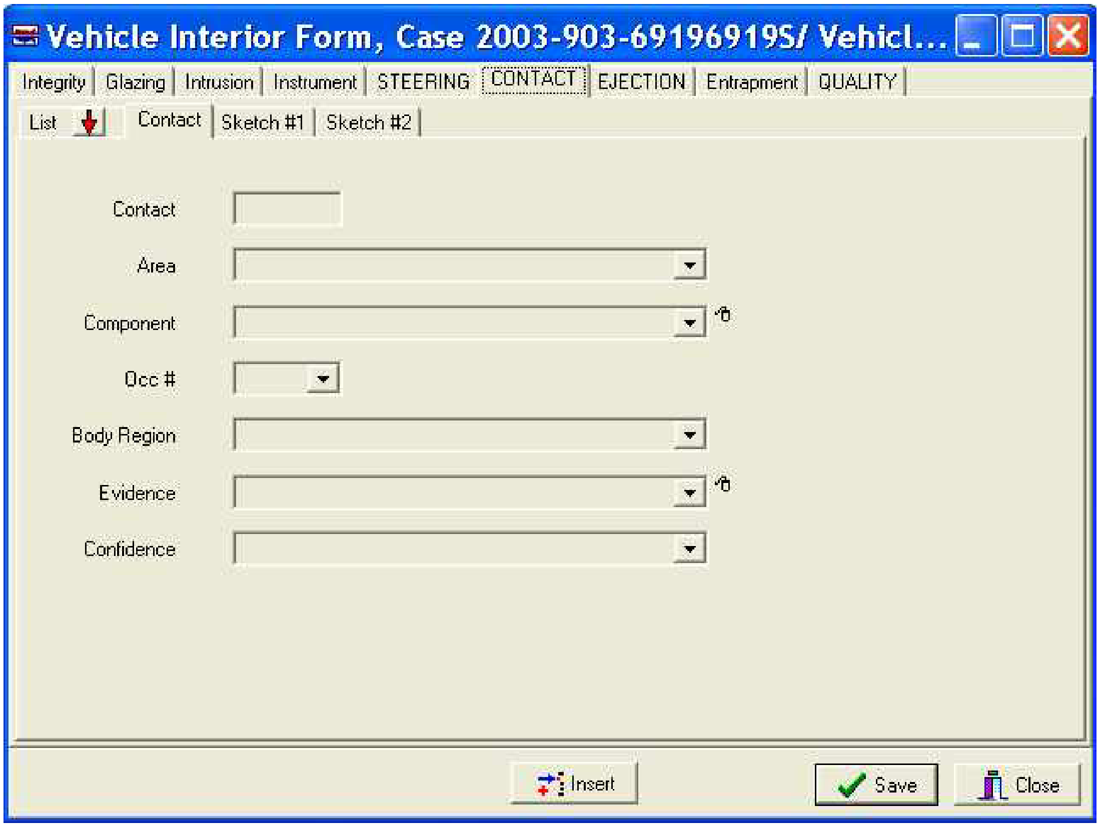
The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim which has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

Contact / List


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Contact
Sketch #1
Sketch #2
Insert
OK
Close

Contact	Area	Component	Occ #	Body Region	Evidence	Confidence
A	Right Side	Right side hardware or armrest	2		Scuffed	

CONTACT/Contact


Vehicle Interior Form, Case 2003-903-69196919S/ Vehicl...
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Contact
Sketch #1
Sketch #2
Contact
Area
Component
Occ #
Body Region
Evidence
Confidence
Insert
Save
Close

OVERVIEW / INSTRUCTIONS FOR COMPLETION OF VEHICLE INTERIOR SKETCHES AND POINT OF OCCUPANT CONTACT PAGES

The Vehicle Interior Sketches page and corresponding Point of Occupant Contact page provide a valuable link between vehicle interior documentation and occupant injury data. Properly completed, these records identify evidence of occupant contact points and relate the contact points to the part of the occupant's body that produced the evidence.

In completing the Vehicle Interior Sketches, assess the occupant trajectory in conjunction with the impact configuration, direction of force, and use of restraints. As contact points are identified, they should be documented as follows.

Open up Sketch 1 and Sketch 2 (by double clicking) to open them in Paint.

Leave the Sketches open or minimized for ease in navigating between the Detail Tab, and the Sketches.

Within the vehicle, highlight the contact point with yellow (or similar) tape for photographic purposes.

Sketch the damaged area on Sketches 1 and 2 (*e.g.*, radio, glove compartment, damage to instrument panel structure, etc.).

Label the Contact point with a sequential alpha character beginning with the letter “A”. To add contacted components go to the Title Bar and select “**Edit**” and then “**Insert**” and contact point “B” will appear.

On the Detail tab Select the Area (e.g., front, side, roof, Air Bag, etc.,).

Select the interior component contacted (i.e., windshield).

Select the number of the contacting occupant if it can be determined. (Note: if an occupant list for this vehicle does not appear, they must be added into the case structure on the Case Form, Structure tab, Occupant sub-tab).

Select the Body Region that is suspected of causing the contact point (e.g., head, ankle - left, elbow - right, etc.,).

Identify the type of evidence present (e.g., bent, cracked, scuffed, , etc.) in the "Evidence" variable.

Specify the confidence level which you feel best represents your selection of this particular component as a contact point, using the scale of: Certain, Probable, Possible, Unknown.

Annotate suspected area(s) through which the occupant was ejected or the area in which the occupant was entrapped.

CONTACT

Screen Name: Contact

SAS Data Set: **CONTACT**
SAS Variable: **REFID**

Element Attributes:

A
B
C
D, etc.

Source: Vehicle inspection

Remarks:

Identify the contact point. This will correspond to the label used in Sketch 1 or Sketch 2. To add contact points go to the main menu and select “**Edit**” and then “**Insert**” and contact point “B” will appear.

CONTACT AREA LABEL

Screen Name: Area

SAS Data Set: **CONTACT**
SAS Variable: **CONTAREA**

Element Attributes:

1	Front
2	Left Side
3	Right Side
4	Interior
5	Air Bag
6	Roof
7	Floor
8	Rear
50	Adaptive (Assistive) Driving Equipment

Source: Vehicle inspection

Remarks:

Identify the name of the area of the vehicle interior an occupant contacted. Choose the area from the pick list of valid attributes for interior components.

CONTACTED COMPONENT

Page 1 of 3

Screen Name: Component

SAS Data Set: **CONTACT**
SAS Variable: **CONTCOMP**

Element Values:

FRONT

1	Windshield
2	Mirror
3	Sunvisor
4	Steering wheel rim
5	Steering wheel hub/spoke
6	Steering wheel rim/hub/spoke
7	Steering column, transmission selector lever, other attachment
8	Cellular telephone or CB radio
9	Add on equipment (*e.g.*, tape deck, air conditioner)
10	Left instrument panel and below
11	Center instrument panel and below
12	Right instrument panel and below
13	Glove compartment door
14	Knee bolster
15	[Dr only] WS incl 1/+: fr hdr, A pill, instr pnl, mirror, or steering assembly
16	[Pass only] WS incl 1/+: fr hdr, A pill, instr pnl, or mirror
17	Windshield reinforced by exterior object (specify)
19	Other front object (specify):
20	Sunvisor reinforced by exterior object

LEFT SIDE

51	Left side interior surface, excluding hardware or armrests
52	Left side hardware or armrest
53	Left A (A1/A2)-pillar
54	Left B-pillar
55	Other left pillar (specify):
56	Left side window glass
57	Left side window frame
58	Left side window sill
59	Lt side glass +: frame, win sill, A pill, B pill, or roof side rail
60	Other left side object (specify):

RIGHT SIDE

101	Right side interior surface, excluding hardware or armrests
102	Right side hardware or armrest
103	Right A (A1/A2)-pillar
104	Right B-pillar
105	Other right pillar (specify):
106	Right side window glass
107	Right side window frame
108	Right side window sill
109	Rt side glass +: frame, win sill, A pill, B pill, or roof side rail
110	Other right side object (specify):

INTERIOR

151	Seat, back support
152	Belt restraint webbing/buckle
153	Belt restraint B-pillar or door frame attachment point
154	Other restraint system component (specify):
155	Head restraint system
160	Other occupants (specify):
161	Interior loose objects
162	Child safety seat (specify):
163	Other interior object (specify):
164	Center console first row
165	Center console second row
166	Center console other row
167	Fold down armrest first row
168	Fold down armrest second row
169	Fold down armrest other row
570	Same occupant contact (specify):
571	Interior loose object (specify):
572	Seat LATCH points for child restraints
573	Grab handles
574	Engine shroud / cover
575	Seatback trays

Element Values: (cont'd)

AIR BAG

170	Air bag-driver side
175	Air bag compartment cover-driver side
180	Air bag-passenger side
185	Air bag compartment cover-passenger side
190	Other air bag (specify)
195	Other air bag compartment cover (specify)

ROOF

201	Front header
202	Rear header
203	Roof left side rail
204	Roof right side rail
205	Roof or convertible top
206	Roof maplight/console
207	Sunroof/components
208	Roll bar

FLOOR

251	Floor (including toe pan)
252	Floor or console mounted transmission lever, including console
253	Parking brake handle
254	Foot controls including parking brake

REAR

301	Backlight (rear window)
302	Backlight storage rack, door, etc.
303	Other rear object (specify):

ADAPTIVE (ASSISTIVE) DRIVING EQUIPMENT

401	Hand controls for braking /acceleration
402	Steering control devices (attached to OEM steering wheel)
403	Steering knob attached to steering wheel
404	Replacement steering wheel (*i.e.*,reduced diameter)
405	Joy stick steering controls
406	Wheelchair tie-downs
407	Modification to seat belts,(specify):
408	Additional or relocated switches, (specify):
409	Raised roof
410	Wall mounted head rest (used behind wheel chair)
411	Other adaptive device (specify):

CONTACT POINTS LISTED EARLIER

570	Same occupant contact (specify):
571	Interior loose object (specify):
572	Seat LATCH points for child restraints (after 169)
573	Grab handles
575	Seatback trays (after 169)

Source: Vehicle inspection secondary inputs include: interviewee, and medical records.

Remarks:

The researcher should record only those contact mechanisms which can be documented by some physical evidence (*e.g.*, scuffs, hair, smudges, dents, cracks, etc.).

The element values encoded can be based on physical evidence, occupant kinematics, and interviewee information. Although physical evidence is preferred, it does not have to be present to support a contact mechanism.

Contacted Component (cont'd)

* **Note**: Whenever an "other" code is selected as injury source, clearly identify, in the space provided a description of the "other" source.

Steering Rim / Hub / Spoke
is selected when there is continuous or simultaneous contact by a single body region to the Steering Rim / Hub / Spoke. Additionally, use this attribute when the steering wheel is determined to be the suspected injury source, but it cannot be further determined if the rim / hub/ spoke are involved.

[Dr only] WS incl 1/+: fr hdr, A pill, instr pnl, mirror, or steering assembly
should be selected for contacts on the left (driver) side of the vehicle interior. This code applies only when there is a continuous or simultaneous contact to the windshield and one of the listed components by a single Body Region of the occupant.

Note: Some vehicles (*e.g.*, GM APV minivans) are designed with two upper A-pillars on each side. The forward most pillar is called an A1-pillar which is primarily designed to secure the windshield to the vehicle. The second pillar is labeled as an A2-pillar. This pillar generally lends support to the roof and also helps to establish the front door opening. Annotation should be provided on the Interior Vehicle Form specifying which pillar was most severely intruded.

[Pass only] WS incl 1/+: fr hdr, A pill, instr pnl, or mirror
should be selected for contacts on the right (passenger) side of the vehicle interior. This code applies only when there is a continuous or simultaneous contact to the windshield and one of the listed components by a single Body Region of the occupant.

Windshield reinforced by exterior object
is selected when, for example, an occupant contacts a windshield which has been reinforced by the hood of the occupant's vehicle.

Lt (Rt) side glass +: frame, win sill, A pill, B pill, or roof side rail
apply when there is a simultaneous or continuous contact by a single body region of an occupant to the appropriate side window glass and at least one of the listed components. The window sill consists, for this element, of the upper portion of the side interior surface immediately adjacent to the bottom of the side window opening.

Child restraint devices have caused confusion when they are the source of the injury. The child restraint (*i.e.*, infant/child seat, booster seat, etc.) is considered to be an integral restraint (*e.g.*, the whole seat is the restraint). When the restraint is used by an infant or child it should be coded as one unit. In the CDS the analyst is concerned with the complete seat and its performance.

Child safety seat
if contact with a child safety seat occurs from either:

an infant or child restrained by the child safety seat or any passenger including an infant or child who contacts a child safety seat but is not restrained by that seat.

When any body member of an infant or child, restrained by child safety seat, contacts an interior object other than the child safety seat, then code the appropriate interior object (*i.e.*, Seat, back support; Head restraint system etc.)

OCCUPANT NUMBER

Screen Name: Occupant Number

SAS Data Set: **CONTACT**
SAS Variable: **OCCNO**

Element Attributes:
Select occupant number from drop down list

Source: Vehicle inspection

Remarks:

The Researcher should Identify the number of the occupant who is suspected of contacting the identified component, if it can be determined.

An occupant number must be selected, there is no unknown.

Note: If an occupant list for this vehicle does not appear, they must be added into the case structure on the Case Form, Structure tab, Occupant sub-tab).

BODY REGION

Screen Name: Body Region

SAS Data Set: **CONTACT**
SAS Variable: **CONTREGN**

Element Attributes:

10	Abdomen
15	Ankle – Left
20	Ankle – Right
22	Ankle - Unknown
25	Back
30	Buttock – Both
35	Buttock – Left
40	Buttock – Right
45	Buttock – Unknown
50	Chest
55	Elbow – Left
60	Elbow – Right
65	Elbow – Unknown
70	Face
75	Flank – Left
80	Flank – Right
82	Flank - Unknown
85	Foot – Left
90	Foot – Right
95	Foot – Unknown
100	Genitals
105	Hand – Left
110	Hand – Right
115	Hand – Unknown
120	Head
125	Hip-Left
130	Hip – Right
135	Hip – Unknown
140	Knee – Left
145	Knee – Right
150	Knee – Unknown
155	Lower Arm – Left
160	Lower Arm – Right
165	Lower Arm – Unknown
170	Lower Leg – Left
175	Lower Leg – Right
180	Lower Leg – Unknown
185	Neck
190	Shoulder – Left
195	Shoulder – Right
200	Shoulder – Unknown
205	Thigh – Left
210	Thigh – Right
215	Thigh – Unknown
220	Upper Arm – Left
225	Upper Arm – Right
230	Upper Arm – Unknown
235	Upper Leg – Left
240	Upper Leg – Right
245	Upper Leg – Unknown
250	Wrist – Left
255	Wrist – Right
260	Wrist – Unknown
999	Unknown

Source: Vehicle inspection.

Remarks:

The Researcher should identify the **suspected** body region of the occupant that contacted the identified component, if it can be determined or presumed.

EVIDENCE

Screen Name: Evidence

SAS Data Set: **CONTACT**
SAS Variable: **CONTEVID**

Element Attributes:

1	Bent
2	Cracked
3	Scuffed
4	Transfer (specify)
5	Deformed
6	Blood
7	Hair
8	Stretched
9	Scratched
10	Teeth marks
11	Imprint
12	Spider Web
	Child Seat – No SAS Code
	Moved – No SAS Code
96	Combination (specify)
98	Other (specify)

Source: Vehicle inspection

Remarks:

The Researcher should identify the type of contact evidence present (i.e., scuff, tissue transfer, tooth mark, etc.) that indicates an occupant contact.

Note: Blood, in and by itself, is not a reliable indicator of a contact point.

CONFIDENCE LEVEL OF OCCUPANT CONTACT

Screen Name: Confidence

SAS Data Set: **CONTACT**
SAS Variable: **CONTCONF**

Element Attributes:

1	Certain
2	Probable
3	Possible
9	Unknown

Source: Vehicle inspection

Remarks:

Specify the level of confidence, which best represents the Researchers certainty of **this component**, as an occupant contact.

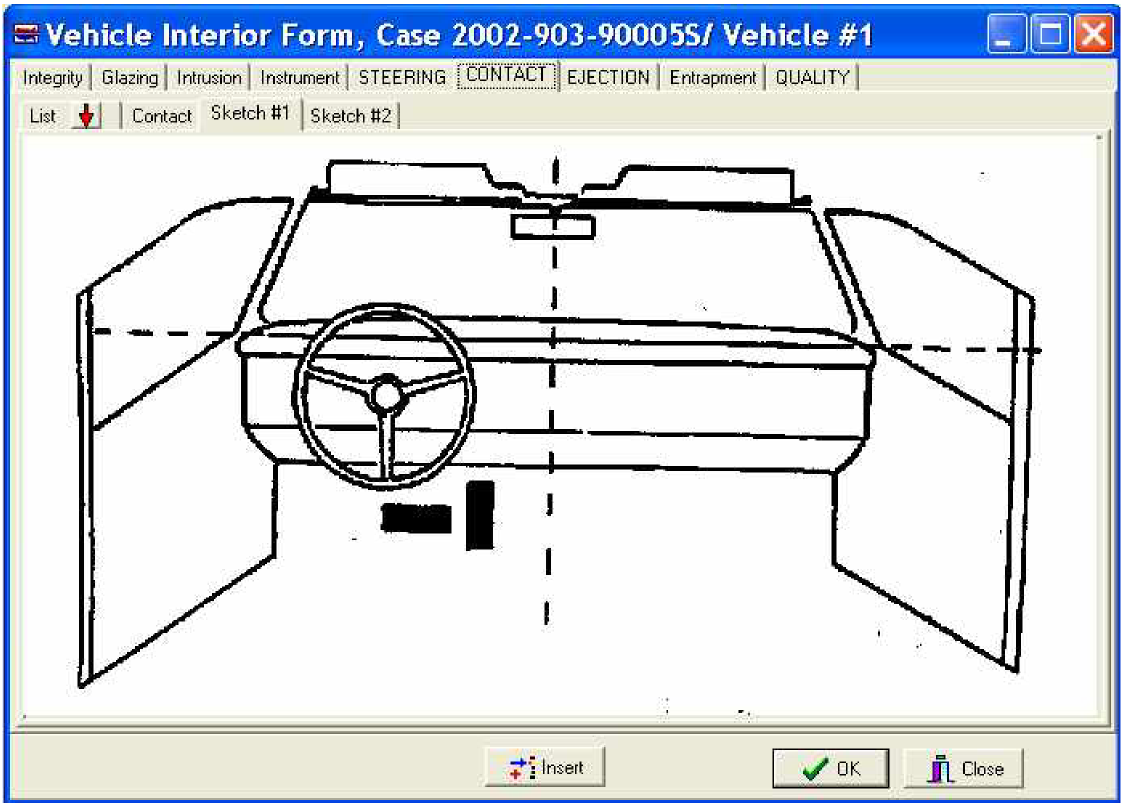
Certain
if there is no reasonable doubt in the mind of the researcher, that this component was contacted by the occupant based on occupant location, crash dynamics, contact points.

Probable
in those situations where there is not a certainty based on the factors noted above for **Certain**.

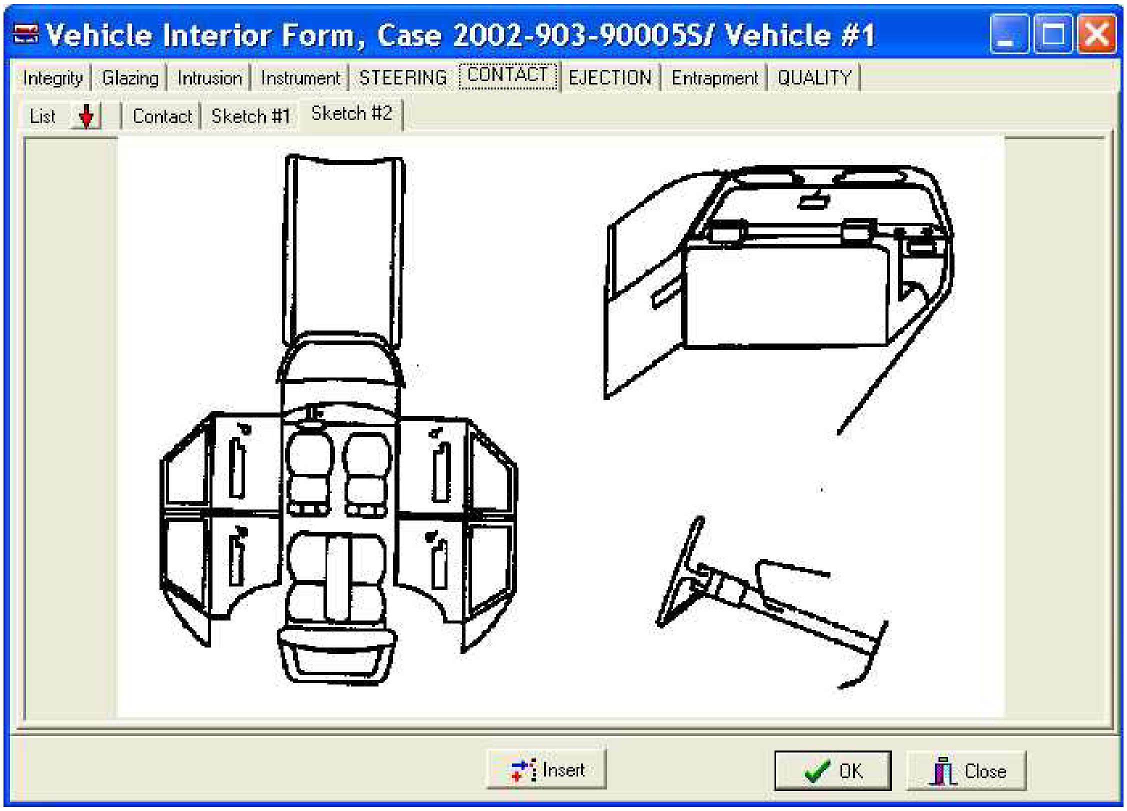
Possible
if there is no supporting physical evidence of occupant contact, however there is damage, and based on occupant location, crash dynamics, and component location, it is possible the occupant contacted the suspected component.

Unknown
If it is unknown whether the component listed as a contact point was contacted by the occupant or some type of induced or post-crash damage.

CONTACT / SKETCH 1 AND SKETCH 2



Vehicle Interior Form, Case 2002-903-90005S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Contact
Sketch #1
Sketch #2
Insert
OK
Close



Vehicle Interior Form, Case 2002-903-90005S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Contact
Sketch #1
Sketch #2
Insert
OK
Close

INSTRUCTIONS FOR COMPLETION OF VEHICLE INTERIOR SKETCHES

Open up Sketch 1 and Sketch 2 (by double clicking) to open them in Paint.

Leave the Sketches open or minimized for ease in navigating between the Detail Tab, and the Sketches.

For each documented Contact Point:

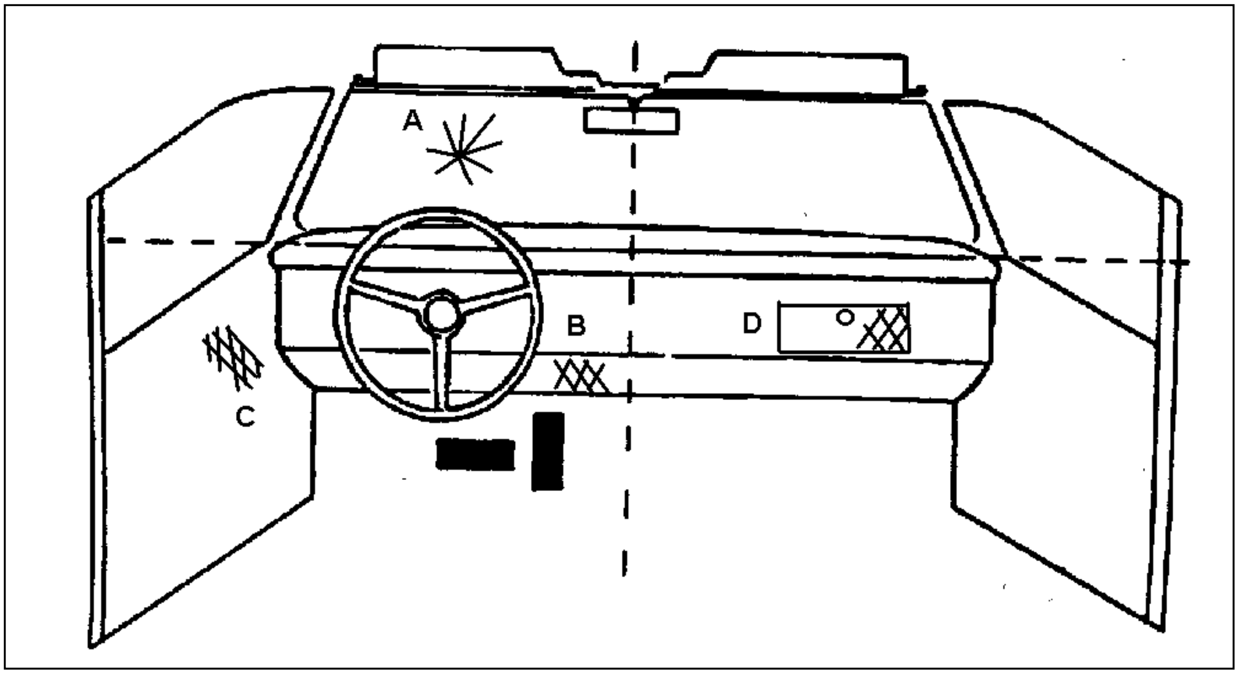
Sketch the damaged area on Sketches 1 and 2 (*e.g.*, windshield, instrument panel, glove compartment, front seat back, etc.).

Label the Contact point with a sequential alpha character beginning with the letter “A”.

Provide any annotations as necessary

Examples of a basic vehicle interior sketch is shown:

Vehicle Interior / Contact / Sketch 1 Completed

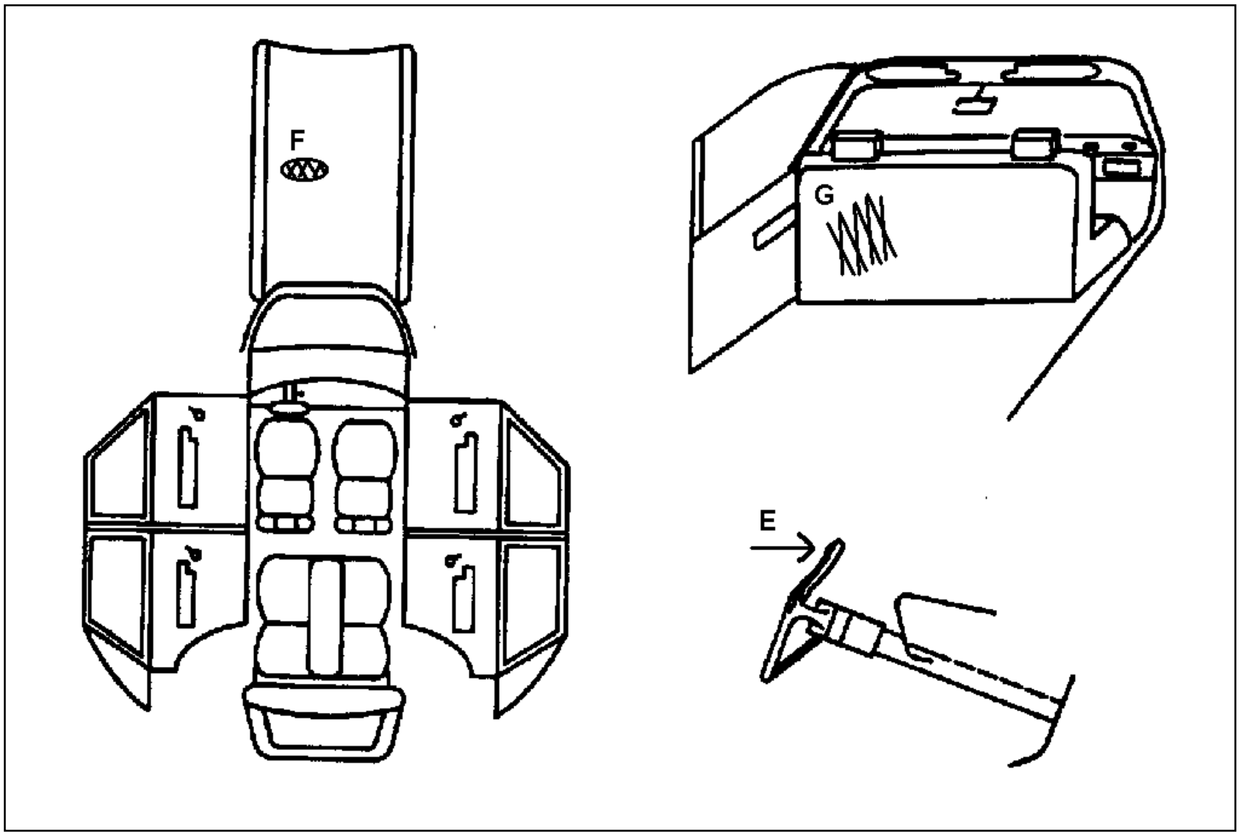


VEHICLE INTERIOR FORM **CONTACT / SKETCH 1 AND SKETCH 2**

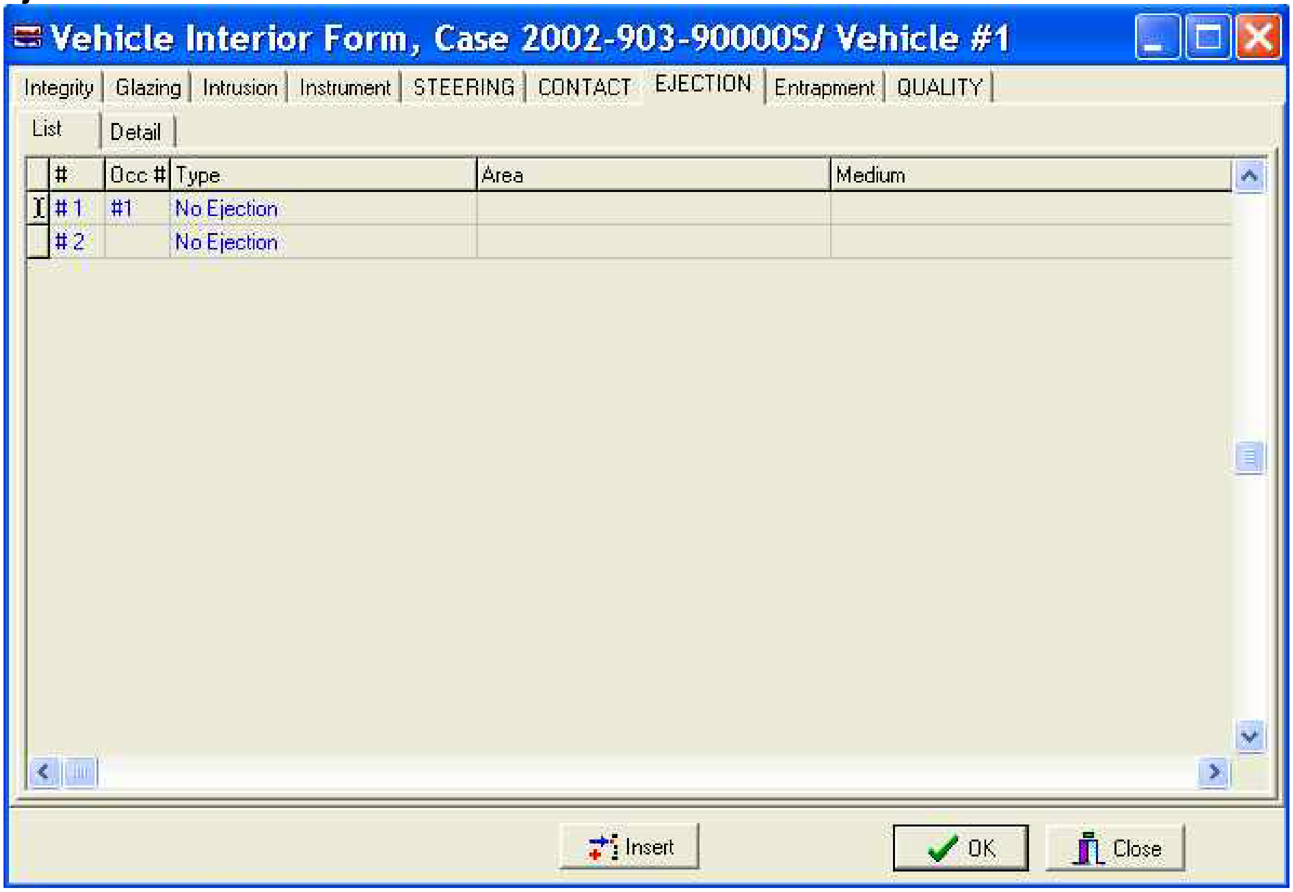
Instructions for Completion of Vehicle Interior Sketches (cont'd)

Page 2 of 2

Vehicle Interior / Contact / Sketch 2 Completed



Ejection / List


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Detail
Insert
OK
Close

#	Occ #	Type	Area	Medium
# 1	#1	No Ejection		
# 2		No Ejection		

EJECTION LIST TAB

Remarks:

All ejections that are documented on the preceding tabs will be displayed on this tab. This tab is generally used as an overview for all of the ejections. No fields can be edited here. To edit an ejection, return to the Detail tab, use the Previous and Next buttons to navigate to the ejection, and make any corrections.

EJECTION / ENTRAPMENT OVERVIEW

Variables in this section provide an assessment of the occurrence of entrapment or ejection of an occupant. These variables in this section are coded based upon vehicle inspection. Verification of questionable ejection or entrapment will come from the interview.

Historically, ejection from the vehicle has been a major cause of fatalities and more serious injuries. The chances of being killed if ejected are about 1 in 5; whereas, if the occupant remains inside the vehicle, the chances of dying are reduced to about 1 in 200 for all fatal crashes. Unfortunately ejection from the vehicle is not that uncommon and has become a significant part of the fatality (30%) and severe (15%) injury crashes. Further contributing to the ejection problem is the increase in window surface area and more hatchback models. Despite the current emphasis on restraint use through legal requirements for occupants to be buckled up, a significant portion of the population continues to be unrestrained and at risk to ejection. All evidence indicates that this trend will continue into the foreseeable future.

A problem not often addressed is that of partial ejection. This refers to those instances where some part but not all of an occupant's body is, at some time during the crash sequence, outside the occupant compartment. Although it would not seem to be a problem it can be, and often is, fatal if the part outside is the occupant's head. Because of the dynamics of the vehicle and the kinematics of the occupants during an ejection sequence, it is often the occupant's own vehicle which causes the injury as it rolls onto the occupant.

Entrapment poses a different problem area. Recent years have brought about a vast improvement in the delivery of emergency medical attention to motor vehicle crash victims. This improvement has been achieved through the establishment of regional trauma centers, well equipped Mobile Intensive Care Units manned by trained paramedics even in rural areas, and a general increase in the knowledge of how to treat acute trauma. This improvement has not helped those victims who are restrained within the vehicle by deformed components. The improved care cannot be delivered because the personnel are unable to get to the victim, remove the victim from the vehicle, and deliver the victim to a treatment facility in a reasonable amount of time. Also, previous extrication tools used by rescue personnel were crude and sometimes injury causing themselves, an example of which is the large metal cutting saws. Within the last few years a device known as the "Jaws of Life" was developed and widely distributed. It is a hydraulically driven mechanism which can be used to increase the size of openings, extricate entrapped occupant's limbs and force open doors which are jammed. This development came about because of the perceived need for an extrication tool which operated quickly yet did not further injure the occupant.

Federal Motor Vehicle Safety Standards (FMVSS) which were developed in response to the problems seen in these areas are FMVSS 201 (Occupant Protection in Interior Impact), FMVSS 205 (Glazing Materials), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 212 (Windshield Mounting), and FMVSS 214 (Roof Crush Resistance Passenger Cars).

Analytically this group of variables is a stand alone package most of the time. It can form the basis of an analysis without the use or comparison to any other variables. This would be used mostly in exploring the number and types of ejections and entrapments. Expanding the scope somewhat to include injury severity allows a determination of the increase or decrease in the ejection problem. Inclusion of injury source would provide an idea of the severity of all occurrences of entrapment and ejection. Injury source also provides an idea of the kinematics of the occupant during the sequence. The addition of a cross-tabulation for AIS level would show the relative severity between the injuries incurred inside the vehicle and those outside the vehicle.

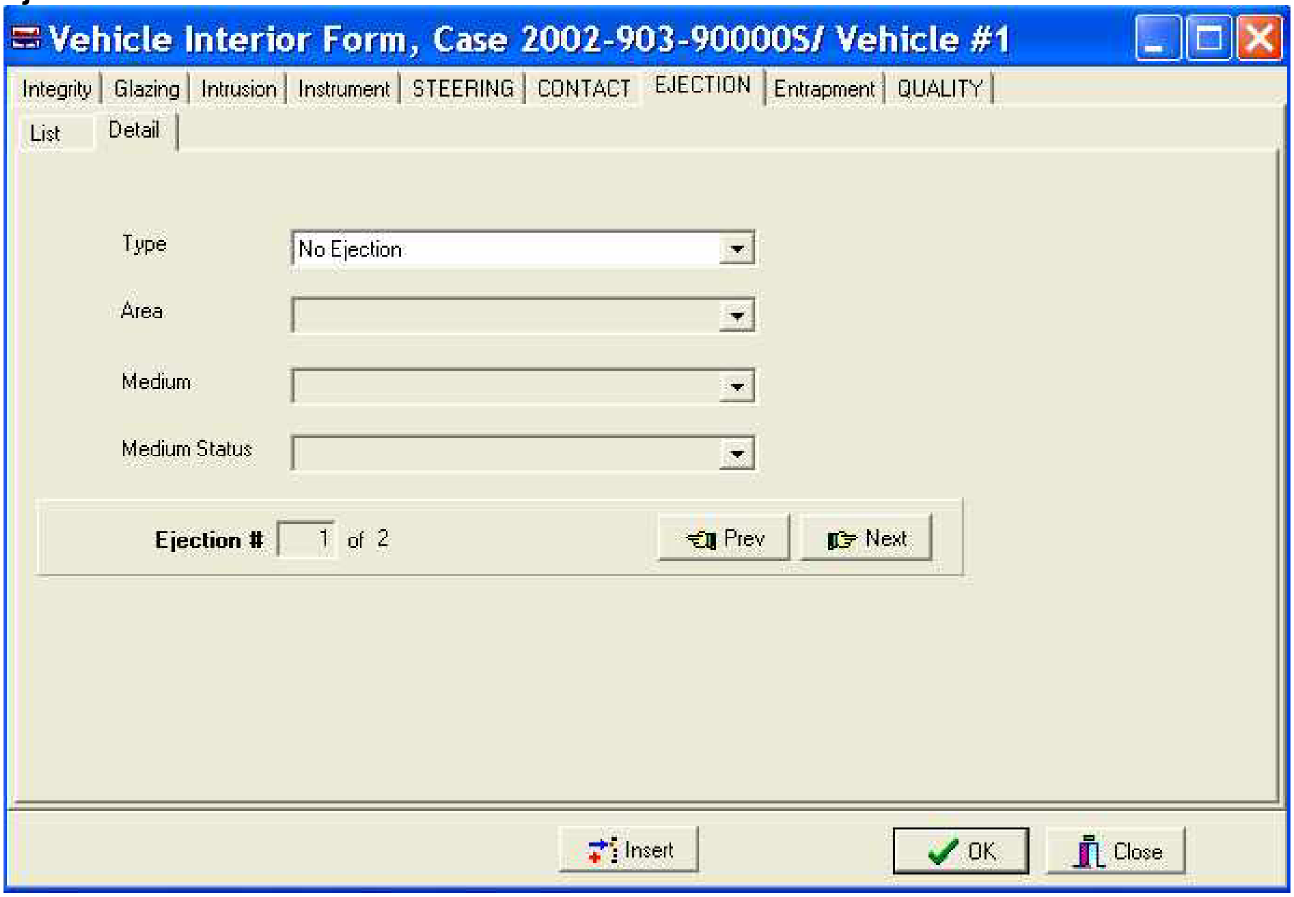
Other areas of interest to the analyst are the ejection route and performance of integral structures. The integral structure performance is directly governed by the FMVSS 206 and 212. These areas are of increasing interest to NHTSA since the real world performance can help support the findings from the staged collisions and will help determine the effectiveness of the standards.

Lastly, an alternative glazing techniques was introduced in windshields. This type of window have a plastic layer on the interior surface of the window. Tests have shown a reduction in Lacerative injuries which was the primary objective but also an increased resistance to ejection through the window. Further study of real world performance is needed to provide an accurate evaluation of this secondary benefit.

Gathering the data, which will allow the researcher to accurately select the variables, is a multistage process. It will begin with the PAR which may give an indication of either ejection or entrapment. Inspection of the vehicle will provide the evidence needed to substantiate either occurrence. Further, documentation should be obtained through the scene inspection, interview, and injury data. Only at the end of the data gathering process should these variables be selected. Particular attention should be paid to the vehicle inspection since most evidence of ejection will be less apparent and not easily discerned.

In summary, this group of variables assesses the level of a very significant problem in today's crash picture. Correct accurate assessment is a result of a multistage research process which will be individualized by case. Attention to detail will result in a correct assessment. This is one area which is directly tied to the FMVSS, and all gathered data results in a direct evaluation of the applicable standards.

Ejection Detail


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
List
Detail
Prev
Next
Insert
OK
Close

Type: No Ejection

Area:

Medium:

Medium Status:

Ejection # 1 of 2

EJECTION NUMBER

Screen Name: Ejection #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Value:

Number as assigned

Source: Vehicle inspection

Remarks:

Each potential ejection is added by the researcher as it is located. The system will automatically increment the count. To add an ejection, go to the Title Bar and select “**Edit**” and then “**Insert**” and contact point “B” will appear.

EJECTION - TYPE

Screen Name: Ejection -Type

SAS Data Set: **OA**
SAS Variable: **EJECTION**

Element Value:

0	No Ejection
1	Complete ejection
2	Partial ejection
3	Ejection, unknown degree
9	Unknown if ejected

Source: Vehicle inspection

Remarks:

Ejection refers to persons being completely or partially thrown from the vehicle as a result of an impact or rollover. If a person already has a body part protruding from the vehicle (*e.g.*, an elbow, arm, etc.) and the PDOF acting on the vehicle would likely cause further protrusions of the body part, then at least partial ejection is selected.

No Ejection
is selected when there is no indication of any occupant being either partially or fully ejected from the vehicle.

Complete ejection
is selected when an the occupant's body is entirely outside of the vehicle during the crash sequence. It is important to note that even though the body may be outside the vehicle, it may still be in contact with the vehicle. This code also includes occupants who are not initially in the seating compartment of the vehicle (e.g., pickup beds, boot of a convertible, and persons riding on open tailgates).

Partial ejection
is selected when part of the occupant's body remains **in** the vehicle, and any part of it is forced outside of the vehicle during the crash sequence. This code **does not apply** to those occupants who are not initially in the seating compartment of the vehicle, they are indicated as "**Complete ejection**".

Ejection, unknown degree
is selected when it is suspected (or known) that an ejection of the occupant occurred, however, at the time of the vehicle inspection the researcher was unable to determine if the ejection was **Partial** or **Complete**.

Unknown
is selected when:
the vehicle has been completely repaired
it cannot be determined if an ejection is applicable

EJECTION AREA

Page 1 of 2

Screen Name: Ejection--Area

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

0	[No ejection]
1	Windshield
2	Left front
3	Right front
4	Left rear
5	Right rear
6	Rear
7	Roof
89	[Unknown if ejected]
98	Other area (specify)
99	Unknown ejection area

Source: Vehicle inspection

Remarks:

Rear
is restricted to persons riding in a passenger compartment, who are ejected through the rear window, tailgate (*e.g.*, station wagon), hatchback, etc.

Roof
applies to all hardtops, convertibles, sun roofs, t-bar roofs, and detachable hardtops (such as fiberglass tops) that are used to cover areas designed for passenger protection.

Examples follow for how variable, Ejection Medium, and Medium Status (Immediately Prior to Impact), should be selected when **Area** equals **Roof**.

Ejection Area (cont'd)

Ejection	Roof Type	Area	Ejection Medium	Medium Status
Ejection	Hardtop, ripped open during crash	Roof	Integral Structure	Integral Structure
Ejection	Removable hardtop, attached prior to crash	Roof	Integral Structure	Integral Structure
Ejection	Removable hardtop, detached prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in down or open position	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in closed position	Roof	Non-fixed roof structure	Closed
Ejection	Sun or t-bar, closed, and ripped open during crash	Roof	Non-fixed roof structure	Closed
Ejection	Sun or t-bar, open/removed prior to crash	Roof	Non-fixed roof structure	Open

Ejection Attributes are designated for use with areas designed for passenger protection (*e.g.*, passenger cars, vans, light truck cabs, self-contained mini- Recreational Vehicles and mini-motor homes). Trailers, add-on campers, etc., are to be assigned **Other area**.

Other area
also applies to persons riding on open tailgates.

Unknown
is selected when it is known from the vehicle inspection that an occupant was ejected (i.e., partial, full, or unknown degree) however, the area of potential ejection is unknown.

EJECTION MEDIUM

Screen Name: Ejection—Medium

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

0	[No ejection]
1	Door/hatch/tailgate
2	Non-fixed roof structure
3	Fixed glazing
4	Non-fixed glazing (specify)
5	Integral structure
79	[Unknown ejection area]
89	[Unknown if ejected]
98	Other medium (specify)
99	Unknown

Source: Vehicle inspection

Remarks:

Door/hatch/tailgate
includes any door, hatch, or tailgate that is opened during the course of the impact sequence.

Non-fixed roof structure
applies only to convertible, sun roofs, t-bar roofs, and removable hardtops when retracted / detached prior to the crash.

Fixed glazing
refer to any glazing in the vehicle that cannot be opened.

Non-fixed glazing
refer to any glazing in the vehicle that can be opened to any degree.

Integral structure
includes removable hardtops when attached to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (*e.g.*, standard roof), is torn open during the crash such as to permit ejection.

Other medium
applies to persons riding in pickup beds, on open tailgates, and for other situations which cannot be classified above. In addition, use this attribute when someone is ejected from a trailer, add-on camper, etc.

Unknown
is selected when the ejection medium it is not known.

EJECTION MEDIUM STATUS

Screen Name: Ejection—Medium Status

Element Attributes:

0	[No ejection]
1	Open
2	Closed
3	[Integral Structure]
79	[Unknown ejection area]
89	[Unknown if ejected]
99	Unknown status of medium

Source: Vehicle inspection

Remarks:

This variable is a description of the status of the area through which an occupant was ejected and is the status of the medium immediately prior to the impact.

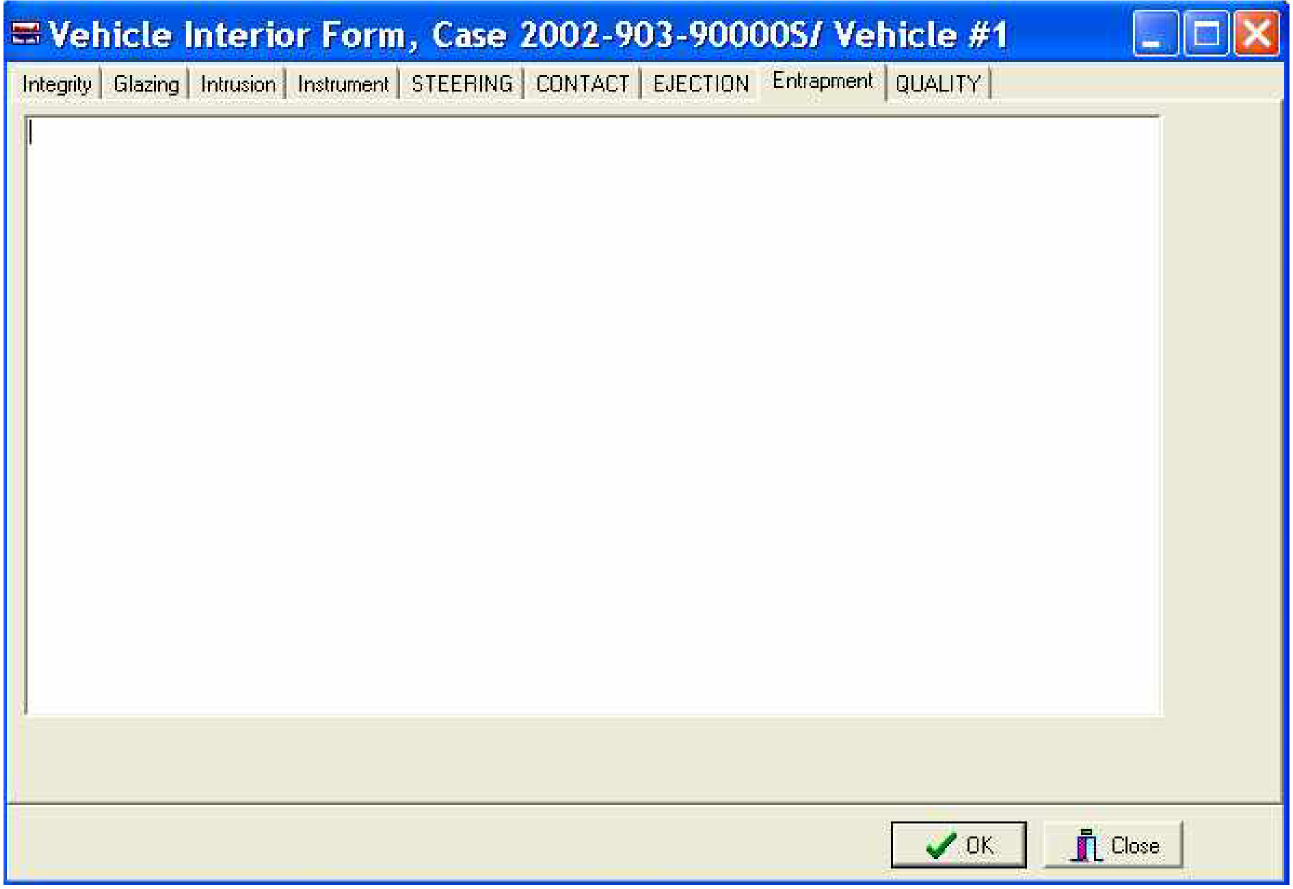
Open
applies to convertible roofs, sun roofs, t-bar roofs, windows, doors or tailgates that are completely or partially open immediately prior to impact, or to other open areas of vehicles such as pickup beds, etc.

Closed
refers to a window that is completely closed when damaged, or to a convertible, sun, or t-bar roof that is closed when damaged. Sun and t-bar roofs are captured here if the ejection occurred through the designed opening in the sun or t-bar roof. However, if the roof was of a sun or t-bar type but the ejection occurred because a sizable opening was torn in the roof structure, then select **Integral structure**. This is also used for fixed glazings such as windshields and backlights which are in place prior to the collision. This also refers to a door that is closed, but when damaged, experiences latch and/or hinge failure causing the door to open.

Integral structure
should be used when any vehicle structure, not designed to be opened (*e.g.*, standard roof), is torn open during the crash such as to permit ejection.

Unknown
is used when the medium status prior to the impact is unknown.

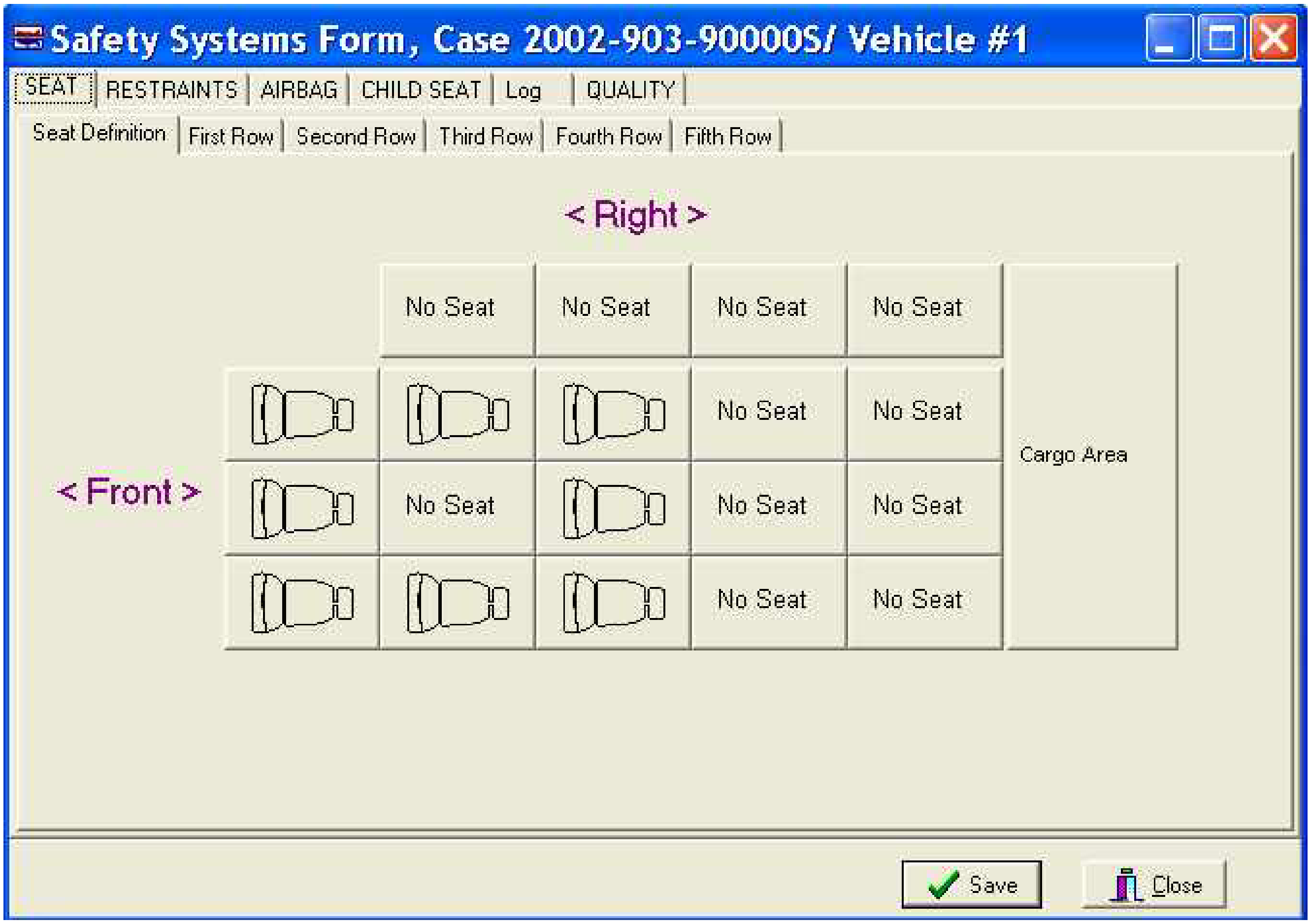
Entrapment


Vehicle Interior Form, Case 2002-903-90000S/ Vehicle #1
Integrity
Glazing
Intrusion
Instrument
STEERING
CONTACT
EJECTION
Entrapment
QUALITY
OK
Close

Enter any observations or indications of possible entrapment or mobility restriction. Careful observation should be made of intruding vehicle components, jammed doors, crushed roof, or other mechanisms that might have restrained occupants or restricted or limited egress from the vehicle

SAFETY SYSTEMS FORM

Select the available seats in this vehicle


Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Seat Definition
First Row
Second Row
Third Row
Fourth Row
Fifth Row
< Right >
< Front >
Save
Close

	No Seat	No Seat	No Seat	No Seat	Cargo Area
			No Seat	No Seat	
	No Seat		No Seat	No Seat	
			No Seat	No Seat	

SAFETY SYSTEMS FORM

SAFETY SYSTEMS FORM OVERVIEW

Information recorded on the Safety System Form is based solely on the evidence obtained during the vehicle inspection.

An indication of restraint usage is determined **for every seating position in the vehicle, regardless of whether the seating position is occupied**. This includes Integrated Child Restraints and any Child restrasint (infant, booster, convertible, etc.) that are in the vehicle at the time of inspection.

The “indication of usage” represents **“recent usage”** rather than “usage ever”, whenever possible. The following evidence is sought when assessing restraint usage:

- **belts/fittings damaged by occupant loading**: deformed anchor components, stretched webbing, latch metal peening (loading impression on metal);

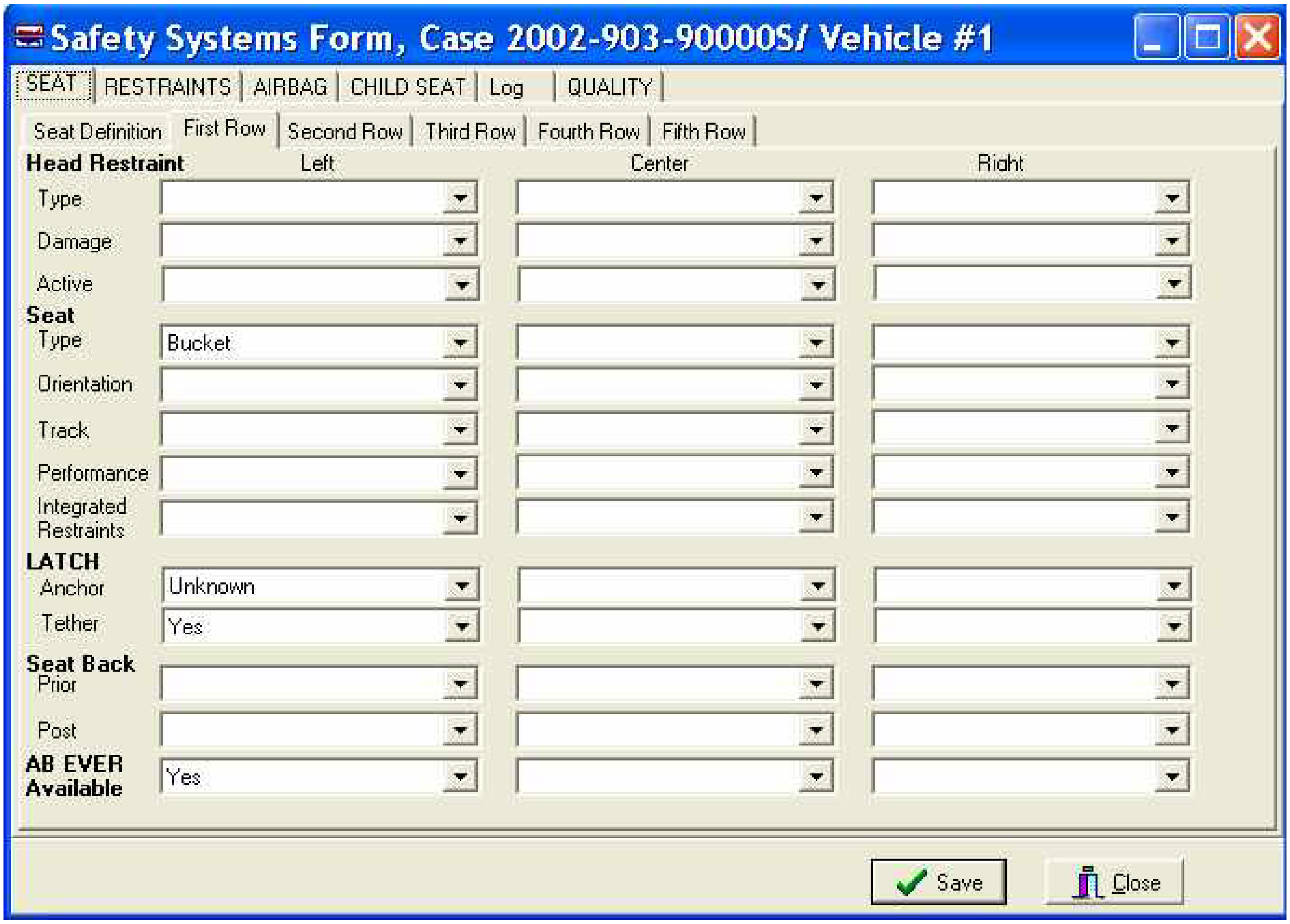
- **placement of belts**: on, behind, or under seatbacks or cushions; and,

- **condition of belts**: dirty, dust covered, mechanically unusable, knotted, size adjustment on fixed length belts, cut for convenience or comfort (out of the way, near housings), or cut for occupant extraction by emergency personnel (usually at an easily accessible position).

Restraint “usage in this crash” is ***not*** generally determined on the Safety System screens. Vehicle evidence along with police report information, interviews, relationship of contact points to seat position given the PDOF applied to the vehicle, presence of belt-caused occupant injuries, and presence or absence of ejection are considered before encoding restraint usage on the Occupant Assessment screens.

Potential Safety Bulletins should be submitted when there is a failure of a safety system.

Seat Definition


Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Seat Definition
First Row
Second Row
Third Row
Fourth Row
Fifth Row
Save
Close

	Left	Center	Right
Head Restraint			
Type			
Damage			
Active			
Seat			
Type	Bucket		
Orientation			
Track			
Performance			
Integrated Restraints			
LATCH			
Anchor	Unknown		
Tether	Yes		
Seat Back			
Prior			
Post			
AB EVER Available	Yes		

OCCUPANT'S SEAT POSITION

Screen Name: Seat Location Identification

SAS Data Set: **SEATLOC**
SAS Variable: **SEATPOS**

Element Attributes:

Element Attributes:

Front Seat
11 Left side
12 Middle
13 Right side

Second Seat
21 Left side
22 Middle
23 Right side
24 Other (specify)

Fifth Seat
51 Left side
52 Middle
53 Right side
54 Other (specify)

Third Seat
31 Left side
32 Middle
33 Right side
34 Other (specify)

Fourth Seat
41 Left side
42 Middle
43 Right side
44 Other (specify)

98 Other enclosed area (specify)

Source: Vehicle Inspection

Source: Vehicle inspection

Remarks:

Source: Interviewee, police report and vehicle inspection

Remarks:

"Far right side" is only to be used if the seat has four seating positions.

More than one person may be assigned to a seating position. When this happens, the appropriate **Posture** must be selected to account for this.

The seating position by the steering wheel should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or persons.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor.

Persons appended to the vehicle in motion are not considered to be occupants of the vehicle.

Unenclosed Area

Other Seat
is used for the sixth or higher numbered seat area (highly unlikely).

HEAD RESTRAINT TYPE AT THIS OCCUPANT POSITION

Screen Name: Head Restraint -Type

SAS Data Set: **SEATLOC**
SAS Variable: **HEADTYPE**

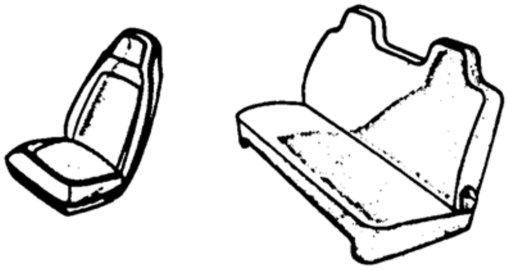
Element Attributes:

1 No head restraints
2 Integral
3 Adjustable
4 Add-on
8 Other (specify)
9 Unknown

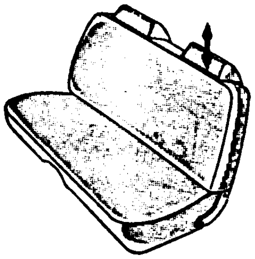
Source: Vehicle inspection.

Remarks:

Many passenger cars have head restraints for the front outboard seat positions. The head restraints can be of any design but must meet the requirements of FMVSS 202 (Head Restraints). Some examples of head restraint styles are shown below.



INTEGRAL



ADJUSTABLE

Any damage to a head restraint caused by the occupant in the seat position having the head restraint should be identified.

No head restraints

is used when (1) no head restraint is available for this seating position, or (2) there had been a head restraint but it had been removed prior to the crash.

Integral

refer to head restraints which are a continuous part of the seat back structure or those which are a separate structure but are not vertically adjustable.

Head Restraint Type at This Occupant Position (cont'd)

Page 2 of 2

Adjustable

apply to:

- head restraints which can be moved vertically to accommodate occupants of varying heights, and
- head restraints which have a fixed outer framework and a separate center section which is adjustable vertically.

Add-on

refer to clamp-on, strap-on, or even bolt-on head restraints on a vehicle not originally equipped with head restraints. ThIs attribute should be infrequently used.

Unknown

is used when the type of head restraint cannot be determined

Note: Manufacturers are providing head restraints for rear seat occupants. These head restraints may be the same or similar to those used in the front seats, or they may be a slight rise in the rear seat back.

HEAD RESTRAINT DAMAGE BY OCCUPANT AT THIS OCCUPANT POSITION

Screen Name: Head Restraint – Damage

SAS Data Set: **SEATLOC**
SAS Variable: **HEADDAMG**

Element Attributes:

1 [No Head Restraints]
2 No damage
3 Damaged during crash
9 Unknown

Source: Vehicle inspection.

Remarks:

No damage
There was no damage to the head restraint by the occupant.

Damaged during crash
Any damage to a head restraint caused by the occupant in the seat position having the head restraint should be identified.

Unknown
is used when it is unknown if damage to the restraint was caused by an occupant in the appropriate seat position.

Note: Manufacturers are providing head restraints for rear seat occupants. These head restraints may be the same or similar to those used in the front seats, or they may be a slight rise in the rear seat back. Any damage to a rear seat head restraint by the occupant in the seat position must be captured regardless of the height of the restraint.

ACTIVE HEAD RESTRAINT

Screen Name: Head Restraint - Active

SAS Data Set: **SEATLOC**
SAS Variable: **HEADACT**

Element Attributes:

2	No active head Present
3	Present
9	Unknown

Source: Vehicle Inspection, interview

Remarks:

There should be a label on the seat indicating the presence of the active head restraint.

SEAT TYPE

Page 1 of 2

Screen Name: Seat – Type

SAS Data Set: **SEATLOC**
SAS Variable: **SEATTYPE**

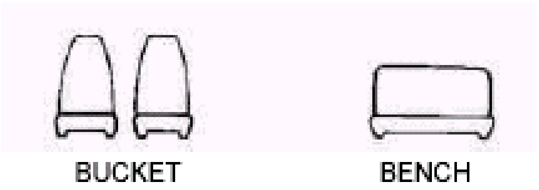
Element Attributes:

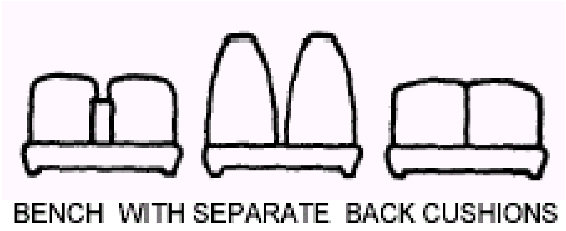
1 Bucket
2 Bucket with folding back
3 Bench
4 Bench with separate back cushions
5 Bench with folding back(s)
6 Split bench with separate back cushions
7 Split bench with folding back(s)
8 Pedestal (*i.e.*, column supported)
9 Box mounted seat (*i.e.*, van type)
10 Other seat type (specify)
99 Unknown Seat Type

Source: Vehicle inspection.

Remarks:

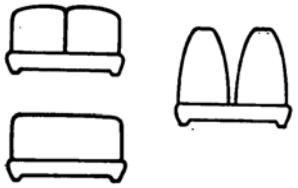
This variable assesses the type of seat present at this position.
The type of seat in which an occupant is positioned may have an effect on the occupant



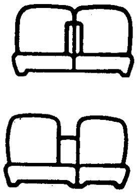


Seat Type (cont'd)

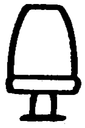
Page 2 of 2



BENCH WITH FOLDING BACK(S)



SPLIT BENCH



PEDESTAL

The term "folding back(s)" for both bench and bucket-type seats refers to seat backs which are designed to fold significantly forward of upright.

Seats which recline only rearward are not considered to be folding backs. If the seat back does not fold forward at the position you are assessing, do not use the folding back attributes. Folding backs, because of the additional possibility of failure of the folding mechanism, take precedence over solid or separate back cushions. For example, a bench seat with separate back cushions which fold forward would be **Bench with folding back(s)**.

The rear seats in many late model vehicles may be of unusual design. The researcher is cautioned to view only the seat type for the occupant's position. If the seat is of a bench type and the back cushion for the position folds, then the proper attribute is **Bench with folding back(s).** The fact that the seat cushion may also fold is not considered.

At the time of the inspection if a seat was folded down, record the data as if the seat was in the upright position. If any seat has been removed and cannot be inspected that data is to be recorded.

Box mounted seat (*i.e.*, van type)

is used to identify elevated seats which have as a part of their attachment design a box which is fastened to the floor and has seat tracks bolted to the top of the box. This type is often found in front row locations of vans. Do not confuse this design with pedestal seats which require a single post support column.

SEAT ORIENTATION

Screen Name: Seat – Orientation

SAS Data Set: **SEATLOC**
SAS Variable: **STORIENT**

Range:

Element Attributes:

1	Forward facing seat
2	Rear facing seat
3	Side facing seat (inward)
4	Side facing seat (outward)
8	Other (specify):
9	Unknown Orientation

Source: Vehicle inspection.

Remarks:

Most seats are fixed in terms of their orientation within the vehicle; however, some seats (*e.g.*, swivel or reversible) can be oriented in more than one direction. Swivel seats and reversible seats (*e.g.*, some station-wagons or vans) are entered according to their orientation at the time of impact [*i.e.*, **Forward facing seat** or **Rear facing seat].**

Forward facing seat
is used when the seat is oriented towards the front plane of the vehicle.

Rear facing seat
is used when the seat is oriented towards the rear plane of the vehicle.

Side facing seat (inward)
is used when the seat is oriented towards either the right or left planes of the vehicle and faces inward.

Side facing seat (outward)
is used when the seat is oriented towards either the right or left planes of the vehicle and faces outward.

Other
is used when a seat is oriented such that the above attributes do not apply.

Unknown
is used when the seat orientation cannot be determined.

SEAT TRACK POSITION

Screen Name: Seat—Track

SAS Data Set: **SEATLOC**
SAS Variable: **SEATRACK**

Element Attributes:

1	Non-adjustable seat track
2	Seat at forward most track position
3	Seat between forward most and middle track positions
4	Seat at middle track position
5	Seat between middle and rear most track position
6	Seat at rear most track position
9	Unknown Seat Track Position

Source: Vehicle inspection.

Remarks:

The researcher should attempt to determine the seat position at impact. When the researcher begins the interior inspection, he/she should note the position of the seat. The researcher should then move the seat forward and back along its track and determine the number of positions. Once this has been done, the seat should be moved to the position initially observed and photographed.

If the seat has electric adjusters with no distinct track positions, attempt to determine the relative position of the seat and select accordingly.

Non-adjustable seat track
Use this for seats that cannot be moved longitudinally.

Adjustable Seat Track

Seat at forward most track position
Use this if the seat is at the forward limit of the track.

Seat between forward most and middle track position
Use this if the seat is at any position between the most forward and middle seat positions.

Seat at middle track position
Use this if the seat is in the position mid-range between the forward and rear most track position.

Seat Track Position (cont'd)

Seat between middle and rear most track position
Use this if the seat is at any position between the middle and rearmost track position.

Seat at rear most track position
Use this attribute if the seat is at the rear limit of the track.

Unknown
Use this attribute if the seat position at impact cannot be determined.

SEAT PERFORMANCE

Page 1 of 2

Screen Name: Seat—Performance

SAS Data Set: **SEATLOC**
SAS Variable: **SEATPERF**

Element Attributes:

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 Performance

Source: Vehicle inspection.

Remarks:

This variable assesses the performance of the seat. The attributes are indications of whether the seat failed or was deformed in any way. Select the attribute which corresponds to the appropriate seat performance failure or deformation. Minor smudges, scrapes, dents, etc. are not considered deformation. If a failure or deformity occurs, then document the failure or deformation with a diagram and explanation. In addition, include photographs of the seat failure or deformity.

No seat performance failure(s)
is used if the seat was not deformed or no portion of the seat structure failed during the crash.

Seat adjusters failed
is used if any of the mechanisms used to adjust a seat’s “comfort” position are separated or deformed during the crash as a result of occupant loading.

Seat adjuster mechanisms include:

- Height adjustment
- Longitudinal (horizontal) seat track adjustment
- Rocker adjustment
- Swivel/rotational adjustment
- Seat back recliner adjustment

For a seat back recliner failure, the seat back must have released in a rearward direction. Do not use this attribute if the seat back failed in a forward direction and the seat has a folding lock mechanism (*e.g.*, front seats in 2-door vehicles); see **Seat back folding locks failed** below.

This should be used when multiple adjuster failures have been detected. Be sure to include supportive written and photographic documentation to support all failures.

Seat Performance (cont'd)

Seat back folding locks or "seat back" failed

is used when the mechanism which is designed to lock the seat back in its upright position fails or separates allowing the seat back to move forward during the collision as a result of occupant loading

"Seat back" failed refers to forward facing seats where seat back structural failures (*e.g.*, seat back hinge points) resulted in a separation of the seat back from its anchorage points. Again, to be considered applicable for this, the seat must have failed while moving forward during the collision as a result of occupant loading.

Seat tracks/anchors failed

is used if the seat separates, to any degree, from a seat track during the crash. In addition, use this if the seat anchor that attaches the seat track to the floorpan separates, to any degree, during the crash. Box mounted seats are included in this if a separation occurred between the box and the floor or the box and the seat track/anchor. Seat track or anchor failures must be a result of occupant loading.

Deformed by impact of occupant

is used when the seat is changed in form from its original design from occupant loading during the crash. Situations where seats are deformed and also experience mechanical failures should be identified under **Combination of above.**

Deformed by passenger compartment intrusion

is used when the seat is deformed or failed by intrusion of an interior vehicle component(s) or exterior vehicle component(s) into the passenger compartment.

Combination of above

is used when any combination of the above occurs and describes multiple seat failures or deformations. Seat failures or deformations which are not described in the above are reported below. Seat failures or deformations listed in the above take priority over others.

Other

is used when the only seat failure(s) or deformation(s) which occur are not described in the above (*e.g.*, impact forces).

Unknown

is used if the seat performance cannot be determined.

DOES THE SEAT HAVE INTEGRATED PASSENGER BELTS?

Screen Name: Seat—Integrated Restraints

SAS Data Set: **SEATLOC**
SAS Variable: **INTGREST**

Element Attributes:

1	No
2	Yes
9	Unknown if integrated

Source: Vehicle inspection

Remarks:

An integral seat is a seat structure, which replaces existing seats with multi-functional seats containing built-in occupant protection devices. Previous seating structures operated independently of the occupant restraint system, perhaps only having an upper ring that guided the seat belt across the torso. The new seats are designed to contain the occupant restraint systems, as well as being designed to help retain the occupant in the seat by use of clever designs of the lower seat pan and the back seat structure.

If you were to remove the seat and the restraint comes with the seat indicate “Yes”.

LATCH LOWER ANCHOR AVAILABILITY

Screen Name: LATCH Anchor

SAS Data Set: **SEATLOC**
SAS Variable: **LATANCH**

Element Attributes:

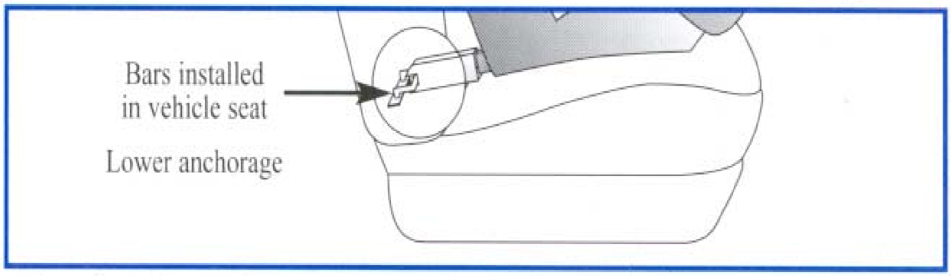
1 No
2 Yes
9 Unknown if achor

Source: Interior Vehicle Inspection (and/or Interview)

Remarks:

Currently, some new passenger vehicles are equipped with lower child seat anchorage points between a vehicle's seat cushion and seat back. Together, the two lower anchorage points and top tether anchorage make the LATCH system. By September 1, 2002, this system will be required in two rear seating positions of all cars, minivans, and light trucks.

A lower anchorage is a small rod or bar located between a vehicle's seat cushion and seat back allowing a child safety seat to be attached or snapped into the vehicle instead of being held secure by the vehicle's belt system. By September 1, 2002, all child safety seats will have two attachments which will connect to the vehicle's lower anchorage attachment points. (Some child seat manufacturers have included lower anchorage points in year 2000 models.)



LATCH TETHER AVAILABILITY

Screen Name: LATCH Tether

SAS Data Set: **SEATLOC**
SAS Variable: **LATTETH**

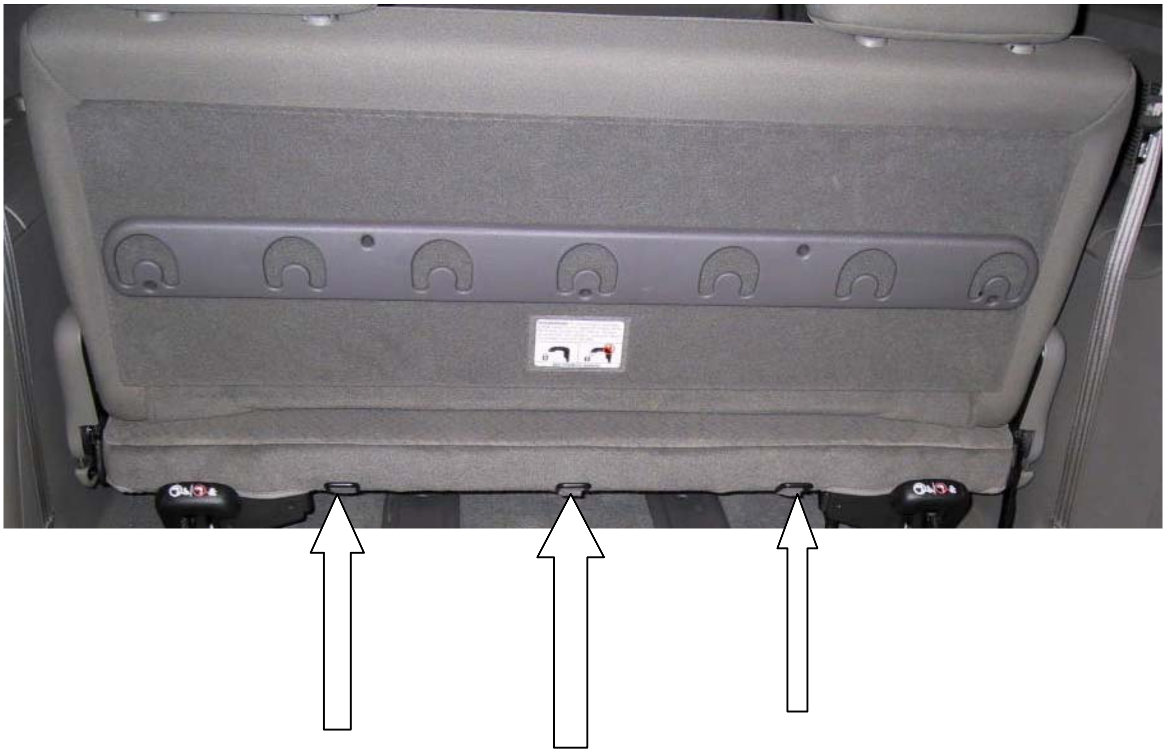
Element Attributes:

1	No
2	Yes
9	Unknown if tether

Source: Interior Vehicle Inspection (and/or Interview)

Remarks:

The tether anchor will found on the rear shelf area of the vehicle. It may be concealed by some sort of covering which can be removed or “flipped up”. In some vehicles, such as mini-vans and station wagons, the tether anchor may be found on the rear floor of the vehicle or on the back of the rear seat.



SEAT BACK INCLINE PRIOR TO IMPACT

Screen Name: Seat Back -- Prior

SAS Data Set: **SEATLOC**
SAS Variable: **STPRINCL**

Element Values:

1	Not adjustable
2	Upright
3	Slightly reclined
4	Completely reclined
9	Unknown prior incline

Source: Vehicle inspection

Remarks:

This variable is for adjustable (reclining) seat backs only

Not adjustable
is used for seating positions where there is a seat back which is fixed in position.

Upright
is used when the seatback is in the fully upright position (i.e., perpendicular to the seat cushion)

Slightly reclined
is used when the seat back is in a slightly reclined position

Completely reclined
is used when the seat back is in a position that is rearward to the limit of its range of movement.

Unknown
is used when the pre-impact position could not be ascertained.

SEAT BACK INCLINE POSITION POST IMPACT

Screen Name: Seat Back -- Post

SAS Data Set: **SEATLOC**
SAS Variable: **STPSINCL**

Element Attributes:

0	[No seat]
1	[Not adjustable]
2	Moved to completely rearward position
3	Moved to rearward midrange position
4	Move to slightly rearward position
5	Retained pre-impact position
6	Moved to upright position
7	Moved to slightly forward position
8	Moved to Forward midrange position
9	Move to complete forward position
99	Unknown post incline

Source: Vehicle inspection

Remarks:

This variable is for adjustable (reclining) seat backs only. Select the attribute that describes the backrest position post-impact as determined from the vehicle inspection. The final coding of this variable on the Occupant form will take into account information gathered from the occupant interviews.

Unknown
is used when the post crash seat back position could not be determined.

AIR BAG EVER AVAILABLE

Screen Name: Air Bag Ever Available

SAS Data Set: **SEATLOC**
SAS Variable: **BAGEVER**

Element Attributes:

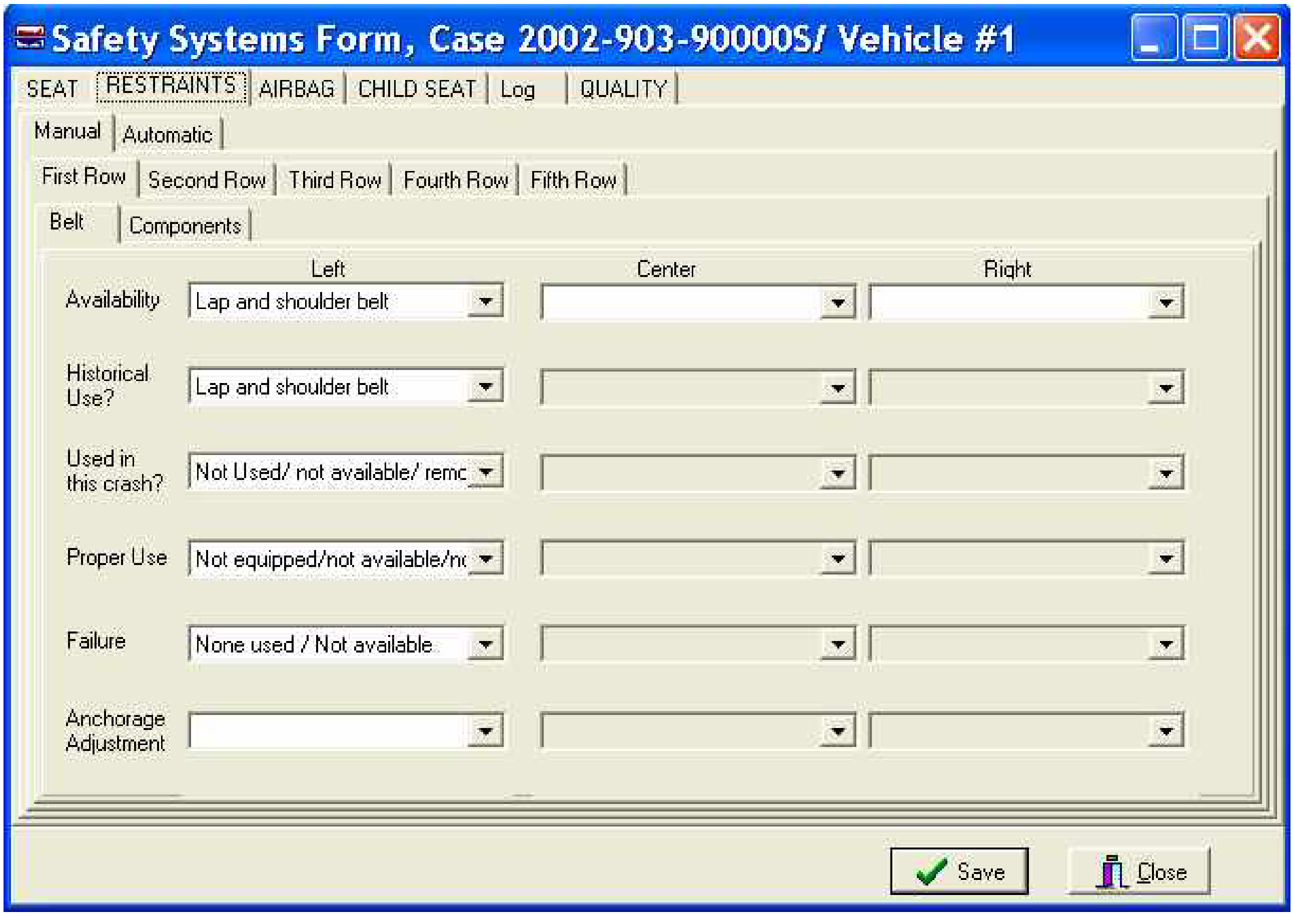
0	No
1	Yes
9	Unknown

Source: Vehicle inspection

Remarks:

If this car was either manufactured with an air bag or one was none to have been retrofitted then indicate this information in the variable.

Restraints / Manual / Belt



Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Manual
Automatic
First Row
Second Row
Third Row
Fourth Row
Fifth Row
Belt
Components
Save
Close

	Left	Center	Right
Availability	Lap and shoulder belt		
Historical Use?	Lap and shoulder belt		
Used in this crash?	Not Used/ not available/ remc		
Proper Use	Not equipped/not available/nc		
Failure	None used / Not available		
Anchorage Adjustment			

MANUAL (ACTIVE) BELT SYSTEM AVAILABILITY

Screen Name: Availability

SAS Data Set: **SEATLOC**
SAS Variable: **ACTAVAIL**

Element Attributes:

0 None available
1 Belt removed/destroyed
2 Shoulder belt
3 Lap belt
4 Lap and shoulder belt
5 Belt available - type unknown
6 Shoulder belt (lap belt destroyed/removed)
7 Lap belt (shoulder belt destroyed/removed)
8 Other belt (specify)
9 Unknown if available

Source: Vehicle inspection

Remarks:

Some belt restraint systems are a combination of manual (active) and automatic (passive) occupant protection devices. For this variable, consider only the manual portion of the system.

Availability is assessed based on the seat position regardless of whether it is occupied. Select the manual belt system which was available for use, if so desired, by the occupant relative to the seat position in the vehicle.

Not available
indicates: (1) that at the time of the crash the designated seating position was not equipped with a manufacture installed or post manufacturer installed manual belt (lap, shoulder, or lap and shoulder); (2) the seat position was equipped only with an automatic (passive) belt system.

Belt removed/destroyed
indicates that the manual belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (*e.g.*, unbolted, cutout, etc.). If the belt is present but nonfunctional, then select the type of manual belt available on this variable and use **Inoperative** for **Used In This Crash?**

Belts which are knotted, buckled at the rear of the seat (bench or bucket), stored below the seat, etc., are available if they were otherwise operative.

Manual (Active) Belt System Availability (cont'd)

Shoulder belt
is used when this occupant's seat position was equipped with a manual upper torso restraint and no lap belt. The population of vehicles equipped with only manual shoulder belts is very small, therefore, care must be taken that a two-point passive belt is not identified as a manual belt (*e.g.*, Volkswagen Rabbits 1981-1984).

Lap belt
is used when this occupant's seat position is equipped with a manual belt that secures the pelvic area of the occupant in the seat and there is no manual upper torso belt.

Lap and shoulder belt
is used when both a manual upper torso belt and a manual lap (pelvic area) belt are present at this occupant's seat position.

Belt available — type unknown
When the specific manual belt system cannot be determined, but it is known some type of belt is present, then use this attribute (this **may** occur when inspecting completely burned or stripped vehicles).

Shoulder belt (lap belt destroyed/removed)
is used for integral noncontinuous loop manual belt systems when the lap belt portion of the belt has been removed or destroyed leaving only the shoulder belt portion present at this occupant's seating position.

Lap belt (shoulder belt destroyed/removed)
is used for integral noncontinuous loop manual belt systems when the shoulder belt portion of the belt has been removed or destroyed leaving only the lap belt portion present at this occupant's seating position.

Other belt (specify)
is used when the belt system is nonstandard or cannot be described with other attributes. Specify (write out in the Specify Box) the type of manual belt (*e.g.*, 5 point competition harness, 4 inch wide webbing, etc.). In addition, use this attribute if a properly position "self-contained" built-in child safety seat was available at this occupant's seating position. Other child restraints are not recorded here.

Unknown
is used when it cannot be determined whether or not manual belts were available for this occupant's seat position.

HISTORICAL USE OF MANUAL (ACTIVE) BELT SYSTEM

Screen Name: Historical Use

SAS Data Set: **SEATLOC**
SAS Variable: **ACTHIST**

Element Attributes:

0	None used / not available / removed or destroyed
1	Inoperative (specify)
2	Shoulder belt
3	Lap belt
4	Lap and shoulder belt
5	Belt used — type unknown
8	Other belt used (specify)
12	Shoulder with child safety seat
13	Lap with child safety seat
14	Lap and shoulder 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

Source: Vehicle inspection

Remarks:

Select the manual belt system (or portion of the system) which has historically been used by an occupant in this seat position. The correctness of the use is not assessed on this variable. This variable only identifies historical manual belt usage; do not consider the presence and use of a passive belt system.

None used / not a available / removed or destroyed
is used when there is no evidence present that a manual belt was worn. Note: the "**not available removed or destroyed**" within this selection is automatically selected when the corresponding attribute is selected in **Manual Belt Availability**.

Inoperative (specify)
includes belts which are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts which are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned **None used, not available, or belt removed/destroyed**.

Shoulder belt
is used when evidence is present that indicates a manual shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a non-integral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Historical Use of Manual (Active) Belt System (cont'd)

Page 2 of 2

Lap belt
is used when evidence is present that indicates a manual lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a non-integral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use. **Note**, manual lap belts can be used in conjunction with a two-point automatic belt system. For manual and automatic belt combinations, use this attribute for the manual lap belt usage.

Lap and shoulder belt
is used when evidence is present that indicates the occupant is: (1) "encompassed" ***both*** in the lap and upper torso region by a manual lap and shoulder belt combination, or (2) using only a portion of an ***intact integral*** lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (*i.e.*, having the shoulder belt behind his or her back), then use this attribute.

Belt used — type unknown
is used when the type of manual belt system cannot be determined.

Shoulder / lap / lap and shoulder belt used with child seat
is used when evidence is present that indicates the vehicle's manual belt system anchors a child safety seat to the vehicle. These attributes do not refer to the belts which are part of the child seat itself.

Belt used with child safety seat — type unknown
s used when evidence is present that indicates a belt was used with a child safety seat, however the vehicle belt type is unknown, not the child safety seat type.

Other belt used with child safety seat
s used when evidence is present that indicates a built-in child safety seat is "self contained" (does not use any part of the regular existing manual belt system available at the occupant seating position).

Unknown if belt used
is used if it cannot be determined whether or not a manual belt was in use by the occupant at the time of the crash.

MANUAL (ACTIVE) BELT SYSTEM USED IN THIS CRASH?

Page 1 of 2

Screen Name: Used in this crash?

SAS Data Set: **SEATLOC**
SAS Variable: **ACTUSE**

Element Attributes:

0 None used not available / removed or destroyed
1 Inoperative (specify)
2 Shoulder belt
3 Lap belt
4 Lap and shoulder belt
5 Belt used — type unknown
8 Other belt used (specify)
12 Shoulder belt with child safety seat
13 Lap belt with child safety seat
14 Lap and shoulder belt with child safety seat
15 Belt with child safety seat — type unknown
18 Other belt with child safety seat (specify)
99 Unknown if belt used

Source: Vehicle Inspection

Remarks:

Select the manual belt system or portion of the system which was in use at the time of the crash by the occupant. The correctness of the use is not assessed on this variable. This variable only identifies manual belt usage; do not consider the presence and use of a passive belt system.

None used / not available / removed or destroyed
is used when a manual belt was available but not worn at the time of the crash. **Note:** the "**not available / removed or destroyed**" within this selection is automatically selected when the corresponding attribute is selected in **Manual Belt Availability**.

Inoperative
includes belts which are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts which are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned **None used, not available, or belt removed/destroyed.**

Shoulder belt
is used when a manual shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a non-integral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Manual (Active) Belt System Used in This Crash? (cont'd)

Page 2 of 2

Lap belt
is used when a manual lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a non-integral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use. **Note**, manual lap belts can be used in conjunction with a two-point automatic belt system. For manual and automatic belt combinations, use this attribute for the manual lap belt usage.

Lap and shoulder belt
is used when the occupant is: (1) "encompassed" ***both*** in the lap and upper torso region by a manual lap and shoulder belt combination, or (2) using only a portion of an ***intact integral*** lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (*i.e.*, having the shoulder belt behind his or her back), then use this attribute. Improper use of the belt is assessed in Proper Use of Manual (Active) Belts.

Belt used — type unknown
is used when the type of manual belt system cannot be determined.

Shoulder / lap / lap and shoulder belt used with child seat
is used when the vehicle's manual belt system anchors a child safety seat to the vehicle. These attributes do not refer to the belts which are part of the child seat itself.

Belt with child safety seat — type unknown
is used when the vehicle belt type is unknown, not the child safety seat type.

Other belt with child safety seat
is used when a built-in child safety seat is "self contained" (does not use any part of the regular existing manual belt system available at the occupant seating position).

Unknown if belt used
is used if it cannot be determined whether or not a manual belt was in use by the occupant at the time of the crash.

PROPER USE OF MANUAL (ACTIVE) BELTS

Screen Name: Proper Use

SAS Data Set: **SEATLOC**
SAS Variable: **ACTPROPR**

Element Attributes:

0	[None used / not available / removed or destroyed]
1	Used properly
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
8	Other improper use of manual belt system (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

This variable must be assessed by the researcher using all available vehicle data. An improperly used manual belt can cause a large variety of injuries by itself or, depending upon the way it is improperly used, it can allow other injuries to occur which might not have happened if the restraint was properly used. In severe cases an improperly worn belt can be the cause of death. An improperly used belt can also lead to belt failure. If there is an improperly used belt and/or a belt system failure, they should be noted in the Case Summary.

Shoulder belt worn behind back or seat
is used when an occupant has an integral lap and shoulder belt but is only wearing the lap portion (*e.g.*, having the manual shoulder belt behind his or her back).

Belt worn around more than one person
is used when more than one occupant is sharing the same manual belt. Occupants may be sitting side-by-side, in front of one another, or on top of one another.

Lap belt worn on abdomen
is used when the manual lap belt, or lap belt portion of a manual system, is worn above the occupant's pelvic bones.

Proper Use of Manual (Active) Belts (cont'd)

Other improper use of manual belt (system)
is used to describe any improper use of the manual belt system which is not listed above. For example, use this when a manual shoulder belt is worn on the outside of an occupant's arm (*i.e.*, humeral area) as opposed to under the arm or on top of the shoulder/clavicle.

Unknown
is used:

- when it is not known whether the manual belts used were used properly or improperly, or

- when a child safety seat is occupied by a child, but it is unknown if the seat was installed (using either the manufacturer's or the vehicle's manual belts) according to the manufacturer's directions.

MANUAL (ACTIVE) BELT FAILURE MODES DURING CRASH

Screen Name: Failure

SAS Data Set: **SEATLOC**
SAS Variable: **ACTFAIL**

Element Attributes:

0	[None used / not available / removed or destroyed]
1	No manual belt failure(s)
2	Torn webbing (stretched webbing not included)
3	Broken buckle or latch plate
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 if failed [unknown if available / unknown if used]

Source: Vehicle inspection

Remarks:
If any component of the manual belt system fails during the impact as a result of occupant loading, the failure is captured in this variable. The failure is also recorded on the **Case Form / Summary Tab** and documented with images.

If a failure occurs, select the attribute which corresponds to the appropriate manual belt failure mode that describes the component of the restraint system which failed (*i.e.*, torn webbing, broken buckle or latchplate, anchorage separation, broken retractor). A complete and documented description of the failed component and the way it failed must accompany the case.

No manual belt failure(s)
is used when there is no physical evidence from the vehicle inspection to indicate that a failure occurred.

Combination of above (specify)
is used when any combination of specified attributes occur and describes multiple manual belt failure modes. Manual belt failure modes which are not described are reported in **other manual belt failure**. Manual belt failures **with specific attributes** take priority over the **Other manual belt failure** code.

Other manual belt failure (specify)
is used when the only manual belt failure(s) which occur are not described with a specific attribute.

Unknown
is used when it can not be determined if the manual belt failed.

MANUAL SHOULDER BELT UPPER ANCHORAGE ADJUSTMENT

Screen Name: Anchorage Adjustment

SAS Data Set: **SEATLOC**
SAS Variable: **ACTANCH**

Element Attributes:

0 [No manual shoulder belt]
1 None for manual shoulder belt
2 In full up position
3 In mid position
4 In full down position
5 Position unknown
9 Unknown if adjuster present

Source: Vehicle inspection

Remarks:

Complete this variable regardless of manual shoulder belt usage.

No upper anchorage adjustment for manual shoulder belt
is used when a manual shoulder belt is present but there is no adjustment mechanism at the upper anchorage point.

In full up position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in its highest position at the time of the crash (*e.g.* closest position to the roof).

In mid position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in a middle position at the time of the crash (somewhere between full up and full down).

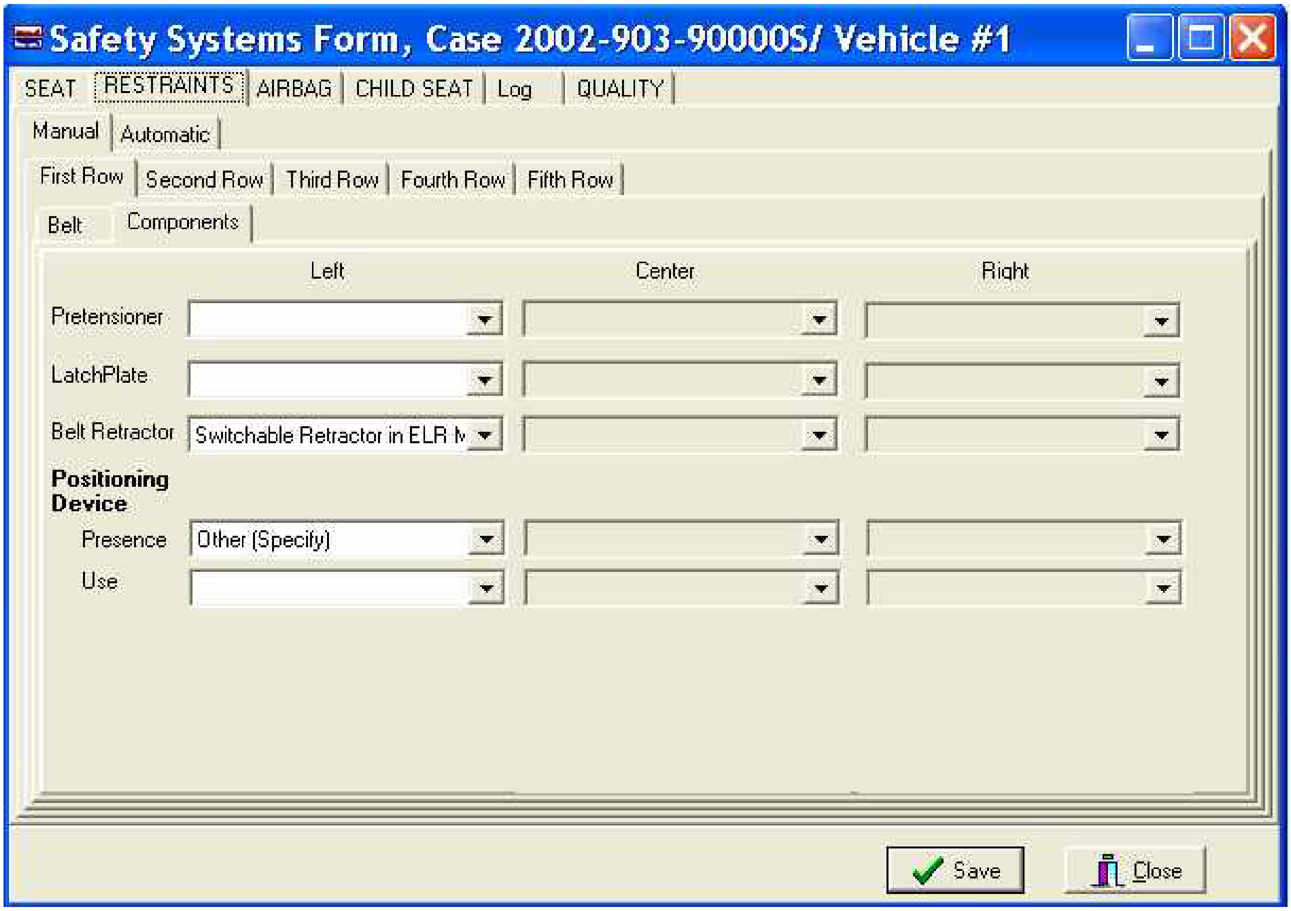
In full down position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in its lowest position at the time of the crash (closest position to the floor).

Position unknown
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point but it cannot be determined what the position was at the time of the crash.

Unknown if adjuster present
Is used when it cannot be determined if the manual shoulder belt was equipped with an adjustable upper anchorage device.

in NASSMAIN to distinguish it from “Position unknown”.

RESTRAINTS / MANUAL / COMPONENTS


SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Manual
Automatic
First Row
Second Row
Third Row
Fourth Row
Fifth Row
Belt
Components
Save
Close

Safety Systems Form, Case 2002-903-90000S/ Vehicle #1

	Left	Center	Right
Pretensioner			
LatchPlate			
Belt Retractor	Switchable Retractor in ELR M		
Positioning Device			
Presence	Other (Specify)		
Use			

PRETENSIONER PRESENCE/ACTUATION

Screen Name: Pretensioner

SAS Data Set: **SEATLOC**
SAS Variable: **ACTPRET**

Element Attributes:

0	Not equipped
1	Pretensioner not actuated
2	Retractor type actuated
3	Buckle type actuated (Specify Measurement)
4	Buckle type actuated measurement unknown
5	Pretnensioner present, Unknown if actuated
9	Unknown if equipped

Source: Vehicle Inspection

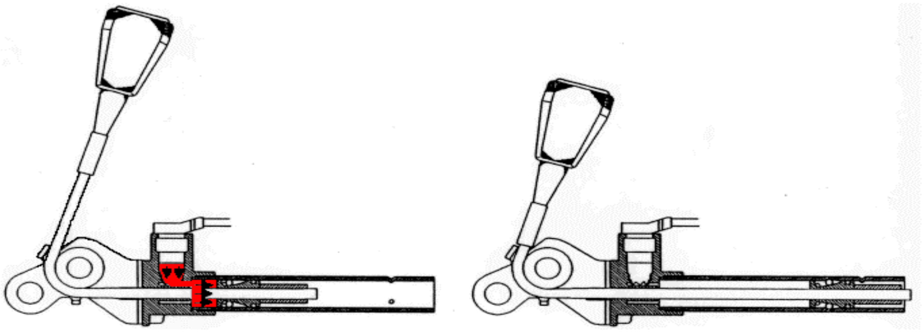
Remarks:

Can tighten the belt up to 15 cm.

When a collision occurs, a seat belt with a pretensioner detects the incident, or that the have been applied, and tightens the belt before the wearer is propelled forward. This holds the occupant more securely in the seat. Only vehicles with air bags will have pretensioners. They may be present in seating positions that do not have air bags (‘80s Mercedes).

The seat belt pretensioners consist of a housing, an initiator, a canister of gas generating materials, a routing cable with a piston attached, and a piston tube. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, a microprocessor causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners and shortens the seat belt pretensioner height, which removes all of the slack in the seat belts. The seat belt pretensioners will deploy immediately before the frontal inflator (air bag) modules deploy.

If a front air bag (instrument panel, steering wheel) deploys, the pretensioner will deploy. However, it is possible for the pretensioner to deploy without the air bag.



LATCH PLATE TYPE

Screen Name: Latch Plate

SAS Data Set: **SEATLOC**
SAS Variable: **ACTLPLAT**

Element Attributes:

0	Not used/not available
1	Sliding
2	Light weight locking/cinching
3	Locking
4	Switchable
5	Sewn On
9	Unknown Type

Source: Vehicle Inspection

Remarks:

This variable is coded for all manual seat belts that are coded for any vehicle position.

Sliding

Lightweight locking/cinching

Locking

Switchable

Switchable has a switch that locks the belt webbing by sliding a button.

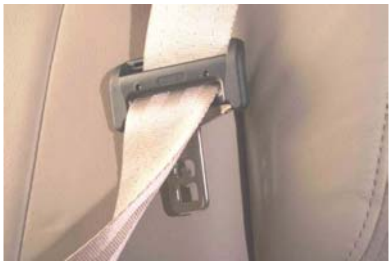
Sewn on

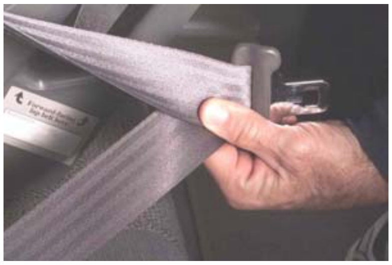
If a sewn on latch plate is present, there will be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable.

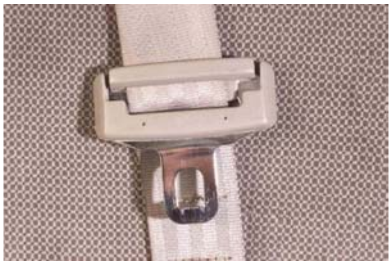
Unknown type

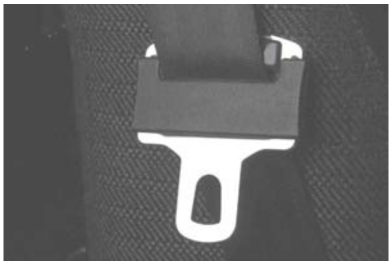
Latch Plate Type cont'd

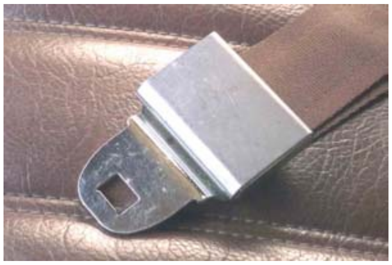
Page 2 of 2

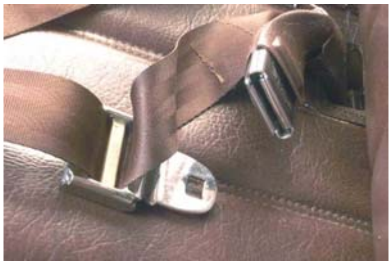

Sliding

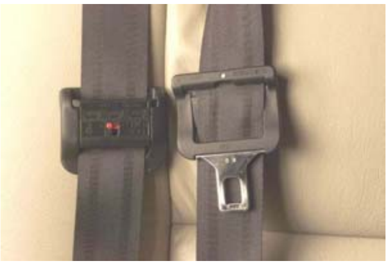

Sliding

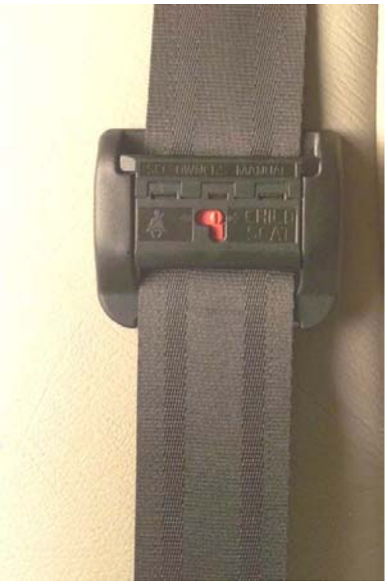

Lightweight locking/cinching

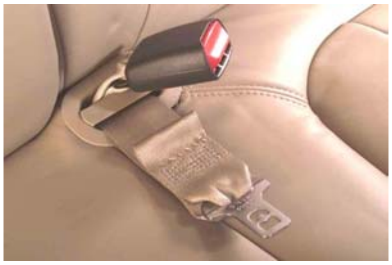

Lightweight locking/cinching

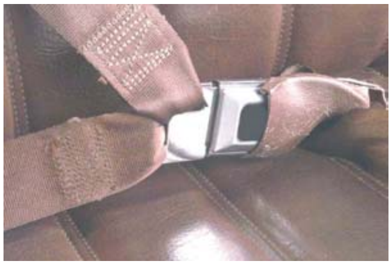

Locking


Locking


Switchable


SEE OWNER'S MANUAL
CHILD SEAT
Switchable


Sewn on


Sewn on

BELT RETRACTOR TYPE

Page 1 of 2

Screen Name: Belt Retractor

SAS Data Set: **SEATLOC**
SAS Variable: **ACTBLRET**

Element Attributes:

0	None Present
1	Emergency Locking Retractor
2	Automatic Locking Retractor
3	Switchable Retractor in ELR Mode
4	Switchable Retractor in ALR Mode
5	Switchable Retractor in Unknown Mode
9	Unknown Type of Retractor

Source: Vehicle Inspection, interview

Remarks:

This variable is coded for all manual seat belts that are coded for any vehicle position.

If a sewn on latch plate is present, there will most likely be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable from ELR to ALR. In this variable we are only interested in the retractor of the lap portion of the belt.

Another type of switchable retractor switches when the belt is pulled all the way out causing the retractor to switch to ALR mode.

Retractors wind up the loose webbing of the unused 3-point safety belt, take up the slack, and provides slight tension on belts that are in use. They are usually located out of sight at an anchor point. Check the vehicle owner's manual and also look for labels on the belt webbing to determine the retractor type.

NOTE that some newer vehicles have a switchable retractor that can be manually adjusted from ELR to ALR. Most of them can be switched by pulling the webbing all the way out of the retractor to activate the ALR. In some models, the retractors switch from ELR to ALR with the push of a button. Most switchable retractors have a label on the belt with instructions on how to switch it. Enter the information for the position of the retractor.

Automatic locking retractor (ALR)
The ALR locks in place after being pulled out and allowed to retract about ½" The belt cannot be extended unless it is first fully rewound. It is generally uncomfortable for adults to wear.

Emergency locking retractor (ELR)
The ELR allows the belt to be freely extended or rewound. It locks only when the vehicle slows, changes direction, or stops suddenly. Since the retractor rarely locks during normal driving, it provides more freedom and comfort to an adult driver than an ALR. Some ELRs are vehicle sensitive and lock in direct response to the deceleration of the vehicle. Other ELRs are webbing

Belt Retractor Type cont'd

or belt-sensitive and temporarily lock in response to a quick jerk or pull on the belt. Some ELRs are both vehicle and belt sensitive. Some ELRs have a window shade tension reliever system designed to make 3-point belts more comfortable by allowing “slack” in the shoulder belt. Occupants using these belts “tug” on the shoulder belt to tighten it after they lean forward.

Unknown
is used when the type of retractor cannot be determined

SEAT BELT POSITIONING DEVICE PRESENCE

Page 1 of 2

Screen Name: Positioning Device Presence

SAS Data Set: **SEATLOC**
SAS Variable: **IPOSPRES**

Element Attributes:

0	None present
1	Buckle Buddy – Shoulder Belt Adjuster
2	Sta-n-Place – Shoulder Belt Adjuster
3	Belt-A-Way – Shoulder Belt Adjuster
4	Shoulder Strap Adjuster – Shoulder Belt Adjuster
5	Child Protector – Lap and Shoulder Belt Adjuster
6	SafeFit – Shoulder Belt Adjuster
7	SafeFit Supreme - Shoulder Belt Adjuster
8	Seat Belt Adjuster – Shoulder Belt Adjuster
9	Klunk-Klip – Shoulder Belt Adjuster
10	Child Safer – Shoulder Belt Adjuster
11	Comfort Ride – Shoulder Belt Adjuster
12	Belt Buddy
97	OEM device
98	Other device (specify)
99	Unknown if device present

Source: Vehicle Inspection

Remarks:

This variable is coded for any position containing a shoulder belt.

Aftermarket seat belt positioning devices are typically manufactured for use by small statured adults and children to adjust lap and shoulder belt fit and comfort.

These products are not considered “safety devices” and are not tested or regulated by NHTSA.

GM rear seat shoulder belt comfort guide

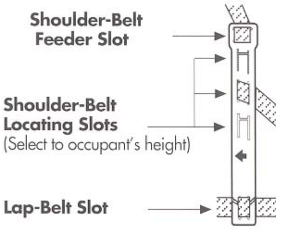
Belt buddy

Buckle buddy

Seat Belt Positioning Device Presence cont'd

Shoulder strap adjusters

Shoulder strap adjusters

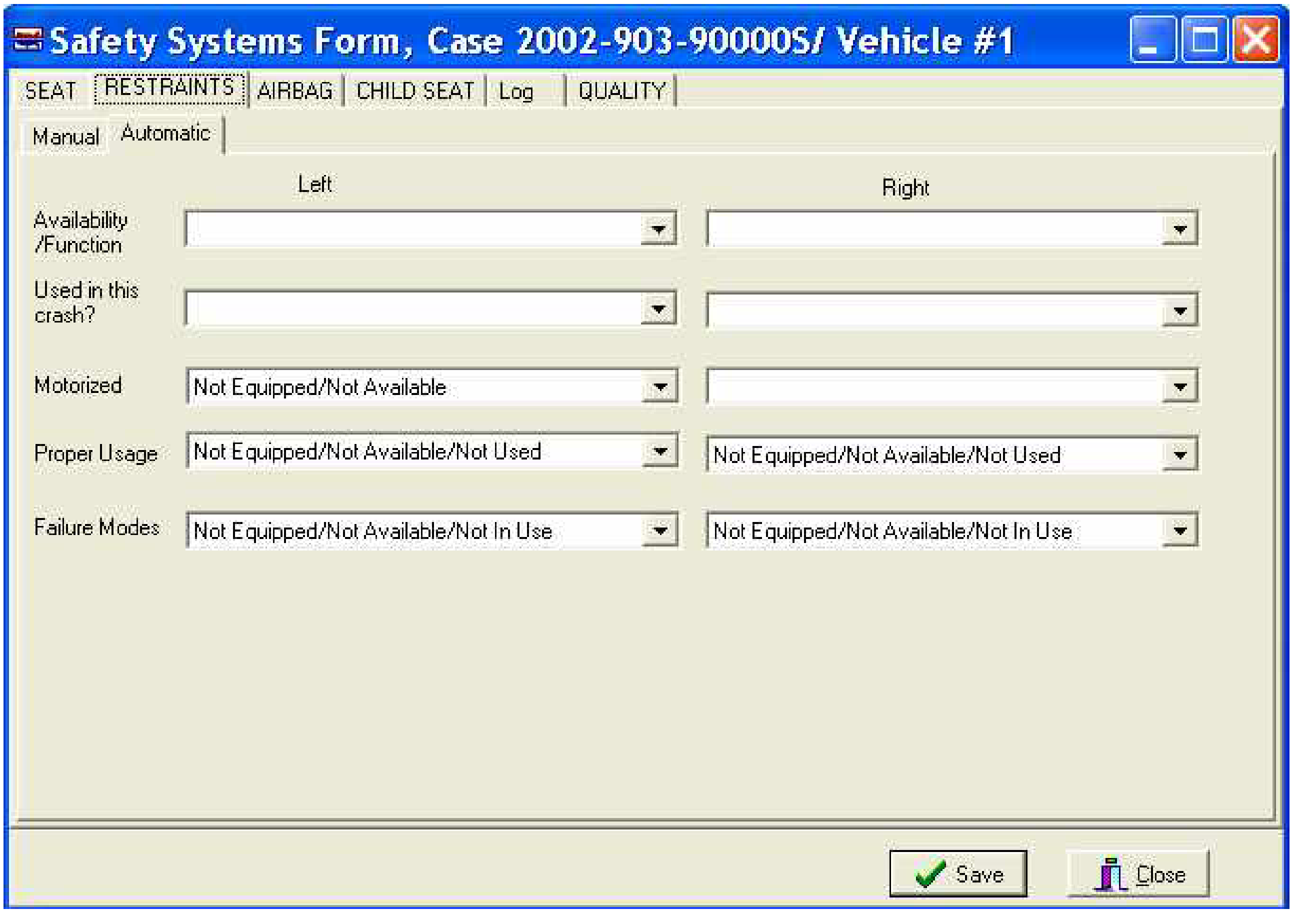

Shoulder-Belt Feeder Slot
Shoulder-Belt Locating Slots (Select to occupant's height)
Lap-Belt Slot

Child safer

Child safer

Child safer

Restraints / Automatic


Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Manual
Automatic
Save
Close

	Left	Right
Availability /Function		
Used in this crash?		
Motorized	Not Equipped/Not Available	
Proper Usage	Not Equipped/Not Available/Not Used	Not Equipped/Not Available/Not Used
Failure Modes	Not Equipped/Not Available/Not In Use	Not Equipped/Not Available/Not In Use

AUTOMATIC (PASSIVE) BELT SYSTEM AVAILABILITY/FUNCTION

Screen Name: Availability/Function

SAS Data Set: **SEATLOC**
SAS Variable: **PASAVAIL**

Element Attributes:

0	Not equipped/not available
1	2 point automatic belts
2	3 point automatic belts
3	Automatic type unknown
4	Automatic belts destroyed or rendered inoperative
9	Unknown

Source: Vehicle inspection

Remarks:

Some belt restraint systems are a combination of manual (active) and automatic (passive) occupant protection devices. For this variable, consider only the automatic portion of the system. Select the automatic belt system which was available at the time of the crash for this occupant.

Automatic belts are designed to restrain an occupant and allow an occupant egress (the act of going from an enclosed place) without the requirement of manually activating the belt. Some systems use only a torso belt (2 point automatic belts), while others are designed with a lap and torso belt (3 point automatic belts). A clue for proper system identification involves the egress issue. If you are sitting in the occupant's position and all belts are attached and you open the door, then determine if you ***have to*** detach any belt in order to exit the vehicle. Belts which do not require detaching are automatic belts. Note: The ease of egress is not considered because many automatic belt systems may appear cumbersome.

Availability is assessed based on the occupant's seating position. Select the automatic belt system which was available for use, if so desired, by the occupant relative to the occupant's seating position in the vehicle. Availability is also determined by presence, functional status, and use of the automatic belt system. Any occupant who is using a belt restraint system, or portion thereof, must by default have that system available to them. The correctness and/or appropriateness of the use is considered in Proper Use of Automatic (Passive) Belt System.

Not equipped/not available
indicates:

- that at the time of the crash the designated seating position that the occupant was in, was not equipped with a manufacturer installed or post manufacture installed automatic belt (2- point or 3-point)
- the occupant was not in a designated seat position (*e.g.*, on the floor)
- the occupant was not the person assigned the designated seat position and was not using an automatic belt (*e.g.*, sitting side-by-side) **or**
- the seat position that the occupant was in was equipped only with a manual (active) belt system.

2 point automatic belts

is used when a torso belt is anchored along the inboard side of the front seat and anchored either at the upper window frame of the door surface (adjacent to the upper B-pillar) or attached to a motorized track located along the upper A-pillar, roof side rail, and upper B-pillar. A two point automatic belt system requires the presence of either a manual lap belt or a knee bolster.

3 point automatic belts

is used for an automatic belt system consisting of a lap and torso belt. This system uses a common anchor for both belts located on the inboard side of the front seat and two anchors along the door surface (*e.g.*, commonly used in General Motors cars beginning in 1987 until mid- 1990's). This system can be detected by sitting in the occupant's position with the latch plate/buckle attached and opening the door. If the belt travels with the door and allows egress without detaching the belt, then use this attribute—the system is automatic.

Automatic belts — type unknown

is used when a vehicle inspection occurs and the occupant's seating position is known to have automatic belts but the researcher is not able to determine from the vehicle inspection what type of automatic belts are available.

If the type of automatic belt system is determinable, then the system's mechanization can also be determined because most manufacturers use the same type of system for a given vehicular model. In addition, this code takes precedence over the following code **Automatic belts destroyed or rendered inoperative**.

Automatic belts destroyed or rendered inoperative

is used when the automatic belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (*e.g.*, unbolted, cutout, etc.) or in any way rendered inoperative. In addition, use this attribute for belts which are extremely deteriorated from aging. Do not use this attribute for motorized belt tracks which are mechanically or electrically inoperative. This is considered under Automatic Belt Use System.

Belts which are knotted, buckled at the rear of the seat (bench or bucket), etc., are available if they were otherwise operative.

Unknown

is used for front out-board occupants of passenger vehicles when it cannot be determined whether or not this occupant's seating position was equipped with an automatic belt system.

AUTOMATIC (PASSIVE) BELT SYSTEM USE

Screen Name: Used in this crash?

SAS Data Set: **SEATLOC**
SAS Variable: **PASSUSE**

Element Attributes:

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

Source: Vehicle inspection

Remarks:

Not equipped / not available / destroyed or rendered inoperative

is automatically selected when **Automatic Availability** is selected as “Not equipped not available”.

Additionally, select this code when automatic belts are present, but were destroyed or rendered inoperative at the time of the crash.

Automatic belt in use

is used when this automatic belt was hooked up (in use) at the time of the crash. The correctness of the use is not assessed on this variable.

Not in use (manually disconnected, motorized track inoperative)

is used when the automatic belt’s latch plate/buckle was detached at the time of the crash. For example, this attribute is used to capture disconnected 3-point, door mounted automatic belts (*i.e.*, 1987 to mid-1990 General Motors vehicles) which can be used similar to an active lap and shoulder belt system.

This is also used for motorized tracks which were ***not in the restrained position*** at the time of the crash. The motorized track may be inoperative because of fuse removal, electric motor failure, or track failure when the malfunction prevents the automatic belt system from moving along its track into the restrained position.

Note! This variable does not assess how this occupant uses the automatic belt when entering or exiting the seating position. For example, this occupant may routinely manually detach/attach the latch plate/buckle (*i.e.*, uses the automatic belt system as if it were a manual belt system). This variable assumes that the nonmotorized automatic belt is available and functioning and assesses whether or not the latch plate/buckle was attached at the time of the crash. If the latch plate/buckle was attached at the time of the crash, then use Automatic belt in use. On the other hand, if it was detached, then use Automatic belt not in use (manually disconnected, motorized track inoperative).

For motorized belts, this variable assumes that the motorized belt system is locked in the restrained position with the belt attached at the time of the crash. If the motorized belt system was locked in the restrained position and the belt was attached at the time of the crash, then use Automatic belt in use. If the motorized belt system was not locked in the restrained position or the belt was detached, then use Automatic belt not in use (manually disconnected motorized track inoperative).

Automatic belt use unknown

is used when the researcher is unable to determine if the automatic belt was in use.

AUTOMATIC (PASSIVE) BELT SYSTEM TYPE

Screen Name: Motorized

SAS Data Set: **SEATLOC**
SAS Variable: **PASSTYPE**

Element Attributes:
0 [Not equipped / not available / destroyed or rendered inoperative]
1 Non-motorized system
2 Motorized system
9 Unknown

Source: Vehicle inspection

Remarks:

Non-motorized system
is used when the automatic belt system available to this occupant does not require a motor for operation.

Motorized system
is used when the automatic belt system available to this occupant requires a motor for operation.

Unknown
is used when it is known that an automatic belt is available but the type (non-motorized or motorized) cannot be determined.

PROPER USE OF AUTOMATIC (PASSIVE) BELT SYSTEM

Screen Name: Proper Use

SAS Data Set: **SEATLOC**
SAS Variable: **PASSPROP**

Element Attributes:

0	[Not equipped / not available / destroyed or rendered inoperative]
1	Used properly
3	Shoulder belt worn under arm
4	Shoulder belt worn behind back
5	Belt worn around more than one person
6	Lap portion worn on abdomen
8	Other improper use (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

This variable must be assessed by the researcher using all available data. An improperly used automatic belt can cause a large variety of injuries by itself or, depending upon the way it is improperly used, it can allow other injuries to occur which might not have happened if the restraint was properly used. In severe cases an improperly worn belt can be the cause of death. An improperly used belt can also lead to belt failure which is addressed in Automatic (Passive) Belt Failure Modes During Crash. If there is an improperly used belt and/or a belt system failure, they should be noted on the **Case Form / Summary Tab.**

Automatic shoulder belt worn behind back is used:

- when an occupant has a three point automatic belt but is only wearing the lap portion (*i.e.*, having the automatic torso belt behind the occupant's back), or

- when an occupant has a two point automatic belt and is not wearing the torso portion (*i.e.*, the automatic torso belt is attached and is behind the occupant's back).

Automatic belt worn around more than one person

is used when more than one occupant is sharing the same automatic belt. Occupants may be sitting side-by-side, in front of one another, or on top of one another. If the occupants are using a three point automatic belt such that the torso portion is worn behind one or more of the occupants backs while the lap portion encompasses their hips, then use this attribute.

Proper Use of Automatic (Passive) Belt System (cont'd)

Page 2 of 2

Lap portion of automatic belt worn on abdomen

is used when the lap belt portion of a three point automatic belt system is worn above the occupant's pelvic bones.

Other improper use of automatic belt system

is used to describe any improper use of the automatic belt system which is not listed above. This includes when an automatic shoulder belt is worn on the outside of an occupant's arm as opposed to under the arm or on top of the shoulder.

Unknown

is used when it is not known whether the automatic belts were used properly.

AUTOMATIC (PASSIVE) BELT FAILURE MODES DURING CRASH

Screen Name: Failure Modes

SAS Data Set: **SEATLOC**
SAS Variable: **PASSFAIL**

Element Attributes:

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

Source: Vehicle inspection

Remarks:

If any component of the automatic belt system fails during the impact, the failure is captured in this variable. The failure is also recorded on the **Case Form / Summary Tab** and documented with images as needed. Automatic belt system failures, unlike manual belt system failures, are not limited to those that resulted from occupant loading.

If a failure occurs, select the attribute which corresponds to the appropriate automatic belt failure mode that describes the component of the restraint system which failed (*i.e.*, torn webbing, broken buckle or latchplate, anchorage separation, broken retractor). A complete and documented description of the failed component and the way it failed must accompany the case.

No automatic belt failure(s)

is used when there is no physical evidence from the vehicle inspection to indicate or support that a failure occurred.

Combination of above, specify

is used when any combination of specified attributes occurs and describes multiple automatic belt failure modes. Automatic belt failures which are not described are reported in **Other automatic belt failure**. Automatic belt failures listed with specific attributes take priority over other attributes.

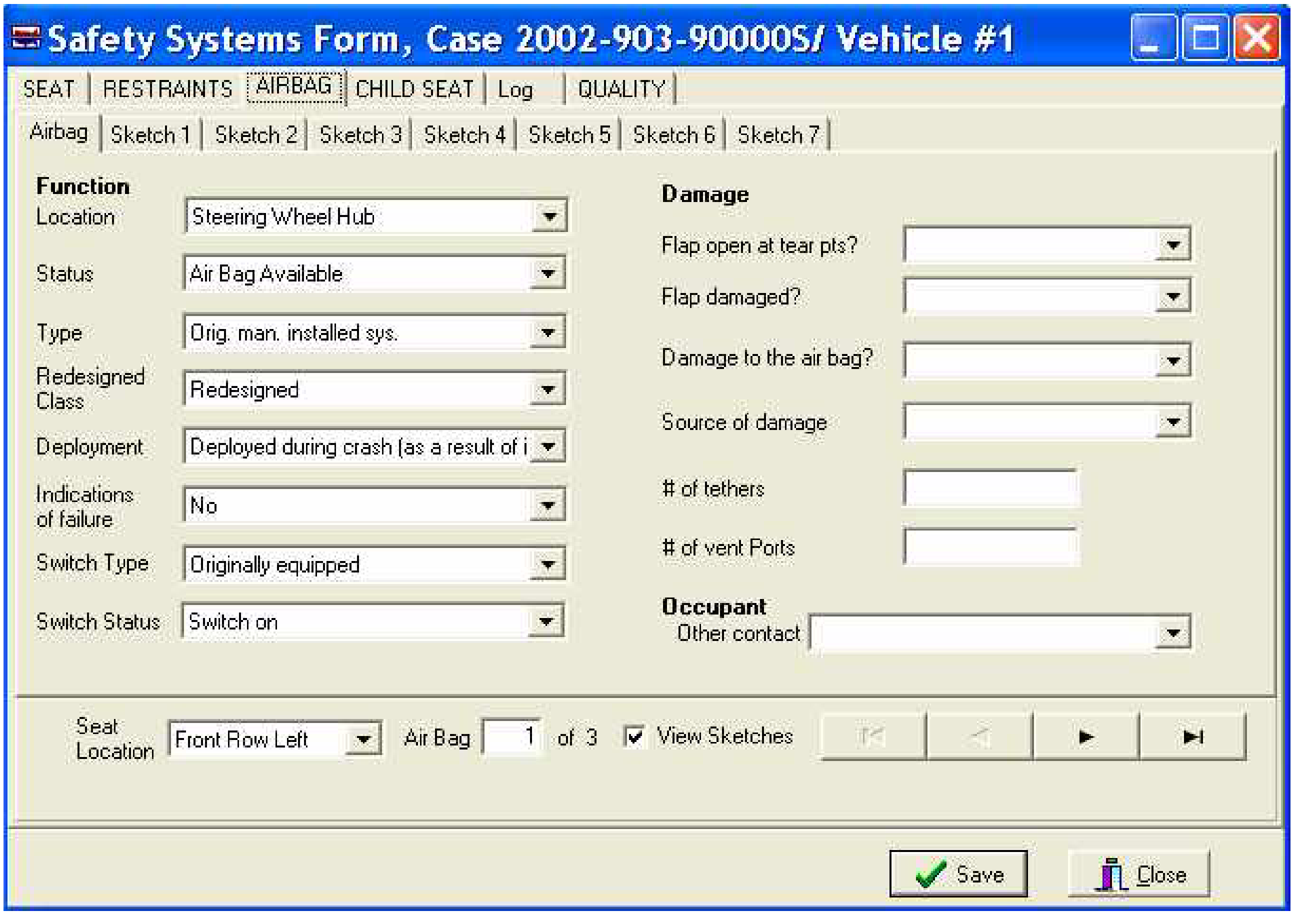
Other automatic belt failure, specify

is used when the only automatic belt failure(s) which occur are not described in the specific attributes. An example of this would be when the 2 point automatic “track mouse” is ripped from the mechanism.

Unknown

is used when it cannot be determined if the automatic belt failed.

Air Bag


Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Airbag
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
Save
Close

Function

Location: Steering Wheel Hub

Status: Air Bag Available

Type: Orig. man. installed sys.

Redesigned Class: Redesigned

Deployment: Deployed during crash (as a result of i

Indications of failure: No

Switch Type: Originally equipped

Switch Status: Switch on

Damage

Flap open at tear pts?:

Flap damaged?:

Damage to the air bag?:

Source of damage:

# of tethers:

# of vent Ports:

Occupant

Other contact:

Seat Location: Front Row Left

Air Bag 1 of 3

☑ View Sketches

AIR BAG NUMBER FOR THIS VEHICLE

Screen Name: Air Bag

SAS Data Set: **AIRBAG**
SAS Variable: **BAGNO**

Element Attributes:
Air bag number

Source: Vehicle inspection

Remarks:

Assigned by the system, one for every single air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select **Edit / Insert**, then indicate its location, and complete the information about the air bag.

SEAT LOCATION FOR AIR BAG(S) DATA

Screen Name: Seat Location

SAS Data Set: **AIRBAG**
SAS Variable: **SEATPOS1; SEATPOS2**

Element Attributes:
Seat Location (based on defined seats for this vehicle)

Source: Vehicle inspection

Remarks:

Select the seat location from the list of available seats for the available air bag(s).

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select **Edit / Insert**, then indicate its location, and complete the information about the air bag.

DEPLOYMENT LOCATION OF AIR BAG

Screen Name: Function – Location

SAS Data Set: **AIRBAG**
SAS Variable: **BAGLOC**

Element Attributes:

1 Steering Wheel Hub
2 Top Instrument Panel
3 Mid Instrument Panel
4 Bottom Instrument Panel
5 Seat Back
6 Door
7 Roof Side Rail
98 Other (specify)
99 Unknown

Source: Vehicle inspection

Remarks:

Enter the location of the air bag

Steering Wheel
is used for an air bag that is designed to deploy from a module integrated with the steering wheel. It is designed to protect the vehicle's driver primarily from frontal impacts.

Top Instrument Panel Location
is used for those air bags that deploy rearward from a location on the top of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Mid Instrument Panel Location
is used for those air bags that deploy rearward from a location in the middle of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Bottom Instrument Panel Location
is used for those air bags that deploy rearward from a location in the bottom of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts. This includes "knee bags".

Seat Back
is located on the outside portion of the seat back and is designed to protect the torso of occupants primarily from side impacts.

Seat Cushion
is located on the outside portion of the seat cushion and is designed to protect the torso of occupants primarily from side impacts.

Deployment Location of Air Bag (cont'd)

Pillar (A or B)

is primarily a tubular shaped bag that is tethered at the A pillar and is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Door

is located in the door is designed to protect the torso of occupants primarily from side impacts.

Roof Side Rail

is primarily a curtain type bag that is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Other (specify)

is used when the location of the air bag cannot be captured in the above attributes. This should be a rare occurrence. The location of the air bag must be specified.

AIR BAG STATUS

Screen Name: Function -- Status

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFUNC**

Element Attributes:

1 Air Bag Available
2 Air bag disconnected (specify):
3 Air bag not reinstalled
9 Unknown status if available for this crash

Source: Vehicle inspection

Remarks:

Air bag available

is used when the vehicle is equipped with an air bag for this seating position. Deployment of the air bag system has no bearing on this variable.

Air bag disconnected

is used when any component of the air bag was rendered inoperative prior to the collision (*e.g.*, fuse removed).

Air bag not reinstalled

is used when the air bag for this seating position was not replaced after a prior deployment to the crash being researched.

Unknown

is used when it cannot be ascertained whether an air bag was available at the time of the crash.

TYPE OF AIR BAG

Screen Name: Function—Type

SAS Data Set: **AIRBAG**
SAS Variable: **BAGTYPE**

Element Attributes:

1 Original manufacturer install
2 Retrofitted Air Bag
3 Replacement Air Bag
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown Type

Source: Vehicle inspection

Remarks:

Original manufacturer install
is used when it can be determined that the vehicle was equipped with an air bag system in this seating position that was installed by the manufacturer at the time the vehicle was built (OEM).

Retrofitted air bag
is used when it can be determined that the vehicle was equipped with an air bag system for this seating position but that the vehicle was not built with a manufacturer equipped air bag system. This is an after market product and should not be confused with **Replacement air bag**. Replacement retrofit air bags are also included in this category.

Replacement air bag
is used when it can be determined that the vehicle was equipped with an OEM air bag system for this seating position, and that this system had been replaced due to a previous deployment.

REDESIGNED AIR BAG

Screen Name: Function—Redesigned Class

SAS Data Set: **AIRBAG**
SAS Variable: **BAGREDES**

Element Attributes:

0	Not Redesigned
1	Redesigned
2	Advanced (specify)
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Unknown class

Source: Vehicle inspection

Remarks:

This variable indicates whether the vehicle was equipped with a redesigned air bag for this location.

Not Redesigned
indicates that the vehicle was not equipped with a redesigned air bag for this location. Generally, vehicles manufactured with OEM air bags prior to 1997 are coded as **Not Redesigned.**

Redesigned
indicates that the vehicle was equipped with a redesigned air bag for this location. Redesigned class of air bag includes "second generation" air bags. See the chart beginning on the next page.

Advanced (specify)
this includes air bags such as "smart" air bags that will not deploy if the position is not occupied. Specify the type of advanced air bag that is found.

Unknown
is used when it is not known if the air bag was redesigned.

**** Need to add (specify) to NASSMAIN for "Advanced" ****

AIR BAG DEPLOYMENT

Screen Name: Function—Deployment

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDEPLY**

Element Attributes:

1 Deployed during crash (as a result of impact)
2 Deployed inadvertently just prior to crash
3 Deployed, detail unknown
4 Deployed as a result of a noncollision event during crash sequence (e.g., fire, explosion, electrical)
7 Nondeployed
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if deployed

Source: Vehicle inspection

Remarks:

Deployed during crash (as a result of impact)
is used when the vehicle is equipped with an air bag and the air bag deployed as a result of an impact which produced a longitudinal deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag. Note, an air bag is not designed to deploy in every collision.

Deployed inadvertently just prior to crash
is used when an air bag deploys without an impact having caused its deployment, and the vehicle is subsequently involved in an crash.

Deployed, crash details unknown
is used when the researcher cannot determine if the air bag deployed (1) prior to the crash or (2) during the crash as a result of an impact which produced a deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag.

Deployed as a result of a noncollision event during crash sequence (*e.g.*, fire, explosion, electrical)
is used if the air bag deploys during an crash but not as a result of an impact.

For example, a vehicular fire, occurring as a result of:

- an impact or
- a noncollision event

prior to any impacts to this vehicle.

Unknown if deployed

is used when it is known that the vehicle was equipped with an air bag but the researcher is unable to determine if the air bag deployed (for whatever reason). For example, if the vehicle was sufficiently damaged so that a determination of deployment cannot be made from the vehicle inspection or the deployment status at the time of the crash cannot be determined..

Non-deployed

is used when an air bag equipped vehicle has one or more impacts, and the air bag did not inflate during the crash.

INDICATIONS OF AIR BAG FAILURE

Screen Name: Function—Indications of Failure

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFAIL**

Element Attributes:
0 No
1 Yes (specify):
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if air bag failed

Source: Vehicle inspection

Remarks:

This variable flags "indications of air bag failures" and means that something abnormal has occurred to the air bag system. It may not necessarily mean that the air bag system was defective. A vehicle inspection is required in order to report an indication of air bag failure because the vehicle's deceleration may have been below the ***threshold*** for the air bag's deployment.

No

is used whenever the air bag deployed and there are no indications of air bag failure. Also use this when an air bag did not deploy and no failure is suspected and the vehicle inspection indicates that the deceleration sustained by the vehicle was near or below the ***deployment threshold***.

Yes, specify

is used whenever an indication of air bag failure is suspected and specify the failure. An indication of air bag failure could be a cut in or blowout of the fabric, a rupture along a fabric seam, a cover which does not open properly causing a misaligned deployment, partial inflation, or any number of other problems. If an indication of air bag failure is suspected, then document the condition with images, then call your zone center for assistance.

Unknown

is used when it is not known if the bag failed

TYPE OF CUTOFF SWITCH

Screen Name: Function -- Switch Type

SAS Data Set: **AIRBAG**
SAS Variable: **SWTCHTYP**

Element Attributes:

0	None present
1	Originally equipped
2	Retro fit
3	Switch present, type unknown
9	Unknown if switch present

Source: Vehicle inspection

Remarks:

Air bag cutoff switches were designed to be installed by manufacturers in vehicles with only one row of occupant seating. This was done so that if a child seat was used, the air bag could be turned off. More recently NHTSA has permitted the public to request air bag cutoff switches to be installed by dealers. The retro fit switch can be located in the glove compartment. **Close up images of the switch are required.**

None present

is used when there is no air bag cutoff switch present for this occupant position.

Originally equipped

is used when a vehicle is originally equipped by the manufacturer with an air bag cutoff switch for this occupant position is present. This switch will not be present for the driver's position.

Retro fit

is used when an air bag cutoff switch for this occupant position has been added.

Switch present, type unknown

is used when an air bag cutoff switch for this occupant position is present and it is not known if it is original or retro fit.

Unknown if switch present

is used when it is not known if an air bag cutoff switch is present

CUTOFF SWITCH POSITION STATUS

Screen Name: Function—Switch Status

SAS Data Set: **AIRBAG**
SAS Variable: **SWTCHSET**

Element Attributes:

0	Switch on/Autmatic
1	Switch off
7	[None present]
8	[Unknown if switch present]
9	Switch status unknown

Source: Vehicle inspection

Remarks:

Air bag cutoff switches were designed to be installed by manufacturers in vehicles with only one row of occupant seating. This was done so that if a child seat was used, the air bag could be turned off. More recently NHTSA has permitted the public to request air bag cutoff switches to be installed by dealers. The retro fit switch can be located in the glove compartment. Close up images of the switch are required.

Switch on/Autmatic

is used when an air bag cutoff switch for this occupant position is present and is in the on position or the Autmatic position.

Switch off

is used when an air bag cutoff switch for this occupant position is present and is in the off position.

Switch position unknown

is used when an air bag cutoff switch for this occupant position is present and its position is unknown

None present

is precoded when there is no air bag cutoff switch present for this occupant position.

Unknown if switch present

is precoded when it is not known if an air cutoff switch is present

DID AIR BAG MODULE COVER FLAP(S) / SEAMS OPEN AT DESIGNATED TEAR POINTS?

Screen Name: Damage – Flap Open at Tear Points?

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFLOPN**

Element Attributes:

0	No
1	Yes
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Unknown flaps / seams opened at tear points

Source: Vehicle inspection.

Remarks:

A designated tear point is a weakened area of the flap material designed to allow the air bag easy escape from its storage area during deployment. Some air bags in the seat cushion and seat back may not have cover flaps, but will deploy through a seam that separates during the air bag deployment.

No

is used when it can be determined that the module cover flap(s) for this air bag opened somewhere other than their designated tear points. A non-linear tear in the flap is an indication that the flap opened irregularly, not at the designated tear point.

Yes

is used when it can be determined that the module cover flap(s) for this air bag opened up at their designated tear points. Linear and symmetrical tears are good indications of proper separation of the cover flap(s) at their designated tear points.

Unknown if flaps / seams open at tear points

is used when it is not known if the air bag opened at the tear points.

WERE THE COVER FLAP(S) DAMAGED

Screen Name: Damage—Flap Damaged

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFLDAM**

Element Attributes:

0	No
1	Yes (specify)
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Unknown if flaps damaged

Source: Vehicle inspection.

Remarks:

No

is used when it can be determined that no damage was present on the air bag module cover flap(s). Normal separation/tearing at the designated tear points does not constitute damage.

Yes (specify)

is used when it can be determined that the air bag module cover flap(s) sustained damage. Abnormal separation/tearing at the designated tear points constitutes damage. Damage can also be cuts, tears, holes, burns, abrasions, etc. The researcher must specify the type of damage that is being reported.

Unknown

is used when it cannot be determined if the air bag flap(s) sustained damage.

WAS THERE DAMAGE TO THE AIR BAG?

Page 1 of 2

Screen Name: Damage—Damage to the Air Bag?

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDAMAG**

Element Attributes:
0 Not damaged

Yes — Air Bag Damaged
1 Ruptured
2 Cut
3 Torn
4 Holed
5 Burned
6 Abraded
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
88 Other damage (specify)
95 Damaged, details unknown
99 Deployed, unknown if damaged

Source: Vehicle inspection

Remarks:

Damage to the air bag must occur during the crash sequence. If multiple damage types apply select the attribute that most deteriorates the effectiveness of the air bag. If you cannot make this determination then select the attribute in a hierarchical manner from the top of the list down.

Not damaged
is used when no damage to the air bag for this occupant position was sustained.

Ruptured
describes damage to the air bag that resembles a stellate or starlike pattern of damage, with multiple tears originating from a single point of origin.

Cut
describes openings in the air bag which are generally linear and have smooth edges.

Torn
describes openings which have ragged edges but which are generally linear in appearance.

Holed
describes damage which is circular in appearance with or without ragged edges.

Was there damage to the air bag? (cont'd)

Burned

describes damage resulting from heat which scorches, melts or burns the bag.

Abraded

is a pattern of damage to the surface of the bag that appears as a fraying of the surface threads.

Other damage (specify)

is used to describe damage which is not captured in any of the attributes above.

Damaged, details unknown

is used when it is known that the air bag sustained damage, but the type of damage cannot be determined.

Deployed, unknown if damaged

is used when cannot be determined if the air bag sustained damage.

SOURCE OF AIR BAG DAMAGE

Screen Name: Damage—Source of Damage

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDAMSO**

Element Attributes:

1	Object worn by occupant (specify)
2	Object carried by occupant (specify)
3	Adaptive/assistive controls, (specify)
4	Cover flaps
5	Fire in vehicle
6	Thermal burns
7	Windshield
8	Rescue or emergency efforts
50	[Air Bag Not Damaged]
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
88	Other damage source (specify)
99	Damaged unknown source

Source: Vehicle inspection

Remarks:

This is a hierarchical variable, that is, if more than one element applies, then select the first attribute that applies. The attribute **Rescue or emergency efforts** should **only** be used when:

- no other sources of damage apply, **AND**
- it is known the damage was from rescue or emergency efforts, or any other post-crash source.

Object worn by occupant (specify)
is selected when the object is fastened, attached, or worn by the occupant. Be sure to specify the object.

Object carried by occupant (specify)
is used when the object is held in the mouth, the hand(s), arm(s), etc., by the occupant. Be sure to specify the object.

Adaptive/assistive controls (specify)
is used when adaptive/assistive controls damages the air bag for this occupant position. Be sure to specify the object / control.

Source of Air Bag Damage (cont'd)

Fire in vehicle
is used when there was a fire in the occupant compartment which damaged the air bag.

Thermal burns
is used when the air bag is burned or scorched by the inflation or chemicals.

Other damage source (specify)
is used whenever there is damage to the air bag and it cannot be fit into any of the categories above.

Rescue or emergency efforts
is used **only** when:

- no other sources of damage apply, **AND**
- it is known the damage was from rescue or emergency efforts, or any other post-crash source

Damaged, unknown source
is used when there is damage to the air bag, but the source of the damage cannot be determined.

WAS THE AIR BAG TETHERED

Screen Name: Damage—Tethered

SAS Data Set: **AIRBAG**
SAS Variable: **BAGTETHR**

Element Attributes:

Enter number of tethers
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if air bag tethered

Range: 0-5

Source: Vehicle inspection

Remarks:

A tether is a strap that is used to shape the air bag upon deployment. Stitching on the air bag is a good indicator of the presence of tethers.

0 (zero)
is used when there are no tethers present on the air bag.

Enter number of tethers
is used when the air bag has tethers. Their number should be specified.

Indeterminate
is used when it is known that the air bag has tethers, but the number of tethers is unknown

Unknown
is used when it is not known if the air bag was tethered.

DID THE AIR BAG HAVE VENT PORTS?

Screen Name: Damage—Vent Ports

SAS Data Set: **AIRBAG**
SAS Variable: **BAGVENTS**

Element Attributes:

	Enter number of vent ports
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Unknown if vent ports present

Range: 0-9

Source: Vehicle inspection

Remarks:

Vent ports are circular holes designed for the venting of gasses resulting from the deployment process of the air bag. The location of the ports is normally on the rear surface of the air bag.

0 (zero)
is used when there are no vent ports present on the air bag.

Enter number of vent ports
is used when the air bag has vent ports. Their number should be specified.

Indeterminate
is used when it is known that the air bag has vent ports, but the number of vent ports is unknown.

Unknown
is used when it is not known if the air bag has vent ports

WAS THE AIR BAG IN THIS OCCUPANT'S POSITION CONTACTED BY ANOTHER OCCUPANT?

Screen Name: Occupant – Other Contact

SAS Data Set: **AIRBAG**
SAS Variable: **BAGCONOT**

Element Attributes:

0 No
1 Yes (specify)
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Deployed, unknown if other occupant contact to air bag

Source: Vehicle inspection

Remarks:

No

is used when there is no contact to the air bag for this occupant position by any occupant other than the occupant in this occupant position.

Yes (specify)

Identify the occupant and describe the type of contact. Examples include:

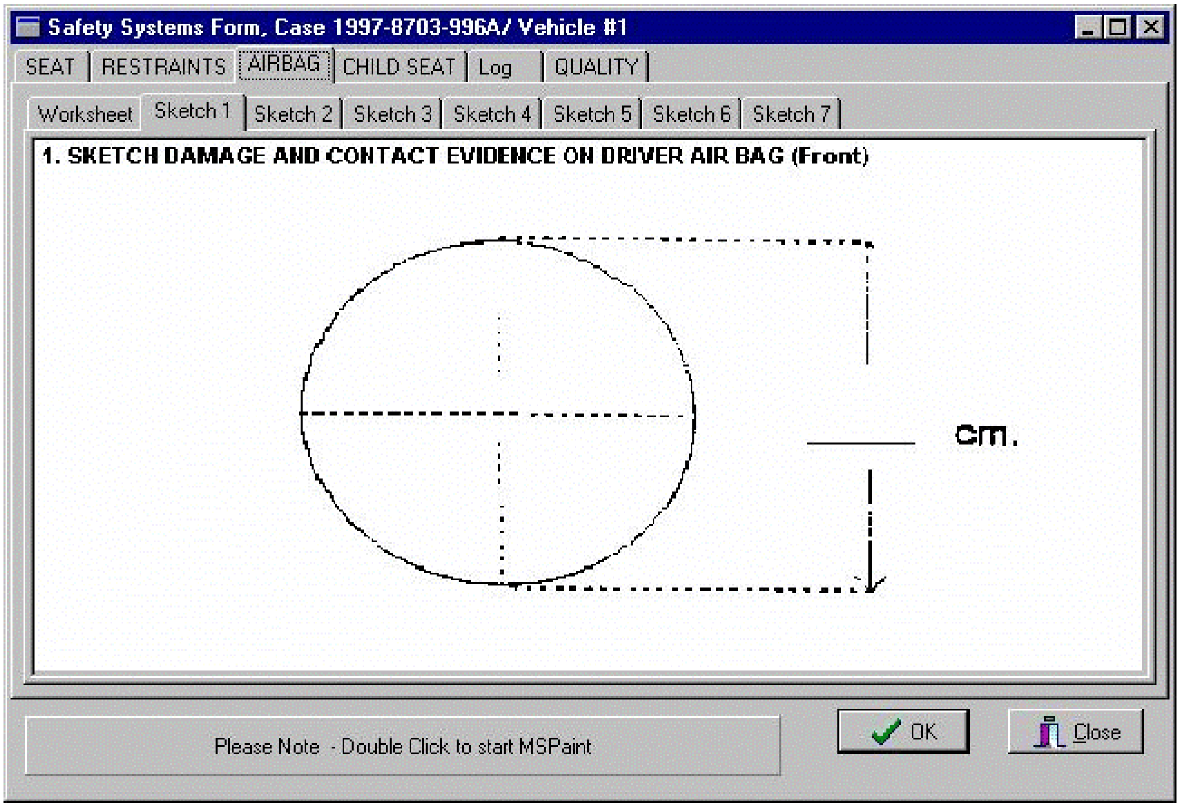
- when a driver contacts the passenger air bag and vice-versa
- when the center front seat occupant strikes the outer seat position air bag and
- when multiple occupants in the same seat position contact one air bag.

Deployed, unknown if other occupant contact to air bag

is used when it is not known if another occupant contacted the air bag.

Air Bag / Sketches

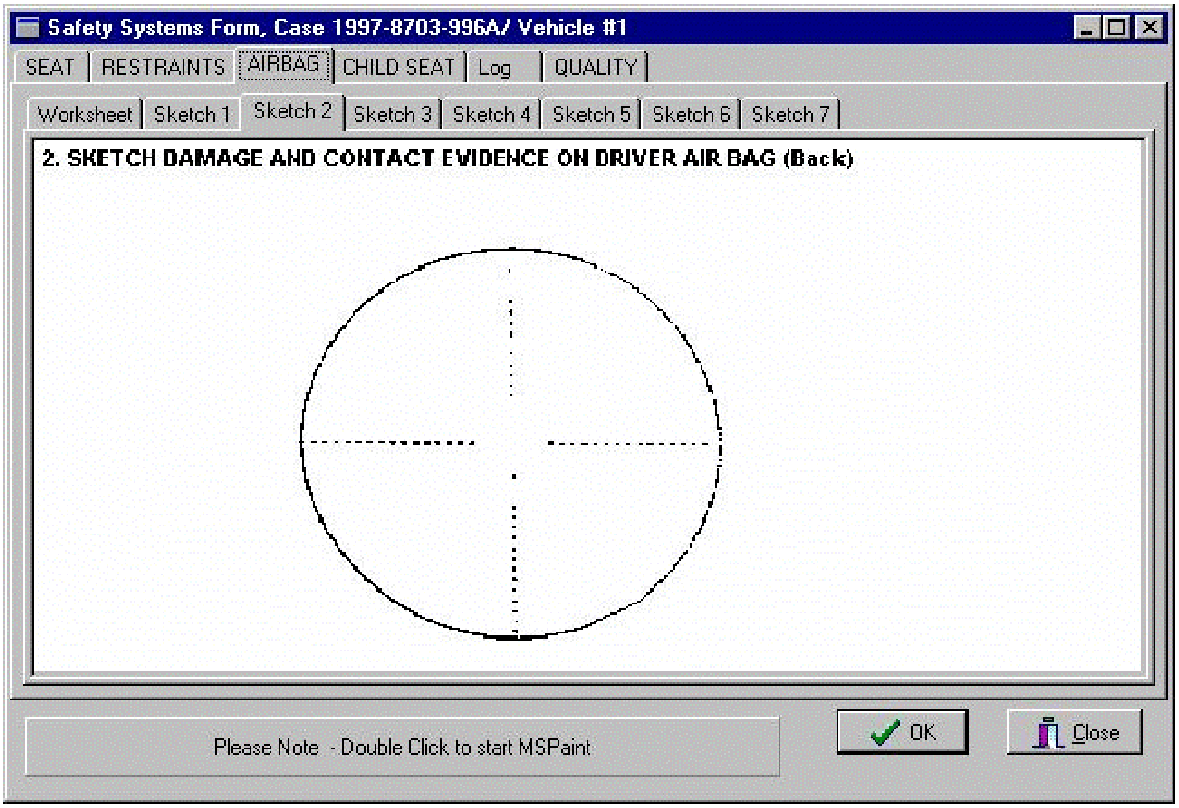
Sketch 1: Damage and Contact Evidence on Driver Air Bag (Front)


Safety Systems Form, Case 1997-8703-996A/ Vehicle #1

1. SKETCH DAMAGE AND CONTACT EVIDENCE ON DRIVER AIR BAG (Front)

____ cm.

Please Note - Double Click to start MSPaint
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
OK
Close

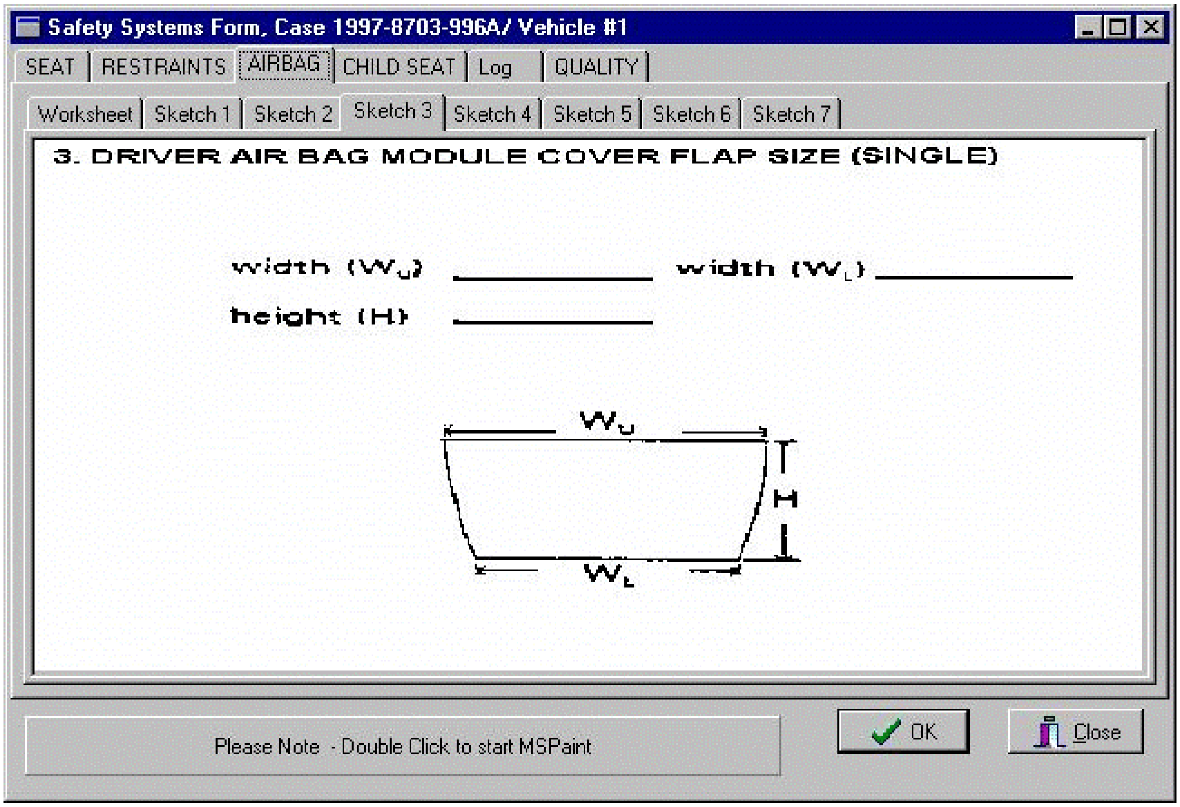

Safety Systems Form, Case 1997-8703-996A/ Vehicle #1

2. SKETCH DAMAGE AND CONTACT EVIDENCE ON DRIVER AIR BAG (Back)

Please Note - Double Click to start MSPaint
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
OK
Close

Sketch 2: Damage and Contact Evidence on Driver Air Bag (Back)

Sketch 3: Driver Air Bag Module Cover Flap Size (Single)



Safety Systems Form, Case 1997-8703-996A/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
W$_U$
H
W$_L$
OK
Close

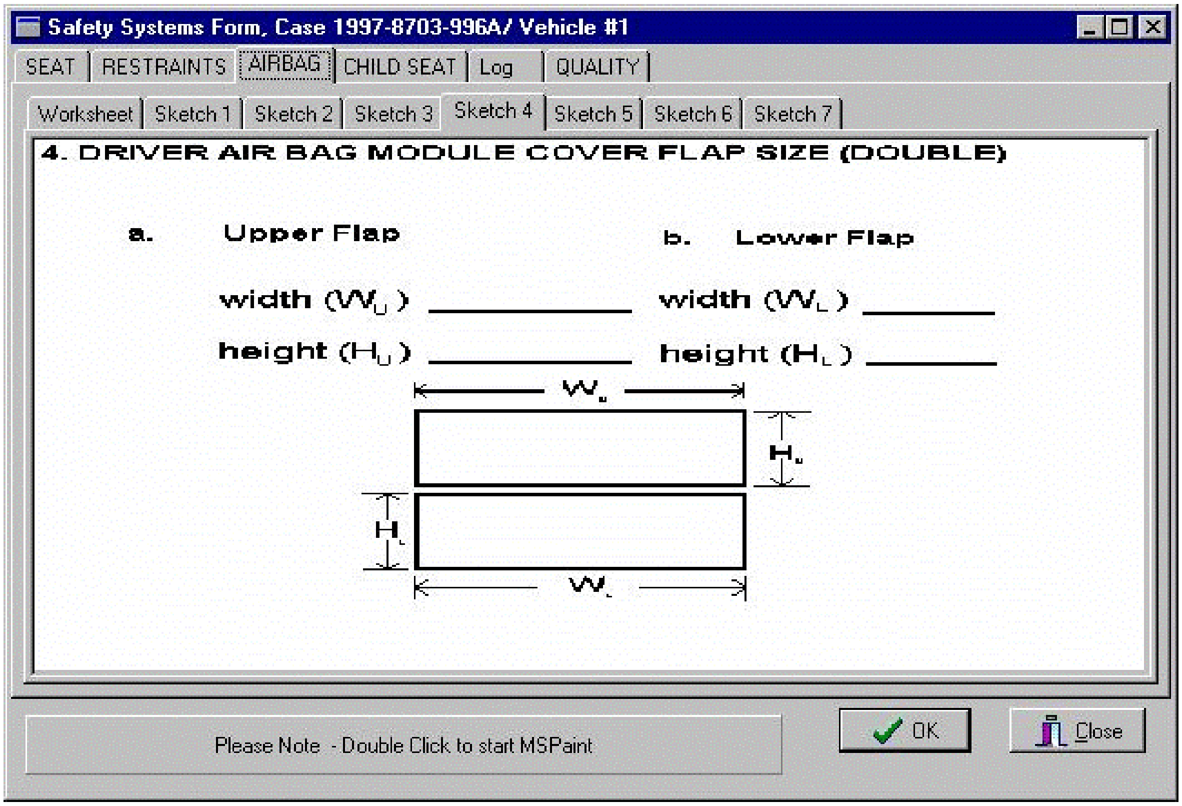
3. DRIVER AIR BAG MODULE COVER FLAP SIZE (SINGLE)

width (W$_U$) __________ width (W$_L$) __________

height (H) __________

Please Note - Double Click to start MSPaint

Sketch 4: Driver Air Bag Module Cover Flap Size (Double)


Safety Systems Form, Case 1997-8703-996A/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
W_u
H_u
H_L
W_L
OK
Close

4. DRIVER AIR BAG MODULE COVER FLAP SIZE (DOUBLE)

a. Upper Flap

width (W_U) ____________

height (H_U) ____________

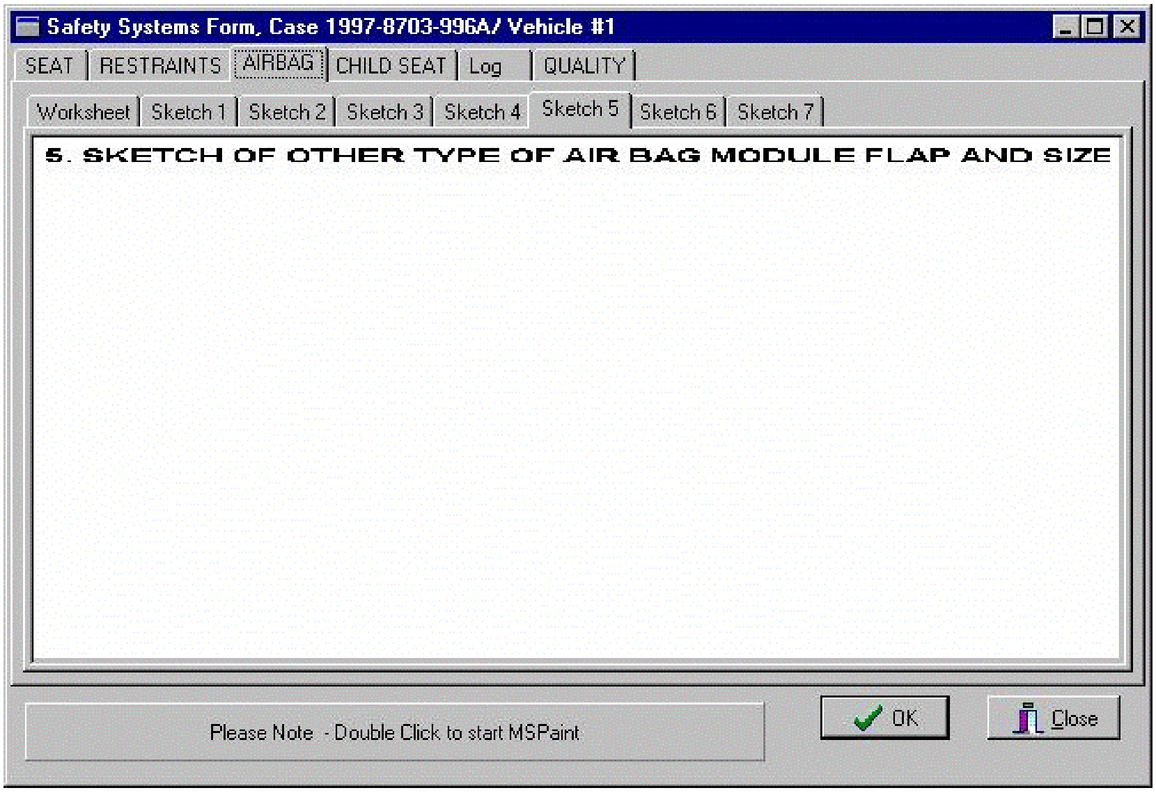
b. Lower Flap

width (W_L) ____________

height (H_L) ____________

Please Note - Double Click to start MSPaint

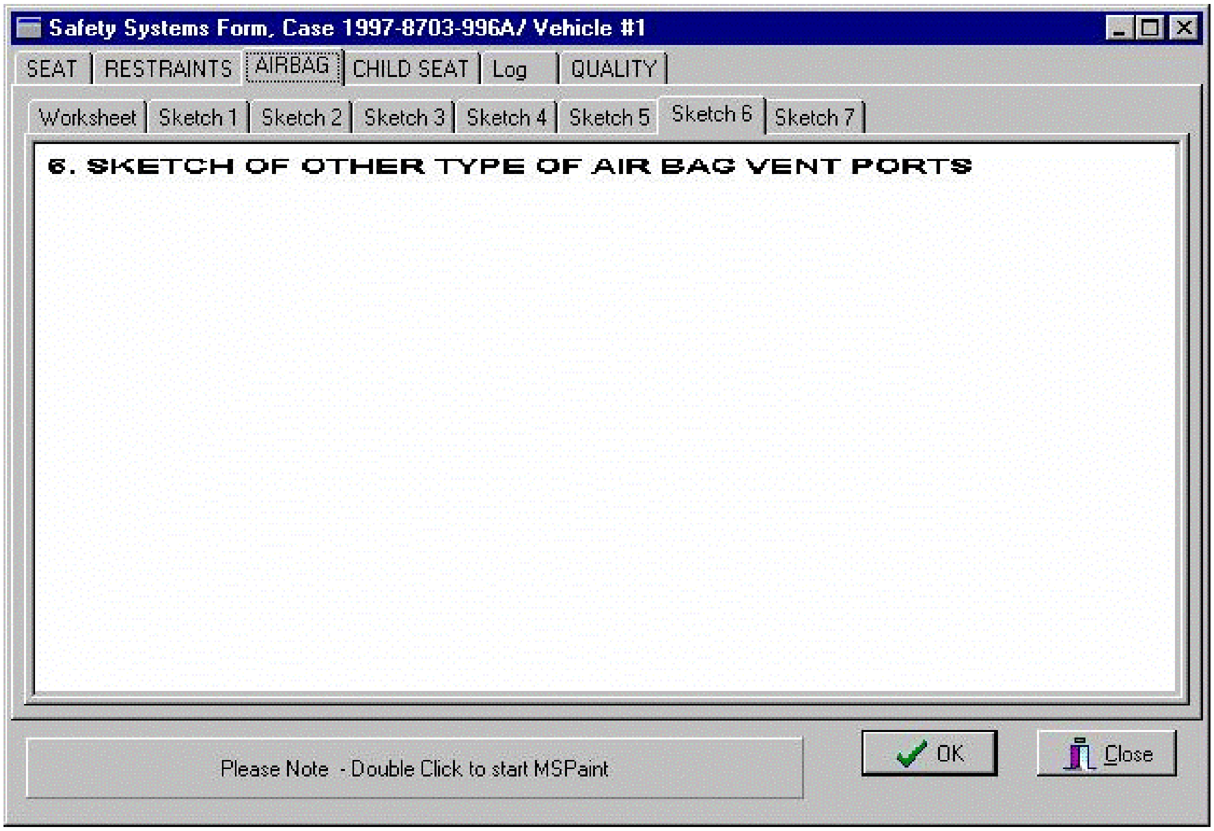
Sketch 5: Sketch of Other Type of Air Bag Module Flap and Size


Safety Systems Form, Case 1997-8703-996A/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
OK
Close

5. SKETCH OF OTHER TYPE OF AIR BAG MODULE FLAP AND SIZE

Please Note - Double Click to start MSPaint

Sketch 6: Sketch of Other Type of Air Bag Vent Ports



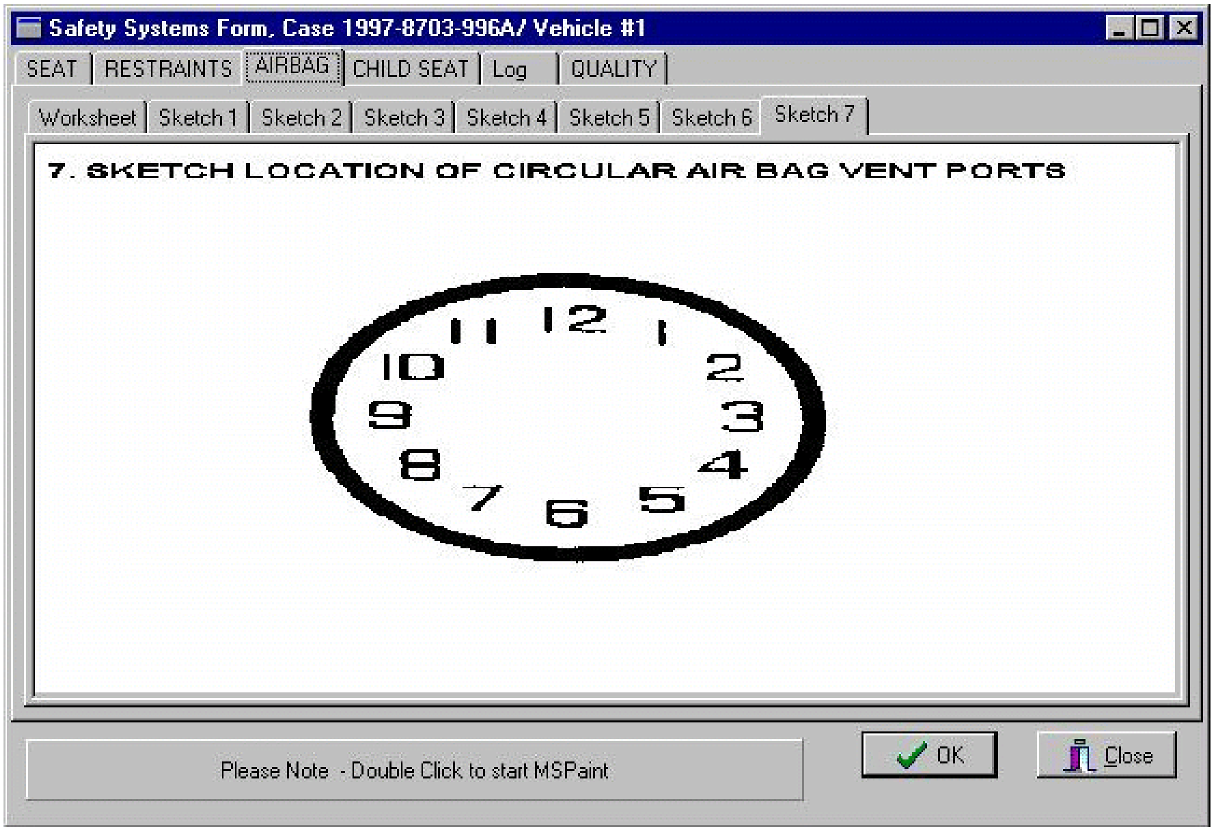
Safety Systems Form, Case 1997-8703-996A/ Vehicle #1

SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
OK
Close

6. SKETCH OF OTHER TYPE OF AIR BAG VENT PORTS

Please Note - Double Click to start MSPaint

Sketch 7: Location of Circular Air Bag Vent Ports

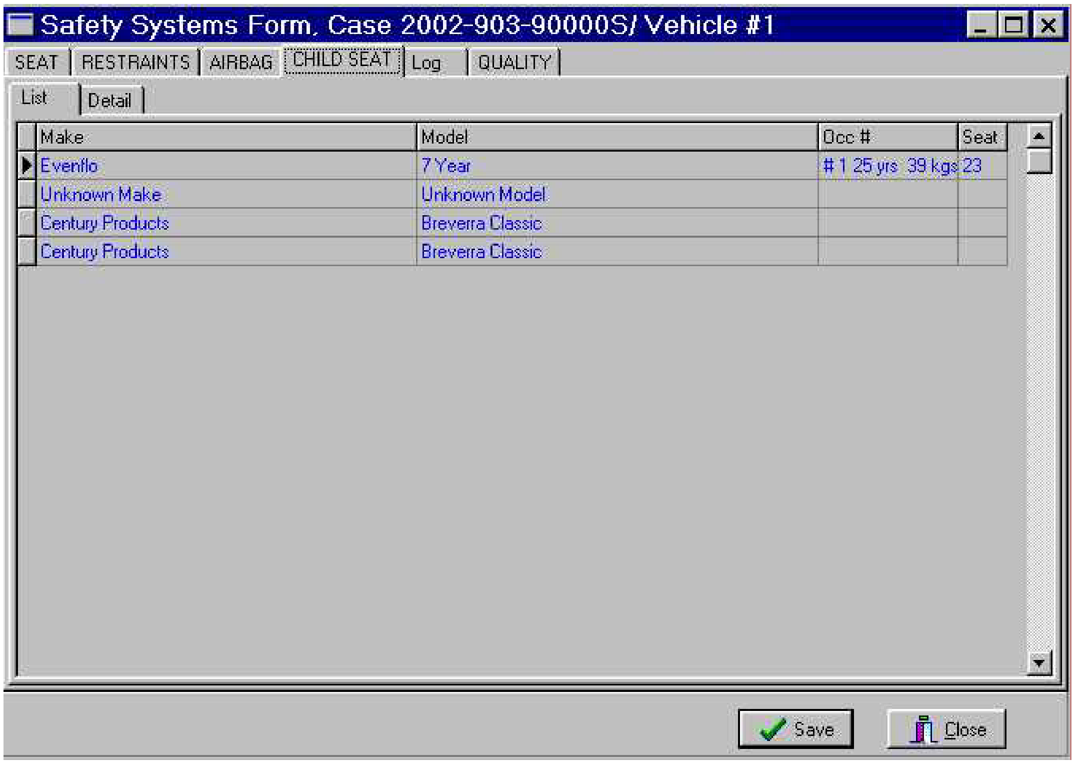


Safety Systems Form, Case 1997-8703-996A/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
Worksheet
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
12
1
2
3
4
5
6
7
8
9
10
11
OK
Close

7. SKETCH LOCATION OF CIRCULAR AIR BAG VENT PORTS

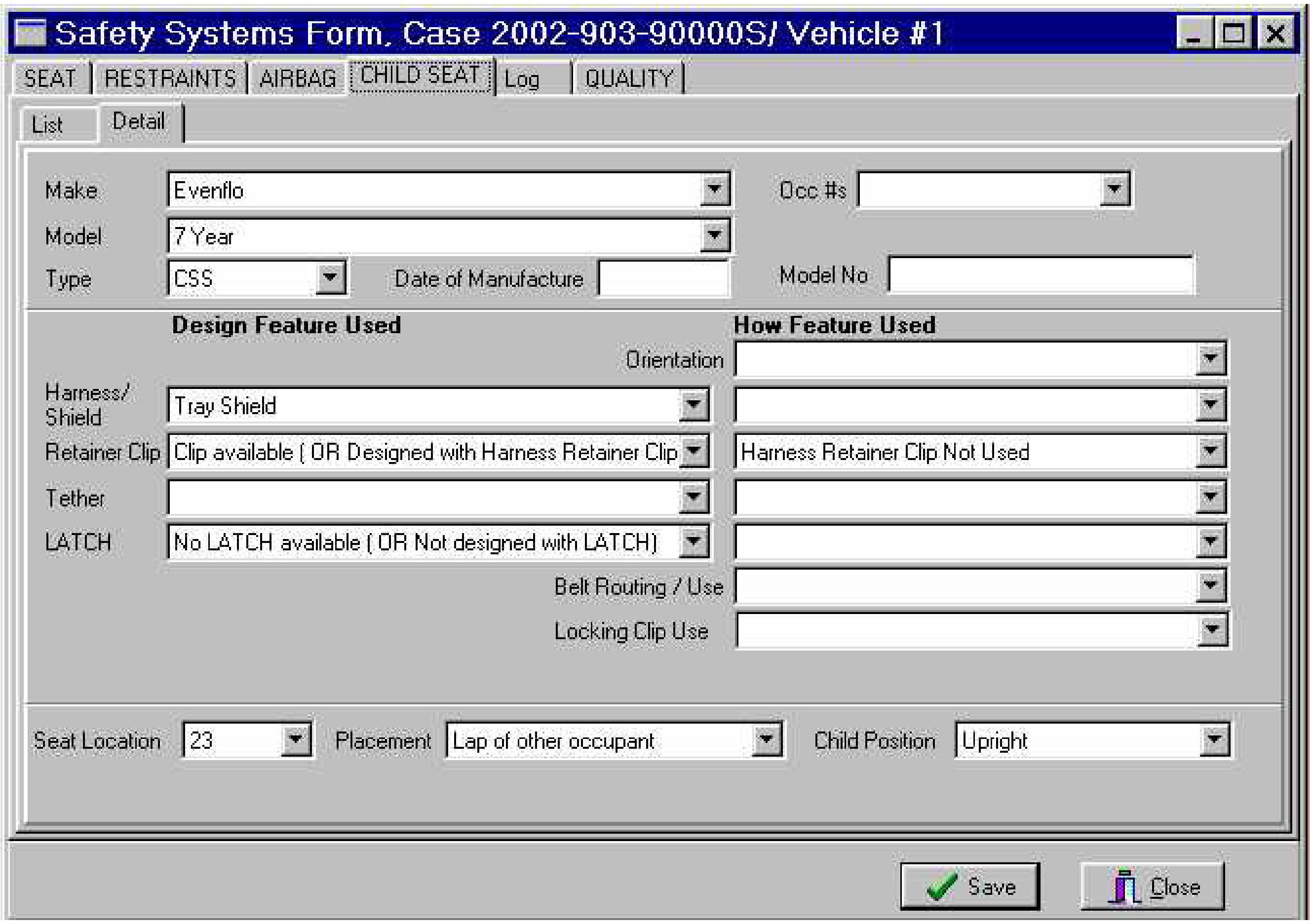
Please Note - Double Click to start MSPaint

CHILD SEAT LIST


Safety Systems Form, Case 2002-903-90000S/ Vehicle #1
SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
List
Detail
Save
Close

Make	Model	Occ #	Seat
Evenflo	7 Year	# 1 25 yrs 39 kgs	23
Unknown Make	Unknown Model		
Century Products	Breverra Classic		
Century Products	Breverra Classic		

CHILD SEAT DETAIL


SEAT
RESTRAINTS
AIRBAG
CHILD SEAT
Log
QUALITY
List
Detail
Save
Close

Safety Systems Form, Case 2002-903-90000S/ Vehicle #1

Make: Evenflo
Occ #s:
Model: 7 Year
Type: CSS
Date of Manufacture:
Model No:

	Design Feature Used	How Feature Used
Orientation		
Harness/ Shield	Tray Shield	
Retainer Clip	Clip available (OR Designed with Harness Retainer Clip	Harness Retainer Clip Not Used
Tether		
LATCH	No LATCH available (OR Not designed with LATCH)	
Belt Routing / Use		
Locking Clip Use		

Seat Location: 23
Placement: Lap of other occupant
Child Position: Upright

[CHILD RESTRAINT NUMBER]

Screen Name: N/A

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHSEATNO**

Element Attributes:
1, 2, 3, etc.,

Source: As created by system

Remarks:

CHILD RESTRAINT MAKE

Screen Name: Make

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHMAKE**

Element Attributes:
Refer to listing of child restraints

Source: Vehicle inspection

Remarks:

A child seat's manufacturer/make and model name may be difficult to determine unless the manufacturer/model name is stamped/sewn/molded into the child seat itself. Refer to the manufacturer's instruction booklet which accompanied the child seat, if available, for specific make and model of seat. The child seat should have a label permanently attached which identifies the seats date of manufacture and model number; although this information alone does not identify the specific make of seat, it may be useful if no other identifiers exist and should be coded under "other." The updated NASS-CDS attribute listing of child seat makes and models includes the majority of seats manufactured for use in the U.S. from 1985-2000, and provides attributes of each respective seat, e.g., harness design, weight and height recommendations, etc..

Remarks: Interview Questions - Make of Child Seat

CHILD RESTRAINT MODEL

Screen Name: Model

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHMODEL**

Element Attributes:
Refer to listing of child restraints

Source: Vehicle inspection

A child seats manufacturer/make and model name may be difficult to determine unless the manufacturer/model name is stamped/sewn/molded into the child seat itself. Refer to the manufacturer's instruction booklet which accompanied the child seat, if available, for specific make and model of seat. The child seat should have a label permanently attached which identifies the seat's date of manufacture and model number; although this information alone does not identify the specific make of seat, it may be useful if no other identifiers exist and should be coded under "other". The updated NASS-CDS attribute listing of child seat makes and models includes the majority of seats manufactured for use in the U.S. from 1985-2000, and provides attributes of each respective seat, e.g., harness design, weight and height recommendations, etc.

CHILD RESTRAINT TYPE

Page 1 of 5

Screen Name: Type

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHTYPE**

Element Attributes:

1	Infant seat (ISS)
2	Convertible seat (CSS)
3	Forward facing only (FSS)
4	Booster seat (BSS)
5	Booster/Forward facing seat (BSS/FSS)
6	Booster/Convertible facing seat (BSS/CSS)
7	Integrated seat (INT)
8	Harness (HSS)
9	Vest (VSS)
10	Special needs (SNSS)
98	Other (specify)
99	Unknown

Source: Vehicle inspection

Remarks:

Refer to child seat listing for additional information regarding each respective seat in addition to Manufacturer' Instructions.

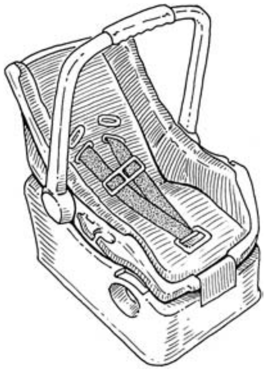
Once the child seat has been identified by make and model, the child seat TYPE will automatically be defined. However, this information can be determined by child seat examination and interview if no make or model information is available.

Infant Seat (ISS)

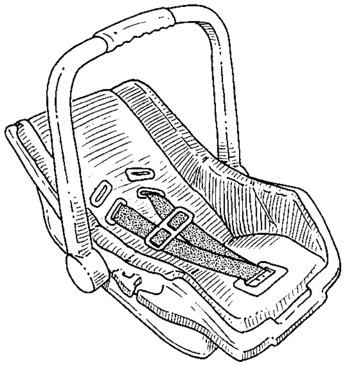
Designed and intended to be used rear facing only by newborns and infants weighing up to about 20 pounds. Typically equipped with a 3-point harness, two straps which cross over the infant's shoulders, connecting to a buckle on a piece of webbing or to a buckle recessed at the crotch area. Infant seats should recline at a 45-degree angle. Some infant seats have detachable bases which can be left secured in the vehicle, while the infant seat is removed, doubling as a carrier. When used as a child restraint the carrier-type infant seat's carrying handle should be folded back, in the down position.

Infant only seats are typically designed with 2 or 3 sets of harness strap slots in the back of the seat which allow for proper shoulder strap placement (below or at the infant's shoulders). Most harness adjustment mechanisms are behind the seat back and are typically affixed/locked by a metal bar, or clip-type lock. Most seats are equipped with a harness retainer clip which should be positioned at the infant's armpit level. Positioning of the harness retainer clip at armpit level keeps the shoulder straps positioned properly up on the infant's shoulders. The vehicle belt system (lap or lap portion of a lap/shoulder belt combination) must be used to secure the seat and/or its base to the vehicle.

Child Restraint Type cont'd



Infant seat with base



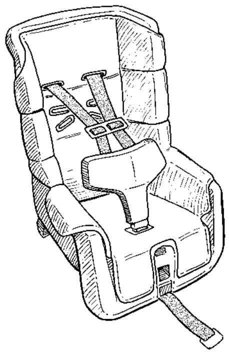
Infant seat

Convertible Seat (CSS)

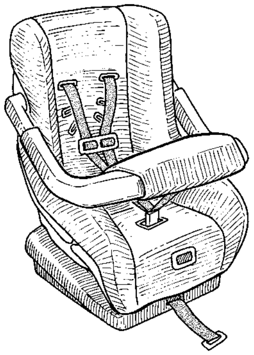
Designed and intended to be used either rear or forward facing for a child ranging from birth to approximately 40 pounds (this information will normally be found on the child seat labeling as well as in the manufacturer's instructions). All have a harness system to secure the child to the seat which consists of a 5-point harness, T-Shield or Tray-Shield. Most seats have 3 sets of harness slots, lowest and middle set of slots for rear facing only use positioning the straps below or at the infant's shoulder level and a top set of slots for use forward facing placing the straps above or at the child's shoulder level. Most have a harness retainer clip which helps position the shoulder straps up on the child's shoulders. Refer to manufacturers' instructions for proper use orientation according to the child's height and weight. When used rear facing the weight of the child ranges from birth to approximately 20 pounds (some convertible seats allow for heavier weight infants rear facing up to about 30 pounds). In the rear facing mode the seat is reclined at a 45-degree angle for infant use. When used forward facing the weight of the child normally ranges from 20 pounds to approximately 40 pounds. In the forward facing mode most seats are used fully upright, but some allow for a slight recline forward facing. Refer to manufacturers' instructions for proper use orientation according to the child's height and weight.

The vehicle belt system (lap or lap portion of a lap/shoulder belt combination) must be used to secure the child seat to the vehicle. In addition seats manufactured after September 1, 1999, may come equipped with a top tether strap which anchors to the vehicle to help secure the child seat. Vehicles manufactured after September 1, 2000, or earlier models come equipped with a top tether anchorage. Refer to the child seat and vehicle owners manual for proper tether attachment and use.

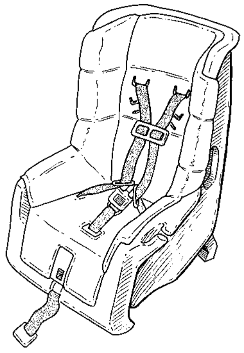
Child Restraint Type cont'd



Convertible seat with t shield



Convertible seat with tray shield



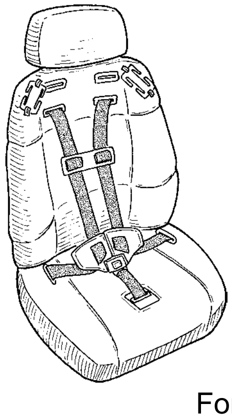
Convertible seat with
5 point harness

Forward Facing Only Seat (FSS):

A forward facing only seat is intended to be used by children who are over 1 year old and who weigh at least 20 pounds. The majority are recommended for use by children who weigh at least 20 pounds up to about 40 pounds, though some have a lower weight use recommendation of 30 pounds and upper weight limits above 40 pounds. These seats come equipped with a built-in harness or shield to restrain the child, and the seat must be secured to the vehicle seat with a lap and/or lap/shoulder belt combination. These seats are used with the child sitting in an upright position. These seats typically have 3 sets of harness slots in the back of the seat which allows for proper harness placement over the child's shoulders as the child grows. Harness straps should be at or above the child's shoulder level and since this type of seat is intended for forward facing use only, all sets of slots can be used.

The majority of these seats convert to belt-positioning boosters by removing the harness system after a child reaches 40 pounds. Always check manufacturer instructions for proper use recommendations

Backless boosters with shields are considered forward facing only seats and are not currently certified for use by children over 40 pounds.



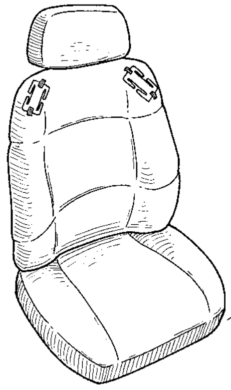
Forward facing seat

Child Restraint Type cont'd

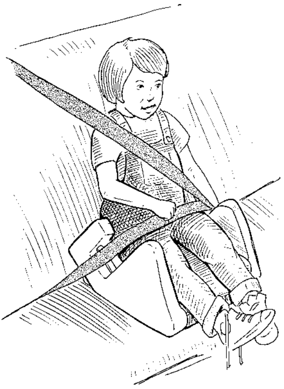
Booster Seat (BSS) Belt-positioning

Designed and intended as a forward facing platform which raises a child's sitting height, enabling them to use the adult lap and shoulder belt for restraint. Some belt-positioning booster seats come equipped with a harness which is used until the child reaches about 40 pounds. The seat is considered a forward facing only seat when used with the harness and must be secured with the vehicle belt system. Belt-positioning booster seats are primarily designed to "fill the gap" between a seat with a harness and the adult lap and shoulder belt used alone. Belt-positioning boosters should never be used with a lap belt only across the child.

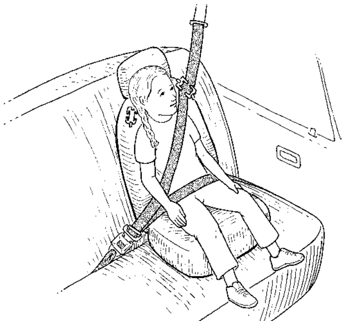
Belt-positioning boosters come in high-back and backless models. High-back models which some compare to "portable mini bucket seats" provide head protection for the child when used in vehicle seats with low seat backs or no head restraints. Most high-back models have shoulder belt positioners on the sides of the seat which help position the shoulder belt across the child properly. Backless models provide a base which the child sits on to raise their sitting height, which then enables the adult lap and shoulder belt to fit properly. Some backless boosters have removable shields, e.g., shield boosters, which when used with the shield are considered forward facing only seats for children up to 40 pounds. Most backless boosters with shields convert to belt-positioning boosters by removing the shield and using the booster base with the adult lap and shoulder belt. Refer to the manufacturers' instructions for proper use according to the child's weight and height.



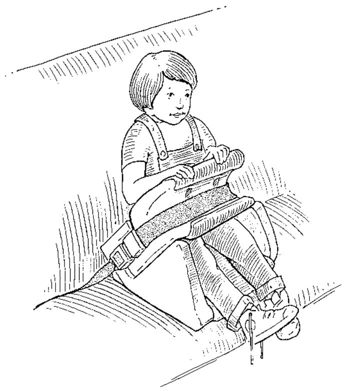
Belt positioning booster



Belt positioning booster



Belt positioning booster



Belt positioning booster with shield

Integrated Seat (INT) Built-In Child Restraint

Built-into the vehicle seat, typically "camouflaged" within or under an adult seating position in the back seat. Designed for forward facing use only by children who weigh between 20 and 40 pounds and whose height ranges between 33 and 40 inches, typically a child at least 1 year old and over 20 pounds. The majority of these seats have a 5-pt harness system, e.g., one strap over each shoulder, one strap across each upper thigh and a strap with a buckle or recessed buckle in the crotch area. Some models convert into belt-positioning booster seats for use by children up to about 60 pounds after the child reaches 40 pounds and can no longer use the 5-pt harness system.

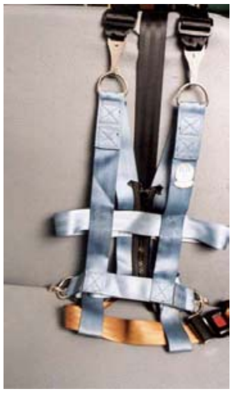
Child Restraint Type cont'd

Harness (HSS)

Intended to be used forward facing for children, who have outgrown a child seat, typically over 40 pounds, age 5 and older who are passengers of vehicles with lap belts only in the rear seat. Typically a harness consists of two straps with bottom loops which rest across the child's shoulders and chest connected at the top by a tether anchorage. The vehicle lap belt routes through the loop at the bottom of each strap, resting across the child's lap/upper thigh area. Refer to the manufacturers' instructions for proper restraint use and installation.

Vest (VSS)

Designed for forward facing use only and generally intended for use by children weighing 25-40 pounds; however, some vests can be made according to chest and waist measurements (e.g., EZ-On Products) which can accommodate small children to adults. Some models have a 5-pt type harness system and some have adjustable zipper closures in the back which typically require a top tether/anchor strap to be used along with the vehicle belt system. Some vests such as those used on school buses when transporting children with special transportation needs may require its own "seat mount" belt system for proper use of the vest. Refer to the manufacturers' instructions for proper restraint use and installation.



Vest

Special Needs Safety Seat (SNSS)

Designed and modified for children with special transportation needs who range from newborn to about 100 pounds. The majority of these devices are intended for forward facing use only, however some devices can be used rear and forward facing. All have a harness system to secure the child to the seat which may consist of a 3 or 5-point harness, T-shield, etc. Refer to manufacturers' instructions for proper restraint use and orientation.

Other – Not meant for vehicle travel

Other items, other than a certified child restraint used to hold, adjust sitting height, or otherwise contain or position a child while in a motor vehicle. Defines a product for which no type, make or model could be identified through the listing of child restraints and/or manufacturers instructions dated 1996 and 1999, nor found in the typical examples: Infant carriers, phone books/books, restaurant-home style booster seat, portable crib/cradle/playpen, wood platform, plastic platform, cushion or pillow.

Unknown

DATE OF MANUFACTURE

Screen Name: Date of Manufacture

SAS Data Set: **CHILDSEAT**
SAS Variable: **MANDATE**

Element Attributes:

MM/DD/YYYY
Indicate the date of manufacture as indicated on the child restraint
99/99/9999 Unknown date

Source: Vehicle inspection

Remarks:

Indicate the date of manufacture as indicated on the child restraint. This information can be used for recalls and for determining the model of the child seat if it is not known.

MODEL NUMBER

Screen Name: Model No

SAS Data Set: **CHILDSEAT**
SAS Variable: **MODELNO**

Element Attributes:

Indicate the model number as indicated on the child restraint

Source: Vehicle inspection

Remarks:

Indicate the model number as indicated on the child restraint. This information can be used for recalls and for determining the model of the child seat if it is not known.

CHILD RESTRAINT HARNESS/SHIELD DESIGN

Screen Name: Harness/Shield

SAS Data Set: **CHILDSEAT**
SAS Variable: **HARDES**

Element Attributes:

0	Not designed with harness/shield (or No harness/shield available)
1	3-pt harness
2	5-pt harness
3	T-shield
4	Tray-shield
5	Shield
9	Unknown

Source: Vehicle inspection

Remarks:

This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

Some seats can be purchased in different configurations. For these seats the make and model DO NOT uniquely define the harness/shield design.

A harness is a belt-type restraint integral to the child seat, for the specific purpose of holding the child in the seat.

3-pt/V-Harness

Two straps crossing both shoulders attached to a latch plate which typically inserts into a buckle on a piece of webbing or recessed at the crotch area, visually forming a V. Applicable to rear facing only infant seats

5-pt Harness

Two straps crossing both shoulders, two straps crossing each upper thigh and a strap between the legs (crotch strap). This type harness can be adjusted to fit a variety of infants rear facing and toddlers in forward facing orientations. Typically available in convertible seats, forward facing only seats and some infant only seats.

T-shield

Secures two shoulder harness straps to a “T” shaped shield which is positioned in front of the torso and hips. Typically found in convertible and forward facing only seats.

Tray-Shield

Secures two shoulder harness straps to a broad padded tray positioned in front of the torso. The crotch strap may be separate or integral with the shield. Found on convertible and forward facing only seats.

Child Restraint Harness/Shield Design cont'd

Page 2 of 2

Shield

(Typically shield-boosters) The over-body shield was designed for use in seating positions with lap belts only for children between 30-60 pounds. The shield is attached to a base which raises the child's sitting height and pre- 1996 models recommended use with the shield up to 60 pounds. Boosters with shields made after 1996 recommend an upper weight limit of 40 pounds. Most shield-boosters made after 1996 allow the 40 pound child to use the booster base with the shield removed, converting the seat to a belt-positioning booster. Found on forward facing only seats.

CHILD RESTRAINT HARNESS RETAINER CLIP

SAS Data Set: **CHILDSEAT**
SAS Variable: **CLIPDES**

Screen Name: Retainer Clip

Element Attributes:

0	Not designed with harness retainer clip (or No harness retainer clip available)
1	Designed with harness retainer clip (or Harness retainer clip available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

A harness retainer clip is a plastic device/clip which is placed between the two shoulder harness straps, holding the two together for correct pre-crash positioning. The retainer clip should be threaded correctly and placed at armpit level to help keep the shoulder straps up-on the child's' shoulders.

CHILD RESTRAINT TETHER DESIGN

Screen Name: Tether

SAS Data Set: **CHILDSEAT**
SAS Variable: **TETHDES**

Element Attributes:

0	Not designed with tether (or No tether available)
1	Designed with tether (or Tether available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

Effective September 1999, the majority of child seats come equipped with top tethers. The top tether system is part of LATCH (Lower Anchors and Tethers for Children) and vehicles manufactured after September 1999 come equipped with a tether anchor for attaching the top tether of the child seat.

CHILD RESTRAINT LATCH DESIGN

Screen Name: LATCH

SAS Data Set: **CHILDSEAT**
SAS Variable: **LATCHDES**

Element Attributes:

0	Not designed with LATCH (or LATCH available)
1	Designed with LATCH (or LATCH not available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

LATCH (Lower Anchors and Tethers for Children). All child seats manufactured after September 1, 2002 will have two lower attachments which connect to anchorage points between a vehicles' seat back and bottom cushion for the majority of vehicles manufactured after September 1, 2002. Child seats with corresponding attachments can be attached to these lower anchorages instead of being held by the vehicle seat belt. Child seats manufactured after September 1, 2002 will still have designated vehicle belt paths for proper orientation to accommodate older vehicles.

CHILD RESTRAINT USAGE ORIENTATION

Screen Name: Orientation

SAS Data Set: **CHILDSEAT**
SAS Variable: **ORIENT**

Element Attributes:

1	Rear facing
2	Forward facing
3	Supine
8	Other (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

The actual orientation of the child seat at the time of impact must be determined and coded.

Rear Facing
At the time of the crash the child seat was rear facing/facing the rear of the vehicle

Forward Facing
At the time of the crash the child seat was facing forward/front of the vehicle

Supine
At the time of the crash the child seat was laying flat

Other
At the time of the crash the seat was facing other than the rear, supine or forward (e.g., sideways, on top of or underneath something)

Unknown
A child seat is present but the orientation at the time of the crash is unknown

CHILD RESTRAINT HARNESS/SHIELD USE

Screen Name: Harness/Shield

SAS Data Set: **CHILDSEAT**
SAS Variable: **HARUSE**

Element Attributes:

0	Not designed with harness/shield
1	Harness/shield not used
2	Harness used - harness straps in top/highest slot
3	Harness used - harness straps in middle/bottom slot
4	Harness used - slots used unknown
5	Retrofitted with harness
6	Shield used
9	Unknown if harness/shield used

Source: Vehicle inspection

Remarks: The actual child seat harness usage at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine the design of the seat, its respective harness design and use according to the weight/height of the child.

CHILD RESTRAINT RETAINER CLIP USE

Screen Name: Retainer Clip

SAS Data Set: **CHILDSEAT**
SAS Variable: **CLIPUSE**

Element Attributes:

0	Not designed with harness retainer clip
1	Harness retainer clip not used
2	Harness retainer clip used – below armpit level
3	Harness retainer clip used at armpit level
4	Harness retainer clip used – above armpit level
5	Harness retainer clip used – unknown level
6	Retrofitted with harness retainer clip
9	Unknown

Source: Vehicle inspection

Remarks: The actual child seat harness retainer clip use at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine if the respective child seat comes equipped with a harness retainer clip.

CHILD RESTRAINT TETHER USE

Screen Name: Tether

SAS Data Set: **CHILDSEAT**
SAS Variable: **TETHUSE**

Element Attributes:

0	Not designed with tether
1	Tether not used
2	OEM Tether used
3	After market (retrofitted) tether used
9	Unknown if tether Used

Source: Vehicle inspection

Remarks:

Refer to Manufacturers' Instructions for Child Safety Seats and Child Seat listing for applicability of tether.

CHILD SEAT LATCH USE

Screen Name: LATCH

SAS Data Set: **CHILDSEAT**
SAS Variable: **LATCHUSE**

Element Attributes:

0	Not designed with LATCH lower anchors
1	LATCH lower anchors – not used
2	LATCH lower anchors used
3	After market (retrofitted) LATCH lower anchors used
9	Unknown

Source: Vehicle inspection

Remarks: The actual child seat LATCH usage at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine applicability of LATCH.

BELT ROUTING/USE

Screen Name: Belt Routing/Use

SAS Data Set: **CHILDSEAT**
SAS Variable: **BELTROUT**

Element Attributes:

0	No belt routing
1	No belt used
2	Belt routed through belt positioning slots/channels
3	Belt routed through forward facing slots/channels
4	Belt routed through rear facing slots/channels
5	Belt routed unconventionally (specify)
9	Unknown belt path

Source: Vehicle inspection

Remarks:

No belt used

When no seat belt was used. No belt was used to either restrain the child or install the seat.

Belt routed through belt positioning slots/channels

The belt was routed through the belt positioning slots or channels built into the child restraint.

Belt routed through forward facing slots/channels

The belt was routed through the forward facing slots or channels built into the child restraint

Belt routed through rear facing slots/channels

The belt was routed through the rear facing slots or channels built into the child restraint

Belt routed unconventionally (specify)

The belt was routed unconventionally

No belt routing

The belt was not routed through any slots/channels in the seat (if they exist at all). The belt was used solely to restrain the child was sitting on/in the seat. This will be automatically filled in for Integrated child restraints

Unknown belt path

It is not known what path the belt took around the child/seat. If it is not know if a belt was used indicate that on the belt availabililty/use variables and choose unknown belt path for this variable.

USE OF LOCKING CLIP ON VEHICLE BELT

Screen Name: Locking Clip Use

SAS Data Set: **CHILDSEAT**
SAS Variable: **LOCKCLIP**

Element Attributes:

0	None Present
1	Locking Clip Used on Lap and Shoulder Belt
2	Locking Clip Used on Lap Belt Only
3	Locking Clip Used on Shoulder Belt Only
8	Other (Specify)
9	Unknown

Source: Child Seat Inspection and Interview

Remarks:

When found in vehicle, be sure to photograph. This variable is NOT ASSESSING the proper use of the locking clip, only indentifying on what belt it is found.

A **locking clip** is typically provided by the child seat manufacturer and found clipped/fastened to a new child seat when purchased. A **locking clip** is used to lock an emergency locking retractor (ELR) lap and shoulder combination belt with a sliding latch plate. Some belts are labeled indicating the need for the locking clip, and vehicles requiring a locking clip provide information about its use in the owner manual .

Locking clips are used to shorten lap belts that have emergency locking retractors which do not switch or lock.

None Present
When there is no locking clip present on any seat belt

Locking Clip Used on Lap and Shoulder Belt
When the lap and shoulder belts are threaded through the locking clip

Locking Clip Used on Lap Belt Only
When the lap belt is threaded through the locking clip

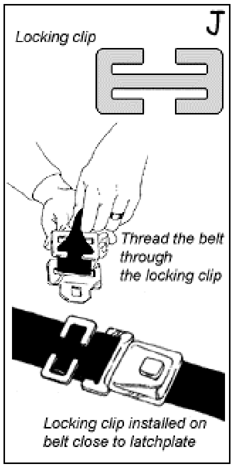
Locking Clip Used on Shoulder Belt Only
When the shoulder belt is threaded through the locking clip

Other (Specify)

Unknown

Use of Locking Clip on Vehicle Belt cont'd

Locking clip on belt


J
Locking clip
Thread the belt through the locking clip
Locking clip installed on belt close to latchplate

Locking clip instructions

Locking clip on belt

Locking clip in use

SEAT LOCATION FOR CHILD RESTRAINT

Screen Name: Seat Location

SAS Data Set: **CHILDSEAT**
SAS Variable: **SEATPOS**

Element Attributes: Seat Number

Front Seat
11 Left side
12 Middle
13 Right side

Second Seat
21 Left side
22 Middle
23 Right side
24 Other (specify)

Fifth Seat
51 Left side
52 Middle
53 Right side
54 Other (specify)

Third Seat
31 Left side
32 Middle
33 Right side
34 Other (specify)

Fourth Seat
41 Left side
42 Middle
43 Right side
44 Other (specify)

97 In or on unenclosed area
98 Other enclosed area (specify)
99 Unknown seat location

Source: Vehicle Inspection

Remarks:

All child seats shall be coded as to whether or not the child seat is occupied or belted into the vehicle seat and its specific location in the vehicle, ***if known. When the Occupant Form is completed you will be indicating the location of the seat based upon all the information in the case.*** Select seating locations are defined in the Seat tab.

There are occasions when a child is sitting in a child seat, but the child seat is not restrained by the vehicle belt system or the child in the child seat is sitting on another occupants lap; and there are times when a child seat is restrained by the vehicle belt system, yet is not in use by a child at the time of a crash. Likewise there are occasions when a child seat is inside the vehicle not in use and not belted into the vehicle and is considered cargo, as a possible injury source, etc. Information will be collected on every child seat and its location ***(if known)*** at the time of a crash whether or not it is in use or restrained by the vehicle belt system at the time of the crash.

The majority of child seats involved in crashes do not remain with the vehicle where it can be visually inspected; however, a child seat's location inside the vehicle can also be determined by interview. Some information can be collected from interviews with the driver/child seat installer, e.g., child seat location, type of belt/LATCH used to secure child seat, etc.

CHILD RESTRAINT PLACEMENT

Screen Name: Placement

SAS Data Set: **CHILDSEAT**
SAS Variable: **PLCMNT**

Element Attributes:

1	Seat
2	Floor
3	Lap of other occupant
4	Console
8	Other (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

Seat
Child restraint sitting on vehicle seat

Floor
Child restraint sitting on vehicle floor

Lap of Occupant
Child restraint sitting on lap of other occupant

Console
Child restraint sitting on front, middle or rear console

Other
Other position of child restraint (specify)

Unknown
Position of child restraint is not known

CHILD POSITION IN CHILD RESTRAINT

Screen Name: Child Position

SAS Data Set: **CHILDSEAT**
SAS Variable: **POSTN**

Element Attributes:

0	Not occupied
1	Upright
2	Reclined/lying back
3	Supine, facing upwards
4	Slumped forward
5	Slumped to the Side
6	Kneeling
8	Other (specify)
9	Unknown

Source: Interview

Remarks:

Upright

Child was sitting upright, facing forward

Reclined/Lying Back

Child was reclined, between 90 and 45 degrees

Supine

Child was laying flat, outstretched facing upwards

Slumped Forward

Child was leaning forward from the waist up and their back was not against the back of the child restraint or vehicle seat in the case of a belt-positioning booster

Slumped to the Side

Child was leaning to the side from the waist up and their back was not against the back of the child restraint or vehicle seat in the case of a belt-positioning booster

Kneeling

Child was resting on their knees while in the child restraint

Other

Any other position of child (specify)

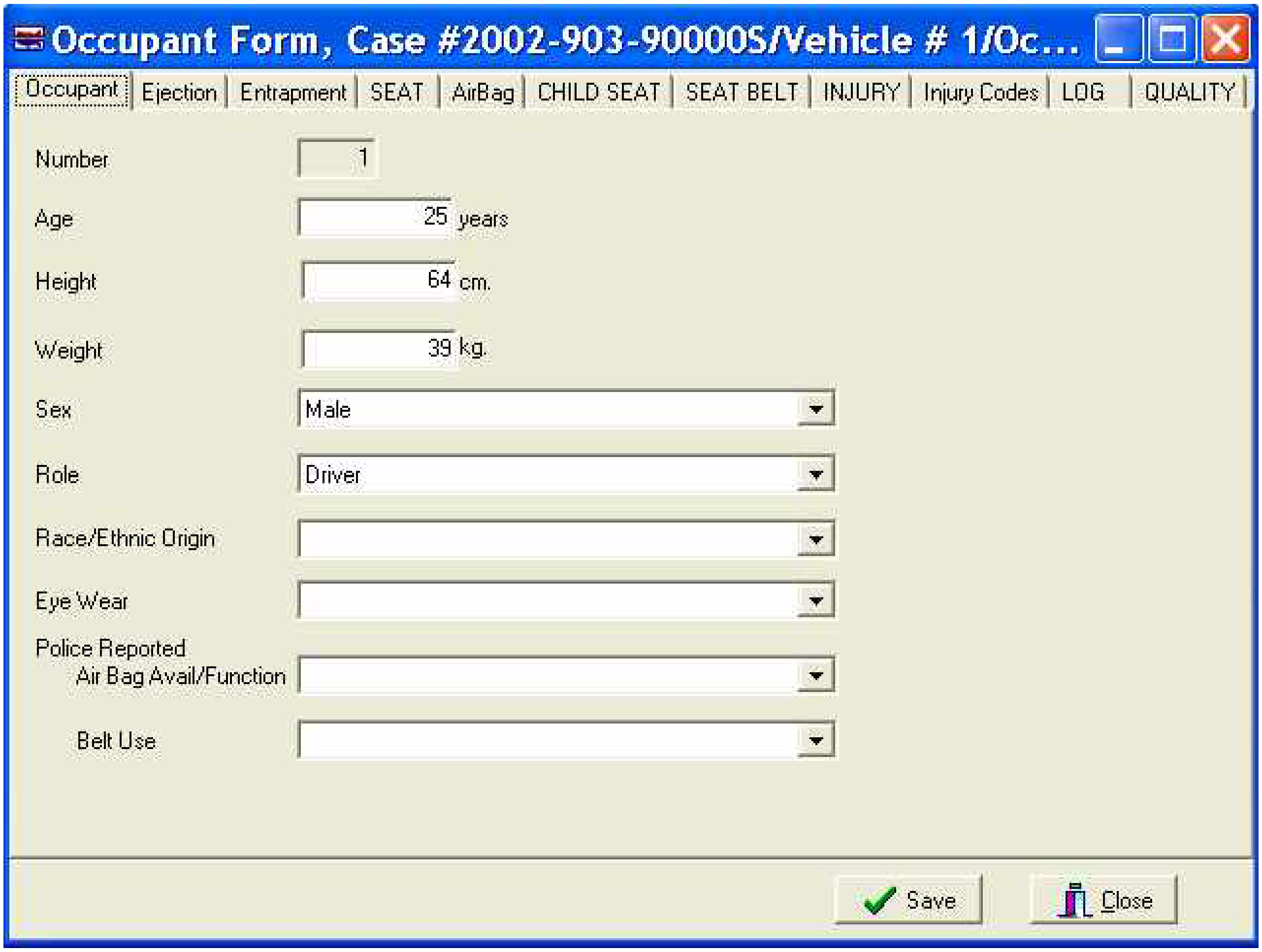
Not occuped

When it is know that the seat was not occuped during the crash

Unknown

Unknown position of child in restraint

Occupant


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Save
Close

Number 1

Age 25 years

Height 64 cm.

Weight 39 kg.

Sex Male

Role Driver

Race/Ethnic Origin

Eye Wear

Police Reported Air Bag Avail/Function

Belt Use

OCCUPANT OVERVIEW

This section provides a base of information that is vital to the analytical process. Ergonomic engineers design the interior of vehicles to be most comfortable for a range of occupants. The height and weight for a particular age bracket are considered in establishing the leg room, head room, and other interior dimensions for a vehicle. Restraint design relies heavily on this type of information. Initial designs of active belts were determined to be very uncomfortable and difficult to wear. The use of a wider range of heights and weights, which also has a bearing on seat adjustments, resulted in belts which were much more comfortable to wear and therefore encouraged use.

Occupant demographics and position play an important role in the injury mechanism, restraint system effectiveness, and vehicle design analysis. For example, the vehicle design, which includes the restraint system, must take into consideration the differences between a 163 centimeters, 45 kilograms driver and a 198 centimeters, 136 kilograms passenger. Both of these occupants must be provided with the same amount of protection by the vehicle in a crash.

Societal costs are also derived from these variables and the related injury assessment variables in this and the Occupant Injury Form.

In many cases the only source for this information is the interview. For this reason the researcher should ask probing questions to elicit complete and accurate responses to these, and all other, variables.

Federal Motor Vehicle Safety Standards--FMVSS 202 (Head Restraints), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 207 (Seating Systems), FMVSS 208 (Occupant Protection), FMVSS 212 (Windshield Mountings), FMVSS 213 (Child Restraint System), and FMVSS 214 (Side Door Strength), are all assessed relative to their potential for reduction of injury to occupants. For this reason it is necessary to have the occupant's characteristics as complete as possible for correct and accurate assessment of the various vehicle components and FMVSSs which apply.

The Occupant Form is also where the Researcher makes their final determination of certain data that is collected from different sources within the case. Data collected from the vehicle inspection, interview, scene, and medical data is assimilated here on the Occupant Form. For example, the Interviewee may say they were wearing the seatbelt; the interior vehicle inspection may indicate that no belt was in use at the time of the crash; the medical report **may not** indicate either way. The researcher must then make their final decision, based on all available evidence, whether or not the seatbelt was worn on the Seatbelt Tab of this form.

OCCUPANT NUMBER

Screen Name: Number

SAS Data Set: **OA**
SAS Variable: **OCCNO**

Element Attributes:
Pre-assigned

Source: User assigned on Case Form

Remarks:

Occupants for this vehicle must be added into the case structure on the Case Form, Structure tab, Occupant sub-tab.

1. Occupant numbers must be assigned sequentially, beginning in the enclosed area with "1". No numbers may be skipped. Assign numbers left to right and front to back among occupants.

2. Assign numbers last to persons on the vehicle or in an unenclosed area. Persons appended to vehicle for motion (*e.g.*, bicyclist holding onto vehicle) are either pedestrians or other nonmotorists and not occupants; therefore, no form is completed, and no number is assigned.

3. Drivers do not have to be "1" (*e.g.*, right hand drive vehicles containing left front occupant). The assumed driver of a hit-and- run vehicle is assigned "1".

4. For each seating location begin numbering with the occupant seated. For each additional occupant in the lap or lying across, assign one number higher. If an occupant is on the floor in front of a person(s) assign one number higher.

5. Occupants sharing a seating position should be assigned numbers using the guidelines stated in the first paragraph above.

OCCUPANT'S AGE

Screen Name: Age

SAS Data Set: **OA**
SAS Variable: **AGEMONTH, AGEYEAR**

Element Attributes:

	Enter actual age in months if under 2 years, in years or months if older than 2 years.
999	Unknown

Range: 0- 24 months, 0-120 years

Source: Primary source is interviewee; secondary sources include police reports and other official records (*i.e.*, medical records).

Remarks:

The occupant's age at the time of the crash is recorded with respect to the occupant's last birthday.

If under the age of twoo years enter the actual age in months. If less than one month old enter one month.

If you are unable to obtain the age of a driver, request a driver's license record. **This action must be discussed and a policy determined with your zone center and COTR. Licensing file data takes precedence over police or interview data.**

OCCUPANT'S HEIGHT

Screen Name: Height

SAS Data Set: **OA**
SAS Variable: **HEIGHT**

Element Attributes:

	Entry defaults to inches, but may also be entered in centimeters
999	Unknown

Range: 30 – 432, 999

Source: Researcher determined--inputs include interviewee or official records (*e.g.*, medical).

Remarks:

Enter actual height to nearest inch / centimeter (program automatically converts inches to centimeters).

The PAR may be used as a source if it contains this data, but it is superseded if other data exists.

Autopsies often include this information; use it when present.

If you are unable to obtain the height of a driver, request a driver's license record. **This action must be discussed and a policy determined with your zone center and COTR. Licensing file data takes precedence over police or interview data.**

OCCUPANT'S WEIGHT

Screen Name: Weight

SAS Data Set: **OA**
SAS Variable: **WEIGHT**

Element Attributes:

Entry defaults to pounds, but may also be entered in kilograms.

9999	Unknown

Range: 2 – 225, 999

Source: Researcher determined--inputs include interviewee or official records (*e.g.*, medical).

Remarks:

Enter actual weight to nearest pound/kilogram. **The appropriate units must be selected for the English or Metric system.**

The PAR may be used as a source if it contains this data, but it is superseded if other data exists.

Autopsies often include this information; use it when present.

OCCUPANT'S SEX

Screen Name: Sex

SAS Data Set: **OA**
SAS Variable: **SEX**

Element Attributes:

1	Male
2	Female — Not reported pregnant
3	Female — pregnant - 1st trimester (1st-3rd month)
4	Female — pregnant - 2nd trimester (4th-6th month)
5	Female — pregnant - 3rd trimester (7th-9th month)
6	Female — pregnant - term unknown
9	Unknown

Source: Primary source is the interview, secondary sources include police report and official records (*e.g.* medical).

Remarks:

Male
consists of men and boys.

Female — Not reported pregnant
consists of women and girls who are reported as not pregnant at the time of the crash. This includes any females for whom pregnancy status is unknown.

Female — pregnant - 1st trimester (1st-3rd month)
consists of women and girls who are reported to be pregnant and were in the first three months of their pregnancy at the time of the crash.

Female — pregnant - 2nd trimester (4th-6th month)
consists of women and girls who were reported to be pregnant and were in the second three months of their pregnancy at the time of the crash.

Female — pregnant - 3rd trimester (7th-9th+ month)
consists of women and girls who were reported to be pregnant and were in the final third of their pregnancy at the time of the crash. Pregnant females who were over nine months pregnant are also included.

Female — pregnant - term unknown
consists of women and girls who were reported to be pregnant at the time of the crash but the stage of their pregnancy could not be determined.

Unknown
is used when the gender of the occupant cannot be determined.

OCCUPANT'S ROLE

Screen Name: Role

SAS Data Set: **OA**
SAS Variable: **ROLE**

Element Attributes:

1	Driver
2	Passenger
9	Unknown

Source: Primary source is interviewee; secondary source is police report.

Remarks:

Hit-and-run vehicles are assumed to have only one occupant (unless reliable evidence to the contrary exists), and that person is assumed to be the driver. All other persons riding in or on the vehicle are considered to be passengers.

RACE/ETHNIC ORIGIN OF OCCUPANT

Screen Name: Race/Ethnic Origin

SAS Data Set: **OA**
SAS Variable: **RACE**

Element Attributes:

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

Source: Researcher determined; primary source is the interviewee; secondary sources include police report, medical records, and other official documents.

Remarks:

The concept of race as used by the U.S. Census Bureau reflects **self-identification**; it does not denote any clear-cut scientific definition of biological stock. Self-identification represents self-classification by people according to the race with which they identify themselves. For drivers with parents of different races who cannot provide a single response, use the race of the driver's mother; however, if a single response cannot be provided for the driver's mother, the first race reported by the driver is encoded.

Hispanic is not a race but rather an ethnic origin. Persons of Spanish origin may be of any race. For the purpose of this variable, race and Hispanic origin have been combined using the elements listed above.

Prioritization of data sources:

***First, use interviewee data*:**
Ask the interviewee what the driver considers their race and ethnic origin to be. If the response does not clearly fit into one of the race and ethnic origin categories, then use the information provided by the interviewee concerning the driver's nationality/ethnic origin to select the correct element value.

***Second, use the PAR*:**
If race is given on the PAR and the PAR scheme is compatible with this variable, then use the PAR information. Researchers in states whose only available data source is the PAR, must use **Unknown**.

If the PAR indicates White/Caucasian, Black/Negro, Hispanic/Spanish, or Other, then the PAR contains insufficient information for this variable. Additional information is required to determine the combination of race and ethnic origin. In addition, the driver's ***name*** is not a reliable indicator of either race or ethnic origin and ***cannot be used*** when selecting the applicable element value for this variable. For example, a name such as: Mary Perez, tells you neither race (*e.g.*, white or black) nor ethnic origin since the person may or may not consider themselves to be of Hispanic descent.

When Hispanic origin is known but race is not and when race is known but Hispanic origin is not, enter **Unknown**.

Third, use official records (**e.g.,* ***medical):
If the data needed cannot be obtained from the interviewee and is not available or usable from the PAR, then use official records, if available, to determine the correct element attribute.

White (non-Hispanic)
is used for drivers who consider themselves as having origins in any of the original peoples of Europe, North Africa, or the Middle East. The person may consider his/her race to be white ***and*** not of Hispanic origin.

Black (non-Hispanic)
is used for drivers who consider themselves as having origins in any of the black racial groups of Africa. The person may consider his/her race to be Black, Negro, or Afro-American ***and*** not of Hispanic origin.

White (Hispanic)
is used for drivers who consider themselves as having origins in any of the original peoples of Europe, North Africa, or the Middle East. The person may consider his/her race to be white ***and*** of Hispanic origin.

Black (Hispanic)
is used for drivers who consider themselves as having origins in any of the black racial groups of Africa. The person may consider his/her race to be Black, Negro, or Afro-American ***and*** of Hispanic origin.

American Indian, Eskimo or Aleut
is used for drivers who consider themselves as having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition. For example, if a specific (or named) Indian tribe is given, then use this attribute.

Asian or Pacific Islander
is used for drivers who consider themselves as having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Other
is used for drivers who consider themselves to be of a race or ethnic origin not described above. Use this attribute for descriptions such as: Eurasian, Cosmopolitan, inter-racial, etc. In addition, if the driver considers him/herself to be of Hispanic origin but not white or black, then use this code.

Unknown
is used when the source(s) available do not provide sufficient information to classify the driver's race. In addition use this code when Hispanic origin is known but race is not and when race is known but Hispanic origin is not.

OCCUPANT'S EYE WEAR

Screen Name: Eye Wear

SAS Data Set: **OA**
SAS Variable: **EYEWEAR**

Element Attributes:

0	No
1	Eyeglasses/sunglasses
2	Contact lenses
3	Contact lenses with sunglasses
8	Other (specify)
9	Unknown

Source: Researcher determined — primary source is the interview and secondary sources includes vehicle inspection and medical records.

Remarks:

This variable refers to all occupants. The occupant must be wearing the glasses/lenses at the time of the crash.

The presence of glasses in the vehicle does not in itself mean that an occupant was wearing them. Additional information must be obtained to determine that they were worn (injuries, air bag damage, etc.)

No
no eyeglasses/sunglasses or contact lenses were worn by this occupant.

Eyeglasses/sunglasses
if this occupant was wearing eyeglasses or sunglasses at the time of impact.

Contact lenses
if this occupant was wearing contact lenses at the time of impact.

Contact lenses with sunglasses
if the occupant is wearing contact lenses with sunglasses.

Unknown
it is not known if the occupant in this position was wearing eyewear.

POLICE REPORTED AIR BAG AVAILABILITY/FUNCTION

Screen Name: Police Reported–Air Bag Avail/Function

SAS Data Set: **OA**
SAS Variable: **BAGAVRPT**

Element Attributes:

0	No air bag available
1	Police did not indicate air bag availability/function
2	Deployed
3	Not deployed
4	Unknown if deployed
9	Police indicated "unknown"

Source: Police report.

Remarks:

This variable captures what was documented on the PAR regarding the availability and functioning of any air bag system. The entire PAR (especially narrative) must be reviewed to make a determination to code this variable.

Police did not indicate air bag availability/function
is used in two instances. The first is when the PAR has a space, box, line, etc. to indicate air bag availability/function but there is no response present. The second is when there is no area of the PAR for the officer to report air bag availability/function.

POLICE REPORTED BELT USE

Screen Name: Police Reported—Belt Use

SAS Data Set: **OA**
SAS Variable: **PARUSE**

Element Attributes:

0	None used
1	Police did not indicate belt use
2	Shoulder belt
3	Lap belt
4	Lap and shoulder belt
5	Belt used, type not specified
6	Child safety seat
7	Automatic belt
8	Other type belt, (specify)
9	Police indicated "unknown"

Source: Police report.

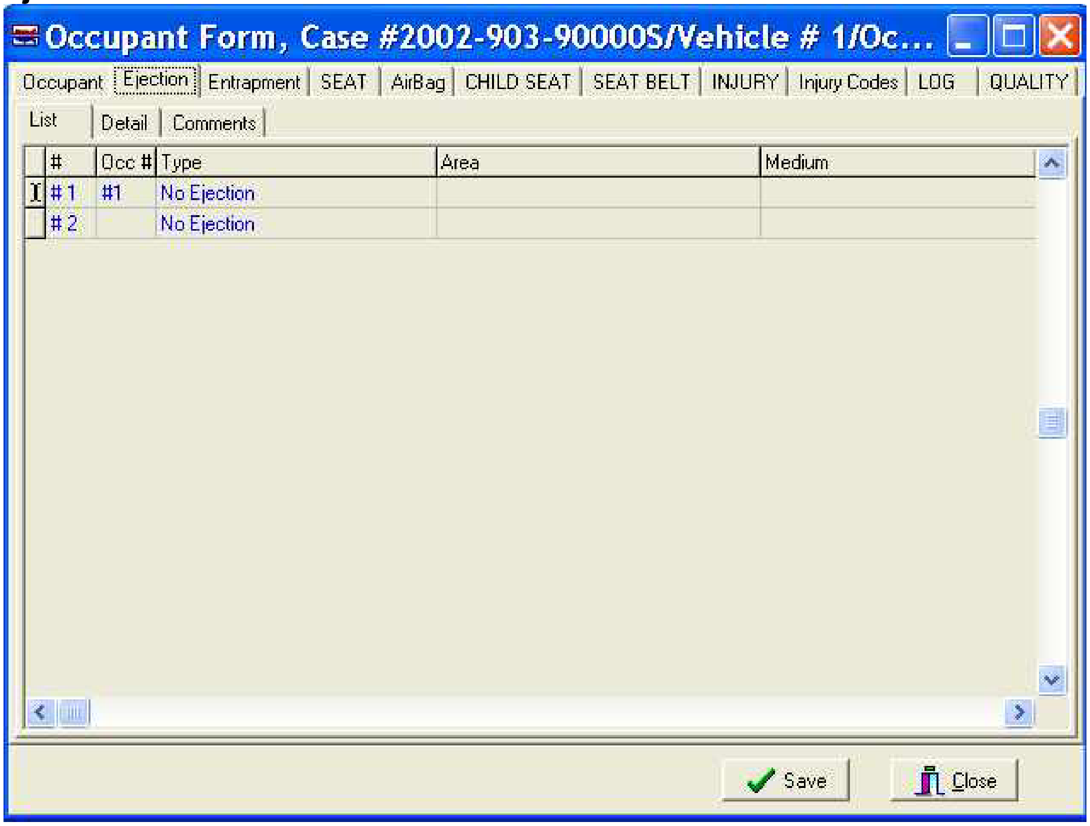
Remarks:

This variable captures what was documented on the PAR regarding occupant use of available vehicle restraints (*i.e.*, manual belts, child safety seat, or automatic restraints). Select the first attribute which applies. The entire PAR (especially narrative) must be reviewed to make a determination to code this variable.

Police did not indicate restraint use
is used in two instances. The first is when the PAR has a space, box, line, etc. to indicate restraint use but there is no response present. The second is when there is no area of the PAR for the officer to report restraint use.

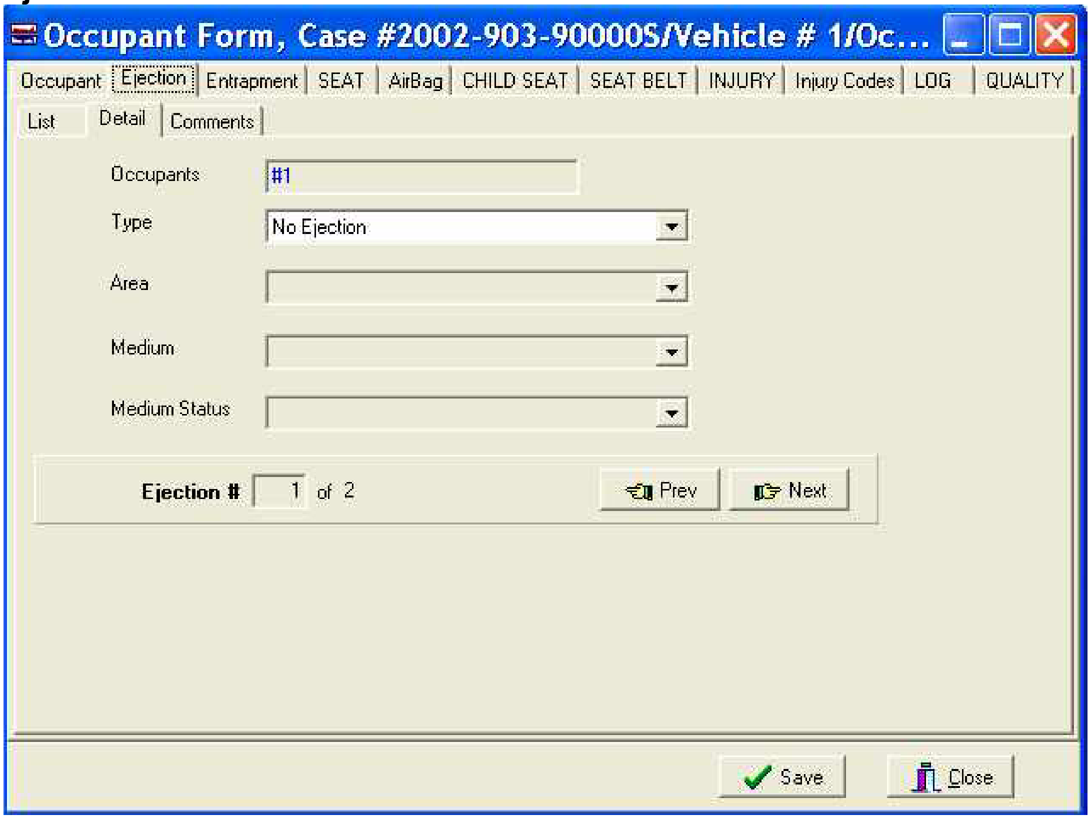
Belt used, type not specified
is used when the PAR indicates that available ***belts*** were used, but it is unclear what type of belts were actually in use.

Ejection List


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
List
Detail
Comments
Save
Close

#	Occ #	Type	Area	Medium
# 1	#1	No Ejection		
# 2		No Ejection		

Ejection Detail


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
List
Detail
Comments
Prev
Next
Save
Close

Occupants: #1
Type: No Ejection
Area:
Medium:
Medium Status:

Ejection # 1 of 2

EJECTION / ENTRAPMENT OVERVIEW

Variables in this section provide an assessment of the occurrence of entrapment or ejection of this occupant. All of the variables in this section are considered final assessments, which are selected at the end of all field research and interviewing. Much of the information regarding them comes from the vehicle inspection. Verification of questionable ejection or entrapment comes from the interview.

Historically, ejection from the vehicle has been a major cause of fatalities and more serious injuries. The chances of being killed if ejected are about 1 in 5; whereas, if the occupant remains inside the vehicle, the chances of dying are reduced to about 1 in 200 for all fatal crashes. Unfortunately ejection from the vehicle is not that uncommon and has become a significant part of the fatality (30%) and severe (15%) injury crashes. Further contributing to the ejection problem is the increase in window surface area and more hatchback models. Despite the current emphasis on restraint use through legal requirements for occupants to be buckled up, a significant portion of the population continues to be unrestrained and at risk to ejection. All evidence indicates that this trend will continue into the foreseeable future.

A problem not often addressed is that of partial ejection. This refers to those instances where some part but not all of an occupant's body is, at some time during the crash sequence, outside the occupant compartment. Although it would not seem to be a problem it can be, and often is, fatal if the part outside is the occupant's head. Because of the dynamics of the vehicle and the kinematics of the occupants during a rollover ejection sequence, it is often the occupant's own vehicle which causes the injury as it rolls onto the occupant.

Entrapment poses a different problem area. Recent years have brought about a vast improvement in the delivery of emergency medical attention to motor vehicle crash victims. This improvement has been achieved through the establishment of regional trauma centers, well equipped Mobile Intensive Care Units manned by trained paramedics even in rural areas, and a general increase in the knowledge of how to treat acute trauma. This improvement has not helped those victims who are restrained within the vehicle by deformed components. The improved care cannot be delivered because the personnel are unable to get to the victim, remove the victim from the vehicle, and deliver the victim to a treatment facility in a reasonable amount of time. Also, previous extrication tools used by rescue personnel were crude and sometimes injury causing themselves, an example of which is the large metal cutting saws. Within the last few years a device known as the "Jaws of Life" was developed and widely distributed. It is a hydraulically driven mechanism which can be used to increase the size of openings, extricate entrapped occupant's limbs and force open doors which are jammed. This development came about because of the perceived need for an extrication tool which operated quickly yet did not further injure the occupant.

Federal Motor Vehicle Safety Standards (FMVSS) which were developed in response to the problems seen in these areas are FMVSS 201 (Occupant Protection in Interior Impact), FMVSS 205 (Glazing Materials), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 212 (Windshield Mounting), and FMVSS 214 (Roof Crush Resistance Passenger Cars).

Analytically this group of variables is a stand alone package most of the time. It can form the basis of an analysis without the use or comparison to any other variables. This would be used mostly in exploring the number and types of ejections and entrapments. Expanding the scope somewhat to include injury severity allows a determination of the increase or decrease in the ejection problem. Inclusion of injury source would provide an idea of the severity of all occurrences of entrapment and ejection. Injury source also provides an idea of the kinematics of the occupant during the sequence. The addition of a cross-tabulation for AIS level would show the relative severity between the injuries incurred inside the vehicle and those outside the vehicle.

Other areas of interest to the analyst are the ejection route and performance of integral structures. The integral structure performance is directly governed by the FMVSS 206 and 212. These areas are of increasing interest to NHTSA since the real world performance can help support the findings from the staged collisions and will help determine the effectiveness of the standards.

Lastly, an alternative glazing techniques was introduced in windshields. This type of window have a plastic layer on the interior surface of the window. Tests have shown a reduction in lacerative injuries which was the primary objective but also an increased resistance to ejection through the window. Further study of real world performance is needed to provide an accurate evaluation of this secondary benefit.

Gathering the data, which will allow the researcher to accurately select the variables, is a multistage process. It will begin with the PAR which may give an indication of either ejection or entrapment. Inspection of the vehicle will provide the evidence needed to substantiate either occurrence. Further, documentation should be obtained through the scene inspection, interview, and injury data. Only at the end of the data gathering process should these variables be selected. Particular attention should be paid to the vehicle inspection since most evidence of ejection will be less apparent and not easily discerned.

Occupant mobility refers to the level of assistance that the occupant used in exiting the vehicle.

In summary, this group of variables assesses the level of a very significant problem in today's crash picture. Correct accurate assessment is a result of a multistage research process which will be individualized by case. Attention to detail will result in a correct assessment. This is one area which is directly tied to the FMVSS, and all gathered data results in a direct evaluation of the applicable standards.

Special Conditions for *Ejection and Entrapment*

Using the guidelines given below, *Ejection/Entrapment* variables may be completed for towed CDS applicable vehicles based on PAR and crash severity when there is ***no vehicle inspection, no interview***, and ***the answer is obvious***. If there is any doubt, annotate accordingly and select **Unknown.**

1. Select **Not entrapped** for occupants fleeing from towed CDS applicable vehicles.

2. For other towed CDS applicable vehicles:

    (a) **No Ejection** may be used ***if the PAR specifically so states for a given occupant***. For all other occupants about whom the PAR is silent, select **Unknown**.

    If the PAR indicates that an occupant is ejected, this is sufficient to select **Complete ejection** or **Partial ejection** if the PAR so states. If complete versus partial ejection is not stated on the PAR, then select **Ejection, unknown degree** may be used.

    Note, however, that these three variables can be used only if the PAR provides sufficient detail.

    (b) Entrapment may be selected as **Not entrapped *if the PAR specifically so states for a given occupant***. For all other occupants about whom the PAR is silent, use **Unknown**.

    Recall, however, that if the PAR states that an occupant is entrapped, this is ***not sufficient*** to select Entrapment (because PAR definition of entrapment is different from NASS definition). Unless Entrapment is verified through other sources, Entrapment must be selected as **Unknown**.

TYPE OF EJECTION

Screen Name: Type

SAS Data Set: **OA**
SAS Variable: **EJECTION**

Element Value:

0	No ejection
1	Complete ejection
2	Partial ejection
3	Ejection, unknown degree
9	Unknown

Source: Researcher determined--inputs include the vehicle inspection, interviewee, medical records, and the police report.

Remarks:

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified. If no ejection is the only information then do not link it.

Ejection refers to persons being completely or partially thrown from the vehicle as a result of an impact or rollover. If a person already has a body part protruding from the vehicle (*e.g.*, an elbow, arm, etc.) and the PDOF acting on the vehicle would likely cause further protrusions of the body part, then at least partial ejection is selected.

No ejection
for any persons riding on the exterior of a vehicle, such as the fenders **(this does not include pickup beds, boot of a convertible, and persons riding on open tailgates)**.

Complete ejection
refers to a situation where the occupant's body is entirely outside the vehicle but may be in contact with the vehicle.

Partial ejection
refers to a situation where part of the occupant's body remains in the vehicle. This does not apply to occupants who are not initially in the seating compartment of the vehicle [*e.g.*, pickup beds, boot of a convertible, and persons riding on open tailgates, since any ejection for them is selected as **Complete ejection**].

Police reported ejections may be used if there is no vehicle inspection or occupant interview, provided that the ejectee was in the seating compartment of the vehicle, and there is no evidence which contradicts the reported ejection.

EJECTION AREA

Screen Name: Area

SAS Data Set: **OA**
SAS Variable: **EJCTAREA**

Element Attributes:

0	[No ejection]
1	Windshield
2	Left front
3	Right front
4	Left rear
5	Right rear
6	Rear
7	Roof
89	[Unknown if ejected]
98	Other area (*e.g.*, back of pickup, etc.) (specify)
99	Unknown

Source: Researcher determined — inputs include the vehicle inspection, interviewee, and the police report.

Remarks:

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified.

Rear
is restricted to persons riding in a passenger compartment, who are ejected through the rear window, tailgate (*e.g.*, station wagon), hatchback, etc.

Roof
applies to all hardtops, convertibles, sun roofs, t-bar roofs, and detachable hardtops (such as fiberglass tops) that are used to cover areas designed for passenger protection.

Ejection Area (cont'd)

When **Ejection Area** equals **Roof,** follow examples illustrated below when selecting **Ejection Medium** and **Medium Status** (immediately prior to impact).

Ejection	Roof Type	Area	Ejection Medium	Medium Status
Ejection	Hardtop, ripped open during crash	Roof	Integral Structure	Integral Structure
Ejection	Removable hardtop, attached prior to the crash	Roof	Integral Structure	Integral Structure
Ejection	Removable hardtop, detached prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in down or open position prior to crash	Roof	Non-fixed roof structure	Open
Ejection	Convertible, in closed position	Roof	Non-fixed roof structure	Closed
Ejection	Sun or t-bar, closed and ripped open during the crash	Roof	Non-fixed roof structure	Closed
Ejection	Sun or t-bar, open/removed prior to the crash	Roof	Non-fixed roof structure	Open

The specific Ejection--Area attributes are designated for use with areas designed for passenger protection (*e.g.*, passenger cars, vans, light truck cabs, self-contained mini- RVs and mini-motor homes). Trailers, add-on campers, etc., are to be assigned **Other area**.

Other area

also applies to persons riding on open tailgates.

Unknown

if the sole source for the ejection is the police report, unless the PAR provides a clear, distinguishable avenue of occupant ejection.

EJECTION MEDIUM

Screen Name: Medium

SAS Data Set: **OA**
SAS Variable: **EJECTMED**

Element Attributes:

0 [No ejection]
1 Door/hatch/tailgate
2 Nonfixed roof structure
3 Fixed glazing
4 Nonfixed glazing (specify)
5 Integral structure
79 [Unknown ejection area]
89 [Unknown if ejected]
98 Other medium (specify)
99 Unknown

Source: Researcher determined — inputs include the vehicle inspection, interviewee, and the police report.

Remarks:

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified.

Door/hatch/tailgate
includes any door, hatch, or tailgate that is opened during the course of the impact sequence.

Non-fixed roof structure
applies only to convertible, sun roofs, t-bar roofs, and removable hardtops when detached / retracted prior to the crash.

Fixed glazing
refers to any glazing in the vehicle that cannot be opened

Non-fixed glazing
refer to any glazing in the vehicle that can be opened to any degree.

Integral structure
includes removable hardtops when attached to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (*e.g.*, standard roof), is torn open during the crash such as to permit ejection.

Other medium
applies to persons riding in pickup beds, on open tailgates, and for other situations which cannot be classified above. In addition, use this attribute when someone is ejected from a trailer, add-on camper, etc.

Unknown

if the sole source for the ejection is the police report, unless the PAR provides a clear, distinguishable avenue of occupant ejection.

EJECTION MEDIUM STATUS (IMMEDIATELY PRIOR TO IMPACT)

Screen Name: Medium Status

SAS Data Set: **OA**
SAS Variable: **MEDSTA**

Element Attributes:

0 [No ejection]
1 Open
2 Closed
3 [Integral Structure]
79 [Unknown ejection area]
89 [Unknown if ejected]
99 Unknown status

Source: Researcher determined — inputs include the vehicle inspection, interviewee, and the police report.

Remarks:

The coding of ejection for this variable is done by either linking it to an ejection that has been noted during the vehicle inspection, if present, or inserting one. In either condition, the information can be modified. This variable is a description of the status of the area through which an occupant was ejected and is the status of the medium immediately prior to the impact.

Open

applies to convertible roofs, sun roofs, t-bar roofs, windows, doors or tailgates that are completely or partially open immediately prior to impact, or to other open areas of vehicles such as pickup beds, etc.

Closed

refers to a window that is completely closed when damaged, or to a convertible, sun, or t-bar roof that is closed when damaged. Sun and t-bar roofs are captured here if the ejection occurred through the designed opening in the sun or t-bar roof. However, if the roof was of a sun or t-bar type but the ejection occurred because a sizable opening was torn in the roof structure, then select **Integral structure**. This is also used for fixed glazings such as windshields and backlights which are in place prior to the collision. This also refers to a door that is closed, but when damaged, experiences latch and/or hinge failure causing the door to open.

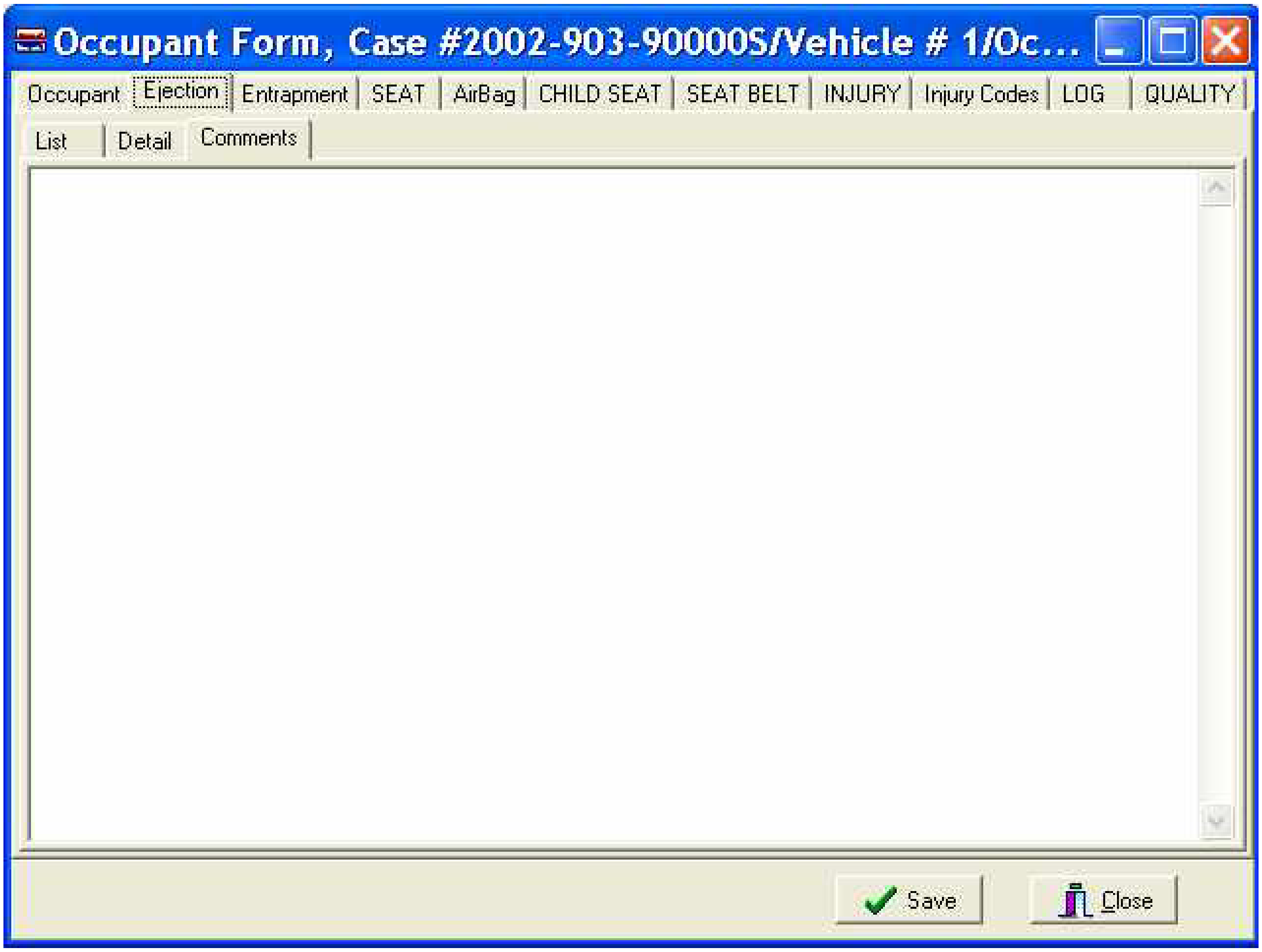
Integral structure

includes removable hardtops when attached to the vehicle prior to the crash. This also should be used when any vehicle structure, not designed to be opened (*e.g.*, standard roof), is torn open during the crash such as to permit ejection.

Unknown

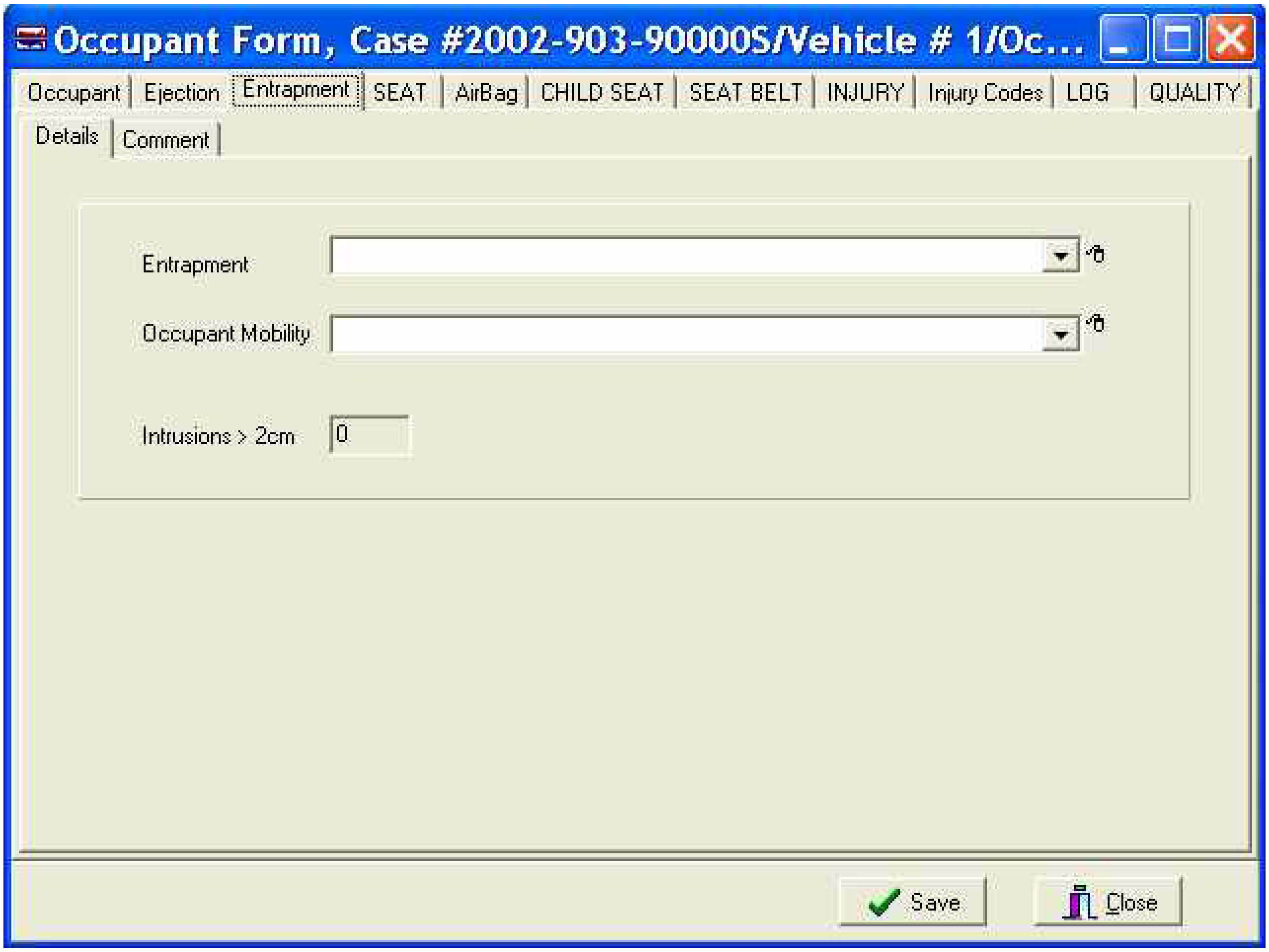
if the sole source for the ejection is the police report, unless there is a clear indication on the PAR of the medium status.

Ejection Comments


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
List
Detail
Comments
Save
Close

This screen is for adding further annotations about any ejection.

Entrapment Details


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Details
Comment
Save
Close

Entrapment

Occupant Mobility

Intrusions > 2cm 0

ENTRAPMENT

Screen Name: Entrapment

SAS Data Set: **OA**
SAS Variable: **ENTRAP**

Element Attributes:

0 Not entrapped/exit not inhibited
1 Entrapped/pinned — mechanically restrained
2 Could not exit vehicle due to jammed doors, fire, etc (specify)
9 Unknown

Source: Researcher determined — inputs include the vehicle inspection, interview and police report.

Remarks:

Not entrapped/exit not inhibited

is used when this occupant exited the vehicle and his/her egress was not inhibited in any way by intruding vehicle components, jammed doors, etc.

Entrapped/pinned — mechanically restrained

is used when this occupant was physically restrained in the seat position by an intruding vehicle component. The occupant could not move from the post impact position without some part of the vehicle being cut away, bent or moved.

Could not exit vehicle due to jammed doors, fire, etc. (specify)

is used when this occupant could not exit the vehicle due to jammed door(s), roof collapse, etc. This occupant, however could move about within the vehicle.

Unknown

is used when there is no knowledge of the manner of this occupant's exit from the vehicle and generally, no inspection of the vehicle.

Screen Name: Occupant Mobility

SAS Data Set: **OA**
SAS Variable: **OCCMOBIL**

Element Attributes:

0 Occupant fatal before removed from vehicle
1 Removed from vehicle while unconscious or not oriented to time or place
2 Removed from vehicle due to perceived serious injuries
3 Exited from vehicle with some assistance
4 Exited from vehicle under own power
5 Occupant fully ejected
8 Removed from vehicle for other reasons (specify):
9 Unknown

Source: Researcher determined — inputs include fire and or EMS personnel/records, interviews, witnesses, medical records, PAR.

Remarks:

The variable attributes are hierarchical.

Do not rely on the interview alone to make this selection. Consider all information (EMS, medicals, etc.) when making your selection.

Occupant fatal before removed from vehicle
is used when it can be determined that the occupant was deceased prior to removal from the vehicle.

Removed from vehicle while unconscious or not oriented to time or place
is used when it can be determined that the occupant was unconscious or had diminished awareness (not oriented to time and place) when they were removed from the vehicle.

Removed from the vehicle due to perceived serious injuries
is used when it can be determined that the occupant was injured but conscious and oriented and had to be removed from the vehicle due to their serious injuries (*e.g.* broken femur). A key factor to consider is the perceived seriousness of the injury. Generally this involves removal by EMS personnel.

Exited the vehicle with some assistance
is used when the occupant was able to exit the vehicle partially under their own power but their condition was such that some assistance in exiting was necessary.

Exited the vehicle under own power
is used when the occupant was able to exit the vehicle without assistance from another person.

Occupant Mobility (cont'd)

Occupant fully ejected

is used when the occupant was completely ejected from the vehicle.

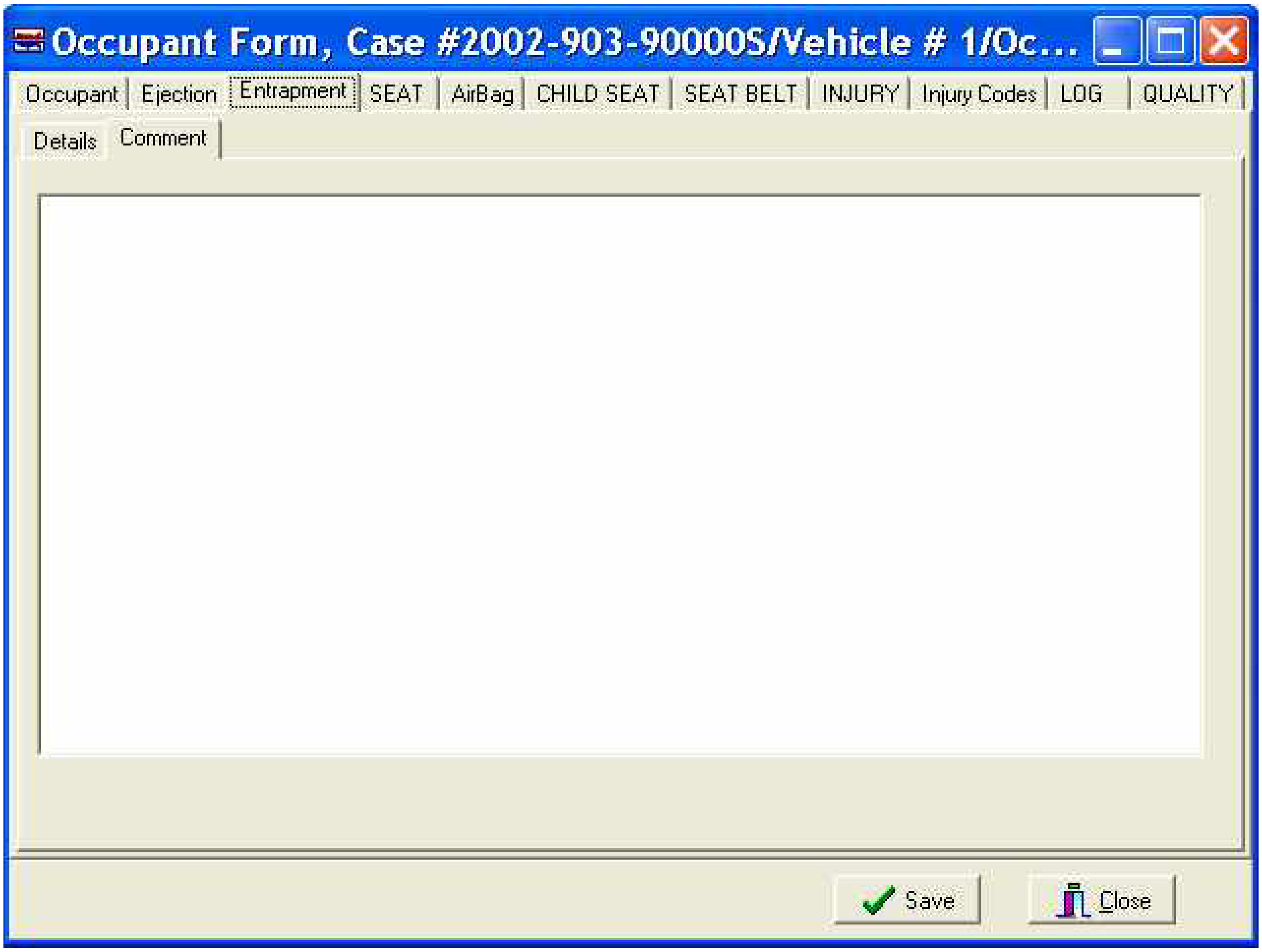
Removed from vehicle for other reasons (specify):

includes those people who require assistance in exiting the vehicle and would have required assistance even if there had not been a crash i.e., infants, severely disabled, intoxicated persons.

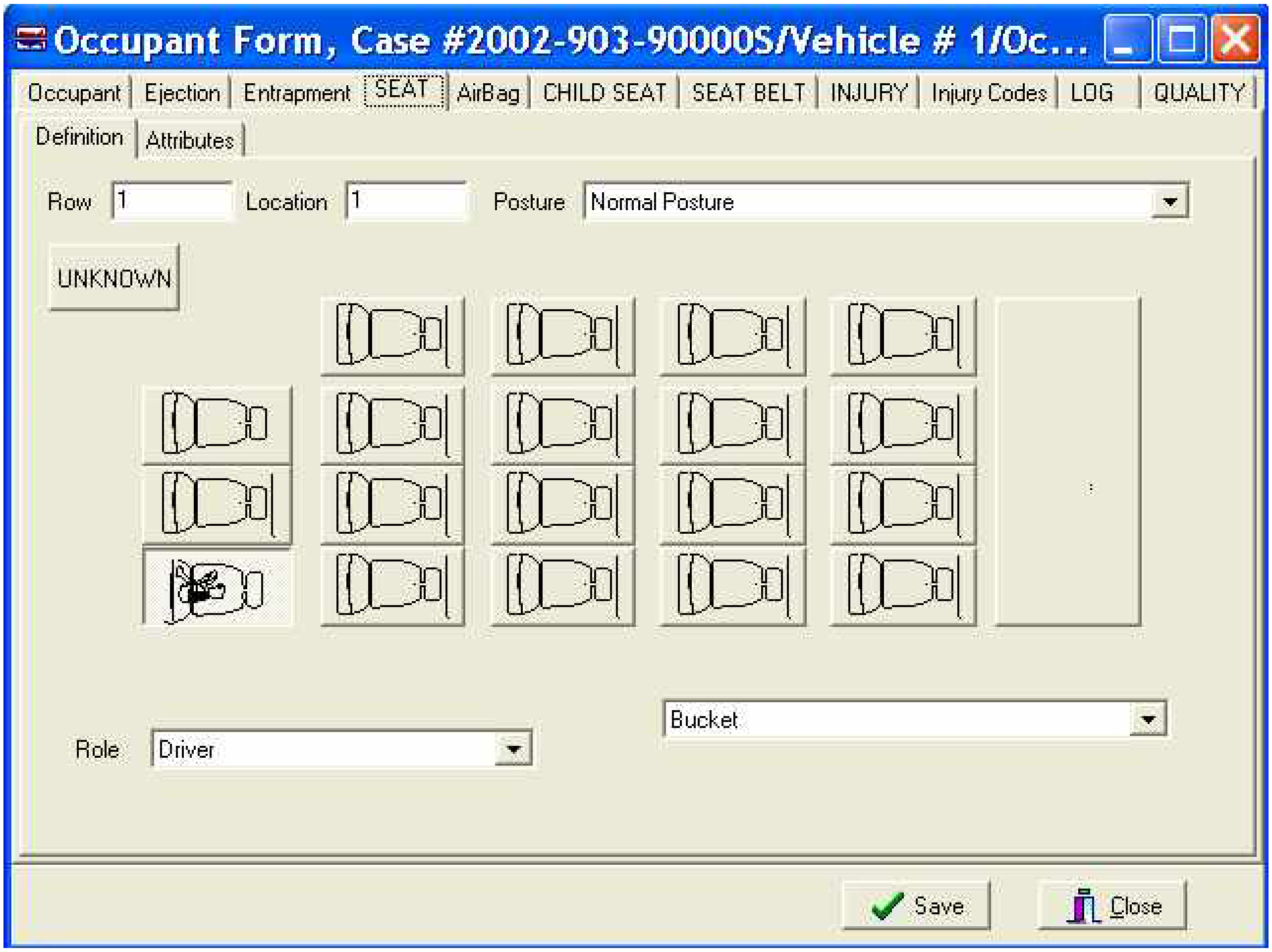
Unknown

is used when the researcher cannot reasonably determine the manner of exit by the occupant.

Entrapment / Comment


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Details
Comment
Save
Close

Seat Definition


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Definition
Attributes
UNKNOWN
Save
Close

Row 1 Location 1 Posture Normal Posture

Role Driver

Bucket

OCCUPANT’S SEAT POSITION

Screen Name: Seat Location Identification

SAS Data Set: **SEATLOC**
SAS Variable: **SEATPOS**

Front Seat
11 Left side
12 Middle
13 Right side

Second Seat
21 Left side
22 Middle
23 Right side
24 Far right side

Third Seat
31 Left side
32 Middle
33 Right side
34 Far right side

Fourth Seat
41 Left side
42 Middle
43 Right side
44 Far right side

Fifth Seat
51 Left side
52 Middle
53 Right side
54 Far right side

98 Other enlosed area

Source: Vehicle inspection

Remarks:

“Far right side” is only to be used if the seat has four seating positions.

More than one person may be assigned to a seating position. When this happens, the appropriate **Posture** must be selected to account for this.

The seating position by the steering wheel should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or persons.

If the only seat in the front seating area is a driver's seat (*e.g.*, bucket, pedestal, etc.) and the occupant was in the area but not in the seat, assign the appropriate seating position (maybe the front right seating location) and the "Posture" will be indicated appropriately

The area at the rear of the vehicle is the location to indicate those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc. or for anyone in the sixth or higher numbered seat area. See below for clarification.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor.

Persons appended to the vehicle in motion are not considered to be occupants of the vehicle.

Unenclosed Area

includes those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc.

To select “Unenclosed area”, you must first “click on” the large area in the rear of the vehicle on the screen. Then using the variable **Seat Type**, you will select “In or on other Unenclosed area (specify)”

Other Seat

is used for anyone in the sixth or higher numbered seat area (highly unlikely). In addition, use this code when an occupant(s) is in an enclosed area where no defined seating exists.

To select “Other seat”, you must first “click on” the large area in the rear of the vehicle on the screen. Then using the variable **Seat Type**, you will select “In other Enclosed area (specify)”

OCCUPANT'S POSTURE

Screen Name: Posture

SAS Data Set: **OA**
SAS Variable: **POSTURE**

Element Attributes:
0 Normal 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 In the lap of another occupant
9 Sharing a seat-sitting side by side another occupant
10 In a child restraint
88 Other posture (specify):
99 Unknown

Source: Primary source is interviewee; secondary sources include vehicle inspection, police report, or official records (*i.e.*, medical).

Remarks:

This variable is designed to capture those instances where an occupant was not in the usual upright, **forward facing seated position** except for occupants correctly seated in child safety seats.

The occupant's posture is assessed as the last known position that the occupant was in just prior to impact. If the occupant cannot recall his/her position just prior to impact, then assign the last known position just prior to recognizing an impending danger.

The posture of an occupant of a child safety seat is normal if the occupant is correctly seated in the seat as designed. If the occupant is not seated (*i.e.*, kneeling or standing) in the child safety seat as designed, then the occupant's posture is abnormal and **Other abnormal posture** is used.

It is extremely important in locating injuries associated with various items within the passenger compartment to know as much as possible about the occupant's trajectory or path inside the vehicle during the collision. The accuracy of this analysis depends on knowing exactly where the occupant was before the collision. Therefore, details about the occupant's posture are necessary.

As an example, if the right front passenger was sitting sideways in the seat facing the driver immediately prior to a frontal collision, it is reasonable to assume that his injuries would be confined to the right side of his body from contact with the instrument panel area. If he is reported simply as "sitting on the seat", his normal position would be with his right toward the door. For the same collision situation described above he would probably then contact the instrument panel with the front of his body rather than the side.

Occupant's Posture (cont'd)

Kneeling or standing on seat

is used whenever an occupant is not seated but is kneeling or standing on a seat.

Lying on or across seat

is used whenever an occupant is not seated but is lying with body, or body and legs across one or more seating positions.

Kneeling, standing or sitting in front of seat

is used whenever an occupant is not seated but is on the floor kneeling, standing, or sitting in front of a seat, which may be occupied.

Sitting sideways or turned to talk with another occupant or to look out a rear window

is used whenever an occupant is seated but is sitting sideways or turned to talk with another occupant or to look out a rear window just prior to impact.

Sitting on a console

is used whenever an occupant is not in a seat position but is sitting on a console.

Lying back in a reclined seat position

is used whenever an occupant in a seat position has reclined the seat back rearward and is lying back in the seat.

Bracing with feet or hands on a surface in front of seat

is used whenever a seated occupant has assumed a position of bracing on the surface in front of the seat position just prior to the collision.

Sitting on or in the lap of another occupant

is used whenever two occupants occupy the same seat position by sitting on, or in the lap of, the other occupant.

Sitting side-by-side another occupant in the same seating location, not primarily in their lap

is used when a seated occupant is in the same seating location as another occupant but is not in their lap.

Other abnormal posture (specify)

includes but is not limited to:

- sitting normally (not kneeling, etc.) in a designed rearward or side-facing seat except for occupants correctly seated in child safety seat
- leaning over in the seat
- being in an enclosed area that does not have designated seating positions
- being in an unenclosed area
- incorrectly seated in a child safety seat

Unknown

if the occupant's posture cannot be determined.

Seat / Attributes

OCCUPANT'S ROLE

Screen Name: Role

SAS Data Set: **OA**
SAS Variable: **ROLE**

Element Attributes:

1 Driver
2 Passenger
9 Unknown

Source: Primary source is interviewee; secondary source is police report.

Remarks:

Hit-and-run vehicles are assumed to have only one occupant (unless reliable evidence to the contrary exists), and that person is assumed to be the driver. All other persons riding in or on the vehicle are considered to be passengers.

SEAT TYPE

Screen Name: Seat – Type

SAS Data Set: **OA**
SAS Variable: **SEATTYPE**

Element Attributes:

0	Occupant not seated or no seat
1	Bucket
2	Bucket with folding back
3	Bench
4	Bench with separate back cushions
5	Bench with folding back(s)
6	Split bench with separate back cushions
7	Split bench with folding back(s)
8	Pedestal (*i.e.*, column supported)
9	Box mounted seat (*i.e.*, van type)
10	Other seat type (specify)
	Other enclosed area
	Other unenclosed area
99	Unknown seat type

Unknown

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

This variable assesses the type of seat present at this position.

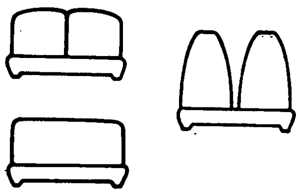
The type of seat in which an occupant is positioned may have an effect on the occupant kinematics. For this reason the type of seat is important to analysts.

Pedestal (*i.e.*, column supported)
includes both swivel and non-swivel type pedestal seats. A pedestal seat can be differentiated from a bucket seat by the presence of a column supporting the pedestal seat.

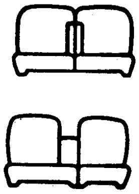
Seat Type (cont'd)

Page 2 of 2

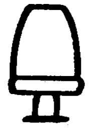
Below are examples of some seats and appropriate attributes.



BENCH WITH FOLDING BACK(S)



SPLIT BENCH



PEDESTAL

The term "folding back(s)" for both bench and bucket-type seats refers to seat backs which are designed to fold significantly forward of upright.

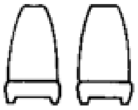
Seats which recline only rearward are not considered to be folding backs. If the seat back does not fold forward at the position you are assessing, do not use the folding back attributes. Folding backs, because of the additional possibility of failure of the folding mechanism, take precedence over solid or separate back cushions. For example, a bench seat with separate back cushions which fold forward would be **Bench with folding back(s)**.

The rear seats in many late model vehicles may be of unusual design. The researcher is cautioned to view only the seat type for the occupant's position. If the seat is of a bench type and the back cushion for the position folds, then the proper attribute is **Bench with folding back(s).** The fact that the seat cushion may also fold is not considered.

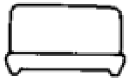
At the time of the inspection if a seat was folded down, record the data as if the seat was in the upright position. If any seat has been removed and cannot be inspected that data is to be recorded.

Box mounted seat (*i.e.*, van type)

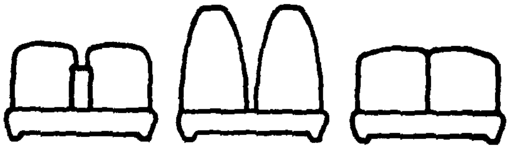
is used to identify elevated seats which have as a part of their attachment design a box which is fastened to the floor and has seat tracks bolted to the top of the box. This type is often found in front row locations of vans. Do not confuse this design with pedestal seats which require a single post support column.



BUCKET

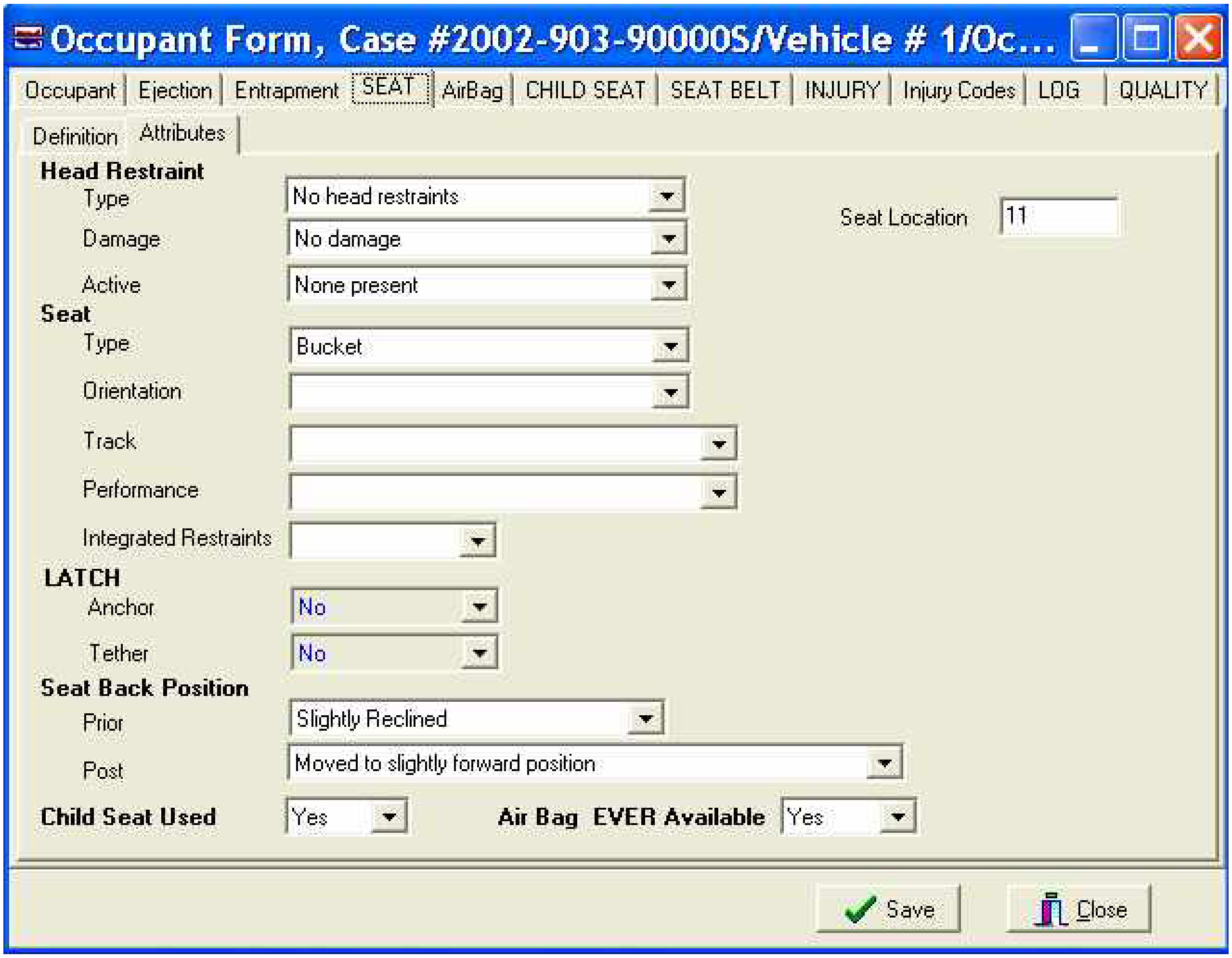


BENCH



BENCH WITH SEPARATE BACK CUSHIONS

Seat Attributes


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Definition
Attributes
Save
Close

Head Restraint

Type: No head restraints

Damage: No damage

Active: None present

Seat Location: 11

Seat

Type: Bucket

Orientation:

Track:

Performance:

Integrated Restraints:

LATCH

Anchor: No

Tether: No

Seat Back Position

Prior: Slightly Reclined

Post: Moved to slightly forward position

Child Seat Used: Yes

Air Bag EVER Available: Yes

HEAD RESTRAINT TYPE AT THIS OCCUPANT POSITION

Page 1 of 2

Screen Name: Head Restraint--Type

SAS Data Set: **OA**
SAS Variable: **HEADTYPE**

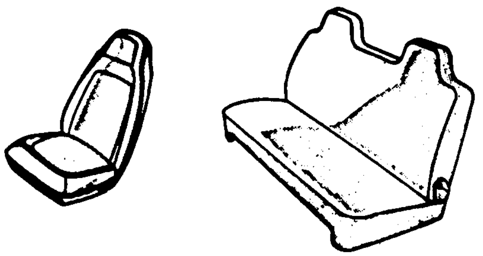
Element Attributes:

0 [Occupant not seated or no seat]
1 No head restraints
2 Integral
3 Adjustable
4 Add-on
8 Other (specify)
9 Unknown

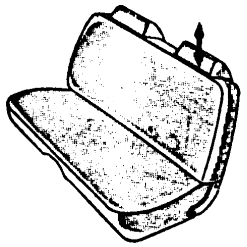
Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

Many passenger cars have head restraints for the front outboard seat positions. The head restraints can be of any design but must meet the requirements of FMVSS 202 (Head Restraints). Some examples of head restraint styles are shown below.



INTEGRAL



ADJUSTABLE

Some manufacturers are providing head restraints for rear seat occupants.

No head restraints
is used when (1) no head restraint is available for this seating position, or (2) there had been a head restraint but it had been removed prior to the crash.

Integral
refer to head restraints which are a continuous part of the seat back structure or those which are a separate structure but are not vertically adjustable. Some rear seats may have a slight rise in the rear seat back, these are also classified as integral head restraints.

Head Restraint Type at This Occupant Position (cont'd)

Page 2 of 2

Adjustable

apply to:

- head restraints which can be moved vertically to accommodate occupants of varying heights, and
- head restraints which have a fixed outer framework and a separate center section which is adjustable vertically.

Add-on

refer to clamp-on, strap-on, or even bolt-on head restraints on a vehicle not originally equipped with head restraints. This attribute should be infrequently used.

Unknown

is used when the type of head restraint cannot be determined

HEAD RESTRAINT DAMAGE BY OCCUPANT AT THIS OCCUPANT POSITION

Screen Name: Head Restraint—Damage

SAS Data Set: **OA**
SAS Variable: **HEADDAMG**

Element Attributes:

0	[Occupant not seated or no seat]
1	[No Head Restraints]
2	No damage
3	Damaged during crash
9	Unknown

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

Some manufacturers are providing head restraints for rear seat occupants. These head restraints may be the same or similar to those used in the front seats, or they may be a slight rise in the rear seat back. Any damage to a rear seat head restraint by the occupant in the seat position must be captured regardless of the height of the restraint.

No damage

There was no damage to the head restraint by the occupant.

Damaged during crash

Any damage to a head restraint caused by the occupant in the seat position having the head restraint should be identified and photographed

Unknown

is used when it is unknown if damage to the restraint was caused by an occupant in the appropriate seat position.

ACTIVE HEAD RESTRAINT

Screen Name: Head Restraint - Active

SAS Data Set: **OA**
SAS Variable: **HEADACT**

Element Attributes:

0 [Occupant not seated or no seat]
2 None Present
3 Present
9 Unknown

Source: Vehicle Inspection, interview

Remarks:

There should be a label on the seat indicating the presence of the active head restraint.

SEAT TYPE

Screen Name: Seat – Type

SAS Data Set: **OA**
SAS Variable: **SEATTYPE**

Element Attributes:

0	Occupant not seated or no seat
1	Bucket
2	Bucket with folding back
3	Bench
4	Bench with separate back cushions
5	Bench with folding back(s)
6	Split bench with separate back cushions
7	Split bench with folding back(s)
8	Pedestal (*i.e.*, column supported)
9	Box mounted seat (*i.e.*, van type)
10	Other seat type (specify)
97	Other unenclosed area
98	Other enclosed area
99	Unknown seat type

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

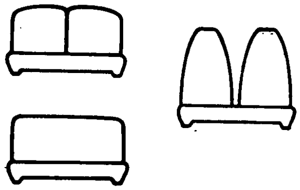
This variable assesses the type of seat present at this position.

The type of seat in which an occupant is positioned may have an effect on the occupant kinematics. For this reason the type of seat is important to analysts.

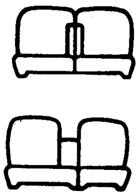
Pedestal (*i.e.*, column supported)
includes both swivel and non-swivel type pedestal seats. A pedestal seat can be differentiated from a bucket seat by the presence of a column supporting the pedestal seat.

Seat Type (cont'd)

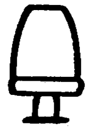
Below are examples of some seats and appropriate attributes.



BENCH WITH FOLDING BACK(S)



SPLIT BENCH



PEDESTAL

The term "folding back(s)" for both bench and bucket-type seats refers to seat backs which are designed to fold significantly forward of upright.

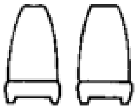
Seats which recline only rearward are not considered to be folding backs. If the seat back does not fold forward at the position you are assessing, do not use the folding back attributes. Folding backs, because of the additional possibility of failure of the folding mechanism, take precedence over solid or separate back cushions. For example, a bench seat with separate back cushions which fold forward would be **Bench with folding back(s)**.

The rear seats in many late model vehicles may be of unusual design. The researcher is cautioned to view only the seat type for the occupant's position. If the seat is of a bench type and the back cushion for the position folds, then the proper attribute is **Bench with folding back(s).** The fact that the seat cushion may also fold is not considered.

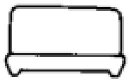
At the time of the inspection if a seat was folded down, record the data as if the seat was in the upright position. If any seat has been removed and cannot be inspected that data is to be recorded.

Box mounted seat (*i.e.*, van type)

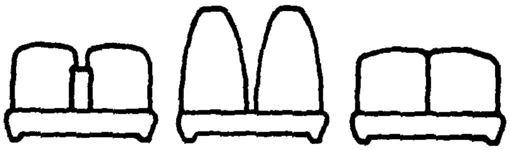
is used to identify elevated seats which have as a part of their attachment design a box which is fastened to the floor and has seat tracks bolted to the top of the box. This type is often found in front row locations of vans. Do not confuse this design with pedestal seats which require a single post support column.



BUCKET



BENCH



BENCH WITH SEPARATE BACK CUSHIONS

SEAT ORIENTATION

Screen Name: Seat—Orientation

SAS Data Set: **OA**
SAS Variable: **STORIENT**

Element Attributes:

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 Orientation

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

Most seats are fixed in terms of their orientation within the vehicle; however, some seats (*e.g.*, swivel or reversible) can be oriented in more than one direction. Swivel seats and reversible seats (*e.g.*, some station-wagons or vans) are entered according to their orientation at the time of impact [*i.e.*, **Forward facing seat** or **Rear facing seat].**

Forward facing seat
is used when the seat is oriented towards the front plane of the vehicle.

Rear facing seat
is used when the seat is oriented towards the rear plane of the vehicle.

Side facing seat (inward)
is used when the seat is oriented towards either the right or left planes of the vehicle and faces inward.

Side facing seat (outward)
is used when the seat is oriented towards either the right or left planes of the vehicle and faces outward.

Other
is used when a seat is oriented such that the above attributes do not apply.

Unknown
is used when the seat orientation cannot be determined.

SEAT TRACK POSITION

Screen Name: Seat—Track

SAS Data Set: **OA**
SAS Variable: **SEATRACK**

Element Attributes:

0	[Occupant not seated or no seat]
1	Non-adjustable seat track
2	Seat at forward most track position
3	Seat between forward most and middle track positions
4	Seat at middle track position
5	Seat between middle and rear most track position
6	Seat at rear most track position
7	Unknown Seat Track Position

Source: Researcher determined--Vehicle inspection, interviews confirming or secondary source.

Remarks:

The researcher should attempt to determine the seat position at impact. When the researcher begins the interior inspection, he/she should note the position of the seat. The researcher should then move the seat forward and back along its track and determine the number of positions. Once this has been done, the seat should be moved to the position initially observed and photographed. Interviewee data must be taken into consideration before assigning the final code.

If the seat has electric adjusters with no distinct track positions, attempt to determine the relative position of the seat and select accordingly.

Non-adjustable seat track

Use this for seats that cannot be moved longitudinally.

Adjustable Seat Track

Seat at forward most track position

Use this if the seat is at the forward limit of the track.

Seat between forward most and middle track position

Use this if the seat is at any position between the most forward and middle seat positions.

Seat at middle track position

Use this if the seat is in the position mid-range between the forward and rear most track position.

Seat between middle and rear most track position

Use this if the seat is at any position between the middle and rearmost track position.

Seat at rear most track position

Use this attribute if the seat is at the rear limit of the track.

Unknown

Use this attribute if the seat position at impact cannot be determined.

SEAT PERFORMANCE

Page 1 of 2

Screen Name: Seat—Performance

SAS Data Set: **OA**
SAS Variable: **SEATPERF**

Element Attributes:

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 Performance

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

This variable assesses the performance of the seat during the crash sequence. The attributes are indications of whether the seat failed or was deformed in any way. Select the attribute which corresponds to the appropriate seat performance failure or deformation. Minor smudges, scrapes, dents, etc. are not considered deformation. Interviews can be used as a confirming source for coding this variable.

If a failure or deformity occurs, then document the failure or deformation with a diagram and explanation. In addition, include photographs of the seat failure or deformity.

No seat performance failure(s)
is used if the seat was not deformed or no portion of the seat structure failed during the crash.

Seat adjusters failed
is used if any of the mechanisms used to adjust a seat's "comfort" position are separated or deformed during the crash as a result of occupant loading.

Seat adjuster mechanisms include:

- Height adjustment
- Longitudinal (horizontal) seat track adjustment
- Rocker adjustment
- Swivel/rotational adjustment
- Seat back recliner adjustment

For a seat back recliner failure, the seat back must have released in a rearward direction. Do not use this attribute if the seat back failed in a forward direction and the seat has a folding lock mechanism (*e.g.*, front seats in 2-door vehicles); see **Seat back folding locks failed** below.

This code should be used when multiple adjuster failures have been detected. Be sure to include supportive written and photographic documentation to support all failures.

Seat back folding locks or "seat back" failed

is used when the mechanism which is designed to lock the seat back in its upright position fails or separates allowing the seat back to move forward during the collision as a result of occupant loading

"Seat back" failed refers to forward facing seats where seat back structural failures (*e.g.*, seat back hinge points) resulted in a separation of the seat back from its anchorage points. Again, to be considered applicable for this, the seat must have failed while moving forward during the collision as a result of occupant loading.

Seat tracks/anchors failed

is used if the seat separates, to any degree, from a seat track during the crash. In addition, use this if the seat anchor that attaches the seat track to the floorpan separates, to any degree, during the crash. Box mounted seats are included in this if a separation occurred between the box and the floor or the box and the seat track/anchor. Seat track or anchor failures must be a result of occupant loading.

Deformed by impact of occupant

is used when the seat is changed in form from its original design from occupant loading during the crash. Situations where seats are deformed and also experience mechanical failures should be identified under **Combination of above.**

Deformed by passenger compartment intrusion

is used when the seat is deformed or failed by intrusion of an interior vehicle component(s) or exterior vehicle component(s) into the passenger compartment.

Combination of above

is used when any combination of the above occurs and describes multiple seat failures or deformations. Seat failures or deformations which are not described in the above are reported below. Seat failures or deformations listed in the above take priority over others

Other

is used when the only seat failure(s) or deformation(s) which occur are not described in the above (*e.g.*, impact forces).

Unknown

is used if the seat performance cannot be determined.

SEAT LATCH ANCHOR AVAILABILITY

Page 1 of 2

Screen Name: LATCH - Anchor

SAS Data Set: **OA**
SAS Variable: **LATANCH**

Element Values:

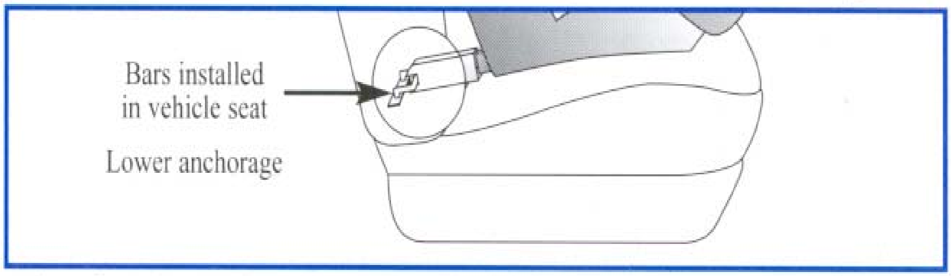
0	[No seat]
1	No
2	Yes
9	Unknown if anchor

Source: Researcher determined--driver/occupant interview and vehicle inspection

Remarks:

Currently, some new passenger vehicles are equipped with lower child seat anchorage points between a vehicle's seat cushion and seat back. Together, the two lower anchorage points and top tether anchorage make the LATCH system. By September 1, 2002, this system will be required in two rear seating positions of all cars, minivans, and light trucks.

A lower anchorage is a small rod or bar located between a vehicle's seat cushion and seat back allowing a child safety seat to be attached or snapped into the vehicle instead of being held secure by the vehicle's belt system. By September 1, 2002, all child safety seats will have two attachments which will connect to the vehicle's lower anchorage attachment points. (Some child seat manufacturers have included lower anchorage points in year 2000 models.)



Seat LATCH Anchor Availability

No

is used when there is no LATCH lower anchor in is this seating position

Yes

is used when a LATCH lower anchor is present for this seating position

SEAT LATCH TETHER AVAILABILITY

Page 1 of 2

Screen Name: LATCH - Tether

SAS Data Set: **OA**
SAS Variable: **LATTETH**

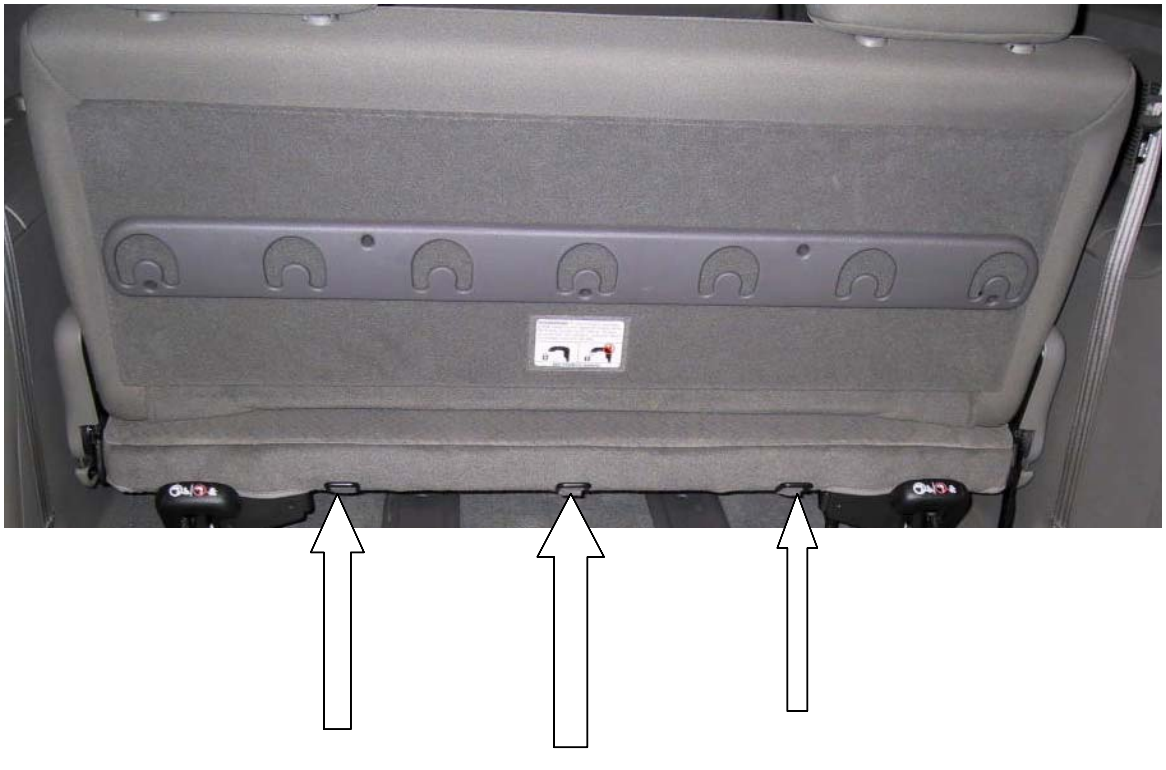
Element Values:

0	[No seat]
1	No
2	Yes
9	Unknown if tether

Source: Researcher determined--driver/occupant interview and vehicle inspection

Remarks:

The tether anchor will found on the rear shelf area of the vehicle. It may be concealed by some sort of covering which can be removed or “flipped up”. In some vehicles, such as mini-vans and station wagons, the tether anchor may be found on the rear floor of the vehicle or on the back of the rear seat.



Seat LATCH Tether Availability

No

is used when there is no LATCH tether anchor for this seating position

Yes

is used when a LATCH tether is present for this seating position

DOES THE SEAT HAVE INTEGRATED PASSENGER BELTS?

Screen Name: Seat--Integrated Restraints

SAS Data Set: **OA**
SAS Variable: **INTGREST**

Element Attributes:

0	[Occupant not seated or no seat]
1	No
2	Yes
9	Unknown if integrated

Source: Primary source is the vehicle inspection, secondary sources include: interviewee; police report, or official records (*i.e.*, medical).

Remarks:

A seat with integrated belt restraints is multi-functional and contains built-in occupant protection devices. Previously all seating structures operated independently of the occupant restraint system, perhaps only having an upper ring that guided the seat belt across the torso. These seats are designed to contain the occupant restraint systems, as well as being designed to help retain the occupant in the seat by use of designs of the lower seat pan and the back seat structure.

If you were to remove the seat and the belt restraints come with the seat indicate **Yes**.

SEAT BACK INCLINE PRIOR TO IMPACT

Screen Name: Seat Back Position – Prior

SAS Data Set: **OA**
SAS Variable: **STPRINCL**

Element Values:

0	[Occupant not seated or no seat]
1	Not adjustable
2	Upright
3	Slightly reclined
4	Completely reclined
9	Unknown prior incline

Source: Researcher determined--driver/occupant interview and vehicle inspection when the seat back incline position prior to impact can be determined from the vehicle inspection.

Remarks:

This variable is for adjustable (reclining) seat backs only

Not adjustable
is used for seating positions where there is a seat back which is fixed in position.

Upright
is used when the seatback is in the fully upright position (i.e., perpendicular to the seat cushion).

Slightly reclined
is used when the seat back is in a slightly reclined position.

Completely reclined
is used when the seat back is in a position that is rearward to the limit of its range of movement.

Unknown
is used when the pre-impact seat back position could not be determined from any source.

SEAT BACK INCLINE POSITION POST IMPACT

Screen Name: Seat Back Position -- Post

SAS Data Set: **OA**
SAS Variable: **STPSINCL**

Element Attributes:

0	[Occupant not seated or no seat]
1	[Not adjustable]
2	Moved to completely rearward position
3	Moved to rearward midrange position
4	Move to slightly rearward position
5	Retained pre-impact position
6	Moved to upright position
7	Moved to slightly forward position
8	Moved to Forward midrange position
9	Complete forward position
99	Unknown

Source: Researcher determined--driver/occupant interview and vehicle inspection when the seat back incline position post impact can be determined from the vehicle inspection.

Remarks:

This variable is for adjustable (reclining) seat backs only. This variable reflects the change in the seat back incline position as a result of forces upon it during the crash sequence. Select the attribute that describes the backrest position post-impact as a result of these forces.

Unknown
is used when the post crash seat back position could not be determined.

CHILD SAFETY SEAT USED

Screen Name: Child Seat Used

SAS Data Set: **OA**
SAS Variable: **CHUSED**

Element Attributes:

0	No
1	Yes
9	Unknown

Source: Researcher determined — inputs include vehicle inspection, interviewee and police report.

Remarks:

No
is used when a child safety seat is not being used by this occupant.

Yes
is used when a child safety seat is being used by this occupant.

Unknown
is used when it is unknown if this person was using a child safety seat.

AIR BAG EVER AVAILABLE

Screen Name: Air Bag Ever Available

SAS Data Set: **OA**
SAS Variable: **BAGEVER**

Element Attributes:

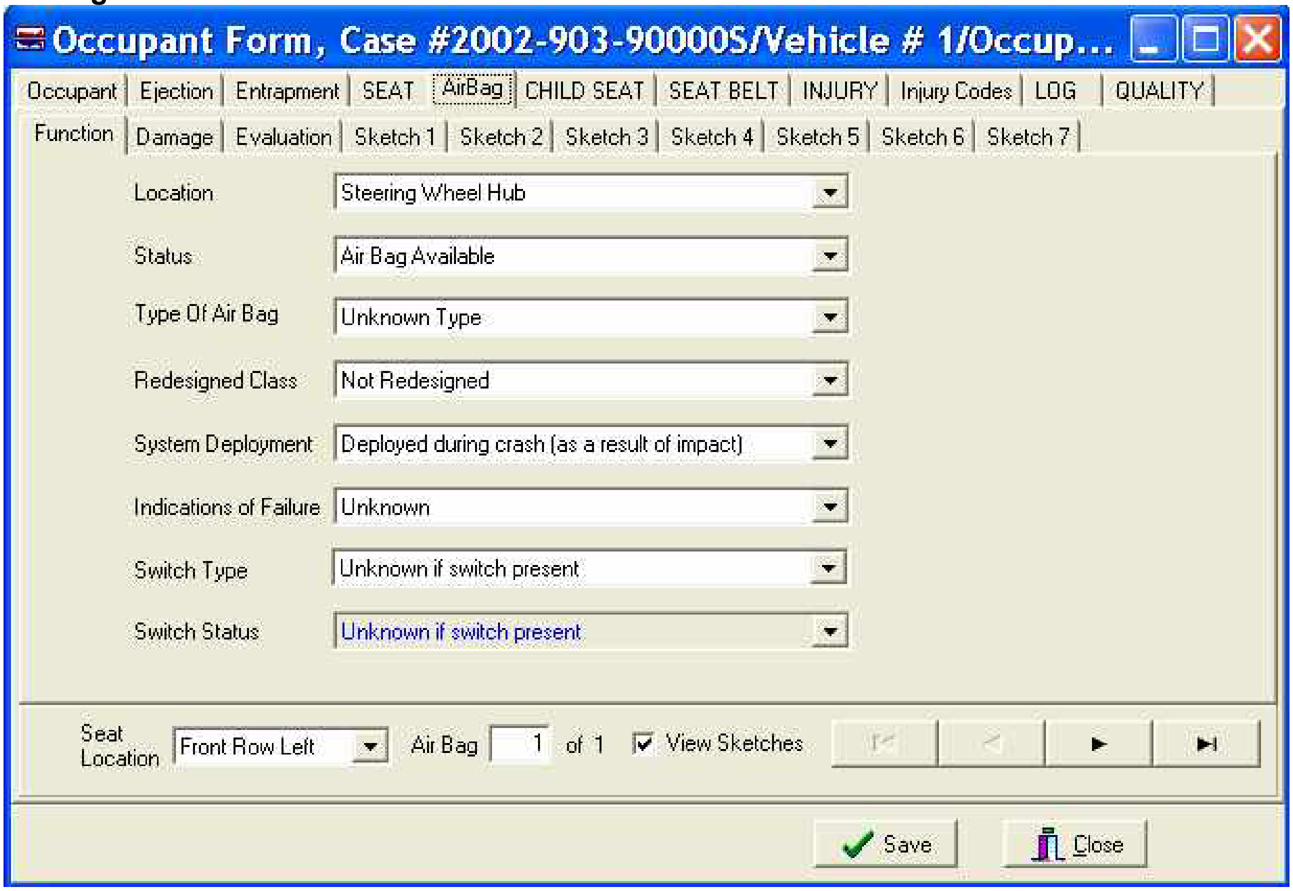
0	No
1	Yes
9	Unknown

Source: Researcher determined — primary source is the vehicle inspection; secondary sources include the interview and medical records.

Remarks:

This variable indicates whether there was ever an air bag present of any type for this seating location. Additional information about it's availability or non-availability is coded on the **Air Bag tab**

Air Bag Function



Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant | Ejection | Entrapment | SEAT | AirBag | CHILD SEAT | SEAT BELT | INJURY | Injury Codes | LOG | QUALITY
Function | Damage | Evaluation | Sketch 1 | Sketch 2 | Sketch 3 | Sketch 4 | Sketch 5 | Sketch 6 | Sketch 7
Save
Close

Location: Steering Wheel Hub

Status: Air Bag Available

Type Of Air Bag: Unknown Type

Redesigned Class: Not Redesigned

System Deployment: Deployed during crash (as a result of impact)

Indications of Failure: Unknown

Switch Type: Unknown if switch present

Switch Status: Unknown if switch present

Seat Location: Front Row Left

Air Bag 1 of 1

☑ View Sketches

AIR BAG NUMBER FOR THIS VEHICLE

Screen Name: Air Bag

SAS Data Set: **AIRBAG**
SAS Variable: **BAGNO**

Element Attributes:
Air bag number

Source: Vehicle inspection

Remarks:

Assigned by the system, one for every single air bag.

If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select Edit / Insert, then indicate its location, and complete the information about the air bag.

LOCATION OF AIR BAG

Page 1 of 2

Screen Name: Location

SAS Data Set: **AIRBAG**
SAS Variable: **BAGLOC**

Element Attributes:

1 Steering Wheel Hub
2 Top Instrument Panel
3 Mid Instrument Panel
4 Bottom Instrument Panel
5 Seat Back
6 Door
7 Roof Side Rail
98 Other (specify)
99 Unknown

Source: Vehicle inspection

Remarks:

Enter the location of the air bag. If air bags are available for the occupant, indicate the information on all air bags. Do so by inserting another air bag. To insert another air bag go to the menu bar and select **Edit / Insert**, then indicate its location, and complete the information about the air bag.

Steering Wheel
is used for an air bag that is designed to deploy from a module integrated with the steering wheel. It is designed to protect the vehicle's driver primarily from frontal impacts.

Top Instrument Panel
is used for those air bags that deploy rearward from a location on the top of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Mid Instrument Panel
is used for those air bags that deploy rearward from a location in the middle of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts.

Bottom Instrument Panel
is used for those air bags that deploy rearward from a location in the bottom of the instrument panel. They are designed to protect front seat passengers primarily from frontal impacts. This includes "knee bags".

Seat Back
is located on the outside portion of the seat back and is designed to protect the torso of occupants primarily from side impacts.

Seat Cushion
is located on the outside portion of the seat cushion and is designed to protect the torso of occupants primarily from side impacts.

Deployment Location of Air Bag (cont'd)

Page 2 of 2

Pillar (A or B)

is primarily a tubular shaped bag that is tethered at the A pillar and is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Door

is located in the door is designed to protect the torso of occupants primarily from side impacts.

Roof Side Rail

is primarily a curtain type bag that is stored in the roof side rail and is designed to protect the head of occupants primarily from side impacts

Other (specify)

is used when the location of the air bag cannot be captured in the above attributes. This should be a rare occurrence. The location of the air bag must be specified.

AIR BAG STATUS

Screen Name: Status

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFUNC**

Element Attributes:

1 Air Bag Available
2 Air bag disconnected (specify):
3 Air bag not reinstalled
9 Unknown status if available for this crash

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks:

Air bag available
is used when the vehicle is equipped with an air bag for this seating position. Non-deployment of the air bag system has no bearing on this variable.

Air bag disconnected
is used when any component of the air bag was rendered inoperative prior to the collision (*e.g.*, fuse removed).

Air bag not reinstalled
is used when the air bag for this seating position was not replaced after a prior deployment to the crash being researched.

Unknown
is used when it cannot be ascertained whether an air bag was available at the time of the crash.

TYPE OF AIR BAG

Screen Name: Type Of Air Bag

SAS Data Set: **AIRBAG**
SAS Variable: **BAGTYPE**

Element Attributes:

1 Original manufacturer install
2 Retrofitted Air Bag
3 Replacement Air Bag
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown Type

Source: Researcher determined—primary source is the interview, secondary sources may include the repair facility and documents found in the vehicle.

Remarks:

Original manufacturer install

is used when it can be determined that the vehicle was equipped with an air bag system in this seating position that was installed by the manufacturer at the time the vehicle was built (OEM—Original Equipment Manufacturer).

Retrofitted air bag

is used when it can be determined that the vehicle was equipped with an air bag system for this seating position but that the vehicle was not built with a manufacturer equipped air bag system. This is an after market product and should not be confused with **Replacement Air Bag**. Replacement **Retrofit Air Bags** are also included in this category.

Replacement air bag

is used when it can be determined that the vehicle was equipped with an OEM air bag system for this seating position and that this system had been replaced due to a previous deployment.

Unknown type

With no interview or other confirming source, assume that the type of air bag is unknown.

REDESIGNED AIR BAG

Screen Name: Redesigned Class

SAS Data Set: **AIRBAG**
SAS Variable: **BAGREDES**

Element Attributes:

0 Not Redesigned
1 Redesigned
2 Advanced (specify)
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown class

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include VIN and interview.

Remarks:

This variable indicates whether the vehicle was equipped with a redesigned air bag for this location. Redesigned air bags include second generation air bags, next generation air bags, Air Bag II, advanced air bags, and other innovative systems that have been developed to make use of air bag protection technology

Not Redesigned

indicates that the vehicle was not equipped with a depowered air bag or an advanced air bag for this location.

Redesigned

indicates that the vehicle was equipped with a redesigned air bag for this location. Redesigned class of air bag includes “second generation” air bags. Vehicles with these air bags were first manufactured in 1998 See the **Redesigned Air Bag Special Study** instruction for additional detail on vehicle applicability.

Advanced (specify)

this includes air bags such as “smart” air bags that will not deploy if the position is not occupied. Specify the type of advanced air bag found.

Unknown

is used when it is not known if the air bag was redesigned

AIR BAG DEPLOYMENT

Page 1 of 2

Screen Name: System Deployment

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDEPLY**

Element Attributes:

1 Deployed during crash (as a result of impact)
2 Deployed inadvertently just prior to crash
3 Deployed, detail unknown
4 Deployed as a result of a noncollision event during crash sequence (e.g., fire, explosion, electrical)
7 Nondeployed
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if deployed

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks:

Although rarely occurring, an air bag may partially deploy. These air bags should be coded under **Deployed during crash**.

Deployed during crash (as a result of impact)
is used when the vehicle is equipped with an air bag and the air bag deployed (or partially deployed) as a result of an impact which produced a longitudinal deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag. Note, an air bag is not designed to deploy in every collision.

Deployed inadvertently just prior to crash
is used when an air bag deploys without an impact having caused its deployment, and the vehicle is subsequently involved in a crash.

Deployed, crash details unknown
is used when the researcher cannot determine if the air bag deployed (1) prior to the crash or (2) during the crash as a result of an impact which produced a deceleration through the vehicle of sufficient magnitude to cause inflation of the air bag.

Deployed as a result of a noncollision event during crash sequence (*e.g.*, fire, explosion, electrical)
is used if the air bag deploys during a crash but not as a result of an impact.

For example, a vehicular fire, occurring as a result of:

- an impact or
- a noncollision event

prior to any impacts to this vehicle.

Air Bag Deployment (cont'd)

Unknown if deployed

is used when it is known that the vehicle was equipped with an air bag but the researcher is unable to determine if the air bag deployed (for whatever reason). For example, if the vehicle was sufficiently damaged so that a determination of deployment cannot be made from the vehicle inspection or the deployment status at the time of the crash cannot be determined..

Non-deployed

is used when an air bag equipped vehicle has one or more impacts, and the air bag did not inflate during the crash.

INDICATIONS OF AIR BAG FAILURE

Screen Name: Indications of Failure

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFAIL**

Element Attributes:
0 No
1 Yes (specify):
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if air bag failed

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility, medical records.

Remarks:

This variable flags "indications of air bag failures" and means that something abnormal has occurred to the air bag system. It may not necessarily mean that the air bag system was defective.

A vehicle inspection is required in order to report an indication of air bag failure because the vehicle's deceleration may have been below the ***threshold*** for the air bag's deployment.

No

is used whenever the air bag deployed and there are no indications of air bag failure. Also use this when an air bag did not deploy and no failure is suspected and the vehicle inspection indicates that the deceleration sustained by the vehicle was near or below the ***deployment threshold***.

Yes, specify

is used whenever an indication of air bag failure is suspected and specify the failure. An indication of air bag failure could be a cut in or blowout of the fabric, a rupture along a fabric seam, a cover which does not open properly causing a misaligned deployment, partial inflation, or any number of other problems. If an indication of air bag failure is suspected, then document the condition with images, then call your zone center for assistance.

Unknown

is used when it is not known if the bag failed

TYPE OF CUTOFF SWITCH

Screen Name: Switch Type

SAS Data Set: **AIRBAG**
SAS Variable: **SWTCHTYP**

Element Attributes:

0	None present
1	Originally equipped
2	Retro fit
3	Switch present, type unknown
9	Unknown if switch present

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility.

Remarks:

Air bag cutoff switches were designed to be installed by manufacturers in vehicles with only one row of occupant seating. This was done so that if a child seat was used, the air bag could be turned off. Recently NHTSA has permitted the public to request air bag cutoff switches to be installed by dealers. The retro fit switch can be located in the glove compartment. **Close up images of the switch are required.**

None
is used when there is no air bag cutoff switch present for this occupant position.

Originally equipped
is used when a vehicle is originally equipped by the manufacturer with an air bag cutoff switch for this occupant position is present. This switch will not be present for the driver's position.

Retro fit
is used when an air bag cutoff switch for this occupant position has been added.

Switch present, type unknown
is used when an air bag cutoff switch for this occupant position is present and it is not known if it is original or retro fit.

Unknown if switch present
is used when it is not known if an air bag cutoff switch is present.

CUTOFF SWITCH POSITION STATUS

Screen Name: Switch Status

SAS Data Set: **AIRBAG**
SAS Variable: **SWTCHSET**

Element Attributes:

0 Switch on/automatic
1 Switch off
7 [None present]
8 [Unknown if switch present]
9 Switch status unknown

Source: Researcher determined--, primary source is vehicle inspection, secondary sources include interview, repair facilities, tow facility.

Remarks:

Air bag cutoff switches were designed to be installed by manufacturers in vehicles with only one row of occupant seating. This was done so that if a child seat was used, the air bag could be turned off. More recently NHTSA has permitted the public to request air bag cutoff switches to be installed by dealers. The retro fit switch can be located in the glove compartment. **Close up images of the switch are required.**

Switch on/automatic
is used when an air bag cutoff switch for this occupant position is present and is in the on position.

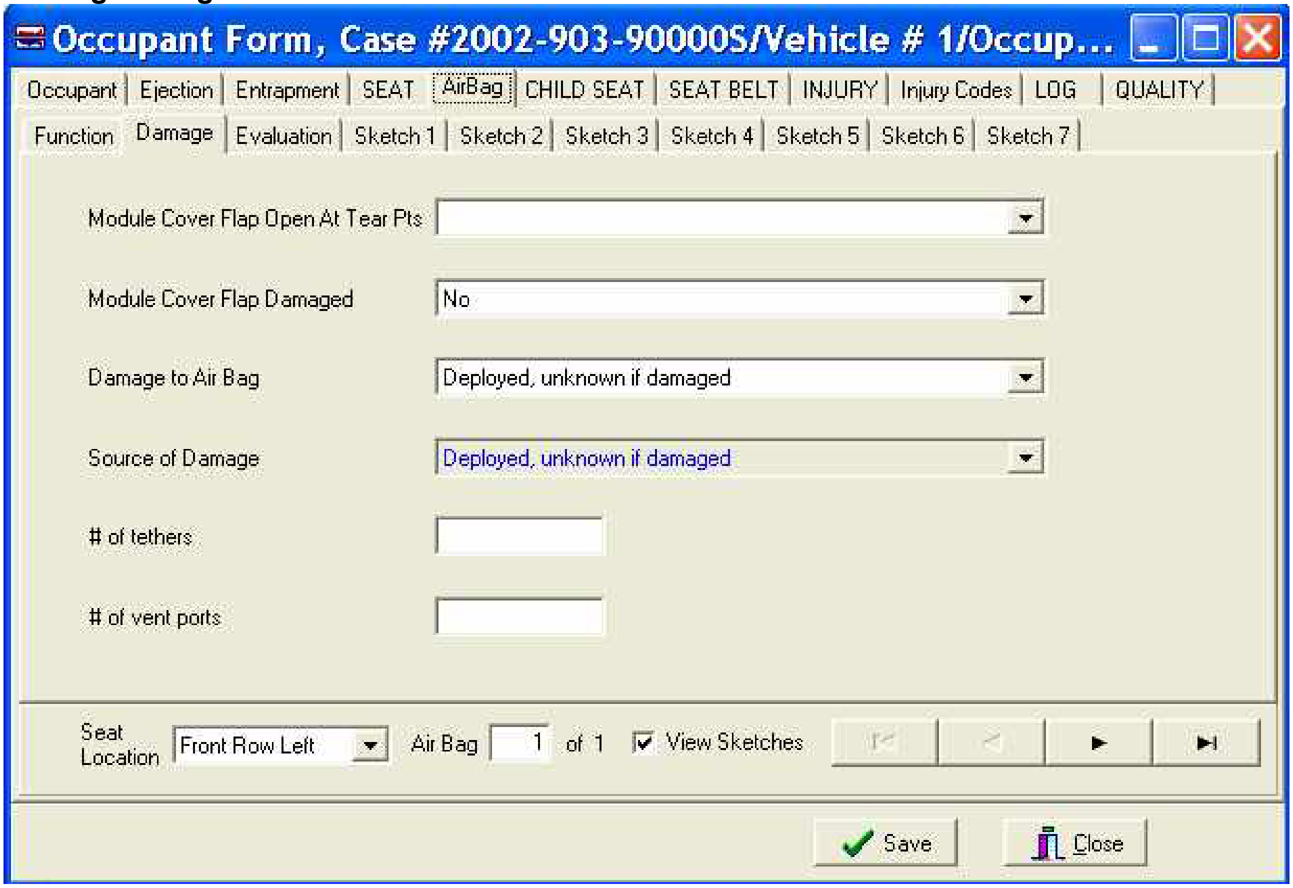
Switch off
is used when an air bag cutoff switch for this occupant position is present and is in the off position.

Switch status unknown
is used when an air bag cutoff switch for this occupant position is present and its position is unknown.

None present
is precoded when there is no air bag cutoff switch present for this occupant position.

Unknown if switch present
is precoded when it is not known if an air cutoff switch is present.

Air Bag Damage


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Function
Damage
Evaluation
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7
Save
Close

Module Cover Flap Open At Tear Pts

Module Cover Flap Damaged: No

Damage to Air Bag: Deployed, unknown if damaged

Source of Damage: Deployed, unknown if damaged

# of tethers

# of vent ports

Seat Location: Front Row Left

Air Bag 1 of 1

☑ View Sketches

DID AIR BAG MODULE COVER FLAP(S)/SEAM(S) OPEN AT DESIGNATED TEAR POINTS?

Screen Name: Module Cover Flap Open at Tear Pts?

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFLOPN**

Element Attributes:

0 No
1 Yes
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown flaps / seams opened at tear points

Source: Vehicle inspection.

Remarks:

A designated tear point is a weakened area of the flap material designed to allow the air bag easy escape from its storage area during deployment. Some air bags in the seat cushion and seat back may not have cover flaps, but will deploy through a seam that separates during the air bag deployment.

No

is used when it can be determined that the module cover flap(s)/seam(s) for this air bag opened somewhere other than their designated tear points. A non-linear tear in the flap is an indication that the flap opened irregularly, not at the designated tear point.

Yes

is used when it can be determined that the module cover flap(s)/seam(s) for this air bag opened up at their designated tear points. Linear and symmetrical tears are good indications of proper separation of the cover flap(s) at their designated tear points.

Unknown if flaps / seams opened at tear points

is used when it is not known if the air bag opened at the tear points.

WERE THE COVER FLAP(S) DAMAGED

Screen Name: Module Cover Flap Damaged

SAS Data Set: **AIRBAG**
SAS Variable: **BAGFLDAM**

Element Attributes:

0	No
1	Yes (specify)
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Unknown if flaps damaged

Source: Vehicle inspection.

Remarks:

No

is used when it can be determined that no damage was present on the air bag module cover flap(s). Normal separation/tearing at the designated tear points does not constitute damage.

Yes — specify

is used when it can be determined that the air bag module cover flap(s) sustained damage. Abnormal separation/tearing at the designated tear points constitutes damage. Damage can also be cuts, tears, holes, burns, abrasions, etc.. The researcher must specify the type of damage that is being reported.

Unknown

is used when it cannot be determined if the air bag flap(s) sustained damage.

WAS THERE DAMAGE TO THE AIR BAG?

Screen Name: Damage to Air Bag?

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDAMAG**

Element Attributes:
0 Not damaged

Yes — Air Bag Damaged
1 Ruptured
2 Cut
3 Torn
4 Holed
5 Burned
6 Abraded
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
88 Other damage (specify)
95 Damaged, details unknown
99 Deployed, unknown if damaged

Source Vehicle inspection

Remarks:

Damage to the air bag must occur during the crash sequence. If multiple damage types apply select the attribute that most deteriorates the effectiveness of the air bag. If you cannot make this determination then select the attribute in a hierarchical manner from the top of the list down.

Not damaged
is used when no damage to the air bag for this occupant position was sustained.

Ruptured
describes damage to the air bag that resembles a stellate or starlike pattern of damage, with multiple tears originating from a single point of origin.

Cut
describes openings in the air bag which are generally linear and have smooth edges.

Torn
describes openings which have ragged edges but which are generally linear in appearance.

Holed
describes damage which is circular in appearance with or without ragged edges. If a burn causes a hole, then select burned

Was There Damage To The Air Bag? (cont'd)

Burned

describes damage resulting from heat which scorches, melts or burns the bag.

Abraded

is a pattern of damage to the surface of the bag that appears as a fraying of the surface threads.

Other damage (specify)

is used to describe damage which is not captured in any of the attributes above.

Damaged, Details unknown

is used when it is known that the air bag sustained damage, but the type of damage cannot be determined.

Deployed, unknown if damaged

is used when cannot be determined if the air bag sustained damage.

SOURCE OF AIR BAG DAMAGE

Screen Name: Source of Damage

SAS Data Set: **AIRBAG**
SAS Variable: **BAGDAMSO**

Element Attributes:

1	Object worn by occupant (specify)
2	Object carried by occupant (specify)
3	Adaptive/assistive controls, (specify)
4	Cover flaps **{added 2003}**
5	Fire in vehicle
6	Thermal burns
7	Windshield
8	Rescue or emergency efforts
50	[Air Bag Not Damaged]
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled)]
79	[Unknown status if air bag available for this crash]
88	Other damage source (specify)
99	Damaged unknown source

Source: Vehicle inspection (with interview/medical records as confirming source for objects worn/carried by occupant)

Remarks:

This is a hierarchical variable, that is, if more than one element applies, then select the first attribute that applies. The attribute **Rescue or emergency efforts** should **only** be used when:

- no other sources of damage apply, **AND**
- it is known the damage was from rescue or emergency efforts, or any other post-crash source.

Object worn by occupant (specify)
is selected when the object is fastened, attached, or worn by the occupant. Be sure to specify the object.

Object carried by occupant (specify)
is used when the object is held in the mouth, the hand(s), arm(s), etc., by the occupant. Be sure to specify the object.

Adaptive/assistive controls (specify)
is used when adaptive/assistive controls damages the air bag for this occupant position. Be sure to specify the object/control.

Cover flaps
is used when the air bag cover flaps damaged the air bag for this occupant position.

Source of Air Bag Damage (cont'd)

Fire in vehicle

is used when there was a fire in the occupant compartment which damaged the air bag.

Thermal burns

is used when the air bag is burned or scorched by the inflator or chemicals.

Other damage source (specify)

is used whenever there is damage to the air bag and it cannot be fit into any of the categories above. Be sure to specify the object/source.

Rescue or emergency efforts

is used **only** when:

- no other sources of damage apply, **AND**
- it is known the damage was from rescue or emergency efforts, or any other post-crash source

Unknown

is used when there is damage to the air bag, but the source of the damage cannot be determined.

WAS THE AIR BAG TETHERED

Screen Name: Tethered

SAS Data Set: **AIRBAG**
SAS Variable: **BAGTETHR**

Element Attributes:

Enter number of tethers
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if air bag tethered

Source: Vehicle inspection

Remarks:

A tether is a strap that is used to shape the air bag upon deployment. Stitching on the air bag is a good indicator of the presence of tethers.

No–enter 0 (zero)
is used when there are no tethers present on the air bag.

Enter number of tethers
is used when the air bag has tethers and the number of tethers can be determined .

Indeterminate
is used when it is known that the air bag has tethers, but the number of tethers is unknown.

Unknown
is used when it is not known if the air bag was tethered.

DID THE AIR BAG HAVE VENT PORTS?

Screen Name: Vent Ports

SAS Data Set: **AIRBAG**
SAS Variable: **BAGVENTS**

Element Attributes:

Enter number of vent ports
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Unknown if vent ports present

Source: Vehicle inspection

Remarks:

Vent ports are circular holes designed for the venting of gasses resulting from the deployment process of the air bag. The location of the ports is normally on the rear surface of the air bag.

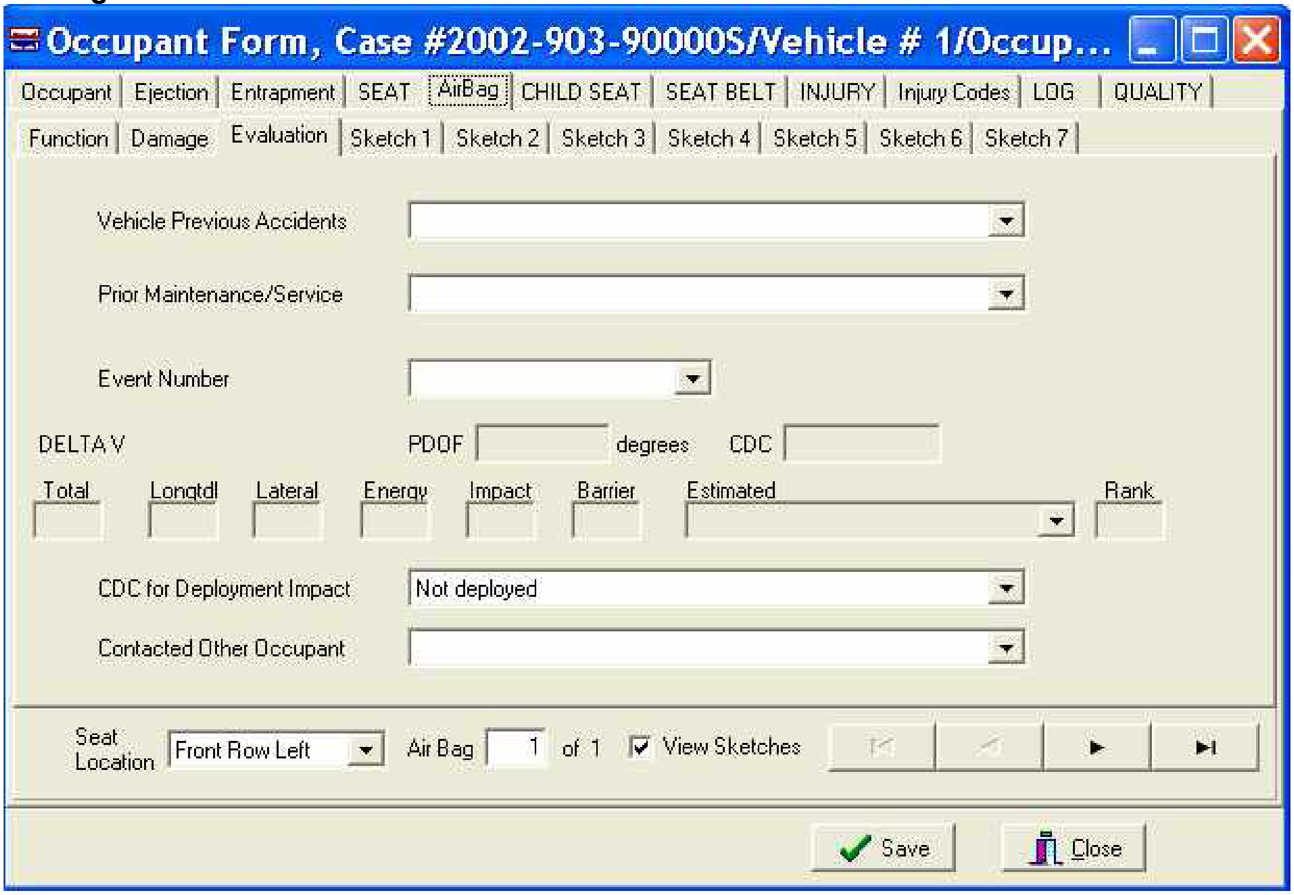
0 (zero)
is used when there are no vent ports present on the air bag.

Enter number of vent ports
is used when the air bag has vent ports and the number can be determined.

Indeterminate
is used when it is known that the air bag has vent ports, but the number of vent ports is unknown.

Unknown
is used when it is not known if the air bag has vent ports.

Air Bag / Evaluation


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Function
Damage
Evaluation
Sketch 1
Sketch 2
Sketch 3
Sketch 4
Sketch 5
Sketch 6
Sketch 7

Vehicle Previous Accidents

Prior Maintenance/Service

Event Number

DELTA V

PDOF degrees

CDC

Total

Longtdl

Lateral

Energy

Impact

Barrier

Estimated

Rank

CDC for Deployment Impact: Not deployed

Contacted Other Occupant

Seat Location: Front Row Left

Air Bag 1 of 1

☑ View Sketches

Save
Close

Had The Vehicle Been In Previous Crashes?

Screen Name: Vehicle Previous Crashes

SAS Data Set: **AIRBAG**
SAS Variable: **PREVACC**

Element Attributes:

1 No previous crashes
2 Previous crash(es) without deployment(s)
3 One previous crash with deployment
4 More than one previous crash with at least one deployment
8 Previous crashes, unknown deployment status
9 Unknown

Source: Researcher determined — primary source is the interview, secondary source may include a repair facility.

Remarks:

No previous crashes

is used for vehicles which are equipped with an air bag for this occupant position, and have not been involved in any previous crashes.

Previous crash(es) without deployment(s)

is used when it can be determined that the vehicle had been in previous crash(es) which did not involve an air bag deployment for this occupant position.

One previous crash with deployment

is used when it can be determined that the vehicle had been in only one previous crash and the air bag for this occupant position deployed in that crash.

More than one previous crash with at least one deployment

is used when it can be determined that the vehicle had been in more than one previous crash at least one of which involved an air bag deployment for this occupant position.

Previous crashes, unknown deployment status

is used when it can be determined that the vehicle had been in at least one previous crash, but the deployment status for this occupant position in any of these previous crashes cannot be determined.

Unknown

is used when it cannot be determined if the vehicle had been in previous crash(es) and/or the air bag deployment status for this occupant position cannot be determined.

HAD ANY PRIOR MAINTENANCE/SERVICE BEEN PERFORMED ON THIS AIR BAG SYSTEM?

Screen Name: Prior Maintenance/Service

SAS Data Set: **AIRBAG**
SAS Variable: **BAGMAINT**

Element Attributes:
1 No prior maintenance
2 Yes, prior maintenance (specify)
9 Unknown

Source: Researcher determined — primary source is the interview, secondary sources may include repair facilities and or documents found in the vehicle.

Remarks:

This variable is specific for the air bag at this occupant's position.

No prior maintenance
is used when it can be determined that the vehicle was equipped with an air bag system, but never had any maintenance/service performed on the air bag system.

Yes, prior maintenance, specify
is used when it can be determined that the vehicle was equipped with an air bag system and that the system had some previous maintenance/service performed. If possible, the researcher must specify exactly what type of maintenance/service was performed and a date of service if possible.

Unknown
is used when it cannot be determined if the vehicle's air bag system had previous maintenance/service.

AIR BAG DEPLOYMENT ACCIDENT EVENT SEQUENCE NUMBER

Screen Name: Event Number

SAS Data Set: **AIRBAG**
SAS Variable: **BAGEVENT**

Element Attributes:

Event #
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Deployed, unknown event

Source Primary sources are the scene and vehicle inspections; secondary sources include the police report and the interviewee.

Remarks:

Event #

Select the event number that is directly related to the deployment for of this occupant position air bag.

Deployed, unknown event

is used when this air bag for this occupant position deployed, but the event associated with the deployment cannot be determined.

CDC FOR AIR BAG DEPLOYMENT IMPACT

Screen Name: CDC For Deployment Impact

SAS Data Set: **AIRBAG**
SAS Variable: **BAGCDC**

Element Attributes:

1 Highest Delta V
2 Second highest Delta V
3 Other Delta V (specify)
60 [Air bag did not deploy]
69 [Unknown if air bag deployed]
70 [No air bag available for this crash (disconected/not reinstalled]
79 [Unknown status if air bag available for this crash]
99 Deployed, unknown event

Source: Researcher determined — primary sources are the scene and vehicle inspection; secondary sources are the police report and the interviewee.

Remarks:

It is not necessary to run a reconstruction program to code this variable. Determination of the proper code can be made by visual estimation if no other means are available.

Highest delta V

is used when it is determined that the crash event which is associated with the air bag deployment for this occupant position is also the event which produced the highest delta V for this vehicle.

Second highest delta V

is used when it is determined that the crash event which is associated with the air bag deployment for this occupant position is also the event that produced the second highest delta V for this vehicle.

Other Delta V (specify)

is used when it is determined that the crash event which is associated with the air bag deployment for this occupant position did not produce either the highest or second highest delta V.

Deployed, unknown event

is used when it cannot be determined which crash event is associated with the air bag deployment for this occupant position.

WAS THE AIR BAG IN THIS OCCUPANT'S POSITION CONTACTED BY ANOTHER OCCUPANT?

Screen Name: Contacted Other Occupant

SAS Data Set: **AIRBAG**
SAS Variable: **BAGCONOT**

Element Attributes:

0	No
1	Yes (specify)
60	[Air bag did not deploy]
69	[Unknown if air bag deployed]
70	[No air bag available for this crash (disconected/not reinstalled]
79	[Unknown status if air bag available for this crash]
99	Deployed, unknown if other occupant contact to air bag

Source: Vehicle inspection, secondary sources include: interview for confirming information and medical information

Remarks:

No

is used when there is no contact to the air bag for this occupant position by any occupant other than the occupant in this occupant position.

Yes (specify)

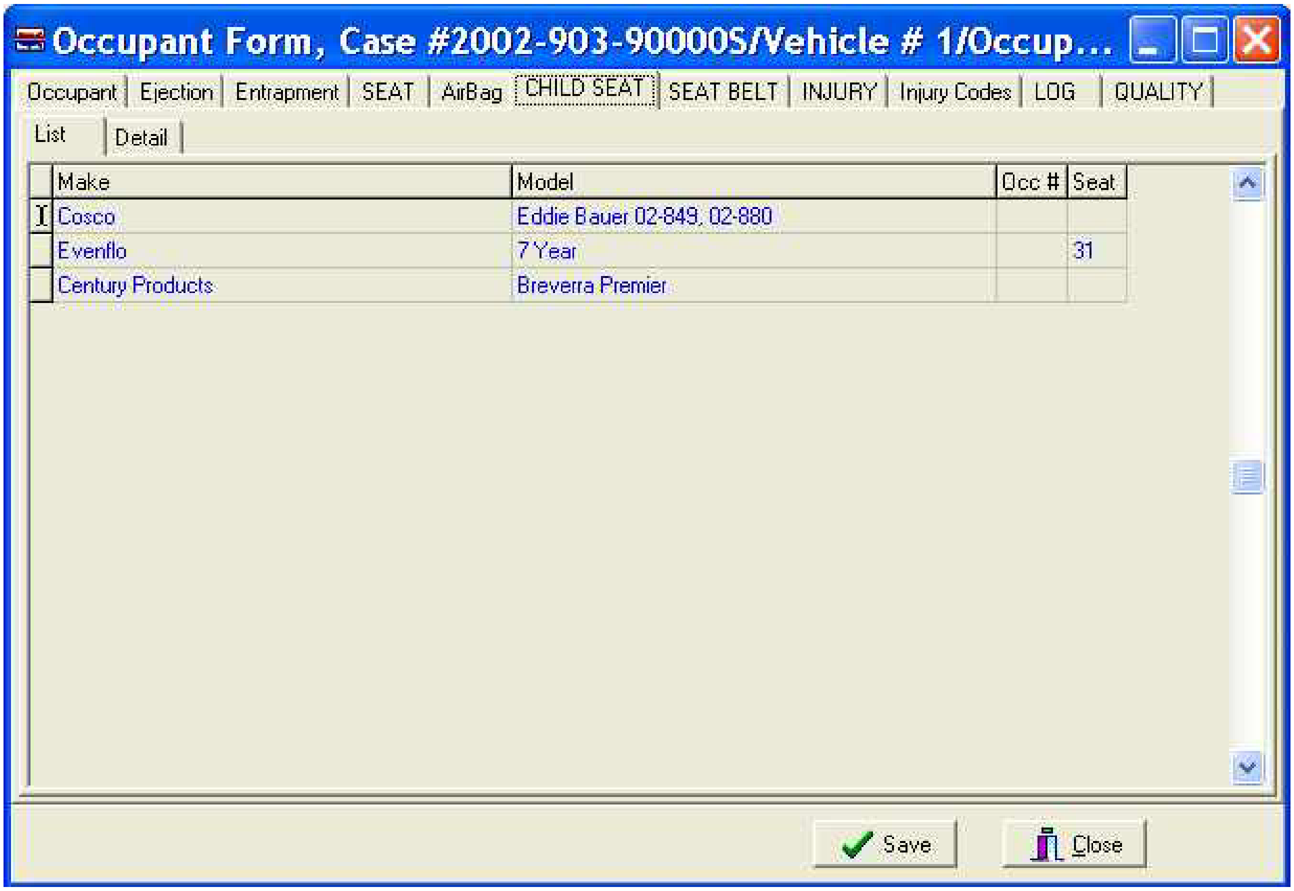
identify the occupant and describe the type of contact. Examples include:

- when a driver contacts the passenger air bag and vice-versa
- when the center front seat occupant strikes the outer seat position air bag and
- when multiple occupants in the same seat position contact one air bag.

Deployed, unknown if other occupant contact to air bag

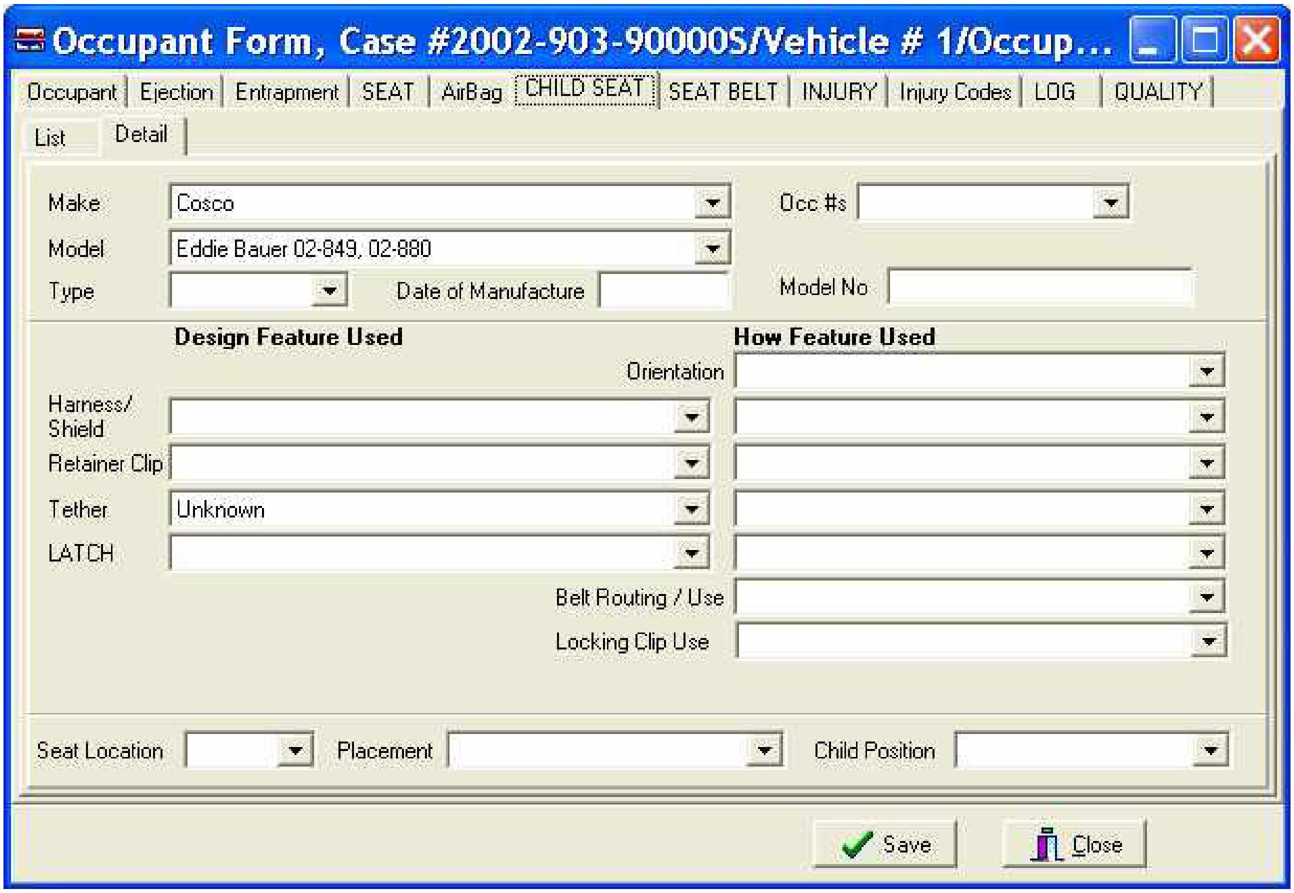
is used when it is not known if another occupant contacted the air bag.

Child Restraint List


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
List
Detail
Save
Close

Make	Model	Occ #	Seat
Cosco	Eddie Bauer 02-849, 02-880		
Evenflo	7 Year		31
Century Products	Breverra Premier		

Child Restraint Detail


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
List
Detail
Type
Date of Manufacture
Occ #s
Model No
Design Feature Used
How Feature Used
Orientation
Harness/ Shield
Retainer Clip
LATCH
Belt Routing / Use
Locking Clip Use
Seat Location
Placement
Child Position
Save
Close

Make: Cosco

Model: Eddie Bauer 02-849, 02-880

Tether: Unknown

Child Restraint Overview

These variables are designed to describe of child restraints used in all the towed CDS applicable vehicles involved in the crash. Information about the seat is of two types: characteristics and usage.

Injury and death of young children has long been a significant part of the motor vehicle crash problem. Unrestrained children have a much greater tendency to be out of place (*i.e.* not in a designated seating position and generally standing or kneeling on the seat cushion). On impact this makes them very susceptible to injury or death since they are unrestrained. For a number of years, motor vehicle crashes have been the leading cause of injury and death to children under the age of five. Many states have attempted to address this problem by legislation requiring young children to be protected by some sort of child restraint. While these efforts have resulted in a reduction of injuries and death, little data on the real world performance of the child seats has been gathered. Police reports many times fail to note the use of such a restraint.

Specifications for these seats come from Federal Motor Vehicle Safety Standard (FMVSS) 213 (Child Seating Systems). Approval of design and testing is the responsibility of the NHTSA. Most states with child restraint laws require the use of a DOT approved seat.

Performance of the seat is also an extremely critical issue. Other than staged laboratory tests, very little data exists on what happens to these seats and how well they perform in protecting the occupants. Analysts will compare use, injury severity levels, and delta V's for initial gross performance levels. Once that type of analysis is done, source of injury will be examined, along with seat type and make/model. All of these analyses will initially be used to evaluate the effectiveness of FMVSS 213 and help determine if the standard should be updated or modified. The other main use of performance analysis is to determine if any type or make/model has any significant problems.

All of the analyses are very dependent on having enough data. Researchers noting that a child younger than five years is an occupant in a CDS applicable vehicle must pursue the interview questions with the presumption that a child seat was present, especially if the jurisdiction has a child restraint law or ordinance. **Probing questions should be asked during the interview, and whenever possible, an inspection of the seat should take place. Of course, if the seat is still with the vehicle it should be inspected and photographed at the same time as the vehicle. However, finding the seat with the vehicle is not a common occurrence. This is another area where the perseverance of the researcher pays off in needed information. If the child restraint is not present during the vehicle inspection, researchers must attempt to locate, obtain an inspection, and photograph the child safety seat.**

If the child seat is belted into a specific seat location, identify that location. If it is not, leave it blank. All child seats are to be identified, whether or not they are known to be occupied. Seat locations that can be selected are only those previously defined on the **Occupant Form/Seat tab.**

Some manufacturers are incorporating Child Safety Seats (CSS) into the vehicle's seat installed in the vehicle. This type of CSS is termed an Integrated Child Safety Seat. Should the Researcher encounter this seat type during a vehicle inspection, the documentation of the seat and CSS are required on the Safety Systems Form, regardless of whether it was occupied at the time of the crash.

Child restraints are a major issue, and data collection in this area has a high priority. Much information is needed to provide a reliable evaluation of the real world performance of these restraints.

[CHILD RESTRAINT NUMBER]

Screen Name: N/A

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHSEATNO**

Element Attributes:
1, 2, 3, etc.,

Source: As created by system

Remarks:

CHILD RESTRAINT MAKE

Screen Name: Make

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHMAKE**

Element Attributes:

Refer to listing of child restraints
Unknown make

Source: Vehicle inspection, child seat inspection, and secondary source includes the interview

Remarks:

A child seat's manufacturer/make and model name may be difficult to determine unless the manufacturer/model name is stamped/sewn/molded into the child seat itself. Refer to the manufacturer's instruction booklet which accompanied the child seat, if available, for specific make and model of seat. The child seat should have a label permanently attached which identifies the seats date of manufacture and model number; although this information alone does not identify the specific make of seat, it may be useful if no other identifiers exist and should be coded under "other." The updated NASS-CDS attribute listing of child seat makes and models includes the majority of seats manufactured for use in the U.S. from 1985-2000, and provides attributes of each respective seat, e.g., harness design, weight and height recommendations, etc..

Remarks: Interview Questions - Make of Child Seat

CHILD RESTRAINT MODEL

Screen Name: Model

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHMODEL**

Element Attributes:

Refer to listing of child restraints
Unknown model

Source: Vehicle inspection

A child seats manufacturer/make and model name may be difficult to determine unless the manufacturer/model name is stamped/sewn/molded into the child seat itself. Refer to the manufacturer's instruction booklet which accompanied the child seat, if available, for specific make and model of seat. The child seat should have a label permanently attached which identifies the seat's date of manufacture and model number; although this information alone does not identify the specific make of seat, it may be useful if no other identifiers exist and should be coded under "other". The updated NASS-CDS attribute listing of child seat makes and models includes the majority of seats manufactured for use in the U.S. from 1985-2000, and provides attributes of each respective seat, e.g., harness design, weight and height recommendations, etc.

CHILD RESTRAINT TYPE

Screen Name: Type

SAS Data Set: **CHILDSEAT**
SAS Variable: **CHTYPE**

Element Attributes:

1	Infant seat (ISS)
2	Convertible seat (CSS)
3	Forward facing only (FSS)
4	Booster seat (BSS)
5	Booster/Forward facing seat (BSS/FSS)
6	Booster/Convertible facing seat (BSS/CSS)
7	Integrated seat (INT)
8	Harness (HSS)
9	Vest (VSS)
10	Special needs (SNSS)
98	Other (specify)
99	Unknown

Source: Vehicle inspection

Remarks:

Refer to child seat listing for additional information regarding each respective seat in addition to Manufacturer' Instructions.

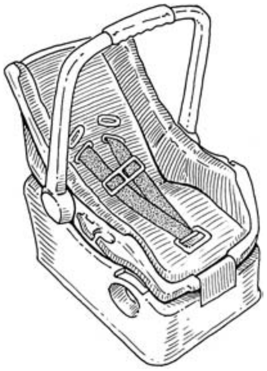
Once the child seat has been identified by make and model, the child seat TYPE will automatically be defined. However, this information can be determined by child seat examination and interview if no make or model information is available.

Infant Seat (ISS)

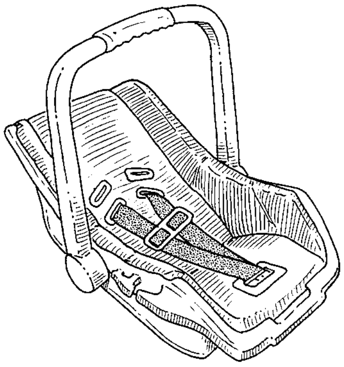
Designed and intended to be used rear facing only by newborns and infants weighing up to about 20 pounds. Typically equipped with a 3-point harness, two straps which cross over the infant's shoulders, connecting to a buckle on a piece of webbing or to a buckle recessed at the crotch area. Infant seats should recline at a 45-degree angle. Some infant seats have detachable bases which can be left secured in the vehicle, while the infant seat is removed, doubling as a carrier. When used as a child restraint the carrier-type infant seat's carrying handle should be folded back, in the down position.

Infant only seats are typically designed with 2 or 3 sets of harness strap slots in the back of the seat which allow for proper shoulder strap placement (below or at the infant's shoulders). Most harness adjustment mechanisms are behind the seat back and are typically affixed/locked by a metal bar, or clip-type lock. Most seats are equipped with a harness retainer clip which should be positioned at the infant's armpit level. Positioning of the harness retainer clip at armpit level keeps the shoulder straps positioned properly up on the infant's shoulders. The vehicle belt system (lap or lap portion of a lap/shoulder belt combination) must be used to secure the seat and/or its base to the vehicle.

Child Restraint Type cont'd



Infant seat with base



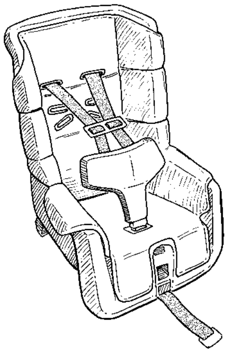
Infant seat

Convertible Seat (CSS)

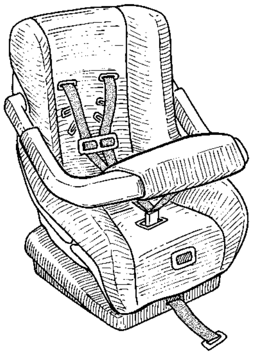
Designed and intended to be used either rear or forward facing for a child ranging from birth to approximately 40 pounds (this information will normally be found on the child seat labeling as well as in the manufacturer's instructions). All have a harness system to secure the child to the seat which consists of a 5-point harness, T-Shield or Tray-Shield. Most seats have 3 sets of harness slots, lowest and middle set of slots for rear facing only use positioning the straps below or at the infant's shoulder level and a top set of slots for use forward facing placing the straps above or at the child's shoulder level. Most have a harness retainer clip which helps position the shoulder straps up on the child's shoulders. Refer to manufacturers' instructions for proper use orientation according to the child's height and weight. When used rear facing the weight of the child ranges from birth to approximately 20 pounds (some convertible seats allow for heavier weight infants rear facing up to about 30 pounds). In the rear facing mode the seat is reclined at a 45-degree angle for infant use. When used forward facing the weight of the child normally ranges from 20 pounds to approximately 40 pounds. In the forward facing mode most seats are used fully upright, but some allow for a slight recline forward facing. Refer to manufacturers' instructions for proper use orientation according to the child's height and weight.

The vehicle belt system (lap or lap portion of a lap/shoulder belt combination) must be used to secure the child seat to the vehicle. In addition seats manufactured after September 1, 1999, may come equipped with a top tether strap which anchors to the vehicle to help secure the child seat. Vehicles manufactured after September 1, 2000, or earlier models come equipped with a top tether anchorage. Refer to the child seat and vehicle owners manual for proper tether attachment and use.

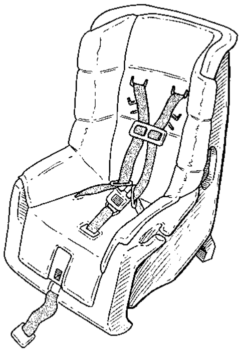
Child Restraint Type cont'd



Convertible seat with t shield



Convertible seat with tray shield



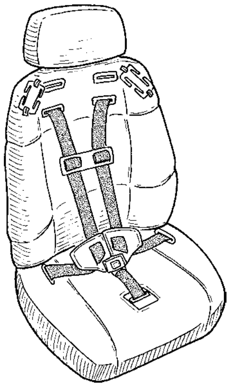
Convertible seat with
5 point harness

Forward Facing Only Seat (FSS):

A forward facing only seat is intended to be used by children who are over 1 year old and who weigh at least 20 pounds. The majority are recommended for use by children who weigh at least 20 pounds up to about 40 pounds, though some have a lower weight use recommendation of 30 pounds and upper weight limits above 40 pounds. These seats come equipped with a built-in harness or shield to restrain the child, and the seat must be secured to the vehicle seat with a lap and/or lap/shoulder belt combination. These seats are used with the child sitting in an upright position. These seats typically have 3 sets of harness slots in the back of the seat which allows for proper harness placement over the child's shoulders as the child grows. Harness straps should be at or above the child's shoulder level and since this type of seat is intended for forward facing use only, all sets of slots can be used.

The majority of these seats convert to belt-positioning boosters by removing the harness system after a child reaches 40 pounds. Always check manufacturer instructions for proper use recommendations

Backless boosters with shields are considered forward facing only seats and are not currently certified for use by children over 40 pounds.



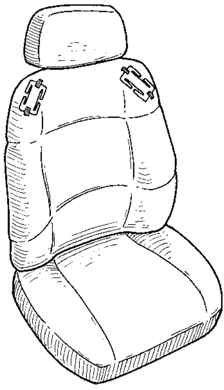
Forward facing seat

Child Restraint Type cont'd

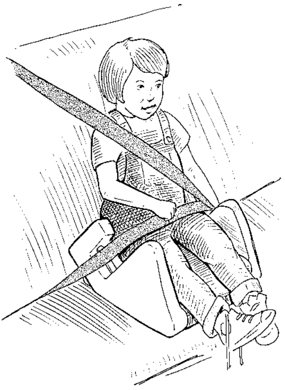
Booster Seat (BSS) Belt-positioning

Designed and intended as a forward facing platform which raises a child's sitting height, enabling them to use the adult lap and shoulder belt for restraint. Some belt-positioning booster seats come equipped with a harness which is used until the child reaches about 40 pounds. The seat is considered a forward facing only seat when used with the harness and must be secured with the vehicle belt system. Belt-positioning booster seats are primarily designed to "fill the gap" between a seat with a harness and the adult lap and shoulder belt used alone. Belt-positioning boosters should never be used with a lap belt only across the child.

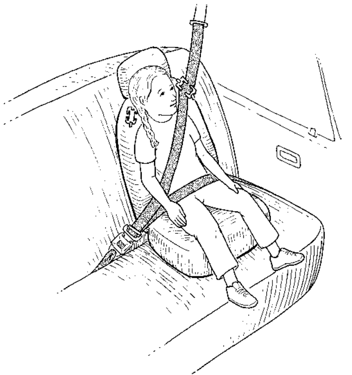
Belt-positioning boosters come in high-back and backless models. High-back models which some compare to "portable mini bucket seats" provide head protection for the child when used in vehicle seats with low seat backs or no head restraints. Most high-back models have shoulder belt positioners on the sides of the seat which help position the shoulder belt across the child properly. Backless models provide a base which the child sits on to raise their sitting height, which then enables the adult lap and shoulder belt to fit properly. Some backless boosters have removable shields, e.g., shield boosters, which when used with the shield are considered forward facing only seats for children up to 40 pounds. Most backless boosters with shields convert to belt-positioning boosters by removing the shield and using the booster base with the adult lap and shoulder belt. Refer to the manufacturers' instructions for proper use according to the child's weight and height.



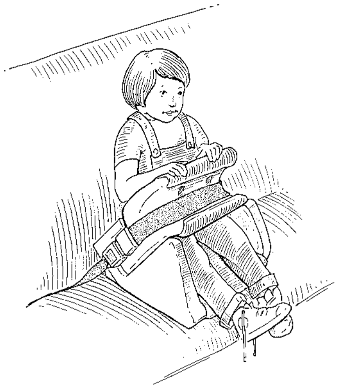
Belt positioning booster



Belt positioning booster



Belt positioning booster



Belt positioning booster with shield

Integrated Seat (INT) Built-In Child Restraint

Built-into the vehicle seat, typically "camouflaged" within or under an adult seating position in the back seat. Designed for forward facing use only by children who weigh between 20 and 40 pounds and whose height ranges between 33 and 40 inches, typically a child at least 1 year old and over 20 pounds. The majority of these seats have a 5-pt harness system, e.g., one strap over each shoulder, one strap across each upper thigh and a strap with a buckle or recessed buckle in the crotch area. Some models convert into belt-positioning booster seats for use by children up to about 60 pounds after the child reaches 40 pounds and can no longer use the 5-pt harness system.

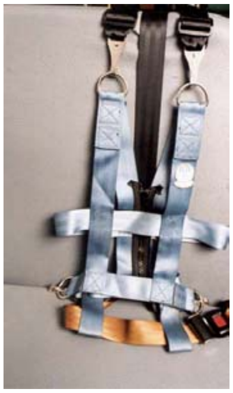
Child Restraint Type cont'd

Harness (HSS)

Intended to be used forward facing for children, who have outgrown a child seat, typically over 40 pounds, age 5 and older who are passengers of vehicles with lap belts only in the rear seat. Typically a harness consists of two straps with bottom loops which rest across the child's shoulders and chest connected at the top by a tether anchorage. The vehicle lap belt routes through the loop at the bottom of each strap, resting across the child's lap/upper thigh area. Refer to the manufacturers' instructions for proper restraint use and installation.

Vest (VSS)

Designed for forward facing use only and generally intended for use by children weighing 25-40 pounds; however, some vests can be made according to chest and waist measurements (e.g., EZ-On Products) which can accommodate small children to adults. Some models have a 5-pt type harness system and some have adjustable zipper closures in the back which typically require a top tether/anchor strap to be used along with the vehicle belt system. Some vests such as those used on school buses when transporting children with special transportation needs may require its own "seat mount" belt system for proper use of the vest. Refer to the manufacturers' instructions for proper restraint use and installation.



Vest

Special Needs Safety Seat (SNSS)

Designed and modified for children with special transportation needs who range from newborn to about 100 pounds. The majority of these devices are intended for forward facing use only, however some devices can be used rear and forward facing. All have a harness system to secure the child to the seat which may consist of a 3 or 5-point harness, T-shield, etc. Refer to manufacturers' instructions for proper restraint use and orientation.

Other – Not meant for vehicle travel

Other items, other than a certified child restraint used to hold, adjust sitting height, or otherwise contain or position a child while in a motor vehicle. Defines a product for which no type, make or model could be identified through the listing of child restraints and/or manufacturers instructions dated 1996 and 1999, nor found in the typical examples: Infant carriers, phone books/books, restaurant-home style booster seat, portable crib/cradle/playpen, wood platform, plastic platform, cushion or pillow.

Unknown

DATE OF MANUFACTURE

Screen Name: Date of Manufacture

SAS Data Set: **CHILDSEAT**
SAS Variable: **MANDATE**

Element Attributes:

MM/DD/YYYY
Indicate the date of manufacture as indicated on the child restraint
99/99/9999 Unknown date

Source: Vehicle inspection

Remarks:

Indicate the date of manufacture as indicated on the child restraint. This information can be used for recalls and for determining the model of the child seat if it is not known.

MODEL NUMBER

Screen Name: Model No

SAS Data Set: **CHILDSEAT**
SAS Variable: **MODELNO**

Element Attributes:

Indicate the model number as indicated on the child restraint

Source: Vehicle inspection

Remarks:

Indicate the model number as indicated on the child restraint. This information can be used for recalls and for determining the model of the child seat if it is not known.

CHILD RESTRAINT HARNESS/SHIELD DESIGN

Page 1 of 2

Screen Name: Harness/Shield

SAS Data Set: **CHILDSEAT**
SAS Variable: **HARDES**

Element Attributes:

0	Not designed with harness/shield (or No harness/shield available)
1	3-pt harness
2	5-pt harness
3	T-shield
4	Tray-shield
5	Shield
9	Unknown

Source: Vehicle inspection

Remarks:

This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

Some seats can be purchased in different configurations. For these seats the make and model DO NOT uniquely define the harness/shield design.

A harness is a belt-type restraint integral to the child seat, for the specific purpose of holding the child in the seat.

3-pt/V-Harness

Two straps crossing both shoulders attached to a latch plate which typically inserts into a buckle on a piece of webbing or recessed at the crotch area, visually forming a V. Applicable to rear facing only infant seats

5-pt Harness

Two straps crossing both shoulders, two straps crossing each upper thigh and a strap between the legs (crotch strap). This type harness can be adjusted to fit a variety of infants rear facing and toddlers in forward facing orientations. Typically available in convertible seats, forward facing only seats and some infant only seats.

T-shield

Secures two shoulder harness straps to a “T” shaped shield which is positioned in front of the torso and hips. Typically found in convertible and forward facing only seats.

Tray-Shield

Secures two shoulder harness straps to a broad padded tray positioned in front of the torso. The crotch strap may be separate or integral with the shield. Found on convertible and forward facing only seats.

Child Restraint Harness/Shield Design cont'd

Shield

(Typically shield-boosters) The over-body shield was designed for use in seating positions with lap belts only for children between 30-60 pounds. The shield is attached to a base which raises the child's sitting height and pre- 1996 models recommended use with the shield up to 60 pounds. Boosters with shields made after 1996 recommend an upper weight limit of 40 pounds. Most shield-boosters made after 1996 allow the 40 pound child to use the booster base with the shield removed, converting the seat to a belt-positioning booster. Found on forward facing only seats.

CHILD RESTRAINT HARNESS RETAINER CLIP

Screen Name: Retainer Clip

SAS Data Set: **CHILDSEAT**
SAS Variable: **CLIPDES**

Element Attributes:

0	Not designed with harness retainer clip (or No harness retainer clip available)
1	Designed with harness retainer clip (or Harness retainer clip available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

A harness retainer clip is a plastic device/clip which is placed between the two shoulder harness straps, holding the two together for correct pre-crash positioning. The retainer clip should be threaded correctly and placed at armpit level to help keep the shoulder straps up-on the child's' shoulders.

CHILD RESTRAINT TETHER DESIGN

Screen Name: Tether

SAS Data Set: **CHILDSEAT**
SAS Variable: **TETHDES**

Element Attributes:

0	Not designed with tether (or No tether available)
1	Designed with tether (or Tether available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

Effective September 1999, the majority of child seats come equipped with top tethers. The top tether system is part of LATCH (Lower Anchors and Tethers for Children) and vehicles manufactured after September 1999 come equipped with a tether anchor for attaching the top tether of the child seat.

CHILD RESTRAINT LATCH DESIGN

Screen Name: LATCH

SAS Data Set: **CHILDSEAT**
SAS Variable: **LATCHDES**

Element Attributes:

0	Not designed with LATCH (or LATCH available)
1	Designed with LATCH (or LATCH not available)
9	Unknown

Source: Vehicle inspection

Remarks: This variable indicates how the seat is designed to be used. It does not indicate either how it was used, or whether it was used properly.

LATCH (Lower Anchors and Tethers for Children). All child seats manufactured after September 1, 2002 will have two lower attachments which connect to anchorage points between a vehicles' seat back and bottom cushion for the majority of vehicles manufactured after September 1, 2002. Child seats with corresponding attachments can be attached to these lower anchorages instead of being held by the vehicle seat belt. Child seats manufactured after September 1, 2002 will still have designated vehicle belt paths for proper orientation to accommodate older vehicles.

CHILD RESTRAINT USAGE ORIENTATION

Screen Name: Orientation

SAS Data Set: **CHILDSEAT**
SAS Variable: **ORIENT**

Element Attributes:

1	Rear facing
2	Forward facing
3	Supine
8	Other (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

The actual orientation of the child seat at the time of impact must be determined and coded.

Rear Facing
At the time of the crash the child seat was rear facing/facing the rear of the vehicle

Forward Facing
At the time of the crash the child seat was facing forward/front of the vehicle

Supine
At the time of the crash the child seat was laying flat

Other
At the time of the crash the seat was facing other than the rear, supine or forward (e.g., sideways, on top of or underneath something)

Unknown
A child seat is present but the orientation at the time of the crash is unknown

CHILD RESTRAINT HARNESS/SHIELD USE

Screen Name: Harness/Shield

SAS Data Set: **CHILDSEAT**
SAS Variable: **HARUSE**

Element Attributes:

0	Not designed with harness/shield
1	Harness/shield not used
2	Harness used - harness straps in top/highest slot
3	Harness used - harness straps in middle/bottom slot
4	Harness used - slots used unknown
5	Retrofitted with harness
6	Shield used
9	Unknown if harness/shield used

Source: Vehicle inspection

Remarks: The actual child seat harness usage at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine the design of the seat, its respective harness design and use according to the weight/height of the child.

CHILD RESTRAINT RETAINER CLIP USE

Screen Name: Retainer Clip

SAS Data Set: **CHILDSEAT**
SAS Variable: **CLIPUSE**

Element Attributes:

0	Not designed with harness retainer clip
1	Harness retainer clip not used
2	Harness retainer clip used – below armpit level
3	Harness retainer clip used at armpit level
4	Harness retainer clip used – above armpit level
5	Harness retainer clip used – unknown level
6	Retrofitted with harness retainer clip
9	Unknown

Source: Vehicle inspection

Remarks: The actual child seat harness retainer clip use at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine if the respective child seat comes equipped with a harness retainer clip.

CHILD RESTRAINT TETHER USE

Screen Name: Tether

SAS Data Set: **CHILDSEAT**
SAS Variable: **TETHUSE**

Element Attributes:

0	Not designed with tether
1	Tether not used
2	OEM Tether used
3	After market (retrofitted) tether used
9	Unknown if tether Used

Source: Vehicle inspection

Remarks:

Refer to Manufacturers' Instructions for Child Safety Seats and Child Seat listing for applicability of tether.

CHILD SEAT LATCH USE

Screen Name: LATCH

SAS Data Set: **CHILDSEAT**
SAS Variable: **LATCHUSE**

Element Attributes:

0	Not designed with LATCH lower anchors
1	LATCH lower anchors – not used
2	LATCH lower anchors used
3	After market (retrofitted) LATCH lower anchors used
9	Unknown

Source: Vehicle inspection

Remarks: The actual child seat LATCH usage at the time of the crash must be determined and coded.

Refer to the Manufacturers' Instructions for Child Safety Seats and the Child Seat List to determine applicability of LATCH.

BELT ROUTING/USE

Screen Name: Belt Routing/Use

SAS Data Set: **CHILDSEAT**
SAS Variable: **BELTROUT**

Element Attributes:

0	No belt routing
1	No belt used
2	Belt routed through belt positioning slots/channels
3	Belt routed through forward facing slots/channels
4	Belt routed through rear facing slots/channels
5	Belt routed unconventionally (specify)
9	Unknown belt path

Source: Vehicle inspection

Remarks:

No belt used

When no seat belt was used. No belt was used to either restrain the child or install the seat.

Belt routed through belt positioning slots/channels

The belt was routed through the belt positioning slots or channels built into the child restraint.

Belt routed through forward facing slots/channels

The belt was routed through the forward facing slots or channels built into the child restraint

Belt routed through rear facing slots/channels

The belt was routed through the rear facing slots or channels built into the child restraint

Belt routed unconventionally (specify)

The belt was routed unconventionally

No belt routing

The belt was not routed through any slots/channels in the seat (if they exist at all). The belt was used solely to restrain the child was sitting on/in the seat. This will be automatically filled in for Integrated child restraints

Unknown belt path

It is not known what path the belt took around the child/seat. If it is not know if a belt was used indicate that on the belt availabililty/use variables and choose unknown belt path for this variable.

USE OF LOCKING CLIP ON VEHICLE BELT

Page 1 of 2

Screen Name: Locking Clip Use

SAS Data Set: **CHILDSEAT**
SAS Variable: **LOCKCLIP**

Element Attributes:

0	None Present
1	Locking Clip Used on Lap and Shoulder Belt
2	Locking Clip Used on Lap Belt Only
3	Locking Clip Used on Shoulder Belt Only
8	Other (Specify)
9	Unknown

Source: Child Seat Inspection and Interview

Remarks:

When found in vehicle, be sure to photograph. This variable is NOT ASSESSING the proper use of the locking clip, only indentifying on what belt it is found.

A **locking clip** is typically provided by the child seat manufacturer and found clipped/fastened to a new child seat when purchased. A **locking clip** is used to lock an emergency locking retractor (ELR) lap and shoulder combination belt with a sliding latch plate. Some belts are labeled indicating the need for the locking clip, and vehicles requiring a locking clip provide information about its use in the owner manual .

Locking clips are used to shorten lap belts that have emergency locking retractors which do not switch or lock.

None Present
When there is no locking clip present on any seat belt

Locking Clip Used on Lap and Shoulder Belt
When the lap and shoulder belts are threaded through the locking clip

Locking Clip Used on Lap Belt Only
When the lap belt is threaded through the locking clip

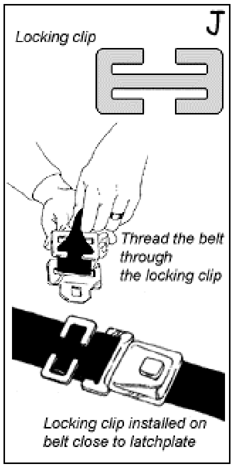
Locking Clip Used on Shoulder Belt Only
When the shoulder belt is threaded through the locking clip

Other (Specify)

Unknown

Use of Locking Clip on Vehicle Belt cont'd

Locking clip on belt



J
Locking clip
Thread the belt through the locking clip
Locking clip installed on belt close to latchplate

Locking clip instructions

Locking clip on belt

Locking clip in use

SEAT LOCATION FOR CHILD RESTRAINT

Screen Name: Seat Location

SAS Data Set: **CHILDSEAT**
SAS Variable: **SEATPOS**

Element Attributes:
Seat Number

Front Seat
- 11 Left side
- 12 Middle
- 13 Right side

Second Seat
- 21 Left side
- 22 Middle
- 23 Right side
- 24 Far right side

Third Seat
- 31 Left side
- 32 Middle
- 33 Right side
- 34 Far right side

Fourth Seat
- 41 Left side
- 42 Middle
- 43 Right side
- 44 Far right side

Fifth Seat
- 51 Left side
- 52 Middle
- 53 Right side
- 54 Far right side

Other or unknown seating
- 97 Unenclosed area
- 98 Other enlosed area
- 99 Unknown seat location

Source: Vehicle Inspection/interview

Remarks:

See the variable **Occupant's Seat Position** for more detail on this variable.

All child seats shall be coded as to whether or not the child seat is occupied or belted into the vehicle seat and its specific location in the vehicle, ***if known. When the Occupant Form is completed you will be indicating the location of the seat based upon all the information in the case.*** Select seating locations are defined in the Seat tab.

There are occasions when a child is sitting in a child seat, but the child seat is not restrained by the vehicle belt system or the child in the child seat is sitting on another occupants lap; and there are times when a child seat is restrained by the vehicle belt system, yet is not in use by a child at the time of a crash. Likewise there are occasions when a child seat is inside the vehicle not in use and not belted into the vehicle and is considered cargo, as a possible injury source, etc. Information will be collected on every child seat and its location ***(if known)*** at the time of a crash whether or not it is in use or restrained by the vehicle belt system at the time of the crash.

The majority of child seats involved in crashes do not remain with the vehicle where it can be visually inspected; however, a child seat's location inside the vehicle can also be determined by interview. Some information can be collected from interviews with the driver/child seat installer, e.g., child seat location, type of belt/LATCH used to secure child seat, etc.

CHILD RESTRAINT PLACEMENT

Screen Name: Placement

SAS Data Set: **CHILDSEAT**
SAS Variable: **PLCMNT**

Element Attributes:

1	Seat
2	Floor
3	Lap of other occupant
4	Console
8	Other (specify)
9	Unknown

Source: Vehicle inspection

Remarks:

Seat
Child restraint sitting on vehicle seat

Floor
Child restraint sitting on vehicle floor

Lap of Occupant
Child restraint sitting on lap of other occupant

Console
Child restraint sitting on front, middle or rear console

Other
Other position of child restraint (specify)

Unknown
Position of child restraint is not known

CHILD POSITION IN CHILD RESTRAINT

Screen Name: Child Position

SAS Data Set: **CHILDSEAT**
SAS Variable: **POSTN**

Element Attributes:

0	[Not occupied]
1	Upright
2	Reclined/lying back
3	Supine, facing upwards
4	Slumped forward
5	Slumped to the Side
6	Kneeling
8	Other (specify)
9	Unknown

Source: Interview

Remarks:

Upright
Child was sitting upright, facing forward

Reclined/Lying Back
Child was reclined, between 90 and 45 degrees

Supine
Child was laying flat, outstretched facing upwards

Slumped Forward
Child was leaning forward from the waist up and their back was not against the back of the child restraint or vehicle seat in the case of a belt-positioning booster

Slumped to the Side
Child was leaning to the side from the waist up and their back was not against the back of the child restraint or vehicle seat in the case of a belt-positioning booster

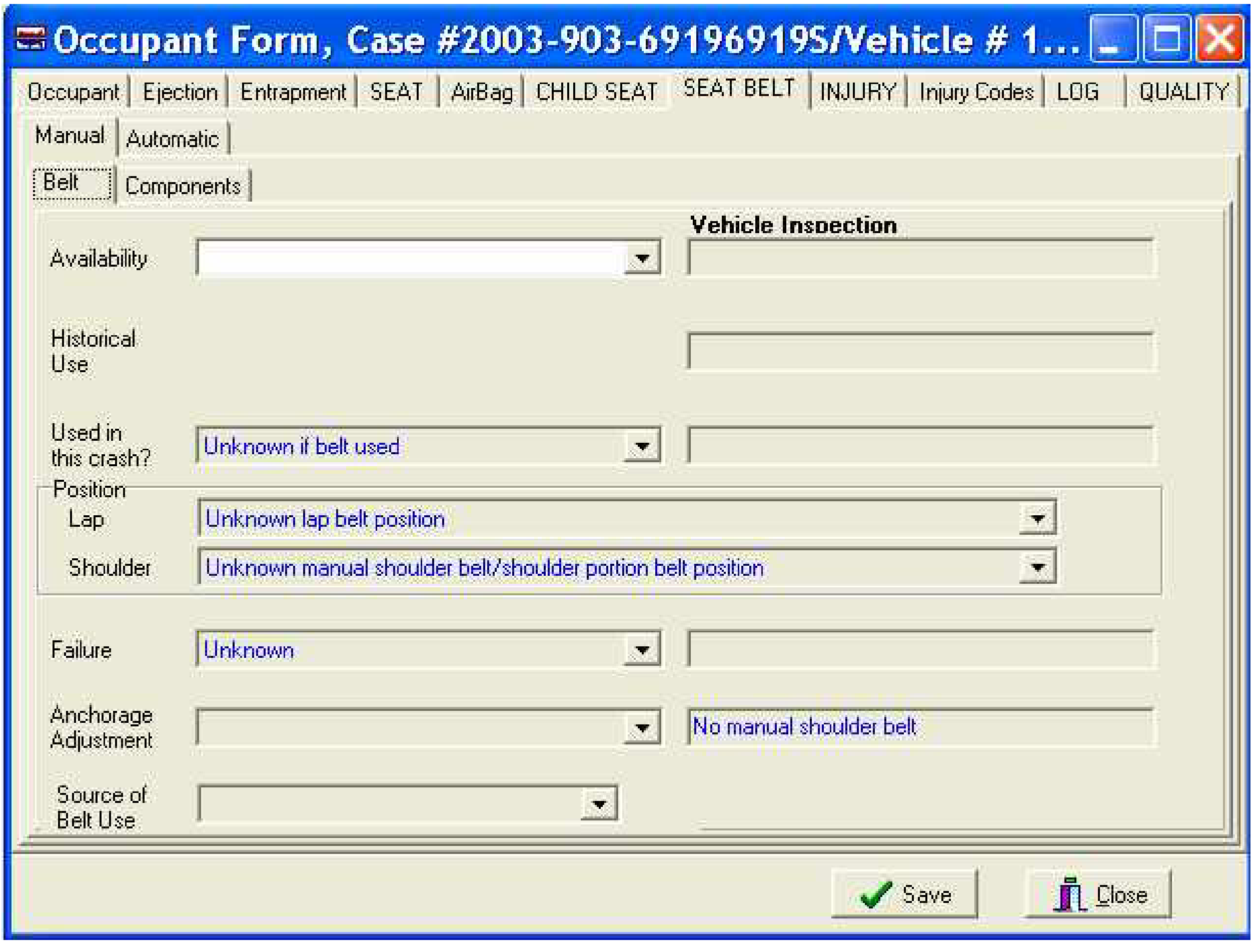
Kneeling
Child was resting on their knees while in the child restraint

Other
Any other position of child (specify)

Not occuped
When it is know that the seat was not occuped during the crash

Unknown
Unknown position of child in restraint

Manual Seat Belt


Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Manual
Automatic
Belt
Components
Save
Close

Occupant Form, Case #2003-903-69196919S/Vehicle # 1...

		Vehicle Inspection
Availability		
Historical Use		
Used in this crash?	Unknown if belt used	
Position Lap	Unknown lap belt position	
Position Shoulder	Unknown manual shoulder belt/shoulder portion belt position	
Failure	Unknown	
Anchorage Adjustment		No manual shoulder belt
Source of Belt Use		

MANUAL (ACTIVE) BELT SYSTEM AVAILABILITY

Screen Name: Availability

SAS Data Set: **OA**
SAS Variable: **MANAVAIL**

Element Attributes:

0 None available
1 Belt removed/destroyed
2 Shoulder belt
3 Lap belt
4 Lap and shoulder belt
5 Belt available - type unknown
6 Shoulder belt (lap belt destroyed/removed)
7 Lap belt (shoulder belt destroyed/removed)
98 Other belt (specify)
99 Unknown

Source: Researcher determined—primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

Some belt restraint systems are a combination of manual (active) and automatic (passive) occupant protection devices. For this variable, consider only the manual portion of the system. Select the manual belt system which was available at the time of the crash for this occupant.

Select the manual belt system which was available for use by the occupant relative to the seat position in the vehicle.

Not available

indicates: (1) that at the time of the crash the designated seating position was not equipped with a manufacturer installed or post manufacturer installed manual belt (lap, shoulder, or lap and shoulder); (2) the seat position was equipped only with an automatic (passive) belt system.

Belt removed/destroyed

indicates that the manual belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (*e.g.*, unbolted, cutout, etc.). If the belt is present but nonfunctional, then select the type of manual belt available on this variable and use **Inoperative** for **Used In This Crash?**

Belts which are knotted, buckled at the rear of the seat (bench or bucket), stored below the seat, etc., are available if they were otherwise operative.

Shoulder belt
is used when this occupant's seat position was equipped with a manual upper torso restraint and no lap belt. The population of vehicles equipped with only manual shoulder belts is very small, therefore, care must be taken that a two-point passive belt is not identified as a manual belt.

Lap belt
is used when this occupant's seat position is equipped with a manual belt that secures the pelvic area of the occupant in the seat and there is no manual upper torso belt.

Lap and shoulder belt
is used when both a manual upper torso belt and a manual lap (pelvic area) belt are present at this occupant's seat position.

Belt available — type unknown
is used when there is no vehicle inspection and there is disagreement regarding the type of manual belt system among the secondary sources. When the specific manual belt system cannot be determined, but it is known some type of belt is present, then use this attribute.

Shoulder belt (lap belt destroyed/removed)
is used for integral noncontinuous loop manual belt systems when the lap belt portion of the belt has been removed or destroyed leaving only the shoulder belt portion present at this occupant's seating position.

Lap belt (shoulder belt destroyed/removed)
is used for integral noncontinuous loop manual belt systems when the shoulder belt portion of the belt has been removed or destroyed leaving only the lap belt portion present at this occupant's seating position.

Other belt (specify)
is used when the belt system is nonstandard or cannot be described with other attributes. Specify (write out in the Specify Box) the type of manual belt (*e.g.*, 5 point competition harness, 4 inch wide webbing, etc.) In addition, use this attribute if a properly positioned "built-in" child safety seat was available at this occupant's seating position. Other child restraints are not recorded here.

Unknown
is used when it cannot be determined whether or not manual belts were available for this occupant's seat position.

HISTORICAL USE OF MANUAL (ACTIVE) BELT SYSTEM

Page 1 of 2

Screen Name: Historical Use

SAS Data Set: **SEATLOC**
SAS Variable: **ACTHIST**

Element Attributes:

0	None used / not available / removed or destroyed
1	Inoperative (specify)
2	Shoulder belt
3	Lap belt
4	Lap and shoulder belt
5	Belt used — type unknown
8	Other belt used (specify)
12	Shoulder with child safety seat
13	Lap with child safety seat
14	Lap and shoulder with child safety seat
15	Belt used with child safety seat — type unknown
18	Other belt used with child safety seat (specify)
77	Vehicle not inspected
99	Unknown if belt used

Source: Vehicle inspection

Remarks:

Select the manual belt system (or portion of the system) which has historically been used by an occupant in this seat position. The correctness of the use is not assessed on this variable. This variable only identifies historical manual belt usage; do not consider the presence and use of a passive belt system.

None used / not a available / removed or destroyed
is used when there is no evidence present that a manual belt was worn. Note: the "**not available / removed or destroyed**" within this selection is automatically selected when the corresponding attribute is selected in **Manual Belt Availability**.

Inoperative (specify)
includes belts which are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts which are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned **None used, not available, or belt removed/destroyed**.

Shoulder belt
is used when evidence is present that indicates a manual shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a non-integral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Lap belt
is used when evidence is present that indicates a manual lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a non-integral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use. **Note**, manual lap belts can be used in conjunction with a two-point automatic belt system. For manual and automatic belt combinations, use this attribute for the manual lap belt usage.

Lap and shoulder belt
is used when evidence is present that indicates the occupant is: (1) "encompassed" ***both*** in the lap and upper torso region by a manual lap and shoulder belt combination, or (2) using only a portion of an ***intact integral*** lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (*i.e.*, having the shoulder belt behind his or her back), then use this attribute.

Belt used — type unknown
is used when the type of manual belt system cannot be determined.

Shoulder / lap / lap and shoulder belt used with child seat
is used when evidence is present that indicates the vehicle's manual belt system anchors a child safety seat to the vehicle. These attributes do not refer to the belts which are part of the child seat itself.

Belt used with child safety seat — type unknown
is used when evidence is present that indicates a belt was used with a child safety seat, however the vehicle belt type is unknown, not the child safety seat type.

Other belt used with child safety seat
is used when evidence is present that indicates a built-in child safety seat is "self contained" (does not use any part of the regular existing manual belt system available at the occupant seating position).

Unknown if belt used
IS USED IF IT CANNOT BE DETERMINED WHETHER OR NOT A MANUAL BELT WAS IN USE BY THE OCCUPANT AT THE TIME OF THE CRASH.

MANUAL (ACTIVE) BELT SYSTEM USED IN THIS CRASH?

Screen Name: Used in this crash?

SAS Data Set: **OA**
SAS Variable: **MANUSE**

Element Attributes:

0	None used not available / removed or destroyed
1	Inoperative (specify)
2	Shoulder belt
3	Lap belt
4	Lap and shoulder belt
5	Belt used — type unknown
8	Other belt used (specify)
12	Shoulder belt with child safety seat
13	Lap belt with child safety seat
14	Lap and shoulder belt with child safety seat
15	Belt with child safety seat — type unknown
18	Other belt with child safety seat (specify)
99	Unknown if belt used

Source: Researcher determined—primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

Select the manual belt system or portion of the system which was in use at the time of the crash by the occupant. The correctness of the use is not assessed on this variable. This variable only identifies manual belt usage; do not consider the presence and use of a passive belt system.

None used / not available / removed or destroyed
is used when a manual belt was available but not worn.

Inoperative (specify)
includes belts which are knotted, jammed, tucked behind the seat, or in any other fashion rendered unusable. In addition, use this attribute for belts which are inoperative because of extreme deterioration from aging. A belt system that was completely removed from or cut out of a vehicle is assigned None used / not available / removed or destroyed.

Manual (Active) Belt System Used in This Crash? (cont'd)

Page 2 of 3

Shoulder belt

is used when a manual shoulder belt alone was in use. This can occur when: (1) the vehicle was not equipped with a lap belt, (2) only the shoulder belt portion of a nonintegral system was in use, or (3) when the lap belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional shoulder belt portion in use.

Lap belt

is used when a manual lap belt alone was in use. This can occur when: (1) the vehicle was not equipped with a shoulder belt, (2) only the lap belt portion of a nonintegral system was in use, or (3) when the shoulder belt portion of a noncontinuous loop integral lap and shoulder belt system was cut out leaving only a functional lap belt portion in use. **Note**, manual lap belts can be used in conjunction with a two-point automatic belt system. For manual and automatic belt combinations, use this attribute for the manual lap belt usage.

Lap and shoulder belt

is used when the occupant is: (1) "encompassed" ***both*** in the lap and upper torso region by a manual lap and shoulder belt combination, or (2) using only a portion of an ***intact integral*** lap and shoulder belt system. For example, if a person has an integral lap and shoulder belt but is only using the lap portion (*i.e.*, having the shoulder belt behind his or her back), then use this attribute. Improper use of the belt is assessed in Proper Use of Manual (Active) Belts.

Belt used — type unknown

is used when it is known that the type of manual belt system being used cannot be determined.

Other belt (specify)

is used when the belt system is nonstandard or cannot be described with other attributes. Specify (write out in the Specify Box) the type of manual belt (*e.g.*, 5 point competition harness, 4 inch wide webbing, etc.

Shoulder with child safety seat

is used when the vehicle's manual shoulder belt system anchors a child safety seat to the vehicle. These attributes do not refer to the belts which are part of the child seat itself.

Lap with child safety seat

is used when the vehicle's manual lap belt system anchors a child safety seat to the vehicle. These attributes do not refer to the belts which are part of the child seat itself.

Belt with child safety seat — type unknown

is used when the vehicle belt type is unknown, not the child safety seat type.

Other belt with child safety seat (specify)

is used when a built-in child safety seat is "self contained" (does not use any part of the regular existing manual belt system available at the occupant seating position).

Unknown if belt used

is used if it cannot be determined whether or not a manual belt was in use by the occupant at the time of the crash.

MANUAL (ACTIVE) BELT FAILURE MODES DURING CRASH

Screen Name: Failure

SAS Data Set: **OA**
SAS Variable: **MANFAIL**

Element Attributes:

0 [None used / not available / removed or destroyed]
1 No manual belt failure(s)
2 Torn webbing (stretched webbing not included)
3 Broken buckle or latch plate
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

Source: Researcher determined—primary source is vehicle inspection, additional input may include the interview and police report if a vehicle inspection is obtained.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

If any component of the manual belt system fails during the impact as a result of occupant loading, the failure is captured in this variable. The failure is also recorded on the **Case Form / Summary tab** and documented with photographs.

If a failure occurs, select the attribute which corresponds to the appropriate manual belt failure mode that describes the component of the restraint system which failed (*i.e.*, torn webbing, broken buckle or latchplate, anchorage separation, broken retractor). A complete and documented description of the failed component and the way it failed must accompany the case.

No manual belt failure(s)
is used when there is no physical evidence from the vehicle inspection to indicate that a failure occurred.

Combination of above (specify)
is used when any combination of specified attributes occur and describes multiple manual belt failure modes. Manual belt failure modes which are not described are reported in other manual belt failure. Manual belt failures **with specific attributes** take priority over the **Other manual belt failure** code.

Manual (Active) Belt Failure Modes During Crash cont'd

Page 2 of 2

Other manual belt failure

is used when the only manual belt failure(s) which occur are not described with a specific attribute.

Unknown

is used when it can not be determined if the manual belt failed.

MANUAL SHOULDER BELT UPPER ANCHORAGE ADJUSTMENT

Page 1 of 2

Screen Name: Anchorage Adjustment

SAS Data Set: **OA**
SAS Variable: **MANANCH**

Element Attributes:

0	[No manual shoulder belt]
1	None for manual shoulder belt
2	In full up position
3	In mid position
4	In full down position
5	Position unknown
9	Unknown if adjuster present

Source: Researcher determined—primary source is vehicle inspection, secondary sources include the interview.

Remarks:

Complete this variable regardless of manual shoulder belt usage.

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

None for manual shoulder belt
is used when a manual shoulder belt is present but there is no adjustment mechanism at the upper anchorage point.

In full up position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in its highest position at the time of the crash (*e.g.* closest position to the roof).

In mid position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in a middle position at the time of the crash (somewhere between full up and full down).

In full down position
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point and it was in its lowest position at the time of the crash (closest position to the floor).

Position unknown
is used when the manual shoulder belt is equipped with an adjustable upper anchorage point but it cannot be determined what the position was at the time of the crash.

Manual Shoulder Belt Upper Anchorage Adjustment cont'd

Page 2 of 2

Unknown if adjuster present

is used when it cannot be determined if the manual shoulder belt was equipped with an adjustable upper anchorage device.

SOURCE OF RESEARCHER'S DETERMINATION OF BELT USE

Screen Name: Source of Belt Use

SAS Data Set: **OA**
SAS Variable: **MBELTSOU**

Element Attributes:

0 Not equipped/not available
1 Vehicle Inspection
2 Official Injury Data
3 Driver/occupant interview
8 Other (specify)
9 Unknown if belt used

Source: Researcher determined

Remarks:

This variable explains what preponderance of information the researcher used to make the determination whether the manual seat belt was used, **not** whether the belt system was available. **The PAR is not an acceptable source to list for belt use determination.** If multiple sources of information are available, select the source that gives the most reliable information.

Vehicle Inspection

Is used if the vehicle inspection gave definitive indications that the belt was in use.

Official Injury Data

is used if the official injury data makes a specific mention of injury patterns that can be attributed to the use of a seat belt, and the vehicle inspection did not give definitive indications of usage.

Driver/occupant interview

is used if the vehicle inspection did not give definitive indications of usage or there was no vehicle inspection, however the interview(s) provided significant information to code belt use.

Other (specify)

is used when information from other official sources such as the EMS, fire department (e.g., rescue or extrication personnel), or on-scene photographs indicates that the occupant was or was not restrained by a manual or automatic belt at the time of the crash. Specify the source of the information.

PRETENSIONER PRESENCE/ACTUATION

Screen Name: Pretensioner

SAS Data Set: **OA**
SAS Variable: **ACTPRET**

Element Attributes:
0 Not equipped
1 Pretensioner not actuated
2 Retractor type actuated
3 Buckle type actuated (Specify Measurement)
4 Buckle type actuated measurement unknown
5 Unknown if actuated
7 Vehicle not inspected
9 Unknown if equipped

Source: Vehicle Inspection

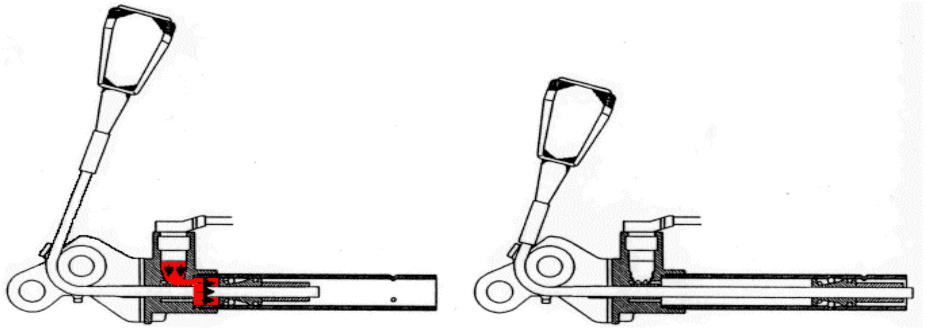
Remarks:

Can tighten the belt up to 15 cm.

When a collision occurs, a seat belt with a pretensioner detects the incident, or that the have been applied, and tightens the belt before the wearer is propelled forward. This holds the occupant more securely in the seat. Only vehicles with air bags will have pretensioners. They may be present in seating positions that do not have air bags (‘80s Mercedes).

The seat belt pretensioners consist of a housing, an initiator, a canister of gas generating materials, a routing cable with a piston attached, and a piston tube. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, a microprocessor causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt pretensioners and shortens the seat belt pretensioner height, which removes all of the slack in the seat belts. The seat belt pretensioners will deploy immediately before the frontal inflator (air bag) modules deploy.

If a front air bag (instrument panel, steering wheel) deploys, the pretensioner will deploy. However, it is possible for the pretensioner to deploy without the air bag.



LATCH PLATE TYPE

Screen Name: Latch Plate

SAS Data Set: **OA**
SAS Variable: **MANLPLAT**

Element Attributes:

0	Not used/not available
1	Sliding
2	Light weight locking/cinching
3	Locking
4	Switchable
5	Sewn On
9	Unknown Type

Source: Vehicle Inspection

Remarks:

This variable is coded for all manual seat belts that are coded for any vehicle position.

Sliding

Lightweight locking/cinching

Locking

Switchable

Switchable has a switch that locks the belt webbing by sliding a button.

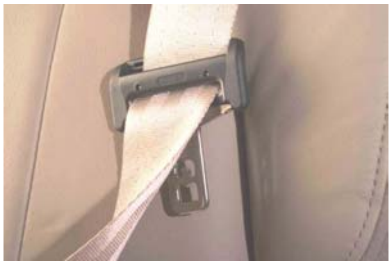
Sewn on

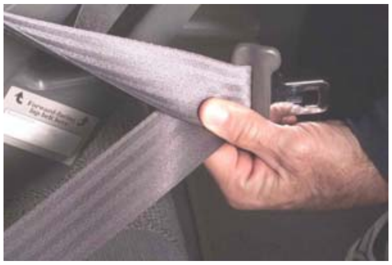
If a sewn on latch plate is present, there will be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable.

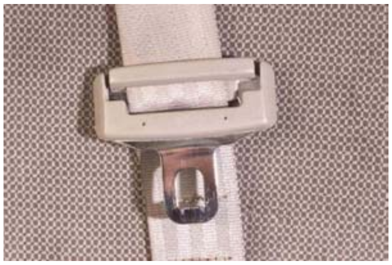
Unknown type

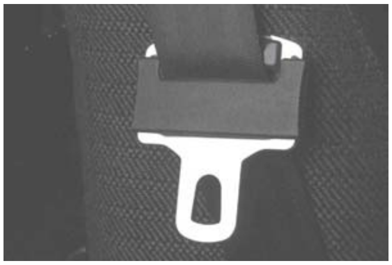
Latch Plate Type cont'd

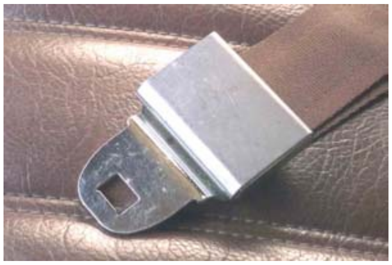
Page 2 of 2

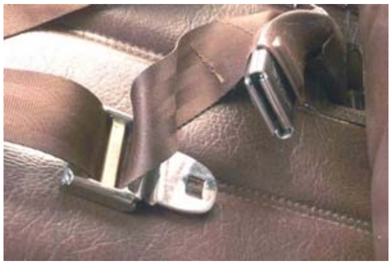

Sliding

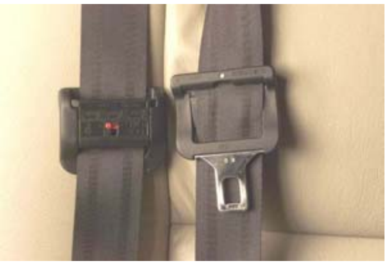

Sliding

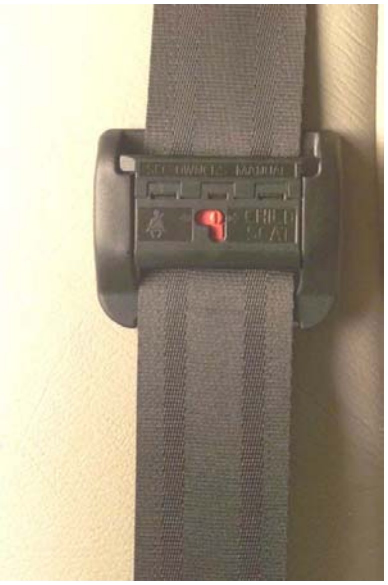

Lightweight locking/cinching

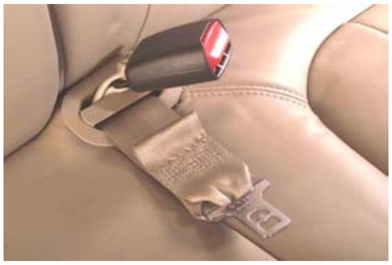

Lightweight locking/cinching

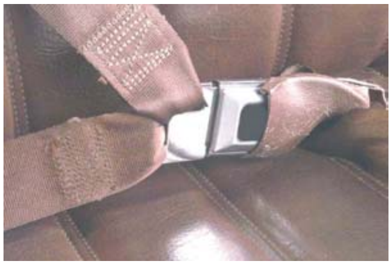

Locking


Locking


Switchable


SEE OWNER'S MANUAL
CHILD SEAT
Switchable


Sewn on


Sewn on

BELT RETRACTOR TYPE

Screen Name: Belt Retractor

SAS Data Set: **OA**
SAS Variable: **MANBLRET**

Element Attributes:

0	None Present
1	Emergency Locking Retractor
2	Automatic Locking Retractor
3	Switchable Retractor in ELR Mode
4	Switchable Retractor in ALR Mode
5	Switchable Retractor in Unknown Mode
9	Unknown Type of Retractor

Source: Vehicle Inspection, interview

Remarks:

This variable is coded for all manual seat belts that are coded for any vehicle position.

If a sewn on latch plate is present, there will most likely be a retractor for both the shoulder portion and the lap portion of the belt. Most likely the shoulder portion will be an ELR and the lap portion will be switchable from ELR to ALR. In this variable we are only interested in the retractor of the lap portion of the belt.

Another type of switchable retractor switches when the belt is pulled all the way out causing the retractor to switch to ALR mode.

Retractors wind up the loose webbing of the unused 3-point safety belt, take up the slack, and provides slight tension on belts that are in use. They are usually located out of sight at an anchor point. Check the vehicle owner's manual and also look for labels on the belt webbing to determine the retractor type.

NOTE that some newer vehicles have a switchable retractor that can be manually adjusted from ELR to ALR. Most of them can be switched by pulling the webbing all the way out of the retractor to activate the ALR. In some models, the retractors switch from ELR to ALR with the push of a button. Most switchable retractors have a label on the belt with instructions on how to switch it. Enter the information for the position of the retractor.

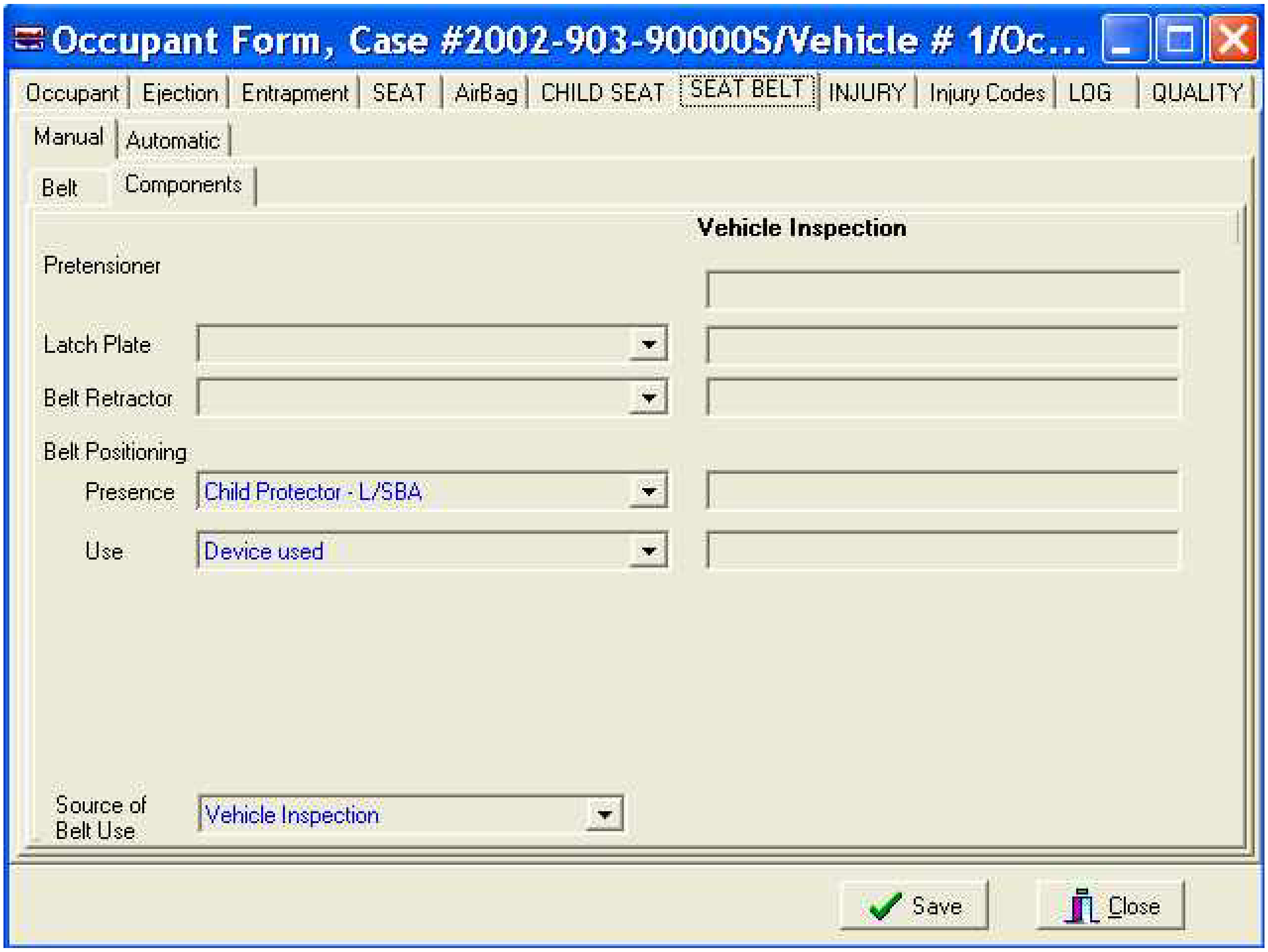
Automatic locking retractor (ALR)
The ALR locks in place after being pulled out and allowed to retract about ½" The belt cannot be extended unless it is first fully rewound. It is generally uncomfortable for adults to wear.

Emergency locking retractor (ELR)
The ELR allows the belt to be freely extended or rewound. It locks only when the vehicle slows, changes direction, or stops suddenly. Since the retractor rarely locks during normal driving, it provides more freedom and comfort to an adult driver than an ALR. Some ELRs are vehicle sensitive and lock in direct response to the deceleration of the vehicle. Other ELRs are webbing

or belt-sensitive and temporarily lock in response to a quick jerk or pull on the belt. Some ELRs are both vehicle and belt sensitive. Some ELRs have a window shade tension reliever system designed to make 3-point belts more comfortable by allowing “slack” in the shoulder belt. Occupants using these belts “tug” on the shoulder belt to tighten it after they lean forward.

Unknown
is used when the type of retractor cannot be determined

Manual Belt Components



Occupant Form, Case #2002-903-90000S/Vehicle # 1/Oc...

Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Manual
Automatic
Belt
Components
Vehicle Inspection
Save
Close

Pretensioner

Latch Plate

Belt Retractor

Belt Positioning

Presence: Child Protector - L/SBA

Use: Device used

Source of Belt Use: Vehicle Inspection

SEAT BELT POSITIONING DEVICE PRESENCE

Page 1 of 2

Screen Name: Positioning Device Presence

SAS Data Set: OA
SAS Variable: POSPRES

Element Attributes:

0	None present
1	Buckle Buddy – Shoulder Belt Adjuster
2	Sta-n-Place – Shoulder Belt Adjuster
3	Belt-A-Way – Shoulder Belt Adjuster
4	Shoulder Strap Adjuster – Shoulder Belt Adjuster
5	Child Protector – Lap and Shoulder Belt Adjuster
6	SafeFit – Shoulder Belt Adjuster
7	SafeFit Supreme - Shoulder Belt Adjuster
8	Seat Belt Adjuster – Shoulder Belt Adjuster
9	Klunk-Klip – Shoulder Belt Adjuster
10	Child Safer – Shoulder Belt Adjuster
11	Comfort Ride – Shoulder Belt Adjuster
12	Belt Buddy
97	OEM device
98	Other device (specify)
99	Unknown if device present

Source: Vehicle Inspection and/or interview. Refer to Make of Positioning Device list

Remarks:

This variable is coded for any position containing a shoulder belt.

Aftermarket seat belt positioning devices are typically manufactured for use by small statured adults and children to adjust lap and shoulder belt fit and comfort.

These products are not considered “safety devices” and are not tested or regulated by NHTSA.

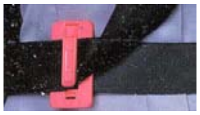
GM rear seat shoulder belt comfort guide

Belt buddy

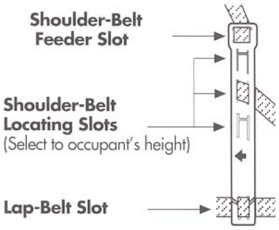
Buckle buddy

Seat Belt Positioning Device Presence cont'd

Shoulder strap adjusters



Shoulder strap adjusters


Shoulder-Belt Feeder Slot
Shoulder-Belt Locating Slots
(Select to occupant's height)
Lap-Belt Slot

Child safer

Child safer

Child safer

SEAT BELT POSITIONING DEVICE USE

Screen Name: Position Device Use

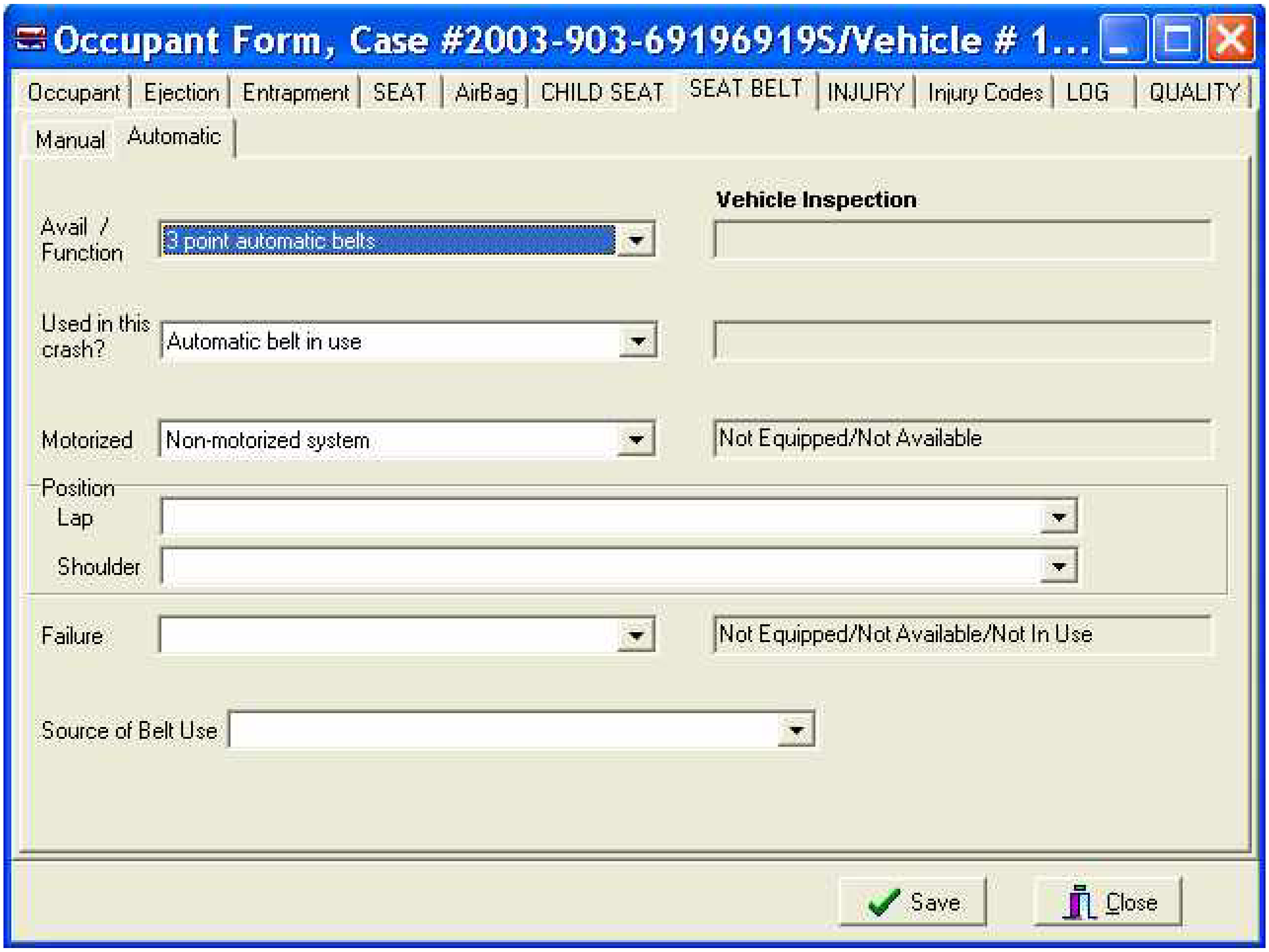
SAS Data Set: **OA**
SAS Variable: **POSUSE**

Element Attributes:

0	[None present]
1	Device not used
2	Device used
9	Unknown if device used

Source:
Vehicle Inspection, Interview

Automatic Seat Belt


Occupant Form, Case #2003-903-69196919S/Vehicle # 1...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
Manual
Automatic
Save
Close

Vehicle Inspection

Avail / Function: 3 point automatic belts

Used in this crash?: Automatic belt in use

Motorized: Non-motorized system — Not Equipped/Not Available

Position
Lap:
Shoulder:

Failure: — Not Equipped/Not Available/Not In Use

Source of Belt Use:

AUTOMATIC (PASSIVE) BELT SYSTEM AVAILABILITY/FUNCTION

Page 1 of 3

Screen Name: Availability / Function

SAS Data Set: **OA**
SAS Variable: **ABELTAVL**

Element Attributes:

0	Not equipped/not available
1	2 point automatic belts
2	3 point automatic belts
3	Automatic type unknown
4	Automatic belts destroyed or rendered inoperative
9	Unknown

Source: Researcher determined—primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

Some belt restraint systems are a combination of manual (active) and automatic (passive) occupant protection devices. For this variable, consider only the automatic portion of the system. Select the automatic belt system which was available at the time of the crash for this occupant.

Automatic belts are designed to restrain an occupant and allow an occupant egress (the act of going from an enclosed place) without the requirement of manually activating the belt. Some systems use only a torso belt (2 point automatic belts), while others are designed with a lap and torso belt (3 point automatic belts). A clue for proper system identification involves the egress issue. If you are sitting in the occupant's position and all belts are attached and you open the door, then determine if you ***have to*** detach any belt in order to exit the vehicle. Belts which do not require detaching are automatic belts. Note: The ease of egress is not considered because many automatic belt systems may appear cumbersome.

Availability is assessed based on the occupant's seating position. Select the automatic belt system which was available for use by the occupant relative to the occupant's seating position in the vehicle. Availability is also determined by presence, functional status, and use of the automatic belt system. Any occupant who is using a belt restraint system, or portion thereof, must by default have that system available to them. The correctness and/or appropriateness of the use is considered in **Proper Use of Automatic (Passive) Belt System**.

Not equipped/not available indicates:

- that at the time of the crash the designated seating position that the occupant was in, was not equipped with a manufacturer installed or post manufacture installed automatic belt (2- point or 3-point)
- the occupant was not in a designated seat position (*e.g.*, on the floor)
- the occupant was not the person assigned the designated seat position and was not using an automatic belt (*e.g.*, sitting side-by-side) **or**
- the seat position that the occupant was in was equipped only with a manual (active) belt system.

2 point automatic belts

is used when a torso belt is anchored along the inboard side of the front seat and anchored either at the upper window frame of the door surface (adjacent to the upper B-pillar) or attached to a motorized track located along the upper A-pillar, roof side rail, and upper B-pillar. A two point automatic belt system requires the presence of either a manual lap belt or a knee bolster.

3 point automatic belts

is used for an automatic belt system consisting of a lap and torso belt. This system uses a common anchor for both belts located on the inboard side of the front seat and two anchors along the door surface (e.g., commonly used in General Motors cars beginning in 1987 until mid- 1990's). This system can be detected by sitting in the occupant's position with the latch plate/buckle attached and opening the door. If the belt travels with the door and allows egress without detaching the belt, then use this attribute – the system is automatic.

Automatic belts — type unknown

is used when:

- no vehicle inspection occurs and the occupant's seating position is known to have automatic belts but the type (2 point versus 3 point) is unknown, or
- a vehicle inspection occurs and the occupant's seating position is known to have automatic belts but the researcher is not able to determine from the vehicle inspection or any secondary sources what type of automatic belts are available.

If the type of automatic belt system is determinable, then the system's mechanization can also be determined because most manufacturers use the same type of system for a given vehicular model. In addition, this code takes precedence over the following code **Automatic belts destroyed or rendered inoperative**.

Automatic belts destroyed or rendered inoperative

is used when the automatic belt, initially installed at this occupant's seating position, was subsequently removed or destroyed (*e.g.*, unbolted, cutout, etc.) or in any way rendered inoperative. In addition, use this attribute for belts which are extremely deteriorated from aging. Do not use this attribute for motorized belt tracks which are mechanically or electrically inoperative. This is considered under Automatic Belt System Failure.

Belts which are knotted, buckled at the rear of the seat (bench or bucket), etc., are available if they were otherwise operative.

Automatic (Passive Belt System Availability/Function (cont'd)

Unknown

is used for front out-board occupants of uninspected passenger vehicles when it cannot be determined whether or not this occupant's seating position was equipped with an automatic belt system.

AUTOMATIC (PASSIVE) BELT SYSTEM USE

Screen Name: Used in this crash?

SAS Data Set: **OA**
SAS Variable: **ABELTUSE**

Element Attributes:

0 Not equipped / not available / destroyed or rendered inoperative
1 Automatic belt in use
2 Not in use (manually disconnected, motorized track inoperative) (specify)
3 Automatic belt use unknown
4 Automatic belt used with child restraint
9 Unknown if equipped/available

Source: Researcher determined—primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection,** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

Not equipped / not available / destroyed or rendered inoperative

is automatically selected when **Automatic Availability** is selected as “Not equipped not available”. Additionally, select this code when automatic belts are present, but were destroyed or rendered inoperative at the time of the crash.

Automatic belt in use

is used when this automatic belt was hooked up (in use) at the time of the crash. The correctness of the use is not assessed on this variable.

Not in use (manually disconnected, motorized track inoperative)

is used when the automatic belt's latch plate/buckle was detached at the time of the crash. For example, this attribute is used to capture disconnected 3-point, door mounted automatic belts (i.e., 1987 to mid-1990 General Motors vehicles) which can be used similar to an active lap and shoulder belt system.

This is also used for motorized tracks which were ***not in the restrained position*** at the time of the crash. The motorized track may be inoperative because of fuse removal, electric motor failure, or track failure when the malfunction prevents the automatic belt system from moving along its track into the restrained position.

Note! This variable does not assess how this occupant uses the automatic belt when entering or exiting the seating position. For example, this occupant may routinely manually detach/attach the latch plate/buckle (*i.e.*, uses the automatic belt system as if it were a manual belt system). This variable assumes that the nonmotorized automatic belt is available and functioning and assesses whether or not the latch plate/buckle was attached at the time of the crash. If the latch plate/buckle was attached at the time of the crash, then use Automatic belt in use. On the other hand, if it was detached, then use Automatic belt not in use (manually disconnected, motorized track inoperative).

Not in use (manually disconnected, motorized track inoperative) cont'd

For motorized belts, this variable assumes that the motorized belt system is locked in the restrained position with the belt attached at the time of the crash. If the motorized belt system was locked in the restrained position and the belt was attached at the time of the crash, then use Automatic belt in use. If the motorized belt system was not locked in the restrained position or the belt was detached, then use Automatic belt not in use (manually disconnected motorized track inoperative).

Automatic belt use unknown

is used when the researcher is unable to determine if the automatic belt was in use.

AUTOMATIC (PASSIVE) BELT SYSTEM TYPE

Screen Name: Motorized

SAS Data Set: **OA**
SAS Variable: **ABELTYPE**

Element Attributes:

0	[Not equipped / not available / destroyed or rendered inoperative]
1	Non-motorized system
2	Motorized system
9	Unknown

Source: Researcher determined—primary source is vehicle inspection, secondary sources include medical records, and the interview.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

Non-motorized system

is used when the automatic belt system available to this occupant does not require a motor for operation.

Motorized system

is used when the automatic belt system available to this occupant requires a motor for operation.

Unknown

is used when it is known that an automatic belt is available but the type (non-motorized or motorized) cannot be determined.

AUTOMATIC (PASSIVE) BELT FAILURE MODES DURING CRASH

Page 1of 2

Screen Name: Failure

SAS Data Set: **OA**
SAS Variable: **ABLTFAIL**

Element Attributes:

0	[Not equipped / not available / destroyed or rendered inoperative]
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

Source: Researcher determined—primary source is vehicle inspection, additional input may include the interview and police report if a vehicle inspection is obtained.

Remarks:

The **Vehicle Inspection** portion of this screen shows what was determined **at the vehicle inspection** which is the primary source of information for these variables. **However**, the researcher should use all the available information, placing emphasis on the vehicle inspection information, to make the final determination for completion of this variable.

If any component of the automatic belt system fails during the impact, the failure is captured in this variable. The failure is also recorded on the **Case Form / Summary Tab** and documented with images as needed. Automatic belt system failures, unlike manual belt system failures, are not limited to those that resulted from occupant loading.

If a failure occurs, select the attribute which corresponds to the appropriate automatic belt failure mode that describes the component of the restraint system which failed (*i.e.*, torn webbing, broken buckle or latchplate, anchorage separation, broken retractor). A complete and documented description of the failed component and the way it failed must accompany the case.

No automatic belt failure(s)

is used when there is no physical evidence from the vehicle inspection to indicate or support that a failure occurred.

Combination of above (specify)

is used when any combination of specified attributes occurs and describes multiple automatic belt failure modes. Automatic belt failures which are not described are reported in Other automatic belt failure. Automatic belt failures listed with specific attributes take priority over other attributes.

Automatic (Passive) Belt Failure Modes During Crash Proper Use of Automatic (Passive) Belt System (cont'd)

Other automatic belt failure (specify)

is used when the only automatic belt failure(s) which occur are not described in the specific attributes. An example of this would be when the 2 pt automatic "track mouse" is ripped from the mechanism.

Unknown

is used when it cannot be determined if the automatic belt failed.

SOURCE OF RESEARCHER'S DETERMINATION OF AUTOMATIC BELT USE

Screen Name: Source of Belt Use

SAS Data Set: **OA**
SAS Variable: **ABELTSOU**

Element Attributes:

0 Not equiped/available/destroyed/redered inoperative
1 Vehicle Inspection
2 Official Injury Data
3 Driver/occupant interview
8 Other (specify)
9 Unknown if belt used

Source: Researcher determined.

Remarks:

This variable explains what preponderance of information the researcher used to make the determination that the automatic seat belt was used, **not** whether the belt system was available. **The PAR is not an acceptable source to list for belt use determination**. If multiple sources of information are available, select the source that gives the most reliable information.

Vehicle Inspection

Is used if the vehicle inspection gave definitive indications that the belt was in use.

Official Injury Data

is used if the official injury data makes a specific mention of injury patterns that can be attributed to the use of a seat belt, and the vehicle inspection did not give definitive indications of usage.

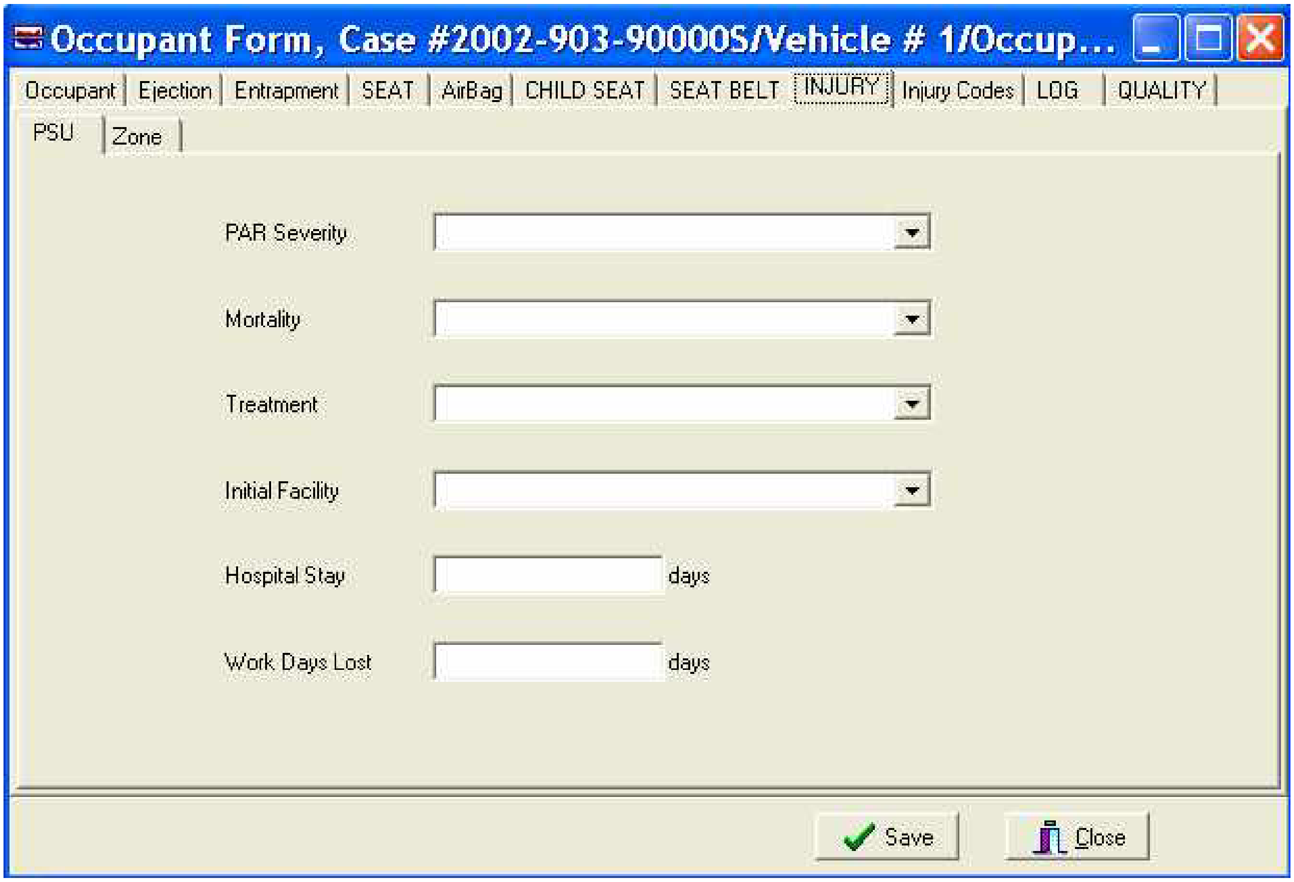
Driver/occupant interview

is used if the vehicle inspection did not give definitive indications of usage or there was no vehicle inspection, however the interview(s) provided significant information to code belt use.

Other (specify)

is used when information from other official sources such as the EMS, fire department (e.g., rescue or extrication personnel), or on-scene photographs indicates that the occupant was or was not restrained by a manual or automatic belt at the time of the crash. Specify the source of the information.

Injury/PSU


Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
PSU
Zone
Save
Close

PAR Severity

Mortality

Treatment

Initial Facility

Hospital Stay days

Work Days Lost days

POLICE INJURY SEVERITY (POLICE RATING)

Screen Name: PAR Severity

SAS Data Set: **OA**
SAS Variable: **INJSEV**

Element Attributes:
0 O — No injury
1 C — Possible injury
2 B — Nonincapaciting injury
3 A — Incapacitating injury
4 K — Killed
5 U — Injury, severity unknown
6 Died prior to crash
9 Unknown

Source: Police report.

Remarks:

Select the police reported injury severity for this occupant. It is possible that the police could have updated the PAR between the time it was stratified and when it was picked up. For example, a person might have been listed originally with incapacitating injuries. Later the person dies, and the PAR is changed accordingly. Therefore, use the latest information on the PAR at the time it was obtained from the police agency.

If the police report contains a detailed description of the injuries but does not translate the injuries into the KABCO codes, use the police method for doing so. For example, injuries which are considered to be of an incapacitating nature are classified as "A", nonincapacitating-evident injuries are classified as "B", and possible injuries are "C", Property damage only is classified as "O".

U — Injury, severity unknown
is used when the police report indicates a "U" or in any other way communicates the idea that the person was injured but their severity is unknown.

Died prior to crash
is only used if the police explicitly so indicate.

As a general rule, if the PAR is "blank" where the injury severity is assessed and the person was at the scene during the police investigation, then select “O” - No injury. If the PAR is "blank" and the person was not present during the police investigation, then select “Unknown”.

Not all states use the KABCOU scheme. Listed below, by state, are alternative schemes; a mapping to the NASS scheme is provided.

Police Injury Severity (Police Rating) (cont'd)

State	PAR Code/Definition			NASS Scheme/Code
Alabama	K	=	Killed	K
	A	=	Visible or carried from scene	A
	B	=	Bruise/abrasion/swelling	B
	C	=	No visibility - has pain/faint	C
	Blank	=	No documentation of driver or occupant injury	O
		=	No set unknown code	U
Arizona	1	=	No injury	O
	2	=	Possible injury	C
	3	=	Non-incapacitating injury	B
	4	=	Incapacitating injury	A
	5	=	Fatal	K
	6	=	Unknown	U
California	1	=	Fatal	K
	2	=	Severe wound/distorted member	A
	3	=	Other visible injury	B
	4	=	Complaint of pain	C
	Blank	=	Occupant present	O
	Blank	=	Occupant not present	U
Colorado*	5	=	Fatal	K
	4	=	Evident - incapacitating	A
	3	=	Evident - non-incapacitating	B
	2	=	Possible injury	C
	1	=	No injury	O
• There is a box at the top of the PAR indicating number of persons injured. If this box is marked 0 and the injury attribute is left "blank", assume "No injury". If the box is marked 1 (or more) pertaining to the vehicle occupants in question and the injury attribute is "blank", assume "Injured, severity unknown". If "blanks" are present in both the persons injured box and the injury box, assume "Unknown".				
Florida	1	=	No injury	O
	2	=	Possible injury	C
	3	=	Non-incapacitating injury	B
	4	=	Incapacitating injury	A
	5	=	Fatal (IN 90 Days) injury	K
	6	=	Non-Traffic fatality	U
		=	No set unknown code	?? U ??

Police Injury Severity (Police Rating) (cont'd)

Page 3 of 6

State	PAR Code/Definition				NASS Scheme/Code
Indiana	**Nature of Most Severe Injury {21}**		**Location of Most Severe Injury {22}**	**Victim's Injury Status {23}**	
	1-11 Any Entry		1-12 Any Entry	6 Dead	K
	1-11 Any Entry		1-12 Any Entry	2 Semiconscious 3 Incoherent 4 Unconscious	A
	1 2 4 7 8	Severed Internal Severe Burn Severe Bleed (Arterial) Fracture/ dislocation	1-12 Any Entry	1 Conscious 5 Shock 7 Refused Med	A
	3 6 10 11	Minor Burn Minor Bleed Complaint of Pain None Visible	3 Eye	1 Conscious 5 Shock 7 Refused Med	A
	3 6	Minor Burn Minor Bleed	1-2, 4-12 (Any EXCEPT Eye)	1 Conscious 5 Shock 7 Refused Med	B
	5 9	Abrasion Contusion/ Bruise	1-12 Any Entry	1 Conscious 5 Shock 7 Refused Med	B
	10 11	Complaint of Pain None Visible	1-2, 4-12 (Any EXCEPT Eye)	1 Conscious 5 Shock 7 Refused Med	C
	11	None Visible	Blank or Slashed	1 Conscious	O
	Blank or Slashed		Blank or Slashed	Blank or Slashed	O
	Unknown		Unknown	Unknown	U

Police Injury Severity (Police Rating) (cont'd)

State	PAR Code/Definition			NASS Scheme/Code
Maryland	5	=	Fatal	K
	4	=	Incapacitating	A
	3	=	Non-incapacitating	B
	2	=	Possible injury	C
	1	=	No injury/Damage only	O
	Blank	=	No documentation of driver or occupants on front of PAR	
Nebraska	1	=	Fatal	K
	2	=	Incapacitating injury	A
	3	=	Non-incapacitating injury	B
	4	=	Possible injury	C
	0	=	No injury	O
	Blank	=	Occupant present	O
	Blank	=	Occupant not present	U

New Jersey	**Location of Injury**	**Type of Injury**	**Victim's Condition**	
	Any entry	Any entry	Killed	K
	Any entry	Any entry	Incapacitated	A
	Any entry	amputation, concussion, internal, fracture/dislocation	Moderate injury complaint of pain	A
	Eye	burn, bleeding, complaint of pain	Moderate injury Complaint of pain	A
	Any entry	bleeding, contusion, bruise, abrasion	Moderate injury	B
	Any entry (except eye)	complaint of pain	Complaint of pain	C
	-	-	-	O
	U	U	U	U

Police Injury Severity (Police Rating) (cont'd)

State	**PAR Code/Definition**			**NASS Scheme/Code**
New York	**Location of Injury {14}**	**Type of Injury {15}**	**Victim's Status {16}**	
	1-12 Any entry	1-13 Any entry	1 Apparent death	K
	1-12 Any entry	1-13 Any entry	2 Unconscious, 3 Semi-conscious, 4 Incoherent	A
	1-12 Any entry	1 Amputation, 2 Concussion, 3 Internal, 5 Severe Bleeding, 7 Moderate Burn, 8 Severe Burn, 9 Fracture - Dislocation	5 Shock, 6 Conscious	A
	3 Eye	4 Minor Bleeding, 6 Minor Burn, 12 Complaint of Pain	5 Shock, 6 Conscious	A
	All but eye 1, 2, 4-12	4 Minor Bleeding, 6 Minor Burn	5 Shock, 6 Conscious	B
	1-12 Any entry	10 Contusions - Bruise, 11 Abrasion	5 Shock, 6 Conscious	B
	All but eye 1, 2, 4-12	12 Complaint of Pain	5 Shock, 6 Conscious	C
	-	13 None Visible	6 Conscious	O
	X	X	X	U

Police Injury Severity (Police Rating) (cont'd)

Page 6 of 6

State	PAR Code/Definition			NASS Scheme/Code
Pennsylvania	0	=	No injury	0
	1	=	Death	K
	2	=	Major injury	A
	3	=	Moderate injury or	A
	4	=	Minor injury [and] Type of Apparent Injury - amputation - broken bone(s) - distorted member - other incapacitating injury	A
	3	=	Moderate injury or	B
	4	=	Minor injury [and] Type of Apparent Injury - abrasions/bruises - burns - bleeding wound - concussion - other non-incapacitating injury	B
	3	=	Moderate injury [and] Type of Apparent Injury - Unknown	B
	3	=	Moderate injury or	C
	4	=	Minor injury [and] Type of Apparent Injury - complaint of pain - limping - swelling	C
	4	=	Minor injury [and] Type of Apparent Injury - Unknown	C
	9	=	Unknown if injured [and] Type of Apparent Injury - Complaint of pain	C
	9	=	Unknown if injured [and] Type of Apparent Injury - Unknown	U
Tennessee	4	=	Fatal Injury	K
	3	=	Incapacitating injury	A
	2	=	Non-incapacitating injury	B
	1	=	Possible injury	C
	0	=	No injury	0
Washington	1	=	No injury	0
	2	=	Dead at scene	K
	3	=	Dead on arrival	K
	4	=	Died in hospital	K
	5	=	Disabling injury	A
	6	=	Non-disabling injury	B
	7	=	Possible injury	C
	Blank	=	Unknown	U

MORTALITY

Screen Name: Mortality

SAS Data Set: **OA**
SAS Variable: **MORTLTY**

Element Attributes:

0 Not Fatal
1 Fatal
2 Fatal — ruled disease (specify)

Source: Researcher determined — inputs include interviewee, police report, and medical records.

Remarks:

Official sources (if they exist) take precedence over interview data.

Not Fatal
is used when death does not occur or occurs more than 30 days after the crash.

Fatal
is used when death occurs within 30 days of the crash. Death must have occurred as a consequence of injuries sustained in the traffic crash. Interview information alone should not be sufficient to select this attribute.

Fatal — ruled disease (specify)
is used in two situations. The first is when the effects of a disease can be deemed as a cause of the crash. Cause means that the on-set of the disease occurred prior to the first harmful event. When determining the time of on-set (relative to the first harmful event), the researcher can use any information source available. The researcher makes his/her determination after weighing all the evidence. (**NOTE:** The use of all available information sources is restricted to the determination of when the on-set occurred.)

Second is when a medical examiner (or other official vested by the state to verify the cause of death) or an official medical report verifies that the death resulted from either (1) a diseased condition, or (2) not from crash related injuries.

TREATMENT

Screen Name: Treatment

SAS Data Set: **OA**
SAS Variable: **TRETMENT**

Element Attributes:

0 No treatment
1 Dead on Arrival (DOA) at hospital
2 Dead Prior To Admission
3 Hospitalized
4 Transported and released
5 Treatment at scene - non-transported
6 Treatment later
7 Transported to a medical facility - unknown if treated
8 Treatment - other (specify)
9 Unknown

Source: Researcher determined — inputs include interviewee, police report, and medical records.

Remarks:

Official sources (if they exist) take precedence over interview data.

No treatment

includes persons transported to a hospital but who refuse treatment. A person who is declared dead at the scene of the crash and is not transported to a hospital is coded **No treatment.**

Dead On Arrival (DOA) at hospital

includes persons who are transported from the scene to a hospital facility and pronounced dead on arrival **at the hospital**. This means that no treatment was attempted at the hospital facility (e.g., no CPR, no examination, no x-rays, etc.)

Dead Prior To Admission

includes persons who are transported from the scene to a hospital facility and treated in the ER, but died prior to admission. See **Hospital Stay** for hospitalization criteria.

Hospitalized

is used when hospitalization occurs as a result of injury (need ***not*** be taken directly to a hospital). See Hospital Stay for hospitalization criteria. Also use this attribute if a person is treated and released, then is subsequently hospitalized as a result of injuries sustained in the crash.

Treatment (cont'd)

Transported and released

is used when the person went ***directly*** from the crash scene to a treatment facility (hospital, clinic, doctor's office, etc.), and the person ***is examined*** for injuries at the facility. The person need not have been injured. The means of transportation is ***not*** a consideration.

Treatment at scene — non-transported

includes treatment at scene such as: first aid, self-treatment, EMT treatment, doctor treatment, etc.--and the person is not transported or does not go to a treatment facility (*e.g.*, doctor, clinic, hospital, etc.) as a result of injuries sustained in this crash.

Treatment later

includes only professional treatment (*e.g.*, doctor, clinic, hospital, etc.) where the person:

- did not go directly from the scene to treatment, **and**
- was treated and released

If a person is treated at the scene, is not transported from the scene, and subsequently receives later treatment (without being hospitalized), then use this attribute. Later is defined as more than one hour after leaving the scene of the crash.

Treatment — other (specify)

includes non-professional treatment such as first aid, self-treatment, etc., not at the scene of the crash. If this is used, then Type of Medical Facility (for Initial Treatment), must be assigned Not treated at a medical facility.

Transported to a medical facility-unknown if treated

is used when the person went ***directly*** from the crash scene to a treatment facility (hospital, clinic, doctor's office, etc.), and no other information about treatment is known.

If a person survives the injuries and receives treatment at a hospital, but is not admitted for hospitalization, that person's treatment is either Transported and released or Treatment later, depending upon whether the person went directly or indirectly to the hospital. It does not matter if the person is treated for one hour or twelve, only that the person is released following treatment. Nor does it matter if the treatment begins prior to midnight and spans into the following day.

TYPE OF MEDICAL FACILITY (FOR INITIAL TREATMENT)

Page 1 of 2

Screen Name: Initial Facility

SAS Data Set: **OA**
SAS Variable: **MEDFACIL**

Element Attributes:

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

Source: Researcher determined — inputs include police report, interviewee, official records, and the American College of Surgeons classification criteria.

Remarks:

The treatment of injuries by a physician immediately (*i.e.*, within one hour) following a crash is of utmost importance in serious injury crashes. In order to assess the quality of immediate care available to the victims in CDS crashes, the following criteria are used to categorize the various treatment facilities. Teams must develop a listing of treatment facilities serving their PSU and categorize each into this variable's scheme. Teams must communicate their list to their respective zone center.

Not treated at a medical facility

is used when the person was not injured or receives nonprofessional treatment such as first-aid, self-treatment, etc. In addition, use this attribute for persons who "died" at the scene or "died in-route" to a medical facility. Treatment at the scene or in-route to a medical facility by emergency medical personnel is ***not*** considered initial treatment for the purposes of this variable. This is true even if the facility has radio communications with their EMTs. If a person arrives at a medical facility and subsequently dies or is declared dead after some treatment, but prior to admission, then use one of the other attributes. For example, an occupant arrives with no vital signs, CPR in progress, and a "flat" EKG and is declared "dead on arrival" on the ER report.

Trauma center

is used when the occupant was initially treated at a Level I or Level II Trauma Center as defined by the American College of Surgeon's Committee on Trauma report entitled: "Hospital and prehospital resources for optimal care of the injured patient", *American College of Surgeons Bulletin*, Vol. 71, No. 10, October 1986, pp. 4-12.

The fact that a medical facility calls itself a "Trauma Center" or something of the same nature does not mean that it satisfies the criteria for Trauma center. The facility must meet the criteria as noted in the preceding paragraph. Teams should contact their "hospitals" and ask each what they consider themselves to be (according to criteria referenced above). Teams should also be alert for communication releases (*i.e.*, newspapers, radio, TV, etc.) which concern the trauma capability status of their area emergency rooms. **If the status of a hospital should change, notify your Zone Center.**

Hospital

is used for all "hospitals" which do not fall into the definition of a Level I or Level II Trauma Center as defined.

Medical clinic

is used for treatment facilities which provide outpatient medical care with related in-house laboratory facilities (e.g, x- ray). These are usually a group practice in which several physicians work cooperatively. This also includes school clinics, work place clinics, or similar facilities if they are staffed by a physician while open. If a doctor is not normally present at a clinic while it is open, then the appropriate attribute is Other.

Physician's office

is used when the person is initially treated in an office of a professional health care provider which does not qualify for Trauma center, Hospital, or Medical clinic.

Treatment later at medical facility

use this attribute when the person receives treatment at a medical facility more than one hour after departing the scene of the crash.

Other (specify)

is used when a health care provider's facility is used for the initial treatment, and the facility does not qualify for Trauma center, Hospital, Medical clinic, or Physician's office above.

Unknown

is used when it is unknown what type of initial treatment facility was used or when it is unknown if treatment of any kind was obtained.

HOSPITAL STAY

Screen Name: Hospital Stay

SAS Data Set: **OA**
SAS Variable: **HOSPSTAY**

Element Attributes:

0 Not hospitalized
Enter the number of days (up through 60)
61 61 days or more
99 Unknown

Source: Researcher determined — inputs include interviewee and medical reports.

Remarks:

Official sources (if they exist) take precedence over interview data.

0 (zero) Not hospitalized
is used when the person was not injured or injured but not admitted to the facility (*i.e.*, admission to the facility's emergency room is not "admission" to the facility for the purposes of the hospitalization question). In addition, use this attribute if fatal at scene, pronounced dead on arrival, or survival does not extend beyond the emergency room.

The basis for the number of days is an overnight criterion. Every time a person remains past midnight subsequent to admission, it is one day. However, there are two exceptions. One exception occurs when a person dies on the same day as the admission. In this situation, 1 is entered. The other exception occurs when a person is ***admitted*** in the early morning hours (between midnight and 7:00 a.m.), usually for observation, and is subsequently released later in the same day (usually late morning or early afternoon) 1 is entered because the person was hospitalized , Treatment equals Hospitalized.

If your information indicates that the person died while in a critical care unit [*e.g.*, intensive (*i.e.*, ICU), coronary (i.e., CCU), etc.], then at least 1 is entered even if the person expires on the same day. In other words, a person is considered admitted if they are still alive when they are transferred to a critical care unit. On the other hand, in the event that the person survives the emergency room but subsequently dies during surgery, then Not hospitalized is used, because a person who goes directly from the emergency room to an operating room is not considered to have been admitted.

If a person is admitted, lives four days in the hospital, and subsequently expires, enter 4.

This variable reports the number of days this occupant is hospitalized at a primary care facility. Primary care facilities includes medical facilities that receive patients via air transfer (*e.g.*, "lifeline" and "medivac"). However, the number of days spent at secondary care facilities (*i.e.*, rehabilitation or convalescent units, centers, facilities; or nursing homes) are ***not*** included in this variable.

WORKING DAYS LOST

Screen Name: Work Days Lost

SAS Data Set: **OA**
SAS Variable: **WORKDAYS**

Element Attributes:

0	No working days lost
	Enter the number of days (up through 60)
61	61 days or more
62	Fatally injured
97	Not working prior
99	Unknown

Source: Primary source is the interviewee; a secondary source is the person's employer.

Remarks:

Report the actual number of "work" days lost due to the crash by an employed person or a full-time college student. Children, adolescents, retirees, or unemployed persons are included in **Not working prior to crash**.

If no interview is obtained, assume that persons over 65 or under 17 are not employed full-time; for these persons Not working prior to crash is used unless the person is fatally injured.

Employed is defined to mean that the person was scheduled to work at least four hours on each of the days lost. Each such day is counted as a full day so long as the person was scheduled to work at least four hours on the day lost. Do ***not*** accumulate the hours and convert to equivalent full-time days; however, if the person works less than full-time but greater than four hours per day annotate "part-time" or "PT".

If during the interview a reasonable projection of future days lost can be made, then add those days to those already known to have been lost. If a reasonable projection cannot be made, then select Unknown.

The days lost need not be due to injury.

Days lost include Saturdays, Sundays, and afternoon and evening shifts if so scheduled. Do not count double shifts or days at time and one-half pay, etc., as more than one day.

If the reported work days lost includes a fraction, round one-half (½) day or greater up to a whole day. Less than one-half day is excluded (rounded down).

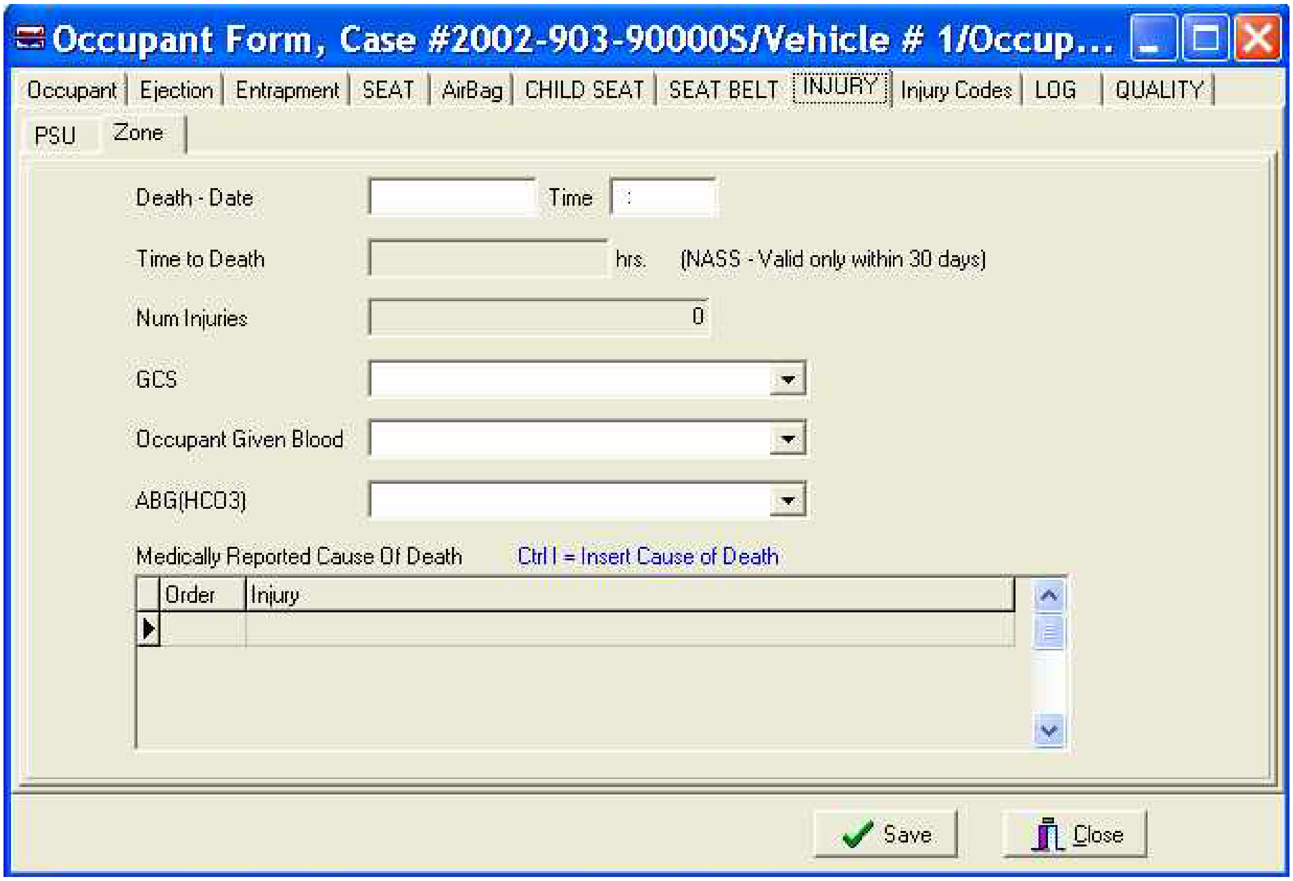
If someone loses their job as a result of the crash, then count only the work days lost between the crash and the date of termination, inclusive.

Do not include days lost by persons who were not directly involved in the crash but who lost days because of it (*e.g.*, husband who was not in crash but stayed home to take care of wife who was injured and required assistance).

If an involved person changes their work schedule as a result of a crash (*e.g.*, to take care of someone injured in the crash), then the work time, which was given up as a result of the crash, shall not be considered as lost.

Not working prior to crash
is used when a person is not employed, not a full-time college student, or works less than four hours per day. This includes all persons (except fatals) who do not qualify to lose working days.

Injury-Zone



Occupant Form, Case #2002-903-90000S/Vehicle # 1/Occup...
Occupant
Ejection
Entrapment
SEAT
AirBag
CHILD SEAT
SEAT BELT
INJURY
Injury Codes
LOG
QUALITY
PSU
Zone
Save
Close

Death - Date

Time :

Time to Death hrs. (NASS - Valid only within 30 days)

Num Injuries 0

GCS

Occupant Given Blood

ABG(HCO3)

Medically Reported Cause Of Death Ctrl I = Insert Cause of Death

Order	Injury

DEATH DATE

Screen Name: Death - Date

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter Date of Death

Source: Zone Center determined from police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Remarks:

Enter the date that the occupant died.

DEATH TIME

Screen Name: Time

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter Time of Death

Source: Zone Center determined from police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Remarks:

Enter the time that the occupant died using the 24 hour military clock.

DEATH TIME

Screen Name: Time to Death

SAS Data Set: **OA**
SAS Variable: **DEATH**

Element Attributes:

	[Enter Time of Death]
96	Fatal, ruled disease
99	Unknown

Source: Zone Center determined from police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Range: 0-30, 96, 99

Remarks:

The system computes the time to death based on the crash date and the date and time of death entered previously. This value is valid in NASS only up to 30 days.

NUMBER OF INJURIES FOR THIS OCCUPANT

Screen Name: Num Injuries

SAS Data Set: **OA**
SAS Variable: **NUMINJ**

Element Attributes:

0	[No injuries]
	[The actual number of injuries recorded for this occupant will be rolled up]
997	[Injured, severity unknown]
999	[Unknown if injured]

Source: Zone Center determined — inputs include official medical records and interviewee data from the PSU and PAR (see limitations below).

Remarks:

The Zone Center will record this occupant's total number of injury rows that were recorded on the Occupant Injury Screen.

The PAR may be used for coding **Injured, details unknown** if the **Police reported injury** for the occupant is **K**, **A**, or **B** or **Unknown if injured** if the **Police reported injury** is **C,** or **U** AND *no other injury information is available.*

0 (zero) No injuries
is used when the occupant is uninjured.

GLASGOW COMA SCALE (GCS) SCORE (AT MEDICAL FACILITY)

Page 1 of 2

Screen Name: GCS

SAS Data Set: **OA**
SAS Variable: **GLASGOW**

Element Attributes:

0	Not injured
1	Injured — not treated at medical facility
2	No GCS Score at medical facility
3-15	Enter the actual value of the initial GCS Score recorded at medical facility
97	Injured, details Unknown
99	Unknown if injured

Source: Zone Center determined from official medical records.

Remarks:

Report the actual value of the ***initial*** GCS score obtained at a medical facility. The Glasgow Coma Scale assesses three neurologic functions: **eye opening**, **motor response**, and **verbal response**. The GCS value can often be found in medical records by looking for the abbreviation "**GCS**". The number following the abbreviation is the score unless the value is less than "03" or greater than "15". It is not uncommon to find the GCS Score accompanied by information about eye pupil size and motor strength.

If more than one Glasgow Coma Scale (GCS) Score is recorded in the document without reference to initial GCS Score, then select the GCS Score to be entered in the following order:

(a) enter the GCS Score from the medical record with the earliest time to hospital treatment (*i.e.*, enter ER record over discharge summary)
(b) enter the GCS Score that appears first in a medical record other than the ER record
(c) if two or more GCS Scores are recorded in the same record without reference to time, enter the lowest GCS Score.

"15" is entered when the occupant's medical record does not specifically indicate the GCS Score but does indicate one or more of the following pieces of information:

- AxOx3 (alert and oriented times three)
- neurologically intact, normal, etc., or
- CN II-XII okay, normal, intact, etc.

Injured — not treated at medical facility

is used when the person was injured and received only nonprofessional treatment such as first-aid, self-treatment, etc., or was treated at the scene by emergency medical personnel. In addition, use this for persons who "died" at the scene or "died in-route" to a medical facility. This is true even if the medical facility has radio communications with the emergency medical personnel.

No GCS Score at medical facility

is used when the occupant was injured and received professional medical treatment but no Glasgow Coma Scale Score was assessed or recorded at a medical facility. Use this if the only GCS Score obtained was reported on an emergency medical report. If GCS Scores are obtained by both emergency medical personnel and at a medical facility, then report the initial score obtained at the medical facility.

Use this attribute If a person was treated at a medical facility and their medical records are pending.

WAS THE OCCUPANT GIVEN BLOOD?

Screen Name: Occupant Given Blood?

SAS Data Set: **OA**
SAS Variable: **BLOOD**

Element Attributes:

0	No — blood not given
1	1 unit given
2	2 units given
3	3 units given
4	4 units given
5	5 units given
6	6 units given
7	7 units given
8	8 units given
9	9 units given
10	10 or more units given
97	Blood given, # units unknown
99	Unknown if blood given

Source: Zone Center determined from official medical records or Emergency Medical Service (EMS) reports.

Remarks:

In general, blood consists of red blood cells (erythrocytes), white blood cells (leukocytes) and platelets (thrombocytes) suspended in plasma. In a transfusion, blood can be given in four separate forms: whole blood, packed red blood cells, plasma, or platelets; or in a combination of these forms.

Whole blood is blood from which none of the elements have been removed.

Packed red blood cells are whole blood from which plasma has been removed.

Plasma is the fluid (pale yellow liquid) of the blood in which the particulate components are suspended. Plasma is often given to burn patients.

Platelets are known for their role in blood coagulation. Platelets are often given when blood clotting is desired.

No — blood not given

is used whenever, Glasgow Coma Scale (GCS) Score equals Not injured or Injured - not treated at medical facility, or it is known that the person did not receive any professional treatment. In addition, use this when:

- Fit is known that the occupant was injured and not given blood; or

- Fan occupant is transported and released ***and*** not subsequently hospitalized independent of whether the occupant's records are acquired.

Enter the number of units of blood
when this occupant was given "blood" in any of the four forms, or combinations, discussed above for injuries sustained as a result of their motor vehicle traffic crash. ***Excluded*** are transfusions which result from noninjury. For example, if a spontaneous abortion results to a mother who was not injured, but who was given a transfusion, then do not consider this occupant to have had blood given. Whenever an occupant is "taken to surgery" researchers should be alert to the possibility that a blood transfusion occurred. Whenever a transfusion occurs, select the number of units of blood given.

Yes, blood given, amount not specified
is used when this occupant was given blood, but the amount was not specified.

Unknown if blood given
Use this when the occupant is:

- injured and treated at a medical facility but it cannot be determined if blood was given.
- hospitalized ***and*** the occupant's records are inconclusive regarding whether blood was given;
- taken to surgery, regardless of hospitalization (*e.g.*, died prior to being hospitalized), ***and*** the occupant's records are inconclusive regarding whether blood was given; or
- hospitalized ***or*** taken to surgery ***and*** the medical records are pending.

ARTERIAL BLOOD GASES -- ABG (HCO3)

Screen Name: ABG (HCO3)

SAS Data Set: **OA**
SAS Variable: **BICARB**

Element Attributes:

0	Not injured
1	Injured, ABGs not measured or reported
2-50	ABG=2, 3, 4, , , …., 50
96	ABGs reported, HCO_3 unknown
97	Injured, details unknown
99	Unknown if injured

Source: Zone Center determined from official medical records.

Remarks:

The table below presents the normal measures of arterial blood gases followed by the definitions of these measures and other keywords.

Arterial Blood Gases (ABGs)

Measure	Normal	Respiratory Acidosis	Respiratory alkalosis	Metabolic acidosis	Metabolic alkalosis
pH	**7.35 to 7.45**	**Normal or Decreased**	**Increased**	**Decreased**	**Increased**
PO_2	**90 to 95 mm Hg**	**Decreased**	**Altered**	**Normal or increased**	**Normal or decreased**
PCO_2	**34 to 46 mm Hg**	**Increased**	**Decreased**	**Decreased**	**Increased**
HCO_3	**24 to 26 mEq/L**	**Increased**	**Decreased**	**Decreased**	**Increased**
RR	**10/min to 20/min**	**Irregular**	**Altered**	**Increased**	**Decreased**

Definitions of Measures

pH — the symbol relating the hydrogen ion (H^+) concentration or activity of a solution to that of a given standard solution. Numerically the pH is approximately equal to the negative logarithm of H^+ concentration expressed in molarity pH 7 is neutral; above it alkalinity increases and below it acidity increases.

PO_2, pO_2, Po_2	oxygen partial pressure (tension).
PCO_2, pCO_2, Pco_2	carbon dioxide partial pressure or tension.
HCO_3	bicarbonate radical.
RR	respiratory rate.

Alphabetical Definitions of Keywords

acidosis	(as"i-do′sis) — a pathologic condition resulting from accumulation of acid or depletion of the alkaline reserve (bicarbonate content) in the blood and body tissues, and characterized by an increase in hydrogen ion concentration (decrease in pH). metabolic a. — a disturbance in which the acid-base status of the body shifts toward the acid side because of loss of base or retention of noncarbonic, or fixed (nonvolatile), acids; called also nonrespiratory a. respiratory a. — a state due to excess retention of carbon dioxide in the body; called also hypercapnic a.
alkali	(al′kah-li) — any of a class of compounds which form soluble soaps with fatty acids ... and form soluble carbonates.
alkalosis	(al"kah-lo′sis) — a pathologic condition resulting from accumulation of base, or from loss of acid without comparable loss of base in the body fluids, and characterized by decrease in hydrogen ion concentration (increase in pH). metabolic a. — a disturbance in which the acid-base status of the body shifts toward the alkaline side because of retention of base or loss of noncarbonic, or fixed (nonvolatile), acids. respiratory a. — a state due to excess loss of carbon dioxide from the body.
anion	(an′i-on) — an ion carrying a negative charge owing to a surplus of electrons.
bicarbonate	(bi-kar′bo-nāt) — any salt containing the HCO_3- anion. blood b. — the bicarbonate of the blood, an index of the alkali reserve.
ion	(i′on) — an atom or radical having a charge of positive (cation) or negative (anion) electricity owing to the loss (positive) or gain (negative) of one or more electrons.
mEq/L	milliequivalent per liter: a milliequivalent is the number of grams of a solute contained in one milliliter of a normal solution; therefore, the normal range for the bicarbonate of blood is 0.024–0.026 grams per milliliter. Thus, for a thousand milliliters, the normal values become 24 to 26 grams.

Medical records often provide ABG information in a condensed format. For example, a medical record presented the ABG information as follows.

ABG:7.56 / 25 / 171 / 100 %

This equates to: pH = 7.56; PCO_2 = 25; PO_2 = 171 -- at 100 percent saturation

In this example, the measure desired is not reported; use ABGs reported, HCO_3 unknown. The measure of interest is the HCO_3 (also referred to as the **bicarbonate**). Researchers must look carefully at their reported ABGs to insure that the desire measure is being obtained. The closeness in range between the normal values of HCO_3 and PCO_2, makes mistaking them easy. In general, when ABGs are reported as a set of three values, consider them to be the pH, PCO_2, and.PO_2.

Actual Values

are used to report the measured HCO_3 (bicarbonate) value obtained for this occupant. If multiple ABG HCO_3 values are reported, enter the lowest value.

Injured, ABGs not measured or reported

is used when the occupant is injured ***and***:

(1) was not treated at a medical facility

(2) was treated at a medical facility but no official medical records were obtained, or

(3) no ABG measures are reported in any of the occupant's obtained official medical records.

ABGs reported, HCO_3 unknown

is used when ABG value(s) are reported in this occupant's medical records but the HCO_3 measure is unknown.

1ST, 2ND, 3RD, 4TH, 5TH MEDICALLY REPORTED CAUSE OF DEATH

Screen Name: Medically Reported Cause of Death

SAS Data Set: **OA**
SAS Variable: **DCAUSE1, DCAUSE1 DCAUSE3 DCAUSE4, DCAUSE5**

Element Attributes:

0	Not fatal
	Select the injuries which have been identified that reportedly contributed to this occupant's death
996	Mode of death given but specific injuries are not linked to cause of death (specify)
997	Other result (includes fatal ruled disease) (specify)
999	Unknown

Source: Zone Center determined from official records

Remarks:

Select up to three specific injuries detailed in a medically reported "cause of death" statement.

This variable records the injury(s) which was/were determined by the medical professional completing the report, or by trained Zone Center injury coders using official medical records, to be the cause of death. A "cause of death" statement may appear at the beginning or end of an official medical record or it may also appear in a "diagnosis" section or body of a medical record. Like the coding rule for injuries, probable or possible causes of death are not used. If the occupant was killed and no official medical data was obtained, or the data obtained inadequately describes injuries which could have an affect on the occupant's death, then assign cause of death equal to **Unknown**. If the occupant was killed and acquired medical data do not provide a specific official medically reported cause of death, then the Zone Center injury coder will determine if injury data are sufficient to enter the 1st cause of death, and/or 2nd, and/or 3rd with an appropriate injury row(s).

Select the injury(s) which caused the death.

If the "cause of death" statement consist of nonspecific indefinite injuries (*e.g.*, multiple injuries of head, trunk, etc., blunt force injuries of the chest etc., massive injury, and multiple traumatic injuries) and injuries are detailed in the official medical records such that the cause of death can be logically determined, then choose up to three specific injuries using the following guidelines:

- Proceed by first considering specific AIS-6 injuries, followed by AIS-5, then AIS-4, then AIS-3.

  Note: AIS levels do not automatically identify an injury as the selected cause of death. For example, if the occupant has an AIS-6 burn injury but the medical says that the occupant was dead prior to the occupant's vehicle catching on fire, then burn was not the cause of death.

- Within each AIS level, determine the contribution the specific injury had on the occupant's chance of survival.

Mode of death given but specific injuries are not linked to cause of death (specify)

is used when it is determined that the occupant qualifies for Fatal in variable, Mortality, but specific injuries are not medically reported for the cause of death. The official medical report may give a mode of death such as (1) acute pulmonary embolis, (2) respiratory failure, (3) cardiac arrest, or (4) asphyxiation. This is also used when the cause of death is reported from complications or consequences of injuries.

Other result

is used when it is determined that the occupant qualifies for **Fatal-ruled disease** in **Mortality**.

If no cause of death is directly from an injury and there is no officially reported mode of death, then encode cause of death as Other result.

EMS

Screen Name: EMS Care

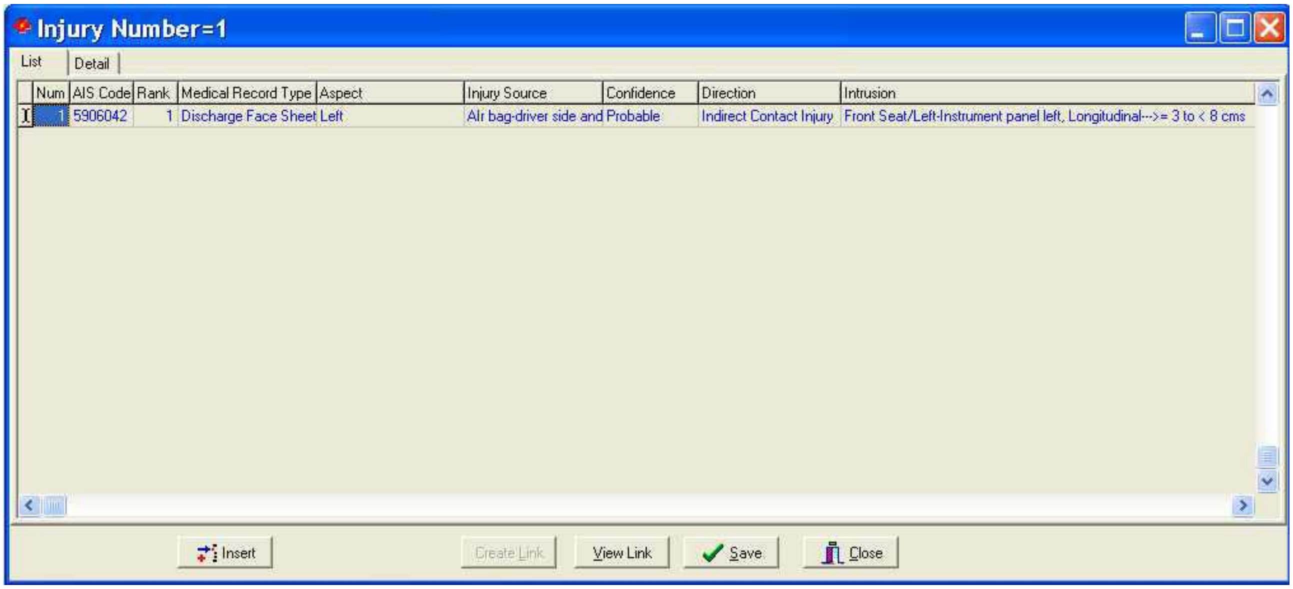
SAS Data Set: **OA**
SAS Variable: **EMSNO1, EMSNO2, EMSNO3, EMSNO4**

Element Attributes:

Source: Zone Center determined from official records

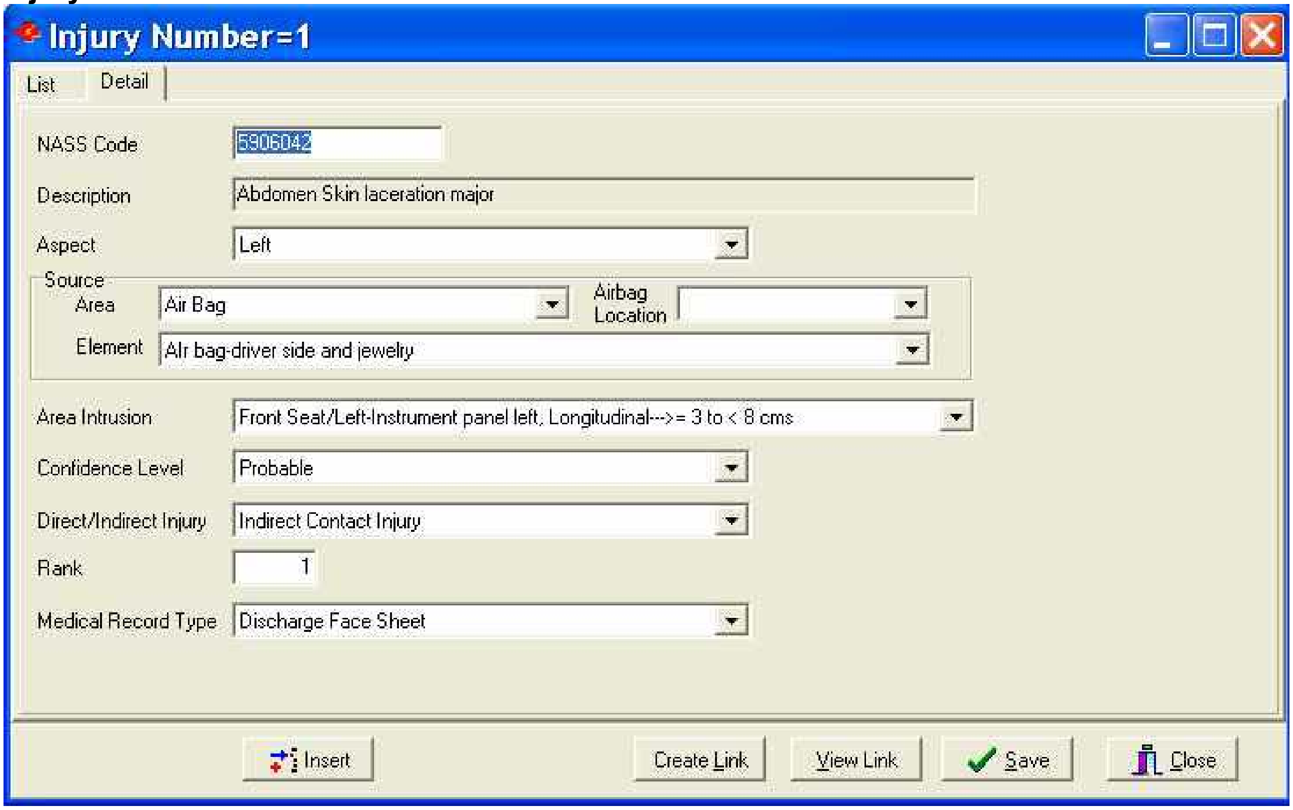
Remarks:

Injury List


Injury Number=1
List
Detail
Insert
Create Link
View Link
Save
Close

Num	AIS Code	Rank	Medical Record Type	Aspect	Injury Source	Confidence	Direction	Intrusion
1	5906042	1	Discharge Face Sheet	Left	AIr bag-driver side and	Probable	Indirect Contact Injury	Front Seat/Left-Instrument panel left, Longitudinal--->= 3 to < 8 cms

Injury Detail


Injury Number=1
List
Detail
Insert
Create Link
View Link
Save
Close

NASS Code: 5906042

Description: Abdomen Skin laceration major

Aspect: Left

Source

Area: Air Bag

Airbag Location:

Element: AIr bag-driver side and jewelry

Area Intrusion: Front Seat/Left-Instrument panel left, Longitudinal--->= 3 to < 8 cms

Confidence Level: Probable

Direct/Indirect Injury: Indirect Contact Injury

Rank: 1

Medical Record Type: Discharge Face Sheet

INJURY NUMBER

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **INJNO**

Element Attributes:
Sequential number assigned by system to each injury

Source: EDS

Remarks:

AIS CODE

Screen Name: NASS Code

SAS Data Set: **OI**
SAS Variable: **AISCODE**

Element Attributes:
7 digit numeric field describing injury

Source:

Remarks:

INJURY DESCRIPTION

Screen Name: Description

SAS Data Set: **OI**
SAS Variable: **AISCODE**

Element Attributes:
Standardized word description of injury

Source:

Remarks:

INJURY RANK

Screen Name: Rank

SAS Data Set: **OI**
SAS Variable: **RANK**

Element Attributes:

Rank of injury from highest to lowest as assigned by zone center

Source:

Remarks:

SOURCE OF INJURY DATA

Screen Name: Medical Record Type

SAS Data Set: **OI**
SAS Variable: **SOUDAT**

Element Attributes:

Enter the source of the injury information

1	Autopsy
2	Post ER medical report
3	Admission records
4	Discharge summary
5	Operative report
6	Radiographic
7	History/physical examination
8	ER records
9	Private physician
10	Lay coroner
11	EMS record
12	Interviewee
13	Police report
14	Other (specify)

Source: Element chosen

Remarks:

Autopsy

excludes records from lay, nonmedical personnel; they must be the result of an autopsy by a physician or other similarly qualified life scientist. Injuries from a non-invasive exam should not be grouped with those from a thorough autopsy report.

Private physician

refers to any physician (in private practice) who saw the injured person and who has records of that treatment (*i.e.*, other than hospital or autopsy records). Also included in this code are non-invasive (external) examinations conducted by a private physician or similarly qualified life scientist on a deceased victim and documented as other than a hospital record (*e.g.*, coroner's report).

Lay coroner report

is used if the injury data is contained in a report where a non-invasive examination of the deceased was performed a non-physician, or lay coroner.

Source of Injury Data (cont'd)

Page 1 of 2

EMS record

refers to a person certified by the state as trained in emergency medical service techniques. This code should not be used for ambulance attendants, police, or other personnel not trained in E.M.S. techniques.

Interviewee

refers to the person who was interviewed to get the information on this form (***not*** necessarily the person described on this form). The interviewee is defined in a log variable.

Other source

is used when data are obtained from an unofficial source different from those explicitly listed above (*e.g.*, chiropractors).

Police report

can be used, but only when ***no*** other source of injury information is available.

BODY REGION

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **REGION90**

Element Attributes:

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

Source: **SOUDAT** variable

Remarks:

The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its body region.

TYPE OF ANATOMIC STRUCTURE

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **STRUTYPE**

Element Attributes:

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

Source: **SOUDAT** variable

Remarks:

The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its type of anatomic structure and record it on the form.

SPECIFIC ANATOMIC STRUCTURE

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **STRUSPEC**

Element Attributes:

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

Source: **SOUDAT** variable

Remarks:

The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its specific anatomic structure and record it on the form.

LEVEL OF INJURY

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **INJLEVEL**

Element Attributes:

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.

Source: **SOUDAT** variable

Remarks:

The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its level of injury and record it on the form.

ABBREVIATED INJURY SCALE

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **AIS**

Element Attributes:

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

Source: **SOUDAT** variable

Remarks:

The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its A.I.S. value and record it on the form.

ASPECT

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **ASPECT90**

Element Attributes:

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

Source: **SOUDAT** variable

Remarks:
The 1993 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its aspect value and record it on the form.

INJURY SOURCE

Screen Name: N/A

SAS Data Set: **OI**
SAS Variable: **INJSOU**

Element Attributes:

Element Values:

FRONT

1	Windshield
2	Mirror
3	Sunvisor
4	Steering wheel rim
5	Steering wheel hub/spoke
6	Steering wheel combination of codes 004 and 005)
7	Steering column, transmission selector lever, other attachment
8	Cellular telephone or CB radio
9	Add on equipment *e.g.*, tape deck, air conditioner)
10	Left instrument panel and below
11	Center instrument panel and below
12	Right instrument panel and below
13	Glove compartment door
14	Knee bolster
15	Windshield including one or more of the following: front header, A A1/A2)-pillar, instrument panel, mirror, or steering assembly driver side only)
16	Windshield including one or more of the following: front header, A A1/A2)-pillar, instrument panel, or mirror (passenger side only)
17	Windshield reinforced by exterior object (specify)
19	Other front object (specify):
20	Sunvisor reinforced by exterior object (specify)

LEFT SIDE

51	Left side interior surface, excluding hardware or armrests
52	Left side hardware or armrest
53	Left A (A1/A2)-pillar
54	Left B-pillar
55	Other left pillar (specify):
56	Left side window glass
57	Left side window frame
58	Left side window sill
59	Left side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
60	Other left side object (specify):

Injury Source (cont'd)

RIGHT SIDE

101	Right side interior surface, excluding hardware or armrests
102	Right side hardware or armrest
103	Right A (A1/A2)-pillar
104	Right B-pillar
105	Other right pillar (specify):
106	Right side window glass
107	Right side window frame
108	Right side window sill
109	Right side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
110	Other right side object (specify):

INTERIOR

151	Seat, back support
152	Belt restraint webbing/buckle
153	Belt restraint B-pillar or door frame attachment point
154	Other restraint system component (specify):
155	Head restraint system
160	Other occupants (specify):
161	Interior loose objects
162	Child safety seat (specify):
163	Other interior object (specify):
164	Center console first row
165	Center console second row
166	Center console other row
167	Fold down armrest first row
168	Fold down armrest second row
169	Fold down armrest other row
570	Same occupant contact (ex. knee)
571	Interior loose object (specify)
572	Seat latch points for child restraints
573	Grab handles
574	Engine shroud/cover
575	Seatback trays

Injury Source (cont'd)

AIR BAG

170	Air bag-driver side
171	Air bag-driver side and eyewear
172	Air bag-driver side and jewelry
173	Air bag-driver side and object held
174	Air bag-driver side and object in mouth
175	Air bag compartment cover-driver side
176	Air bag compartment cover-driver side and eyewear
177	Air bag compartment cover-driver side and jewelry
178	Air bag compartment cover-driver side and object held
179	Air bag compartment cover-driver side and object in mouth
180	Air bag-passenger side
181	Air bag-passenger side and eyewear
182	Air bag-passenger side and jewelry
183	Air bag-passenger side and object held
184	Air bag-passenger side and object in mouth
185	Air bag compartment cover-passenger side
186	Air bag compartment cover-passenger side and eyewear
187	Air bag compartment cover-passenger side and jewelry
188	Air bag compartment cover-passenger side and object held
189	Air bag compartment cover-passenger side and object in mouth
190	Other air bag (specify)
195	Other air bag compartment cover (specify)

ROOF

201	Front header
202	Rear header
203	Roof left side rail
204	Roof right side rail
205	Roof or convertible top
206	Roof maplight/console
207	Sunroof/components'
208	Roll bar

FLOOR

251	Floor (including toe pan)
252	Floor or console mounted transmission lever, including console
253	Parking brake handle
254	Foot controls including parking brake

REAR

301	Backlight (rear window)
302	Backlight storage rack, door, etc.
303	Other rear object (specify):

ADAPTIVE (ASSISTIVE) DRIVING EQUIPMENT

401	Hand controls for braking/acceleration
402	Steering control devices (attached to OEM steering wheel)
403	Steering knob attached to steering wheel
405	Replacement steering wheel (*i.e.*, reduced diameter)
406	Joy stick steering controls
407	Wheelchair tie-downs
408	Modification to seat belts,(specify):
409	Additional or relocated switches, (specify):
410	Raised roof
411	Wall mounted head rest (used behind wheel chair)
412	Other adaptive device (specify):

EXTERIOR of OCCUPANT'S VEHICLE

451	Hood
452	Outside hardware (*e.g.*, outside mirror, antenna)
453	Other exterior surface or tires (specify):
454	Unknown exterior objects

EXTERIOR OF OTHER MOTOR VEHICLE

501	Front bumper
502	Hood edge
503	Other front of vehicle (specify):
504	Hood
505	Hood ornament
506	Windshield, roof rail, A-pillar
507	Side surface
508	Side mirrors
509	Other side protrusions (specify):
510	Rear surface
511	Undercarriage
512	Tires and wheels
513	Other exterior of other motor vehicle (specify):
514	Unknown exterior of other motor vehicle

OTHER VEHICLE OR OBJECT

551	Ground
570	Same occupant contact (ex. knee)
571	Interior loose object (specify)
572	Seat latch points for child restraints
573	Grab handles
574	Engine shroud/cover
575	Seatback trays
598	Other vehicle or object (specify):
599	Unknown vehicle or object

Injury Source (cont'd)

NONCONTACT INJURY

601	Fire in vehicle
602	Flying glass
603	Other noncontact injury source (specify):
604	Air bag exhaust gases
697	Injured, unknown source

Source: Zone Center determined--inputs include vehicle inspection, interviewee, and medical records.

Remarks:

INJURY SOURCE CONFIDENCE LEVEL

Screen Name: Confidence Level

SAS Data Set: **OI**
SAS Variable: **SOUCON**

Element Attributes:

1	Certain
2	Probable
3	Possible
9	Unknown

Source: Zone Center determined--inputs include vehicle inspection, interviewee, and medical records.

Remarks:

The intent of this variable is to give analysts an assessment of the injury coder's confidence in the injury source coded for a specific injury.

Certain
if there is no reasonable doubt in the mind of the injury coder, based on occupant location, crash dynamics, contact points, and injury mechanism.

Probable
in those situations where there is not a certainty based on the factors noted above for code "1" (Certain).

Possible
if there is no supporting physical evidence but all factors point to an area of the vehicle or an object as the injury source.

Unknown
if the injury source is **Injured, unknown source**.

DIRECT/INDIRECT INJURY

Screen Name: Direct/Indirect Injury

SAS Data Set: **OI**
SAS Variable: **DIRINJ**

Element Attributes:

1	Direct contact injury
2	Indirect contact injury
3	Noncontact injury
4	Air bag related injury
7	Injured, unknown source

Source: Zone Center determined--inputs include vehicle inspection, interviewee, and medical records.

Remarks:

The distinction between direct and indirect is covered in greater detail in NASS Injury Coding Procedures.

Direct contact injury

if the coded injury results from a force impacted directly on the injured Body Region by the component/object coded as the Injury Source (OI12 et al.).

The inury can not have been a result of the air bag system “flinging” the arm, head, hand, etc., into contact with the injury source that is being coded for this injury. If it has, code the injury as an air bag related injury (“4”).

Indirect contact injury

if the coded injury results from a force ***transmitted*** from the component/object coded as the Injury Source (OI12 et al.) through another Body Region to the injured Body Region (*e.g.*, knee contacts dash, force transmitted through knee and femur causing a fractured pelvis).

If an occupant's Body Region (OI06 et al.) impacts an object producing an injury to the same Body Region, but the force was transmitted through the occupant's eyeglass, objects in the person's pocket, etc., code the injury as a direct contact ("1")

The inury can not have been a result of the air bag system “flinging” the arm, head, hand, etc., into contact with the injury source that is being coded for this injury. If it has, code the injury as an air bag related injury (“4”).

Noncontact injury

is used when the respective 0I12 et al. equals **Fire in vehicle**, **Flying glass**, **Other noncontact injury source**, or **Air bag exhaust gases**.

Direct/Indirect Injury

Page 1 of 2

Air bag related injury

is used when the air bag system “flings” the arm, head, hand, etc., into contact with the injury source that is being coded for this injury. If the inury is caused directly from contact with an air bag system component then choose **direct contact injury**, or **indirect contact injury**.

Injured, unknown source

is used whenever the Injury Source is coded **Injured, unknown source**.

OCCUPANT AREA INTRUSION NUMBER

Screen Name: Area Intrusion

SAS Data Set: **OI**
SAS Variable: **INTRUNO**

Element Attributes:

Choose from listed intrusions

00	No intrusion or injury not associated with a documented intrusion
99	Unknown

Source: Zone Center determined--inputs include vehicle inspection, interviewee, and medical records.

Remarks:

No intrusion

when the Injury Source is not caused by an intruding component or when there are no intrusions coded on the Interior Vehicle Form.

Unknown

when the injury source is coded unknown ***and*** at least one intrusion is present. If the rare situation exists where an injury coder cannot say what the injury source is, but can say definitely that none of the intruding components could possibly have produced the injury, then code **No intrusion**. In addition, use this code when the vehicle is not inspected or when the vehicle had been repaired prior to inspection.

For all other situations, code the row number of the intruding component which caused the injury. The Intruding Component should be the same or a part of the injury source coded for this injury row.

EMERGENCY MEDICAL SERVICE (EMS) OVERVIEW

Emergency Medical Service (EMS) personnel are integral to the survivability of the people involved in crashes. The following variables attempt to collect some basic information on their involvement with ECDS crashes.

Information is required for all units that respond to the scene of the crash and administer care or transport any occupants. Correspondingly any occupant who receives care or is transported must have information added.

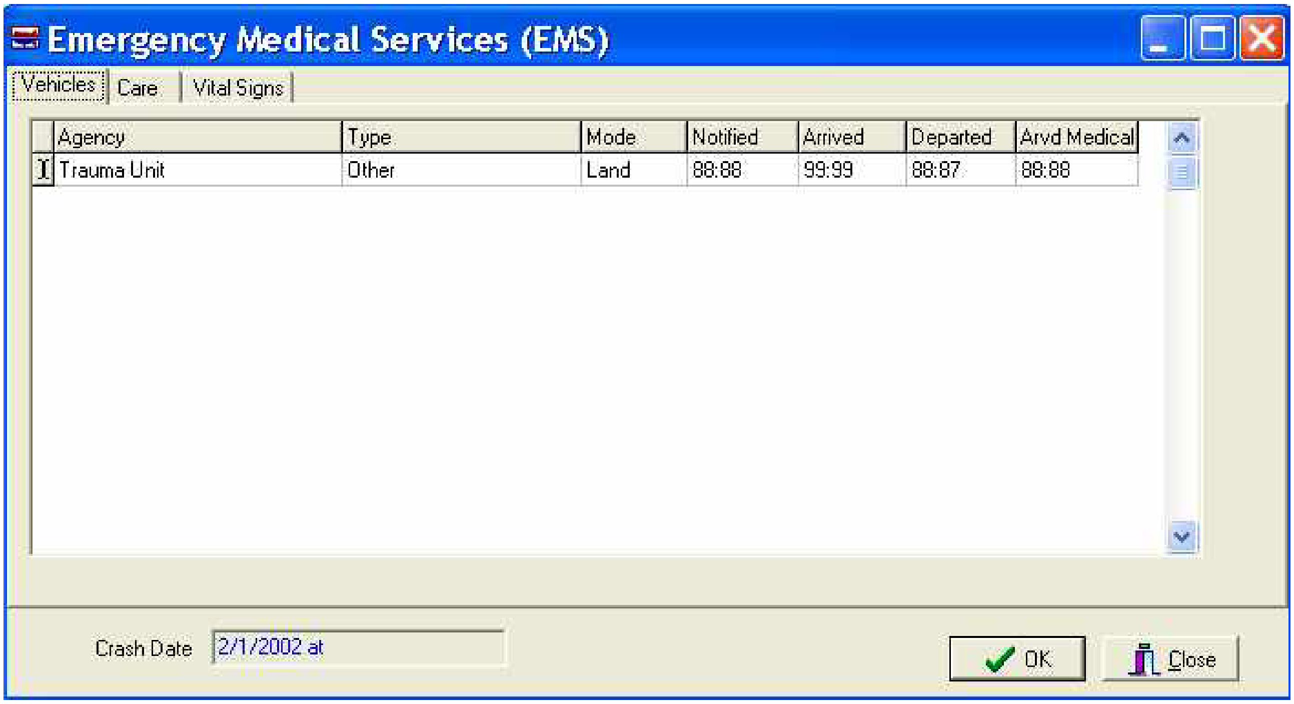
ANY TIME THERE IS INFORMATION THAT AN EMERGENCY UNIT RESPONDED TO THE SCENE OF THE CRASH AN EMS RECORD SHOULD BE REQUESTED FOR EACH OCCUPANT WITH A PAR REPORTED INJURY.

Any time an EMS unit responds to the scene of a crash, all crash involved persons are deemed to receive care if a run sheet is filled out for them.

Please note that there is only **ONE NOTIFICATION TIME** and **ONE ARRIVAL TIME** for a crash.

Do not collect EMS information for those occupants who are declared dead at the scene of the crash. These occupants will have **Treatment** coded as **No Treatment** and **Mortality** coded as **Fatal** or **Fatal Ruled Disease.**

Vehicles


Emergency Medical Services (EMS)
Vehicles
Care
Vital Signs
OK
Close

Agency	Type	Mode	Notified	Arrived	Departed	Arvd Medical
Trauma Unit	Other	Land	88:88	99:99	88:87	88:88

Crash Date 2/1/2002 at

[EMS UNIT NUMBER]

Screen Name: N/A

SAS Data Set: **EMS**
SAS Variable: **EMSNO (EMS data set);**
EMSNO1, EMSNO2, EMSNO3, EMSNO4 (OA data set)

Element Attributes:
Derived number of EMS Unit

Source: Derived from entered data by the data entry system.

Remarks:

The number of the EMS unit. This is derived by the data entry system.

RESPONDING AGENCY

Page 1 of 2

Screen Name: Responding Agency

SAS Data Set: **EMS**
SAS Variable: **EMSTYPE**

Element Attributes:

1	Fire Department
2	Rescue Squad
3	Police Department
4	Trauma Unit
5	Disaster Unit
6	Ambulance Service Unit
7	Hospital
8	Mortuaries/Funeral Home
98	Other, Specify
99	Unknown

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

Indicate the responding agency of the EMS vehicle. The classification of that vehicle will be entered under **EMS Form/Vehicles/ Responding Emergency Vehicle Type.**

Fire Department
Any vehicle that belongs to a fire department will be classified here.

Rescue Squad
Make this selection only if it is not associated with a fire department, police department, or hospital.

Police Department
Any vehicle that belongs to a police department will be classified here.

Trauma Unit
All trauma units that cannot be classified as a fire department, police department or hospital will fall here.

Disaster Unit
This will primarily occur during some national disaster.

Responding Agency (cont'd)

Remarks:

Ambulance Service Unit
An ambulance not otherwise connected with any other type will be entered here.

Hospital
Any unit that belongs to a hospital will be classified here.

Mortuaries/Funeral Home
In some very rural areas, the only unit available may be from a mortuary or funeral home. In those cases, make this selection.

Other, Specify

Unknown

RESPONDING EMERGENCY VEHICLE TYPE

Screen Name: Type of Vehicle

SAS Data Set: **EMS**
SAS Variable: **EMSVTYPE**

Element Attributes:

1	Ambulance
2	Fire Truck/Apparatus
8	Other
9	Unknown

Source: EMS records, Emergency room records, PAR

Remarks:

This variable captures information irrespective of the operating authority or organization that is sponsoring/running the vehicle. Thus a fire department or hospital that uses an ambulance for EMS will be coded as **Ambulance**.

Ambulance
An ambulance is a vehicle that is specifically designed to provide care and transport people. An ambulance run by a Fire department should be included here. Helicopters/planes should be included here.

Fire Truck/Apparatus
Includes any vehicle other than an ambulance run by the Fire department.

Other, specify
Any other unit not covered above will be entered here. This is very unlikely to occur.

Unknown

TRANSPORTATION MODE

Screen Name: Mode

SAS Data Set: **EMS**
SAS Variable: **EMSMODE**

Element Attributes:

1	Land
2	Air

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

Indicate what type of EMS vehicle came to the crash scene or transfer vehicle. Assume it is a road vehicle, unless contrary information is present.

Land

Air

FIRST NOTIFICATION TIME

Screen Name: Notification Time

SAS Data Set: **EMS**
SAS Variable: **NOTTIME**

Element Attributes:

	Enter the EMS notification time in military time format.
8888	Not Applicable
9999	Unknown

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

This variable indicates the **earliest time** that **ANY vehicle was notified** to come to the crash scene. The notification can be made by any source (police, involved persons, witnesses, etc.).

There will be only ONE notification time for a crash

Indicate the earliest time that any unit, or the EMS notification system was notified to come to the crash scene for any occupant in the crash. It will be the earliest of the times listed below.

Time incident reported (e.g., received by 911)
Time dispatch notified
Time EMS unit notified
Time unit responds

FIRST ARRIVAL TIME

Screen Name: Arrival Time

SAS Data Set: **EMS**
SAS Variable: **ARRTIME**

Element Attributes:

	Enter the EMS notification time in military time format.
8888	Not Applicable
9999	Unknown

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

This variable indicates the earliest time that ANY vehicle arrived at the crash scene.

There will be only ONE arrival time for a crash.

Indicate the earliest time that any unit arrived at the crash scene.

Indicate the time that the EMS unit stops physical motion at the scene. If an individual EMT arrives at the scene by private vehicle, that time is NOT the recorded value for this variable.

TIME OF DEPARTURE FROM THE SCENE

Screen Name: Departed

SAS Data Set: **EMS**
SAS Variable: **DEPTIME**

Element Attributes:

	Enter the EMS departure time in military time format.
8886	Transport refused
8887	Not transported
8888	Not Applicable
9999	Unknown

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

Enter the time that the unit departed for the treatment unit or transfer vehicle.

8886 Transport refused
Use this attribute when a person refuses transport to a treatment facility, regardless of treatment level at the crash site.

8887 Not transported
Use this attribute for instances other than transport being refused. This generally will include those cases when the EMTs see no need for transport.

8888 Not applicable
Units which just provide treatment at the crash site and do not transport occupants are entered as **Not applicable .**

Units which do not respond to the crash site, but do receive patient(s) at a transfer point in order to transfer them to a treatment facility, are entered as **Not Applicable** .

9999 Unknown
Use this attribute for instances where the time of departure cannot be determined from any source.

ARRIVED AT MEDICAL FACILITY

Screen Name: Arvd Medical

SAS Data Set: **EMS**
SAS Variable: **MEDTIME**

Element Attributes:

	Enter the EMS arrival time in military time format.
8888	Not Applicable
9999	Unknown

Source: EMS records, Emergency room records, PAR, interviewee

Remarks:

Enter the time that the unit with the occupant arrived at the treatment facility.

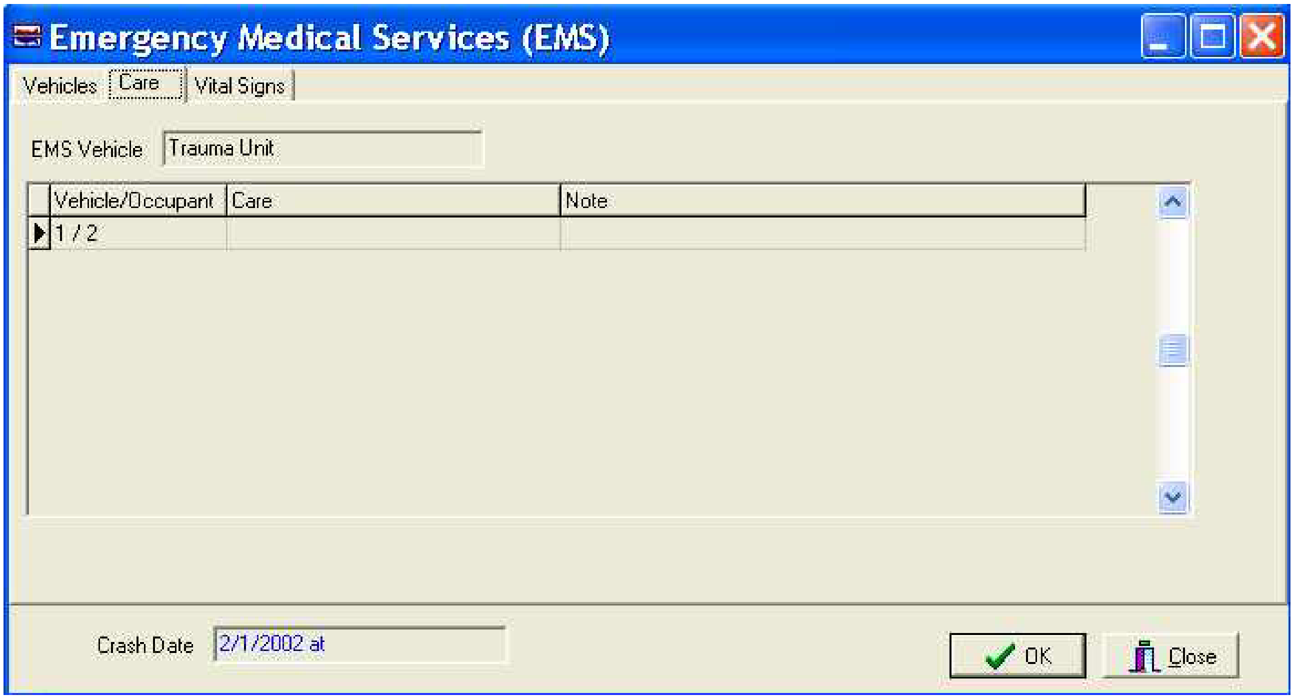
This may be the unit that responded to the crash site or a unit which received the occupant at a point between the crash site and the treatment facility .

8888 Not applicable
Units which just provide treatment at the crash site and do not transport occupants are entered as **Not applicable .**

Units which leave the scene and only transport occupant(s) to a transfer vehicle are entered as **Not applicable** .

9999 Unknown
Use this attribute for instances where the time of departure cannot be determined from any source.

EMS Care


Emergency Medical Services (EMS)
Vehicles
Care
Vital Signs
OK
Close

EMS Vehicle: Trauma Unit

	Vehicle/Occupant	Care	Note
▶	1 / 2		

Crash Date: 2/1/2002 at

Select edit/insert from the main menu. A new screen appears (see below) from which you select Vehicle #, Occupant # and Care.

VEHICLE #.

Screen Name: Vehicle #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:
Enter the vehicle # for the occupant being reported on

Source: EMS records, Emergency room records, PAR

Remarks:

OCCUPANT #

Screen Name: Occupant #

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Enter the occupant # for the occupant being reported on

Source: EMS records, Emergency room records, PAR

Remarks:

TYPE OF EMS CARE ADMINISTERED

Screen Name: Type of Care

SAS Data Set: **OA**
SAS Variable: **CARETYPE1, CARETYPE2, CARETYPE3, CARETYPE4**

Element Attributes:

0	No Care Administered
1	Basic Life Support
2	Advanced Life Support
7	Care administered, type unknown
9	Unknown if care administered

Source: EMS records, Emergency room records, PAR

Remarks:

For this variable, the taking of a pulse, blood pressure, or just the general assessment of a person's health is considered care. Therefore all crash involved persons receive care from any EMS unit at the scene. This minimal level of care is considered **Basic Life Support.** However, not all persons are transported, and some persons refuse transport.

Indicate what type of EMS care was administered:

No Care Administered
Select this when this occupant was transported but did not receive any treatment **including monitoring of vital signs.**

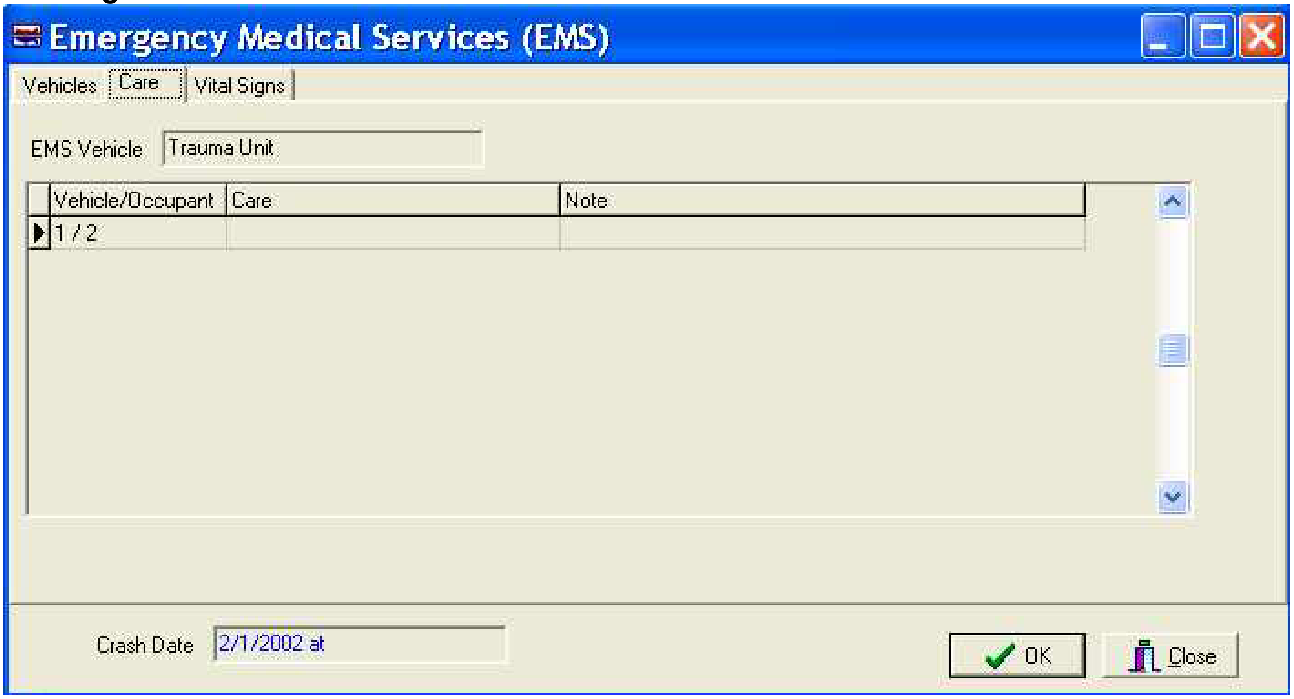
Basic Life Support
Includes non-invasive care such as stabilizing the patient, stop bleeding, and opening of air way, vitals, and basic CPR.

Advanced Life Support
In addition to the care listed under **Basic Life Support**, this includes invasive procedures (IV Fluids, intubation), burn care, emergency cardiac care/CPR (use of defibrillator).

Care Administered, Type Unknown
Use this attribute in instances where treatment was definitely administered, e.g. severity of injuries but NO details are available.

Unknown if Care Administered
Use if there is evidence that EMS responded to the crash site but no further information is available about this occupant and the police crash report assigns this occupant an injury code of K, A, B or C.

Vital Signs


Emergency Medical Services (EMS)
Vehicles
Care
Vital Signs
OK
Close

EMS Vehicle: Trauma Unit

Vehicle/Occupant	Care	Note
1 / 2		

Crash Date: 2/1/2002 at

[VITAL SIGN NUMBER]

Screen Name: N/A

SAS Data Set: **VSIGN**
SAS Variable: **VSIGNO**

Element Attributes:

Sequentially numbered by system

Source: EMS and other medical records

Remarks:

DATE OF READING

Screen Name: Date

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

Date (MM/dd/yyyy)

Source: EMS records

Remarks:

Enter the date that the vital signs readings were taken. If the date on the reading grid in the EMS records is blank, use the incident date recorded on the EMS form.

TIME OF READING

Screen Name: Time

SAS Data Set: **N/A**
SAS Variable: **N/A**

Element Attributes:

	Enter time, in military time format, for the vital signs reading that was taken
9999	Unknown

Source: EMS records

Remarks:

Enter the time that the vital signs readings were taken

9999 Unknown
Enter 9 in the first space of the variable, the program will fill in the remainder of the attribute.

EMS FORM VITAL SIGNS

[ELAPSED TIME SINCE CRASH OF VITAL TIME READING]

Screen Name:

SAS Data Set: **VSIGN**
SAS Variable: **VTIMEDIF**

Element Attributes:

	Number of minutes since crash when vital sign reading is taken
9999	Unknown

Source: EMS records

Range:

Remarks:

Information is comptued by system relating to date and time of crash as compared to date and time of vital sign reading.

PULSE

Screen Name: Pulse

SAS Data Set: **VSIGN**
SAS Variable: **PULSE**

Element Attributes:

0-300		Enter pulse of patient
997	P	Palpable
999	U	Unknown

Source: EMS records

Remarks:

Enter the recorded pulse count of the patient. Range is 0-300.

P Palpable
Enter P (the rest of the word is automatically filled in) when palpable is used in the EMS record.

U Unknown
Enter U (the rest of the word is automatically filled in) when there is no recorded value for pulse.

SYSTOLIC BLOOD PRESSURE

Screen Name: Systolic Systolic Blood Pressure

SAS Data Set: **VSIGN**
SAS Variable: **SYST**

Element Attributes:

0-300		Enter systolic value for patient
997	P	Palpable
999	U	Unknown

Source: EMS records

Remarks:

Enter the recorded systolic pressure value of the patient. Range is 0-300.

P Palpable
Enter P (the rest of the word is automatically filled in) when palpable is used in the EMS record.

U Unknown
Enter U (the rest of the word is automatically filled in) when there is no recorded value for systolic blood pressure.

DIASTOLIC BLOOD PRESSURE

Screen Name: Diastolic

SAS Data Set: **VSIGN**
SAS Variable: **DIAST**

Element Attributes:

0-300		Enter diastolic value for patient
997	P	Palpable
999	U	Unknown

Source: EMS records

Remarks:

Enter the recorded diastolic pressure value of the patient. Range is 0-300.

P Palpable
Enter P (the rest of the word is automatically filled in) when palpable is used in the EMS record.

U Unknown
Enter U (the rest of the word is automatically filled in) when there is no recorded value for diastolic blood pressure.

RESPIRATORY RATE

Screen Name: Respiratory Rate

SAS Data Set: **VSIGN**
SAS Variable: **REPRATE**

Element Attributes:

		Enter the respiratory rate of the patient
997	A	Agonal
999	U	Unknown

Source: EMS records

Remarks:

Enter the recorded diastolic pressure value of the patient. Range is 0-???

A Agonal
Enter A (the rest of the word is automatically filled in) when agonal is used in the EMS record.

U Unknown
Enter U (the rest of the word is automatically filled in) when there is no recorded value for respiratory rate.

SOURCE OF VITAL SIGNS

Screen Name: Source

SAS Data Set: **VSIGN**
SAS Variable: **VSOURCE**

Element Attributes:
Enter the source of the vital sign information

2	Post ER medical report
3	Admission records
4	Discharge summary
5	Operative report
7	History/physical examination
8	ER records
9	Private physician
11	EMS record
13	Police report
14	Other (specify)

Source: Medical records

Remarks:

Enter the source of the vital sign information

MAKE MODEL APPENDIX

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
ACURA	54	CL	35
ACURA	54	INTEGRA	31
ACURA	54	LEGEND	32
ACURA	54	MDX	421
ACURA	54	NSX	33
ACURA	54	OTHER AUTOMOBILE	398
ACURA	54	OTHER LIGHT TRUCK	498
ACURA	54	RL	32
ACURA	54	RSX	38
ACURA	54	SLX	401
ACURA	54	TL	35
ACURA	54	TSX	39
ACURA	54	UNKNOWN AUTOMOBILE	399
ACURA	54	UNKNOWN TYPE LIGHT TRUCK	499
ACURA	54	UNKNOWN VEHICLE	999
ACURA	54	VIGOR	34
ALFA ROMEO	31	164	35
ALFA ROMEO	31	GTV-6	34
ALFA ROMEO	31	OTHER AUTOMOBILE	398
ALFA ROMEO	31	SPIDER	31
ALFA ROMEO	31	SPORTS SEDAN	32
ALFA ROMEO	31	SPRINT SPECIAL	33
ALFA ROMEO	31	UNKNOWN AUTOMOBILE	399
ALFA ROMEO	31	UNKNOWN VEHICLE	999
AM GENERAL	3	BUS - REAR ENGINE/FLAT FRONT	983
AM GENERAL	3	DISPATCHER	401
AM GENERAL	3	DISPATCHER	466
AM GENERAL	3	HUMMER H1/H2	421
AM GENERAL	3	MEDIUM/HEAVY TRUCK	884
AM GENERAL	3	OTHER BUS	988
AM GENERAL	3	OTHER LIGHT TRUCK	498
AM GENERAL	3	OTHER MEDIUM/HEAVY TRUCK	898
AM GENERAL	3	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
AM GENERAL	3	UNKNOWN BUS TYPE	989
AM GENERAL	3	UNKNOWN LIGHT TRUCK	499
AM GENERAL	3	UNKNOWN MEDIUM/HEAVY TRUCK	899
AM GENERAL	3	UNKNOWN VEHICLE	999
AMC/AMERICAN MOTORS	1	AMBASSADOR	3
AMC/AMERICAN MOTORS	1	AMX	5
AMC/AMERICAN MOTORS	1	EAGLE	9
AMC/AMERICAN MOTORS	1	EAGLE SX-4	10
AMC/AMERICAN MOTORS	1	HORNET/CONCORD	7
AMC/AMERICAN MOTORS	1	JAVELIN	6
AMC/AMERICAN MOTORS	1	OTHER AUTOMOBILE	398
AMC/AMERICAN MOTORS	1	PACER	4
AMC/AMERICAN MOTORS	1	RAMBLER/AMERICAN	1
AMC/AMERICAN MOTORS	1	REBEL/MATADOR	2
AMC/AMERICAN MOTORS	1	SPIRIT/GREMLIN	8
AMC/AMERICAN MOTORS	1	UNKNOWN AUTOMOBILE	399
AMC/AMERICAN MOTORS	1	UNKNOWN VEHICLE	999
ASTON MARTIN	69	LAGONDA	31
ASTON MARTIN	69	OTHER AUTOMOBILE	31
ASTON MARTIN	69	SALOON	31
ASTON MARTIN	69	UNKNOWN AUTOMOBILE	31
ASTON MARTIN	69	VANTAGE	31
ASTON MARTIN	69	VOLANTE	31
AUDI	32	100/A6	32

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
AUDI	32	200	37
AUDI	32	4000	34
AUDI	32	5000	35
AUDI	32	80/90	36
AUDI	32	A3	43
AUDI	32	A4	42
AUDI	32	A8	44
AUDI	32	ALLROAD	47
AUDI	32	CABRIOLET	41
AUDI	32	COUPE QUATTRO	39
AUDI	32	FOX	33
AUDI	32	OTHER AUTOMOBILE	398
AUDI	32	OTHER LIGHT TRUCK	498
AUDI	32	Q7	401
AUDI	32	S4/S6	40
AUDI	32	S8	46
AUDI	32	SUPER 90	31
AUDI	32	TT	45
AUDI	32	UNKNOWN AUTOMOBILE	399
AUDI	32	UNKNOWN LIGHT TRUCK	499
AUDI	32	UNKNOWN VEHICLE	999
AUDI	32	V8 QUATTRO	38
AUSTIN / AUSTIN HEALEY	33	AMERICA	32
AUSTIN / AUSTIN HEALEY	33	HEALEY SPRITE	33
AUSTIN / AUSTIN HEALEY	33	HEALY 3000	34
AUSTIN / AUSTIN HEALEY	33	MARINA	31
AUSTIN / AUSTIN HEALEY	33	MINI	35
AUSTIN / AUSTIN HEALEY	33	OTHER AUTOMOBILE	398
AUSTIN / AUSTIN HEALEY	33	UNKNOWN AUTOMOBILE	399
AUSTIN / AUSTIN HEALEY	33	UNKNOWN VEHICLE	999
AUTO-UNION-DKW	98	MEDIUM/HEAVY - CBE	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY - COE/HIGH ENTRY	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY - COE/LOW ENTRY	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY - OTHER	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	802
AUTO-UNION-DKW	98	MEDIUM/HEAVY BASED MOTORHOME	802
AUTOCAR	98	MEDIUM/HEAVY - CBE	801
AUTOCAR	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	801
AUTOCAR	98	MEDIUM/HEAVY - COE/HIGH ENTRY	801
AUTOCAR	98	MEDIUM/HEAVY - COE/LOW ENTRY	801
AUTOCAR	98	MEDIUM/HEAVY - COE/LOW ENTRY	802
AUTOCAR	98	MEDIUM/HEAVY - OTHER	801
AUTOCAR	98	MEDIUM/HEAVY - UNKOWN ENGINE LOCATION	801
AUTOCAR	98	MEDIUM/HEAVY BASED MOTORHOME	801
AVANTI	29	OTHER AUTOMOBILE	1
AVANTI	29	UNKNOWN AUTOMOBILE	1
BERTONE	69	OTHER AUTOMOBILE	52
BERTONE	69	UNKNOWN AUTOMOBILE	52
BMW	34	1600, 2002	31
BMW	34	3 SERIES	34
BMW	34	5 SERIES	35
BMW	34	6 SERIES	36
BMW	34	7 SERIES	37
BMW	34	8 SERIES	38
BMW	34	BAVARIA SEDAN	33
BMW	34	COUPE	32

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
BMW	34	MOTORCYCLE (000-050CC)	701
BMW	34	MOTORCYCLE (051-124CC)	702
BMW	34	MOTORCYCLE (125-349CC)	703
BMW	34	MOTORCYCLE (350-449CC)	704
BMW	34	MOTORCYCLE (450-749CC)	705
BMW	34	MOTORCYCLE (750CC-OVER)	706
BMW	34	MOTORCYCLE (UNKNOWN CC)	709
BMW	34	OTHER AUTOMOBILE	398
BMW	34	OTHER LIGHT TRUCK	498
BMW	34	UNKNOWN AUTOMOBILE	399
BMW	34	UNKNOWN LIGHT TRUCK	499
BMW	34	UNKNOWN MOTORED CYCLE	799
BMW	34	UNKNOWN VEHICLE	999
BMW	34	X3	402
BMW	34	X5	401
BMW	34	Z3	39
BMW	34	Z4	42
BMW	34	Z8	40
BRICKLIN	69	OTHER AUTOMOBILE	32
BRICKLIN	69	UNKNOWN AUTOMOBILE	32
BROCKWAY	80	MEDIUM/HEAVE - COE/LOW ENTRY	882
BROCKWAY	80	MEDIUM/HEAVY - CBE	881
BROCKWAY	80	MEDIUM/HEAVY - COE HIGH ENTRY	883
BROCKWAY	80	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
BROCKWAY	80	MEDIUM/HEAVY - OTHER	898
BROCKWAY	80	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
BROCKWAY	80	MEDIUM/HEAVY TRUCK BASED MOTORHOME	850
BROCKWAY	80	UNKNOWN MEDIUM/HEAVY TRUCK	899
BSA	70	MOTORCYCLE (000-050CC)	701
BSA	70	MOTORCYCLE (051-124CC)	702
BSA	70	MOTORCYCLE (125-349CC)	703
BSA	70	MOTORCYCLE (350-449CC)	704
BSA	70	MOTORCYCLE (450-749CC)	705
BSA	70	MOTORCYCLE (750CC-OVER)	706
BSA	70	MOTORCYCLE (UNKNOWN CC)	709
BSA	70	OTHER MOTORED CYCLE	798
BSA	70	UNKNOWN MOTORED CYCLE	799
BUELL	29	MOTORCYCLE (000-051CC)	701
BUELL	29	MOTORCYCLE (051-124CC)	702
BUELL	29	MOTORCYCLE (125-349CC)	703
BUELL	29	MOTORCYCLE (350-449CC)	704
BUELL	29	MOTORCYCLE (450-749CC)	705
BUELL	29	MOTORCYCLE (750CC OR GREATER)	706
BUELL	29	MOTORCYCLE (UNKNOWN CC)	709
BUELL	29	OTHER MOTORED CYCLE	798
BUELL	29	UNKNOWN MOTORED CYCLE	799
BUICK	18	APOLLO/SKYLARK (73-76)	8
BUICK	18	CENTURY	7
BUICK	18	ELECTRA/ELECTRA 225/PARK AVENUE (91-ON)	3
BUICK	18	LACROSSE	22
BUICK	18	LESABRE/CENTURION/WILDCAT	2
BUICK	18	LUCERNE	23
BUICK	18	OPEL GT	33
BUICK	18	OPEL ISUZU	34
BUICK	18	OPEL KADETT	31
BUICK	18	OPEL MANTA	32
BUICK	18	OTHER AUTOMOBILE	398

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
BUICK	18	OTHER LIGHT TRUCK	498
BUICK	18	RAINIER	402
BUICK	18	REATTA	21
BUICK	18	REGAL	10
BUICK	18	REGAL (FWD)	20
BUICK	18	RENDEZVOUS	401
BUICK	18	RIVIERA	5
BUICK	18	ROADMASTER	4
BUICK	18	SKYHAWK	12
BUICK	18	SKYLARK (76-85)	15
BUICK	18	SOMERSET(85-87)/SKYLARK(86-ON)	18
BUICK	18	SPECIAL/SKYLARK (thru 1972)	1
BUICK	18	TERRAZA	441
BUICK	18	UNKNOWN AUTOMOBILE	399
BUICK	18	UNKNOWN LIGHT TRUCK	499
BUICK	18	UNKNOWN VEHICLE	999
CADILLAC	19	ALLANTE	9
CADILLAC	19	CATERA	17
CADILLAC	19	CIMARRON	16
CADILLAC	19	COMMERCIAL SERIES	6
CADILLAC	19	CTS	18
CADILLAC	19	DEVILLE/FLEETWOOD	3
CADILLAC	19	DTS	22
CADILLAC	19	ELDORADO	5
CADILLAC	19	ESCALADE	421
CADILLAC	19	ESCALADE ESV	431
CADILLAC	19	ESCALADE EXT	480
CADILLAC	19	LIMOUSINE	4
CADILLAC	19	OTHER AUTOMOBILE	398
CADILLAC	19	OTHER LIGHT TRUCK	498
CADILLAC	19	SEVILLE	14
CADILLAC	19	SRX	20
CADILLAC	19	STS	21
CADILLAC	19	UNKNOWN AUTOMOBILE	399
CADILLAC	19	UNKNOWN LIGHT TRUCK	498
CADILLAC	19	UNKNOWN VEHICLE	999
CADILLAC	19	XLR	19
CHECKER	29	AEROBUS	2
CHECKER	29	MARATHON	2
CHECKER	29	OTHER AUTOMOBILE	2
CHECKER	29	SUPERBA	2
CHECKER	29	TAXI	2
CHECKER	29	UNKNOWN AUTOMOBILE	2
CHEVROLET	20	ASTRO VAN	441
CHEVROLET	20	AVALANCHE	482
CHEVROLET	20	AVEO	39
CHEVROLET	20	BERETTA/CORSICA	19
CHEVROLET	20	BUS	981
CHEVROLET	20	C, K, R, V-SERIES PICKUP	481
CHEVROLET	20	CAMARO	9
CHEVROLET	20	CAVALIER	16
CHEVROLET	20	CELEBRITY	17
CHEVROLET	20	CHEVELLE/MALIBU (83-)	1
CHEVROLET	20	CHEVETTE	13
CHEVROLET	20	CITATION	15
CHEVROLET	20	COBALT	22
CHEVROLET	20	COLORADO	473

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
CHEVROLET	20	CORVAIR	6
CHEVROLET	20	CORVETTE	4
CHEVROLET	20	EL CAMINO	7
CHEVROLET	20	EQUINOX	404
CHEVROLET	20	FULLSIZE BLAZER (K, Tahoe)	421
CHEVROLET	20	G-SERIES VAN	461
CHEVROLET	20	GEO METRO	34
CHEVROLET	20	GEO STORM	35
CHEVROLET	20	GEO TRACKER	402
CHEVROLET	20	HHR	23
CHEVROLET	20	IMPALA/CAPRICE	2
CHEVROLET	20	LUMINA	20
CHEVROLET	20	LUMINA APV/VENTURE	442
CHEVROLET	20	LUV	472
CHEVROLET	20	MALIBU (1997+)	37
CHEVROLET	20	MEDIUM/HEAVY CBE	881
CHEVROLET	20	MEDIUM/HEAVY COE HIGH ENTRY	883
CHEVROLET	20	MEDIUM/HEAVY COE LOW ENTRY	882
CHEVROLET	20	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	884
CHEVROLET	20	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	890
CHEVROLET	20	MONTE CARLO ('70-'88) (RWD ONLY)	10
CHEVROLET	20	MONTE CARLO (1995+) (FWD ONLY)	36
CHEVROLET	20	MONZA	12
CHEVROLET	20	NOVA (-79)	8
CHEVROLET	20	NOVA/GEO PRIZM	32
CHEVROLET	20	OTHER AUTOMOBILE	398
CHEVROLET	20	OTHER BUS	988
CHEVROLET	20	OTHER LIGHT TRUCK	498
CHEVROLET	20	OTHER MEDIUM/HEAVY TRUCK	898
CHEVROLET	20	OTHER VEHICLE	998
CHEVROLET	20	P-SERIES VAN	466
CHEVROLET	20	S-10 BLAZER, BLAZER	401
CHEVROLET	20	S-10/T-10	471
CHEVROLET	20	SPECTRUM	31
CHEVROLET	20	SPRINT/GEO SPRINT	33
CHEVROLET	20	SSR	38
CHEVROLET	20	SUBURBAN	431
CHEVROLET	20	TRAILBLAZER (2002 and later)	403
CHEVROLET	20	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
CHEVROLET	20	UNKNOWN AUTOMOBILE	399
CHEVROLET	20	UNKNOWN BUS TYPE	989
CHEVROLET	20	UNKNOWN LIGHT TRUCK	499
CHEVROLET	20	UNKNOWN MEDIUM/HEAVY TRUCK	899
CHEVROLET	20	UNKNOWN VEHICLE	999
CHEVROLET	20	UPLANDER	444
CHEVROLET	20	VAN DERIVATIVE	470
CHEVROLET	20	VEGA	11
CHRYSLER	6	300M	51
CHRYSLER	6	CIRRUS	44
CHRYSLER	6	CONCORDE	41
CHRYSLER	6	CONQUEST	35
CHRYSLER	6	CORDOBA	9
CHRYSLER	6	CROSSFIRE	55
CHRYSLER	6	INTREPID (CANADIAN)	18
CHRYSLER	6	LASER	15
CHRYSLER	6	LEBARON	16
CHRYSLER	6	LEBARON GTS/GTC	17

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
CHRYSLER	6	LHS	42
CHRYSLER	6	NEON (EXPORT)	19
CHRYSLER	6	NEW YORKER ('83-'90)	14
CHRYSLER	6	NEW YORKER FIFTH AVENUE ('89)	10
CHRYSLER	6	NEW YORKER SALON	14
CHRYSLER	6	NEW YORKER/E CLASS/IMPERIAL/5TH AVENUE	14
CHRYSLER	6	NEWPORT	10
CHRYSLER	6	OTHER AUTOMOBILE	398
CHRYSLER	6	OTHER LIGHT TRUCK	498
CHRYSLER	6	PACIFICA	54
CHRYSLER	6	PROWLER	53
CHRYSLER	6	PT CRUISER	52
CHRYSLER	6	RAMPAGE 2.2 (CAR BASED PICKUP)	13
CHRYSLER	6	RWD ONLY-NEW YORKER/NEWPORT/5TH AVENU	14
CHRYSLER	6	SEBRING	43
CHRYSLER	6	TC (MASERATI SPORT)	31
CHRYSLER	6	TOWN AND COUNTRY	441
CHRYSLER	6	UNKNOWN AUTOMOBILE	399
CHRYSLER	6	UNKNOWN LIGHT TRUCK	499
CHRYSLER	6	UNKNOWN VEHICLE	999
CHRYSLER	6	VOYAGER	442
CITROEN	69	OTHER AUTOMOBILE	33
CITROEN	69	UNKNOWN AUTOMOBILE	33
CONSULIER	29	OTHER AUTOMOBILE	398
CONSULIER	29	UNKNOWN AUTOMOBILE	398
DAEWOO	64	LANOS	31
DAEWOO	64	LEGANZA	33
DAEWOO	64	NUBIRA	32
DAEWOO	64	OTHER AUTOMOBILE	398
DAEWOO	64	UNKNOWN AUTOMOBILE	399
DAEWOO	64	UNKNOWN VEHICLE	999
DAIHATSU	60	CHARADE	31
DAIHATSU	60	OTHER AUTOMOBILE	398
DAIHATSU	60	OTHER LIGHT TRUCK	498
DAIHATSU	60	ROCKY	401
DAIHATSU	60	UNKNOWN AUTOMOBILE	399
DAIHATSU	60	UNKNOWN LIGHT TRUCK	499
DAIHATSU	60	UNKNOWN VEHICLE	999
DELOREAN	69	OTHER AUTOMOBILE	34
DELOREAN	69	UNKNOWN AUTOMOBILE	34
DESOTO	29	OTHER AUTOMOBILE	398
DESOTO	29	UNKNOWN AUTOMOBILE	398
DESTA	69	OTHER AUTOMOBILE	48
DESTA	69	UNKNOWN AUTOMOBILE	48
DIAMOND REO/REO	81	MEDIUM/HEAVY - CBE	881
DIAMOND REO/REO	81	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
DIAMOND REO/REO	81	MEDIUM/HEAVY - COE/HIGH ENTRY	883
DIAMOND REO/REO	81	MEDIUM/HEAVY - COE/LOW ENTRY	882
DIAMOND REO/REO	81	MEDIUM/HEAVY - OTHER	898
DIAMOND REO/REO	81	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
DIAMOND REO/REO	81	MEDIUM/HEAVY TRUCK BASED MOTORHOME	850
DIAMOND REO/REO	81	UNKNOWN MEDIUM/HEAVY TRUCK	899
DIVCO	98	MEDIUM/HEAVY - CBE	803
DIVCO	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	803
DIVCO	98	MEDIUM/HEAVY - COE/HIGH ENTRY	803
DIVCO	98	MEDIUM/HEAVY - COE/LOW ENTRY	803
DIVCO	98	MEDIUM/HEAVY - OTHER	803

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
DIVCO	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	803
DIVCO	98	MEDIUM/HEAVY BASED MOTORHOME	803
DODGE	7	400	12
DODGE	7	600	14
DODGE	7	ARIES (K)	11
DODGE	7	ASPEN	6
DODGE	7	AVENGER	42
DODGE	7	B-SERIES VANS	461
DODGE	7	CALIBER	25
DODGE	7	CARAVAN	442
DODGE	7	CHALLENGER	5
DODGE	7	CHALLENGER (ALL IMPORTED)	33
DODGE	7	CHARGER (2006+)	24
DODGE	7	COLT (EXCLUDES VISTA)	34
DODGE	7	CONQUEST	35
DODGE	7	CORONET/CHARGER/MAGNUM	2
DODGE	7	D, W-SERIES PICKUP, W100-W350	481
DODGE	7	D50, COLT P/U, RAM 50/RAM 100	471
DODGE	7	DAKOTA	472
DODGE	7	DART	1
DODGE	7	DAYTONA	15
DODGE	7	DIPLOMAT	7
DODGE	7	DURANGO	422
DODGE	7	DYNASTY	18
DODGE	7	INTREPID	41
DODGE	7	LANCER	16
DODGE	7	MAGNUM	21
DODGE	7	MEDIUM BUS	981
DODGE	7	MEDIUM/HEAVY: CBE	881
DODGE	7	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
DODGE	7	MEDIUM/HEAVY: COE HIGH ENTRY	883
DODGE	7	MEDIUM/HEAVY: COE LOW ENGRY	882
DODGE	7	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	884
DODGE	7	MIRADA	9
DODGE	7	MONACO	40
DODGE	7	NEON	20
DODGE	7	OMNI/CHARGER	8
DODGE	7	OTHER AUTOMOBILE	398
DODGE	7	OTHER BUS	988
DODGE	7	OTHER LIGHT TRUCK	498
DODGE	7	OTHER MEDIUM/HEAVY TRUCK	898
DODGE	7	OTHER VEHICLE	998
DODGE	7	POLARA/MONACO/ROYAL MONACO	3
DODGE	7	RAIDER	401
DODGE	7	RAM	482
DODGE	7	RAMCHARGER	421
DODGE	7	RAMPAGE 2.2, GT, SPORT	13
DODGE	7	SHADOW	17
DODGE	7	SPIRIT	19
DODGE	7	SPRINTER	462
DODGE	7	ST REGIS	10
DODGE	7	STEALTH	39
DODGE	7	STRATUS	43
DODGE	7	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
DODGE	7	UNKNOWN AUTOMOBILE	399
DODGE	7	UNKNOWN BUS TYPE	989
DODGE	7	UNKNOWN LIGHT TRUCK	499

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
DODGE	7	UNKNOWN MEDIUM/HEAVY TRUCK	899
DODGE	7	UNKNOWN VEHICLE	999
DODGE	7	VAN DERIVATIVE	470
DODGE	7	VIPER	4
DODGE	7	VISTA	441
DUCATI	71	MOTORCYCLE (000-050CC)	701
DUCATI	71	MOTORCYCLE (051-124CC)	702
DUCATI	71	MOTORCYCLE (125-349CC)	703
DUCATI	71	MOTORCYCLE (350-449CC)	704
DUCATI	71	MOTORCYCLE (450-749CC)	705
DUCATI	71	MOTORCYCLE (750CC-OVER)	706
DUCATI	71	MOTORCYCLE (UNKNOWN CC)	709
DUCATI	71	OTHER MOTORED CYCLE	798
DUCATI	71	UNKNOWN MOTORED CYCLE	799
EAGLE	10	MEDALLION	44
EAGLE	10	OTHER AUTOMOBILE	398
EAGLE	10	OTHER LIGHT TRUCK	498
EAGLE	10	PREMIER	40
EAGLE	10	SUMMIT	34
EAGLE	10	SUMMIT WAGON	441
EAGLE	10	TALON	37
EAGLE	10	UNKNOWN AUTOMOBILE	399
EAGLE	10	UNKNOWN LIGHT TRUCK	499
EAGLE	10	UNKNOWN VEHICLE	999
EAGLE	10	VISION	41
EXCALIBER	29	OTHER AUTOMOBILE	398
EXCALIBER	29	UNKNOWN AUTOMOBILE	398
FERRARI	69	OTHER AUTOMOBILE	35
FERRARI	69	SUPERAMERICA	35
FERRARI	69	UNKNOWN AUTOMOBILE	35
FIAT	36	124 (COUPE/SEDAN)	31
FIAT	36	124 SPIDER/RACER	32
FIAT	36	128	35
FIAT	36	850 (COUPE/SPYDER)	34
FIAT	36	BRAVA - 131	33
FIAT	36	MEDIUM/HEAVY COE ENTRY POSITION UNKNOWN	890
FIAT	36	MEDIUM/HEAVY COE HIGH ENTRY	883
FIAT	36	MEDIUM/HEAVY COE LOW ENTRY	882
FIAT	36	OTHER AUTOMOBILE	398
FIAT	36	OTHER MEDIUM/HEAVY TRUCK	898
FIAT	36	STRADA	37
FIAT	36	UNKNOWN AUTOMOBILE	399
FIAT	36	UNKNOWN MEDIUM/HEAVY TRUCK	899
FIAT	36	UNKNOWN VEHICLE	999
FIAT	36	X-1/9	36
FORD	12	AEROSTAR	441
FORD	12	ASPIRE	36
FORD	12	BRONCO-FULLSIZE	421
FORD	12	CONTOUR	35
FORD	12	COURIER	472
FORD	12	CROWN VICTORIA	16
FORD	12	E-SERIES VANS	461
FORD	12	ENGLISH FORD	31
FORD	12	ESCAPE	402
FORD	12	ESCORT/EXP	13
FORD	12	EXCURSION	431
FORD	12	EXPEDITION	422

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
FORD	12	EXPLORER/BRONCO ii/BRONCO (-77)	401
FORD	12	F-SERIES PICKUP	481
FORD	12	F450/550 PICKUP >4536 GVWR	880
FORD	12	FAIRLANE	2
FORD	12	FAIRMONT	12
FORD	12	FALCON	1
FORD	12	FESTIVA	33
FORD	12	FIESTA	32
FORD	12	FIVE HUNDRED	21
FORD	12	FOCUS	37
FORD	12	FREESTAR	443
FORD	12	FREESTYLE	22
FORD	12	FUSION	23
FORD	12	GRANADA	11
FORD	12	GT	38
FORD	12	LASER	34
FORD	12	LTD II	5
FORD	12	LTD/CUSTOM/GALAXIE (ALL SIZES)	6
FORD	12	MAVERICK	8
FORD	12	MEDIUM BUS	981
FORD	12	MEDIUM/HEAVY CBE	881
FORD	12	MEDIUM/HEAVY COE HIGH ENTRY	883
FORD	12	MEDIUM/HEAVY COE LOW ENGRY	882
FORD	12	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
FORD	12	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	884
FORD	12	MUSTANG/MUSTANG II	3
FORD	12	OTHER AUTOMOBILE	398
FORD	12	OTHER BUS	988
FORD	12	OTHER LIGHT TRUCK	498
FORD	12	OTHER MEDIUM/HEAVY TRUCK	898
FORD	12	OTHER VEHICLE	998
FORD	12	PINTO	9
FORD	12	PROBE	18
FORD	12	RANCHERO	7
FORD	12	RANGER	471
FORD	12	SPORT TRAC	473
FORD	12	TAURUS	17
FORD	12	TEMPO	15
FORD	12	THUNDERBIRD (ALL SIZES)	4
FORD	12	TORINO/GRAN TORINO/ELITE	10
FORD	12	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
FORD	12	UNKNOWN AUTOMOBILE	399
FORD	12	UNKNOWN BUS TYPE	989
FORD	12	UNKNOWN LIGHT TRUCK	499
FORD	12	UNKNOWN MEDIUM/HEAVY TRUCK	899
FORD	12	UNKNOWN VEHICLE	999
FORD	12	VAN DERIVATIVE	470
FORD	12	WINDSTAR	442
FREIGHTLINER/WHITE	82	BUS CONVENTIONAL ENGINE OUT FRONT	981
FREIGHTLINER/WHITE	82	BUS FRONT ENGINE/FLAT FRONT	982
FREIGHTLINER/WHITE	82	BUS REAR ENGINE/FLAT FRONT	983
FREIGHTLINER/WHITE	82	M-LINE WALK IN VAN	470
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - CBE	881
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - COE/HIGH ENTRY	883
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - COE/LOW ENTRY	882
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - OTHER	898

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
FREIGHTLINER/WHITE	82	MEDIUM/HEAVY TRUCK BASED MOTORHOME	850
FREIGHTLINER/WHITE	82	OTHER BUS	988
FREIGHTLINER/WHITE	82	OTHER LIGHT TRUCK	498
FREIGHTLINER/WHITE	82	SPRINTER/ADVANTAGE	461
FREIGHTLINER/WHITE	82	UNKNOWN BUS TYPE	989
FREIGHTLINER/WHITE	82	UNKNOWN LIGHT TRUCK	499
FREIGHTLINER/WHITE	82	UNKNOWN LIGHT/MEDIUM/HEAVY TRUCK	899
FREIGHTLINER/WHITE	82	UNKNOWN VEHICLE	999
FWD	83	MEDIUM/HEAVY - CBE	881
FWD	83	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	898
FWD	83	MEDIUM/HEAVY - COE/HIGH ENTRY	883
FWD	83	MEDIUM/HEAVY - COE/LOW ENTRY	882
FWD	83	MEDIUM/HEAVY - OTHER	898
FWD	83	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
FWD	83	MEIDUM/HEAVY TRUCK BASED MOTORHOME	850
FWD	83	UNKNOWN MEDIUM/HEAVY TRUCK	899
GMC	23	C, K, R, V-SERIES PICKUP	481
GMC	23	CABALLERO/SPRINT	7
GMC	23	CANYON	472
GMC	23	FULLSIZE JIMMY/YUKON	421
GMC	23	G-SERIES VAN	461
GMC	23	JIMMY/TYPHOON/ENVOY	401
GMC	23	MEDIUM BUS	981
GMC	23	MEDIUM/HDAVY COE LOW ENTRY	882
GMC	23	MEDIUM/HEAVY CBE	881
GMC	23	MEDIUM/HEAVY COE HIGH ENTRY	883
GMC	23	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
GMC	23	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	884
GMC	23	OTHER AUTOMOBILE	398
GMC	23	OTHER BUS	988
GMC	23	OTHER LIGHT TRUCK	498
GMC	23	OTHER MEDIUM/HEAVY TRUCK	898
GMC	23	P-SERIES VAN	466
GMC	23	S15/T15/SONOMA	471
GMC	23	SAFARI (MINIVAN)	441
GMC	23	SUBURBAN	431
GMC	23	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
GMC	23	UNKNOWN AUTOMOBILE	399
GMC	23	UNKNOWN BUS TYPE	989
GMC	23	UNKNOWN LIGHT TRUCK	499
GMC	23	UNKNOWN MEDIUM/HEAVY TRUCK	899
GMC	23	UNKNOWN VEHICLE	999
GMC	23	VAN DERIVATIVE	470
GRUMMAN	25	BUS-FLAT FRONT, REAR ENGINE	983
GRUMMAN	25	LLV	441
GRUMMAN	25	MEDIUM/HEAVY TRUCK - CBE	881
GRUMMAN	25	MEDIUM/HEAVY TRUCK - COE HIGH ENTRY	883
GRUMMAN	25	MEDIUM/HEAVY TRUCK - COE LOW ENTRY	882
GRUMMAN	25	MEDIUM/HEAVY TRUCK ENTRY POSITION UNKNO	890
GRUMMAN	25	MEDIUM/HEAVY TRUCK UNKNOWN ENGINE LOCA	884
GRUMMAN	25	OTHER BUS	988
GRUMMAN	25	OTHER LIGHT TRUCK	498
GRUMMAN	25	OTHER MEDIUM/HEAVY TRUCK	898
GRUMMAN	25	STEP-IN VAN	442
GRUMMAN	25	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
GRUMMAN	25	UNKNOWN BUS TYPE	989

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
GRUMMAN	25	UNKNOWN LIGHT TRUCK	499
GRUMMAN	25	UNKNOWN MEDIUM/HEAVY TRUCK	899
GRUMMAN	25	UNKNOWN VEHICLE	999
HARLEY-DAVIDSON	72	MOTORCYCLE (000-050CC)	701
HARLEY-DAVIDSON	72	MOTORCYCLE (051-124CC)	702
HARLEY-DAVIDSON	72	MOTORCYCLE (125-349CC)	703
HARLEY-DAVIDSON	72	MOTORCYCLE (350-449CC)	704
HARLEY-DAVIDSON	72	MOTORCYCLE (450-749CC)	705
HARLEY-DAVIDSON	72	MOTORCYCLE (750CC-OVER)	706
HARLEY-DAVIDSON	72	MOTORCYCLE (UNKNOWN CC)	709
HARLEY-DAVIDSON	72	OTHER MOTORED CYCLE	798
HARLEY-DAVIDSON	72	UNKNOWN MOTORED CYCLE	799
HILLMAN	69	OTHER AUTOMOBILE	36
HILLMAN	69	UNKNOWN AUTOMOBILE	36
HINO	98	MEDIUM/HEAVY - CBE	806
HINO	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	806
HINO	98	MEDIUM/HEAVY - COE/HIGH ENTRY	806
HINO	98	MEDIUM/HEAVY - COE/LOW ENTRY	806
HINO	98	MEDIUM/HEAVY - OTHER	806
HINO	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	806
HINO	98	MEDIUM/HEAVY BASED MOTORHOME	806
HONDA	37	600	34
HONDA	37	ACCORD	32
HONDA	37	ATC/ATV (000-050CC)	731
HONDA	37	ATC/ATV (051-124CC)	732
HONDA	37	ATC/ATV (125-349CC)	733
HONDA	37	ATC/ATV (350CC-OVER)	734
HONDA	37	ATC/ATV (UNKNOWN CC)	739
HONDA	37	CIVIC/CRX/DEL SOL	31
HONDA	37	CR-V	402
HONDA	37	ELEMENT	403
HONDA	37	FCX	38
HONDA	37	FIT	39
HONDA	37	INSIGHT	37
HONDA	37	MOTORCYCLE (000-050CC)	701
HONDA	37	MOTORCYCLE (051-124CC)	702
HONDA	37	MOTORCYCLE (125-349CC)	703
HONDA	37	MOTORCYCLE (350-449CC)	704
HONDA	37	MOTORCYCLE (450-749CC)	705
HONDA	37	MOTORCYCLE (750CC-OVER)	706
HONDA	37	MOTORCYCLE (UNKNOWN CC)	709
HONDA	37	ODYSSEY	441
HONDA	37	OTHER AUTOMOBILE	398
HONDA	37	OTHER LIGHT TRUCK	498
HONDA	37	OTHER MOTORED CYCLE	798
HONDA	37	PASSPORT	401
HONDA	37	PILOT	421
HONDA	37	PRELUDE	33
HONDA	37	RIDGELINE	471
HONDA	37	S2000	35
HONDA	37	UNKNOWN AUTOMOBILE	399
HONDA	37	UNKNOWN LIGHT TRUCK	499
HONDA	37	UNKNOWN VEHICLE	999
HUDSON	29	OTHER AUTOMOBILE	398
HUDSON	29	UNKNOWN AUTOMOBILE	398
HYUNDAI	55	ACCENT	36
HYUNDAI	55	AZERA	39

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
HYUNDAI	55	ELANTRA	35
HYUNDAI	55	EXCEL	32
HYUNDAI	55	OTHER AUTOMOBILE	398
HYUNDAI	55	OTHER LIGHT TRUCK	498
HYUNDAI	55	PONY	31
HYUNDAI	55	SANTA FE	401
HYUNDAI	55	SCOUPE	34
HYUNDAI	55	SONATA	33
HYUNDAI	55	TIBURON	37
HYUNDAI	55	TUCSON	402
HYUNDAI	55	UNKNOWN AUTOMOBILE	399
HYUNDAI	55	UNKNOWN LIGHT TRUCK	499
HYUNDAI	55	UNKNOWN VEHICLE	999
HYUNDAI	55	XG300/350	38
IMPERIAL	8	IMPERIAL	10
IMPERIAL	8	OTHER AUTOMOBILE	398
IMPERIAL	8	UNKNOWN AUTOMOBILE	399
IMPERIAL	8	UNKNOWN VEHICLE	999
INDIAN	29	MOTORCYCLE (000-050CC)	701
INDIAN	29	MOTORCYCLE (051-124CC)	702
INDIAN	29	MOTORCYCLE (125-349CC)	703
INDIAN	29	MOTORCYCLE (350-449CC)	704
INDIAN	29	MOTORCYCLE (450-749CC)	705
INDIAN	29	MOTORCYCLE (750CC OR GREATER)	706
INDIAN	29	MOTORCYCLE (UNKNOWN CC)	709
INDIAN	29	OTHER MOTORED CYCLE	798
INDIAN	29	UNKNOWN MOTORED CYCLE	799
INFINITI	58	FX35/45	39
INFINITI	58	G20	33
INFINITI	58	G35	37
INFINITI	58	I30	35
INFINITI	58	I35	36
INFINITI	58	J30	34
INFINITI	58	M30	31
INFINITI	58	M45	38
INFINITI	58	OTHER AUTOMOBILE	398
INFINITI	58	OTHER LIGHT TRUCK	498
INFINITI	58	Q45	32
INFINITI	58	QX4	401
INFINITI	58	QX56	421
INFINITI	58	UNKNOWN AUTOMOBILE	399
INFINITI	58	UNKNOWN LIGHT TRUCK	499
INFINITI	58	UNKNOWN VEHICLE	999
INTERNATIONAL HARVESTER/	84	BUS BASED MOTOHOME	950
INTERNATIONAL HARVESTER/	84	BUS-FLAT FRONT, FRONT ENGINE	982
INTERNATIONAL HARVESTER/	84	BUS-FLAT FRONT, REAR ENGINE	983
INTERNATIONAL HARVESTER/	84	CONVENTIONAL BUS	981
INTERNATIONAL HARVESTER/	84	MEDIUM HEAVY - CBE	881
INTERNATIONAL HARVESTER/	84	MEDIUM/HEAVY - COE HIGH ENTRY	883
INTERNATIONAL HARVESTER/	84	MEDIUM/HEAVY - COE LOW ENTRY	882
INTERNATIONAL HARVESTER/	84	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
INTERNATIONAL HARVESTER/	84	MEDIUM/HEAVY: UNKNOWN ENGINE LOCATION	884
INTERNATIONAL HARVESTER/	84	MULTISTOP VAN	466
INTERNATIONAL HARVESTER/	84	OTHER BUS	988
INTERNATIONAL HARVESTER/	84	OTHER LIGHT TRUCK	498
INTERNATIONAL HARVESTER/	84	OTHER MEDIUM/HEAVY TRUCK	898
INTERNATIONAL HARVESTER/	84	OTHER VEHICLE	998

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
INTERNATIONAL HARVESTER/	84	PICKUP	481
INTERNATIONAL HARVESTER/	84	SCOUT	421
INTERNATIONAL HARVESTER/	84	TRAVELALL	431
INTERNATIONAL HARVESTER/	84	TRUCK BASED MOTORHOME	850
INTERNATIONAL HARVESTER/	84	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
INTERNATIONAL HARVESTER/	84	UNKNOWN BUS TYPE	989
INTERNATIONAL HARVESTER/	84	UNKNOWN LIGHT TRUCK	499
INTERNATIONAL HARVESTER/	84	UNKNOWN MEDIUM/HEAVY TRUCK	899
INTERNATIONAL HARVESTER/	84	UNKNOWN VEHICLE	999
ISUZU	38	AMIGO	403
ISUZU	38	ASCENDER	421
ISUZU	38	AXIOM	405
ISUZU	38	CONVENTIONAL FRONT ENGINE	981
ISUZU	38	FRONT ENGINE/FLAT FRONT	982
ISUZU	38	I-MARK	31
ISUZU	38	IMPULSE	32
ISUZU	38	MEDIUM/HEAVY - CBE	881
ISUZU	38	MEDIUM/HEAVY COE ENTRY POSITION UNKNOW	890
ISUZU	38	MEDIUM/HEAVY COE HIGH ENTRY	883
ISUZU	38	MEDIUM/HEAVY COE LOW ENTRY	882
ISUZU	38	MEDIUM/HEAVY UNKNOWN ENGINE LOCATION	884
ISUZU	38	OASIS	441
ISUZU	38	OTHER AUTOMOBILE	398
ISUZU	38	OTHER BUS	988
ISUZU	38	OTHER LIGHT TRUCK	498
ISUZU	38	OTHER MEDIUM/HEAVY TRUCK	898
ISUZU	38	P'UP (PICKUP) HOMBRE	471
ISUZU	38	REAR ENGINE/FLAT FRONT	983
ISUZU	38	RODEO	402
ISUZU	38	STYLUS	33
ISUZU	38	TROOPER/TROOPER II	401
ISUZU	38	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
ISUZU	38	UNKNOWN AUTOMOBILE	399
ISUZU	38	UNKNOWN BUS TYPE	989
ISUZU	38	UNKNOWN LIGHT TRUCK	499
ISUZU	38	UNKNOWN MEDIUM/HEAVY TRUCK	899
ISUZU	38	UNKNOWN VEHICLE	999
ISUZU	38	VEHICROSS	404
ISUZU	38	i-280	473
ISUZU	38	i-350	474
IVECO/MAGIRUS	88	MEDIUM/HEAVY - CBE	881
IVECO/MAGIRUS	88	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
IVECO/MAGIRUS	88	MEDIUM/HEAVY - COE/HIGH ENTRY	883
IVECO/MAGIRUS	88	MEDIUM/HEAVY - COE/LOW ENTRY	882
IVECO/MAGIRUS	88	MEDIUM/HEAVY - OTHER	898
IVECO/MAGIRUS	88	MEDIUM/HEAVY - UNKOWN ENGINE LOCATION	884
IVECO/MAGIRUS	88	MEDIUM/HEAVY BASED MOTORHOME	850
IVECO/MAGIRUS	88	UNKNOWN MEDIUM/HEAVY TRUCK	899
JAGUAR	39	OTHER AUTOMOBILE	398
JAGUAR	39	S-TYPE	34
JAGUAR	39	UNKNOWN AUTOMOBILE	399
JAGUAR	39	UNKNOWN VEHICLE	999
JAGUAR	39	VANDEN PLAS	32
JAGUAR	39	X-TYPE	35
JAGUAR	39	X100	34
JAGUAR	39	XJ-S COUPE	31
JAGUAR	39	XJ6/12 SEDAN/COUPE/XJ8/	32

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
JAGUAR	39	XKE	33
JEEP / KAISER-JEEP	2	CHEROKEE (1963 - 1983)	421
JEEP / KAISER-JEEP	2	CHEROKEE (1984 ON)	404
JEEP / KAISER-JEEP	2	CJ-2/CJ-3/CJ-4	401
JEEP / KAISER-JEEP	2	CJ-5/CJ-6/CH-7/CH-8	402
JEEP / KAISER-JEEP	2	COMANCHE	482
JEEP / KAISER-JEEP	2	COMMANDER	406
JEEP / KAISER-JEEP	2	GRAND WAGONEER	431
JEEP / KAISER-JEEP	2	LIBERTY	405
JEEP / KAISER-JEEP	2	OTHER LIGHT TRUCK	498
JEEP / KAISER-JEEP	2	PICKUP	481
JEEP / KAISER-JEEP	2	UNKNOWN LIGHT TRUCK	499
JEEP / KAISER-JEEP	2	UNKNOWN VEHICLE	999
JEEP / KAISER-JEEP	2	YJ-SERIES	403
JENSEN	69	HEALY	37
JENSEN	69	OTHER AUTOMOBILE	37
JENSEN	69	UNKNOWN AUTOMOBILE	37
KAWASAKI	73	ATC/ATV (000-050CC)	731
KAWASAKI	73	ATC/ATV (051-124CC)	732
KAWASAKI	73	ATC/ATV (125-349CC)	733
KAWASAKI	73	ATC/ATV (350CC-OVER)	734
KAWASAKI	73	ATC/ATV (UNKNOWN CC)	739
KAWASAKI	73	MOTORCYCLE (000-050CC)	701
KAWASAKI	73	MOTORCYCLE (051-124CC)	702
KAWASAKI	73	MOTORCYCLE (125-349CC)	703
KAWASAKI	73	MOTORCYCLE (350-449CC)	704
KAWASAKI	73	MOTORCYCLE (450-749CC)	705
KAWASAKI	73	MOTORCYCLE (750CC-OVER)	706
KAWASAKI	73	MOTORCYCLE (UNKNOWN CC)	709
KAWASAKI	73	OTHER MOTORED CYCLE	798
KAWASAKI	73	UNKNOWN MOTORED CYCLE	799
KENWORTH	85	MEDIUM/HEAVY - CBE	881
KENWORTH	85	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
KENWORTH	85	MEDIUM/HEAVY - COE/HIGH ENTRY	883
KENWORTH	85	MEDIUM/HEAVY - COE/LOW ENTRY	882
KENWORTH	85	MEDIUM/HEAVY - OTHER	898
KENWORTH	85	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
KENWORTH	85	MEDIUM/HEAVY TRUCK BASED MOTORHOME	850
KENWORTH	85	UNKNOWN MEDIUM/HEAVY TRUCK	899
KIA	63	AMANTI	35
KIA	63	OPTIMA	34
KIA	63	OTHER AUTOMOBILE	398
KIA	63	OTHER LIGHT TRUCK	498
KIA	63	RIO/RIO 5	33
KIA	63	SEDONA	441
KIA	63	SEPHIA	31
KIA	63	SORRENTO	402
KIA	63	SPECTRA	32
KIA	63	SPORTAGE	401
KIA	63	UNKNOWN AUTOMOBILE	399
KIA	63	UNKNOWN LIGHT TRUCK	499
KIA	63	UNKNOWN VEHICLE	999
LADA	69	OTHER AUTOMOBILE	53
LADA	69	UNKNOWN AUTOMOBILE	53
LAMBORGHINI	69	COUNTACH 5000S	38
LAMBORGHINI	69	JALPA	38
LAMBORGHINI	69	OTHER AUTOMOBILE	38

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
LAMBORGHINI	69	UNKNOWN AUTOMOBILE	38
LANCIA	40	BETA COUPE - ZAGATO	32
LANCIA	40	BETA SEDAN-HPE	31
LANCIA	40	OTHER AUTOMOBILE	398
LANCIA	40	SCORPION	33
LANCIA	40	UNKNOWN AUTOMOBILE	399
LANCIA	40	UNKNOWN VEHICLE	999
LAND ROVER	62	4.0 SE (RR)	422
LAND ROVER	62	COUNTY LWB (RR) / COUNT CLASSIC (RR)	421
LAND ROVER	62	DEFENDER 90 (LR)	422
LAND ROVER	62	DISCOVERY (LR)	401
LAND ROVER	62	FREELANDER	422
LAND ROVER	62	LR3	423
LAND ROVER	62	OTHER LIGHT TRUCK	498
LAND ROVER	62	UNKNOWN LIGHT TRUCK	499
LAND ROVER	62	UNKNOWN VEHICLE	999
LEXUS	59	ES250/ES-300	31
LEXUS	59	GS300/GS400	34
LEXUS	59	GX470	402
LEXUS	59	IS-250/300/350	35
LEXUS	59	LS400	32
LEXUS	59	LX 450/470	421
LEXUS	59	OTHER AUTOMOBILE	398
LEXUS	59	OTHER LIGHT TRUCK	498
LEXUS	59	RX300	401
LEXUS	59	SC 430	36
LEXUS	59	SC-300/SC-400	33
LEXUS	59	UNKNOWN AUTOMOBILE	399
LEXUS	59	UNKNOWN LIGHT TRUCK	499
LEXUS	59	UNKNOWN VEHICLE	999
LINCOLN	13	AVIATOR	401
LINCOLN	13	BLACKWOOD	481
LINCOLN	13	CONTINENTAL (82-ON)	5
LINCOLN	13	CONTINENTAL/TOWN CAR	1
LINCOLN	13	LS	12
LINCOLN	13	MARK	2
LINCOLN	13	MARK LT	482
LINCOLN	13	NAVIGATOR	421
LINCOLN	13	OTHER AUTOMOBILE	398
LINCOLN	13	OTHER LIGHT TRUCK	498
LINCOLN	13	UNKNOWN AUTOMOBILE	399
LINCOLN	13	UNKNOWN LIGHT TRUCK	499
LINCOLN	13	UNKNOWN VEHICLE	999
LINCOLN	13	VERSAILLES	11
LINCOLN	13	ZEPHYR	13
LOTUS	69	ELISE	39
LOTUS	69	ESPRIT	39
LOTUS	69	EUROPE	39
LOTUS	69	OTHER AUTOMOBILE	39
LOTUS	69	UNKNOWN AUTOMOBILE	39
MACK	86	MEDIUM/HEAVY - CBE	881
MACK	86	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
MACK	86	MEDIUM/HEAVY - COE/HIGH ENTRY	883
MACK	86	MEDIUM/HEAVY - COE/LOW ENTRY	882
MACK	86	MEDIUM/HEAVY - OTHER	898
MACK	86	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
MACK	86	MEDIUM/HEAVY BASED MOTORHOME	850

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
MACK	86	UNKNOWN MEDIUM/HEAVY TRUCK	899
MARMON	98	MEDIUM/HEAVY - CBE	898
MARMON	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	898
MARMON	98	MEDIUM/HEAVY - COE/HIGH ENTRY	898
MARMON	98	MEDIUM/HEAVY - COE/LOW ENTRY	898
MARMON	98	MEDIUM/HEAVY - OTHER	898
MARMON	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	898
MARMON	98	MEDIUM/HEAVY BASED MOTORHOME	898
MASERATI	69	BITURBO	40
MASERATI	69	OTHER AUTOMOBILE	40
MASERATI	69	UNKNOWN AUTOMOBILE	40
MAZDA	41	1800	42
MAZDA	41	616/618	41
MAZDA	41	626	37
MAZDA	41	808	38
MAZDA	41	929	43
MAZDA	41	COSMO	36
MAZDA	41	CX-7	53
MAZDA	41	GLC/PROTEGE/323	35
MAZDA	41	MAZDA 5	52
MAZDA	41	MAZDA 6	50
MAZDA	41	MAZDA PICKUP	471
MAZDA	41	MAZDA3	51
MAZDA	41	MIATA	45
MAZDA	41	MILLENIA	47
MAZDA	41	MIZER	39
MAZDA	41	MP3	48
MAZDA	41	MPV	441
MAZDA	41	MX-3	46
MAZDA	41	MX-6	44
MAZDA	41	NAVAJO	401
MAZDA	41	OTHER AUTOMOBILE	398
MAZDA	41	OTHER LIGHT TRUCK	498
MAZDA	41	R-100	40
MAZDA	41	RX-8	49
MAZDA	41	RX2	31
MAZDA	41	RX3	32
MAZDA	41	RX4	33
MAZDA	41	RX7	34
MAZDA	41	TRIBUTE	402
MAZDA	41	UNKNOWN AUTOMOBILE	399
MAZDA	41	UNKNOWN LIGHT TRUCK	499
MAZDA	41	UNKNOWN VEHICLE	999
MERCEDES BENZ	42	190	39
MERCEDES BENZ	42	200/220/230/240/250/260/280/300/320 SE,CD,D,SD,E	31
MERCEDES BENZ	42	220/280 C	42
MERCEDES BENZ	42	230/280 SL	32
MERCEDES BENZ	42	280/300SEL	35
MERCEDES BENZ	42	300	40
MERCEDES BENZ	42	300 SE/380/450 SE	37
MERCEDES BENZ	42	300/350/380/450/500SL/560SL	33
MERCEDES BENZ	42	350/380/420/450/560/ SLC	34
MERCEDES BENZ	42	380/420/450/500/560SEL/500SEC/560SEC/350SDL/3	36
MERCEDES BENZ	42	400/500 E	41
MERCEDES BENZ	42	600, 6.9 SEDAB	38
MERCEDES BENZ	42	CL	46
MERCEDES BENZ	42	CLK	47

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
MERCEDES BENZ	42	CLS CLASS	51
MERCEDES BENZ	42	E	48
MERCEDES BENZ	42	G CLASS	402
MERCEDES BENZ	42	M	401
MERCEDES BENZ	42	MEDIUM BUS	981
MERCEDES BENZ	42	MEDIUM/HEAVE - CBE	881
MERCEDES BENZ	42	MEDIUM/HEAVY - COE HIGH ENTRY	883
MERCEDES BENZ	42	MEDIUM/HEAVY - COE LOW ENTRY	882
MERCEDES BENZ	42	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
MERCEDES BENZ	42	MEDIUM/HEAVY; UNKNOWN ENGINE LOCATION	884
MERCEDES BENZ	42	OTHER AUTOMOBILE	398
MERCEDES BENZ	42	OTHER BUS	988
MERCEDES BENZ	42	OTHER LIGHT TRUCK	498
MERCEDES BENZ	42	OTHER MEDIUM/HEAVY TRUCK	898
MERCEDES BENZ	42	R-CLASS	50
MERCEDES BENZ	42	S CLASS	43
MERCEDES BENZ	42	SL CLASS	44
MERCEDES BENZ	42	SLK	45
MERCEDES BENZ	42	SLR MCLAREN	49
MERCEDES BENZ	42	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
MERCEDES BENZ	42	UNKNOWN AUTOMOBILE	399
MERCEDES BENZ	42	UNKNOWN BUS TYPE	989
MERCEDES BENZ	42	UNKNOWN LIGHT TRUCK	499
MERCEDES BENZ	42	UNKNOWN MEDIUM/HEAVY TRUCK	899
MERCEDES BENZ	42	UNKNOWN VEHICLE	999
MERCEDES BENZ	42	VAN DERIVATIVE	470
MERCURY	14	BOBCAT	9
MERCURY	14	CAPRI-DOMESTIC	3
MERCURY	14	CAPRI-FOREIGN	31
MERCURY	14	COMET	8
MERCURY	14	COUGAR	38
MERCURY	14	COUGAR/XR7	4
MERCURY	14	CYCLONE	2
MERCURY	14	LYNX/LN-7 (82-83)	13
MERCURY	14	MARAUDER	39
MERCURY	14	MARINER	402
MERCURY	14	MARQUIS/MONTEREY	6
MERCURY	14	MILAN	21
MERCURY	14	MONARCH	11
MERCURY	14	MONTEGO	10
MERCURY	14	MONTEGO (2005+)	20
MERCURY	14	MONTEREY (2004+)	444
MERCURY	14	MOUNTAINEER	401
MERCURY	14	MYSTIQUE	37
MERCURY	14	OTHER AUTOMOBILE	398
MERCURY	14	OTHER LIGHT TRUCK	498
MERCURY	14	PANTERA	33
MERCURY	14	SABLE	17
MERCURY	14	TOPAZ	15
MERCURY	14	TRACER	36
MERCURY	14	UNKNOWN AUTOMOBILE	399
MERCURY	14	UNKNOWN LIGHT TRUCK	499
MERCURY	14	UNKNOWN VEHICLE	999
MERCURY	14	VILLAGER	443
MERCURY	14	ZEPHYR	12
MERKUR	56	OTHER AUTOMOBILE	398
MERKUR	56	SCORPIO	32

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
MERKUR	56	UNKNOWN AUTOMOBILE	399
MERKUR	56	UNKNOWN VEHICLE	999
MERKUR	56	XR4Ti	31
MG	43	MGA	34
MG	43	MGB ('67-'75)	33
MG	43	MGB ('76-'79)	32
MG	43	MGC	36
MG	43	MIDGET	31
MG	43	OTHER AUTOMOBILE	398
MG	43	TA/TC/TD/TF	35
MG	43	UNKNOWN AUTOMOBILE	399
MG	43	UNKNOWN VEHICLE	999
MINI	65	COOPER,COOPER S	31
MITSUBISHI	52	3000GT	39
MITSUBISHI	52	CONVENTIONAL FRONT ENGINE	981
MITSUBISHI	52	CORDIA	33
MITSUBISHI	52	DIAMANTE	40
MITSUBISHI	52	ECLIPSE	37
MITSUBISHI	52	ENDEAVOR	403
MITSUBISHI	52	EXPO WAGON	442
MITSUBISHI	52	FRONT ENGINE/FLAT FRONT	982
MITSUBISHI	52	GALANT	34
MITSUBISHI	52	LANCER	46
MITSUBISHI	52	MEDIUM/HEAVY - COE LOW ENTRY	882
MITSUBISHI	52	MINIVAN	441
MITSUBISHI	52	MIRAGE	35
MITSUBISHI	52	MONTERO	401
MITSUBISHI	52	OTHER AUTOMOBILE	398
MITSUBISHI	52	OTHER BUS	988
MITSUBISHI	52	OTHER LIGHT TRUCK	498
MITSUBISHI	52	OTHER MEDIUM/HEAVY TRUCK	898
MITSUBISHI	52	OUTLANDER	402
MITSUBISHI	52	PICKUP	471
MITSUBISHI	52	PRECIS	36
MITSUBISHI	52	REAR ENGINE/FLAT FRONT	983
MITSUBISHI	52	SIGMA	38
MITSUBISHI	52	STARION	31
MITSUBISHI	52	TREDIA	32
MITSUBISHI	52	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
MITSUBISHI	52	UNKNOWN AUTOMOBILE	399
MITSUBISHI	52	UNKNOWN LIGHT TRUCK	499
MITSUBISHI	52	UNKNOWN MEDIUM/HEAVY TRUCK	899
MITSUBISHI	52	UNKNOWN TYPE BUS	989
MITSUBISHI	52	UNKNOWN VEHICLE	999
MORRIS	69	MINOR	41
MORRIS	69	OTHER AUTOMOBILE	41
MORRIS	69	UNKNOWN AUTOMOBILE	41
MOTO-GUZZI	74	ATC/ATV (000-050CC)	731
MOTO-GUZZI	74	ATC/ATV (051-124CC)	732
MOTO-GUZZI	74	ATC/ATV (125-349CC)	733
MOTO-GUZZI	74	ATC/ATV (350CC-OVER)	734
MOTO-GUZZI	74	ATC/ATV (UNKNOWN CC)	739
MOTO-GUZZI	74	MOTORCYCLE (000-050CC)	701
MOTO-GUZZI	74	MOTORCYCLE (051-124CC)	702
MOTO-GUZZI	74	MOTORCYCLE (125-349CC)	703
MOTO-GUZZI	74	MOTORCYCLE (350-449CC)	704
MOTO-GUZZI	74	MOTORCYCLE (450-749CC)	705

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
MOTO-GUZZI	74	MOTORCYCLE (750CC-OVER)	706
MOTO-GUZZI	74	MOTORCYCLE (UNKNOWN CC)	709
MOTO-GUZZI	74	OTHER MOTORED CYCLE	798
MOTO-GUZZI	74	UNKNOWN MOTORED CYCLE	799
NEOPLAN	98	BUS - CONVENTIONAL FRONT ENGINE	902
NEOPLAN	98	BUS - FRONT ENGINE/FLAT FRONT	902
NEOPLAN	98	BUS - REAR ENGINE/FLAT FRONT	902
NEOPLAN	98	BUS BASED MOTORHOME	902
NEOPLAN	98	OTHER BUS	902
NISSAN / DATSUN	35	1200/210/B210	33
NISSAN / DATSUN	35	200/240 SX	32
NISSAN / DATSUN	35	310	35
NISSAN / DATSUN	35	350Z	48
NISSAN / DATSUN	35	510	36
NISSAN / DATSUN	35	610	37
NISSAN / DATSUN	35	710	38
NISSAN / DATSUN	35	810/MAXIMA	39
NISSAN / DATSUN	35	ALTIMA	47
NISSAN / DATSUN	35	AXXESS	442
NISSAN / DATSUN	35	DATSUN/NISSAN PU/FRONTIER	471
NISSAN / DATSUN	35	F10	31
NISSAN / DATSUN	35	MEDIUM/HEAVY COE HIGH ENTRY	883
NISSAN / DATSUN	35	MICRA	45
NISSAN / DATSUN	35	MURANO	49
NISSAN / DATSUN	35	NX 1600/2000	46
NISSAN / DATSUN	35	OTHER AUTOMOBILE	398
NISSAN / DATSUN	35	OTHER LIGHT TRUCK	498
NISSAN / DATSUN	35	OTHER MEDIUM/HEAVY TRUCK	898
NISSAN / DATSUN	35	PATHFINDER	401
NISSAN / DATSUN	35	PATHFINDER ARMADA	421
NISSAN / DATSUN	35	PL411, RL411	41
NISSAN / DATSUN	35	PULSAR	44
NISSAN / DATSUN	35	QUEST	443
NISSAN / DATSUN	35	ROADSTER	40
NISSAN / DATSUN	35	SENTRA	43
NISSAN / DATSUN	35	STANZA	42
NISSAN / DATSUN	35	TITAN	473
NISSAN / DATSUN	35	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
NISSAN / DATSUN	35	UNKNOWN AUTOMOBILE	399
NISSAN / DATSUN	35	UNKNOWN LIGHT TRUCK	499
NISSAN / DATSUN	35	UNKNOWN MEDIUM/HEAVY TRUCK	899
NISSAN / DATSUN	35	UNKNOWN VEHICLE	999
NISSAN / DATSUN	35	VAN	441
NISSAN / DATSUN	35	VERSA	50
NISSAN / DATSUN	35	XTERRA	402
NISSAN / DATSUN	35	Z-CAR, ZX	34
NORTON	75	MOTORCYCLE (000-050CC)	701
NORTON	75	MOTORCYCLE (051-124CC)	702
NORTON	75	MOTORCYCLE (125-349CC)	703
NORTON	75	MOTORCYCLE (350-449CC)	704
NORTON	75	MOTORCYCLE (450-749CC)	705
NORTON	75	MOTORCYCLE (750CC-OVER)	706
NORTON	75	MOTORCYCLE (UNKNOWN CC)	709
NORTON	75	OTHER MOTORED CYCLE	798
NORTON	75	UNKNOWN MOTORED CYCLE	799
OLDSMOBILE	21	ACHIEVA	21
OLDSMOBILE	21	ALERO	24

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
OLDSMOBILE	21	AURORA	22
OLDSMOBILE	21	BRAVADA	401
OLDSMOBILE	21	CALAIS	18
OLDSMOBILE	21	CIERA	17
OLDSMOBILE	21	COMMERCIAL SERIES	6
OLDSMOBILE	21	CUTLASS (FWD)	20
OLDSMOBILE	21	CUTLASS (RWD-ONLY)	1
OLDSMOBILE	21	DELTA 88	2
OLDSMOBILE	21	FIRENZA	16
OLDSMOBILE	21	INTRIGUE	23
OLDSMOBILE	21	NINETY-EIGHT	3
OLDSMOBILE	21	OMEGA	15
OLDSMOBILE	21	OTHER AUTOMOBILE	398
OLDSMOBILE	21	OTHER LIGHT TRUCK	498
OLDSMOBILE	21	OTHER VEHICLE	998
OLDSMOBILE	21	SILHOUETTE	441
OLDSMOBILE	21	STARFIRE	12
OLDSMOBILE	21	TORONADO-TROFEO	5
OLDSMOBILE	21	UNKNOWN AUTOMOBILE	399
OLDSMOBILE	21	UNKNOWN LIGHT TRUCK	499
OLDSMOBILE	21	UNKNOWN VEHICLE	999
OSHKOSH	98	MEDIUM/HEAVY - CBE	805
OSHKOSH	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	805
OSHKOSH	98	MEDIUM/HEAVY - COE/HIGH ENTRY	805
OSHKOSH	98	MEDIUM/HEAVY - COE/LOW ENTRY	805
OSHKOSH	98	MEDIUM/HEAVY - OTHER	805
OSHKOSH	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	805
OSHKOSH	98	MEDIUM/HEAVY BASED MOTORHOME	805
OTHER DOMESTIC MANUFACT	29	OTHER BUS	988
OTHER DOMESTIC MANUFACT	29	OTHER LIGHT TRUCK	498
OTHER DOMESTIC MANUFACT	29	OTHER MAKE	398
OTHER DOMESTIC MANUFACT	29	OTHER MEDIUM/HEAVY TRUCK	898
OTHER DOMESTIC MANUFACT	29	OTHER VEHICLE	998
OTHER DOMESTIC MANUFACT	29	UNKNOWN MAKE	399
OTHER FOREIGN MANUFACTU	69	OTHER BUS	988
OTHER FOREIGN MANUFACTU	69	OTHER LIGHT TRUCK	498
OTHER FOREIGN MANUFACTU	69	OTHER MAKE	398
OTHER FOREIGN MANUFACTU	69	OTHER MEDIUM/HEAVY TRUCK	898
OTHER FOREIGN MANUFACTU	69	OTHER VEHICLE	998
OTHER FOREIGN MANUFACTU	69	UNKOWN MAKE	399
OTHER MAKE (med/heavy truck/	98	BUS BASED MOTORHOME	950
OTHER MAKE (med/heavy truck/	98	OTHER AUTOMOBILE	398
OTHER MAKE (med/heavy truck/	98	OTHER BUS	988
OTHER MAKE (med/heavy truck/	98	OTHER LIGHT TRUCK	498
OTHER MAKE (med/heavy truck/	98	OTHER MEDIUM/HEAVY TRUCK	898
OTHER MAKE (med/heavy truck/	98	OTHER VEHICLE	998
OTHER MAKE (med/heavy truck/	98	TRUCK BASED MOTORHOME	850
OTHER MAKE MOPED	78	0-50cc	701
OTHER MAKE MOPED	78	51-124cc	702
OTHER MAKE MOPED	78	OTHER MOTORED CYCLE	798
OTHER MAKE MOPED	78	UNKNOWN MOTORED CYCLE	799
OTHER MAKE MOPED	78	UNKNOWN cc	709
OTHER MAKE MOTORED CYCL	79	0-50cc	701
OTHER MAKE MOTORED CYCL	79	125-349cc	703
OTHER MAKE MOTORED CYCL	79	350-449cc	704
OTHER MAKE MOTORED CYCL	79	450-749cc	705
OTHER MAKE MOTORED CYCL	79	51-124cc	702

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
OTHER MAKE MOTORED CYCL	79	750c or greater	706
OTHER MAKE MOTORED CYCL	79	ATC/ATV 0-50cc	731
OTHER MAKE MOTORED CYCL	79	ATC/ATV 125-349cc	733
OTHER MAKE MOTORED CYCL	79	ATC/ATV 350cc OR GREATER	734
OTHER MAKE MOTORED CYCL	79	ATC/ATV 51-124cc	732
OTHER MAKE MOTORED CYCL	79	ATV/ATC UNKNOWN cc	739
OTHER MAKE MOTORED CYCL	79	OTHER MOTORED CYCLE	798
OTHER MAKE MOTORED CYCL	79	UNKNOWN MOTORED CYCLE	799
OTHER MAKE MOTORED CYCL	79	Unknown cc	709
PETERBILT	87	MEDIUM/HEAVY - CBE	881
PETERBILT	87	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	890
PETERBILT	87	MEDIUM/HEAVY - COE/HIGH ENTRY	883
PETERBILT	87	MEDIUM/HEAVY - COE/LOW ENTRY	882
PETERBILT	87	MEDIUM/HEAVY - OTHER	898
PETERBILT	87	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
PETERBILT	87	MEDIUM/HEAVY BASED MOTORHOME	850
PETERBILT	87	UNKNOWN MEDIUM/HEAVY TRUCK	899
PEUGEOT	44	304	31
PEUGEOT	44	403	32
PEUGEOT	44	404	33
PEUGEOT	44	405	36
PEUGEOT	44	504/505	34
PEUGEOT	44	604	35
PEUGEOT	44	MOTORCYCLE (000-050CC)	701
PEUGEOT	44	MOTORCYCLE (051-124CC)	702
PEUGEOT	44	MOTORCYCLE (UNKNOWN CC)	709
PEUGEOT	44	OTHER AUTOMOBILE	398
PEUGEOT	44	UNKNOWN AUTOMOBILE	399
PEUGEOT	44	UNKNOWN MOTORED CYCLE	799
PEUGEOT	44	UNKNOWN VEHICLE	999
PLYMOUTH	9	ACCLAIM	19
PLYMOUTH	9	ARROW	32
PLYMOUTH	9	ARROW PICKUP (FOREIGN)	471
PLYMOUTH	9	BARRACUDA	5
PLYMOUTH	9	BREEZE	38
PLYMOUTH	9	CARAVELLE	7
PLYMOUTH	9	CHAMP/COLT (EXCLUDES VISTA)	34
PLYMOUTH	9	COLT VISTA	441
PLYMOUTH	9	CONQUEST	35
PLYMOUTH	9	CRICKET	31
PLYMOUTH	9	FURY	3
PLYMOUTH	9	GRAN FURY	4
PLYMOUTH	9	HORIZON	8
PLYMOUTH	9	LASER	37
PLYMOUTH	9	NEON	20
PLYMOUTH	9	OTHER AUTOMOBILE	398
PLYMOUTH	9	OTHER LIGHT TRUCK	498
PLYMOUTH	9	PROWLER	39
PLYMOUTH	9	RELIANT (K)	11
PLYMOUTH	9	SAPPORO	33
PLYMOUTH	9	SATELLITE/BELVEDERE	2
PLYMOUTH	9	SCAMP (CAR BASED PICKUP)	13
PLYMOUTH	9	SUNDANCE	17
PLYMOUTH	9	TRAILDUSTER	421
PLYMOUTH	9	UNKNOWN AUTOMOBILE	399
PLYMOUTH	9	UNKNOWN LIGHT TRUCK	499
PLYMOUTH	9	UNKNOWN VEHICLE	999

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
PLYMOUTH	9	VALIANT/DUSTER/SCAMP	1
PLYMOUTH	9	VAN-FULLSIZE (B-SERIES)	461
PLYMOUTH	9	VOLARE	6
PLYMOUTH	9	VOYAGER (MINIVAN)	442
PONTIAC	22	6000	17
PONTIAC	22	ASTRE	11
PONTIAC	22	AZTEK	401
PONTIAC	22	BONNEVILLE/CATALINA/PARISIENNE	2
PONTIAC	22	FIERO	5
PONTIAC	22	FIREBIRD/TRANS AM	9
PONTIAC	22	G6	22
PONTIAC	22	GRAND AM	18
PONTIAC	22	GRAND PRIX (FWD)	20
PONTIAC	22	GRAND PRIX (RWD)	10
PONTIAC	22	J2000/SUNBIRD/SUNFIRE	16
PONTIAC	22	LEMANS (88-on)	31
PONTIAC	22	LEMANS/TEMPEST (THRU 79)	1
PONTIAC	22	OTHER AUTOMOBILE	398
PONTIAC	22	OTHER LIGHT	
PONTIAC	22	OTHER LIGHT TRUCK	498
PONTIAC	22	PHOENIX	15
PONTIAC	22	SOLTICE	23
PONTIAC	22	SUNBIRD (THRU 80)	12
PONTIAC	22	T1000/1000	13
PONTIAC	22	TORRENT	403
PONTIAC	22	TRANS SPORT/MONTANA	441
PONTIAC	22	UNKNOWN AUTOMOBILE	399
PONTIAC	22	UNKNOWN LIGHT TRUCK	499
PONTIAC	22	UNKNOWN VEHICLE	999
PONTIAC	22	VENTURA	8
PONTIAC	22	VIBE	402
PORSCHE	45	911	31
PORSCHE	45	912	32
PORSCHE	45	914	33
PORSCHE	45	924	34
PORSCHE	45	928	35
PORSCHE	45	930	36
PORSCHE	45	944	37
PORSCHE	45	959	38
PORSCHE	45	968	39
PORSCHE	45	986 BOXSTER	40
PORSCHE	45	CAYENNE	421
PORSCHE	45	CAYMAN	41
PORSCHE	45	OTHER AUTOMOBILE	398
PORSCHE	45	UNKNOWN AUTOMOBILE	399
PORSCHE	45	UNKNOWN VEHICLE	999
RELIANT	69	OTHER AUTOMOBILE	49
RELIANT	69	UNKNOWN AUTOMOBILE	49
RENAULT/AMC	46	12	33
RENAULT/AMC	46	15	34
RENAULT/AMC	46	16	35
RENAULT/AMC	46	17	36
RENAULT/AMC	46	ALLIANCE/ENCORE/GTA, CONVERTIBLE	39
RENAULT/AMC	46	ALPINE	41
RENAULT/AMC	46	DAUPHINE/10/R-8/CARAVELLE	32
RENAULT/AMC	46	FUEGO	38
RENAULT/AMC	46	LECAR	31

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
RENAULT/AMC	46	MEDALLION	44
RENAULT/AMC	46	OTHER AUTOMOBILE	398
RENAULT/AMC	46	PREMIER	45
RENAULT/AMC	46	R18I	37
RENAULT/AMC	46	UNKNOWN AUTOMOBILE	399
RENAULT/AMC	46	UNKNOWN VEHICLE	999
ROLLS ROYCE/BENTLEY	69	CLOUD/SHADOW SERIES	42
ROLLS ROYCE/BENTLEY	69	OTHER AUTOMOBILE	42
ROLLS ROYCE/BENTLEY	69	UNKNOWN AUTOMOBILE	42
SAAB	16-Feb	3-Sep	35
SAAB	16-Feb	5-Sep	36
SAAB	47	9-2X	37
SAAB	47	9-7X	401
SAAB	47	9000, CS	34
SAAB	47	95/96/97	33
SAAB	47	99/99E/900	31
SAAB	47	OTHER AUTOMOBILE	398
SAAB	47	OTHER LIGHT TRUCK	498
SAAB	47	SONNETT	32
SAAB	47	UNKNOWN AUTOMOBILE	399
SAAB	47	UNKNOWN LIGHT TRUCK	499
SAAB	47	UNKNOWN VEHICLE	999
SATURN	24	AURA	9
SATURN	24	EV	4
SATURN	24	ION	7
SATURN	24	LS/ LS1/ LS2/L100/L200/L300	5
SATURN	24	LW/LW1/ LW2/ LW200/300	6
SATURN	24	OTHER AUTOMOBILE	398
SATURN	24	OTHER LIGHT TRUCK	498
SATURN	24	RELAY	441
SATURN	24	SC	2
SATURN	24	SKY	8
SATURN	24	SL	1
SATURN	24	SW	3
SATURN	24	UNKNOWN AUTOMOBILE	399
SATURN	24	UNKNOWN LIGHT TRUCK	499
SATURN	24	UNKNOWN VEHICLE	999
SATURN	24	VUE	401
SCANIA	98	MEDIUM/HEAVY - CBE	807
SCANIA	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	807
SCANIA	98	MEDIUM/HEAVY - COE/HIGH ENTRY	807
SCANIA	98	MEDIUM/HEAVY - COE/LOW ENTRY	807
SCANIA	98	MEDIUM/HEAVY - OTHER	807
SCANIA	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	807
SCANIA	98	MEDIUM/HEAVY BASED MOTORHOME	807
SIMCA	69	OTHER AUTOMOBILE	44
SIMCA	69	UNKNOWN AUTOMOBILE	44
STERLING	61	827S	31
STERLING	61	OTHER AUTOMOBILE	398
STERLING	61	UNKNOWN AUTOMOBILE	399
STERLING	61	UNKNOWN VEHICLE	999
STERLING TRUCKS	98	MEDIUM/HEAVY - CBE	808
STERLING TRUCKS	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	808
STERLING TRUCKS	98	MEDIUM/HEAVY - COE/HIGH ENTRY	808
STERLING TRUCKS	98	MEDIUM/HEAVY - COE/LOW ENTRY	808
STERLING TRUCKS	98	MEDIUM/HEAVY - OTHER	808
STERLING TRUCKS	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	808

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
STUDEBAKER	29	CRUISER	1
STUDEBAKER	29	GRAN TURISMO	1
STUDEBAKER	29	HAWK	1
STUDEBAKER	29	LARK	1
STUDEBAKER	29	OTHER AUTOMOBILE	1
STUDEBAKER	29	UNKNOWN AUTOMOBILE	1
STUTZ	29	OTHER AUTOMOBILE	398
STUTZ	29	UNKNOWN AUTOMOBILE	398
SUBARU	48	360	33
SUBARU	48	B9 TRIBECA	402
SUBARU	48	BAJA	44
SUBARU	48	BRAT DL, GL	43
SUBARU	48	DL/FE/G/GF/GL/GLF/STD/LOYALE	31
SUBARU	48	FORESTER	401
SUBARU	48	IMPREZA	38
SUBARU	48	JUSTY	36
SUBARU	48	LEGACY	34
SUBARU	48	OTHER AUTOMOBILE	398
SUBARU	48	OTHER LIGHT TRUCK	498
SUBARU	48	OUTBACK	45
SUBARU	48	STAR	32
SUBARU	48	SVX	37
SUBARU	48	UNKNOWN AUTOMOBILE	399
SUBARU	48	UNKNOWN LIGHT TRUCK	499
SUBARU	48	UNKNOWN VEHICLE	999
SUBARU	48	XT/XT6	35
SUNBEAM	69	OTHER AUTOMOBILE	45
SUNBEAM	69	UNKNOWN AUTOMOBILE	45
SUZUKI	53	AERIO	36
SUZUKI	53	ATC/ATV (000-050CC)	731
SUZUKI	53	ATC/ATV (051-124CC)	732
SUZUKI	53	ATC/ATV (125-349CC)	733
SUZUKI	53	ATC/ATV (350CC-OVER)	734
SUZUKI	53	ATC/ATV (UNKNOWN CC)	739
SUZUKI	53	ESTEEM	35
SUZUKI	53	FORENZA	37
SUZUKI	53	GRAND VITARA	404
SUZUKI	53	MOTORCYCLE (000-050CC)	701
SUZUKI	53	MOTORCYCLE (051-124CC)	702
SUZUKI	53	MOTORCYCLE (125-349CC)	703
SUZUKI	53	MOTORCYCLE (350-449CC)	704
SUZUKI	53	MOTORCYCLE (450-749CC)	705
SUZUKI	53	MOTORCYCLE (750CC-OVER)	706
SUZUKI	53	MOTORCYCLE (UNKNOWN CC)	709
SUZUKI	53	OTHER AUTOMOBILE	398
SUZUKI	53	OTHER LIGHT TRUCK	498
SUZUKI	53	OTHER MOTORED CYCLE	798
SUZUKI	53	RENO	39
SUZUKI	53	SA310	31
SUZUKI	53	SAMURAI	401
SUZUKI	53	SIDEKICK/GRAND VITARA	402
SUZUKI	53	SWIFT	34
SUZUKI	53	UNKNOWN AUTOMOBILE	399
SUZUKI	53	UNKNOWN LIGHT TRUCK	499
SUZUKI	53	UNKNOWN MOTORED CYCLE	799
SUZUKI	53	UNKNOWN VEHICLE	999
SUZUKI	53	VERONA	38

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
SUZUKI	53	X-90/VITARA	403
SUZUKI	53	XL7	405
TOYOTA	49	4-RUNNER	401
TOYOTA	49	AVALON	43
TOYOTA	49	CAMRY	40
TOYOTA	49	CARINA	37
TOYOTA	49	CELICA	33
TOYOTA	49	COROLLA	32
TOYOTA	49	CORONA	31
TOYOTA	49	CRESSIDA	35
TOYOTA	49	CROWN	36
TOYOTA	49	ECHO	45
TOYOTA	49	FJ CRUISER	405
TOYOTA	49	HIGHLANDER	403
TOYOTA	49	LANDCRUISER	421
TOYOTA	49	MATRIX	404
TOYOTA	49	MINVAN/PREVIA	441
TOYOTA	49	MR-2	41
TOYOTA	49	OTHER AUTOMOBILE	398
TOYOTA	49	OTHER LIGHT TRUCK	498
TOYOTA	49	PASEO	42
TOYOTA	49	PICKUP	471
TOYOTA	49	PRIUS	46
TOYOTA	49	RAV-4	402
TOYOTA	49	SCION TC	50
TOYOTA	49	SCION XA	48
TOYOTA	49	SCION XB	49
TOYOTA	49	SEQUOIA	422
TOYOTA	49	SIENNA	442
TOYOTA	49	SOLARA	44
TOYOTA	49	STARLET	39
TOYOTA	49	SUPRA	34
TOYOTA	49	T-100	481
TOYOTA	49	TACOMA	472
TOYOTA	49	TERCEL	38
TOYOTA	49	TUNDRA	482
TOYOTA	49	UNKNOWN AUTOMOBILE	399
TOYOTA	49	UNKNOWN LIGHT TRUCK	499
TOYOTA	49	UNKNOWN VEHICLE	999
TOYOTA	49	YARIS	51
TRIUMPH	50	GT-6	32
TRIUMPH	50	HERALD	36
TRIUMPH	50	MOTORCYCLE (000-050CC)	701
TRIUMPH	50	MOTORCYCLE (051-124CC)	702
TRIUMPH	50	MOTORCYCLE (125-349CC)	703
TRIUMPH	50	MOTORCYCLE (350-449CC)	704
TRIUMPH	50	MOTORCYCLE (450-749CC)	705
TRIUMPH	50	MOTORCYCLE (750CC-OVER)	706
TRIUMPH	50	MOTORCYCLE (UNKNOWN CC)	709
TRIUMPH	50	OTHER AUTOMOBILE	398
TRIUMPH	50	SPITFIRE	31
TRIUMPH	50	STAG	37
TRIUMPH	50	TR4	33
TRIUMPH	50	TR6	34
TRIUMPH	50	TR7/8	35
TRIUMPH	50	UNKNOWN AUTOMOBILE	399
TRIUMPH	50	UNKNOWN MOTORED CYCLE	799

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
TRIUMPH	50	UNKNOWN VEHICLE	999
TVR	69	OTHER AUTOMOBILE	46
TVR	69	UNKNOWN AUTOMOBILE	46
UNKNOWN DOMESTIC MANUF	99	UNKNOWN AUTOMOBILE	399
UNKNOWN DOMESTIC MANUF	99	UNKNOWN BUS TYPE	989
UNKNOWN DOMESTIC MANUF	99	UNKNOWN LIGHT TRUCK	499
UNKNOWN DOMESTIC MANUF	99	UNKNOWN MEDIUM/HEAVY TRUCK	899
UNKNOWN DOMESTIC MANUF	99	UNKNOWN MOTORED CYCLE	799
UNKNOWN DOMESTIC MANUF	99	UNKNOWN VEHICLE	999
UNKNOWN FOREIGN MANUFA	99	UNKNOWN AUTOMOBILE	399
UNKNOWN FOREIGN MANUFA	99	UNKNOWN BUS TYPE	989
UNKNOWN FOREIGN MANUFA	99	UNKNOWN LIGHT TRUCK	499
UNKNOWN FOREIGN MANUFA	99	UNKNOWN MEDIUM/HEAVY TRUCK	899
UNKNOWN FOREIGN MANUFA	99	UNKNOWN MOTORED CYCLE	799
UNKNOWN FOREIGN MANUFA	99	UNKNOWN VEHICLE	999
UNKNOWN MANUFACTURER	99	UNK TYPE TRUCK (LIGHT/MED/HEAVY)	899
UNKNOWN MANUFACTURER	99	UNKNOWN AUTOMOBILE	399
UNKNOWN MANUFACTURER	99	UNKNOWN BUS TYPE	989
UNKNOWN MANUFACTURER	99	UNKNOWN LIGHT TRUCK	499
UNKNOWN MANUFACTURER	99	UNKNOWN MEDIUM/HEAVY TRUCK	899
UNKNOWN MANUFACTURER	99	UNKNOWN MOTORED CYCLE	799
UNKNOWN MANUFACTURER	99	UNKNOWN VEHICLE	999
UNKNOWN MEDIUM/HEAVY TR	99	Unknown bus type	988
UNKNOWN MEDIUM/HEAVY TR	99	Unknown medium/heavy truck	899
VOLKSWAGEN	30	411/412	34
VOLKSWAGEN	30	BEETLE 1300/1500	32
VOLKSWAGEN	30	CORRADO	45
VOLKSWAGEN	30	DASHER	37
VOLKSWAGEN	30	EOS	51
VOLKSWAGEN	30	EUROVAN	442
VOLKSWAGEN	30	FOX	44
VOLKSWAGEN	30	GOLF III	48
VOLKSWAGEN	30	GOLF/CABRIOLET/GTI	42
VOLKSWAGEN	30	JETTA	40
VOLKSWAGEN	30	JETTA III	47
VOLKSWAGEN	30	KARMANN GHIA	31
VOLKSWAGEN	30	NEW BEETLE	49
VOLKSWAGEN	30	OTHER AUTOMOBILE	398
VOLKSWAGEN	30	OTHER LIGHT TRUCK	498
VOLKSWAGEN	30	OTHER VEHICLE	998
VOLKSWAGEN	30	PASSAT	46
VOLKSWAGEN	30	PHAETON	50
VOLKSWAGEN	30	QUANTUM	41
VOLKSWAGEN	30	RABBIT	36
VOLKSWAGEN	30	RABBIT PICKUP	43
VOLKSWAGEN	30	SCIROCCO	38
VOLKSWAGEN	30	SQUAREBACK/FASTBACK	35
VOLKSWAGEN	30	SUPER BEETLE	33
VOLKSWAGEN	30	THE THING (181)	401
VOLKSWAGEN	30	TOUAREG	421
VOLKSWAGEN	30	UNKNOWN AUTOMOBILE	399
VOLKSWAGEN	30	UNKNOWN LIGHT TRUCK	499
VOLKSWAGEN	30	UNKNOWN VEHICLE	999
VOLKSWAGEN	30	VANAGON/CAMPER	441
VOLVO	51	122	31
VOLVO	51	142/144/145	32
VOLVO	51	164	33

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
VOLVO	51	1800	36
VOLVO	51	240/242/244/245	34
VOLVO	51	262/264/265	35
VOLVO	51	4O SERIES	46
VOLVO	51	60 SERIES	47
VOLVO	51	70 SERIES	43
VOLVO	51	740	39
VOLVO	51	760/780	38
VOLVO	51	80 SERIES	45
VOLVO	51	850	42
VOLVO	51	90 SERIES	44
VOLVO	51	940	40
VOLVO	51	960	41
VOLVO	51	MEDIUM BUS	981
VOLVO	51	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	884
VOLVO	51	MEDIUM/HEAVY CBE	881
VOLVO	51	MEDIUM/HEAVY COE HIGH ENTRY	883
VOLVO	51	MEDIUM/HEAVY COE LOW ENTRY	882
VOLVO	51	MEDIUM/HEAVY: COE ENTRY POSITION UNKNOW	890
VOLVO	51	OTHER AUTOMOBILE	398
VOLVO	51	OTHER BUS	988
VOLVO	51	OTHER MEDIUM/HEAVY TRUCK	898
VOLVO	51	UNKNOWN AUTOMOBILE	399
VOLVO	51	UNKNOWN MEDIUM/HEAVY TRUCK	899
VOLVO	51	UNKNOWN TYPE BUS	989
VOLVO	51	UNKNOWN VEHICLE	999
VOLVO	51	V50	48
VOLVO	51	XC90	401
WARD LAFRANCE	98	MEDIUM/HEAVY - CBE	898
WARD LAFRANCE	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	898
WARD LAFRANCE	98	MEDIUM/HEAVY - COE/HIGH ENTRY	898
WARD LAFRANCE	98	MEDIUM/HEAVY - COE/LOW ENTRY	898
WARD LAFRANCE	98	MEDIUM/HEAVY - OTHER	898
WARD LAFRANCE	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	898
WARD LAFRANCE	98	MEDIUM/HEAVY BASED MOTORHOME	898
WESTERN STAR	98	MEDIUM/HEAVY - CBE	804
WESTERN STAR	98	MEDIUM/HEAVY - COE/ENTRY POSITION UNKNOW	804
WESTERN STAR	98	MEDIUM/HEAVY - COE/HIGH ENTRY	804
WESTERN STAR	98	MEDIUM/HEAVY - COE/LOW ENTRY	804
WESTERN STAR	98	MEDIUM/HEAVY - OTHER	804
WESTERN STAR	98	MEDIUM/HEAVY - UNKNOWN ENGINE LOCATION	804
WESTERN STAR	98	MEDIUM/HEAVY BASED MOTORHOME	804
WINNEBAGO	98	LIGHT TRUCK BASED MOTORHOME	498
WINNEBAGO	98	MEDIUM / HEAVY OTHER	898
WINNEBAGO	98	MEDIUM / HEAVY UNKNOWN	899
WINNEBAGO	98	MOTOR HOME	850
WINNEBAGO	98	UNKNOWN TYPE LIGHT MOTORHOME	499
WINNEBAGO	98	UNKNOWN VEHICLE	999
WINNEBAGO	98	VAN BASED MOTORHOME	470
YAMAHA	76	ATC/ATV (000-050CC)	731
YAMAHA	76	ATC/ATV (051-124CC)	732
YAMAHA	76	ATC/ATV (125-349CC)	733
YAMAHA	76	ATC/ATV (350CC-OVER)	734
YAMAHA	76	ATC/ATV (UNKNOWN CC)	739
YAMAHA	76	MOTORCYCLE (000-050CC)	701
YAMAHA	76	MOTORCYCLE (051-124CC)	702
YAMAHA	76	MOTORCYCLE (125-349CC)	703

MAKENAME	SAS MAKE	MODELNAME	SAS MODEL
YAMAHA	76	MOTORCYCLE (350-449CC)	704
YAMAHA	76	MOTORCYCLE (450-749CC)	705
YAMAHA	76	MOTORCYCLE (750CC-OVER)	706
YAMAHA	76	MOTORCYCLE (UNKNOWN CC)	709
YAMAHA	76	OTHER MOTORED CYCLE	798
YAMAHA	76	OTHER VEHICLE	998
YAMAHA	76	UNKNOWN MOTORED CYCLE	799
YUGO	57	GV	31
YUGO	57	OTHER AUTOMOBILE	398
YUGO	57	UNKNOWN AUTOMOBILE	399
YUGO	57	UNKNOWN VEHICLE	999

CHILD SEAT APPENDIX

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
ISS	Baby Trend	Flex Loc	795140669	122
ISS	Baby Trend	LatchLoc	795140669	846
BSS	Baby Trend	Recaro	795140669	343
ISS	Baby Trend	Tahoe	795140669	130
BSS	Baby Trend	Trend	795140669	344
CSS	Babyhood	Baby Sitter, Wonda Chair	21	249
CSS	Babyhood	Baby Sitter, Wonda Chair	21	249
BSS	Basic Comfort	Booster	592039456	548
BSS	Basic Comfort	Galaxy 2000	592039456	636
CSS	Britax	Advantage	592039459	702
ISS	Britax	Baby Safe	592039459	131
ISS	Britax	Baby Trend Latch-Loc	592039459	133
BSS	Britax	Bodyguard	592039459	836
CSS	Britax	Boulevard	592039459	265
ISS	Britax	Companion	592039459	132
BSS	Britax	Cruiser	592039459	640
CSS	Britax	Decathlon	592039459	266
CSS	Britax	Elite	592039459	677
FSS	Britax	Expressway	592039459	706
FSS	Britax	Freeway, Plus	592039459	701
CSS	Britax	Galaxy	592039459	267
ISS	Britax	Handle With Care	592039459	639
FSS	Britax	Husky	592039459	811
FSS	Britax	Laptop	592039459	815
CSS	Britax	Marathon	592039459	812
BSS	Britax	Parkway	592039459	331
FSS	Britax	Regent	592039459	705
BSS	Britax	Roadster	592039459	531
ISS	Britax	Rock -a- tot	592039459	641
CSS	Britax	Roundabout	592039459	637
BSS	Britax	Stariser / Comfy	592039459	530
FSS	Britax	Traveller Plus	592039459	700
CSS	Britax	Wizard	592039459	845
ISS	Buick	Baby Safe	592044337	129
INT	Buick	Century Integrated Seat	592044337	950
INT	Buick	Regal Integrated Seat	592044337	950
ISS	Car Seat Speciality	Nania Baby One	158272	123
CSS	Car Seat Speciality	Nania Convertible	158272	268
BSS	Car Seat Speciality	Nania Ola	158272	329
BSS/FSS	Car Seat Specialty	Airway	592039485	830
BSS	Car Seat Specialty	Duo Highback Booster	592039485	520
CSS	Car Seat Specialty	Nania Basic	592039485	269
BSS/FSS	Car Seat Specialty	Nania Nuevo	592039485	851
BSS/FSS	Car Seat Specialty	Nania Solo	592039485	850
CSS	Car Seat Specialty	Safety Basic Convertible	592039485	521
BSS	Car Seat Specialty	Speedway Booster	592039485	522
FSS	Car Seat Specialty	Speedway Car Seat	592039485	526
BSS	Car Seat Specialty	Topper Highback/LoBack	592039485	532
BSS	Car Seat Specialty	Uno/Polo	592039485	704
CSS	Century Products	1000 STE	1	205
CSS	Century Products	1500 STE	1	635
CSS	Century Products	2000 STE	1	206
CSS	Century Products	3000 STE, 3500 STE	1	207
ISS	Century Products	4-in-1 Travel Solutions	1	591
CSS	Century Products	4100	1	710
CSS	Century Products	4200	1	630
CSS	Century Products	4300	1	631
CSS	Century Products	4400	1	632
ISS	Century Products	4500	1	633
FSS	Century Products	4600	1	709
CSS	Century Products	5000 STE, 5500 STE	1	250
BSS/FSS	Century Products	8480 Booster	1	634
CSS	Century Products	Accel	1	534

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
ISS	Century Products	Advanta	1	513
ISS	Century Products	Assura	1	514
ISS	Century Products	Assura Premiere	1	771
ISS	Century Products	Assura V	1	515
ISS	Century Products	Avanta SE	1	772
CSS	Century Products	Bravo	1	596
BSS/FSS	Century Products	Breverra	1	599
BSS/FSS	Century Products	Breverra Ascend, Sport	1	516
BSS/FSS	Century Products	Breverra Classic	1	774
BSS/FSS	Century Products	Breverra Contour	1	600
BSS/FSS	Century Products	Breverra Contour SE	1	601
BSS	Century Products	Breverra Contour Sport	1	519
BSS/FSS	Century Products	Breverra Metro	1	517
BSS/FSS	Century Products	Breverra Premier	1	518
BSS/FSS	Century Products	Breverra Transit	1	792
BSS/FSS	Century Products	CR3	1	598
FSS	Century Products	Commander	1	301
ISS	Century Products	Infant 560, 565, 570	1	565
ISS	Century Products	Infant 580, 590	1	569
ISS	Century Products	Infant Love Seat	1	567
BSS/FSS	Century Products	Next Step	1	776
CSS	Century Products	Nexus	1	597
CSS	Century Products	Ovation	1	594
CSS	Century Products	Ovation Encore	1	684
CSS	Century Products	Ovation Select Fit	1	595
CSS	Century Products	Room To Grow	1	592
BSS/FSS	Century Products	Safe-T-Rider	1	801
ISS	Century Products	Smart Fit	1	593
ISS	Century Products	Smart Fit Plus, Elite	1	625
ISS	Century Products	Smart Fit Supreme	1	623
CSS	Century Products	Smart Move	1	681
CSS	Century Products	Smart Move XT, SE	1	533
ISS	Century/Graco	530	592044335	602
ISS	Century/Graco	560	592044335	536
ISS	Century/Graco	Avanta	592044335	537
ISS	Century/Graco	Celestia	592044335	562
CSS	Century/Graco	Encore	592044335	686
BSS/FSS	Century/Graco	Simpson	592044335	397
ISS	Century/Graco	Vante V	592044335	814
ISS	Century/Graco	Vante V	592044335	804
INT	Chevrolet	Astro Integrated Seat	592044342	950
INT	Chevrolet	Geo Prizm Integrated Seat	592044342	950
INT	Chevrolet	Lumina Integrated Seat	592044342	950
INT	Chevrolet	Venture Integrated Seat	592044342	950
ISS	Chicco	KeyFit	592044095	
FSS	Chicco	Shuttle	592044095	685
INT	Chrysler	Cirrus Integrated Seat	592044341	950
INT	Chrysler	Concorde Integrated Seat	592044341	950
INT	Chrysler	Town & Country SX, LX Integrated Seat	592044341	950
FSS	Collier-Keyworth	Co-Pilot	3	303
ISS	Collier-Keyworth	Cuddle Shuttle	3	104
CSS	Collier-Keyworth	Formula 1	3	547
CSS	Collier-Keyworth	Roundtripper	3	210
CSS	Collier-Keyworth	Safe & Sound II	3	209
SNSS	Columbia Medical	2000	28	703
BSS	Combi	Apogee	156859	342
CSS	Combi	Avatar	156859	271
ISS	Combi	Connection	156859	136
BSS	Combi	Everest	156859	347
ISS	Combi	Tyro	156859	134
CSS	Combi	Victoria	156859	270
BSS	Combi	Yorktown	156859	345
BSS/FSS	Compass	Apex	155279	857

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
BSS	Compass	B500 Folding Booster	155279	346
CSS	Cosco/Doral	5 PT	4	215
BSS/FSS	Cosco/Doral	Adventurer II	4	535
BSS/CSS	Cosco/Doral	Alpha Omega	4	551
BSS	Cosco/Doral	Ambassador	4	325
ISS	Cosco/Doral	Arriva	4	552
CSS	Cosco/Doral	Auto Trac	4	553
CSS	Cosco/Doral	Comfort Ride	4	751
CSS	Cosco/Doral	Commuter	4	554
BSS/FSS	Cosco/Doral	Commuter High Back Booster	4	324
BSS	Cosco/Doral	Complete Voyager	4	725
CSS	Cosco/Doral	Cosco Safe & Easy	4	213
CSS	Cosco/Doral	Cosco Safe & Snug	4	214
ISS	Cosco/Doral	Cosco TLC	4	105
ISS	Cosco/Doral	Designer 22	4	726
ISS	Cosco/Doral	Designer 35	4	727
ISS	Cosco/Doral	Dream Ride	4	728
BSS/FSS	Cosco/Doral	Eddie Bauer 02-429	4	679
BSS/CSS	Cosco/Doral	Eddie Bauer 02-537	4	718
ISS	Cosco/Doral	Eddie Bauer 02-770	4	719
BSS/FSS	Cosco/Doral	Eddie Bauer 02-849, 02-880	4	668
CSS	Cosco/Doral	Eddie Bauer 02-870	4	669
CSS	Cosco/Doral	Eddie Bauer 02-875	4	670
ISS	Cosco/Doral	Eddie Bauer Comfort	4	124
BSS/CSS	Cosco/Doral	Eddie Bauer Deluxe 3-in-1	4	326
BSS/CSS	Cosco/Doral	Eddie Bauer Deluxe Convertible	4	500
ISS	Cosco/Doral	Eddie Bauer Integrated Travel System	4	135
BSS/CSS	Cosco/Doral	Enspira	4	502
BSS/FSS	Cosco/Doral	Explorer	4	672
ISS	Cosco/Doral	First Ride	4	673
ISS	Cosco/Doral	First Ride	4	673
BSS/FSS	Cosco/Doral	Grand Explorer	4	674
BSS/FSS	Cosco/Doral	High Backed Booster	4	550
BSS	Cosco/Doral	Highrise	4	328
ISS	Cosco/Doral	Infant Car Seat	4	675
BSS/CSS	Cosco/Doral	Intera	4	
BSS/CSS	Cosco/Doral	Intera	4	503
FSS	Cosco/Doral	Maxi-Cosi Priori	4	615
CSS	Cosco/Doral	Olympian	4	576
ISS	Cosco/Doral	Opus 35	4	577
BSS	Cosco/Doral	Protek	4	323
CSS	Cosco/Doral	Regal Ride	4	578
CSS	Cosco/Doral	Scenera	4	272
CSS	Cosco/Doral	Soft Shield	4	579
BSS/FSS	Cosco/Doral	Summit	4	797
ISS	Cosco/Doral	TLC	4	580
CSS	Cosco/Doral	Touriva	4	581
VSS	Cosco/Doral	Travel Vest	4	720
BSS	Cosco/Doral	Traveler	4	332
CSS	Cosco/Doral	Triad	4	582
ISS	Cosco/Doral	Turnbout	4	583
ISS	Cosco/Doral	Ultra Dream Ride	4	584
BSS	Cosco/Doral	Valet	4	333
BSS/FSS	Cosco/Doral	Vantage Point	4	852
BSS/FSS	Cosco/Doral	Ventura/Vision	4	586
BSS	Cosco/Doral	Vista	4	800
BSS	Cosco/Doral	Voyager	4	585
CSS	Cosco/Peterson	Safe & Easy	5	764
CSS	Cosco/Peterson	Safe & Snug	5	765
CSS	Cosco/Peterson	Safe-T-Seat	5	217
CSS	Cosco/Peterson	Safe-T-Shield	5	218
FSS	Cosco/Peterson	Travel Hi-Lo - Includes Deluxe High Back	5	305
BSS	Cosco/Peterson	Traver Hi-Lo	5	671

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
INT	Dodge	Caravan Integrated Seat	592044344	950
INT	Dodge	Grand Caravan Integrated Seat	592044344	950
INT	Dodge	Intrepid Integrated Seat	592044344	950
INT	Dodge	Neon Integrated Seat	592044344	950
INT	Dodge	Stratus Integrated Seat	592044344	950
BSS	Downunder	Kangaroo	592044345	770
Unknown	E-Z On Products	E-Z-On Vest - Includes 101-TCXS, 101-TC, 102-TC(8 sizes)	25	403
CSS	Early Development	Guardian Comfort	592039614	667
CSS	Early Development	Guardian Express	592039614	773
CSS	Early Development	Guardian Folder	592039614	775
CSS	Evenflo	7 Year	6	616
BSS/FSS	Evenflo	Apollo	6	813
BSS	Evenflo	Big Kid	6	330
CSS	Evenflo	Bobby Mac	6	223
CSS	Evenflo	Bobby-Mac Champion	6	620
FSS	Evenflo	Bobby-Mac Lite	6	621
CSS	Evenflo	Bobby-Mac Super	6	622
FSS	Evenflo	Booster	6	306
BSS	Evenflo	Booster Seat	6	624
CSS	Evenflo	Champion	6	626
BSS/FSS	Evenflo	Chase Comfort Touch	6	798
BSS/FSS	Evenflo	Comet	6	835
CSS	Evenflo	Conquest I	6	627
CSS	Evenflo	Conquest V	6	628
ISS	Evenflo	Cozy Carry	6	794
ISS	Evenflo	Discovery	6	629
ISS	Evenflo	Discovery	6	629
ISS	Evenflo	Dyn-O-Mite	6	109
ISS	Evenflo	Embrace	6	847
BSS/FSS	Evenflo	Express	6	545
ISS	Evenflo	First Choice	6	546
HSS	Evenflo	Harness	6	724
CSS	Evenflo	Horizon	6	707
CSS	Evenflo	Horizon I	6	524
CSS	Evenflo	Horizon V	6	525
ISS	Evenflo	Infant Seat 456	6	508
ISS	Evenflo	Joy Ride	6	115
CSS	Evenflo	Medallion	6	510
CSS	Evenflo	Medallion V	6	527
CSS	Evenflo	Medallion V	6	527
CSS	Evenflo	My Style	6	273
CSS	Evenflo	Odyssey I	6	643
CSS	Evenflo	Odyssey V	6	646
ISS	Evenflo	On My Way	6	649
ISS	Evenflo	On My Way, Position Right	6	654
ISS	Evenflo	On My Way, Position Right	6	654
CSS	Evenflo	One Step	6	655
ISS	Evenflo	Port About	6	805
ISS	Evenflo	Port About 3	6	832
ISS	Evenflo	Port About 5, Comfort Touch, Premier	6	831
BSS	Evenflo	Right Fit	6	656
CSS	Evenflo	Scout	6	657
CSS	Evenflo	Scout	6	657
CSS	Evenflo	Secure Advantage I	6	658
CSS	Evenflo	Secure Advantage V	6	659
CSS	Evenflo	Secure Choice	6	660
BSS	Evenflo	Secure Comfort	6	661
BSS/CSS	Evenflo	Seven Year	6	605
BSS/FSS	Evenflo	Sidekick	6	606
FSS	Evenflo	Sightseer	6	319
BSS	Evenflo	Sightseer Comfort Touch	6	834
CSS	Evenflo	Titan	6	793
CSS	Evenflo	Titan 5	6	816

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
ISS	Evenflo	Tot Taxi	6	806
CSS	Evenflo	Town & Country	6	607
BSS/FSS	Evenflo	Traditions	6	853
ISS	Evenflo	Travel Tandem	6	117
CSS	Evenflo	Tribute	6	817
CSS	Evenflo	Tribute 5	6	818
CSS	Evenflo	Triumph	6	799
CSS	Evenflo	Trooper	6	608
BSS/FSS	Evenflo	Two-in-One	6	609
CSS	Evenflo	Ultara I	6	610
CSS	Evenflo	Ultara II	6	611
CSS	Evenflo	Ultara Premier	6	612
CSS	Evenflo	Ultara Premier V	6	613
CSS	Evenflo	Ultara V	6	614
CSS	Evenflo	Vanguard 1 Comfort Touch	6	833
CSS	Evenflo	Vanguard 5	6	809
VSS	Evenflo	Vest	6	248
CSS	Evenflo	Victory 5	6	808
BSS/FSS	Evenflo	Vision	6	264
FSS	Evenflo	Wings	6	307
CSS	FBS, Inc. Renolux	GT-2000	592044346	549
CSS	FBS, Inc. Renolux	GT-5000 Turn-A-Tot	592044346	574
CSS	FBS, Inc. Renolux	GT-7000	592044346	575
CSS	Fisher-Price	9100, 9101	12	555
CSS	Fisher-Price	9100, 9101	12	555
CSS	Fisher-Price	Bolster	12	556
CSS	Fisher-Price	Comfort Plus	12	557
CSS	Fisher-Price	Deluxe	12	558
FSS	Fisher-Price	Futura 20/60	12	559
FSS	Fisher-Price	Futura 20/60	12	559
BSS/FSS	Fisher-Price	Grow with me	12	662
ISS	Fisher-Price	Infant Seat	12	663
ISS	Fisher-Price	Infant Seat 9149, 9173	12	664
ISS	Fisher-Price	Infant Seat 9149, 9173	12	664
BSS/CSS	Fisher-Price	Safe Embrace	12	587
BSS	Fisher-Price	Safe Embrace Booster	12	828
ISS	Fisher-Price	Safe Embrace Infant Seat	12	588
ISS	Fisher-Price	Stay in View	12	589
BSS/FSS	Fisher-Price	T-Shield Booster	12	590
INT	Ford	Escort Integrated Seat	7	950
INT	Ford	Explorer Integrated Seat	7	950
INT	Ford	Taurus Integrated Seat	7	950
FSS	Ford	Tot Guard	7	308
INT	Ford	Windstar Integrated Seat	7	950
INT	GMC	Safari Integrated Seat	592044347	950
BSS	Gerry	Belt Right	592044349	761
BSS/FSS	Gerry	Double Guard	592044349	762
BSS/FSS	Gerry	Evolution	592044349	777
ISS	Gerry	Guard with Glide	592044349	779
ISS	Gerry	Guard with Glide	592044349	779
CSS	Gerry	Guardian	592044349	781
CSS	Gerry	One Click	592044349	784
BSS	Gerry	Pro-Ride	592044349	785
CSS	Gerry	Pro-Tech	592044349	787
CSS	Gerry	ReadyLock	592044349	789
ISS	Gerry	Secure Ride	592044349	791
ISS	Gerry	Secure Ride	592044349	791
CSS	Gerry	SecureLock	592044349	617
CSS	Gerry	SecureLock	592044349	617
BSS	Gerry	Super Shield	592044349	618
BSS	Gerry	Voyager	592044349	619
BSS/FSS	Graco	CarGo	8	859
ISS	Graco	Cherish Car Bed	8	729

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
BSS/FSS	Graco	Cherished CarGo	8	730
ISS	Graco	CoachRider Travel System	8	840
CSS	Graco	ComfortSport	8	795
ISS	Graco	DuoGlider Travel System	8	841
CSS	Graco	GT1000	8	228
BSS/FSS	Graco	Grand Cargo	8	822
ISS	Graco	Infant Car Bed	8	733
ISS	Graco	Infant Seat/Carrier	8	735
ISS	Graco	LiteRider	8	837
ISS	Graco	LiteRider Breeze	8	844
ISS	Graco	LiteRider Glider	8	843
ISS	Graco	LiteRider Sterling	8	842
CSS	Graco	Little Trav'ler	8	227
ISS	Graco	MetroLite Travel System	8	839
BSS	Graco	My CarGo	8	334
BSS	Graco	MyCarGo	8	823
BSS/FSS	Graco	Platinum CarGo	8	854
BSS/FSS	Graco	Quest	8	737
ISS	Graco	Snug Ride	8	749
ISS	Graco	Snug Ride DX5	8	750
ISS	Graco	Snug Seat	8	111
BSS/FSS	Graco	Teasured Cargo	8	824
BSS	Graco	TurboBooster	8	802
BSS/FSS	Graco	Ultra Cargo	8	829
CSS	Graco	Vanguard Comfort Touch	8	810
CSS	Guardian	Comfort Plus	592044350	757
BSS	Guardian	Double Up	592044350	758
CSS	Guardian	Folder Plus	592044350	682
BSS	IMMI	Komfort Kruiser	193039	827
FSS	IMMI	SafeGuard	193039	711
CSS	International	Teddy Tot Astrorider	15	760
BSS	International	Teddy Tot Astrorider 6000 Series	15	310
INT	Jeep	Grand Cherokee Integrated Seat	592044351	950
HSS	Joey Safe	Safety Harness	795140504	807
BSS	Jupiter	Grand Touring	592044352	722
BSS	Jupiter	Komfort Rider	592044352	723
BSS	Jupiter	Komfort Rider GT	592044352	604
INT	Kia	Sephia Integrated Seat	592044353	950
CSS	Kolcraft	Auto-Mate - Includes Dial-A-Fit	9	252
CSS	Kolcraft	Dial-A-Fit	9	778
BSS/FSS	Kolcraft	Flip'n Go	9	780
CSS	Kolcraft	Hi-Rider XL2	9	782
ISS	Kolcraft	Infant Car Seat	9	783
ISS	Kolcraft	Infant Rider	9	786
CSS	Kolcraft	Perfect F.I.T.	9	247
CSS	Kolcraft	Performa	9	788
CSS	Kolcraft	Playskool	9	253
BSS	Kolcraft	Prodigy	9	790
CSS	Kolcraft	Quickstep	9	232
CSS	Kolcraft	Redi-Rider	9	231
ISS	Kolcraft	Rock 'n Ride	9	112
ISS	Kolcraft	Secura	9	731
CSS	Kolcraft	Secure Fit	9	732
BSS	Kolcraft	Tot Rider	9	734
FSS	Kolcraft	Tot Rider Quick Step	9	838
ISS	Kolcraft	Travel About	9	736
CSS	Kolcraft	Traveler 700	9	260
CSS	Kolcraft	Ultra Ride	9	233
BSS	LaRoche	Grizzly Bear	592044354	738
BSS	LaRoche	Polar Bear	592044354	335
BSS	LaRoche	Teddy Bear	592044354	739
CSS	Lennox	Tattle Tale	180600	275
VSS	Little Cargo	Travel Vest	592044355	740

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
ISS	Mercedez Benz	Baby Smart	592044097	741
BSS	Mercedez Benz	Booster Seat	592044097	690
FSS	Mercedez Benz	Toddler Seat	592044097	680
INT	Mercury	Mountaineer Integrated Seat	592044357	950
INT	Mercury	Sable Integrated Seat	592044357	950
INT	Mercury	Tracer Integrated Seat	592044357	950
INT	Mercury	Villager Integrated Seat	592044357	950
CSS	Nissan	Child Safety Seat	16	746
CSS	Nissan	Infant-Child Safety Seat	16	234
INT	Nissan	Quest Integrated Seat	16	950
INT	Oldsmobile	Silhouette Integrated Seat	592044358	950
ISS	Peg Perego	Primo Viaggio	795140735	796
ISS	Pioneered II	Safety System Infant Car Seat	158279	125
INT	Plymouth	Breeze Integrated Seat	592044360	950
INT	Plymouth	Grand Voyager Integrated Seat	592044360	950
INT	Pontiac	Grand Prix Integrated Seat	592044361	950
INT	Pontiac	Montana Integrated Seat	592044361	950
INT	Pontiac	Trans Sport Integrated Seat	592044361	950
ISS	Porsche	Baby-Safe	592044362	650
BSS	Porsche	Comfy	592044362	651
CSS	Porsche	Convertible	592044362	678
FSS	Porsche	Prince	592044362	652
BSS	Porsche	Zoom	592044362	653
CSS	Pride-Trimble	Pride-Ride 820 & 830 Series	17	235
CSS	Prodigy	Kiwi Plus	22	254
CSS	Prodigy	Shuttle	22	255
CSS	Questor/Kantwet	Care Seat	18	236
CSS	Questor/Kantwet	One Step	18	752
FSS	Questor/Kantwet	Safe Guard	18	237
BSS	Recaro	Start	592044363	665
BSS	Renolux	Booster	23	666
CSS	Renolux	GT 4000	23	714
CSS	Renolux	GT 7000	23	715
CSS	Renolux	Renolux GT 2000	23	256
CSS	Renolux	Turn-A-Tot GT 5000	23	753
INT	Saab	9-3 Integrated Seat	592044365	950
INT	Saab	9-5 Integrated Seat	592044365	950
ISS	Safe-n-Sound	Capsule	159187	126
FSS	Safe-n-Sound	Series 3	159187	712
ISS	Safe-n-Sound	Unity	159187	137
BSS	Safeline	Mission Control	592044366	573
BSS	Safeline	Pilot	592044366	695
CSS	Safeline	Sit n' Stroll	592044366	696
CSS	Safety 1st	Comfort Ride	795139977	274
ISS	Safety 1st	Designer 22	795139977	821
BSS/CSS	Safety 1st	Enspira	795139977	505
CSS	Safety 1st	Forerunner	795139977	820
BSS	Safety 1st	Highrider	795139977	336
BSS/CSS	Safety 1st	Intera	795139977	504
BSS/FSS	Safety 1st	Prospect	795139977	856
ISS	Safety 1st	Starter	795139977	127
BSS/FSS	Safety 1st	Surveyor	795139977	855
VSS	Safety 1st	Tote 'n Go	795139977	900
BSS/FSS	Safety 1st	Vantage Point	795139977	819
BSS	Safety Angel	Ride Ryte	158569	337
VSS	Safety Angel	Travel Vest	158569	803
FSS	Safety Baby	Airway	795140481	825
BSS/FSS	Safety Baby	Speedway	795140481	826
SNSS	Safety Rehab	900 Series Transporter	31	412
SNSS	Sammons Preston	Tumbleforms Carrie	592044367	698
FSS	Snug Seat	Gorilla	30	511
FSS	Snug Seat	Snug Seat 1	30	411
FSS	Snug Seat	Snug Seat 2	30	688

TYPE	MAKE	MODEL	SAS MAKE	SAS MODEL
ISS	Snug Seat	Snug Seat Car Bed	30	512
CSS	Snug Seat	Spelcast	30	528
CSS	Strolee	597	11	708
CSS	Strolee	599	11	523
BSS/FSS	Strolee	Airway Kansas	11	858
ISS	Strolee	Baby One	11	128
BSS	Strolee	Highride	11	339
BSS	Strolee	McKinley	11	340
FSS	Strolee	Quick Click	11	243
BSS	Strolee	Saratoga	11	338
CSS	Strolee	Wee Care 600 Series	11	241
BSS/FSS	Strolee	Wee Care Booster	11	509
BSS	Strolee	Yorktown 8600	11	341
INT	Subaru	Legacy Integrated Seat	592044368	950
CSS	Sunshine Kids	Radian	198249	276
BSS	Team Tex	Polo Uno	178407	327
INT	Toyota	Camry Integrated Seat	592044369	950
INT	Toyota	Corolla Integrated Seat	592044369	950
INT	Toyota	Sienna Integrated Seat	592044369	950
FSS	Travel Safety	Inflatable Car Seat	592044105	691
CSS	Tripleplay Products	Sit n' Stroll	193056	277
FSS	Tumble Forms	Carrie Car Seat	33	404
Unknown	Unknown Make	Unknown Model	-999	998
CSS	Volvo	240, 260	19	539
BSS	Volvo	Booster Cushion	19	692
BSS	Volvo	Child Cushion	19	245
INT	Volvo	S40 Integrated Seat	19	950
INT	Volvo	S70/V70 Integrated Seat	19	950
INT	Volvo	S80 Integrated Seat	19	950
INT	Volvo	V40 Integrated Seat	19	950
INT	Volvo	V70 Integrated Seat	19	950
CSS	Welsh	Travel Tot	20	246
FSS	ZB Sales	Bobob	592044370	538

SAS RECORD DEFINITIONS

■ACCDESC

-A detailed summary of the crash and vehicles involved.

-One accident description for each crash.

-Each crash can have multiple records describing the crash.

-Each record is identified by SCASEID and LINENO.

■ACCIDENT

-The details of a crash.

-One record per crash.

-Each record is identified by SCASEID

■ADAPTEQ

-Adaptive equipment for a vehicle.

-One record for each type of adaptive equipment.

-Interior vehicle inspection required.

-Records are created only for vehicles that are known to have adaptive equipment (VI data set, ADAPTEQ=1).

-Each record is identified by SCASEID, VEHNO, and EQUIPTYP.

■AIRBAG

-Describes all the air bags that can be identified in a vehicle.

-One record per air bag (all air bags covering both occupied and unoccupied seat positions) for vehicles with an interior inspection.

-If a vehicle interior is not inspected, only air bags which cover occupied seat positions will be included.

-Each record is identified by SCASEID, VEHNO, and BAGNO.

■BAGSEAT

-Describes the seat locations that an air bag is associated with

-One record per seat location

-Each record is identified by SCASEID, VEHNO, BAGNO, and SEAT

■CDCCRSH

-Crash deformation and crash profile data.

-One record per CDC.

-Exterior vehicle inspection required.

-Each record is identified by SCASEID, VEHNO, ACCSEQ and DEFORMNO.

SAS RECORD DEFINITIONS

■CHILDSEAT
-The attributes of a child restraint system.
-One record per child seat (occupied or not) for vehicle with an interior inspection.
-If a vehicle interior is not inspected, only child seats for occupied seat positions are included.
-Each record is identified by SCASEID, VEHNO, and CHSEATNO.

■CONTACT
-Potential occupant contacts identified during vehicle inspection.
-Interior vehicle inspection required.
-One record per interior component contacted.
-Each record is identified by SCASEID, VEHNO, and REFID.

■DISTRACT
-Distractions identified for a driver.
-One record for each type of distraction.
-Records are created only for drivers that are distracted (GV data set, DRATENTN=3).
-Each record is identified by SCASEID, VEHNO, and DRIVDIS.

■DOORS
-The doors of a vehicle as they relate to a crash.
-One record per door.
-Interior vehicle inspection required.
-Each record is identified by SCASEID, VEHNO, and DLOCAT.

■EDRABAG
-Event Data Recorder airbag deployment data.
-One record for each deployed airbag identified by the EDR.
-Exterior vehicle inspection required.
-Only present when EDR information is obtained (GV data set, EDRINFO=2.
-Each record is identified by SCASEID, VEHNO, EBAGLOC, POSITION.

SAS RECORD DEFINITIONS

■EDRCRASH

-Event Data Recorder delta v measurements.

-One record for every 10 milliseconds reported by the EDR for deployment and non-deployment events, by DVCLASS.

-Exterior vehicle inspection required.

-Only present when EDR information is obtained (GV data set, EDRINFO=2.

-Each record is identified by SCASEID, VEHNO, EACCSEQ, DVCLASS, and MSECONDS.

■EDRDATA

-EDR timed measurements for a variety of instruments.

-One record for every event recorded by the EDR.

-Exterior vehicle inspection required.

-Only present when EDR information is obtained (GV data set, EDRINFO=2.

-Each record is identified by SCASEID, VEHNO, and EACCSEQ.

■EDRPRECR

-Event Data Recorder pre crash measurements

-One record for every second for 5 seconds prior to each event recorded.

-Exterior vehicle inspection required.

-Only present when EDR information is obtained (GV data set, EDRINFO=2.

-Each record is identified by SCASEID, VEHNO, EACCSEQ and PRESEC.

■EMS

-The details of EMS unit type and EMS times.

-One record for each EMS unit which “responded”.

-Each record is identified by SCASEID and EMSNO.

■EVENT

-The components of a harmful event.

-One record per event.

-Each record is identified by SCASEID and ACCSEQ.

SAS RECORD DEFINITIONS

■FUELTANK
-The details of a fuel tank system
-One record per fuel system.
-Exterior vehicle inspection required.
-Each record is identified by SCASEID, VEHNO, and TANKNO.

■GLAZING
-Information on glazing type, location, and damage
-One record per glazing position.
-Interior inspection required.
-Each record is identified by SCASEID, VEHNO, and GLOC.

■GV
-General vehicle information
-One record per vehicle.
-Each record is identified by SCASEID and VEHNO.

■INTGRTY
-Information on integrity loss (windows/doors)
-One record per area of integrity loss.
-Interior inspection required.
-There are records only where there is integrity loss (VI data set, INTGLOSS=1).
-Each record is identified by SCASEID, VEHNO, and PASINTEG.

■INTRSN
-Information on intrusion to the vehicle
-One record per intrusion where the intrusion is greater than 0.
-Interior inspection required.
-Each record is identified by SCASEID, VEHNO, and INTNUM.

■OA
-General occupant information
-One record per occupant.
-Each record is identified by SCASEID, VEHNO and OCCNO.

SAS RECORD DEFINITIONS

■OI

-Occupant injury information

-One record per injury per occupant.

-Each record is identified by SCASEID, VEHNO, OCCNO and INJNO.

■SEATLOC

-Information on seats in the vehicle.

-One record for each seat position (occupied and unoccupied)

-Interior inspection required.

-Each record is identified by SCASEID, VEHNO and SEATPOS.

■SPECSTDY

-Indicates the applicability of a special study.

-There is one record for each special study that applies to the crash.

-Each record is identified by SCASEID and STUDY.

■TIRE

-Information on vehicle tires.

-One record per wheel location per vehicle, four records for each vehicle.

-Exterior inspection required.

-Each record is identified by SCASEID, VEHNO and TLOC.

■TIREDMG

-Information on damage to tires.

-One record per wheel location per damage type (no records where the tire is not damaged or unknown damage).

-Exterior vehicle inspection required.

-There are records only for tires where TIRE data set, DAMAGE=1.

-Each record is identified by SCASEID, VEHNO, TLOC, and DAMTYPE.

■VEHSPEC

-Vehicle specifications.

-One record per CDS applicable vehicle.

-Each record is identified by SCASEID and VEHNO.

SAS RECORD DEFINITIONS

■VI

-General information on the vehicle interior.
-One record per vehicle with an interior inspection.
-Each vehicle is uniquely identified by SCASEID and VEHNO.

■VSIGN

-Vital sign information from official sources.
-One record per chronological vital sign.
-Each record is identified by SCASEID, VEHNO, OCCNO, and VSIGNNO

KEY MERGE/SORT VARIABLES

P = primary
S = secondary
(S) = other
variable can be used

DATASET	SCASEID	VEHNO	OCCNO	ACCSEQ	SEATPOS	SEAT	TLOC	BAGNO	DLOCAT	EMSNO	TANKNO	INTNUM	INJNO	DEFORMNO	CHSEATNO	GLOC	LINENO	EQUIPTYP	REFID	DRIVDIS	EBAGNO	DVCLASS	MSECONDS	EACCSEQ	PRESEC	PASINTEG	STUDY	DAMTYPE	VSIGNO	**DATASET**
ACCDESC	P																P													ACCDESC
ACCIDENT	P																													ACCIDENT
ADAPTEQ	P	P																P												ADAPTEQ
AIRBAG	P	P			(S)			P																						AIRBAG
BAGSEAT	P	P			P			P																						BAGSEAT
CDCCRSH	P	P		P										P																CDCCRSH
CHLDSEAT	P	P	S												P															CHLDSEAT
CONTACT	P	P	S																P											CONTACT
DISTRACT	P	P																		P										DISTRACT
DOORS	P	P							P																					DOORS
EDRABAG	P	P																			P									EDRABAG
EDRCRASH	P	P																				P	P	P						EDRCRASH
EDRDATA	P	P																						P						EDRDATA
EDRPRECR	P	P																						P	P					EDRPRECR
EMS	P	P								P																				EMS
EVENT	P			P																										EVENT
FUELTANK	P	P									P																			FUELTANK
GLAZING	P	P														P														GLAZING
GV	P	P																												GV
INTGRTY	P	P																								P				INTGRTY
INTRSN	P	P										P																		INTRSN
OA	P	P	P		S					(S)			(S)																	OA
OI	P	P	P					S					P																	OI
SEATLOC	P	P			P																									SEATLOC
SPECSTDY	P																										P			SPECSTDY
TIRE	P	P					P																							TIRE
TIREDMG	P	P					P																					P		TIREDMG
VEHSPEC	P	P																												VEHSPEC
VI	P	P																												VI
VSIGN	P	P	P																										P	VSIGN

Old Event Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.

The user should be especially careful with those marked with an asterisk.

An asterisk indicates a more complex relationship because:

1) two or more variables are needed in the new data set to derive the target variable

2) the old and new data sets do not contain the same types of record

Old SAS Variables				*** = More Complex**	**New SASOracle Variables**			
Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
EVENT	ACCSEQ	Accident Event Sequence Number	N		EVENT	ACCSEQ	Accident Event Sequence Number	N
EVENT	CLASS1	Class Of First Vehicle	N		EVENT	CLASS1	Class Of First Vehicle	N
EVENT	CLASS2	Class Of Other Vehicle	N		EVENT	CLASS2	Class Of Other Vehicle	N
EVENT	GADEV1	General Area Of Damage First Vehicle	C		EVENT	GADEV1	General Area Of Damage First Vehicle	C
EVENT	GADEV2	General Area Of Damage Other Vehicle	C		EVENT	GADEV2	General Area Of Damage Other Vehicle	C
EVENT	OBJCONT	Other Vehicle Number Or Object Contacted	N		EVENT	OBJCONT	Other Vehicle Number Or Object Contacted	N
EVENT	PSU	Primary Sampling Unit Number	N	*	ACCIDENt	PSU	Primary Sampling Unit Number	N
EVENT	RATWGT	Ratio Inflation Factor	N		EVENT	RATWGT	Ratio Inflation Factor	N
EVENT	STRATIF	Case Stratum	C		EVENT	STRATIF	Case Stratum	C
EVENT	VEHNUM	Vehicle Number	N		EVENT	VEHNUM	Vehicle Number	N
EVENT	VERSION	Version Number	N		EVENT	VERSION	Version Number	N

Old Accident Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or Attributes may be different. Refer to documentation for every variable.

The user should be especially careful with those marked with an asterisk.

An asterisk indicates a more complex relationship because:

1) two or more variables are needed in the new or old data set to derive the target variable
(e.g. ATREAT in the old Accident data set is derived from ATRET and CRFATAL in the new Accident data set.)

2) the old and new data sets do not contain the same types of record
(e.g. Accident data set has one record per crash but SPECSTDY has one record for each study a crash is involved with).

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
ACCIDENT	ADMINSS	Administrative Use	N	*	SPECSTDY	STUDY	Study Added When Relevant	N
ACCIDENT	AINJSER	Number Of Seriously Injured Occupants	N		ACCIDENT	AINJSER	Number Of Seriously Injured Occupants	N
ACCIDENT	AINJURED	Total Number Of Injured Occupants	N		ACCIDENT	AINJURED	Total Number Of Injured Occupants	N
ACCIDENT	ALCINV	Alcohol Involved In Accident	N		ACCIDENT	ALCINV	Alcohol Involved In Accident	N
ACCIDENT	AOPSS	Advanced Occupant Protection Special Study	N	*	SPECSTDY	STUDY	Study Added When Relevant	N
ACCIDENT	ATREAT	Maximum Treatment In Accident	N	*	ACCIDENT	ATRET	Initial Treatment	N
					ACCIDENT	CRFTAL	Number Of Fatalities In The Crash	N
ACCIDENT	DAYWEEK	Day Of Week Of Accident	N		ACCIDENT	DAYWEEK	Day Of Week Of Accident	N
ACCIDENT	DRGINV	Drug Involved	N		ACCIDENT	DRGINV	Drug Involved	N
ACCIDENT	EVENTS	Number Of Recorded Events In Accident	N		ACCIDENT	EVENTS	Number Of Recorded Events In Accident	N
ACCIDENT	FIRESTDY	Impact Fires	N	*	SPECSTDY	STUDY	Study Added When Relevant	N
ACCIDENT	MANCOLL	Manner Of Collision	N		ACCIDENT	MANCOLL	Manner Of Collision	N
ACCIDENT	MONTH	Month Of Accident	N		ACCIDENT	MONTH	Month Of Accident	N
ACCIDENT	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
ACCIDENT	PSUSTRAT	Primary Sampling Unit Stratification	N		ACCIDENT	PSUSTRAT	Primary Sampling Unit Stratification	N
ACCIDENT	RATWGT	Ratio Inflation Factor	N		All Data Sets	RATWGT	Ratio Inflation Factor	N
ACCIDENT	STRATIF	Case Stratum	C		All Data Sets	STRATIF	Case Stratum	C
ACCIDENT	TIME	Time Of Accident	N		ACCIDENT	TIME	Time Of Accident	N
ACCIDENT	VEHFORMS	Number General Vehicle Forms Submitted	N		ACCIDENT	VEHFORMS	Number General Vehicle Forms Submitted	N
ACCIDENT	VERSION	Version Number	N		ACCIDENT	VERSION	Version Number	N
ACCIDENT	YEAR	Year Of Accident	N		ACCIDENT	YEAR	Year Of Accident	N
TYP_ACC	TEXT66	Summary Text	C		ACCIDENT	CRSHDSC1	Crash Type	C

Old GV Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.
The user should be especially careful with those marked with an asterisk.
An asterisk indicates a more complex relationship because:
1) two or more variables are needed in the new data set to derive the target variable
(e.g. ROLLOVER in the old GV data set is derived from ROLLTYPE and ROLLTURN in the new GV data set.)
2) the old and new data sets do not contain the same types of record
(e.g GV has one record per vehicle but DISTRACT has one record per driver distraction).

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
GV	ACCSEQDV	Accident Sequence No For Highest Delta V	N		GV	ACCSEQDV	Accident Sequence No For Highest Delta V	N
GV	ACCTYPE	Accident Type	N		GV	ACCTYPE	Crash Type	N
GV	ALCTEST	Alcohol Test Result For Driver	N		GV	ALCTEST	Alcohol Test Result For Driver	N
GV	ALIGNMNT	Roadway Alignment	N		GV	ALIGNMNT	Roadway Alignment	N
GV	ANGOTHER	Heading Angle For Other Vehicle	N		GV	ANGOTHER	Heading Angle For Other Vehicle	N
GV	ANGTHIS	Heading Angle For This Vehicle	N		GV	ANGTHIS	Heading Angle For This Vehicle	N
GV	ANTILOCK	Antilock Brakes	N		GV	ANTILOCK	Antilock Brakes	N
GV	AOPSVEH	Aops Vehicle	N		GV	AOPSVEH	Aops Vehicle	N
GV	BAGDEPFV	Air Bag Deployment, First Seat Frontal	N		GV	BAGDEPFV	Air Bag Deployment, First Seat Frontal	N
GV	BAGDEPOV	Air Bag Deployment, Other	N		GV	BAGDEPOV	Air Bag Deployment, Other	N
GV	BAREQSP	Barrier Equivalent Speed	N		GV	HBAREQSP	Barrier Equivalent Speed	N
GV	BODYTYPE	Vehicle Body Type	N		GV	BODYTYPE	Vehicle Body Type	N
GV	CARBUR	Carburetion	C		GV	CARBUR	Carburetion	C
GV	CARGOWGT	Vehicle Cargo Weight	N		GV	CARGOWGT	Vehicle Cargo Weight	N
GV	CONDTREE	Post Collision Condition Of Tree Or Pole	N		GV	CONDTREE	Post Collision Condition Of Tree Or Pole	N
GV	CURBWGT	Vehicle Curb Weight	N		VEHSPEC	CURBWGT	Vehicle Curb Weight	N
GV	DAYRUNLT	Daylight Running Lights	C		GV	DAYRUNLT	Daylight Running Lights	C
GV	DOCTRAJ	Documentation Of Trajectory Data	N		GV	DOCTRAJ	Documentation Of Trajectory Data	N
GV	DRINKING	Police Reported Alcohol Presence	N		GV	DRINKING	Police Reported Alcohol Presence	N
GV	DRIVDIST	Driver's Distraction/Inattention To Driving	N	*	GV	DRATENTN	Driver's Distraction/Inattention To Driving	N
					DISTRACT	DRIVDIS	Driver Distraction	N
GV	DRIVE	Front/Rear Wheel Drive	N		VEHSPEC	DRIVE	Drive Wheels	N
GV	DRPRES	Driver Presence In Vehicle	N		GV	DRPRES	Driver Presence In Vehicle	N
GV	DRRACE	Driver's Race/Ethnic Origin	N		GV	DRRACE	Driver's Race/Ethnic Origin	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
GV	DRUGS	Reported Other Drug	N		GV	DRUGS	Reported Other Drug	N
GV	DRZIP	Driver's Zip Code	N		GV	DRZIP	Driver's Zip Code	N
GV	DVBASIS	Basis For Total Delta V (Highest)	N		GV	HDVBASIS	Basis For Total Delta V (Highest)	N
GV	DVCONFID	Confidence In Reconstruction	N		GV	DVCONFID	Confidence In Reconstruction	N
GV	DVEST	Estimated Highest Delta V	N		GV	HDVEST	Estimated Highest Delta V	N
GV	DVLAT	Lateral Component Of Delta V	N		GV	HDVLAT	Lateral Component Of Delta V	N
GV	DVLONG	Longitudinal Component Of Delta V	N		GV	HDVLONG	Longitudinal Component Of Delta V	N
GV	DVTOTAL	Total Delta V	N		GV	HDVTOTAL	Total Delta V	N
GV	ENERGY	Energy Absorption	N		GV	HENERGY	Energy Absorption	N
GV	FOURWHDR	Four Wheel Drive	C		GV	FOURWHDR	Four Wheel Drive	C
GV	FRTWHLDR	Front Wheel Drive	C		GV	FRTWHLDR	Front Wheel Drive	C
GV	FUELCODE	Fuel Code	C		GV	FUELCODE	Fuel Code	N
GV	IMPACTSP	Impact Speed	N		GV	HIMPCTSP	Impact Speed	N
GV	INSPTYPE	Type Of Vehicle Inspection	N		GV	INSPTYPE	Type Of Vehicle Inspection	N
GV	LANES	Number Of Lanes	N		GV	LANES	Number Of Lanes	N
GV	LGTCOND	Light Conditions	N		GV	LGTCOND	Light Conditions	N
GV	MAKE	Vehicle Make	N		GV	MAKE	Vehicle Make	N
GV	MANEUVER	Attempted Avoidance Maneuver	N		GV	MANEUVER	Attempted Avoidance Maneuver	N
GV	MCYCLDS	Motorcycle Engine Displacement	N		GV	MCYCLDS	Motorcycle Engine Displacement	N
GV	MODEL	Vehicle Model	N		GV	MODEL	Vehicle Model	N
GV	MODELYR	Vehicle Model Year	N		GV	MODELYR	Vehicle Model Year	N
GV	OCCFORMS	Number Of Occupant Forms Submitted	N		GV	OCCFORMS	Number Of Occupant Forms Submitted	N
GV	OCUPANTS	Number Of Occupants This Vehicle	N		GV	OCUPANTS	Number Of Occupants This Vehicle	N
GV	PREEVENT	Initial Critical (Precrash) Event	N		GV	PREEVENT	Initial Critical (Precrash) Event	N
GV	PREILOC	Pre-Impact Location	N		GV	PREILOC	Pre-Impact Location	N
GV	PREISTAB	Pre-Impact Stability	N		GV	PREISTAB	Pre-Impact Stability	N
GV	PREMOVE	Pre-Event Movement Prior Rec Crit Event	N		GV	PREMOVE	Pre-Event Movement Prior Rec Crit Event	N
GV	PROFILE	Roadway Profile	N		GV	PROFILE	Roadway Profile	N
GV	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
GV	RATWGT	Ratio Inflation Factor	N		GV	RATWGT	Ratio Inflation Factor	N
GV	RELINTER	Relation To Junction	N		GV	RELINTER	Relation To Junction	N
GV	RESTYPE	Restraint Type	C		GV	RESTYPE	Restraint Type	C
GV	ROLINDIR	Direction Of Initial Roll	N		GV	ROLINDIR	Direction Of Initial Roll	N
GV	ROLINLOC	Location Of Rollover	N		GV	ROLINLOC	Location Of Rollover	N
GV	ROLINTYP	Rollover Initiation Type	N		GV	ROLINTYP	Rollover Initiation Type	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
GV	ROLLOBJ	Rollover Initiation Object Contacted	N		GV	ROLLOBJ	Rollover Initiation Object Contacted	N
GV	ROLLOVER	Rollover	N	*	GV	ROLLTYPE	Rollover	N
					GV	ROLLTURN	Rollover Quarter Turns	N
GV	ROOF1	Roof	N		GV	ROOF1	Roof	N
GV	ROOF2	Optional Roof 1	N		GV	ROOF2	Optional Roof 1	N
GV	ROOF3	Optional Roof 2	N		GV	ROOF3	Optional Roof 2	N
GV	SERTR	Vin Series Truck	C		GV	SERTR	Vin Series Truck	C
GV	SPECOTH	Other Drug: Specimen Test Results	N		GV	SPECOTH	Other Drug: Specimen Test Results	N
GV	SPLIMIT	Speed Limit	N		GV	SPLIMIT	Speed Limit	N
GV	STRATIF	Case Stratum	C		All Data Sets	STRATIF	Case Stratum	C
GV	SURCOND	Roadway Surface Condition	N		GV	SURCOND	Roadway Surface Condition	N
GV	SURTYPE	Roadway Surface Type	N		GV	SURTYPE	Roadway Surface Type	N
GV	TOWHITCH	Towed Trailing Unit	N		GV	TOWHITCH	Towed Trailing Unit	N
GV	TOWPAR	Police Reported Vehicle Disposition	N		GV	TOWPAR	Police Reported Vehicle Disposition	N
GV	TRAFCONT	Traffic Control Device	N		GV	TRAFCONT	Traffic Control Device	N
GV	TRAFFLOW	Trafficway Flow	N		GV	TRAFFLOW	Trafficway Flow	N
GV	TRAVELSP	Police Reported Travel Speed	N		GV	TRAVELSP	Police Reported Travel Speed	N
GV	TRCTLFCT	Traffic Control Device Functioning	N		GV	TRCTLFCT	Traffic Control Device Functioning	N
GV	TRIPLOC	Loc. On Veh. Where Init Trip Force Appl	N		GV	TRIPLOC	Loc. On Veh. Where Init Trip Force Appl	N
GV	VAIS	Maximum Known Ais In This Vehicle	N		GV	VAIS	Maximum Known Ais In This Vehicle	N
GV	VEHNO	Vehicle Number	N		GV	VEHNO	Vehicle Number	N
GV	VEHTYPE	Type Of Vehicle	C		GV	VEHTYPE	Type Of Vehicle	C
GV	VEHUSE	Vehicle Special Use	N		GV	VEHUSE	Vehicle Special Use	N
GV	VEHWGT	Vin Vehicle Weight	N		GV	VEHWGT	Vin Vehicle Weight	N
GV	VERSION	Version Number	N		GV	VERSION	Version Number	N
GV	VIN	Vehicle Identification Number	C		GV	VIN	Vehicle Identification Number	C
GV	VINAMOD	Vin Model Cars And Trucks	C		GV	VINAMOD	Vin Model Cars And Trucks	C
GV	VINBT	Vin Body Type	C		GV	VINBT	Vin Body Type	C
GV	VINJSER	Number Seriously Injured In This Vehicle	N		GV	VINJSER	Number Seriously Injured In This Vehicle	N
GV	VINJURED	Number Injured In This Vehicle	N		GV	VINJURED	Number Injured In This Vehicle	N
GV	VINLNGTH	Vin Length	N		GV	VINLNGTH	Vin Length	N
GV	VINMAKE	Vin Make	C		GV	VINMAKE	Vin Make	C
GV	VINMODYR	Vin Model Year	N		GV	VINMODYR	Vin Model Year	N
GV	VTREAT	Maximum Treatment In This Vehicle	N	*	GV	VTRET	Maximum Treatment in this Vehicle	N
					GV	VFATAL	Number of Fatalities within this Vehicle	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
GV	WEATHER	Atmospheric Conditions	N		GV	WEATHER	Atmospheric Conditions	N
GV	WGTCDTR	Truck Weight Code	N		GV	WGTCDTR	Truck Weight Code	N
GV	WHLDRWHL	Number Wheels/Number Of Drive Wheels	N		GV	WHLDRWHL	Number Wheels/Number Of Drive Wheels	N
GV	OTBDYTYP	Body Type Of The Other Vehicle	N		GV	OTBDYTYP	Body Type Of The Other Vehicle	N
GV	OTVEHWGT	Weight Of The Other Vehicle	N		GV	OTVEHWGT	Weight Of The Other Vehicle	N
GV	FOVERIDE (1)	Front Override/Underride This Vehicle	N		CDCCRSH	RIDEUP (1)	Rideup	N
GV	ROVERIDE (1)	Rear Override/Underride This Vehicle	N		CDCCRSH	RIDEUP (1)	Rideup	N

(1) FOVERIDE and ROVERIDE in the old GV data set is related to RIDEUP in the new CDCCRSH data set.

An exact mapping back to the old variables is complex and requires the use of many variables in the new data sets including:

EVENT variables GADEV1, GADEV2, and CLASS2

CDCCRSH variables RANK, GAD, and RIDEUP

Old VE Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.

The user should be especially careful with those marked with an asterisk.

An asterisk indicates a more complex relationship because:

1) two or more variables are needed in the new data set to derive the target variable
(e.g. DOF1 in the old VE data set is derived from RANK and PDOF in the new CDCCRSH data set.)

2) the old and new data sets do not contain the same types of record
(e.g. VE data set has one record/vehicle but CDCCRSH has one record per CDC).

Old SAS Variables				* = More Complex	New SASOracle Variables			
Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
VE	ACCSEQ1	Accident Event Sequence (Highest)	N		GV	ACCSEQDV	Accident Sequence No For Highest Delta V	N
VE	ACCSEQ2	Accident Event Sequence (2nd Highest)	N	*	CDCCRSH	ACCSEQ	Event Sequence Number	N
					CDCCRSH	RANK	Rank	N
VE	ALTVEH	Multi-Stage Manufactured/Cert. Alt. Veh.	N		VEHSPEC	ALTVEH	Manufacturer Cert Mods	N
VE	DIRDAMW	Direct Damage Width	N	*	CDCCRSH	DIRDAMW	Direct Damage Width	N
					CDCCRSH	RANK	Rank	N
VE	DOCCDC	CDCs Documented But Not Coded On File?	N		Does not apply to new data structure			
VE	DOF1	Direction Of Force (Highest)	N	*	CDCCRSH	PDOF	Clock Direction in Degrees	N
					CDCCRSH	RANK	Rank	N
VE	DOF2	Direction Of Force (2nd Highest)	N	*	CDCCRSH	PDOF	Clock Direction in Degrees	N
					CDCCRSH	RANK	Rank	N
VE	DVC1-DVC6	Crush Profile C1 - C6 (Highest)	N	*	CDCCRSH	C1 - C6	Crush Profile 1 - Crush Profile 6	N
					CDCCRSH	RANK	Rank	N
VE	DVD	Crush Profile D (Highest)	N	*	CDCCRSH	D	Crush Profile D	N
					CDCCRSH	RANK	Rank	N
VE	DVL	Crush Profile L (Highest)	N	*	CDCCRSH	L	Crush Profile L	N
					CDCCRSH	RANK	Rank	N
VE	EXTENT1	Deformation Extent (Highest)	N	*	CDCCRSH	EXTENT	Deformation Extent	N
					CDCCRSH	RANK	Rank	N
VE	EXTENT2	Deformation Extent (2nd Highest)	N	*	CDCCRSH	EXTENT	Deformation Extent	N
					CDCCRSH	RANK	Rank	N
VE	FIRE	Fire Occurrence	N		GV	FIRE	Fire Severity Code	N
VE	FIREORIG	Origin Of Fire	N		GV	FIREORG	Origin Of Fire	N
VE	FUELCAP1	Location Of Fuel Tank-1 Filler Cap	N	*	FUELTANK	FUELCAP	Location Of Filler Cap	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELCAP2	Location Of Fuel Tank-2 Filler Cap	N	*	FUELTANK	FUELCAP	Location Of Filler Cap	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELDAM1	Damage To Fuel Tank-1	N	*	FUELTANK	FUELDAM	Fuel Tank Damage	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELDAM2	Damage To Fuel Tank-2	N	*	FUELTANK	FUELDAM	Fuel Tank Damage	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELEAK1	Leakage Location Of Fuel System-1	N	*	FUELTANK	FUELLEAK	Fuel Tank Leakage Area	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELEAK2	Leakage Location Of Fuel System-2	N	*	FUELTANK	FUELLEAK	Fuel Tank Leakage Area	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELGT2	Equipped With More Than Two Fuel Tanks	N	*	FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELLOC1	Location Of Fuel Tank-1	N	*	FUELTANK	FUELLOC	Location Of Fuel Tank	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELLOC2	Location Of Fuel Tank-2	N	*	FUELTANK	FUELLOC	Location Of Fuel Tank	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELTNK1	Type Of Fuel Tank-1	N	*	FUELTANK	FUELTNK	Type Of Fuel Tank	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELTNK2	Type Of Fuel Tank-2	N	*	FUELTANK	FUELTNK	Type Of Fuel Tank	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELTYP1	Fuel Type-1	N	*	FUELTANK	FUELTYP	Type Of Fuel	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	FUELTYP2	Fuel Type-2	N	*	FUELTANK	FUELTYP	Type Of Fuel	N
					FUELTANK	TANKNO	Fuel Tank Identifier	N
VE	GAD1	Deformation Location (Highest)	C	*	CDCCRSH	GAD	General Area Of Damage	C
					CDCCRSH	RANK	Rank	N
VE	GAD2	Deformation Location (2nd Highest)	C	*	CDCCRSH	GAD	General Area Of Damage	C
					CDCCRSH	RANK	Rank	N
VE	OBJCONT1	Object Contacted (Highest)	N	*	CDCCRSH	OBJCONT	Object Contacted	N
					CDCCRSH	RANK	Rank	N
VE	OBJCONT2	Object Contacted (2nd Highest)	N	*	CDCCRSH	OBJCONT	Object Contacted	N
					CDCCRSH	RANK	Rank	N
VE	ORIGAVTW	Original Average Track Width	N		VEHSPEC	ORIGAVTW	Average Track	N
VE	PDOF1	Clock Direction For Pdof In Degrees (Highest CDC)	N		CDCCRSH	PDOF	Clock Direction For Pdof In Degrees	N
				*	CDCCRSH	RANK	Rank	N
VE	PDOF2	Clock Direction For Pdof In Degrees (2nd Highest CDC)	N	*	CDCCRSH	PDOF	Clock Direction For Pdof In Degrees	N
					CDCCRSH	RANK	Rank	N
VE	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
VE	RATWGT	Ratio Inflation Factor	N		All Data Sets	RATWGT	Ratio Inflation Factor	N
VE	SDVC1 - SDVC6	Crush Profile C1 - C6 (2nd Highest)	N	*	CDCCRSH	C1 - C6	Crush Profile 1 -Crush Profile 6	N
					CDCCRSH	RANK	Rank	N
VE	SDVD	Crush Profile D (2nd Highest)	N	*	CDCCRSH	D	Crush Profile D / Rank	N
					CDCCRSH	RANK	Rank	N
VE	SDVL	Crush Profile L (2nd Highest)	N	*	CDCCRSH	L	Crush Profile L / Rank	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Set	Variable	Label	Type		Data Set	Variable	Label	Type
					CDCCRSH	RANK	Rank	N
VE	SHL1	Specific Longitudinal Location (Highest)	C	*	CDCCRSH	SHL	Specific Longlat Location	C
					CDCCRSH	RANK	Rank	N
VE	SHL2	Specific Longitudinal Loc. (2nd Highest)	C	*	CDCCRSH	SHL	Specific Longlat Location	C
					CDCCRSH	RANK	Rank	N
VE	STRATIF	Case Stratum	C	*	All Data Sets	STRATIF	Case Stratum	C
VE	SVL1	Specific Vertical Location (Highest)	C	*	CDCCRSH	SVL	Specific Vertical Location / Rank	C
					CDCCRSH	RANK	Rank	N
VE	SVL2	Specific Vertical Location (2nd Highest)	C	*	CDCCRSH	SVL	Specific Vertical Location / Rank	C
					CDCCRSH	RANK	Rank	N
VE	TDD1	Type Of Damage Distribution (Highest)	C	*	CDCCRSH	TDD	Type Of Damage Distribution / Rank	C
					CDCCRSH	RANK	Rank	N
VE	TDD2	Type Of Damage Distribution(2nd Highest)	C	*	CDCCRSH	TDD	Type Of Damage Distribution / Rank	C
					CDCCRSH	RANK	Rank	N
VE	TOWRES	Researcher Assessmnt Vehicle Disposition	N		GV	TOWRES	Researcher Determined Vehicle Disposition	N
VE	UNDENDW	Undeformed End Width	N		VEHSPEC	UNDENDW	Undeformed End Width	N
VE	VEHNO	Vehicle Number	N		GV, CDCCRSH, V	VEHNO	Vehicle Number	N
VE	VERSION	Version Number	N		All Data Sets	VERSION	Version Number	N
VE	WHEELBAS	Original Wheelbase	N		VEHSPEC	WHEELBAS	Original Wheelbase	N

Old VI Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.

The user should be especially careful with those marked with an asterisk.

An asterisk indicates a more complex relationship because:

1. **two or more variables are needed in the new data set to derive the target variable (e.g. ADAPTEQ in the old VI data set is derived from ADAPTEQ in the new VI data set and EQUIPTYP in the new ADAPTEQ data set.)**
2. **the old and new data sets do not contain the same types of record (e.g. VI data set has one record/vehicle but DOORS data set has one record/door).**

Old SAS Variables				* = More	New SASOracle Variables			
Set	**Variable**	**Label**	**Type**	**Complex**	**Data Set**	**Variable**	**Label**	**Type**
VI	ADAPTEQ	Adaptive (Assistive) Driving Equipment	N	*	VI	ADAPTEQ	Adaptive Equipment Exists	N
					ADAPTEQ	EQUIPTYP	Adaptive Equipment Identifier	N
VI	BOLSTDEF	Knee Bolster Deformed - Occupant Contact	N		VI	BOLSTDEF	Knee Bolster Deformed - Occupant Contact	N
VI	BOLSTYPE	Type Of Knee Bolster Covering	N		VI	BOLSTYPE	Type Of Knee Bolster Covering	N
VI	CDRIR1 - CDRIR10	1st - 10th Dominant Crush Direction	N	*	INTRSN	CDRIR	Intruding Direction	N
					INTRSN	INTNUM	Intrusion Number	N
VI	COLMTELE	Telescoping Steering Column Adjustment	N		VI	COLMTELE	Telescoping Steering Column Adjustment	N
VI	COLMTILT	Tilt Steering Column Adjustment	N		VI	COLMTILT	Tilt Steering Column Adjustment	N
VI	COLUMTYP	Steering Column Type	N		VI	COLUMTYP	Steering Column Type	N
VI	FAILLF	Lf Damage/Failure-Opening In Collision	N	*	DOORS	DFAILURE (1)	Door Failure	N
VI	FAILLR	Lr Damage/Failure - Opening In Collision	N	*	DOORS	DFAILURE (1)	Door Failure	N
VI	FAILRF	Rf Damage/Failure - Opening In Collision	N	*	DOORS	DFAILURE (1)	Door Failure	N
VI	FAILRR	Rr Damage/Failure - Opening In Collision	N	*	DOORS	DFAILURE (1)	Door Failure	N
VI	FAILTG	Tg Damage/Failure - Opening In Collision	N	*	DOORS	DFAILURE (1)	Door Failure	N
VI	GLIMPBL	BL Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPLF	LF Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPLR	LR Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPOTH	Other Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPRF	RF Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPRR	RR Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPRUF	Roof Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLIMPWS	WS Glazing Damage From Impact Forces	N	*	GLAZING	GLIMPACT (2)	Glazing Impact Damage	N
VI	GLOCCBL	BL Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCLF	LF Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCLR	LR Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCOTH	Other Glazing Damage From Occ. Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCRF	RF Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCRR	RR Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
VI	GLOCCRUF	Roof Glazing Damage From Occ. Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOCCWS	WS Glazing Damage From Occupant Contact	N	*	GLAZING	GLOCCUPT (2)	Glazing Occupant Damage	N
VI	GLOVOPEN	Did Glove Compartment Door Open?	N		VI	GLOVOPEN	Did Glove Compartment Door Open?	N
VI	GLPREBL	BL Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPRELF	LF Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPRELR	LR Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPREOTH	Other Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPRERF	RF Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPRERR	RR Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPRERUF	Roof Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLPREWS	WS Window Precrash Glazing Status	N	*	GLAZING	GLPRCRSH (2)	Glazing Precrash Status	N
VI	GLTYPBL	BL Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPLF	LF Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPLR	LR Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPOTH	Other Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPRF	RF Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPRR	RR Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPRUF	Roof Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	GLTYPWS	WS Type Of Window/Windshield Glazing	N	*	GLAZING	GLTYPE (2)	Glazing Type	N
VI	INCOMP1 - INCOMP10	1st - 10th Intruding Component	N	*	INTRSN	INCOMP	Intruding Component	N
					INTRSN	INTNUM	Intrusion Number	N
VI	INLOC1 - INLOC10	1st - 10th Location Of Intrusion	N	*	INTRSN	INLOC	Location of Intrusion	N
					INTRSN	INTNUM	Intrusion Number	N
VI	INMAG1 - INMAG10	1st - 10th Magnitude Of Intrusion	N	*	INTRSN	INMAG	Intrusion Magnitude	N
					INTRSN	INTNUM	Intrusion Number	N
VI	OPENLF	Lf Door, Tailgate Or Hatch Opening	N	*	DOORS	DOPEN (1)	Door Failure	N
VI	OPENLR	Lr Door, Tailgate Or Hatch Opening	N	*	DOORS	DOPEN (1)	Door Failure	N
VI	OPENRF	Rf Door, Tailgate Or Hatch Opening	N	*	DOORS	DOPEN (1)	Door Failure	N
VI	OPENRR	Rr Door, Tailgate Or Hatch Opening	N	*	DOORS	DOPEN (1)	Door Failure	N
VI	OPENTG	Tg Door, Tailgate Or Hatch Opening	N	*	DOORS	DOPEN (1)	Door Failure	N
VI	PANELDAM	Instrument Panel Damage - Occ. Contact	N		VI	PANELDAM	Instrument Panel Damage - Occ. Contact	N
VI	PASINTEG	Passenger Compartment Integrity	N	*	VI	INTGLOSS	Integrity Loss	N
					INTGRTY	PASINTEG	Passenger Compartment Integrity	N
VI	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
VI	RATWGT	Ratio Inflation Factor	N		All Data Sets	RATWGT	Ratio Inflation Factor	N
VI	RDEFLOC	Location Steering Rim/Spoke Deformation	N		VI	RDEFLOC	Location Steering Rim/Spoke Deformation	N
VI	RIMDEF	Steering Rim/Spoke Deformation	N		VI	RIMDEF	Steering Rim/Spoke Deformation	N
VI	STRATIF	Case Stratum	C		All Data Sets	STRATIF	Case Stratum	C
VI	VEHNO	Vehicle Number	N		VI, Glazing, Intrsn, D	VEHNO	Vehicle Number	N
VI	VERSION	Version Number	N		VI	VERSION	Version Number	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Set	Variable	Label	Type		Data Set	Variable	Label	Type

(1) The variable DLOCAT in the new DOORS data set also is needed to derive all of the old door-related variables in the old VI data set.
(2) The variable GLOC in the new GLAZING data set also is needed to derive all of the old glazing-related variables in the old VI data set.

Old OA Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.
The user should be especially careful with those marked with an asterisk.
An asterisk indicates a more complex relationship because:
1) two or more variables are needed in the new data set to derive the target variable
(e.g. STBACINC in the old OA data set is derived from STPRINCL and STPSINCL in the new OA data set)
2) the old and new data sets do not contain the same types of record
(e.g. OA data set has one record per occupant but AIRBAG has one record per air bag).

Old SAS Variables				*** = More Complex**	**New SASOracle Variables**			
Data Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
OA	ABLTFAIL	Automatic (Passive) Belt System Failure	N		OA	ABLTFAIL	Automatic Belt Failure	N
OA	ABELTYPE	Automatic (Passive) Belt System Type	N		OA	ABELTYPE	Automatic Seat Belt Type	N
OA	ABELTUSE	Automatic Belt (Passive) System Use	N		OA	ABELTUSE	Automatic Belt Use	N
OA	CAUSE1	1st Medically Reported Cause Of Death	N		OA	DCAUSE1	Cause Of Death 1	N
OA	CAUSE2	2nd Medically Reported Cause Of Death	N		OA	DCAUSE2	Cause Of Death 2	N
OA	CAUSE3	3rd Medically Reported Cause Of Death	N		OA	DCAUSE3	Cause Of Death 3	N
OA	EJCTMED	Ejection Medium	N		OA	EJECTMED	Ejection Medium	N
OA	BELTSOU	Primary Source Of Belt Use Determination	N		OA	MBELTSOU	Primary Source Of Belt Use Determination	N
OA	STBACINC	Seat Back Incline Prior And Post Impact	N	*	OA	STPRINCL	Seat Back Incline PrioR	N
					OA	STPSINCL	Seat Back Incline Post	N
OA	TREATMNT	Treatment - Mortality	N	*	OA	TRETMENT	Treatment	N
					OA	MORTLTY	Mortality	N
OA	ABLTPROP	Proper Use Of Auto (Passive) Belt System	N		OA	ABLTPROP	Proper Use Of Auto (Passive) Belt System	N
OA	BAGAVAIL (1)	Air Bag System Availability	N	*	AIRBAG	BAGFUNC (1)	Air Bag Function	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGAVOTH (1)	Other Frontal Air Bag Availability/Function	N	*	AIRBAG	BAGFUNC (1)	Air Bag Function	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGCDC (1)	CDC For Air Bag Deployment Impact	N	*	AIRBAG	BAGCDC (1)	CDC For Bag Deployment	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGCONOT (1)	Air Bag Contacted By Another Occupant	N	*	AIRBAG	BAGCONOT (1)	Air Bag Contacted With Other Occupant	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGDAMAG (1)	Was There Damage To The Air Bag	N	*	AIRBAG	BAGDAMAG (1)	Air Bag Damage	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
OA	BAGDAMSO (1)	Source Of Air Bag Damage	N	*	AIRBAG	BAGDAMSO (1)	Air Bag Source Of Damage	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGDEPLY (1)	Air Bag System Deployed	N	*	AIRBAG	BAGDEPLY (1)	Air Bag System Deployed	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGDEPOT (1)	Other Air Bag System Deployment	N	*	AIRBAG	BAGDEPLY (1)	Air Bag System Deployed	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGEVENT (1)	Air Bag Deployment Accident Event Seq. Number	N	*	AIRBAG	BAGEVENT (1)	Air Bag Deployment Event Id	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGFAIL (1)	Air Bag System Failure	N	*	AIRBAG	BAGFAIL (1)	Air Bag Failure	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGFLDAM (1)	Were Air Bag Module Cover Flaps Damaged	N	*	AIRBAG	BAGFLDAM (1)	Were Air Bag Module Cover Flaps Damaged	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGFLOPN (1)	Did Air Bag Module Cover Flaps Open At Desg Tear Pts	N	*	AIRBAG	BAGFLOPN (1)	Did Air Bag Module Cover Flaps Open At Desg	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGMAINT (1)	Prior Maintenance/Service On Air Bag	N	*	AIRBAG	BAGMAINT (1)	Air Bag Prior Maintenance/Service	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGTETHR (1)	Was The Air Bag Tethered	N	*	AIRBAG	BAGTETHR (1)	Number Of Tether Straps	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGTYPE (1)	Type Of Air Bag	N	*	AIRBAG	BAGTYPE (1)	Air Bag Class Id	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BAGVENTS (1)	Did The Air Bag Have Vent Ports	N	*	AIRBAG	BAGVENTS (1)	Number Of Vent Ports	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	BELTANCH	Shoulder Belt Upper Anchorage Adjustment	N	*	OA	MANANCH	Manual Seat Belt Upper Anchor Position	N
OA	CHHARNES	Child Safety Seat Harness Usage	N	*	CHLDSEAT	HARDES	Child Seat Harness Design	N
					CHLDSEAT	HARUSE	Child Seat Harness Use	N
OA	CHMAKE	Child Safety Seat Make/Model	N	*	CHLDSEAT	CHMAKE	Child Seat Make Identifier	N
					CHLDSEAT	CHMODEL	Child Seat Model Identifier	N
OA	CHORIENT	Child Safety Seat Orientation	N	*	CHLDSEAT	ORIENT	Child Seat Orientation	N
OA	CHSHIELD	Child Safety Seat Shield Usage	N	*	CHLDSEAT	HARDES	Child Seat Harness Design	N
					CHLDSEAT	HARUSE	Child Seat Harness Use	N
OA	CHTETHER	Child Safety Seat Tether Usage	N	*	CHLDSEAT	TETHDES	Child Seat Tether Design	N
					CHLDSEAT	TETHUSE	Child Seat Tether Use	N
OA	CHTYPE	Type Of Child Safety Seat	N	*	CHLDSEAT	CHTYPE	Child Seat Type	N
					CHLDSEAT	HARDES	Child Seat Harness Use	N

Old SAS Variables					New SASOracle Variables			
Data Set	Variable	Label	Type	* = More Complex	Data Set	Variable	Label	Type
OA	DVBAG (1,2)	Long. Comp.Of Delta V For Air Bag	N	*	AIRBAG	BAGEVENT (1)	Airbag Deployment Event ID	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
					CDCCRSH	ACCSEQ	Event Sequence Number	N
					CDCCRSH	DVLONG	Long. Comp. Of Delta V	N
OA	HEADREST	Head Restraint Type/Damage By Occupant	N		OA	HEADTYPE	Head Restraint Type	N
OA	PREVACC (1)	Had Vehicle Been In Previous Accidents	N	*	AIRBAG	PREVACC (1)	Air Bag in Prior Accident	N
					AIRBAG	BAGLOC (1)	Air Bag Location	N
OA	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
OA	ABELTAVL	Automatic Belt System Availability/Func	N		OA	ABELTAVL	Automatic Belt Available	N
OA	AGE	Age Of Occupant	N		OA	AGEYEAR	Age Of Occupant	N
OA	BAGAVRPT	Police Reported Airbag Availability/Function	N		OA	BAGAVRPT	Police Reported Airbag Availability/Function	N
OA	BICARB	Arterial Blood Gases (Abg) Hc03	N		OA	BICARB	Arterial Blood Gases (Abg) Hc03	N
OA	BLOOD	Was The Occupant Given Blood?	N		OA	BLOOD	Was The Occupant Given Blood?	N
OA	DEATH	Time To Death	N		OA	DEATH	Time To Death	N
OA	EJCTAREA	Ejection Area	N		OA	EJCTAREA	Ejection Area	N
OA	EJECTION	Ejection	N		OA	EJECTION	Ejection Type	N
OA	ENTRAP	Entrapment	N		OA	ENTRAP	Entrapment	N
OA	EYEWEAR	Was The Occupant Wearing Eye-Wear	N		OA	EYEWEAR	Was The Occupant Wearing Eye-Wear	N
OA	GLASGOW	Glasgow Coma Scale (Gcs) Score	N		OA	GLASGOW	Glasgow Coma Scale (Gcs) Score	N
OA	HEIGHT	Height Of Occupant	N		OA	HEIGHT	Height Of Occupant	N
OA	HOSPSTAY	Hospital Stay	N		OA	HOSPSTAY	Hospital Stay	N
OA	INJNUM	Number Recorded Injuries This Occupant	N		OA	INJNUM	Number Of Injuries	N
OA	INJSEV	Injury Severity (Police Rating)	N		OA	INJSEV	Injury Severity (Police Rating)	N
OA	ISS	Injury Severity Score	N		OA	ISS	Injury Severity Score	N
OA	MAIS	Maximum Known Occupant Ais	N		OA	MAIS	Maximum Know Occupant Ais	N
OA	MANAVAIL	Manual Belt System Availability	N		OA	MANAVAIL	Manual Belt Available	N
OA	MANFAIL	Manual Belt Failure Mode During Accident	N		OA	MANFAIL	Manual Belt Failure	N
OA	MANPROPR	Proper Use Of Manual Belts	N		OA	MANPROPR	Manual Belt Use	N
OA	MANUSE	Manual Belt System Use	N		OA	MANUSE	Manual Belt Type Used	N
OA	MEDFACIL	Type Medical Facility Initial Treatment	N		OA	MEDFACIL	Type Medical Facility Initial Treatment	N
OA	MEDSTA	Medium Status (Prior To Impact)	N		OA	MEDSTA	Medium Status	N
OA	OCCMOBIL	Occupant Mobility	N		OA	OCCMOBIL	Occupant Mobility	N
OA	OCCNO	Occupant Number	N		OA	OCCNO	Occupant Identifier	N
OA	PARUSE	Police Reported Restraint Use	N		OA	PARUSE	Police Reported Restraint Use	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
OA	POSTURE	Occupant's Posture	N		OA	POSTURE	Occupant's Posture	N
OA	RATWGT	Ratio Inflation Factor	N		OA	RATWGT	Ratio Inflation Factor	N
OA	ROLE	Occupant's Role	N		OA	ROLE	Occupant's Role	N
OA	SEATPERF	Seat Performance (This Position)	N		OA	SEATPERF	Seat Performance	N
OA	SEATPOS	Occupant's Seat Position	N		OA	SEATPOS	Occupant Seat Position	N
OA	SEATRACK	Seat Track Adjusted Position Prior To Impact	N		OA	SEATRACK	Seat Track Position	N
OA	SEATTYPE	Seat Type (This Occupant Position)	N		OA	SEATTYPE	Seat Type	N
OA	SEX	Occupant's Sex	N		OA	SEX	Occupant's Sex	N
OA	STORIENT	Seat Orientation (This Occupant Pos.)	N		OA	STORIENT	Seat Orientation	N
OA	STRATIF	Case Stratum	C		OA	STRATIF	Case Stratum	C
OA	VEHNO	Vehicle Number	N		OA	VEHNO	Vehicle Identifier	N
OA	VERSION	Version Number	N		OA	VERSION	Version Number	N
OA	WEIGHT	Occupant's Weight	N		OA	WEIGHT	Occupant's Weight	N
OA	WORKDAYS	Working Days Lost	N		OA	WORKDAYS	Working Days Lost	N

(1) SEATPOS in the old OA data set and SEATPOS1 and SEATPOS2 in the new AIRBAG data set are also required to derive the air bag variables in the old OA data set from the air bag variables in the new AIRBAG data set. Since AIRBAG has records for air bags regardless of whether the seat position was occupied, but the OA variables exist only for occupied seat positions, AIRBAG records must be selected only for occupied seat positions. This is done by linking SEATPOS in OA with (SEATPOS1 or SEATPOS2) in AIRBAG. AIRBAG records for occupied seat positions should be selected only if SEATPOS in the OA data set matches SEATPOS1 or SEATPOS2 in the AIRBAG data set. Also, many air bag variables in old OA are coded in reference to the driver and front right passenger frontal air bags.

(2) Old GV.DVBAG for inspected vehicles can be derived from the 4 variables listed in the table but other variables are needed to derive it for non-inspected vehicles. For non-inspected vehicles, If the air bag event were the same as ACCSEQDV in the GV data set then it could be obtained from GV.HDVLONG.

Old OI Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.

The user should be especially careful with those marked with an asterisk.

An asterisk indicates a more complex relationship because:

1) two or more variables are needed in the new data set to derive the target variable

2) the old and new data sets do not contain the same types of record

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	Variable	Label	Type		Data Set	Variable	Label	Type
OI	BODYREG	Body Region	C		OI	BODYREG	Body Region	C
OI	LESION	Lesion (A.I.S. - O.I.C.)	C		OI	LESION	Lesion	C
OI	SYSORG	System/Organ (O.I.C. - A.I.S.)	C		OI	SYSORG	System Organ	C
OI	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
OI	NATWGT	National Inflation Factor	N		OI	NATWGT	National Inflation Factor	N
OI	AIS	A.I.S. Severity	N		OI	AIS	Ais Severity	N
OI	ASPECT90	Aspect90	N		OI	ASPECT90	Aspect	N
OI	DIRINJ	Direct/Indirect Injury	N		OI	DIRINJ	Direct/Indirect Injury	N
OI	INJLEVEL	Injury Level	N		OI	INJLEVEL	Level Of Injury	N
OI	INJNO	Injury Number	N		OI	INJNO	Number Of Recorded Injur	N
OI	INJSOU	Injury Source	N		OI	INJSOU	Injury Source	N
OI	INTRUNO	Occupant Area Intrusion No.	N		OI	INTRUNO	Occupant Area Intrusion N	N
OI	OCCNO	Occupant Number	N		OI	OCCNO	Occupant Identifier	N
OI	RATWGT	Ratio Inflation Factor	N		OI	RATWGT	Ratio Inflation Factor	N
OI	REGION90	Body Region (O.I.C. - A.I.S.)	N		OI	REGION90	Body Region	N
OI	SOUCON	Injury Source Confidence Level	N		OI	SOUCON	Injury Source Confidence L	N
OI	SOUDAT	Source Of Injury Data	N		OI	SOUDAT	Source Of Injury Data	N
OI	STRATIF	Case Stratum	C		OI	STRATIF	Case Stratum	C
OI	STRUSPEC	Specific Anatomic Structure	N		OI	STRUSPEC	Specific Structure	N
OI	STRUTYPE	Type Of Anatomic Structure	N		OI	STRUTYPE	Type Of Structure	N
OI	VEHNO	Vehicle Number	N		OI	VEHNO	Vehicle Identifier	N
OI	VERSION	Version Number	N		OI	VERSION	Version Number	N

Old Acc_Desc, Typ_Acc, Veh_Pro, and Pers_Pro Data Set Variables

The user should not assume a direct relationship between old and new variables because SAS codes and/or attributes may be different. Refer to documentation for every variable.
The user should be especially careful with those marked with an asterisk.
An asterisk indicates a more complex relationship because:
the old and new data sets do not contain the same types of record

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
ACC_DESC	LINENO	Line Number	N		ACCDESC	LINENO	Line Number	N
ACC_DESC	PSU	Primary Sampling Unit Number	N	*	ACCIDENT	PSU	Primary Sampling Unit Number	N
ACC_DESC	STRATIF	Case Stratum	C		ACCDESC	STRATIF	Case Stratum	C
ACC_DESC	TEXT71	Summary Text	C		ACCDESC	SUMTEXT	Summary Text	C
ACC_DESC	VERSION	Version Number	N		ACCDESC	VERSION	Version Number	N

Old SAS Variables				* = More Complex	New SASOracle Variables			
Data Set	**Variable**	**Label**	**Type**		**Data Set**	**Variable**	**Label**	**Type**
TYP_ACC	LINENO	Line Number	N		Not applicable			
TYP_ACC	PSU	Primary Sampling Unit Number	N		ACCIDENT	PSU	Primary Sampling Unit Number	N
TYP_ACC	STRATIF	Case Stratum	C		ACCIDENT	STRATIF	Case Stratum	C
TYP_ACC	TEXT66	Summary Text	C		ACCIDENT	CRSHDSC1	Crash Type	C
TYP_ACC	VERSION	Version Number	N		ACCIDENT	VERSION	Version Number	N

The old data set VEH_PRO contains the variable TEXT81, an 80 character string that describes vehicle class, make, model, model year, and damage characteristics. There is no equivalent variable in the new data sets. See new GV and CDCCRSH data set variables.

The old data set PERS_PRO contains the variable TEXT91, an 80 character string that describes person role, seat position, injury level, restraint use etc. There is no equivalent variable in the new data sets. See new OA and INJSOU data set variables.