Incident Reconstruction Form

Case Number __ __ __   Investigator Number __ __   QA# __ __   Noncollision__

CDC and Crush Measurements

Vehicle Number:_____   **Impact Sequence Number:___**   **PDOF (degrees):_____**

Object Contacted (see list)	Direction of Force (clock)	Shift Classif. (SAEJ224.)	(1) (2) Direction of Force (with shift)	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
__ __	__ __	__ __	__ __	__	__	__	__	__

(numbers in parentheses above are 7 digits specified in SAE J224)

Crush Profile in Inches

The crush profile for the damage described in the CDC(s) above should be documented in the appropriate space below.
(All measurements are in inches.)

L Direct+Induced Width	C_1	C_2	C_3	C_4	C_5	C_6	±D L midpoint offset
__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	+ __ __ __ - __ __ __

Maximum Crush __ __

('C' measurments taken left to right, rear to front. 'D' positive right of center, and forward of center)

Vehicle Number:_____   **Impact Sequence Number:___**   **PDOF (degrees):_____**

Object Contacted (see list)	Direction of Force (clock)	Shift Classif. (SAEJ224.)	(1) (2) Direction of Force (with shift)	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
__ __	__ __	__ __	__ __	__	__	__	__	__

(numbers in parentheses above are 7 digits specified in SAE J224)

Crush Profile in Inches

The crush profile for the damage described in the CDC(s) above should be documented in the appropriate space below.
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L Direct+Induced Width	C_1	C_2	C_3	C_4	C_5	C_6	±D L midpoint offset
__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	__ __ __	+ __ __ __ - __ __ __

Maximum Crush __ __

Attach another sheet if there are more than two damage- or injury-producing impacts.

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Case Number __ __ __   Investigator Number __ __   QA# __ __

Codes for Object Contacted (01-30)—Vehicle Number

Noncollision
  (31) 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)_____

Nonbreakaway Pole or Post
  (50) Pole or post (= 10 cm in diameter)
  (51) Pole or post (> 10 cm but = 30 cm in diameter)
  (52) Pole or post (>30 cm in diameter)
  (53) Pole or post (diameter unknown)
  (54) Concrete traffic barrier
  (55) Impact attenuator
  (56) Other traffic barrier (includes guardrail) (specify):
  _____

  (57) Fence
  (58) Wall
  (59) Building
  (60) Ditch or culvert
  (61) Ground
  (62) Fire hydrant
  (63) Curb
  (64) Bridge
  (65) 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
  _____
  (75) Vehicle occupant
  (76) Animal
  (77) Train
  (78) Trailer, disconnected in transport
  (79) Object fell from vehicle in-transport
  (88) Other nonfixed object (specify):
  _____
  (89) Unknown nonfixed object
  (98) Not applicable or not occupied
  (99) Unknown event or object

Incident Reconstruction Form

Case Number __ __ __   Investigator Number __ __   QA# __ __

For each impact with probability of injury or damage to result in fire:

Vehicle Number _____	**Vehicle Number** _____
Impact Number _____	**Impact Number** _____
Travel speed _____ mph	**Travel speed** _____ mph
Basis _____	**Basis** _____
Travel speed probable range ___ to ___ mph (If not calculated, put 999 in range, explain in comment.)	**Travel speed probable range** ___ to ___ mph (If not calculated, put 999 in range, explain in comment.)
Comment _____	**Comment** _____

Impact speed _____ mph	**Impact speed** _____ mph
Basis _____ (If not calculated, put 999 in range, explain in comment.)	**Basis** _____ (If not calculated, put 999 in range, explain in comment.)
Impact speed probable range ___ to ___ mph	**Impact speed probable range** ___ to ___ mph
Delta V _____ mph	**Delta V** _____ mph
Basis _____	**Basis** _____
Delta V probable range ___ to ___ mph	**Delta V probable range** ___ to ___ mph
Comment _____	**Comment** _____

Energy absorption _____ ft-lbs	**Energy absorption** _____ ft-lbs
Basis _____	**Basis** _____
Energy absorption probable range ___ to ___	**Energy absorption probable range** ___ to ___
Comment _____	**Comment** _____

Incident Reconstruction Form

Case Number __ __ __   Investigator Number __ __   QA# __ __

Guidelines for Incident Reconstruction

Can use worksheet for reconstruction program, must attach program output.

Techniques for speed	**Concise narrative; description of incident:**

(note – one narrative per incident

Techniques for speed

Witness (travel speed only)
Critical speed scuff (travel speed)
Scuff and skid (impact speed)
Skid (with travel speed source for impact speed)
Momentum (impact speed, Delta V)
Computer model (Impact speed, Delta V, energy from crash, trajectory)

Techniques for energy

Computer model, conservation of energy
(undeformable object collision)

Stiffness sources:

Crash test data

Calculate A, B values

Look for closest approximation in test data, angle, delta V, offset, surface

Modifications for narrow object:
• research
• range of variance in literature

Modifications for angled:
• range of variance in literature

Comments include how close test approximates incident

Modifications for override (underride), similar for override/underride

Document all for QA

Approach

Use the best sources available; explain. For instance, if reliable stiffness data are available, but you have good witness travel speed, skid mark, and coefficient of friction data, calculations based on Newton's laws.

Summarize incident reconstruction; Document for QA

Note sources of all input data
Attach references, vehicle specifications
Formulae used—source of formulae if appropriate
Source(s) of coefficient of friction (and any modifications used for wet measurements and dry road incident, etc.)
Document and justify all judgements made