

TRUCK CAB CRASHWORTHINESS IN REAL WORD ACCIDENTS

CEESAR

Presented by RENAULT TRUCKS

11 April 2007

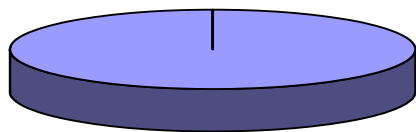
CEESAR DATABASE

Traffic Accident involving Heavy Trucks (CEESAR/Renault VI database 2001)

French Statistic 2000

CEESAR/Renault VI database 2001

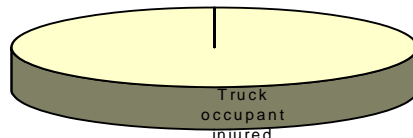
Truck Occupant Injured



Truck occupant injured
2%

Truck Occupant Injured

22 % of occupants (Truck and others) involved
212 crashes
233 truck occupant injured



Truck occupant injured
41%

Off road

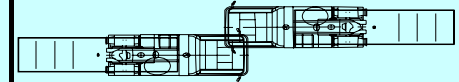
21%

Rollover

36%

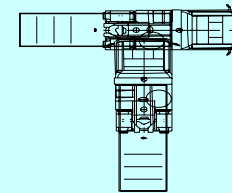
Front to front

14%



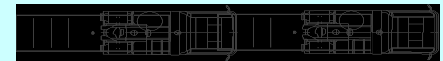
Front to side

3%



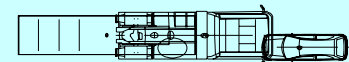
Front to back

10%



Truck to car

15%



Truck to other

2%

FRONTAL IMPACT

- ACCIDENT N° 02 785.
- Tuesday 19 June 2001.
- Frontal impact against agricultural trailer.
- One cab occupant.



THE OPPOSITE VEHICLE

- The back face of an agricultural trailer.
- Very rigid structure without deformation.
- Main impact height : 1 m 20.



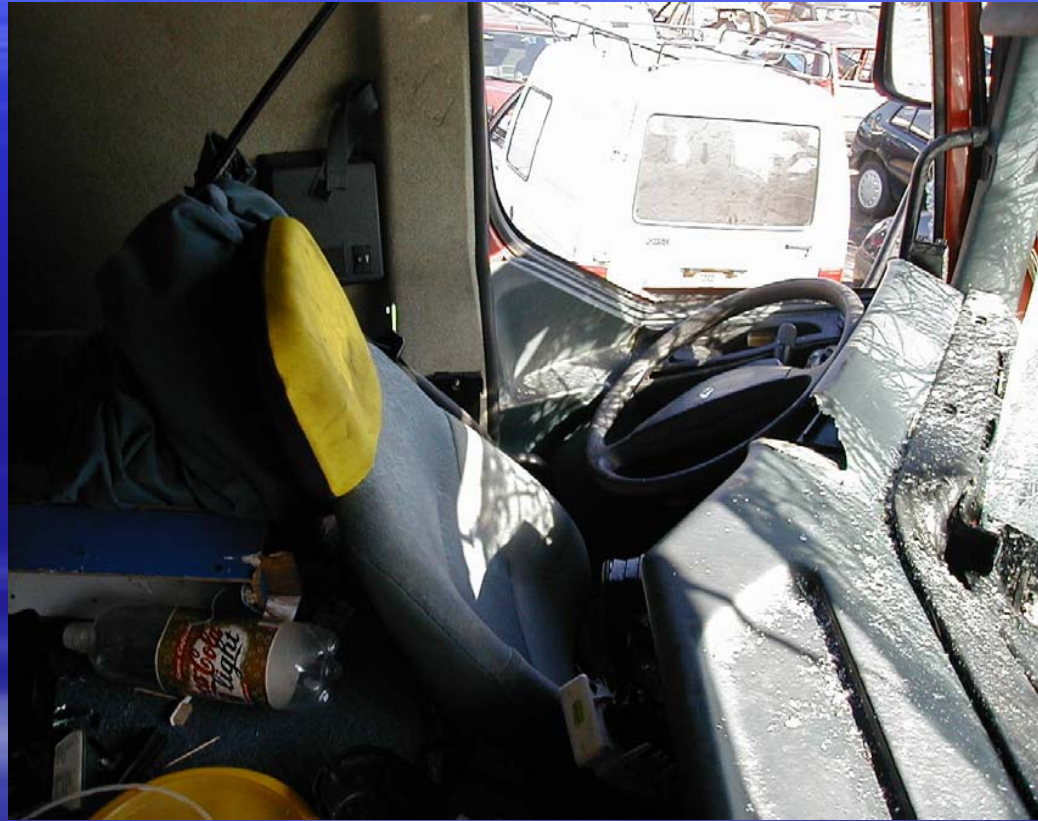
CAB DEFORMATIONS

- Overlap 2/3 right front.
- Intrusion on right seat : 590 mm.
- Intrusion on left seat : 80 mm.
- Intrusion on center : 680 mm.



MEDICAL RESULT

- The truck driver is a 42 year old man.
- Very slightly injured
MAIS 1.
- Contusion on right
knee.



FRONTAL IMPACT FIRST EXAMPLE

- Front to rear collision.
- Between a truck and an agricultural trailer.
- Overlap of 1700 mm on the truck right front.
- With a high level of intrusion on the right front part.
- But small deformation on the left seat.
- The driver is slightly injured.

FRONTAL IMPACT SECOND EXAMPLE

- ACCIDENT N° 02 782.
- Friday 15 June 2001.
- Fatal accident between two trucks.
- On a highway at 04:42 am during the night.
- The truck is a SCANIA 143 HA.



THE OPPOSITE VEHICLE

- Another truck with its trailer.
- Main impact on the rear face.
- Nobody in the cab when the collision happened.



CAB DEFORMATIONS

- Front to rear collision between two trucks.
- 100% overlap of front face.
- Intrusion on left seat : 1090 mm.
- Intrusion on center : 1100 mm
- Intrusion on right seat 1070 mm.



MEDICAL RESULT

- Two occupants inside this cab.
- Two fatalities M.AIS 6.
- Death by intrusion.



FRONTAL IMPACT SECOND EXAMPLE

- Front to rear collision.
- Between two trucks with trailers.
- 100% front overlap of 2300 mm.
- With a high level of intrusion into the cab.
- With an important deformation of the cab.
- Two occupants fatally injured.

TIPOVER

- ACCIDENT N° 02 792.
- Monday 24 September 2001.
- Loss of control in a right hand curve.
- The truck is a Renault Premium 400.
- One occupant in the cab.



TIPOVER

- Tipover on a fixed obstacle : a bank.
- Main impact on the roof.
- Impact speed : 36 km/h



CAB DEFORMATIONS

- First deformation type :
roof intrusion 1200 mm
on right seat
roof intrusion 80 mm on
left seat
- Second deformation type
:
frontal intrusion 300 mm
on left seat without
intrusion on right seat



MEDICAL RESULT

- One occupant in the cab.
- The truck driver is a 52 year old man.
- Very slightly injured
M.ASI 1.
- Right ear contusion.



TIPOVER

- Tipover on a fixed obstacle.
- Two types of cab deformation.
- Important roof intrusion on right seat.
- Small frontal intrusion on left seat.
- But no cab structure deformation on driver seat.
- One occupant, the driver slightly injured.

TURNOVER

- ACCIDENT N° 02 783.
- Friday 23 June 2001.
- Loss of control in a left hand curve.
- The truck is a Renault G 340.
- One occupant in the cab.



TURNOVER

- Turnover without fixed obstacle.
- Main impact on the cab roof.
- The driver was not trapped inside the cab.



CAB DEFORMATIONS

- Important roof intrusion on right seat : 810 mm.
- Roof intrusion on center : 510 mm.
- Small roof intrusion on left seat : 380 mm.



MEDICAL RESULT

- One occupant in the cab.
- The truck driver is a 28 year old man.
- Slightly injured M.AIS 2.
- Head contusion with unconsciousness.



TURNOVER

- Turnover without fixed obstacle.
- Important roof intrusion on right seat.
- Small roof intrusion on left seat.
- Asymmetrical cab structure deformation.
- One occupant, the driver slightly injured.

TIPOVER

- Accident n° 02 779.
- Tuesday 15 May 2001.
- Loss of control in a left curve hand due to inappropriate speed.
- The truck is a VOLVO FH 12.
- One occupant in the cab.



TIPOVER

- Tipover on two fixed obstacles : safety barrier and a bank.
- Main impact on the roof.
- Impact speed : 25 km/h.



CAB DEFORMATION

- Roof intrusion on right seat : 960 mm .
- Roof intrusion on center : 750 mm .
- Roof intrusion on left seat : 620 mm .



MEDICAL RESULT

- One occupant in the cab.
- The truck driver is a 29 year old man.
- Uninjured M.AIS 0.

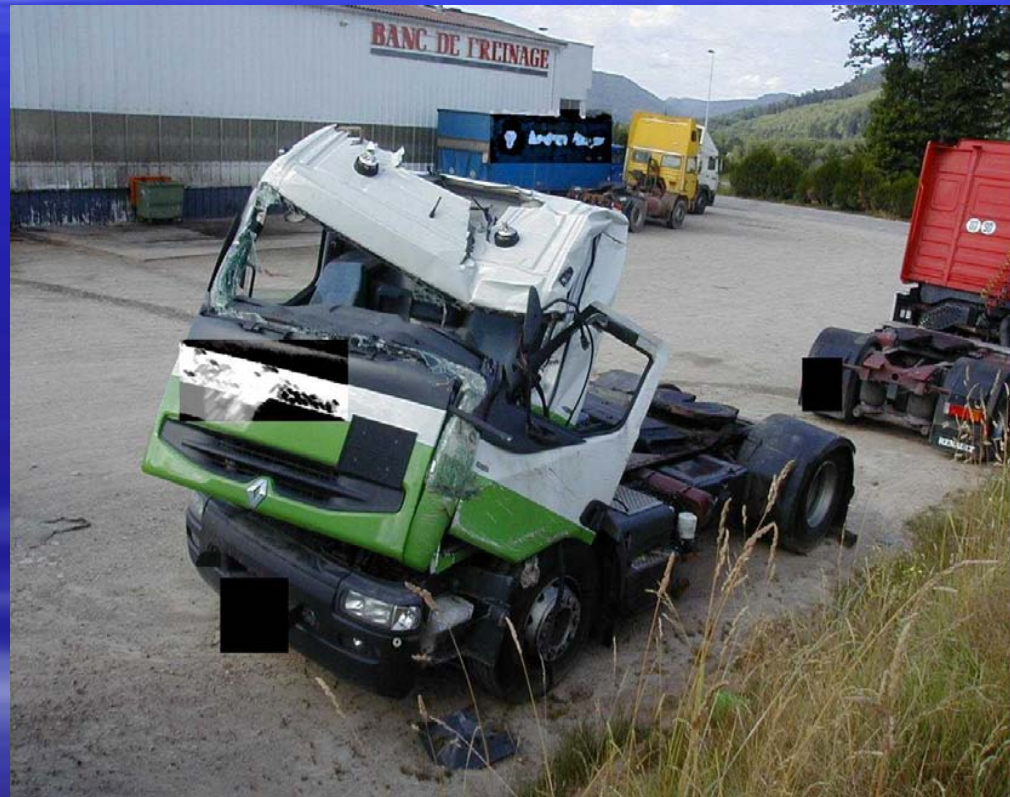


TIPOVER

- Tipover on a fixed obstacle.
- One type of cab structure deformation.
- Roof intrusion on all seats.
- One occupant, the driver uninjured.

TIPOVER

- Accident n° 02 787.
- Tuesday 29 May 2001.
- Loss of control in a right hand curve.
- Tipover on left side.
- The truck is a Renault Premium 400.
- One occupant in the cab.



TIPOVER

- Tipover on a fixed obstacle : a tree.
- First impact is tipover.
- Second impact is a frontal impact against a tree.



CAB DEFORMATION

- First type of deformation:
roof intrusion 740 mm
on left seat.
- Second type of
deformation :
frontal intrusion 1130
mm on left seat.



MEDICAL RESULT

- One occupant in the cab.
- The truck driver is a 29 year old man.
- The driver was trapped inside the cab for 4 hours.
- Very seriously injured M.AIS 3.
- Crush syndrome for left leg.



TIPOVER

- Tipover on a tree.
- First impact tipover.
- Just after second impact is a frontal impact against a tree.
- Major cab structure deformation.
- Roof and frontal intrusion on the driver.
- Driver trapped a very long time inside the cab.
- Driver seriously injured.

TIP OVER

- Accident n° 02 774.
- Monday 08 January 2001.
- Many impacts during the crash.
- The truck is a Renault Premium 400.
- Two occupants in the cab.



TIPOVER

- Tipover on fixed obstacles : safety barrier
concrete pole
low wall
- Main impact on the roof.
- Major cab structure deformation.



CAB DEFORMATIONS

- Roof intrusion 1310 mm on left seat.
- Roof intrusion 1100 mm on center.
- Roof intrusion 1550 mm on right seat.



MEDICAL RESULT

- Two occupants in the cab.
- Two fatalities.



TIPOVER

- Tipover on fixed obstacles.
- Many impacts.
- Very important cab structure deformation.
- Two occupants and two fatalities.