

Multi-Vehicle Fatality

Assignment

You asked Texas Claims & Consulting Co. to review the material provided, conduct any field investigation necessary, reconstruct the accident, and then render expert opinions as to how the above styled, multi-vehicle, fatal accident occurred.

Material Provided for Review

The following material was provided for review:

1. Photographs obtained by other individuals immediately after the accident.
2. Preliminary police report.
3. *Del Rio News – Herald* news article

Field Assignment

On July 6, 2006 we conducted a full field investigation at the accident site near Del Rio, Texas. At that time we,

1. obtained detailed measurements for our scale diagram of the site,
2. obtained additional photographs of the accident area,
3. compared the police officer's analysis of the case with the actual field observations, and
4. identified police marking at the site, as well as physical evidence still remaining.

Brief Historical Review

This is a multi-vehicle, fatal accident that occurred approximately five miles east of Del Rio, Texas on US highway 90.

The participants were,

1. Unit #1 – Mr. Smith. He was the driver of a 2001, Chevrolet, Silverado truck proceeding eastbound on highway 90. He was driving alone at the time.
2. Unit #2 – Mr. Jones. He was the driver of a 2005, Ford Crown Victoria police cruiser also proceeding eastbound on highway 90. Mr. Jones was

ahead of Mr. Smith. Mr. Smith's father was a passenger riding in the front right seat of the vehicle.

3. Unit #3 – Ms. Thomas was the driver and owner of a 2005 Nissan, X-terra sports utility vehicle. She was proceeding westbound on highway 90. She was driving alone at the time.

In sequence, Mr. Smith rear-ended Mr. Jones forcing the police cruiser to rotate counter-clockwise into the path of Ms. Thomas. Ms. Thomas struck the police cruiser on the front, passenger door. Mr. Smith's father was killed and the other individuals were injured.

At the time of the accident, it is our understanding there was road construction in the immediate area and weather conditions were poor with heavy rain.

Office Analysis

From July 6, 2006 until July 21, 2006 we completed the following office analysis:

1. Completed a scale drawing of the accident site.
2. Reviewed and analyzed all photographs.
3. Prepared momentum study drawings.
4. Completed mathematical analysis of Conservation of Momentum for two separate crashes.
5. Identified each vehicle's appropriate dimensions and other physical characteristics.
6. Completed scale drawings depicting each accident individually and combined as interpreted by the mathematical analysis.
7. Completed scale drawings of each vehicle with significant dimensions.
8. Prepared our overall preliminary impressions.

Preliminary Opinions

1. The first crash was between the police cruiser (Jones) and the Silverado 2500 construction truck (Smith). In this crash we note the following,
 - a. The construction truck's pre-impact minimum speed was 49.8 MPH. If the truck driver's testimony were that he skidded for 1 or 2 seconds prior to impact, then his speed would increase to 59.7 or 69.6 MPH respectively.

This is calculated based on the results of the momentum analysis between the police cruiser and the construction truck. The inputs to the momentum formula are obtained from the approach and departure angles, the weights of the two vehicles, and the minimum speeds post- impact.

The adjusted speed for the 1 or 2 second skid was calculated a standard formula. (NW formula #4)

- b. The police cruiser's pre-impact speed was 38 MPH.

(See 1a above as the same calculation reveals the police cruiser's impact speed)

- c. Construction truck impacts the police cruiser on the right rear, causing the cruiser to rotate counter-clockwise.

See drawing of the vehicles and explain the center-of-mass locations and rotations.

- d. The construction truck's post-impact speed was 43.4 MPH, assuming the minimum case speed above.

After colliding with the police cruiser, the truck continued another 140 feet to final rest. The speed required to travel from impact to rest was calculated to be 43.4 MPH, using the standard formula. (NW formula #6)

- e. The construction truck traveled off the road to rest on its side, in a ditch, 180 feet from impact. Forty feet involved tumbling down a slope to rest. We used 140 feet for the calculations.

See first impact diagram for construction truck's movement to rest after impact.

- f. The police cruiser's post-impact speed was 45.1 MPH

For this issue, the police cruiser's post-impact speed of 45.1 MPH is defined as his speed after the first crash. In other words, after being struck by the truck, his forward movement was 45.1 MPH before the second impact.

These facts are established by knowing the pre-impact speed with the Nissan and skidding the police cruiser back to the first impact with the construction truck. This was accomplished using the standard formula to calculate initial velocity. (NW formula #6)

- g. The police cruiser rotated counter-clockwise and traveled 129 feet into the oncoming lane before encountering the second crash

with the Nissan X-terra. This took 2.2 seconds from the first crash to the second crash.

**The 129 feet was measured at the scene based on field evidence. The 2.2 seconds was calculated using a standard formula. (NW # 12)
($V_e = 50.1$ fps, $V_i = 66.2$ fps, $a = -7.24$)**

- h. At the moment of the second crash, the police cruiser was traveling 34.2 MPH.

This is calculated based on the results of the momentum analysis between the police cruiser and the Nissan X-terra. The inputs to the momentum formula are obtained from the approach and departure angles, the weights of the two vehicles, and the minimum speeds post- impact.

- 2. The second crash was between the police cruiser (Jones) and a Nissan X-terra (Thomas).
 - a. The Nissan approached the impact at a minimum speed of 60.6 MPH. If the Nissan skids for one second before impact, she would have been traveling 65 MPH.

This is calculated based on the results of the momentum analysis between the police cruiser and the Nissan X-terra. The inputs to the momentum formula are obtained from the approach and departure angles, the weights of the two vehicles, and the minimum speeds post- impact.

- b. As stated above (1-h), the police cruiser was traveling 34.2 MPH.

See 2a above.

- c. The Nissan strikes the passenger side of the rotating police cruiser.

See drawing of the vehicles and explain the center-of-mass locations and rotations.

- d. The police cruiser's post-impact speed was 12 MPH.

This is calculated using a standard formula knowing the distance the police cruiser slid to rest and the drag factor. (NW #6)

- e. The police cruiser is rolled onto its side and travels 52 feet to its final rest on the passenger side.

See second impact diagram for police cruiser's movement to rest after impact.

- f. The Nissan's post-impact speed was 14.6 MPH.

This is calculated using a standard formula knowing the distance the Nissan X-terra slid to rest and the drag factor. (NW #6)

- g. The Nissan rotates clock-wise, 180 degrees, coming to rest 32 feet from the second Point of Impact.

See second impact diagram for Nissan X-terra's movement to rest after impact.

- 3. If, at the moment of the first accident, Thomas had started to react and brake, she would have had 2.2 seconds to her impact. Her total stopping distance at 60.6 MPH is 406 feet and stopping time is 7.6 seconds, including reaction time.

The 2.2 seconds is the time the police cruiser took to get to the second impact. With normal reaction time being 1.5 seconds, or greater because of the rain, Ms Thomas would have less than a second to complete a successful, evasive maneuver.

Overall, it is my expert opinion that Mr. Smith's negligence for failure to allow for an "***Assured Clear Distance***" between his vehicle and Mr. Jones' is the direct proximate cause for this fatal accident. Additionally, Mr. Smith's negligence for "***Improper Forward Lookout***" and "***Excessive Speed for Conditions***" must be considered significant contributing factors.

Further, it is my opinion Mr. Jones was negligent-free in this accident.

Finally, it is my opinion that at 60 MPH Ms. Thomas had no real opportunity to avoid the crash.

Respectfully submitted,
Texas Claims & Consulting Co.

Ted Marules, Sr.
Accident Reconstruction Expert