C32　Wrong Way DUI Head-On Collision Reconstruction Using DashCam Video

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The goal of this presentation is to share knowledge with the forensic community by detailing the analysis and reconstruction of a fatal collision using the video camera images recorded by an onboard law enforcement camera.

This presentation will impact the forensic science community by virtue of the severity of the impact being analyzed and demonstrating tools which are effective in collision reconstruction.

A family of six, in two vehicles was heading home after an evening out of town. A driver and front passenger in a small van were being followed by a passenger vehicle containing the driver, front passenger, and two rear-seated occupants. Both vehicles were traveling in southbound lane #2 of a two-lane highway with a posted speed limit of 65mph.

An intoxicated individual entered the freeway south of the two-vehicle caravan, and began to drive the wrong way in a mid-size Sports Utility Vehicle (SUV). This operator, under the influence of alcohol, cocaine, and/or other drugs, was driving northbound in lane #1.

From a location between the three converging vehicles, a law enforcement officer responded to the call of a wrong-way driver and entered the southbound traffic lanes from an adjacent on-ramp. Without activating the overhead emergency lights, the officer began to merge into lane #2 at a speed about half that of the caravan approaching from the rear, also in lane #2. The lead vehicle of the caravan was forced to merge into lane #1 to avoid a collision with the rear of the officer's vehicle, thereby becoming aligned with the path of the approaching SUV. The second caravan vehicle followed the first vehicle into lane #1.

Puzzled by the strange encroachment of the officer's car, the lead vehicle operator's attention was momentarily distracted. Only after this vehicle passed the officer's car were the overhead emergency lights activated, approximately 7sec before impact. The lead vehicle operator, thinking they were being pulled over, activated the turn signal and began to merge toward the right-hand shoulder. In doing so, they narrowly missed impacting the wrong-way SUV, but the SUV then slammed head-on into the passenger car.

The impact killed both front seat occupants of the passenger car and seriously injured the two rear-seated passengers, all of whom were wearing their seat belts. The wrong-way driver escaped with only minor injuries.

The video camera, secured to the roof header inside the officer's vehicle, is triggered to begin recording upon activation of the overhead lights. Additionally, the onboard system also records one minute of footage prior to this trigger. The video image captured the offset head-on collision having a closing speed in excess of 120mph. This video was used to determine the pre-impact collision events.

A freeway section north of the point of impact was surveyed with a robotic Total Station device, and a scale diagram was prepared by a licensed professional land surveyor. Using known locations of the lane lines and artifacts observed in the video images, a time-position history analysis was used to determine the pre-impact speeds of the three southbound vehicles. It was determined that the officer's vehicle began its merge into southbound lane #2 at approximately 32mph. The van in lane #1 passed the officer at approximately 60mph. Next, the passenger car that was following the van at a distance of approximately 160ft, passed the officer's vehicle also at approximately 60mph.

The approach trajectory of the officer's vehicle descending the on-ramp until merging into lane #1 was compared to the officer's potential view behind in the direction of the approaching caravan. The pre-impact positions of the caravan were likewise considered. It was declared that the officer was not aware of the caravan until being passed, but the officer had approximately 18sec of time to observe the southbound vehicles and activate the overhead lights with the potential to warn of the immediate collision hazard ahead.

DashCam, Wrong Way DUI, Collision Reconstruction