

Coastal Crash Consultants

Expert in Traffic Crash Investigation and Reconstruction

*Event Data Recorder
Imaging and Analysis*

*Expert Traffic Crash
Reconstruction*

*Serving the
South Florida Area*

Coastal Crash Consultants

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Why Event Data Recorders are important to you!



Obtaining the information contained within a vehicle's Event Data Recorder (EDR) is quickly becoming the standard for a complete insurance claim investigation. It is estimated that 80% of the vehicles on the road today are equipped with an EDR. With the 2013 model year of vehicles, new federal legislation mandates that car manufacturers standardize what information is captured and how it is reported. Furthermore, additional proposed legislation is pending that would require all vehicles sold in the U.S. to have an EDR system by 2015.

The information contained in the EDR presents crucial evidence of the factors that played a role in a traffic crash, evidence that could not be obtained with this high degree of accuracy until now. EDR data can also be used by a crash re-constructionist to examine what the factors were concerning not just the insured's vehicle, but the other vehicle in the crash as well. Imagine what might happen if the other vehicle's expert has downloaded their vehicle's EDR and is using it to determine what your vehicle's speed was? Wouldn't you rather have downloaded your vehicle's EDR and have the most accurate information yourself?

Imaging Vehicle Crash Data Enables You To:

- Identify fraudulent claims
- Obtain pre-crash vehicle data
 - vehicle speed
 - seat belt status
 - ignition cycles
 - throttle position
 - brake status
 - many other valuable parameters
- Evaluate liability
- Quickly make accurate, defensible determinations where liability is questioned
- Detect the absence of "jump-in" passengers in a vehicle at the time of a crash
- Determine if the driver and front seat passenger were belted
- Evaluate crash severity



CASE STUDY 1

Violation of Right of Way vs Excessive Speed

Circumstances

Vehicle 1 was occupied by an elderly couple and was crossing a four lane divided highway in a rural area with a speed limit of 55 MPH. The elderly man, driver of the vehicle, stopped in the median before attempting to cross the remaining two lanes. He saw headlights in the distance, but thought he could continue across the road safely. The approaching vehicle, Vehicle 2, could not stop before it collided with the right side of Vehicle 1. As a result, the elderly passenger in Vehicle 1 was fatally injured.



Pre Crash Data of Vehicle 2 (Originally captured in 0.1 sec intervals, displayed in half sec intervals for simplicity)

Parameter	-5.0 sec	-4.5 sec	-4.0 sec	-3.5 sec	-3.0 sec	-2.5 sec	-2.0 sec	-1.5 sec	-1.0 sec	-.05 sec
Accelerator Pedal Position (percent)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Speed (MPH)	124	122	121	119	118	117	111	104	91	81
Engine Speed (PPM)	4,416	4,384	4,320	4,288	4,224	4,160	3,936	3,648	3,200	2,816
Percent Throttle	8.7	8.3	8.3	8.3	8.3	8.3	7.9	7.5	6.7	5.5
Brake Switch Circuit Status	Off	Off	Off	Off	Off	On	On	On	On	On
Panic Brake Assist Active (If Equipped)	No	No	No	No	No	No	No	No	No	Yes
Steering Input (deg) (if equipped)	-24	-20	-22	-22	-18	-10	-2	2	-20	64
Yaw Rate (deg/sec) (if equipped)	5	4	5	5	3	2	0	1	4	-18

Results

This collision demonstrates how EDR data can provide crucial information that would otherwise be unavailable. Due to the anti-lock brake system in Vehicle 2, there were no visible skid marks left on the roadway. The absence of skid marks would have prevented investigators from establishing the true speed of the vehicle. As shown in the diagram above, Vehicle 2 was travelling 124 MPH a full five seconds prior to the crash. The driver did not apply his brakes until two seconds before the crash, and at the high speed at which he was traveling, he was unable to slow his vehicle before it impacted Vehicle 1. If Vehicle 2 had been doing the speed limit of 55 MPH, this crash would not have happened. Only through data analysis could this conclusion have been reached.

CASE STUDY 2

Damaged While Parked

What the insured claimed

The insured filed a police report stating that their vehicle had been struck in the rear and damaged while parked. They had purchased the vehicle four days prior to the claim, before the pre-inspection had been completed.



Pre Crash Data

Parameter	-1.0 sec	-0.5 sec
Reduced Engine Power Mode	Off	Off
Cruise Control Active (If Equipped)	No	No
Cruise Control Resume Switch Active (If Equipped)	No	No
Cruise Control Self Switch Active (If Equipped)	No	No
Engine Torque (foot pounds)	Invalid	Invalid

Pre Crash Data

Parameter	-2.5 sec	-2.0 sec	-1.5 sec	-1.0 sec	-0.5 sec
Accelerator Pedal Position (percent)	0	0	0	0	0
Vehicle Speed (MPH)	30	27	23	18	12
Engine Speed (PPM)	864	737	724	724	715
Percent Throttle	7	6	6	5	5
Brake Switch Circuit Status	ON	ON	ON	ON	ON

Longitudinal Axis Delta-V Change

Time (milliseconds)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
SDM (Longitudinal Axis Recorded Velocity Change (MPH))	0.85	1.53	2.75	3.54	4.39	5.83	6.45	7.18	8.65	9.40	9.95	0.00	0.00	0.00	0.00

Results

The insured signed a "Release to Image Data" allowing data to be retrieved. As shown by the chart above, the vehicle was braking and had slowed from 30 MPH to 12 MPH just prior to the collision. Due to this information, it was determined that the vehicle was not stopped at the time of the collision but rather it was slowing. This information would not have been available without downloading it from the EDR.

CASE STUDY 3

Three Vehicle Rear-End Collision: Who Hit Whom?

What the claimant alleged

The claimant, in Vehicle 1, stated that they had stopped on an expressway due to traffic stopped ahead. They said that at that point, they were rear-ended by the insured in Vehicle 2. The insured claimed that they were also struck from behind and forced into Vehicle 1. The insured vehicle was equipped with an EDR, which captured two events critical to the case.



Important to note that both events were on same ignition cycle indicating they are from same crash

First Event as determined by “Trigger Counts” Longitudinal Axis Delta-V Change

Time (milliseconds)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
SDM (Longitudinal Axis Recorded Velocity Change (MPH))	0.5	1.1	1.9	2.5	3.0	3.5	4.0	4.4	4.9	5.3	6.3	6.6	8.1	8.8	9.7

Second Event as determined by “Trigger Counts” Longitudinal Axis Delta-V Change

Time (milliseconds)	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
SDM (Longitudinal Axis Recorded Velocity Change (MPH))	-0.5	-1.1	-1.2	-1.6	-2.1	-2.5	-2.6	-2.6	-2.6	-2.5	-2.3	-2.1	-1.9	-1.9	-1.9

Time Between Events

Recorder Status	Time From Previous Trigger (msec)
Complete	963

Results

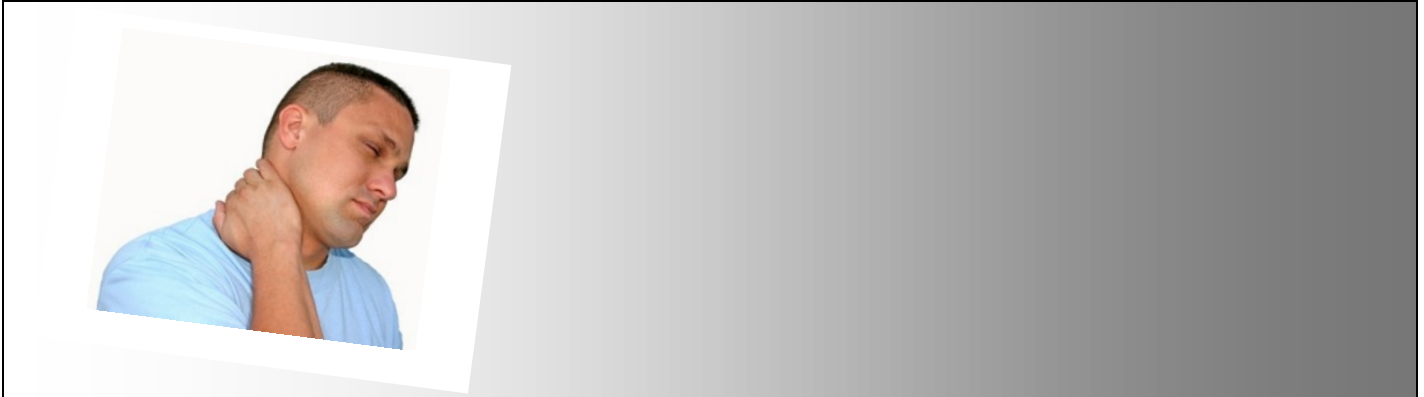
The first event indicated a positive Delta-V, or a gain in momentum. The only way a vehicle can gain momentum or increase in MPH in a crash is to be struck from behind. The second event showed a negative Delta-V, or a reduction in momentum. This was due to the insured striking the claimant's vehicle in the rear, causing the insured's vehicle to have a reduction in momentum or MPH. Furthermore, the time between the increase and subsequent decrease in momentum established that the insured's vehicle was at least 10 feet behind the claimant's vehicle when it was struck in the rear by the third vehicle, which then pushed it into the claimant's vehicle.

CASE STUDY 4

Passenger Claiming Injury Fraud Case

What the claimant alleged

The claimant alleged that he was a passenger in vehicle that was struck by the insured, and that he suffered neck and back injuries from the accident. It was a minor crash and no passengers were listed on the police report.



Claimants Vehicles System Status at Crash Event

Recording Status, Front/Rear Crash Info.	Complete
TRG Count	1
Time Between Previous TRG (msec)	5120 or greater
Buckle Switch, Driver	Belted
Buckle Switch, Passenger	Unbelted
Occupancy Status , Passenger	Unoccupied
Seat Position, Driver	Rearward

Results

The claimant signed a “Release to Image Data” allowing data to be retrieved from their vehicle. Upon examination of the EDR data, it was revealed that the passenger seat was unoccupied at the time of the crash. This type of information is only available through the downloading of EDR data. Seat occupancy is a standard because it is used by the airbag module to determine if the airbag should be deployed. In addition, it can identify the size of the occupant because it also uses this information to determine the strength required to deploy the airbags. When the insured was asked to give an Examination Under Oath, he never responded.