

# J.M. MILLER ENGINEERING

## TECHNICAL BULLETIN: Auto/Truck Accident Reconstruction & Analysis

### Accident Reconstruction & Analysis Services

Miller Engineering has the experience and capability to provide the following services in accident reconstruction cases:

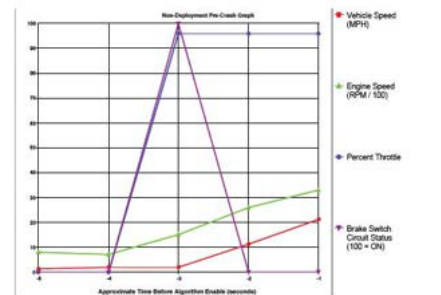
- \* Accident Site Inspections, Surveys & Scene Reconstructions
- \* Vehicle & Equipment Inspections
- \* Failure Analysis
- \* Full Litigation Services
- \* Human/Machine Interaction Analysis
- \* Human Performance Evaluation
- \* Product Liability Assessment
- \* Auto Safety Standards Assessment
- \* Vehicle Components Testing
- \* Vehicle Dynamics & Impact Severity Determinations
- \* Vehicular Fire Investigation
- \* Visibility Studies
- \* ECM/Black Box Data Extraction & Interpretation
- \* Accident Reconstruction & Animations
- \* Insurance Investigations
- \* Accident Sequence Reconstruction Visuals
- \* Speed, Time, & Distance Calculations
- \* Crush Damage Analysis
- \* Pedestrian/Bicycle Accident Investigation
- \* Expert Testimony

Vetronix

CDR CRASH DATA

#### System Status At Non-Deployment

SIR Warning Lamp Status	OFF
Driver's Seat Switch Circuit Status	UNRECORDED
Passenger Seat Position Switch Circuit Status	REARWARD
Ignition Cycles At Non-Deployment	10517
Ignition Cycles At Investigation	10543
Maximum SCM Recorded Velocity Change (MPH)	20.73
Algorithm Enable to Maximum SCM Recorded Velocity Change (msec)	63
Crash Record Locked	No
Event Recording Complete	Yes
Multiple Events Associated With This Record	No
One Or More Associated Events Not Recorded	No



Seconds Before AE	Vehicle Speed (MPH)	Engine Speed (RPM)	Percent Throttle	Brake Switch Circuit Status
-5	1	753	0	OFF
-4	2	754	0	OFF
-3	2	1158	0	ON
-2	11	2224	56	OFF
-1	21	3224	96	OFF

Example CDR Non-Deployment Report for Sudden Acceleration Accident

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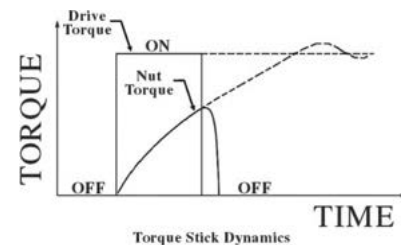
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### Wheel Loss

Lug nut torque requirements are critical to keeping tires firmly attached to the vehicle. Miller Engineering has worked on numerous cases involving wheel loss for autos, commercial trucks, RVs, and towed vehicles.

The graph shown above illustrates the torque-time relationship when using a torque stick along with an impact wrench, rather than a torque wrench to install or replace a tire. Proper torque maintenance is important in preventing wheel loss.

The vehicle shown to the right was involved in a fatal accident resulting from a wheel loss.



## Truck Crashes With Autos

Commercial truck operators often have litigation brought against them or their company for accidents with automobiles. The causes of such crashes may relate to inattentiveness or poor judgement on the part of the truck driver, or actions by the auto drivers which put the truck drivers in a situation where a collision cannot be avoided.

Miller Engineering has assisted in litigation for numerous commercial truck accidents.

## Visibility From Truck Cabs

While forward vision is excellent from a truck driver's elevated position, vision to the sides and rear has some limitations. Miller Engineering has developed techniques to quantitatively analyze and graphically depict visibility areas & blind spots as a function of driver's size, mirror configuration and type of vehicle involved.

## Three-Point Climbing System for Effective Egress & Ingress

Climbing/slip and fall analyses have been a major strength of Miller Engineering in relation to truck/tractor systems. Traditional & cabover engine models have been evaluated & methodologies have been developed to both analyze & depict truck/tractor climbing systems. Miller Engineering has fully computerized data collections which utilize force plates to analyze choices of step surfaces, sole-step interactions, human gait, & effectiveness of 3-point climbing systems. We have also participated in the design of standards relative to the egress & ingress issues.

## Vehicle Types

Miller Engineering has provided expert services and testimony on cases involving various types of vehicles including:

- Auto, Truck, Bus
- Forklift, Hi-Lo, Personal Lifts
- ATV, Off-Road Vehicles, Motorcycles
- Mining, Cranes, Utility Vehicles
- Bicycle Accidents
- Railroad Car & Railroad Utility Vehicles

## Example Graphics & Photographs



This scaled illustration was created in relation to a vehicle-bicycle accident. The colored lines show the vehicle's path, while the colored markings represent various items at the scene such as fire hydrant, utility poles, and a postal box.

Railroad track maintenance & vehicle design issues may have contributed to a worker's back injury from riding in this railroad UTV.



This Miller created simulation illustrates 1 of 3 possible scenarios leading to a forklift backover accident.



A stuck accelerator caused the crash that damaged this vehicle.