ISSUE 1/2011

AT-SCENE TECHNICAL RECONSTRUCTION
INDIANA ASSOCIATION OF CERTIFIED ACCIDENT INVESTIGATORS

THE ASSOCIATION

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IACAI HOSTS PHOTOGRAMMETRY SEMINAR

INSIDE THIS ISSUE:

By now, unless you've been hiding under a rock, you've probably heard of and have some sort of knowledge of the advancements in area of Photogrammetry. Today's photogrammetry is not your daddy's version; while it still incorporates photographs and still uses markers and reference points, most of the work is now done by computer instead of good old-fashioned geometry.
On December 1, 2010, ISP Senior Trooper and IACAI Member Thomas Merkling presented a seminar on Photogrammetry and it's use in the area of Crash Reconstruction.
Merkling began the presentation by discussing the evolution of scene measurements, from the tape to the total station. In photogrammetry, photographs can be taken and an accurate diagram be made from the photographs. So long as an object can be observed in three or more different photographs, the object can be measured. One benefit which I'm sure we can all agree upon, is that with photogrammetry, you can take photos and recover evidence that might not have been obtained through conventional means.

What is required to use Photogrammetry? The heart of the photogrammetry process is the computer program it uses. There are several programs out there now that utilize much the same methods, but for this presentation, the iWitness Photogrammetry program was referenced. It all starts with good photographs and good photo equipment. Photos should be taken from different angles; contrasting angles in different photographs. The better the quality photo, the better the distance, and the better the accuracy is for the program.

As far as the camera is concerned, Merkling suggested using a digital SLR (Single Lens Reflex) camera with no less than 6 megapixel capability. In order to be successful, the camera lens should be fixed and the auto focus be disabled. Every camera that will be used should be calibrated with the program, as no two cameras are alike.

When taking photographs, instead of using the conventional "box" method for the scene, the officer should take photos in "waves," left to right, right to left, etc. Again, the more angle you have in your contrasting photos, the better the diagram will be.

As part of the presentation, Merkling gave a demonstration on how photographs are used to obtain measurements. He also explained how the program can be used to map damage on vehicles and turn the information into 3-D objects for presentations.
Photogrammetry programs provides yet another tool for the crash investigator to use in the investigation of serious or fatal crashes.
Tom Merkling is a veteran Trooper for the Indiana State Police, where he is based out of the Fort Wayne District. He is an instructor and teaches Photogrammetry courses utilizing the iWitness Photogrammetry program.

IN MEMORY OF: IMPD OFFICER DAVID MOORE

The Indiana Association of Certified Accident Investigators wishes to express our heartfelt condolences to the family, friends, and co-workers of Indianapolis Metropolitan Police Officer David Moore, who passed away on January 26, 2011, after sustaining gunshot wounds on January 23, 2011 during a traffic stop.

Shortly after 9:00am, Officer Moore made a traffic stop in the 3400 blk of N. Temple Ave in Indianapolis. Little did Officer Moore know that the driver, suspect Thomas Hardy, a convicted felon, had robbed a Dollar General store shortly before the stop. It appears that Officer Moore had little or no time to react before being shot 4 times, including once in the head and in the neck. Officer Moore was found unconscious and unresponsive and never regained consciousness. He was removed from life-support on January 26, 2011.
Thanks to the extremely impressive, diligent work by the IMPD, suspect Thomas Hardy was apprehended later that same day; a .380 pistol was recovered which was later connected to the shooting.
Our thoughts and prayers will be with you.

IACAI SEMINAR DATES

- **March 30, 2011**
  Plainfield, IN Topic: Fraudulent ID's; BMV
- **June 29, 2011**
  Warsaw, IN Topic: Photogrammetry
- **September 28, 2011**
  Greenwood , IN Topic: New Technologies
- **November 30, 2011**
  Seymour, IN Topic: Legal Update

DISTRACTED DRIVING: WHO'S TO BLAME?

David McElhaney

The policy of the National Highway Traffic Safety Administration, with regards to the topic of electronic entertainment and communication devices, reads in-part: *"The primary responsibility of the driver is to operate a motor vehicle safely. The task of driving requires full attention and focus. Drivers should resist engaging in any activity that takes their eyes and attention off the road for more than a couple of seconds. In some circumstances, a second or two can make all the difference in a driver being able to avoid a crash."* That makes perfect sense to me. It is a statement that puts the responsibility of the safe operation of a motor vehicle squarely on the shoulders of the driver, as it should be.

Recently, I heard on the news that Indiana is one step closer to passing a ban on Texting While Driving. The ban would have Indiana joining 9 other states with texting bans. The ban would make the act of texting while behind the wheel of a motor vehicle an infraction with a possible $500 fine for each offense. Indiana currently has a Texting while driving infraction on the books, but that addresses teens under the age of 18.

As I said in the beginning, I'm all with the driver being responsible for his/her actions while driving. But don't you think that vehicle manufacturers, After market manufacturers, and other electronic manufacturers take some direction to help with this cause?

Case in point: A domestic automobile manufacturer who shall remain nameless for purposes of this article (and for me, since I never know when I might need a part) touts being a supporter of the Don't Text and Drive campaign, yet, it is producing a particular vehicle which incorporates not one, but two 7" LCD screens in the center dash. These color LCD screens permit the driver to access various computer functions, such as systems controls, GPS, and can even permit the driver to call home. While the system boasts "hands-free" Bluetooth technology, it also has a touch screen. I know, technology sells cars. Technology sells cell phones, too. But doesn't this seem contradictory? It would be like an Automobile manufacturer putting "Don't Drink & Drive" advertisements on TV and then have a promotion for a free case of beer with every test drive. It just doesn't sit well.

After market manufacturers, particularly in the car stereo/entertainment business, promote their LCD TV/DVD/Stereo systems for use in vehicles. These systems have multi-system functional capabilities which involve remote controls, audio/video screens for stereo control and for viewing. Do we really need all of this stuff? Whatever happened to "listening" to the radio? And what's up with needing

(Continued on page #3)

"The force required to fracture the human skull is between approximately 16-33 ft/lbs; the force required to fracture a standard automobile windshield is between 24-32 ft/lbs."

TRAINING ANNOUNCEMENTS:

iWitness Photogrammetry Program Cost: Free *Space limited to 20 students*

March 14-18, 2011 8a-5p

Warsaw Police Department

2191 E. Fort Wayne Street

Warsaw, IN 46580

*Must have own equipment, including iWitness Program, SLR Camera, Retroreflective targets, and laptop.

For more information, contact:

Lt. Kip Shuter @ Warsaw Police Department

574-372-9520 (office) 574-267-3613 (Fax)

kshuter@warsawpd.org or kshuter@warsaw.in.gov

VEHICLE RELATED CERVICAL SPINE INJURIES

One of the more common Injury complaints following a motor vehicle crash is that of 'Whiplash.' The term "Whiplash" is a non-medical term which describes a variety of injuries to the neck caused by or related to the hyperextension of the neck. While commonly associated with vehicle crashes, specifically rear-end collisions, whiplash can also occur in other accidents, such as falls from horses, bicycles, and bar stools. Whiplash ranks as one of the most commonly filed insurance claims.

While the exact injury cause of whiplash is unknown, it is thought to involve an impulsive stretching of the spine, mainly in the anterior longitudinal ligament which stretches or tears as the head snaps forward and back again causing the injury.

Some common complaints of whiplash injury include pain or aching to the neck and back, referred pain to the shoulders, nerve pain (pins & needles) to the arms and legs, and headaches.

Common treatments for this type of injury often includes pain medication, muscle relaxants, and the fitting of a cervical collar for a prescribed period of time. Long term prognosis is that whiplash can last from days to several years.

"..Whiplash can occur in other accidents, such as falls from horses, bicycles and bar stools.."

TRIVIAL FACTS YOU CAN'T LIVE WITHOUT

- The first automobile crash occurred in Ohio City, Ohio in 1891. Driver James William Lambert, operating one of the first gas-powered cars, struck a tree root, causing the vehicle to careen out of control and into a hitching post. The injuries to Lambert and his front seat passenger were reportedly minor.
- The first automobile fatality occurred on September 14, 1899 in New York City, NY, when 68 year old Henry Bliss died from injuries sustained from a single vehicle (Taxi) crash which occurred in New York's Central Park.
- The worst car pile-up in US History occurred on March 12, 2008 on I-5 near Coalinga, CA. 164 vehicles were involved, with 17 fatalities and over 150 injured.
- In 1771, French Inventor Nicholas Cugnot ran his steam-powered car into a stone wall, making him the first person to be involved in a motor vehicle crash.

MORE ABOUT: DISTRACTED DRIVING..

a remote for your stereo? Is this necessary? As an officer who's worked several crashes involving drivers who have paid more attention to these devices than on the road, I wonder what's wrong with our society. In my humble opinion, rather than legislate the driver, let's legislate the manufacturers..let's cut out some of the unnecessary crap that we supposedly need in our vehicles today, such as the multifunction LCD screens and other distraction devices. Only when everyone joins together to fix this problem will the problem get fixed. Let's get back to the old plain AM/FM radios...well, okay, I've got to have my CD player….okay, and the little ticker-tape display which tells the name of the song and artist is kinda cool...but that's it. No more!! And put down those cell phones while driving!!

NHTSA RELEASES TOYOTA REPORT

A NHTSA Report DOT 16-11

WASHINGTON, DC -- The U.S. Department of Transportation released results from an unprecedented ten-month study of potential electronic causes of unintended acceleration in Toyota vehicles. The National Highway Traffic Safety Administration (NHTSA) launched the study last spring at the request of Congress, and enlisted NASA engineers with expertise in areas such as computer controlled electronic systems, electromagnetic interference and software integrity to conduct new research into whether electronic systems or electromagnetic interference played a role in incidents of unintended acceleration.

NASA engineers found no electronic flaws in Toyota vehicles capable of producing the large throttle openings required to create dangerous high-speed unintended acceleration incidents. The two mechanical safety defects identified by NHTSA more than a year ago – "sticking" accelerator pedals and a design flaw that enabled accelerator pedals to become trapped by floor mats – remain the only known causes for these kinds of unsafe unintended acceleration incidents. Toyota has recalled nearly 8 million vehicles in the United States for these two defects.

In conducting their report, NASA engineers evaluated the electronic circuitry in Toyota vehicles and analyzed more than 280,000 lines of software code for any potential flaws that could initiate an unintended acceleration incident. At the Goddard Space Flight Center in Maryland, NASA hardware and systems engineers rigorously examined and tested mechanical components of Toyota vehicles that could result in an unwanted throttle opening. At a special facility in Michigan, NHTSA and NASA engineers bombarded vehicles with electromagnetic radiation to study whether such radiation could cause malfunctions resulting in unintended acceleration. NHTSA engineers and researchers also tested Toyota vehicles at NHTSA's Vehicle Research and Test Center in East Liberty, Ohio to determine whether there were any additional mechanical causes for unintended acceleration and whether any of the test scenarios developed during the NHTSA-NASA investigation could actually occur in real-world conditions.

While NASA and NHTSA have identified no electronic cause of dangerous unintended acceleration incidents in Toyota vehicles or any new mechanical causes beyond sticking pedals and accelerator pedal entrapment, NHTSA is considering taking several new actions as the result of today's findings, including:

- Propose rules, by the end of 2011, to require brake override systems, to standardize operation of keyless ignition systems, and to require the installation of event data recorders in all passenger vehicles;
- Begin broad research on the reliability and security of electronic control systems;

Research the placement and design of accelerator and brake pedals, as well as driver usage of pedals, to determine whether design and placement can be improved to reduce pedal misapplication.
NHTSA and NASA will also brief the National Academy of Sciences panel currently conducting a broad review of unintended acceleration and electronic throttle control systems on the reports released today.

"While today marks the end of our study with NASA, our work to protect millions of American drivers continues," said NHTSA Administrator David Strickland. "The record number of voluntary recalls initiated by automakers last year is also very good news, and shows that we can work cooperatively with industry to protect consumers."

Based on objective event data recorder (EDR) readings and crash investigations conducted as part of NHTSA's report, NHTSA is researching whether better placement and design of accelerator and brake pedals can reduce pedal misapplication, which occurs in vehicles across the industry. NHTSA's forthcoming rulemaking to require brake override systems in all passenger vehicles will further help ensure that braking can take precedence over the accelerator pedal in emergency situations. The ongoing National Academy of Sciences study, which will examine unintended acceleration and electronic vehicle controls across the entire automotive industry, will also make recommendations to NHTSA. The NAS study was launched in spring 2010 alongside the NHTSA-NASA investigation and will be finalized later in 2011.

To see the entire report, please visit NHTSA's website @ http://www.nhtsa.gov/PR/DOT-16-11

"NASA engineers found no electronic flaws in Toyota vehicles capable of producing the large throttle openings required to create dangerous high-speed unintended acceleration incidents. "

IACAI SKILLS

This issue of IACAI Skills involves Vehicle Dynamics.

1. The driver of a vehicle involved in a car/pedestrian crash stated that he had just stopped at a stop sign 200 feet from the point of impact. There were no skidmarks prior to the collision. The driver further stated that he had accelerated "normally" and was still accelerating when the crash occurred. As a crash investigator assigned to the crash, you have timed Several similar vehicles over the 200 foot distance with the following results:

Test	Time
1	9.9 sec
2	8.3 sec
3	9.1 sec
4	9.7 sec
5	8.5 sec

   A. What was the vehicle's average acceleration?

   B. If the driver's statements are true, was he exceeding the 35 mph speed limit?

2. A Ford skids 223 feet on a surface with a drag factor of 0.72 and struck a parked Dodge at 38 feet per second. The vehicles remained together after impact.

   A. What was the velocity of the Ford at the beginning of the skid?

   B. How far had the car skidded after 3/4 sec?

   C. If the Ford stopped in 28 feet after impact, what was its average deceleration from Impact to rest?
   D. Assuming a reaction time of 2.3 sec., how far was the Ford from impact when the driver reacted to the Dodge?

3. A vehicle travels off an embankment for a distance of 76 feet while falling 17 feet. The Surface in the area of the take-off was level.

   A. What was the velocity of the vehicle at take-off?

   B. How much time was the vehicle in the air?

4. An accident vehicle skidded 197 feet up a 4 percent grade and came to a stop. A test Vehicle's velocity at braking was 58 fps down the same grade. The test vehicle skidded 73 feet.

   A. What was the velocity of the accident vehicle at first braking?

   B. What was the total time the accident vehicle slid?

The answers to this issue of the IACAI Skills can be found on the IACAI Website after March 1, 2011.

IACAI TRAINING ANNOUNCEMENT

Seminar Announcement

The Indiana Association of Certified Accident Investigators will be sponsoring a seminar on

"Fraudulent ID's" (AM) & "Bureau of Motor Vehicles" (PM)

Presented by: TBA

***Wednesday,* March 30, 2011 0900-1500 hrs**

at the

Plainfield Town Court Building

1075 West Main Street

Plainfield, IN 46168

Cost: $50 for IACAI members; $75 for non-members

No advanced registration is required.
Registration begins at 08:30am

Please plan to attend!!
Questions regarding this seminar may be directed to IACAI President Don Harris
email: donhar232@comcast.net

The Association is published quarterly as a service to members of the Indiana Association of Certified Accident Investigators.

Articles submitted are the responsibility of the author; the IACAI assumes no responsibility as to an article's content..