Delaware State Police
Collision Reconstruction Unit

Distracted Driving Collisions – Investigatory Practices

Distracted Driving Collisions – Investigatory Practices

Cellphone users' lack of self-control

In Philadelphia, university officials are recognizing the dangers associated with cellphones. Large numbers of students are getting injured simply walking around campus playing with their iPhones. A recent government study of 34,000 teenagers crossing public streets revealed that every single teen was walking while distracted.

Grown adults, with necks bent at a 90-degree angle, check social media. At weddings, movies, grocery stores, McDonalds, red traffic lights, you can spot the people lacking self control. If you reference "etiquette" they can't spell the word without help from Google. The medical profession refers to this "dumbing down" addiction to cellphones as an "obsessive compulsive anti-social disorder."

Social media is fast becoming a dark hole of negative issues. Did you ever imagine the U.S. government profiling your email and Internet searches? Employers create "social media policies" to legally terminate employees for "stealing time" at work.

After a car accident, cellphone users will lie to police in front of their children to cover up illegal conduct. If someone gets injured, litigation attorneys subpoena cellphone activity while your GPS pinpoints your location. You were "negligent" since you knew, or should have known, that driving while distracted was dangerous. Making excuses for your lack of self-control is called addiction.

The federal government should mandate that every mobile device "powers down" if it moves. A $1 chip makes everyone safer. If you walk or drive, your mobile electronics won't work. If you want your phone to work, stop moving.

Jim Mayhart
Director of Human Resource, Compliance, Risk Management
Philadelphia

Distracted Driving Collisions – Investigatory Practices

Overview:

- ➢ Crashes that are predominately the result of distracted driving.
- ➢ What we look for and don't find at crash scenes.
- ➢ Cell phone recovery
- ➢ Cell phone records
- ➢ Forensic Imaging
- ➢ Air bag control module data.
- ➢ Search Warrant Preparation
- ➢ Summary

Distracted Driving Collisions – Investigatory Practices

Crashes that are predominately the result of distracted driving

<u>High Speed Rear End Impact</u>

Distracted Driving Collisions – Investigatory Practices

Crashes that are predominately the result of distracted driving

Head - On

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Failure to Maintain Lane

Types of pre-impact evidence is extremely important to discern:

- ➢Free rolling tire (IE critical speed) vs. Locked wheel
- ➢Tire scrub marks as result of hard steering.

No pre-impact evidence

Distracted Driving Collisions – Investigatory Practices

Crashes that are predominately the result of distracted driving

Stale Red Light / Blatant Stop Sign


Pre-Impact
Braking

Distracted Driving Collisions – Investigatory Practices

Cell Phone Recovery

Is the cell phone still on scene, or has it remained with the driver?

- Easily determined by first responders. Ask EMS personnel if phone is on driver's person. Have first responding officers turn off and secure the device.
- If crash mechanism is high, and distracted driving is likely, there is great probability of locating phone in the wreckage. **Keep this in mind and don't give up easily**
- Section the interior of the vehicle, similar to a terrain search. Include roadside debris field.
- Use of operator kinematics and direction of force is not typically helpful due to internal crash forces and air bag deployment.
- Ascertain the telephone number and have your barracks call it. If the driver is a 'busy body' it will be ringing off the hook anyway.
- If cell cannot be located either on scene or on the driver's person, make sure tow company properly secures and covers the wreckage.

Distracted Driving Collisions – Investigatory Practices

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Cell Phone Recovery

Cell phone has accompanied driver to hospital.

- In my experience, drivers involved in crashes have not considered the possibility that police are going to seize their telephone. This is helpful, as the urge to delete data is not forthright.

- Time is of the essence as data can be deleted. Make sure an officer responds to the hospital to secure the telephone under exigent circumstances if necessary. A search warrant can be obtained shortly thereafter.

- Should the cell phone still be in the driver's possession, and he/she is uncooperative, I would suggest the following:
  1. Maintain an officer's presence to assure data is not deleted. Do not allow subject to use their phone.
  2. Have investigator complete search warrant immediately. In the interest of time, it is helpful if investigator has a generic S.W. template partially complete on in-car computer.
  3. If attempts are made to destroy telephone or manipulate data, react according to departmental policy regarding tampering with evidence.

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Cell phone recovery

Damaged Cell Phones

- Older style flip phones can be easily broken in half.
- Smart phones have shattered screens, specifically directed towards the top of frame.
- Air bag powder/talc can be embedded in shattered areas.

- Combination of a shattered screen & biological matter is a strong indicator it was hand held in front of driver's upper torso/face when it interacted with air bag.
- Air bag deployment typically causes red abrasion type injuries. Document laceration type

Distracted Driving Collisions – Investigatory Practices

Cell Phone Records

➢**Obtain phone number and carrier information ASAP**

This information is much easier to establish during the initial stages of investigation, and can create lengthy delays if wrong #'s and carriers are issued subpoenas for records.

(Deceased/Critically Injured or if Miranda is invoked)

1. Initial interview with family members at hospital is a good time to obtain. (If underage they are probably responsible for telephone bill anyway.)
2. Personal effects in the vehicle, documents, legal notices, prior traffic summonses, intel.
3. If phone is operable, call the 911 center (Caller I.D. will give # and usually the carrier)
4. Utilize Fonefinder.com which is a free web based service. If subscriber switched carriers and kept the same phone #, this information could be wrong.
5. To determine if Verizon, Sprint, or AT&T is the carrier, use these suffixes in a test email. Subsequently monitor device to determine if message arrived.
    a. vtext.biz
    b. messaging.sprintpcs.com
    c. txt.att.net
7. Simply power off then on. Some shut down/start up animations will indicate carrier.

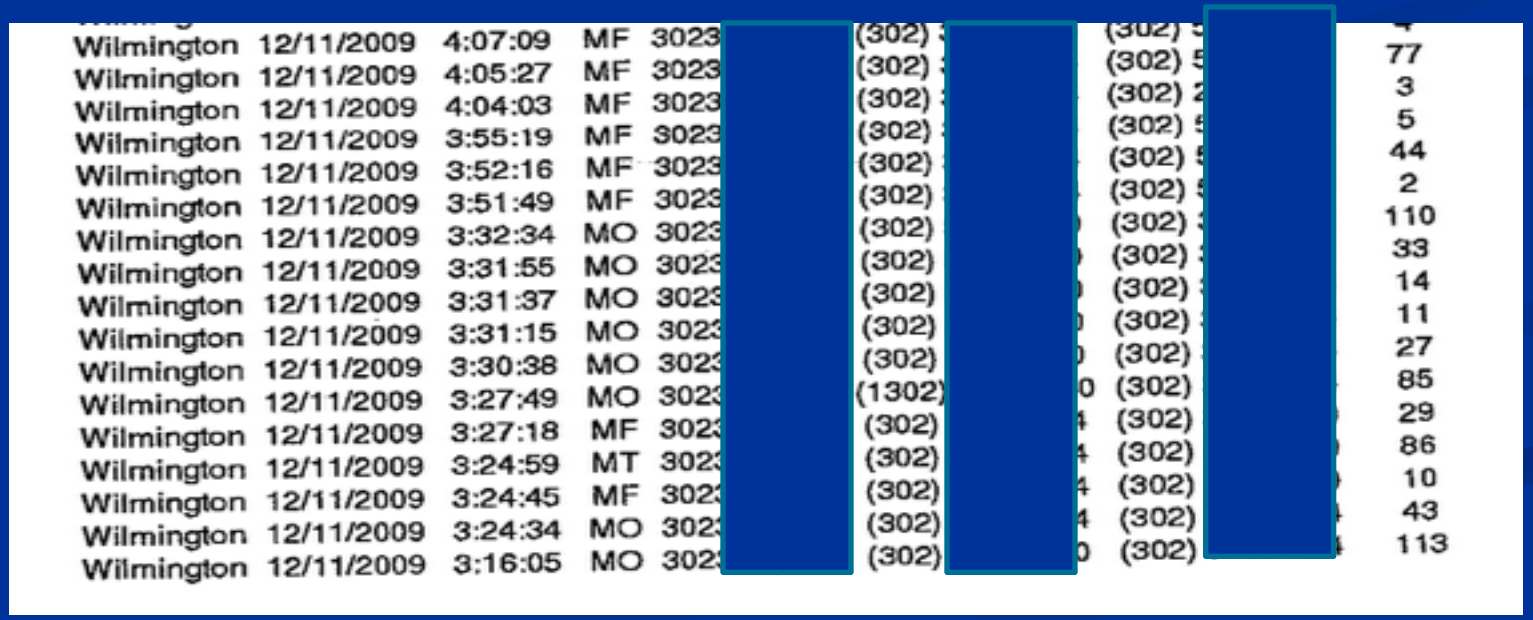
(If you call 911 center to determine phone # and carrier, this should be done after search warrant is obtained)

Distracted Driving Collisions – Investigatory Practices

Cell Phone Records

Call Logs:

- ➢Area
- ➢Date/Time Call Placed (seconds – crucial to investigation/reconstruction)
- ➢Call #'s both
- ➢Duration in seconds
- ➢Least Invasive
- ➢A.G. Subpoena – Supported by officer's investigation analysis.



Wilmington	12/11/2009	4:07:09	MF	3023	[redacted]	(302)	[redacted]	(302)	[redacted]	77
Wilmington	12/11/2009	4:05:27	MF	3023		(302)		(302)		3
Wilmington	12/11/2009	4:04:03	MF	3023		(302)		(302)		5
Wilmington	12/11/2009	3:55:19	MF	3023		(302)		(302)		44
Wilmington	12/11/2009	3:52:16	MF	3023		(302)		(302)		2
Wilmington	12/11/2009	3:51:49	MF	3023		(302)		(302)		110
Wilmington	12/11/2009	3:32:34	MO	3023		(302)		(302)		33
Wilmington	12/11/2009	3:31:55	MO	3023		(302)		(302)		14
Wilmington	12/11/2009	3:31:37	MO	3023		(302)		(302)		11
Wilmington	12/11/2009	3:31:15	MO	3023		(302)		(302)		27
Wilmington	12/11/2009	3:30:38	MO	3023		(302)		(302)		85
Wilmington	12/11/2009	3:27:49	MO	3023		(1302)		(302)		29
Wilmington	12/11/2009	3:27:18	MF	3023		(302)		(302)		86
Wilmington	12/11/2009	3:24:59	MT	3023		(302)		(302)		10
Wilmington	12/11/2009	3:24:45	MF	3023		(302)		(302)		43
Wilmington	12/11/2009	3:24:34	MO	3023		(302)		(302)		113
Wilmington	12/11/2009	3:16:05	MO	3023		(302)		(302)		

Distracted Driving Collisions – Investigatory Practices

Texting Logs (Verizon):
Call Logs:
- ➢Location Processed
- ➢Target #
- ➢Date/Time Message Sent
- ➢Date/Time Message Delivered
- ➢Message Completion Code (1 – Delivered /2 – Expired)
- ➢Message Sender
- ➢Recipient
- ➢Incoming or Outgoing (1 or 2)
- ➢A.G. Subpoena – Supported by officer provided initial analysis.

Network El	Switc	MDN	Msg Send Date	Msg Deliver Date	Messi	Originating Ac	Destination A	Message D	MIN
Plymouth	L	3028530961	08/05/2013 19:03	08/05/2013 19:03	1	3023968423	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 19:18	08/05/2013 19:18	1	3025198654	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 19:33	08/05/2013 19:34	1	3025198654	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 19:33	08/05/2013 19:33	1	3028530961	3025198654	2	3029589567
Plymouth	L	3028530961	08/05/2013 20:40	08/05/2013 20:40	1	3028530961	3023968423	2	3029589567
Plymouth	L	3028530961	08/05/2013 20:41	08/05/2013 20:41	1	3028530961	3023968423	2	3029589567
Plymouth	L	3028530961	08/05/2013 20:53	08/05/2013 20:53	1	3023968423	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 20:56	08/05/2013 20:56	1	3023968423	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 21:39	08/05/2013 21:43	1	3026041780	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 21:49	08/05/2013 21:49	1	3025190151	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 21:50	08/05/2013 21:50	1	3025190151	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 21:47	08/05/2013 21:51	1	3028530961	1.3025E+10	2	3029589567
Plymouth	L	3028530961	08/05/2013 21:50	08/05/2013 21:50	1	3025190151	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 21:46	08/05/2013 21:51	1	3028530961	1.3025E+10	2	3029589567
Plymouth	L	3028530961	08/05/2013 21:50	08/05/2013 21:51	1	3025190151	3028530961	1	3029589567
Plymouth	L	3028530961	08/05/2013 23:44	08/05/2013 23:49	1	3028530961	1.3025E+10	2	3029589567

Distracted Driving Collisions – Investigatory Practices

Text Content

- ➢Currently Verizon is the only carrier where we can still get texting content.
- ➢Extremely important to send a letter of preservation ASAP. (A.G. Office)
- ➢Data is gone 5 days after delivery, if not preserved.
- ➢Other carriers, texting content is volatile.
- ➢Typically deleted as soon as message is received unless phone is off.
- ➢Search Warrant signed by a Judge required.

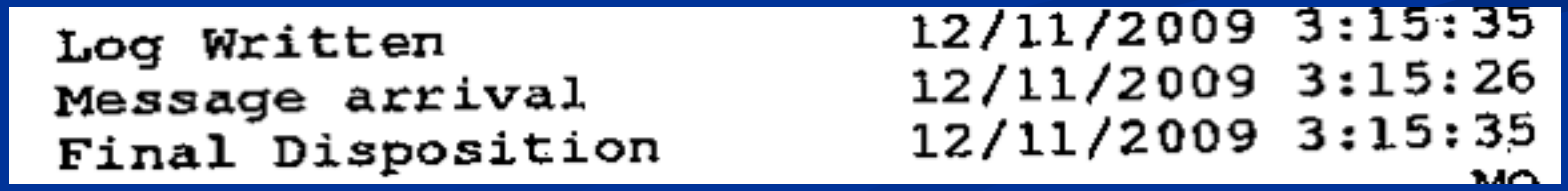
The best avenue for obtaining texting content is through Forensic Imaging

Distracted Driving Collisions – Investigatory Practices

Message Text
[Just got to my car]

Log Written	12/11/2009 3:15:35
Message arrival	12/11/2009 3:15:26
Final Disposition	12/11/2009 3:15:35
Source Protocol	MO
Input Port	0
Output Protocol	SS7
Output Port	0
Message Source	MO_AlphaPg
Message ID	31398771321
Input Label	AUX2
Billing ID	0
Billable	true
Broadcast message	false
User Data Header Indicator	false
Priority	0
Data Coding	0
Number Of VM messages	

Message Text
[Just got to my car]



1. 03:15:35 text from [redacted] to [redacted] "Just got to my car."
2. 03:15:57 text from [redacted] to [redacted] "Who's this"
3. 03:16:05 [redacted] alls [redacted], call length 113 seconds
4. 03:21:09 text from [redacted] to [redacted] "Go to my house if u want that good d[redacted]k :)"
5. 03:24:14 text from [redacted] to [redacted] "Na f[redacted]k you"
6. 03:24:34 call from [redacted] to [redacted]4, call length 43 seconds
7. 03:24:45 voicemail from [redacted] received by [redacted]
8. 03:24:59 call from [redacted] to [redacted] call length 86 seconds
9. 03:27:18 voicemail from [redacted], length 85 seconds
10. 03:27:56 text from [redacted] "Yo stop actin like ur cool. I'll have another u in literally 1 second."
11. 03:30:27 text from [redacted] "no worries my GIRL of 7 months is waitin in my Bed for me have fun 2nite SLUT."
12. 03:30:38 call from [redacted] to [redacted], call length 27 seconds
13. 03:31:15 call from [redacted] to [redacted], call length 11 seconds
14. 03:31:37 call from [redacted] to [redacted], call length 14 seconds
15. 03:31:55 call from [redacted] to [redacted], call length 33 seconds
16. 03:34:53 text from [redacted] to [redacted] "Yeah text me sat sweetie I wanna hang out"
17. 03:36:46 text from [redacted] "pleaz don't show up at my house id hate if my girl beat that pretty ass face of yours in ;) goodnite"

Distracted Driving Collisions – Investigatory Practices

Forensic Imaging - Data Extraction

Terminology: 'Copying' of data with intent to preserve

Distracted Driving Collisions – Investigatory Practices

Forensic Imaging

Extraction Report

- Chats
- Text/Instant Messages
- Contacts
- Emails
- Data Files
- Resources
- Thumbnails
- User Accounts
- Web pages/Used (Twitter/ Facebook, Etc.)

High Tech Crimes Unit handles all Forensic Imaging.

- Search Warrant is necessary.
- Phone can be severely damaged and subsequently rebuilt.
- Password protected phones are able to be imaged with the exception of the new IPhone 5. (Must be sent to Apple in Seattle Washington with S.W. – Will take approximately 3 months to get data returned.)

Forensic Analysis & Review – Ensuring data conforms to limitations of search warrant.

Distracted Driving Collisions – Investigatory Practices

Collision Data Recorder

Can provide any of the following pre-crash data, which can be used to formulate a distracted driving causation. Also extremely helpful for establishing probable cause for a cell record search warrant.

- Throttle percentage
- Steering angle
- Braking status

Distracted Driving Collisions – Investigatory Practices

Collision Data Recorder

Distracted Driving Collisions – Investigatory Practices

Vehicle #1 was equipped with a Sensing and Diagnostic Module (SMD). The SDM is a computer that monitors forces experienced by the vehicle and determines whether to deploy airbags and other safety devices, if equipped, in the event of a collision. The SDM also records the status of variou Data Retrieval software s recorded at the tim was recorded, which is

93 miles per hour.

The SDM in vehicl ine speed (RPM), percent throttle, brake switch status, anti-lock brake system active and steering wheel angle. The data is recorded in one second increments from five thru one second prior to algorithm enable. The speed of vehicle #1 at five seconds before algorithm enable (AE) or the 'wake up' of the SDM is 93 miles per hour. The speed goes to 92, 89, 82 and 68 miles per hour in the successive entries. The engine RPM's are 3584, 3648, 3072, 3008 and 2688. The percent throttle changes from 50% at five seconds prior to AE to 59%, 20% at three and two seconds prior to AE and 49% at one second prior to AE. The Brake Switch Status is 'off' throughout the five seconds prior to AE indicating Ms. Hoffman did not apply the brakes of vehicle #1. This is also consistent with the recorded percent throttles, which would descend to 0% if the

The engine RPM's

did not apply the brakes

Distracted Driving Collisions – Investigatory Practices

Steering Angle:

➢Research data limitations to determine positive/negative orientation.

➢In this particular graph, negative steering is right, positive is left.

➢This crash illustration shows gradual left steering during the inattention phase, followed by extreme right steering and braking prior to impact. (Exceptional data to disprove the claim of falling asleep through the crash event.)

Parameter	-5	-4.5	-4.0	-.3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	-0.1
Vehicle Speed	58	58	58	58	58	58	58	58	58	58	58
Engine Speed	1536	1504	1536	1536	1535	1536	1536	1504	1568	1536	1504
Brake Switch Circuit State	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	On
Steering Input	3	4	4	4	1	1	-1	-1	-1	-14	-64

Distracted Driving Collisions – Investigatory Practices

Search Warrant / Case Preparation

- ➢Types of crashes known to be associated with Distracted Driving.
- ➢Lack of pre-impact evidence, location of evidence well into event.
- ➢Evidence within the vehicle.
- ➢Physical location of cell phone.
- ➢Damage to phone consistent with air bag interaction.
- ➢Biological evidence on cell.
- ➢Witness statements, independent and passengers.
- ➢Cell/Text phone records.
- ➢Forensic Imaging
- ➢ACM data correlation (steering angle, brake switch status).

Distracted Driving Collisions – Investigatory Practices

Type of information & Current Retention (I.E. Verizon)

- Subscriber -post paid: Typically 3-5 yrs.*
- Call detail records/cell sites: 1 rolling year
- Text message detail: 1 rolling year
- Text message content: 3-5 days
- IP session information: 1 rolling year
- IP destination information: 30 days
- Pictures: Only if on web site**
- Bill copies -post paid: Last 12 months
- Payment history -post paid: Typically 3-5 yrs.*

Thanks for you time and attention

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