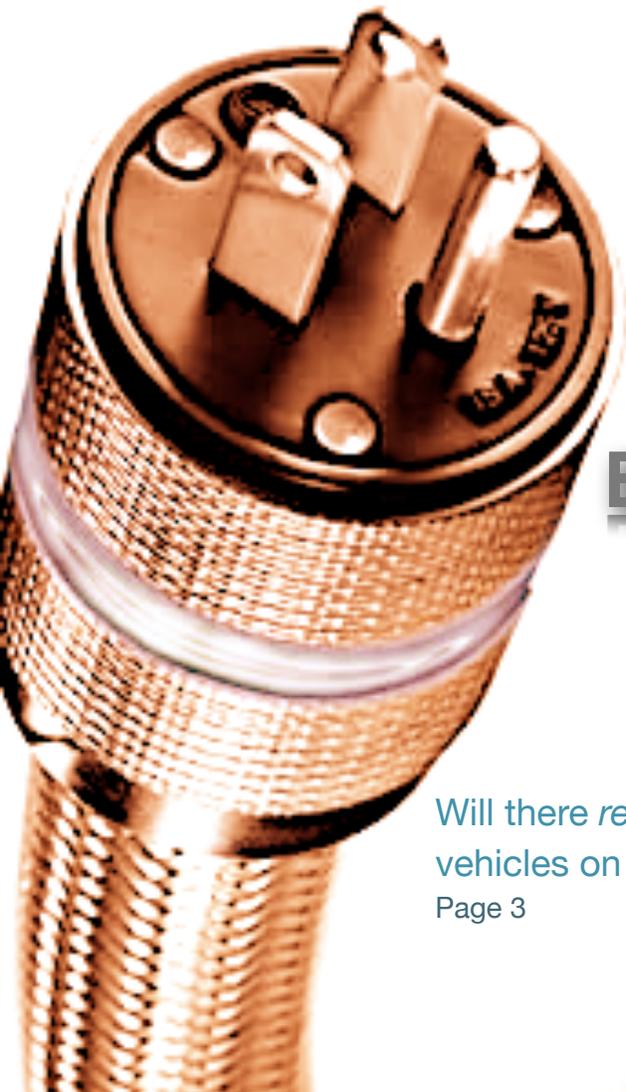


SKIDEMARKS



GOING ELECTRIC



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BOARD BEAT

'Tis the season to be busy spending time with family, shopping, eating, drinking (non-alcoholic of course), transitioning kids from one sports season to another, and oh yeah...working and writing the "Board Beat" for Tim. I would like to take this time of year to thank all of the volunteers who make CAARS such a successful organization. I would like to especially thank our current president, Chris Kauderer, past president Kent Boots, my fellow Board members, and the CAARS administrative staff for all of the hard and thankless work they do behind the scenes. I would also like to thank Jahna Beard, the conference speakers, and all attendees for making this year's conference in Anaheim such a success. As we approach a new year, I would like to extend the offer to any member who would like to volunteer their expertise and time to further the legacy of CAARS for years to come.

In the New Year, we already have both the first and second quarterly training in place. Our first quarterly training speaker will be Craig Fries of Precision Simulations (www.precisionsim.com). Mr. Fries will present case studies involving 3D animations of collision and crime scene reconstructions utilizing laser scanner technology. I have personally worked with Mr. Fries on several motor vehicle, pedestrian, and bicycle collision reconstructions utilizing high precision laser scans over the years. His presentation should not be missed. The second quarter training will involve a local District Attorney presenting strategies for effective expert witness testimony, while the afternoon session will encompass photography from a member of the MAIT team. Please stay tuned to our website for specific locations, dates, and times for the upcoming training sessions.

As you all well know, this time of year can be crazy busy, so please add a bit more travel time into your holiday schedule to account for driving patiently to your destinations. We are the experts, so let's not add to the craziness of the roadways this holiday season. Be safe and have a great holiday season with family and friends.

Respectfully,

Sean Shimada

Sean D. Shimada
Member, Board of Directors

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COVER STORY: WILL WE REACH A MILLION?

Obama's 1M electric car goal could be difficult

by Katie Fehrenbacher, November 18, 2011 — (Original article located [here](#))

A reporter recently asked me if I thought the U.S. would be able to reach President Obama's goal of putting 1 million electric cars on the road in the U.S. by 2015. I'm not sure, I said, but I think that we could potentially come close. But that got me thinking, given some of the struggles of companies like Think and the delays from Fisker, will we be able to reach the 1 million EV goal by 2015?

Here's what the Department of Energy [said back in February](#) about which cars would deliver what part of the goal. It should be noted that the DOE didn't include estimates from Coda Automotive, Honda, and Mitsubishi which will likely deliver some volumes of cars between now and 2015. But let's look at the numbers below and see what is still there. A couple months ago Pike Research said that it thinks that we might end up seeing about [667,000 plug-in electric cars sold by 2015](#) instead of the 1 million.

Think EV: From the get-go we can cross off the 57,000 cars from the Think City EV. [The company filed for bankruptcy](#) this summer, and though it was acquired by an investor, I don't think it will be producing any cars anytime soon. That takes us down to 1,165,200.

Tesla: Tesla will sell 2,500 of its Roadster car in 2011 and 2012, so that adds another 1,500 cars, bringing us up slightly to 1,166,700. The numbers for Tesla's Model S seem to be on track with those on the list.

Smith Electric Vehicles: Electric fleet maker Smith Electric Vehicles [recently filed for an IPO](#), so has revealed its latest figures for how many cars it thinks it can produce. Smith says it has sold 320 vehicles for the year ending Sept. 30, 2011, has a backlog of 120 vehicles, and has pre-sold 540 vehicles, which it will make through July 2012. So after the Summer of 2012, Smith will have made and sold about 1,000 electric cars. That's close to half of what the DOE was expecting by then. Smith says it make another 2,220 vehicles between 2012 and 2015, while the DOE was predicting 4,000 vehicles from it (1,000 per year) by the end of 2015. I think we can conservatively cut Smith's contribution by a third of what the DOE estimated, bringing us down by 1,600, roughly what the extra Roadster sales contributed, 1,165,100. Nissan LEAF: [Nissan said about a month ago](#) that it had sold 15,000 LEAFs globally. The DOE predicted that there would be 25,000 LEAFs just in the U.S. by 2011. Conservatively I think we can cut 10,000 cars off the DOE's 2011 LEAF figure, bringing it to 1,155,100.

Navistar eStar: I'm not sure on the latest numbers for this company, but I've contacted the company and will update this when I know more. Navistar was given a \$39.2 million grant in 2009 under the [\\$2.4 billion stimulus program](#), and the company hoped to deliver 400 eStars by the end of 2010. It launched [eStars for its first customer FedEx](#) in the Summer of 2010. But I don't think its goals have been met, and the DOE estimates for its status report that it thinks Navistar can deliver 200 eStars by the end of 2011. Given that lag time I would bet that the Navistar numbers for the DOE status report are lower, but I'll since they were already low, I'll keep them as is for now.

GM Volt: O.K. now for a big one. According to the DOE numbers, GM is supposed to produce 15,000 Volts by the end of 2011, though more recent figures put GM's own estimates for 10,000 in 2011. According to Wired last month GM had [shipped about 4,000 Volts off of the lot by the end of September](#). GM sold 723 Volts in the month of September. So let's give GM the benefit of the doubt and say it will sell 1,000 Volts each month for October, November and December.

1,000,000 ELECTRIC CARS



So that would mean GM would have shipped 7,000 Volts for 2011, less than half of what the DOE was predicting for 2011.

Then the DOE says that GM is supposed to produce 120,000 Volts for 2012. That number is way high.

[According to reports](#) GM intends to likely produce 45,000 Volts for U.S. dealers in 2012, and will make more cars for other markets. So we can cut the 2011 figure by 8,000, and the 2012 number by 75,000. Bringing us to 1,072,100.

DOE is depending on GM to make and sell 120,000 Volts for the U.S. market each year in 2013/2014/2015. It will probably end up being more like

half that figure at 60,000 cars for at least 2013, though it could ramp up in 2014 and 2015. Giving the DOE the benefit of the doubt for 2014/2015, let's shave off another 60,000 for 2013, to bring it to 1,012,100.

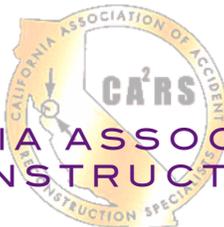
Ford Focus EV: Ford won't even start selling its Focus EV until the end of 2011, and [just opened a website](#) to accept reservations. The DOE thinks it can produce and sell 10,000 Ford Focus EV's in 2012. Ford hasn't said how many it intends to produce, but if it sells 10,000 it would mean the Ford Focus EV would sell more than the Volt in its first year. Doable? Let's keep the number the same on that for now.

Fisker: And now to Fisker, which has sales of its Karma car, and plans to produce the car in small volumes in the fourth quarter of 2011 and the first quarter of 2012, and then ramp up to volume production in 2012. The production of 1,000 Karmas in 2011 doesn't seem realistic, as last I heard Fisker had shipped 40 cars from its partner's plant in [Finland in mid October](#). Let's say Fisker produces and ships 200 Karmas in 2011. Let's cut the DOE's Fisker Karma estimate by 800, bringing the number down to 1,011,300.

Fisker says its Nina won't be [produced in volume until mid-2013](#), with prototype production starting in late 2012. That's assuming this car is coming out at all (the skeptic in me says it's 50/50 at this point). Erase those entire 5,000 cars that the DOE says will come from the Nina in 2012, bringing us to 1,006,300. Since Fisker isn't going into volume production until mid-2013, I think we can cut its 2013 estimates in half, by 20,000, bringing us to 986,300. I'll leave the 2014 and 2015 Nina DOE estimates alone, but they seem rather unreasonable at 45,000 Ninas produced and sold in 2014 and 75,000 in 2015.

Coda: The DOE didn't take Coda into account for that table, so let's add in some cars for Coda, as it will start shipping its first Codas to dealers in December. Let's say Coda sells 2,500 Codas in 2012 (it's estimated 14,000 in its first year, 7,000 for consumers and 7,000 for fleets, but that sounds high), and 5,000 each year for 2013, 2014, and 2015. So I'll add that backup to 1,003,800.

(Continued on Page 8)



**NEW TECHNOLOGY – GM:
ADDITIONAL AIR BAGS & A CAMERA SYSTEM**

GM Introduces Industry's First Front Center Air Bag

New safety feature designed to help protect driver, front passenger in side impact crashes

DETROIT, Sept. 29, 2011 /PRNewswire/ -- General Motors will introduce the industry's first front center air bag, an inflatable restraint designed to help protect drivers and front passengers in far-side impact crashes where the affected occupant is on the opposite, non-struck side of the vehicle. The front center air bag will be introduced on the Buick Enclave, GMC Acadia, and Chevrolet Traverse midsize crossovers in the 2013 model year.

This new safety feature will be standard on Acadia and Traverse with power seats and all Enclaves. The front center air bag deploys from the right side of the driver's seat and positions itself between the front row seats near the center of the vehicle. This tethered, tubular air bag is designed to provide restraint during passenger-side crashes

when the driver is the only front occupant, and also acts as an energy absorbing cushion between driver and front passenger in both driver- and passenger-side crashes.

The air bag also is expected to provide benefit in rollovers. GM analysis of the National Highway Traffic Safety Administration's Fatality Analysis Reporting System database, found that far-side impact crashes, which the front center airbag primarily addresses, accounted for 11 percent of the belted front occupant fatalities in non-rollover



impacts between 2004 and 2009 involving 1999 model year or newer vehicles. These far-side fatalities, where the occupant is on the non-struck side of the vehicle, also represent 29 percent of all the belted front occupant fatalities in side impacts. "The front center air bag is not required by federal regulation, and no other air bag in passenger vehicles today offers the type of restraint and cushioning this air bag is designed to provide for front occupants," said Scott Thomas, senior staff engineer in GM's advanced restraint systems.

The front center air bag is expected to add to the vehicles' record of third-party crash test performance. The 2012 model year editions of these midsize crossovers have received five-star Overall and Side Crash safety ratings from NHTSA's New Car Assessment Program, and 2011 Top Safety Picks from the Insurance





GM Introduces Front Center Air Bag

Institute for Highway Safety. "The front center airbag has real potential to save lives in side crashes," said Adrian Lund, president of the insurance Institute for Highway Safety. "GM and Takata are to be commended for taking the lead in this important area." GM and technology supplier Takata developed the front center air bag over the course of three years, testing many design iterations to achieve packaging, cushioning, and restraint for a variety of crashes and occupant positions.

Numerous elements of the air bag's jointly patented cushion design address the restraint's unique performance characteristics while considering a range of occupant sizes. "While no restraint technology can address all body regions or all potential injuries, the front center air bag is designed to work with the other air bags and safety belts in the vehicles to collectively deliver an even more comprehensive occupant restraint system," said Gay Kent, GM executive director of Vehicle Safety and Crashworthiness. "This technology is a further demonstration of GM's above-and-beyond commitment to provide continuous occupant protection before, during and after a crash." General Motors (NYSE:[GM](#) - [News](#)), one of the world's largest automakers, traces its roots back to 1908. With its global headquarters in Detroit, GM employs 208,000 people in every major region of the world and does business in more than 120 countries. GM and its strategic partners produce cars and trucks in 30 countries, and sell and service these vehicles through the following brands: Baojun, Buick, Cadillac, Chevrolet, GMC, Daewoo, Holden, Isuzu, Jiefang, Opel, Vauxhall, and Wuling. The global Chevrolet brand celebrates its 100th anniversary in 2011. GM's largest national market is China, followed by the United States, Brazil, the United Kingdom, Germany, Canada, and Italy. GM's OnStar subsidiary is the industry leader in vehicle safety, security and information services. More information on the new General Motors can be found at www.gm.com.



New Camera-Based Collision Alert Debuts on GMC Terrain

Industry-first system designed to help drivers avoid front-end and lane departure crashes

DETROIT, Sept. 29, 2011 /PRNewswire/- The 2012 GMC Terrain smaller SUV features the industry's first crash avoidance system that exclusively uses a single camera to help drivers avoid front-end and unsignalled lane departure crashes. Terrain's new active safety system uses a high-resolution digital camera mounted on the windshield ahead of the rearview mirror that looks for shapes of vehicles and lane markings. The system uses audible warnings and a high-mounted visual display to warn the driver if he or she is following another vehicle too closely, when a collision is imminent, or when departing a lane without signaling first.

According to National Automotive Sampling System estimates, rear-end crashes account for approximately 28 percent of the nearly 6 million police-reported incidents that occur annually. The National Highway Traffic Safety Administration maintains that the majority of rear-end collisions involve driver inattention, and the Insurance Institute for Highway Safety says forward collision warning systems have the potential to help prevent such crashes.

"Digital image sensors are used in just about everything from cameras to mobile phones to computers and this is making them a more-affordable alternative for use in vehicles," said Raymond Kiefer, General Motors Technical Fellow for crash

New Camera-Based Collision Alert on GMC Terrain

avoidance systems. “By combining a digital camera with state-of-the-art image processing algorithms, we’re able to estimate when a crash may be imminent.”

Terrain’s warning display contains green “vehicle ahead” and “lanes detected” icons, as well as flashing red “forward collision alert” and amber “lane departure warning” icons that are accompanied by warning chimes. Forward collision alert operates at speeds above 25 mph and warns a driver if they are following too closely or in imminent danger of a front-end crash. When a collision is predicted to be imminent, vehicle brakes are pre-charged to help drivers quickly reach maximum braking.

The forward collision warning software examines each frame captured by the camera – about 14 frames per second – searching for shapes characteristic of vehicles. Detected vehicles are then checked over successive frames for changes in size for calculating time-to-collision. The system also uses speed, directional change, and how the accelerator and brake pedal have been applied to determine when to alert the driver.

In order to operate in varying visibility conditions, the system combines four separate exposures to create each high-resolution image for analysis. This is particularly useful at night when short exposures are needed to get clear images of light sources while long exposures are needed to detect shapes and textures. Night time target recognition is also enhanced by looking for pairs of lights moving together that indicate taillights. The system operates as long as the camera eye is unobstructed, such as by snow or mud.

In addition to searching for other vehicles, the image processor also looks for lane markings to provide lane departure alerts. Available at speeds above 35 mph, the lane departure warning icon shines green when lane markings are detected to indicate the system is active. If the vehicle drifts out of the lane without a turn signal, the lamp switches to flashing amber and is augmented by warning beeps.

The GM camera-based forward collision alert system is listed at the Safecar.gov website as a result of passing three track tests required by the NHTSA’s New Car Assessment Program.

“GM is committed to providing protection before, during and after a crash, but the best scenario is to avoid a collision in the first place, and this technology is designed to assist drivers for that purpose,” said Gay Kent, GM executive director of Vehicle Safety and Crashworthiness. This dual-benefit crash avoidance system is available for \$295.

Camera-Based Collision Alert Debuts on GMC Terrain

GMC 2012 GMC TERRAIN USES INDUSTRY-FIRST SINGLE CAMERA-BASED CRASH AVOIDANCE SYSTEM

Left icon tells driver when vehicle detected ahead

Center icon lights up when following too closely and flashes with audible chimes when there is danger of collision

Right icon turns to amber from green when unsigned lane change begins

LANE DEPARTURE WARNING

FORWARD COLLISION ALERT

Windshield-mounted camera looks for vehicles and lane markings



BY THE NUMBERS

1,000,000 ELECTRIC CARS

Estimated U.S. Supply of Electric Vehicles from 2011 through 2015						
Manufacturer and Model	2011	2012	2013	2014	2015	Total
Fisker Karma PHEV	1,000	5,000	10,000	10,000	10,000	36,000
Fisker Nina PHEV		5,000	40,000	75,000	75,000	195,000
Ford Focus EV		10,000	20,000	20,000	20,000	70,000
Ford Transit Connect EV	400	800	1,000	1,000	1,000	4,200
GM Chevrolet Volt	15,000	120,000	120,000	120,000	120,000	505,000
Navistar eStar EV (truck)	200	800	1,000	1,000	1,000	4,000
Nissan LEAF EV	25,000	25,000	50,000	100,000	100,000	300,000
Smith Electric Vehicles Newton EV (truck)	1,000	1,000	1,000	1,000	1,000	5,000
Tesla Motors Model S EV		5,000	10,000	20,000	20,000	55,000
Tesla Motors Roadster EV	1,000					1,000
Think City EV	2,000	5,000	10,000	20,000	20,000	57,000
Cumulative Total						1,222,200

Note: The above numbers have been taken from announced production figures and media reports. In some cases more conservative estimates have been used due to: delays that have occurred since announced

1,000,000 Electric Cars — Continued from Page 4

Wrap-up

All of this math is based on guesses and assumption, but I'm trying to give you a picture for how close this is going to be. I'm also being conservative in assuming that Fisker stays afloat and is able to ramp up volume production of its Karma, and then is able to produce the Nina at all — the DOE estimates that the Nina will give close to 200,000 EVs to its 1 million total by 2015! So if the Nina doesn't emerge or struggles the numbers will go waaaay down.

In addition if GM doesn't ramp its Volt up to 120,000 per year, it will also cut the total significantly. The DOE was assuming about 500,000 EVs to come from the Volt for its estimates. Essentially between the Nina and the Volt, the DOE thinks close to half of the volume will come from them!

Finally some companies that are meeting their milestones could end up producing more cars than previously estimated. Tesla will be unveiling its Model X, a cool SUV minivan, which will likely go on sale before 2015.

It's going to be close — very close — for the U.S. to meet its goal to put 1 million electric cars on the road by 2015. As I said earlier [Pike Research thinks](#) that we might end up seeing about 667,000 plug-in electric cars sold by 2015, instead of the 1 million.

In case you missed the original Million Electric Vehicles on the Road by 2015 report, you can read it [here](#).



AN OPINION ON ELECTRIC VEHICLE TECHNOLOGY – BATTERY FIRES – ARE WE READY FOR THIS??

The Volt Fire and Public Acceptance of Electric Vehicles

Jim Greenberger – December 3, 2011



The news in the industry this week continues to be dominated by reports of the Volt battery fire and resulting NHTSA investigation. Electric drive skeptics have predictably taken the opportunity to question the efficacy of electric vehicles, calling them 21st Century versions of the infamous Pinto. Even some in the industry, aware of the other political headwinds facing new energy technologies, fear the ramifications of these incidents.

In fact, for those who have followed electric drive and the rise of lithium-ion battery technology, these incidents do not come as a surprise, at least not in a general sense. We have known to a certainty that these types of accidents were going to happen and the industry has been preparing for them for years. How it handles these incidents, and how they are managed from the standpoint of technology, public relations and public education, will determine their impact on the future of electric drive, not the incidents themselves.

The real problem, of course, is not the Volt or its lithium-ion battery but the fact that we are dealing with stored energy. Storing energy in any form involves risk, regardless of whether the energy is stored in the form of a charged lithium-ion battery, a full tank of gasoline or pressurized gas. If stored energy is released in an uncontrolled fashion as can happen in an accident, bad things can happen no matter what the form in which the energy was stored.

The issue is not that the Volt battery is more dangerous than a tank of gasoline or pressurized gas, but that it is less familiar. The public understands what happens when a tank of gasoline ignites and, because of that understanding and the opportunities for risk mitigation that the understanding provides to consumers, the public feels sufficiently empowered in order to accept the risk. That is not the case where the risk involves a new technology that consumers feel they do not yet fully understand. That is where we are today with lithium-ion batteries.

By all accounts, General Motors has responded admirably to the Volt incidents. A review of post-accident procedures is underway, educating first responders is being given renewed priority, loaner vehicles have been offered to any nervous Volt owners, and better ways of educating those owners about operating electric vehicles safely are being developed.

As initial safety problems go, these initial problems with electric vehicles have gone as well as anyone could have hoped. No one was killed or injured. No serious property damage has occurred. The right questions are being asked and better post-accident procedures put in place. Most importantly, we are starting down the necessary path of educating consumers and first responders about how to operate electric vehicles safely. As that education continues and public familiarity increases, so will public comfort with the technology. The incidents involving the Volt were regrettable, as any accident is regrettable. But on balance, so far, so good...

Original story located at theenergycollective.com/jim-greenberger/71591/volt-fire-and-public-acceptance-electric-vehicles



W h a t d o y o u t h i n k ?

NEW TECHNOLOGY – AUTONOMO CONCEPT IS HALF CAR, ALL DRIVER

by Keith Barry, December 2, 2011 — Originally posted on Wired.com

Meet Autonomo, the half-width autonomous car that just might foreshadow next-generation personal mobility in crowded cities. Able to split a lane and equipped with object-recognition sensors, Autonomo relies on the principles of swarm robotics to quickly move as many vehicles as possible in the smallest available space. Like schools of fish, groups of Autonomos could quickly move in tandem to maximize free space on a highway.

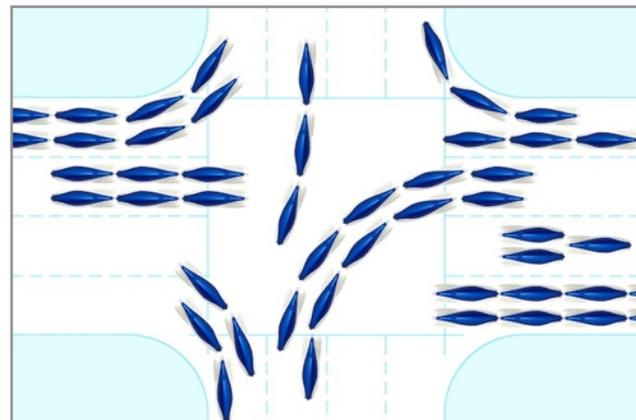
The project is the brainchild of Charles Rattray (who provided the images), a design student in Melbourne, Australia who first saw the need for a whole new kind of car after living in Los Angeles for five years. “While the city continues to grow in population, the congestion problem gets worse every year, hindering economic growth and exacerbating environmental and sustainability problems,” he said. Rattray is by no means alone in re-imagining the automobile and its place in our cities.

As urban centers grow ever more crowded, we need to seriously rethink personal mobility. Sixty percent of the world’s population will live in urban areas by 2030, and there will be as many as two billion cars on the road. Clearly mass transit and smart growth will pay increasingly important roles, but the automobile isn’t going anywhere.



Automakers are looking at this, with vehicles no less outlandish than Rattray’s. General Motors, for example, unveiled the EN V electric pod car last year, and Volkswagen has been doing some interesting work with the One Liter car concepts.

Rattray has no illusions about how infrastructure would change to meet the requirements of a suddenly smaller vehicle, and doesn’t envision any special accommodations outside of dedicated lanes on the most congested roadways. That’s why he designed Autonomo to make the most of existing streets. Using object recognition, motion sensors and vehicle-to-vehicle (V2V) connectivity (above), each Autonomo can coexist with self-driven cars, trucks and bikes.



“Every time it makes a decision to follow, change lanes or overtake it will take into account the performance characteristics of the vehicles around it,” he said. “The



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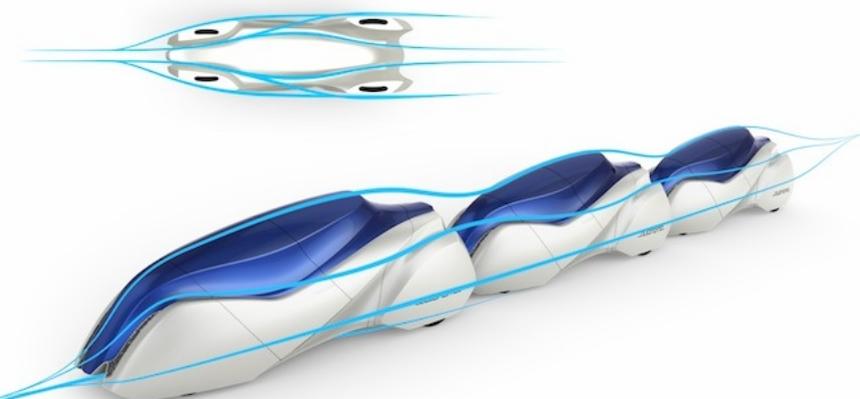
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Fundamentals of Forensic Mapping, the indispensable book for new and experienced users in the field of Forensic Mapping – For details check out our website

vehicle will constantly share those decisions with all other autonomous vehicles and work together to ensure safe, efficient transport. That means a group of Autonomos would never swerve in front of an 18-wheeler that didn't have enough time to brake. If object recognition were powerful enough, Rattray said the Autonomo could even ride on bike paths or walking trails, as it would be able to sense the presence of pedestrians or cyclists.

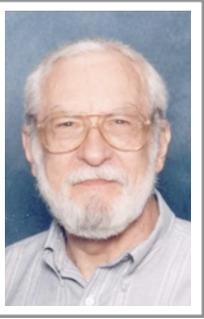


While no automakers have approached him about bringing his design to life, Rattray said that Autonomo anticipates advances in so-called "road train" technology, where connected cars self-drive in closely spaced "platoons." Volvo and other European automakers have already begun tests of road trains, as part of an EU project that's researching how to make the most of existing highways through V2V technology.

http://www.wired.com/autopia/2011/12/autonomo-concept-is-half-car-all-driver/?intcid=story_ribbon

got math?

Accident Reconstruction Science, Fourth Edition
Courtesy of Joseph Badger



Back in December 1996, I wrote about a book devoted to those dreaded low speed crashes. The book was the collaborative effort of three men: Alan Watts, Dale Atkinson and Corey Hennessy.

Since then, the book has undergone upgrades (2nd Ed. 1999), an expansion, (3rd Ed. 2003), and now comes a revision, (4th Ed.): Accident Reconstruction Science. And this time, just a single author... whose impressive credentials reads like a Who's Who of many people but it is about only one: Alan J.

Watts, Ph.D.

I do not want to merely suggest he is multitalented, but he authored or co-authored papers covering a myriad of topics from "Spacecraft Microparticle Impact Flux Definition" to "Optical Scatter due to Impact Effects" to "Potential Impact Damage Effects for Short Mission Spacecraft in a Highly Elliptical Orbit." Whew.

Moreover, he designed and developed a durable bremsstrahlung radiation converter/shield that survives high-energy impulsive loading on materials and structures for the PRONTO II test facility at Sandia National Laboratories in Albuquerque. (No, I didn't know what bremsstrahlung was either, but I'll save you from looking it up. It is electromagnetic radiation produced by the acceleration or especially the deceleration of a charged particle after passing through the electric and magnetic fields of a nucleus. Now, know any more than you did before? But I digress.)

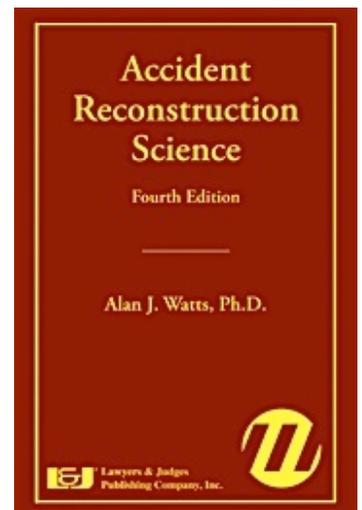
Watts designed & developed instrumentation and test fixtures while at Ktech (whose employees have comprehensive expertise in pulsed power engineering; airborne flight test and satellite systems support and tracking; research and development; large facility operations, maintenance, and engineering) [<http://www.ktech.com/>].

He was chief scientist at POD ("Programs on Demand") in Albuquerque, NM. It was a private company categorized under Research Service, established in 1994 [<http://www.podassoc.com>] for thermomechanical response testing for underground nuclear response tests at the Nevada Test Site.

I met Dr. Watts long ago (1999) in Room H-1073 on the campus of the University of North Florida at the 17th annual session of the Institute of Police Technology and Management's (IPTM) Special Problems in Traffic Accident Reconstruction in Jacksonville. His topic: Low Speed Collisions. One might say that the man has been around the block a couple of times when it comes to the subject at hand.

If you want to check him out, do NOT Google "Alan Watts." You will reach 1.5 million entries, none of which is our Alan James Watts, Ph.D. You need to go to <http://www.jurispro.com/AlanWattsPhD>. Trust me. That site is what's called an "expert witness directory." It lists his curriculum vitae and cites, via the Publications link, the title of his first book. Low Speed Automobile Accidents - Accident Reconstruction and Occupant Kinematics, Dynamics and Biomechanics.

But about his new book Accident Reconstruction Science... First, if you are a math nut, you will go feral and become totally engrossed around Chapter 4, "Crush Responses in Two-Vehicle, Low-Speed Collisions." There are gobs more equations in Chapter 6,





“Energetics of Collisions.” By Chapter 12, “Rollovers and Side Trips,” you will be ecstatic.

Not to fear. If mathematical prowess is not your forte, you will still relish in Watts’ treatment of such topics as “Experiments versus Theory: Balderdash, Dishonesty and Junk Science” (Chapter 11), “Interesting Mechanical Models” (Chapter 9), and “Bumper Speed Limits” (Chapter 8).

However, I must admit that the text is chock-full o’ formulae. In addition, if algebra and trig make you squeamish, you might as well skip Chapter 16, “The Heavy Vehicle versus Light Vehicle Problem.” For example, there is an equation that commences on page 237, but I never quite figured out where it quits. Around page 254, I think. However, there are some charts and graphs that Watts and Weintraub wedged in among those 17 or so pages.

On page 327, Watts slipped in a short chapter (only two pages) on “Event Data Recorders” with nary a single equation, graph or chart. The author explains why he didn’t dwell on EDR usage “for the simple reason that the practice of reading data is precisely that: it is reading data, it is not the act of reconstructing an accident, although the data may be usefully compared with the results of a proper reconstruction.”

Although Watts is primarily into the biomechanical, he states: “... we have renamed this fourth edition and have also removed the section on biomechanics and occupant responses. However, we retain all the biomechanical references to help those who wish to independently study the literature.”

In case you haven’t heard by now, Lawyers & Judges Publishing Co. produces “legal books specializing in accident reconstruction and litigation, forensic economics, nursing home litigation, forensic science and more.” If you go to their website (<http://www.lawyersandjudges.com/>), you might see a blurb and link to Alan J. Watts’ book on the site’s home page.

You will see where the book was “Written for the reconstructionist, attorney, automotive engineer, or other interested professional, this brand new edition examines the science of reconstructing and analyzing an automobile accident.” Click on the “Learn more...” link to, uh, learn more. Or if the book’s information has been moved, simply enter “Watts” (without the quotes) in the Search box to be taken to the correct page. Click on [Table of Contents](#) to see all the chapter and subchapter headings.

I asked Dr. Watts if I could mention his email address in my review – in case readers had specific questions about his book – and he said, “Yes, you can give my home phone (505-255-2572), my cell (505-991-3659) and my email (xprt@comcast.net).”

Whatever you do, though, don’t try to find him at www.alanwatts.com. Sure, the site itself exists, but it’s not about our Alan Watts, Ph.D. That site is about an Alan Watts who was profoundly influenced by the East Indian philosophies of Vedanta and Buddhism, and by Taoist thought, which is reflected in Zen poetry. And that Alan Watts died in 1973.

Just to get personal with the author, I asked him how long it took to write the book. He said, “Several months of real writing (don’t have a ghost writer like many of the ‘political’ books that seem to appear in short order), but many years of pondering.”

I wonder why Alan wrote it in the first place. [I guess we’re on a first-name basis now.] He said, “Why? It started with Steve Weintraub ‘nagging me’ to produce a follow-up. [Weintraub is president of Lawyers & Judges Publishing Co.] He claims I have a ‘following’ (not sure if that’s true). Problem: the longer I pondered the more good books appeared! ...”



ARE YOU READY? 2012 ACTAR EXAMINATION DATES & LOCATIONS

FEBRUARY 2012

Wednesday, February 1: Lincoln, Nebraska, held at the Hall of Justice. Sponsored by ACTAR. New applications must have been received by December 1, 2011. **Exam registration cutoff date: January 1, 2012.**

Friday, February 3: North Las Vegas, Nevada at North Las Vegas PD. Sponsored by ACTAR. New applications must have been received by December 3, 2011. **Exam registration cutoff date: January 3, 2012.**

Wednesday, February 22: Ontario, Oregon, sponsored by Oregon State Patrol. New applications must be received by December 22, 2011. **Exam registration cutoff date: January 22, 2012.**

MARCH 2012

Saturday, March 24: Marietta (Atlanta), Georgia, at the Cobb County Police Training Center. Sponsored by ACTAR. New applications must be received by January 24, 2012. **Exam registration cutoff date: February 24, 2012.**

APRIL 2012

Friday, April 6: Natick, Massachusetts, at the Natick Police Department. Sponsored by IAARS. New applications must be received by February 6, 2012. **Exam registration cutoff date: March 6, 2012.**

Saturday, April 28: Jacksonville, Florida, before the IPTM Special Problems Conference. Sponsored by ACTAR. New applications must be received by February 28, 2012. **Exam registration cutoff date: March 28, 2012.**

MAY 2012

Thursday, May 24: Deadwood, South Dakota. Sponsored by MwATAI. New applications must be received by March 24, 2012. **Exam registration cutoff date: April 24, 2012.**

All tests prohibit the use of laptop computers, but allow pre-approved calculators. Refer to www.ACTAR.org.

f r o m t h e b o o k s h e l f

So eventually I chose to describe my own techniques for solving crashes using the well-known Mathcad computer program, and show how the 'low-speed' approach smoothly moved into 'high-speed' cases."

As for the purpose of the book, Alan said, "Many experts seem to be using 'ready-made' computer codes that can also do animations. Problem: it's not obvious how many users actually understand the science behind the solutions, so I've attempted to explain the logic. Sometimes even I understand what I've said!"

You should be able to understand it too, although you may find some terms and expressions not usually found in other accident recon books. Terms such as single-photon emission computer tomography, elastomers," "repetitive stress syndrome," and prediction of damage. (Actually, you won't find "prediction of change" mentioned by those very words. Alan uses only the acronym POD. I guess I figured you would know that one.)

To buy the book, contact Lawyers & Judges at <http://www.lawyersandjudges.com/>. If you prefer ordering the old-fashioned way, write to P.O. Box 30040, Tucson, AZ 85751 or call (520) 323-1500.

(About the reviewer: Joseph E. Badger is an internationally known accident reconstructionist and consultant who has had over 100 articles published in such periodicals as Law and Order magazine, Accident Reconstruction Journal, Accident Investigation Quarterly, and others. Having retired after 20 years with the Indiana State Police, Mr. Badger resides in Bloomington, Indiana.)



13th ANNUAL CAARS CONFERENCE REVIEW

by Dave Cameron

The 13th Annual CAARS Conference was held October 19-22, 2011, at the familiar and popular Sheraton, Anaheim. The general themes of the conference were safety restraint systems and CDR technology. The keynote speakers were Kent Boots of FactualDiagrams.com, Karen Haverkamp of Riverside PD, Dr. Rick Robertson of Biomechanical Consulting, Rick Suarez of Rick Suarez Consulting, and Kurt Weiss of Automobile Safety Research Inc. All the speakers have given presentations on the subject matter multiple times throughout the United States.

The opening day of the conference started with Rick Suarez presenting Air Bag Fundamentals. Rick covered the components for the driver, passenger, and side impact air bags, as well as seat belt pretensioners. The presentation included how the SDM in a dual stage air bag system receives the signal from the air bag sensors and how it makes the determination on whether to deploy the first or second stage inflation.

After the morning break, Rick continued his presentation, which included the members convening outside for air bag deployment demonstrations. I am sad to report that the stuffed animal used in the demonstration did not survive. On behalf of the CAARS board and membership, I thank him for his sacrifice.

After a buffet lunch, Kent Boots gave a great presentation on the Crash Data Retrieval system. His presentation included the types of data that can be collected by the system depending on the year and manufacture of the automobile.

Kent covered what training, equipment, and software one would need for the data retrieval and analysis. He specifically included the information on the Bosch CDR system and cables, currently the only system available for data retrieval (besides working with the manufacturer — which can be a treat...no sarcasm here).

To the surprise of some, Kent revealed that Toyota (half the cars in the world...almost) has made the data available. Bosch now has cables for Toyota that cover Toyota, Lexus, and Scion. Kent provided a matrix that included which models of the above makes were covered. Currently, the software will only retrieve from 2006 models on, but this opens up [more than 14 million additional vehicles](#) on U.S. roadways for data retrieval. As to Toyota unintended accelerations — Kent gave a very informative breakdown on the suspected causes (i.e. electronic throttle control system, floor mats, and accelerator pedals. He also covered Toyota's recall of the components.)

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THIRD QUARTER TRAINING REVIEW

In conclusion, Kent presented some examples of CDR data and emphasized the importance of CDR data retrieval training.

On day two, the day started with the annual membership meeting, and election. The election results were as follows: David Cameron and John Crews were reelected as Directors-at-Large, and Michael Allison was elected as a Director-at-Large, after being selected to serve out the remainder of Jahna Beard's term (following her 2010 appointment to serve as the Vice Chair). This year, Jahna Beard was elected and solidified her position as the Vice Chair of CAARS.

After the general membership meeting and election, Kurt Weiss kicked off his presentation of Forensic Testing and Analysis of Seat Belts. He began with basic seat belt terminology and progressed through a breakdown of each component. His presentation covered load limiting retractors, anchor brackets, latch plates, D-rings, buckle pretensioners, and benefits of seat belts. Kurt went into detail about physical evidence including, striations to the plastic coating of the D-ring, webbing transfer, expansion loops, pretensioner activation, deformed metal surrounding anchor point, and jammed webbing — among other signs. He presented several case studies with detailed component photos. Kurt also included examples of forensic testing of the seat belt components in his presentation.

After lunch, Karen Haverkamp began her informative presentation on child restraint systems. She outlined the state and federal regulations and progressed into the types of restraints — from infant to booster seats — as well as how to determine the need for a child seat based on, age, weight, and medical need. She covered component nomenclature, functions, and system installation. Karen ended her presentation with information on what to look for in a collision investigation.

Day three was the end of the conference and a half day. Dr. Rick Robertson gave a presentation from the biomechanical and injury analysis view. He described how using injury analysis, occupant kinematics, seat, and occupant measurements, one can determine the seating position of occupants involved in a collision.

Dr. Robertson gave examples of injury mapping as well as how injury analysis can determine the direction and amount of force applied to cause injuries. This can be helpful in determining speed in a collision as well as occupant seating position. I would like to thank all of this year's speakers for their fabulous presentations.

In addition to the speakers, I would like to thank the vendors who were present, and to the companies and individuals who donated prizes to the raffle. I would also like to thank the Conference Committee for their hard work — especially Jahna Beard, who was the cornerstone of and workhorse for this year's conference and registration.



Thanks to Dave Heinbaugh for coordinating the vendors and to Jill Boots for handling conference materials. Jill has been a great help to the organization behind the scenes and she deserves the gratitude of the board and membership. Final thanks go to Sean Shimada and Mike Allison for their efforts in coordinating the speakers and their presentations.

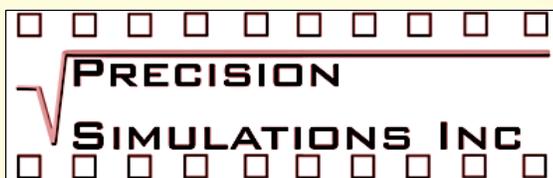


The planning for the 2012 Annual CAARS Conference in Northern California is already underway. We are leaning toward the Embassy Suites in South Lake Tahoe, the location of the 2010 conference, which turned out to be a favorite to our members. If you have any suggestions for location or speakers please contact us.

Regards,

David Cameron
CAARS Board of Directors

UPCOMING TRAINING



The first quarter training will be presented by Craig Fries from Precision Simulations Inc. and will cover laser scans, photogrammetry, and 3D animation. The dates are as follows:

Northern California — February 9, 2012

San Ramon Police Department, 2401 Crow Canyon Road, San Ramon, CA 94583. For a pdf map of the new SRPD location, click [here](#) and look for the link below the neighborhood watch logo. For those interested, air travel is best to the Oakland Airport and lodging is recommended at the [Hyatt House](#) (formerly the Hotel Sierra), located at 2323 San Ramon Valley Boulevard, San Ramon, CA 94583.

Southern California — February 15, 2012

Santa Ana Police Department Community Room, 1000 West Civic Center, Santa Ana, CA 92701. For directions or additional information regarding the pay parking facility, click [here](#).

Please RSVP to training@ca2rs.com or (916) 481-6600 ASAP to allow for accommodations.

PHOTO CREDITS

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Sobering Thought: What's the Most Dangerous Thing About Being a Law Enforcement Officer? — Traffic The death of law enforcement officers (LEOs) in motor vehicle crashes have increased by 48% in the past 28 years. Between the years 2005 to 2007, 54% of all LEO deaths “in the line of duty” were motor vehicle crash involved (and 63% in 2010 were traffic-related). When comparing the fatality rate of LEOs to the general population, during the years from 1996 to 1999 LEOs deaths by motor vehicle crashes were at the same or lower rate than the general population. Since the year 2000 the fatality rate for the general population has steadily declined, but the LEO fatality rate has been increasing.

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