

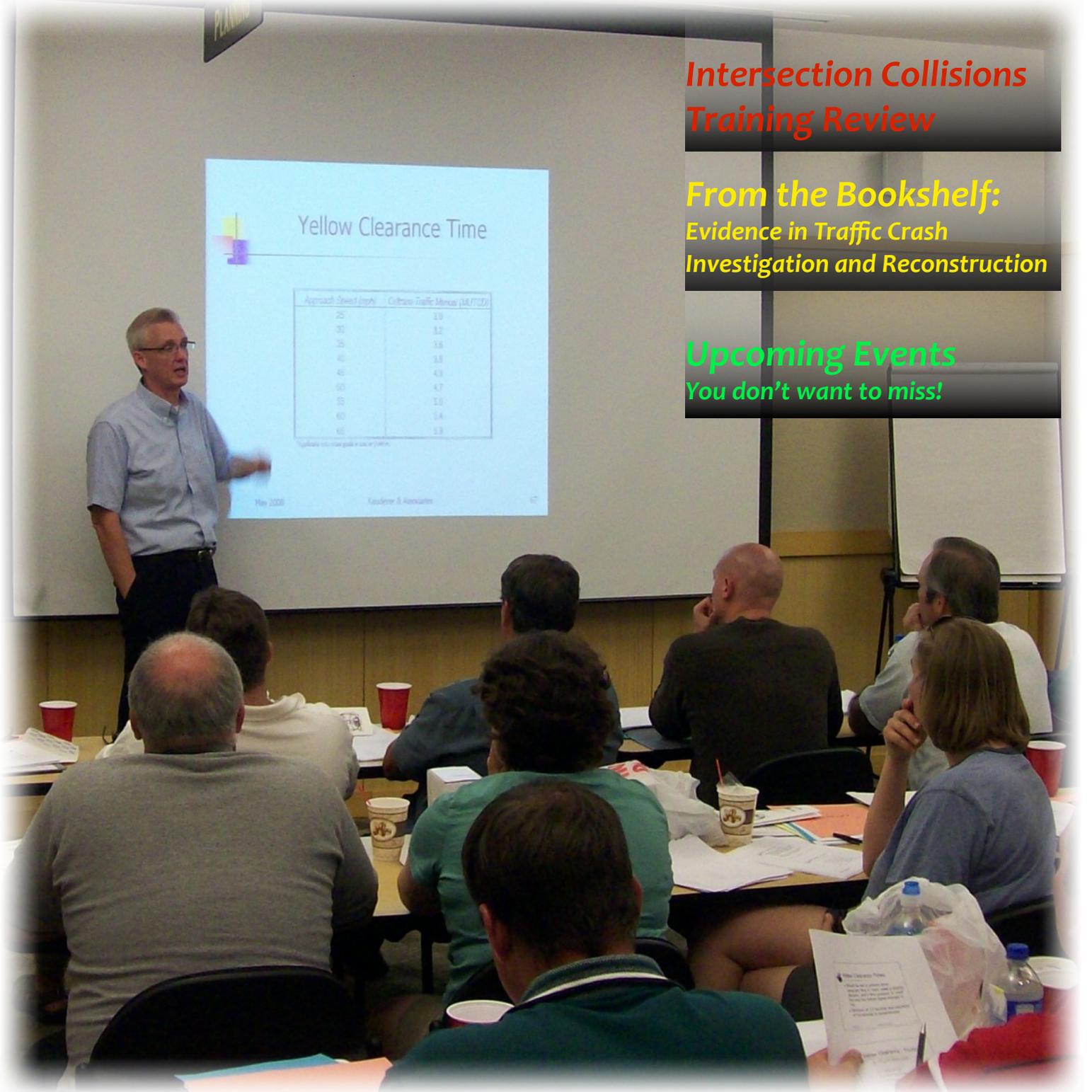


# California Association of Accident Reconstruction Specialists

## SKIDEMARKS

No. 41

June 2008



**Intersection Collisions  
Training Review**

**From the Bookshelf:  
Evidence in Traffic Crash  
Investigation and Reconstruction**

**Upcoming Events  
You don't want to miss!**

### Yellow Clearance Time

Approach Speed (mph)	California Traffic Manual (MUTCD)
25	2.0
30	2.2
35	2.4
40	2.6
45	2.8
50	3.0
55	3.2
60	3.4
65	3.6

# Intersection Collisions

Presented by Chris Kauderer



The 2<sup>nd</sup> quarter training was held the week of May 12<sup>th</sup>. The Southern California session was hosted by the Orange County Sheriff's Department's Katella Training Facility in Orange. Special thanks are in order to board member Paul Wade for making those arrangements. The Northern California session was hosted by Vacaville Police Department. Special thanks go out to CAARS member Nathan Benevides who went above and beyond to ensure things went smoothly.

The training started with a review of traffic signal nomenclature and terminology. The three different types of signals were covered as well; pre-timed, semi-actuated, and fully actuated. The three current types of traffic signal controllers were discussed as well; type 170, type 90, and type 2070.

Signal phasing was discussed and several examples were provided from various California intersections. 95% of the time there are eight phases at an intersection. Phase 2 & 6 are typically the through traffic on the major street, and phase 4 & 8 are the through traffic on the minor street. One thing to keep in mind is that the "major" street may not always be the primary roadway or roadway with the most lanes.

There are four different types of left turn phases; lead-lead, lead-lag, lag-lag, and split/sequential. Lead-lead is when the opposing left turn phases occur immediately before their adjacent through phases. Lead-lag is when the through phase and adjacent left turn phase start together. Lag-lag begins with major through phases and the left turn phases if there is demand. Split/sequential are those where the left turn phases proceed independently. It is always a good practice to observe the traffic signals at the involved intersection to determine which left turn phase is in use.

We also learned about traffic signal timing and dilemma zones. There are green time settings, clearance intervals (yellow & red), and pedestrian times. The times are based upon three things; geometric conditions, traffic conditions, and traffic volume characteristics. Red clearance is also known as "all-red" and gives time to allow vehicles entering the intersection at the end of a yellow light time to clear the intersection before opposing vehicles or pedestrians create a conflict.

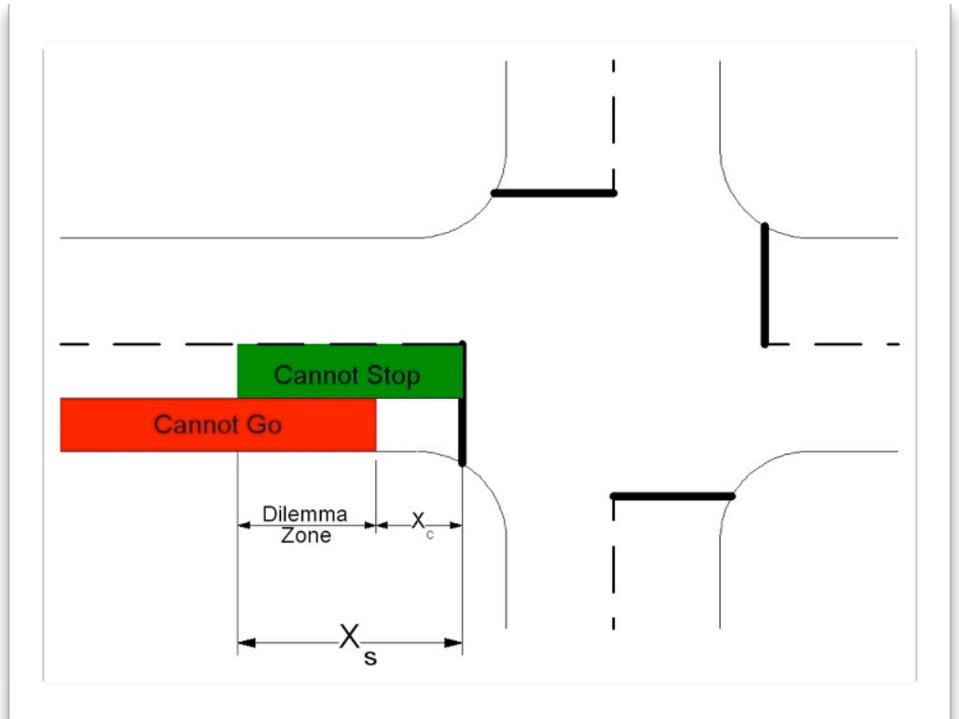
Something of importance for most of those in attendance at the training was the topic of signal preemption. For approaching trains the normal sequence of phases are eliminated and the signal goes into a special phase designed to clear the crossing of remaining vehicles. Emergency vehicle preemption is not a guarantee and they are prioritized; fire equipment, police, and then ambulance. There are also areas where public transportation (buses) is given a signal priority.

There was a lot of material covered during the day, and too much to talk about everything here. Chris handed out a very complete set of handouts including a copy of his presentation, signal timing/phasing diagrams, a glossary, and chapter 9 (traffic signals and lighting) of the Cal Trans manual.



The most important thing to remember is to talk to your traffic engineer and have him/her explain the phasing/timing for your involved intersection.

*Kent E. Boots*

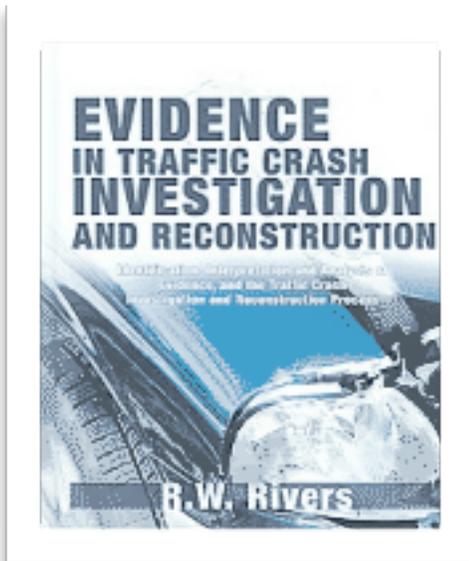
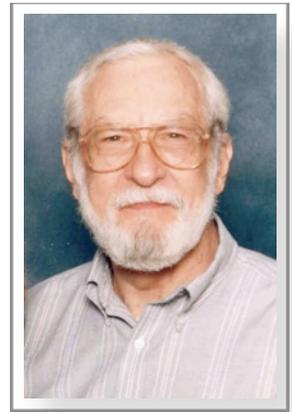


# Calendar of Events

Date	Location	Topic	RSVP
TBD in August	TBD	Basic Motor Vehicle Inspections & Related Topics by Alan Coulter (Coulter & Associates, Inc.)	TBA
Oct 14, 2008	Sacramento, CA CAARS Conference	ACTAR Prep Class	
Oct. 15, 2008	Sacramento, CA CAARS Conference	ACTAR Exam	ACTAR by 9/15/08
October 16-18	Sacramento Arden West Hilton 2200 Harvard St. Sacramento, CA	Annual Conference - Tentative topics: Comparing methods of measuring drag factors, Narrow object impacts, Critical Speed/ yaw situations, Investigating rollover collisions, Courtroom testimony, plus additional topics to be announced	TBA
All training is from 0800 - 1700 hours unless otherwise specified.			

# From The Bookshelf

Another book review from Joseph E. Badger...



International Network of Collision Reconstructionists member, author, 33-year RCMP veteran, traffic crash investigator, reconstruction consultant and all-around good guy R.W. (Bob) Rivers has just penned his 11th and – he says – final book. He spent a lot of time writing the title. **EVIDENCE IN TRAFFIC CRASH INVESTIGATION AND RECONSTRUCTION: Identification, Interpretation and Analysis of Evidence, and the Traffic Crash Investigation and Reconstruction Process.**

A blurb of the book posted at the publisher's Web site indicates the book has 324 pages. Well, that's a stretch. To be honest, the last numbered page is 295. But gee, it has the "About the Author" page, a title page, list of contributors page, a dedication page, a forward AND a preface.... And it has a "Note," a "Disclaimer" and a word about the Metric System. Then a 10-page table of contents. So, yeah, 324 pages.

It also has 175 illustrations and 13 tables.

Rivers has always maintained that there is a lot more to traffic crash investigations than "speed analysis," and therefore for his ultimate text he covered the entire investigation/process in his new manual. And yet he still covers most of the essential ingredients of speed analysis.

One thing I like about the book aside from its contents is that it's full of friends and memories.

For example, Russ Arend wrote the Foreword. I remember Russ from his heading the "Long Course" at Northwestern University Traffic Institute (now the Center for Public Safety). He went on to establish the Institute of Police Technology & Management (IPTM) at the University of North Florida.

Rivers dedicated his book to Dr. R.C. (Dick) Hodge, IPTM's editor and without whom my own book *Trailer Underwrite: Conspicuity, Human Factors, and Rear Bumpers* would never have found the light of day.

Contributors to Rivers' "Evidence Manual" include two INCR members, Al Baxter and George Bonnett. Another contributor and colleague of mine, with whom I was embroiled in a few cases, was the late Bernard Abrams.

Rivers also acknowledged INCR members Frank Navin, John Ruller and my friend the late Charlie Kirk.

The fact that on page 31, Bob Rivers listed one of my articles under the heading "Recommended Reading" didn't hurt.

Speaking of recommending reading, the bibliography in the back of the book lists a whole bunch of people you know and whom I consider personal friends... Besides the folks whose names I dropped earlier, you will find Tony Becker, Bob DuBois, James Collins, Vic Craig, John Daily & Nate Shigemura, Mike Lofgren, Rudy Limpert, Jim Mitchell, Dan Parkka and Gary Stephens. (Yes, I know, I didn't list Nate's name alphabetically because he is inexplicably firmly fixed to John Daily.)

Now that we have all that out of the way, I suspect you'd like to know what's actually IN the book.

It begins with an Introduction to Traffic Accident Investigation. This is not a three or four paragraph description of the investigation process. It's almost 30 pages explanation of the investigator's duties, the accuracy and errors involved, an expert's responsibilities, plus there's a nifty checklist – a "Series of Events" – to make sure you don't miss anything.

The Introduction goes on to define the difference between a fact witness and a lay witness. It explains what the investigation should be prepared to do for trial. Also it presents a history of the Accreditation Commission for Traffic Accident Reconstruction (ACTAR) taken straight from the ACTAR Web site. (Except Rivers chose to

substitute “Crash” for “Accident” even though most English-speaking lay persons still calls them accidents. And Bob, we’re not changing the acronym to ACTCR. I mean how would you pronounce that?)

Chapter Two is all about the human element in accident investigation and reconstruction. Written by Martin Kurke and Anne Corbin the chapter delves into human reliability, error, and risk-taking.

Bernard Abrams wrote Chapter Three, “The Role of Vision, Visibility, and Discernibility in Driver Performance.”

Okay, so there’s no such word as discernibility. Abrams was an optometrist, not a lexicographer, so I’ll cut him some slack. We all know the word is discernability, a noun meaning “distinctness that makes perception easy.”

Bernie gets into photopic and scotopic vision, acuity, and factors that can affect vision.

Chapter Four is a two-part chapter dealing with pathology (written by James Ferris) and the medical examination (written by Los Angeles County Medical Examiner Dr. Lakshmanan Sathyavagiswaran). And while the name Lakshmanan Sathyavagiswaran doesn’t fall trippingly off the tongue, you may recall the name mentioned a time or two in the infamous O.J. Simpson trial.)

There are at least two people named Michael Sweet. Probably the more famous Michael Sweet is a Christian rock singer and co-founder of perhaps the most popular Christian rock band ever, Stryper. He had absolutely nothing to do with Bob Rivers’ book. The other Michael Sweet – the Bloodstain Pattern Analysis Consultant Michael Sweet – from Edmonton, Alberta, wrote Chapter Five. Which, not surprisingly, is all about Bloodstain Pattern Analysis.

Chapter Six, “Forensic Photography and Scene Measurements,” is in two parts. Robert Wyman handles the photographic applications section while Bob Rivers covers scene measurements and plan drawings.

Rivers managed to write Chapter Seven, “Trafficway Evidence,” all by himself. Trafficway Evidence is what some of us might refer to as “Facts from the Road.” This chapter covers traffic control devices, signals, detectors, timing, pavement edges, glare, debris, scrapes, scratches and grooves, chips, chops and gouges., and all sorts of tire marks. Bob includes pages of great photos to assist the reader in identifying physical evidence on the roadway.

Chapters Eight (Vehicle Examinations) and Nine (Speed Analysis and Determinations) are both by Rivers. These two chapters – which make up 40 percent of the text – may be why you bought the book in the first place. Each chapter could be a book all by itself.

At Chapter Ten, we have Al Baxter’s “Evidence Manual [for] Motorcycle Crash Investigation.” This chapter discusses, among other things: rake, trail, acceleration, braking and turning. And it explains the dreaded lean angle equation for determining the amount of lean required to successfully negotiate a curve.

There’s a section on calculating the minimum speed of a skidding or sliding motorcycle (and a sliding rider, whether he’s wearing leathers or, heaven forbid, polyesters).

The book’s appendices offer all manner of U.S. and SI conversion tables and they are followed by a “Quick-Find Index” which refers to particular paragraphs rather than page numbers. That way, you go straight to what you’re looking for rather to just a page where you would have to scan the whole page to find what you wanted.

“Finally,” quoting the publisher’s blurb, “there is a comprehensive quick-find index that takes the reader directly to any topic, formulae, or subject matter - or any combination of these.”

The book – EVIDENCE IN TRAFFIC CRASH INVESTIGATION AND RECONSTRUCTION: Identification, Interpretation and Analysis of Evidence, and the Traffic Crash Investigation and Reconstruction Process – comes in both hard cover (\$86.95) and soft cover (\$56.95) and is available through Charles C Thomas, Publisher, LTD., 2600 S. First St., Springfield, IL 62704. (<http://www.ccthomas.com>) Or you may e-mail questions to [books@ccthomas.com](mailto:books@ccthomas.com).

(About the reviewer: Joseph E. Badger is an internationally known accident reconstructionist 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.)



# The Board BEAT

Well our “Birthday”, April 13<sup>th</sup>, has come and gone but there was some celebration. We started with the largest attendance to date on the 2008 Cruise.

The training, presented by Dr. Bruno Schmidt, covered Newton’s laws, point mass mechanics, and rotational mechanics. I know it sounds like a tough subject but as always Bruno started slow and went step by step through the concept. It was also nice for many of us to get to know Bruno and his wife in an informal setting. The best part of the training for me was the Q & A session that Bruno agreed to do Sunday afternoon.

The 2<sup>nd</sup> quarter training, Intersection Collisions presented by our very own Chris Kauderer, has come and gone. The training was well attended and all those that attended had positive comments. Those who attended received “surplus” CA<sup>2</sup>RS merchandise as a belated birthday present. If you were unable to attend the training, take a look at the review on page 2.

I also wanted to give everyone an update on CAARS merchandise. Now that we have obtained our tax exempt status we don’t want to risk losing it by selling merchandise. The board has decided that any merchandise left over from conferences will be given away as raffle prizes either at the conference or during the following year at quarterly training sessions.

Planning for this year’s conference is well underway. The conference is going to be held at the Sacramento Arden West Hilton (2200 Harvard St., Sacramento) October 16<sup>th</sup> through the 18<sup>th</sup>. This will be a multi-topic conference with just a few speakers. Our first confirmed speaker is John Daily, a published author, who will be speaking on rollover collisions, critical speed situations, and possibly narrow impacts. The ACTAR “prep” class will be held on Tuesday the 14<sup>th</sup>, and there will be an ACTAR exam on Wednesday the 15<sup>th</sup>. **Test applications must be received by ACTAR no later than August 15<sup>th</sup>.** Conference information should be on the web site soon, and brochures will be going out within the next month.

As always, if there is ever anything that I or any of the other board members can do to improve your organization, please don’t hesitate to let us know.

That’s all for now,

*Kent*



Kent E. Boots  
Chair



Chris Kauderer  
Vice-Chair



Joel Salinas  
Director



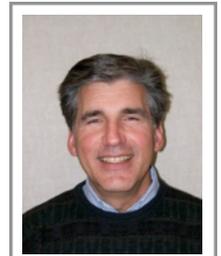
Paul Wade  
Director



Paul Arnold  
Director



Jahna Beard  
Director



Dave Willat  
Director

# ACTAR Examination Schedule



**DATE:** Thursday August 14, 2008  
**LOCATION:** Hershey, Pennsylvania  
**SPONSOR:** PSP  
**CUTOFF DATE:** July 14, 2008  
**COMMENTS:**

**DATE:** Saturday September 13, 2008  
**LOCATION:** Bloomington, Illinois  
**SPONSOR:** IATAI  
**CUTOFF DATE:** August 13, 2008  
**COMMENTS:** Held in conjunction with annual conference

**DATE:** Monday September 15, 2008  
**LOCATION:** Golden, Colorado  
**SPONSOR:** CSP  
**CUTOFF DATE:** August 15, 2008  
**COMMENTS:**

**DATE:** Friday October 10, 2008  
**LOCATION:** Natick, Massachusetts  
**SPONSOR:** IAARS  
**CUTOFF DATE:** September 10, 2008  
**COMMENTS:**

**DATE:** Monday October 13, 2008  
**LOCATION:** Seattle Washington  
**SPONSOR:** WATAI  
**CUTOFF DATE:** September 13, 2008  
**COMMENTS:**

**DATE:** Tuesday October 14, 2008  
**LOCATION:** Atlantic City, New Jersey  
**SPONSOR:** NJAARS  
**CUTOFF DATE:** September 14, 2008  
**COMMENTS:** Held before NJAARS Joint Conference

**DATE:** Wednesday October 15, 2008  
**LOCATION:** Sacramento, California  
**SPONSOR:** CAARS  
**CUTOFF DATE:** September 15, 2008  
**COMMENTS:** Held before CAARS Annual Conference

## Board of Directors Elections

Don't forget that we will hold our annual election for the CAARS board of directors during our business meeting at the conference.

This year we have three positions up for re-election; the Chairperson and two directors at large. Those positions are currently being held by Kent E. Boots (Chairperson), Paul Arnold, and Dave Willat.

The nomination period runs from July 1<sup>st</sup> to September 1<sup>st</sup> of each calendar year. Any member in good standing can nominate another CAARS member as a candidate. The nominations can be done verbally at both the northern and southern California third quarterly training session of the year; typically held in July and August. If you are unable to attend the training sessions, written or e-mail nominations may be submitted to the Chris Kauderer ([chris@chriskauderer.com](mailto:chris@chriskauderer.com)).



IT'S ONE THING TO TALK ABOUT WHAT HAPPENED  
 JUST IMAGINE BEING ABLE TO  
 SHOW **EXACTLY** WHAT HAPPENED



Plug in your reconstruction results, and hit PLAY.

How else can you explain a complex event that happens in less than 3 seconds?

**CALL US FOR A LIVE DEMO AND WE WILL ANIMATE YOUR CRASH!**  
**1.888.828.0383**

[www.visualstatement.com](http://www.visualstatement.com) ☎ 1.888.828.0383



CA2RS - California Association of Accident Reconstruction Specialists  
 Headquarters  
 P.O. Box 53536  
 San Jose, CA 95153  
[www.CA2RS.com](http://www.CA2RS.com)