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HIGHLIGHTS...

- Dearborn Deuce
- Message from the Chair

- Recap of October Meeting
- Coffee Talk

- Taking Advantage of Local Opportunities

Dinner Presentation...

Dearborn Deuce

By SAE President
Ted Robertson

It's getting easier to own a 1932 Ford. This month's presentation will be given by J. E. "Ted" Robertson. Ted Robertson is SAE's 2005 President and he is also Vice Chairman of Production Development at American Specialty Car, Inc. (ASC). His presentation will center on the "one-of-a-kind" 1932 Ford hot rod replica, the Dearborn Deuce, made by ASC.

The Dearborn Deuce is the world's first all-steel-body replica of a 1932 Ford. It comes complete with a fully operational, modern convertible top, 3-1/2" longer doors for easier ingress and egress, 2-1/2" deeper cockpit for increased leg room, 2 cu. ft. more truck space, and real glass side windows, which operate electrically. The winner of two awards at SEMA ("Best-Engineered Product" and "Best Street-Rod Product" runner-up), this Dearborn Deuce Convertible™ also features eye-popping Acurail™ polished frame rails and

inal 1932 Ford hot rod, it has more leg room and it's wider. It does not, however, come with a radio, air conditioning, or seat belts, all of which can be installed after the purchase. Since the unveiling of this vehicle a year ago, about 50 have been sold at around \$100,000 each. For the hot rodders that want their own power trains, the company has also sold another 200 bodies at roughly \$20,000 each.



a fuse-less electrical system. Just since its launch this past summer, more than 250 units of the Dearborn Deuce Convertible™ have been sold.

With a 355-horsepower Chevy V-8 engine for power, and goes from 0 to 60 mph in less than 5 seconds. Unlike the orig-

Ted Robertson



Robertson became assistant treasurer of SAE International in 2003. Elected to the SAE Board of Directors in 1997, he served as a member of SAE's Strategic Planning Committee, Engineering Education Board, Blue Ribbon Panel and Finance Committee. In 1983, Robertson received the SAE Outstanding Younger Member Award. Robertson, who in 1968 was named president of the student branch at the University of Toronto, also served as the Ontario Section's program chairman.

Coffee Talk - Steve Silver



Steve Silver is scheduled to have his own 32 Ford on display at our meeting. Steve will give us a brief overview of this immaculate vehicle.

Our new meeting schedule. Dinner now begins 1/2 hour earlier, at 6:30 pm.

| DATE | TIME | LOCATION | COST | With Dinner | Presentation Only |
|--------|--------------|-----------|----------------------------------|-----------------|-------------------|
| Nov 17 | Social | - 6:00 pm | Crowne Plaza Hotel (Holiday Inn) | Members - \$20 | \$10 |
| | Dinner | - 6:30 pm | 44th St. & Washington | Guests - \$25 | \$10 |
| | Presentation | - 7:30 pm | 602-273-7778 | Students - \$10 | no charge |

RSVP by 2:00 pm Monday November 14.

Call Mindy Erway: 602-364-7122

Message from the Chair

I often find it amazing the amount of loyalty people have for the brand of vehicle they drive. I want to share with you an interesting brand-loyalty experience I had recently on Sandy Beach at Rocky Point, Mexico. A guy walked into our camp and asked to borrow our shovel.



Allan Watts, Section Chair.

After a few minutes I drove down the beach to see what was up. I had gotten my brand T vehicle (and trailer) stuck the day before (as I do every year) so I had already aired down my tires to about 15 psi. Consequently, my vehicle drove across the sand like it was driving across a parking lot. The guy who borrowed our shovel, and his friends, had two brand F trucks buried past the axles in the sand with a chain between them that was so tight that they could not get it undone, and had slept on a blanket on the sand next to the trucks after giving up on extricating them the night before. Wanting to help, I suggested that they let most of the air out of their tires and offered to pull the smaller truck toward the big one so they could release the chain. I suggested that we then use my vehicle to pull the smaller truck out, and then use both their smaller truck and my vehicle to pull out their larger truck. To my surprise, the guy who borrowed the shovel declined to air down, and explained to me that they needed a brand F truck to pull them out, and that they would find someone who had one. He explained to me that they needed a truck like his mom's brand F truck. They asked me if my brother's brand F truck was mine, which was parked nearby, but I just said no.

I stayed and watched for a while, and the situation got interesting again when Roberto, a local, decided to help out, and started letting air out of one of their tires. Roberto has sold burritos on that beach for his entire life, earning enough money to send one of his daughters to law school in the US. In my book, Roberto is the quintessential expert on sand. But Roberto also drives a brand T truck, and after he aired down one tire the stuck people refused his further help. Shortly thereafter, the unfortunate victims of sand found a guy with a big brand new brand D truck that had a winch. The owner of the brand D truck also had not aired down, and was also stuck for a while as he tried to approach the brand F trucks in the soft sand. But the brand D driver had enough sense to take his foot off the gas pedal when he stopped going forward, and was able to work himself out after a while and approach from a different angle. At that point I went off to do some other things, and when I got back the brand F trucks were gone. I guess it was easier for them to accept being rescued by a brand D truck than by a brand T vehicle, but they didn't stick around after suffering the humiliation of having to

be rescued. They did return our shovel to our camp while we were gone.

Getting back to SAE matters, our second meeting of the year went off very well with 56 attendees to see Mike Halpin speak about automobile racing suspension. Special thanks go to Mike for his presentation and for bringing a number of suspension components and shock absorbers for us to look at. Mike's presentation was very informative, and provided an excellent opportunity to learn for attendees of various knowledge levels in the science and art of automobile suspension. This topic drew a number of new attendees who have an interest in motor sports, and the Board is considering having another speaker discuss off-road racing at a future meeting. I would also like to thank Paul Curry for suggesting and arranging last month's speaker and presentation.

I would also like to thank Ryan Kanto and the other students from the University of Arizona SAE student section for attending the meeting and specifically to Kenan Arik for telling us about their work on the suspension of their formula car for FSAE. I was happy to present the University of Arizona student section with a check from our section for part of their entrance fee for Formula SAE. Thanks also go to Max Rumbaugh for providing another check to the student section to complete the funding that they need for their entrance fee. The University of Arizona student section is very committed to their work on the formula car and it was a pleasure to be able to help them in this way. Two other members of our section also told me that they would be willing to make a similar contribution to a student section should a deserving need arise in the future. We also had the pleasure of having a former President of SAE International, Claude Verbal, attend our last dinner meeting. We hope to see Claude at our future meetings as well.

We look forward to our November meeting when Ted Robertson will tell us about the development of the Dearborn Duce, a replica of a '32 Ford coupe that Ted created at SCA. Ted is also the President of SAE International this year, and it will be an honor and a privilege to have him speak to our section. In addition, Steve Silver will bring his '32 Ford Coup hot rod, for us to see, and will tell us a little bit about it and the history of '32 Ford hot rods. Steve and I have daughters that are the same age and went to the same school several years ago. Steve and I both like to climb, and we have taken our daughters rock climbing together a number of times. Steve took me for a ride in his hot rod a year or two ago, and I think you will all enjoy seeing it in conjunction with Ted's presentation on the Dearborn Duce. I look forward to seeing you at the next meeting.

Allan Watts
Section Chair

Recap of October Meeting by Paul Curry

The October SAE Arizona Section was very fortunate to have Mechanical Engineer Mike Halpin provide an excellent technical presentation on Racecar Suspension Design. In the audience were many attentive members from our Student Sections, who were also provided handouts to take back and use to guide their vehicle set-ups. Over fifty members, students and guests attended the meeting.

Mike started with the basics with a discussion on single degree of freedom system formulation and dynamic response (mass, spring, damper) showing effect of damping adjustments. Next

was the formulation for the effective wheel spring rate, which is not obvious. The effect of damping ratio was examined in charts showing how a suspension model reacts to compression and rebound damping adjustments.



Mike Halpin (left) and Allan Watts (right).

The discussion went deeper into how shock absorbers (dampers) actually work, their design and detailed effects upon suspension dynamic response. Low speed damping is controlled by bleed valving (needle type), after a certain piston velocity, the shim stack seal is opened and a large volume of fluid can move under piston pressure. Mike showed the force vs. piston velocity curves for a number of different types of dampers where it could be easily seen how all the adjustments on the units changed the response. The curves are from Mike's own shock absorber dynamometer, his own design.

Actual road racecourse data from a MOTEC system was shown from a car Mike drives. The action of all four wheels as they traveled through the corner was examined- one could see where there was overshoot, undershoot and very importantly, the actual normal forces being applied to the wheels. Mike discussed how the racecar performance over the entire racecourse can be examined.

Mike showed us his own vehicle suspension analysis spreadsheet and how it is used. He illustrated two cases: one where the selected shock could not perform to optimize the car performance on the course and a second that did meet the requirements.

Mike emphasized a process that is followed to tune a racecar's suspension where lastly the damping is adjusted. There are quite a number of inputs to understand and quantify. Finally, Mike discussed his guidelines for track-day tuning (provided in the handout) where the many variables are shown and how the work together to tune the vehicle based on results on the track.

We all enjoyed the fine presentation and many of us

learned some important facts about vehicle suspension and tuning. Many thanks to Mike Halpin of ASM America, who is also the owner of Suspension Research and Development (SRD), Inc in Scottsdale, Arizona.

Taking Advantage of Local Opportunities

by Max E. Rambaugh, Jr.

Arizona presents convenient and low cost opportunities without need for travel. One such opportunity was in May of 2005 when the ITS America (of which SAE is a member) annual meeting was held here. At the meeting, several topics of interest to SAE members were discussed.

Smart Cars and Intelligent Highways was a very popular session. The representative from the Connecticut DOT reported that their agency already has timely information on accidents and congestion but has no means to quickly communicate that information to the drivers on their highways. The Chrysler representative indicated that this is not a technical restraint, but that customers have not yet determined that the value of having onboard information and communication is sufficient to warrant its costs.

Another major application of intelligent transportation system (ITS) technology to vehicles is to improve safety. The representative of CalTrans suggested that designing cars to protect the occupants in an accident is reaching a point of diminishing returns. Likewise building more roads to handle congestion is also becoming unacceptable. The point was that the concept of crash avoidance needs to replace the focus on crash worthiness. Systems to notify the driver when inadvertent lane change is taking place are now available. ITS electronics to warn drivers when they are about to run a red light is becoming available. Yet, the panel also recognized that information overload by drivers must be continuously addressed.

Dave Acton, our section speaker last year, was present and provided some updates on his Arizona Section presentation. He observed that the collection of information on congestion and accidents is rapidly becoming available to highway authorities at no expense to the driver or the government. Sufficient numbers of drivers have cell phones that emit signals which can provide timely information on the concentration of vehicles along a highway. Further drivers are calling 911 to report accidents. He also reported that soon auto companies will be able to receive automatic communication on a vehicle's warranty condition as determined by the OBD systems in the near future. (Dave received the prestigious SAE Delco Electronics award in April for his work on ITS.)

Opportunities are available locally to keep abreast. Plan to attend an SAE Arizona event soon.

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INSTITUTE OBJECTIVES

To provide all engineers, and particularly Reliability Managers and Engineers, and Product assurance Managers and Engineers in government and Industry, with a working knowledge of Reliability Engineering Theory and Practice; Mechanical Reliability Prediction; Reliability Testing and Demonstration; Accelerated Testing; Failure Analysis Techniques; Complete Industry Product Assurance; Maintainability; Quality Management; Concurrent Reliability; World Class Manufacturing Techniques; Variability Reduction; Customer Satisfaction Strategies plus many more! Numerous practical applications of these methodologies will be presented. This Institute will also prepare and help participants with their ASQ CRE Examination.

STAFF

Dr. Dimitri B. Kececioglu, Professor of Aerospace and Mechanical Engineering, Professor-In-Charge Reliability Engineering Option, The University of Arizona, Fulbright Scholar, Internationally Renowned Educator, Reliability and Maintainability Consultant, and the Director of this Institute, plus 10 speakers from 15 sponsoring industries will take part in expertly covering the subject matter of this Institute.

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Meeting Schedule

November 17 - Special Program by SAE International President, Ted Robertson
 December - No Meeting
 January - To Be Announced
 February - To Be Announced
 March - To Be Announced
 April - Hybrid by Toyota
 May - To Be Announced

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