

# SAE ARIZONA • NEVADA SECTION

November 2006

MEETING: NOV 16

\*\*\*\*\* *New Meeting Location* (Page 3) \*\*\*\*\*

Section Web Site: [www.saearizona.org](http://www.saearizona.org) - Sign up for your newsletter on our website.

## HIGHLIGHTS...

- |                                 |                                   |  |
|---------------------------------|-----------------------------------|--|
| - <i>Alternative Fuels, E85</i> | - <i>Recap of October Meeting</i> | - <i>A World In Motion</i>             |
| - <i>Message from the Chair</i> | - <i>SAEAZ Awards</i>             | - <i>Maps for New Meeting Location</i> |
|                                 | - <i>U of A Sponsor Event</i>     |  |

Dinner Presentation...

## Alternative Fuels, E85 by Clay Okabayashi

E85 is an alcohol fuel mixture of 85% ethanol and 15% gasoline. It is becoming increasingly common in the Midwest U.S., where corn is the major crop and primary source for fuel production.

E85 is usually used in a flexible-fuel engine (FFE) - that is, an engine that can switch between gasoline (petrol) and E85. A flexible fuel vehicle (FFV) is modified to accept higher concentrations of ethanol, contains additional sensors to detect which substance it is using and generally switches without user intervention. Most FFV sold in the U.S. are light trucks, SUV's and an increasing number of sedans. General Motors (GM) has been a leader in the FFE, developing a turbo charged FFE called the BioPower, which runs more effectively on E85 than gasoline.

The world is currently consuming 85 million barrels a day. Oil imports in the U.S. have jumped from 10% in the 1970's, to 65% at the end of 2004. Some projections have that number climbing to 70-75% by 2015. E85 has an octane rating of 105, higher than the 85-98 typically sold. Although E85 does not burn as efficiently in traditionally-manufactured internal-combustion engines and contains less energy per vol-

ume as compared to gasoline, it has some major attractions. Those being, we are less reliant on foreign energy, it is a renewable energy source and it has less environmental impact.

With companies like GM spending engineering effort to develop FFE's that are more efficient on E85 than gasoline, like the BioPower, where will this new source of energy take us? What are the long term repercussions? What are the logistics and general availability of offering E85 across the U.S.?

Please join us as Mr. Clay Okabayashi from GM's Alternative Fuel's Program will be here to discuss some of these important issues and educate our group on the details of E85 and alternative fuels. This will be one meeting you don't want to miss!

### CLAY OKABAYASHI

Mr. Okabayashi represents General Motors as Fleet Account Executive for General Motors Government Fleets and Alternative Fuel products. Mr. Okabayashi is responsible for Government Fleet Sales and Alternative Fuel Vehicle Sales for several states in the Western Region. Mr. Okabayashi brings over 12 years of experience in the alternative fuels market and over 24 years in the automotive market. Prior to joining General Motors, Mr. Okabayashi has held sales management positions in the alternative fuel market working for component manufacturers in the industry, and in the automotive racing and the automotive performance market working with various manufacturers. He has been in his current assigned position since June 2000.

### Coffee Talk

Jeff Groscoast, president of AFV Solutions, will join us for our coffee talk discussion. AFV Solutions manufactures fuel systems that allow propane to be used in engines originally built for gasoline or diesel.



DATE	TIME	LOCATION	COST With Dinner	Presentation Only	
Nov. 16	Social	- 6:00 pm	Hilton Phoenix Airport	Members - \$22	\$10
	Dinner	- 6:30 pm	2435 S. 47th St, Phoenix-85034	Guests - \$27	\$10
	Presentation	- 7:30 pm	480.894.1600	Students - \$10	no charge
RSVP by 2:00 pm Monday November 13.			Call Donna Miranda: 602.364.7456		

## Message from the Chair

October was our second month at our new meeting location. The group was treated again to a great dinner from the hotel - but more importantly, a fantastic presentation by Dale Ambrose from Sea Launch Vehicles.

Dale provided us with a motley selection of assembly, processing, launch and operation photos from the company portfolio over dinner. It was easy to relate to the items that their company launches into orbit, including well known satellite cable and radio services.

One aspect of Dale's presentation that stood out was the collaboration between the various companies that help make their rocket launches successful time and time again. Located from countries around the world including Norway, Russia, Ukraine and the United States, each partner brings their expertise and knowledge to the table.

I'd like to thank Dale Ambrose for joining us this month. It was very interesting to hear the differences and benefits of launching a rocket in the middle of the ocean at the equator versus a land based launch. I'd also like to thank Derek Logan for helping coordinate our speaker for this month.

At the time this newsletter goes to print, we should be having our dinner meeting in Las Vegas at the Greek Isles Hotel and Casino. Derek Logan and Bill Gest will be running the show and I know they'll have a seamless event...

Dave Vasquez, Section Chair



Dave Vasquez, Section Chair



Dale Ambrose (left) and Derek Logan (right)

"Christmas" island, more than several hundred miles away.

Dale's responsibility is with integration of the payload such as an XM Satellite. He explained in detail the preparation required including transferring the rocket sections by rail to a converted ship for assembly. In this ship the huge, delicate satellite is carefully loaded into the fairing with less than 1" clearances. Once assembled the rocket is transferred to a converted mobile oil rig and set vertical for electronics and communication systems checks. This is all done at Long Beach prior to heading out to sea.

After 10-14 days at sea they are at their launch point and the process is performed all over again. This time, however, the ships are both floating in the open sea and must be controlled by a computer to maintain their position relative to each other as there is a pedestrian bridge connecting them. Once they are ready for the countdown, the support ship is disconnected and repositioned a little further away to control and observe the launch.

SeaLaunch has many advantages by launching at sea. The most important is that it is at the equator, the most direct route to place satellites in geosynchronous orbit with the least amount of energy.

The rocket uses three stages with the third being capable of shutting down and restarting. As it nears its position, and with the fairing already separated, the V-bands connecting the satellite to the third stage are unclamped with smooth screw-like operation. The 12,000-lb satellite (or whatever the payload) is released and moves gracefully into position.

The team can't see it, except on monitors from video taken by aircraft flying overhead. After the launch is complete, the team starts its long journey back to Long Beach.

If anyone is interested, they can see all of the launches on the internet.

Just visit the SeaLaunch website for more information at <http://www.sea-launch.com>.

We thank Dale Ambrose for giving us such an exciting and interesting presentation.

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## Recap of October Meeting by Derek Logan

Dale Ambrose, Senior Engineer at SeaLaunch, gave an exciting presentation about a fairly new rocket company that launches rockets from the equator at sea. He walked us through the preparation and launch activities, and also showed the expected trajectory and actions that take place after launch. This is probably the first presentation we've had that touched on all four main mobility areas of SAE; land, sea, air and space.

SeaLaunch is a consortium of several key companies one of which is Boeing with a 40% stake. Many of the other companies are headquartered around the globe including one from Russia which supplies the rockets and another from Norway which is responsible for the two ships used for launching their rockets at sea. All of the preparation takes place in Long Beach, then everything is transferred to the Pacific for launch activities with the nearest island,

## SAEAZ Awards

### Outstanding Younger Member (OYM) Award

The board has nominated Kevin Willson, the 2004-2005 SAEA Z Chair, for the OYM award. Established in 1976, the OYM award is intended for members 36 years of age or younger who have made a meaningful contribution to SAE at the section level. Although we have not recently nominated someone for this award, I hope the board will keep this as a yearly activity on the agenda.

As a result of Kevin's nomination as the OYM, he is now in the running for the Distinguished Younger Member (DYM) award. The DYM, established in 1980, recognizes exceptional leadership, accomplishments and service to the section. Only four DYM's are selected each year and they are recognized by SAE's top member leaders at the SAE Congress in Detroit. The board would like to thank Kevin for his dedication and wish him the best of luck in being selected as a DYM as well!



Dave Vasquez(left) presenting Kevin Willson (right) with the Outstanding Younger Member Award.

### Outstanding Section Member (OSM) Award

The board has nominated Max E. Rumbaugh, Jr., Executive Vice President of SAE Intl., for the OSM award. Established in 1994, the OSM award is intended for members 37 years of age and older who had made a meaningful contribution to SAE at the section level.

As a result of Max's nomination as a OSM, he is now in the running for the Noble R. Patterson Distinguished Section Member (DSM) Award. Up to six DSM's are awarded each year and are presented certificates at the SAE congress. The board would like to thank Max for his contributions and dedication to the section.

## U of A Sponsor Event

The University of Arizona student section held a thank you day for their sponsors at the P1 Kart Circuit in Tucson, AZ. SAE Arizona-Nevada regularly donates funds, upon request, to the student sections within our jurisdiction.

Our section is filled with talented and bright students working hard. We're excited to see their interest in the SAE student competitions and pleased to contribute as much as we can.

The half-day event began with a demonstration of the schools Formula SAE car, followed by a quick lunch. After lunch, the attendees were given safety instruction and allowed to drive the karts on site -- it was fun event for all that attended!

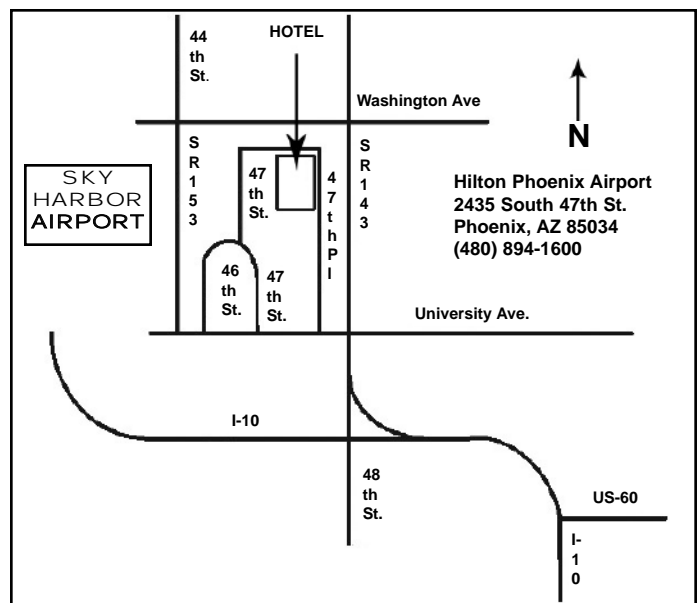
We wish the students at U of A and all the students in the Arizona-Nevada section the best of luck in the upcoming year.



## A World In Motion

A World in Motion has been set up to enlighten youngsters about careers in science and engineering. Demand has been high--engineers are needed to go to local schools for a one-hour presentation. Please contact Joshua Rudin at 602.369.6487 for more information.

\*\*\* Meeting Location \*\*\*



Meeting will be on the 2nd Floor, in the room named \*\*\*\*Palo Verde\*\*\*\*

THE UNIVERSITY OF ARIZONA ANNOUNCES:

THE 33rd ANNUAL RELIABILITY TESTING INSTITUTE  
May 7-10, 2007

The 44th Annual Applied Reliability Engineering and Management Institute provides all engineers, and particularly Reliability Managers and Engineers, and Product Assurance Managers and Engineers in government and Industry 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 Techniques; Maintainability; Customer Satisfaction, Strategies to provide the tools required to design, test and manufacture products which are highly reliable with minimum if any product recalls, easy to maintain, safe and less costly to operate, and sold at globally competitive prices, plus many more! Numerous practical applications of these methodologies are presented. This Institute will also prepare and help participants pass their ASQ Certified Reliability Engineer (CRE) Examination.

Clarion Hotel, Tucson Airport  
6801 S. Tucson Blvd.  
Tucson, Arizona 85706  
520-746-3932 or 800-526-0550

Registration Fee: \$1500      Proceedings Cost: \$50

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The 33rd Annual Applied Reliability Testing Institute provides coverage of how to implement and manage the Design-for-Reliability process through testing; to implement an integrated Reliability & Maintainability Engineering management strategy; a practical approach to attain the high Reliability goals demanded nowadays; to improve our world-wide competitive posture by creating more Reliable products through testing; solder joint durability and their useful life estimation; the determination of the time-to-failure distributions, failure rates, mean lives, reliabilities, and their confidence limits at desired high confidence levels; small-sample-size, high reliability, short-duration, efficient tests; non-parametric testing; test duration, sample size, and number of failures determination; HALT and HAST; burn-in testing, Qualification and Reliability Demonstration Testing; failure analysis technologies; product assurance techniques for becoming more competitive in today's markets; development cycle time reduction; productivity improvement techniques to achieve U. S. leadership in world markets; all types of goodness-of-fit test; determination of the confidence limits of the actual Reliability, Mean life and Failure Rate of all types of components, products and systems at high confidence levels; solutions to participants' problems; plus much more.

### ARIZONA-NEVADA SECTION: Meeting Schedule

November 16	- Alternative Fuels, E85
December	- NO MEETING
January 25	- Infinity G35 Sedan

THE 44th ANNUAL APPLIED RELIABILITY ENGINEERING  
AND MANAGEMENT INSTITUTE  
November 13-16, 2006

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