



# Engineer

## The World's Best Profession

Dr. James Houston, Director of the US Army Engineer Research & Development Center and the Keynote Speaker at the 76th Shock & Vibration Symposium spoke about the challenge this country faces in attracting people to careers in the engineering profession. This resonated with the attendees as evidenced by the many conversations during the week. I was part of many private and three public discussions; the New Engineer's Forum, the Open Technical Advisory Group (TAG) meeting and the Closed TAG Meeting. Many excellent points were made during these exchanges and I'd like to follow up on one in particular at this time.

Engineering used to be considered a glamorous profession. When I was growing up I read about engineers putting a man on the moon, building the Aswan dam in Egypt, and the Fast Breeder Nuclear Reactor; stuff that excited the imagination. Engineers and the engineering profession attracted people looking for a challenge who had a desire to contribute to improving society. But somewhere along the way things changed. When President Bush announced plans to go to Mars, the news concentrated on the cost, I don't think I saw one engineer interviewed to discuss the technical merits of the project. I'm not complaining, I'm just telling it like it is.

I heard a number of people at the Symposium describe programs that they or their company are involved in. There are the obvious ones such as designing a building to withstand a terrorist attack, building the world's best navy, making safer cars, and launching a satellite to name a few. There are also the not so obvious such as working with disadvantaged kids to help them with math, drafting standards on how to tie down a trailer in New Orleans so it won't get blown away by the next hurricane, or serving on a committee to advise a community on road safety. As engineers, we take people's vision for a better life and make it a reality. One could make a case that the standard of living we enjoy is due to the ingenuity of the engineer.

A ranking of the top 250 jobs in the "jobs Rated Almanac" has just 11 jobs with engineer in their title, the highest being Software Engineer at the number 4 slot. Mechanical Engineer comes in at 45, Aerospace at 52, Electrical at 54 and Civil at 70. An interesting one is a Stationary Engineer at 166. I'm not sure if that's an engineer that doesn't move

or one that designs paper. This concerns me. Why aren't we rated higher?

What standard of living will we enjoy in the next decade, how about our children? I had a conversation about how we are turning from a wealth generating society to a wealth manipulating one. We can't possibly improve our standard of living if all we're doing is passing the same dollar bill around from one person to another. Dr. Houston mentioned that the financial world is hiring engineering graduates, at huge salaries, because they are trained in risk analysis. We can't compete on salary, people go into engineering for other reasons, but we can and must take pride in our contributions. Today, we live in a different world and we must find and use techniques appropriate to the times that will enable us to reach our goals. "Goals? What goals?" you may ask. That's a question each of us must ponder and answer individually.

One of my goals is to increase the pride in our profession by showing the world what good work you are doing. What I need is for each of you to send me a short write-up of about 100 words describing the neat things you are working on. It could be job related or it could be something you are doing for the community such as judging a school science fair. Please include any web sites or contacts to get additional information. Please don't send classified material or material your company considers proprietary. I will collect them and put as many as I can in the February newsletter to coincide with Engineer's Week. The remaining I will put in future newsletters. All of them will be put up on the SAVIAC web site. Multiple submittals are fine, but please try to get them to me by the end of January to make the deadline for the February newsletter, although I will continue to take them all year long. The first 20 entries I receive will get a copy of SVM-13, Shock and Vibration Computer Programs, edited by Walter and Barbara Pilkey as thanks for taking the time to do this. I'd like to give everyone a copy, but I'm running low on inventory.

Here's wishing you a happy holiday season from Darnise and myself. Enjoy the time with your family and friends. Sit back, enjoy your accomplishments of the past year and think about what you can do in 2006, personally and professionally, to make this a better world. You, more than any other profession, have the talent to make a difference.

# ***Explosion Effects and Structural Design for Blast***

**A 2-day Training Course  
At the Hilton Garden Inn Virginia Beach Town Center  
Virginia Beach, VA  
February 22 and 23, 2006**

**Instructors: Dr. Sam A. Kiger, PE and Dr. Stan Woodson, PE**

Engineers have an opportunity to improve their skills in understanding explosion effects and designing facilities that are safer to occupants by understanding and minimizing the effects of explosive detonations on structures. Architects and builders will also benefit by appreciating the impact of explosive design decisions early in the process. All new government buildings now require some level of blast resistant design and this training will specifically address those requirements.

## **Course Description:**

This course will focus on the fundamentals of explosion effects, determining blast loads on structures, computing structural response to blast loads, and the design and retrofit of structures to resist blast effects. The emphasis will be on terrorist threats from vehicle bombs, but the fundamental concepts can be applied to other explosive scenarios. Currently available software and publications for blast effects and design guidance will be discussed and demonstrated. Much of the design guidance and software is restricted distribution to government agencies and their contractors, however specific information on how to use and obtain the software will be covered in the course. The participant will gain an understanding of how to compute blast loads on a structure, how to compute structural response to blast loading, and practical methods for designing and retrofitting structures to resist blast effects. Participants will be provided with a complete set of class notes. A general background in structural analysis and structural design will be assumed.

## **Primary Topics Include:**

Explosion Effects, Loads on Structures, Behavior of Structural Elements, Structural Dynamics, Response Calculations (approximate methods and computer codes), and Retrofit Techniques.

## **Course Location:**

The course will be held at the Hilton Garden Inn Virginia Beach Town Center in Virginia Beach, VA. Room reservations can be made through Hilton Garden Inn Central Reservations Line at 1-877-STAY-HGI or 1-877-782-9444 (mention the explosion effects training to get a reduced rate of \$62 per night). A block of rooms will be held for the course until 02/01/2006.

## **Course Registration:**

Registration Fee is \$895.00 (Includes lunch each day). Your payment, in full, must accompany your registration form.

## **Course Refund Policy:**

Refund of registration fee, less \$50 to cover processing costs, are available upon cancellation notice by the registrant. Notification will be by fax, dated and signed by the person registered, to Dr. Sam Kiger at 573-882-4784. The refund will be by check mailed, within 30 days, to the registrant at the address requested on the fax. No refund will be allowed after five working days before the day the course begins. In the event the course is canceled a full refund will be paid to the individual at the address given at the time of registration. Questions may be directed to Dr. Sam Kiger at [kigers@missouri.edu](mailto:kigers@missouri.edu) or by calling 573-882-3285.

More information about the instructors, the course, and accommodations can be found at <http://www.blastdesign-training.com>. This is the fifth offering of this popular course and previous offerings have been full to capacity; so register early to ensure your place is reserved. Secure on-line registration is available. Questions should be directed to Dr. Sam Kiger at 573-882-3285, [KigerS@missouri.edu](mailto:KigerS@missouri.edu) or Stan Woodson at 601-636-4429, [WoodsonEng@netze-ro.net](mailto:WoodsonEng@netze-ro.net).

## Abbott and Costello

Contributed by Jon Wilson, the Dynamic Consultant

You have to be old enough to remember Abbott and Costello, and too old to REALLY understand computers, to fully appreciate this. For those of us who sometimes get flustered by our computers, please read on...If Bud Abbott and Lou Costello were alive today, their infamous sketch, "Who's on First?" might have turned out something like this: Costello calls to buy a computer from Abbott.. Abbott: Super Duper computer store. Can I help you? Costello: Thanks. I'm setting up an office in my den and I'm thinking about buying a computer. Abbott: Mac? Costello: No, the name's Lou. Abbott: Your computer? Costello: I don't own a computer. I want to buy one. Abbott: Mac? Costello: I told you, my name's Lou. Abbott: What about Windows? Costello: Why? Will it get stuffy in here? Abbott: Do you want a computer with Windows? Costello: I don't know. What will I see when I look at the windows? Abbott: Wallpaper. Costello: Never mind the windows. I need a computer and software. Abbott: Software for Windows. Costello: No. On the computer! I need something I can use to write proposals, track expenses and run my business. What do you have? Abbott: Office. COSTELLO: Yeah, for my office. Can you recommend anything? ABBOTT: I just did. Costello: You just did what? Abbott: Recommend something. Costello: You recommended something. Ab: Yes. Costello: For my office? Abbott: Yes. Costello: OK, what did you recommend for my office? Abbott: Office. Costello: Yes, for my office! Abbott: I recommend Office with Windows. Costello: I already have an office with windows! OK, let's just say I'm sitting at my computer and I want to type a proposal. What do I need? Abbott: Word. Costello: What word? Abbott: Word in Office. Costello: The only word in office is office. Abbott: The Word in Office for Windows. Costello: Which word in office for windows? Abbott: The Word you get when you click the blue "W." Costello: I'm going to click your blue "W" if you don't start with some straight answers. What about financial bookkeeping? You have anything I can track my money with? Abbott: Money. Costello: That's right. What do you have? Abbott: Money. Costello: I need money to track my money? Abbott: It comes bundled with your computer. Costello: What's bundled with my computer? Abbott: Money. Costello: Money comes with my computer? Abbott: Yes. No extra charge. Costello: I get a bundle of money with my computer? How much? Abbott: One copy. Costello: Isn't it illegal to copy money? Abbott: Microsoft gave us a license to copy Money. Costello: They can give you a license to copy money? Abbott: Why not? THEY OWN IT! A few days later: ABBOTT: Super Duper computer store. Can I help you? Costello: How do I turn my computer off? ABBOTT: Click on "START

# Structural/Signal Analysis Consultants (S/SAC)

In his 30+ years of experience in both purchasing and providing large-scale, acoustic-frequency data acquisition/analysis systems Strether Smith has found that there is often a large discrepancy between the needs of a testing laboratory and the procurement specification (and consequent results). All too often, the system is under- (or over-) specified and the procurement process is made unnecessarily complex (and expensive) or worse, the purchased system does not perform the required tasks. To this end, he is offering his skills to purchasing organizations through Structural/Signal Analysis Consultants (S/SAC). S/SAC offers consulting services in all aspects of specification and procurement of large-scale measurement systems for vibration, acoustics, shock, wind tunnel, rotating-machinery and other audio-frequency applications. Functions include:

Definition of the technical system requirements.

- o Transducers
- o Signal Conditioning
- o Analog-to-Digital Conversion
- o Data Storage and Archive
- o Run-Time Calculations, Error Sensing, and Displays
- o Post-Test Analysis

Budgetary Considerations

- o Assuring that the technical requirements are reasonable within the available budget.

Writing the Request for Proposal including:

- o Description of the technical requirements
- o Development of a "scored" compliance matrix.
- o Development of the preliminary Acceptance Test Procedure (ATP).

Evaluation, scoring, and selection of proposals.

Negotiation of system customizations and technical details.

Development of the final ATP.

Performance of the ATP

Training of laboratory staff in system use.

Strether Smith, S/SAC President, is well known in the industry as a developer of high-performance data acquisition/analysis systems, a lecturer in Digital Data Acquisition at the Sensors Expo and Shock and Vibration Symposium, and an instructor in Digital Data Acquisition, Digital Signal Processing, and Vibration Testing for Technology Training, Inc. (TTi). He has authored over fifty papers and has a comprehensive knowledge in the technologies involved and of the capabilities of potential vendors that might be candidates to supply the desired system. For further information, please contact [strether.smith@comcast.net](mailto:strether.smith@comcast.net) or call (408)255-3650.

## E-mail Addresses Wanted

SAVIAC has been sending out the newsletter by snail mail and, since January of 2004, by e-mail notification. Response to the electronic component has been positive for the most part. This option proved invaluable when hurricane Katrina went through New Orleans in late August, forcing the 76th Shock & Vibration Symposium to move to Destin, FL. The only way to notify the community was through the SAVIAC website and the electronic newsletter. If you did not receive the newsletter it means the contact

information we have on you is not current or your security is blocking the e-mail. You can fix the former by going to the web site, [www.saviac.org](http://www.saviac.org), clicking on the Current Awareness Newsletter button and then clicking on the button to update your contact information. This is a secure site, so no one will be able to see the information you submit. To fix the problem of blocking the e-mail please ask your administrator to allow e-mail from [joel.leifer@saviac.org](mailto:joel.leifer@saviac.org) and [darnise.johnson@saviac.org](mailto:darnise.johnson@saviac.org).

# Free Winter Shock & Vibration Seminar

SAVIAC invites you to attend a FREE seminar on Shock & Vibration. The course will be held on February 15, 2006 at the Doubletree Grand Key Resort in Key West, FL in conjunction with the SAVIAC Winter Technical Advisory Group (TAG) Meeting. SAVIAC and the featured experts in their disciplines have organized this seminar to introduce you to the SAVIAC community, while providing a valuable educational experience.

### Agenda

8:00 - 8:25	Registration & Continental Breakfast	
8:25 - 8:30	Welcome	Dr. Bob Welch, SAVIAC Director
8:30 - 8:45	Introduction to SAVIAC	Joel Leifer, SAVIAC
8:45 - 9:15	Introduction to Shock & Vibration	Joel Leifer, SAVIAC
9:15 - 9:45	TBD	
9:45 - 10:45	Explosion Effects in Air, Water, and Soil	Dr. Bob Welch, SAVIAC/ERDC
10:45 - 11:00	Break	
11:00 - 11:30	Durability Assessment using Accelerated Life Testing	Gary Zook, NUWC Keyport
11:30 - 12:00	Introduction to Shock Testing	Jeff Morris, HI-TEST Labs
11:45 - 1:15	Lunch	(no host)
1:15 - 1:45	Explosives	Dr. Eric Rinehart, DTRA
1:45 - 2:15	Failure Mechanisms in Polymers	Prof. Rudy Scavuzzo, University of Akron
2:15 - 2:45	High -G Hardening of Structures & Electronics	Ami Frydman, ARL
2:45 - 3:00	Break	
3:00 - 3:30	Optimal Shock Isolation	Prof. Walter Pilkey, University of VA
3:30 - 4:00	Ship Shock Simulation & Modeling & Ship System Damping	Prof. Young Shin, NPS
4:00 - 4:30	The Pseudo Velocity Shock Spectrum	Dr. Howard Gaberson, Consultant
4:30 - 4:45	Wrap-up & Questions	All

**Please forward this invitation to anyone you know who may be interested in attending this program.**

The seminar is free, but you must register to attend. Please RSVP to Darnise Johnson, (301) 596-0100 or [darnise.johnson@saviac.org](mailto:darnise.johnson@saviac.org) to assure your space and note packet. SAVIAC reserves the right to substitute topics and/or instructors when necessary. This schedule is subject to change. For more information about SAVIAC and directions to the Seminar Hotel, please visit our website at [www.saviac.org](http://www.saviac.org).

# Call For Papers

## 77th Shock and Vibration Symposium

October 29 - November 3, 2006

Hyatt Regency Monterey  
Monterey, CA

Planning for the 77th Shock and Vibration Symposium is underway, with the selection of the Naval Undersea Warfare Center and Idaho National Labs as the Government Featured Organizations, and ABAQUS and Spectral Dynamics as the Commercial Featured Organizations, and the Hyatt Regency Monterey as the location.

The Shock & Vibration Symposium is the oldest US Government sponsored forum dealing specifically with the shock and vibratory response of air, sea, space, and ground vehicles and structures and blast effects. The Symposium was established as a mechanism for the exchange of information among Government activities, private industry, and academia on current work and new developments. Presentations on work in progress are encouraged. Separate sessions are held for presentation of classified or limited-distribution material.

Presentations in the following subject areas are welcomed:

901D Case Studies	Dynamic Scale Modeling	Product Announcement/Facility
Active Vibration Control	Dynamic Testing	Description
Air Blast	Environmental Databases	Pyrotechnic Shock
Anti-Terrorist Technologies	Finite Element Analysis	Seismic Shock
Ballistic Shock	Fluid-Structure Interaction	Shock Characterization
Biodynamics	Ground Shock	Shock Hardening
Blast Design	Homeland Defense	Shock Qualification by Extension
Blast Effects	Impact/Penetration Mechanics	Shock Response Spectrum
Combined Environments	Infrastructure Protection	Shock Test/Equipment Failure Modes
Computational Structural Dynamics	Instrumentation	Simulation Methods
COTS	Isolation Systems	Specifications and Standards
Crash Dynamics	Large Structures	Structural Hardening
Damage Identification	Live Fire Testing	System Identification
Damping	Machinery Diagnostics	Test Criteria
Data Analysis	Machinery Vibration	Test Tailoring
Dynamic Analysis Methods	Material Dynamic Properties	Underwater Shock Testing
Dynamic Measurement	Modal Analysis and Testing	Vibroacoustics

Two categories of presentations will be accepted: full papers, suitable for publication in the Symposium Proceedings; and short discussion topics, consisting of viewgraphs with no written paper. Full papers will have a 15 minute technical presentation time plus 5 minutes for questions, while short discussion topics will have a 10 minute presentation time with no question period.

Presentations will be accepted on the basis of their abstracts, which must be submitted by June 1, 2006. You are encouraged to submit online at [www.saviac.org](http://www.saviac.org), click on 77th S&V Symposium Abstract Submittal. The Program Committee will review the abstracts during the June Program Committee meeting and authors will be notified of acceptance by July 14, 2006. The full paper presentations must meet the following standards: They must be previously unpublished, must be appropriate to community interests and must not be overtly commercial, except for papers in the Product/Facility Session. Standards for short discussion topics are similar except that they may include previously presented or published material.

The Proceedings will be published on CD-ROM.

**The paper due-date is October 6, 2006.**

Questions should be directed to Joel Leifer, 301.596.0100 or [joel.leifer@saviac.org](mailto:joel.leifer@saviac.org).

## Announcement for International Short Course on

# Response of Marine Structures to Underwater Explosions

March 28-31, 2006

Monterey Beach Hotel

2600 Sand Dunes Drive, Monterey California 93940

## Course Lecturers:

**Professor Thomas L. Geers**    **Dr. Young S. Shin**  
**Dept. of Mechanical Engineering**    **Shock and Vibration Research**  
**University of Colorado**    **Monterey, California 93940**  
**Boulder, Colorado 80309**

## Course Objective & Overview

### Course Objective:

The purpose of this course is to provide engineers, scientists, and naval architects a discriminating review of underwater explosion phenomena, structural response analysis, fluid-structure interaction, shock spectrum concept, and shock-induced vibration analysis of shipboard equipment.

### Course Overview:

1. UNDERWATER EXPLOSION PHENOMENA: Sequence of Underwater Explosion Events, Hydrodynamic Relations, Underwater Acoustic Waves, Air-Water Interface, Shock Wave Parameters, Bubble Behavior and Bubble-Pulse Loading, Bulk and Local Cavitation, Scaling  
 2. ELEMENTS OF STRUCTURAL DYNAMICS: Analytical Dynamics, Classical Linear Oscillator, Two-Degree-of-Freedom System, Finite Element Discretization and Modeling, Finite Difference Time Integration  
 3. FLUID-STRUCTURE INTERACTION: Athwartship Response of Submarine, Vertical Response of Surface Ship, Submerged Plate Oscillator

4. DAA-BASED ANALYSIS: Submerged Spherical Shell, FE/BE Fluid-Structure Interaction, USA-DYNA, USA-NAS-TRAN, etc.

5. FLUID VOLUME DISCRETIZATION: Fluid Cavitation, Validation of Computer Codes

6. MODELING AND SHOCK SIMULATION: Three Dimensional Ship Shock Analysis, Modeling and Approaches

7. SHOCK QUALIFICATION OF SHIPBOARD EQUIPMENT BY DESIGN ANALYSIS: Shock Spectra, Normal Mode Analysis, Response of a Multi-DOF System to Shock Motion

8. DYNAMIC DESIGN ANALYSIS WORKSHOP: Dynamic Design Analysis Method (DDAM), DDAM Step-by-step Analysis Procedure, Design Criteria of Shipboard Equipment Using DDAM

9. APPLICATION TO SHIPBOARD EQUIPMENT USING DESIGN ANALYSIS: Application Problems

## Course Organization

### REGISTRATION FEE

The following registration fee includes the cost of all sessions, coffee breaks, and the course notes.

\$ 1,350 --- if paid by February 28, 2006.

\$ 1,500 --- if paid after that date.

### ACCOMMODATION

A block of rooms has been reserved at special rates for short course attendees at the Monterey Beach Hotel (Rates \$84). To qualify for these special rates, you must mention that you are attending the "Shock and Vibration Seminar". Attendees should contact the hotel directly to make reservations. The rooms at the special rates will only be held until February 28, 2006.

### COURSE LOCATION

The course will be conducted in Monterey, California, USA;

Monterey Beach Hotel

2600 Sand Dunes Drive, Monterey, California 93940

Phone: (800) 242-8627 or (831) 394-3321

Fax: (831) 393-1912

### FOR FURTHER INFORMATION, CONTACT:

Shock and Vibration Research

10150 Blue Larkspur Lane

Monterey, California 93940, USA

Phone/Fax (831) 375-4999, Cell: (831) 277-7117

email: undex2006@sbcglobal.net

## Let Us Know What You Think!

Did you fill out a symposium evaluation form? You still can! Please visit

[http://www.saviac.org/76th\\_Symposium/76th%20Symposium%20Evaluation%20Form.htm](http://www.saviac.org/76th_Symposium/76th%20Symposium%20Evaluation%20Form.htm) to fill out our online 76th Symposium Evaluation Form so that we can continue to bring you the programming you want at future symposia!

## INDUSTRY NEWS

### National Technical Systems Announces Industry's Highest Level Single System Vibration and Shock Capability

With the installation of the new Unholtz-Dickie T-2000 vibration system installed at NTS Camden, NTS becomes the only Defense/Commercial testing laboratory in the world with a T-2000 system, which is one of the most powerful in the industry. The system can produce very high-level, high-displacement vibration and shock profiles as it is rated at 24,000 force pounds random (peak) and 25,000 force pounds sine (peak). The system, built by Unholtz-Dickie a leading manufacturer of electrodynamic systems, produces very high energy levels for inducing vibration and shock in large test specimens. The system features a full 3-inch (76mm) stroke and is capable of up to 200g of sine acceleration

and up to 600g of shock acceleration. Internal pneumatic load support provides automatic test sample (load) centering for full stroke capability with payloads up to 1,900 lbs. The NTS National Ordnance and Environmental Test Center (NTS Camden) is unique as one of the few independent test facilities equipped to conduct the wide array of complex development, qualification and acceptance tests on weapon systems, ordnance, rocket motors, hazardous materials and commercial products required by government and commercial standards. In support of these test programs, For additional information about NTS, visit its web site at [www.ntscorp.com](http://www.ntscorp.com).

**New 788A Low Cost Accelerometer**  
Wilcoxon Research, a leading supplier of quality vibration sensors and sensor networks, has added another low-cost

sensor to its family of general purpose accelerometers, the new 788A, with a sensitivity of 100 mV/g and a tight +/-10% tolerance. The 788A is a single axis sensor with an acceleration range of +/-50 g (at full scale). High frequency response measurements up to 10 kHz identify faults and improper machine operation, ensuring that maintenance professionals are aware of these potentially damaging conditions. Typical noise is 4 micro g at 100 Hz. The 788A operates normally at temperatures between -500 and 1200 C. Additional features include exceptional shielding, ground isolation, and hermetic sealing. Wilcoxon's 788A is priced at only \$95 and is ideal for Condition Based Monitoring and Predictive Maintenance programs. For information visit [www.wilcoxon.com](http://www.wilcoxon.com), call 1-800-WILCOXON, or email [sensors@wilcoxon.com](mailto:sensors@wilcoxon.com).

## Conference & Short Course Announcements

### SAVIAC to Offer Training in Shock & Vibration

SAVIAC is offering the following short courses: "Basics of Noise & Vibration", "Introduction to Shock & Vibration", and "Environmental Testing for the Program Office", in addition to the popular "Practical Shock Analysis & Design" course. Look for descriptions, times and locations in future newsletters and on our web site. These courses are meant to fill a void between what is taught in college and what other people are teaching. Please send additional course ideas to me at [joel.leifer@saviac.org](mailto:joel.leifer@saviac.org) and we'll see about developing additional offerings.

### GeoCongress

ASCE

Atlanta, GA

February 26 - March 1, 2006

The objectives of the 2006 GeoCongress are to (a) showcase recent advancements in all geo-applications as a result of the adoption of information technologies; (b) debate future opportunities for the geo-industry that can result from even more widespread adoption of information technologies;

and (c) bring together participants from a broad range of groups within the geo-community including those working in areas reflected in the Geo-Institute technical committees, those from technical committees of other organizations who work at the intersection of information technology and geotechnical engineering, those involved in advancing the use of information technology in geotechnical practice, and those involved in geotechnical information research and education. Visit <http://www.asce.org/conferences/geocongress06/> for more information.

### Measurement Science Conf. 2006

MSC

Anaheim, CA

February 27 - March 3, 2006

The theme for the 2006 Measurement Science Conference is "The Science, Technology, and Control of Measurements." The theme is basic to the core mission of MSC which is to promote education and professionalism in measurement science and related disciplines. The goal of the 2006 MSC is to provide a professional forum

and venue to advance education, renew, and further professional contacts and provide emerging ideas and insights in the profession. Visit <http://www.msc-conf.com/msc/index.html> for more information.

### Practical Shock Analysis & Design Course

MFPT

Winchester, VA

March 6-10, 2006

This course is aimed primarily at shock design applications on ships, the analysis and design techniques presented are equally applicable to problems related to design for seismic loads or blast induced ground shock. Thus, engineers in these related areas may find the course to be useful. For all who participate, the course will provide a comprehensive coverage of shock design practice and a solid basis for further exploration of shock technology. Contact MFPT @ (540) 678-8678 Email: [mfpt@adelphia.net](mailto:mfpt@adelphia.net), web: <http://www.mfpt.org> or <http://www.saviac.org/Courses/Shock%20Course.htm> for additional information.



SAVIAC / HI-TEST Laboratories Inc.

5136 Celestial Way  
Columbia, MD 21044

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## ***In the December 2005 Current Awareness Newsletter***

***Engineer: The World's Best Profession  
S/SAC Flyer  
Explosion Effects & Structural Design for Blast  
Short Course  
Winter S&V Seminar  
77th S&V Symposium Call for Papers  
Response of Marine Structures to UNDEX Course  
Industry News  
Conference & Short Course Announcements***

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Program Manager  
Joel Leifer  
(301) 596-0100  
joel.leifer@saviac.org

Darnise Johnson  
Administrative Services  
(301) 596-0100  
darnise.johnson@saviac.org

Manager of Technical Services  
Henry Pusey  
(540) 678-8678  
saviac@adelphia.net

SAVIAC/HI-TEST Laboratories Inc.  
5136 Celestial Way  
Columbia, MD 21044  
(301) 596-6400 (fax)

SAVIAC Director  
Dr. Charles Robert Welch  
US Army Engineer Research and  
Development Center  
Vicksburg, MS 39180  
saviac@wes.army.mil