

**4th Biennial National Forum on**

# **Weapon System Effectiveness**

*Achieving Capabilities-Based  
Weapons Effectiveness*

**PRELIMINARY  
PROGRAM**

**18–20 October 2005**

**Institute for Advanced Technology**

**University of Texas at Austin**

**Austin, Texas**

**CLASSIFIED/U.S. ONLY**



[www.aiaa.org/events/wse](http://www.aiaa.org/events/wse)

# 4th Biennial National Forum on Weapon System Effectiveness

*Achieving Capabilities-Based  
Weapons Effectiveness*

**CLASSIFIED/U.S. ONLY**

**Executive Host**

**HARRY FAIR**

Institute for Advanced Technology

**Technical Chair**

**JAMES W. ATWATER**

Northrop Grumman XonTech

**Administrative Chair**

**JANET MONACO**

Institute for Advanced Technology

**AIAA WSE Technical Committee Chair**

**NASIT C. ARI**

ITT Industries





## Forum Scope

The American Institute of Aeronautics and Astronautics (AIAA) National Forum on Weapon System Effectiveness is a biennial event dedicated to enabling, promoting, and sharing knowledge about the complex nature of modern weapon systems.

The 4th Biennial National Forum is developed by the AIAA Weapon System Effectiveness Technical Committee, under the security sponsorship of the Deputy Under Secretary of Defense (Science and Technology), and is hosted by the Institute for Advanced Technology in Austin, Texas.

This event provides a CLASSIFIED venue for the discussion of weapon system effectiveness, including the technology, design, development, engineering, and operational considerations important to the successful employment of modern ground, sea, air, and space weapon systems and platforms.

The key objective of the 2005 Forum will be addressing the themes of major weapons, test and evaluation, performance analysis, and future systems, with particular emphasis on:

-  Challenges, threats, experiences, and lessons learned with current weapon systems
-  Future challenges and future weapon systems
-  Emerging weapon system technologies
-  Weapon system effectiveness methodologies

This CLASSIFIED event is structured to provide maximum opportunities for technical experts and government leaders interested in the technologies and applications associated with weapon systems to meet at an outstanding event that provides a review of the state of the art across a broad spectrum of disciplines, as well as a forward-looking series of invited presentations concerning future challenges.



# Program

**Tuesday, 18 October 2005**

**0800–0815 hrs**

**Welcome and Administrative Remarks**

Nasit Ari, ITT Industries; Chair, AIAA WSE Technical Committee

**Forum Overview and Keynote Speaker Introduction**

Harry Fair, Director, Institute for Advanced Technology, University of Texas at Austin; Executive Host, 4th Biennial National Forum on Weapon System Effectiveness

**0815–0915 hrs**

**Keynote Address: Assessing Effectiveness of Current and Future Weapon Systems**

Gen. Larry Welch (USAF Ret.), U.S. Department of Homeland Security

**0915–1145 hrs**

**Panel: Warfighter Lessons Learned from Baghdad and Role of Technology**

Chair: Lt. Gen. Butch Funk (Ret.), Institute of Advanced Technology, University of Texas at Austin

Co-Chair: Harry Fair, Director, Institute for Advanced Technology, University of Texas at Austin

Panel: Lt. Gen. William Wallace, Commanding General, USA Combines Arms Center and Fort Leavenworth (invited); Maj. Gen. Peter Chiarelli, Commanding General, 1st Cavalry Division (invited); Maj. Gen. Martin Dempsey, Commanding General, 1st Armored Division, USA Europe and Seventh Army (invited); Brig. Gen. William Catto, Commanding General, Marine Corps Systems Command (invited); Rear Adm. Jay Cohen, USN, Chief of Naval Research; Lt. Gen. Thomas Metz, Commanding General, III Corps and Fort Hood; Lt. Gen. David McKiernan, Deputy Commanding General/Chief of Staff, U.S. Armed Forces Command (invited)

**1300–1730 hrs**

**Session 1-WSE-1**

**Weapon System Effectiveness (WSE as a Discipline)**

Chair: Torger Anderson, Institute for Defense Analyses, Alexandria, VA

**Invited Presentation: WSE Lessons Learned**

C. LaMar, USA/SMDC

**AIAA-I-3**

**UA Methodology for Effects-Based Weaponing**

I. Talbot, Analysis Division, Air Armament Center, Eglin AFB, FL; D. Thornton, Teledyne Brown Engineering, Huntsville, AL

**Invited Presentation**

E. Seglie, Science Advisor, DOT&E, OSD

**AIAA-I-4**

**Modeling the Lethality of Army Systems in Urban Environments**

R. Pearson, U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

**AIAA-I-5**

**Role of System-Level Performance Analysis in Sustaining a Legacy System—ICBM Examples**

T. Schilling and R. Teuscher, Northrop Grumman Corporation, Clearfield, UT; D. Suave, 526th ICBM Systems Wing, Hill AFB, UT

**AIAA-I-6**

**Assessing Effectiveness of Air-to-Air Missiles: The Aim-9X Case**

K. Wall, Institute for Defense Analyses, Alexandria, VA

**AIAA-I-7**

**Integrated Survivability Assessment (ISA) in Weapon System Effectiveness**

R. Ketcham, Naval Air Warfare Center Weapons Division, China Lake, CA; D. Hall, Survice Engineering Company, Ridgecrest, CA

**AIAA-I-8**

**Weapon Systems Technology Investigation**

L. Allen, Naval Air Warfare Center Weapons Division, China Lake, CA

**AIAA-I-9**

**Accounting for Kill-Chain Infrastructure in Evaluating Weapon System Effectiveness**

J. Levin, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

**Session 2-WSE-2**

**WSE Test, Evaluation, and Performance**

Chairs: Tony England, Battelle Memorial Institute, Arlington, VA; Joel Miller, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

**AIAA-2-1**

**TSN and Weapon Communications Lessons Learned to Date**

L. Inouye, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

**AIAA-2-2**

**Enhancement of Hypervelocity Blast Effects by Use of Reactive Payloads**

S. Levinson, S. Bless, and W. Reinecke, Institute for Advanced Technology, Austin, TX; D. Wilson and K. Schroder, Nanotechnologies, Inc., Austin, TX; D. Gee, Institute for Advanced Technology, Austin, TX

**AIAA-2-3**

**Aegis BMD Flight Mission Hit Point Determination and Lethality Assessment**

B. Kiser and S. Rowles, Naval Surface Warfare Center, Dahlgren, VA

**AIAA-2-4**

**Measuring Air-to-Air Weapon Systems Effectiveness with Raytheon's Air Dominance Testbed**

D. Irwin and T. Anderson, Raytheon, Tucson, AZ

# Program

**Tuesday, 18 October 2005** (cont.)

## **AIAA-2-5**

### **Characterization of Particle Ejecta from Projectile Impact into Liquid-Filled Containers**

A. Bernardo, Southwest Research Institute, San Antonio, TX; D. Weber, Metrolaser, Inc., Irvine, CA; M. Magee, Southwest Research Institute, San Antonio, TX; M. Tarbell, Midland Research, Manitou Springs, CO; S. Mullin, Southwest Research Institute, San Antonio, TX; D. Hogg, U.S. Air Force Research Laboratory, Eglin AFB, FL

## **AIAA-2-6**

### **Bulk Chemical Drop Size Consequences: Implications of the Patriot PAC<sub>3</sub> DT/OT-12A Flight Test Results**

J. Willis and M. Guthrie, BAE Systems, Huntsville, AL; T. Cowles, U.S. Army Space & Missile Defense Command, Huntsville, AL

## **AIAA-2-7**

### **Leveraging Test and High Fidelity Simulation Data to Develop, Verify, and Validate Fast-Running Lethality Algorithms**

A. Cash, S. Tillman, and G. Killough, ITT Industries, Huntsville, AL; C. Lind, Missile Defense Agency, Washington, DC

## **AIAA-2-8**

### **Improving GPS-Guided Weapon System Effectiveness by Using Sensors for Precision Targeting**

B. O'Neal, Naval Air Warfare Center Weapons Division, China Lake, CA

## **AIAA-2-9**

### **Operational Test Design for Transformational Weapons**

J. Marlowe, Air Force Operational Test and Evaluation Center, Kirtland AFB, NM

**Wednesday, 19 October 2005**

**0800–0805 hrs**

### **Administrative Remarks and Introductions**

Nasit Ari, ITT Industries; Chair, AIAA WSE Technical Committee

### **Keynote Speaker Introduction**

Wes Kitchens, SAIC; Vice Chair, AIAA WSE Technical Committee

**0805–0850 hrs**

### **Keynote Address: Advanced Technologies for Future Weapon Systems**

Spiro Lekoudis, Director of Weapon Systems, Office of the Deputy Under Secretary of Defense (Science and Technology)

**0900–1200 hrs**

## **Session 3-WSE-3**

### **Emerging Technologies**

Chairs: Wes Kitchens, SAIC, Vienna, VA; Bill Isbell, ATA Associates, Santa Barbara, CA

### **Oral Presentation: Directed Energy Weapons**

G. Cavanaugh, Los Alamos National Laboratory, Los Alamos, NM

### **Oral Presentation: Advances in Electromagnetic (EM) Guns**

H. Fair, Institute for Advanced Technologies, University of Texas at Austin, Austin, TX

### **Oral Presentation: Defeating Improvised Explosive Devices (IEDs)**

M. Finger, Lawrence Livermore National Laboratory, Livermore, CA

### **Oral Presentation: Non-Lethal Weapons**

J. Alexander, Consultant, CINC U.S. Special Operations Command, Las Vegas, NV

## **AIAA-3-5**

### **A Survey of the Future Combat System's Capability for Rapid Retaliation**

R. Pearson and J. Wald, U.S. Army Research Laboratory, Aberdeen Proving Ground, MD; J. Lacetera, Fast Track Technologies, Aberdeen Proving Ground, MD

## **AIAA-3-6**

### **Human-Effects-Based Evaluation of Novel Formulations for Flash-Bang Devices**

R. Ames and E. Carroll, Naval Surface Warfare Center, Dahlgren, VA; R. Blau and L. Spendlove, ATK Thiokol Propulsion, Corinne, UT; P. Chan, Titan/Jaycor, San Diego, CA; R. McCrory, General Dynamics, Brooks City Base, TX

## **Session 4-WSE-4**

### **Network Centric**

Chairs: Brig. Gen. C. Cartwright (invited); Mark Bowler, The Boeing Company, Anaheim, CA; Mark Tempestilli, Next Century Corporation, Laurel, MD

## **AIAA-4-1**

### **Evolution of the JROC Capability-Based Process that Provides a Joint Networked-Centric Force**

R. Larsen, Joint Staff J8, Burke, VA

## **AIAA-4-2**

### **Operator-in-the-Loop for a Wide Area Search Munition**

C. Cocchiarella, U.S. Air Force Research Laboratory, Eglin AFB, FL; M. Mills and M. Tower, Lockheed Martin Missiles and Fire Control, Dallas, TX; G. Harbaugh, Jacobs Engineering/Sverdrup TEAS Group, Eglin AFB, FL

## **AIAA-4-3**

### **Weapon Effects Assessment via Embedded Sensors**

K. Smart, B. Dodson, and R. Bates, Sandia National Laboratories, Albuquerque, NM

## **AIAA-4-4**

### **Effective Net Centric Operations**

K. Hunigan, Northrop Grumman Corporation, Baltimore, MD

# Program

**Wednesday, 19 October 2005 (cont.)**

## **AIAA-4-5**

### **GIG Enabling Fielded Tactical Systems**

E. Martens, D. Corman, and S. Dorris, The Boeing Company, St. Louis, MO; C. Satterthwaite, U.S. Air Force Research Laboratory, Dayton, OH

## **AIAA-4-6**

### **Determining Net Centric Force Effectiveness with Multi-Objective Optimization Models**

T. Bui, The Boeing Company, Huntington Beach, CA

## **1300–1345 hrs**

### **Keynote Address: Common Rules and Characteristics of Successful Major Weapons Systems**

Hans Mark, Professor, University of Texas at Austin, Austin, TX

## **1400–1730 hrs**

### **Session 5-WSE-5**

#### **Deep Earth Penetrator Weapons**

Chair: Jack Roach, NSSO Support, SAIC Systems Engineering Support Office, Arlington, VA

## **AIAA-5-1**

### **Wireless Telemetry System Development for Earth Penetrator Operations**

R. Bates, C. Landron, and M. Oswald, Sandia National Laboratories, Albuquerque, NM

## **AIAA-5-2**

### **Thermal Penetrator Enabling Technologies for Deeply Buried Hardened Target Defeat**

E. Branscome, Aerospace Systems Design Laboratory, Atlanta, GA

## **AIAA-5-3**

### **An Evaluation of the Performance of Penetrating Weapon Effectiveness Algorithms**

C. Drutman, Northrop Grumman Corporation, Reading, MA

## **AIAA-5-5**

### **Technology Research for an Air-Deployed Sensor System for Rapid, Near Surface Site Characterization**

D. Gardner, E. Chael, R. Fogler, R. Gilchrist, J. Lucero, and P. Yarrington, Sandia National Laboratories, Albuquerque, NM

## **AIAA-5-6**

### **Effects of Specific Mechanical Features on the Performance of Deep Penetrating Weapons**

K. Danielson, M. Adley, and J. O'Daniel, U.S. Army Engineer Research and Development Center, Vicksburg, MS

## **AIAA-5-7**

### **Measuring Effectiveness of the Robust Nuclear Earth-Penetrator Weapon**

R. Homsy and A. Sicherman, Lawrence Livermore National Laboratory, Livermore, CA

## **Session 6-WSE-6**

### **Directed Energy Weapons**

Chair: Chuck LaMar, U.S. Army Space & Missile Defense Command, Decatur, AL

## **AIAA-6-1**

### **Expanding HPM EMI Effects Test Results from the Laboratory to Real World Setting**

C. Ropiak, U.S. Naval Research Laboratory, Chestertown, MD; R. Gardner, Alexandria, VA; I. Kohlberg, Institute for Defense Analyses, Alexandria, VA

## **AIAA-6-2**

### **A Hybrid (HEL + Missile) Defense**

J. Cook, M. Mohadjer, and G. Niva, The Boeing Company, Arlington, VA

## **AIAA-6-3**

### **Tactical High Energy Laser Effectiveness Measurements in a Counter Rocket and Mortar Mission**

C. Lamar, U.S. Army Space & Missile Defense Command, Redstone Arsenal, AL; D. Lyman, SAIC, Atlanta, GA; D. Ryan, SPARTA, Inc., Huntsville, AL

## **AIAA-6-4**

### **Directed Energy Weapons: Promise & Reality**

J. Horkovich, Raytheon Missile Systems, Tucson, AZ

## **AIAA-6-5**

### **Comparison of the Performance of a Solid State Laser and a DF Laser in the Army Air Defense Mission**

D. Lyman, SAIC, Marietta, GA; C. LaMar, U.S. Army Space & Missile Defense Command, Huntsville, AL

## **AIAA-6-6**

### **Comparative Assessment of Conventional, Laser, and HPM Weapons Effectiveness Versus Ground Targets**

H. Legner, Physical Sciences, Inc., Andover, MA; R. Stovall, 46th Test Wing, Eglin AFB, FL; T. Stagliano, ITT Industries, Woburn, MA; K. Bentley and G. Sprading, SRS Technologies, Ft. Walton Beach, FL; D. McLemore, ITT Industries, Albuquerque, NM

## **AIAA-6-7**

### **Assessing the Effectiveness of a Laser Weapon-Bomber Self-Defense**

L. Grimes, S. Doerr, L. Lamberson, and D. Rigdon, U.S. Air Force Research Laboratory, Kirtland AFB, NM

## **Session 7-WSE-7**

### **Weapon Effects Analysis Methodologies**

Chairs: Scott Fish, SAIC, Vienna, VA; Col. Mike Kiraly (USAF Ret.), Jacobs Engineering/Sverdrup, Arlington, VA

## **AIAA-7-1**

### **Simulating Chemical/Biological Agent Neutralization Using Random-Walk Tracer Particles**

C. Tobin and S. Diehl, ITT Industries, Colorado Springs, CO; F. Fairchild, U.S. Air Force Nuclear Weapons and Counterproliferation Agency, Kirtland AFB, NM

# Program

## Wednesday, 19 October 2005 (cont.)

### AIAA-7-2

#### The Euler Tunnel Analysis: A Production CFD Suite for Aerodynamics Analysis

B. Greiner, SPARTA, Inc., Huntsville, AL; A. Nicholson, DIA/MSIC, Redstone Arsenal, AL

### AIAA-7-3

#### Rod Penetration Algorithm for Complex Targets and Comparisons with Ballistic Range Data

P. Nebolsine and N. Humer, Physical Sciences, Inc., Andover, MA; J. Vetrovec and D. Schwab, The Boeing Company, Canoga Park, CA

### AIAA-7-4

#### A Tool for CNA COA Selection and Mission Analysis

P. Whiteman, Booz Allen Hamilton, Omaha, NE

### AIAA-7-5

#### FATEPEN Body-to-Body Impact and Target Damage Models

J. Yatteau, Applied Research Associates, Inc., Littleton, CO

### AIAA-7-6

#### Analysis of Multi-Charge Warhead Weapon

J. Schwartz and G. Koretsky, Institute for Defense Analyses, Alexandria, VA

### AIAA-7-7

#### Rod-Tube Extending Penetrators

J. Hodge, D. Littlefield, S. Bless, B. Pedersen, and A. Short, Institute for Advanced Technology, Austin, TX

## Thursday, 20 October 2005

### 0800–0805 hrs

#### Administrative Remarks and Introductions

Nasit Ari, ITT Industries; Chair, AIAA WSE Technical Committee

#### Keynote Speaker Introduction

Don Stevenson, The Boeing Company; Secretary, AIAA WSE Technical Committee

### 0805–0850 hrs

#### Keynote Address: Metrics for BMDS Effectiveness Evaluation

Dennis Mays, Acting Deputy Director for Systems Engineering and Integration (MDA/SE), Missile Defense Agency

### 0900–1300 hrs

#### Session 8-WSE-8

##### Future Weapon Systems

Chair: Mehmet Erenkil, Institute for Advanced Technology, University of Texas at Austin, Austin, TX

##### Oral Presentation: The Spin Out Process for the Future Combat Systems

C. Williams, The Boeing Company, Houston, TX

##### Oral Presentation: An Electromagnetic Weapon System for Naval Applications

F. Beach, Navy Electric Weapons Program Office, Washington, DC

##### Oral Presentation: U.S. Army Electromagnetic Gun Program

M. Cilli, Army Armament Research, Development, and Engineering Center, Picatinny, NJ

### AIAA-8-4

#### System Optimized Reduction of Chemical/Biological Collateral Hazards in Bunker Defeat Scenarios

W. Westlake, ITT Industries, Colorado Springs, CO; D. Parsons, ITT Industries, Albuquerque, NM; F. Fairchild, U.S. Air Force Nuclear Weapons and Counterproliferation Agency, Kirtland AFB, NM

### AIAA-8-5

#### Employment of Munitions from Cargo Aircraft

J. Mercer and M. Franke, Air Force Institute for Defense Analyses, Alexandria, VA

### AIAA-8-6

#### Commercial Aircraft for Military Roles—Survivability Considerations

T. Anderson and L. Truett, Air Force Institute for Defense Analyses, Alexandria, VA

### AIAA-8-7

#### Large-Caliber Applications for Railguns on the Conventional Battlefield (Alternate)

R. Subramanian, M. Crawford, J. Mallick, D. Suris, and S. Bless, Institute for Advanced Technology, Austin, TX

### AIAA-8-8

#### Kinetic Energy Weapon Systems for Low-Cost, Long-Range, Precision Effects (Alternate)

M. Erenkil, Institute for Advanced Technology, Austin, TX

### Session 9-WSE-9

#### Missile Defense Programs

Chairs: Charles Lind, Missile Defense Agency, Washington, DC; Don Stevenson, The Boeing Company, Canoga Park, CA

### AIAA-9-1

#### Assessing Interceptor Effectiveness in the Operational Environment

W. Moore, BAE Systems, Huntsville, AL; C. Lind, Missile Defense Agency, Washington, DC

### AIAA-9-2

#### Simulation of Multi-System Effects in Missile Defense System Architectures

M. Pickard, The Boeing Company, Arlington, VA

# Program

**Thursday, 20 October 2005 (cont.)**

## **AIAA-9-3**

### **Guidance System Selection Criteria to Maximize Effectiveness for Current and Next Generation ICBM**

P. Hendrickson, USAF, Hill AFB, UT; D. Henrickson, Aerothermo Technologies, Port Angeles, WA; L. Richardson, Booz Allen Hamilton, Hill AFB, UT; S. Slivinsky, U.S. Air Force Research Laboratory, Kirtland AFB, NM

## **AIAA-9-4**

### **Parametric Lethality and Debris Analysis in Support of Hit-and-Kill Technologies**

J. Rejcek, Lockheed Martin Missiles and Fire Control, Dallas, TX

## **AIAA-9-5**

### **The Threat of Hypersonic Glide Vehicles to U.S. National Missile Defense**

W. Tedeschi, Sandia National Laboratories, Albuquerque, NM

## **AIAA-9-6**

### **Weapon System Effectiveness Assessment Methodologies in Aegis Ballistic Missile Defense: The Stellar Dragon Campaign**

D. Frieden, Anteon, Crystal City, VA; P. Haase, Naval Sea Systems Command; C. Pool

## **1300-1600 hrs**

### **Session 10-WSE-10**

#### **Improvised Explosive Devices & Other Special Topics**

Chairs: Bill Isbell, ATA Associates, Santa Barbara, CA; Brian Jenkins, RAND; Milton Finger, Lawrence Livermore National Laboratory, Livermore, CA

## **AIAA-10-1**

### **Effects-Based Design of a Counter Improvised Explosive Device (IED) System: Neutralization of IEDs with RF (NIRF)**

D. Stoudt, M. Young, and M. Hatfield, Naval Surface Warfare Center, Dahlgren, VA

## **AIAA-10-2**

### **Rapid Turnaround Lethality Analysis of Counter-Mortar Systems**

D. Moore and G. Killough, ITT Industries, Huntsville, AL; K. Williams, U.S. Army Research, Development, and Engineering Command, Huntsville, AL

## **AIAA-10-3**

### **Gun Firing Doctrine Against Small Surface Vessel Attacks**

D. Griggs and W. Ervin, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

## **AIAA-10-4**

### **Joint Gun Effectiveness Model (JGEM)**

B. Harris, Naval Surface Warfare Center, Dahlgren, VA

## **AIAA-10-5**

### **A Novel Missile Launcher for Submarine Self Defense**

C. Weiland and P. Viachos, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Yagla, Naval Surface Warfare Center, King George, VA

## **AIAA-10-6**

### **Effectiveness of DIME (Dense Inert Metal Explosives) Compared to TNT**

S. Waggener, Naval Surface Warfare Center, Dahlgren, VA

## **Session 11-WSE-11**

### **Missile Defense Lethality**

Chairs: Charles Lind, Missile Defense Agency, Washington, DC; Don Stevenson, The Boeing Company, Canoga Park, CA

## **AIAA-11-1**

### **Information-Sensitive Flyout Guidance for Boost-Phase Engagements**

U. Shankar and N. Palumbo, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

## **AIAA-11-2**

### **Integration of Battle Command Systems and Lessons from Legacy Systems Experience**

D. Heartly, Heartly Consulting, Oak Ridge, TN; A. Loebel, Oak Ridge National Laboratory, Oak Ridge, TN; J. Rigdon and B. Van Leeuwen, Sandia National Laboratories, Albuquerque, NM

## **AIAA-11-3**

### **Battlespace Access Low Cost Miniature Cruise Missile Requirements/Military Worth Analysis**

A. Hughes and C. Ewing, U.S. Air Force Research Laboratory, Eglin AFB, FL; M. McGlockton, Applied Research Associates, Inc., Niceville, FL; P. Gallmeier, Technical and Engineering Acquisition Support, Eglin AFB, FL

## **AIAA-11-4**

### **Integrated, Distributed Micro-Firing Systems for Dynamic Warhead Response**

K. Thomas and J. Kennedy, Los Alamos National Laboratory, Los Alamos, NM; S. Mozzano, Honeywell Federal Manufacturing, Kansas City, MO; J. Foster, Los Alamos National Laboratory, Los Alamos, NM

## **AIAA-11-5**

### **Terminal Guidance Paradigm to Accommodate Kill-Vehicle Lethality-Enhancement Devices**

U. Shanke and N. Palumbo, Johns Hopkins University Applied Physics Laboratory, Laurel, MD

## **AIAA-11-6**

### **Kinetic Warhead Evaluation (KWEval): A Fast Running End-Game Lethality Code for the Aegis BMD Program**

J. Elder, Miltec Missiles and Space Company, Huntsville, AL; B. Kiser, Naval Surface Warfare Center, Dahlgren, VA

# Conference Information

## Hotel Reservations

AIAA has made arrangements for a block of rooms at the **Embassy Suites Austin–Arboretum**, 9505 Stonelake Boulevard, Austin, TX 78759, ph: 512/372-8771, Web: [www.embassysuites.com](http://www.embassysuites.com). Room rates are \$85 per night for a two-room king suite. These rooms are all at the government per diem. Please specify at the time of booking that you are with the AIAA conference. These rooms will be held until **18 September 2005**, then released for sale to the general public. All reservations must be guaranteed with a major credit card for late arrival.

## Conference Venue

The conference will be held at the **Institute for Advanced Technology** at the University of Texas at Austin, 3925 West Braker Lane, Austin, TX 78759-5316. The facility is located five minutes from the Embassy Suites and parking is available.

Tours of the University of Texas' state-of-the-art laboratories will be offered, as will opportunities to visit prominent campus landmarks.

Located in the heart of Texas Hill Country, the city of Austin is known for its rolling hills, beautiful rivers, moderate climate, and rich heritage and culture. Late October finds the city's live oaks and cedars lush and green and average temperatures in the low 80s. Visitors will enjoy legendary hospitality, shopping, live music, and Texas-inspired dining.

## Special Events

### Registration Reception

A reception during registration hours is scheduled for **Monday, 17 October, 1700–1900 hrs**, at the Institute for Advanced Technology.

### Museum Reception

This year we will have a second reception at the Texas Memorial Museum on **Tuesday, 18 October**. Bus transportation will leave from the Embassy Suites at 1800 hrs. The event will begin at 1830 hrs and end at 2030 hrs. Tickets for guests of attendees can be purchased for \$65 each on the AIAA Web site, [www.aiaa.org](http://www.aiaa.org).

### Luncheons

Lunch for attendees will be served Tuesday through Thursday at the Institute for Advanced Technology.

### Meeting Papers

All meeting papers will be archived at the Defense Technical Information Center (DTIC), 8725 John J. Kingman Road, Suite 0944, Ft. Belvoir, VA 22060-6218. Papers will be available 60 days after the conference. To order a copy of the proceedings, you must be a registered DTIC user and must be allowed access to classified information. To register online, please go to [www.dtic.mil/dtic/registration](http://www.dtic.mil/dtic/registration). For further information, please contact Jack Rike at 703/767-9008.

### Messages and Information

Messages for those attending the conference will be recorded and posted on a bulletin board in the AIAA registration area. It is not possible to page conference attendees.

## Employment Opportunities

AIAA is assisting members who are searching for employment by providing a bulletin board at our conferences. This bulletin board is solely for "open position" and "available for employment" postings. Employers are encouraged to have personnel who are attending an AIAA event bring "open position" job postings. Individual unemployed members may post "available for employment" notices. AIAA will not assume responsibility for notices forwarded to AIAA headquarters. AIAA reserves the right to remove inappropriate notices.

## AIAA Membership

Non-members who qualify for AIAA membership and pay the full non-member conference registration fee will receive their first year's membership at no additional cost when their membership application is completed and returned to AIAA. Students who are not members may apply their registration fee toward their first year's student member dues. Members who wish to renew or reinstate their membership must pay the full non-member conference rate.

## Nondiscriminatory Practices

AIAA accepts registrations irrespective of race, creed, sex, color, physical handicap, and national or ethnic origin.

## Smoking Policy

Smoking is not permitted in the conference sessions.

## Restrictions

Videotaping or audio recording during the conference, as well as the unauthorized sale of AIAA copyrighted material, is strictly prohibited.

## Professional Development Course



An AIAA Professional Development two-day short course is being offered in conjunction with this event.

### VULNERABILITY OF BALLISTIC MISSILES TO NEAR MISS WARHEAD TECHNOLOGY

16–17 October 2005, Austin, TX

*Instructor:* Richard M. Lloyd, Raytheon Electronics Company

This course deals with the complicated subject of anti-ballistic missile defense and the associated trades of direct hit technology versus warheads. The mathematics and system trades of computing ballistic missile vulnerability will be taught. These vulnerability models are flown down to Kill Enhancement requirements, and the associated modeling techniques are provided in mathematical details. The course will provide a comprehensive understanding of how to model and design Kill Enhancement concept against ballistic missiles.

For more information and course registration, please visit [www.aiaa.org](http://www.aiaa.org) and click "Courses & Training."



# Registration and Security

## Registration

### Early Bird Registration Deadline: 18 September 2005

All participants are urged to register online at [www.aiaa.org](http://www.aiaa.org) or to use the advance registration form found in this brochure. Registering in advance saves conference attendees \$100. Registration forms must be received by 18 September 2005 to receive the early bird rate. Preregistrants may pick up their materials at the advance registration desk. All those not registered by 18 September 2005 may do so at the onsite registration desk. A check made payable to AIAA or credit card information must be included in order to process your registration.

Registration fees are as follows:

	By 18 Sept. 2005	After 18 Sept. 2005
<b>*Full Conference Rate</b>		
AIAA Member	\$595	\$695
Non-member	\$720	\$820

*\*Includes conference participation, lunch on Tuesday through Thursday, and Monday and Tuesday evening receptions.*

## Registration Hours

The conference registration area will be located at the Institute for Advanced Technology at the University of Texas at Austin. Registration hours are as follows:

Monday, 17 October	1700–1900 hrs
Tuesday, 18 October	0700–1600 hrs
Wednesday, 19 October	0700–1600 hrs
Thursday, 20 October	0700–1300 hrs

## Register on Our Web Site

Registering on the AIAA Web site is easy! Go to [www.aiaa.org](http://www.aiaa.org), select “Conferences & Events,” and choose your conference from the complete calendar of events. Select “Register Now” and choose one of the following options:

- **REGISTRATION FORM (PDF):** Download the registration form in Adobe Acrobat. Print, complete, and then mail or fax with payment to AIAA.
- **REGISTER ONLINE:** Use the online registration form, hosted on a Netscape Secure Commerce Server. Use credit card only. Follow the steps for registration through the AIAA Store.

You may also use the registration form found in this brochure. Complete and mail or fax with payment to AIAA.

## Security

The AIAA 4th Biennial National Forum on Weapon System Effectiveness is a CLASSIFIED event for U.S. CITIZENS ONLY.

Attendance is restricted to U.S. citizens who possess a SECRET clearance verified by the conference security officer. U.S. citizens employed by foreign companies and foreign nationals cannot attend. Clearance verification is accomplished by submission of a properly completed security clearance form. A photocopy of the form must contain original signatures, which is mailed by the applicant's security officer directly to the conference security officer (do NOT mail to AIAA). This form is separate from the conference registration form; submitting a clearance form does not register you for the conference. A security form can be found in this brochure.

Security clearance forms must be received by the conference security officer no later than 1 October 2005. Please send clearance forms to:

**Institute for Advanced Technology  
The University of Texas at Austin**  
3925 West Braker Lane, Suite 400  
Austin, TX 78759-5316

Admission to sessions at the conference will require showing of a photo ID and the security badge provided at registration. Briefcases, notepads, telephones (including cell phones), tape recorders, cameras, laptops, and two-way pagers will not be permitted in the sessions.

## Department of Defense Approval

The Department of Defense (DoD) finds this event meets the minimum regulatory standards for attendance by DoD employees. This finding does not constitute blanket approval or endorsement for attendance. Individual DoD component commands or organizations are responsible for approving attendance of its DoD employees based on mission requirements and DoD regulations.

### Questions? Contact AIAA Customer Service:

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1801 Alexander Bell Drive, Suite 500  
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Ph: 703/264-7500 or 800/639-AIAA  
Fax: 703/264-7551  
E-mail: [custserv@aiaa.org](mailto:custserv@aiaa.org)  
Web: [www.aiaa.org](http://www.aiaa.org)

4th Biennial National Forum on

# Weapon System Effectiveness

*Achieving Capabilities-Based Weapons Effectiveness*

**PRELIMINARY PROGRAM**

18–20 October 2005  
Institute for Advanced Technology  
University of Texas at Austin  
Austin, Texas

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