

## AGENDA

### Monday, August 23, 2010

5:00 - 6:30 PM **Early Bird Registration, Reception at Portola Plaza Hotel, Monterey**

### Tuesday, August 24, 2010

- 8:00AM **Registration and Security Check-in**  
**Naval Postgraduate School, Glasgow Hall Courtyard**
- 9:00AM **Introductory Remarks**  
**Meeting Chairs: Timothy Hennessey and Michael Gunger**
- 9:05AM **Welcoming Address**
- 9:15AM **Invited Presentation**
- 10:15AM **Coffee Break**

#### Session I

#### Ballistics

**Session Chairs: Calvin Candland and Eric Volkmann**

- 10:35AM **Session Introduction**
- 10:40AM **Penetration and Perforation Performance of the .338 LAPUA Projectile into Various Metals**  
**Benjamin Chamish, Bowhead,**  
**U.S. Army Research Laboratory, Aberdeen, MD**
- 11:00AM **Validation of Hydrocode Simulations of Ballistic Impact for Five Aluminum Alloys**  
**James U. Cazamias\*, Bryan M. Love and Stephan R. Bilyk,**  
**HPTi, Bel Air, MD**
- 11:20AM **Artillery Range Extension**  
**Edward M. Schmidt\*, Michael Minnicino, Brett R. Sorensen,**  
**David J. Hepner, Albert W. Horst, Jr., and Fred J. Brandon**  
**U.S. Army Research Laboratory, Aberdeen, MD**
- 11:40AM **Perforation of Reinforced Concrete Slabs by 30mm Mk310 and 30mm STAR Projectiles**  
**W. J. Poulos\*, V.M. Gold, C.L. Chin, J. G. Averett, R. E. Moxley,**  
**B. Henry, and P. Ruffle**  
**U.S. Army ARDEC, Picatinny, NJ**
- 12:00PM **Terminal Ballistic Performance of Segmented Penetrators**  
**D. Barnette\*, G. Itz, R. Submarian and J. Hodge**  
**IAT, The University of Texas at Austin**
- 12:20PM **Lunch**  
**Hermann Hall Ballroom**

**Session II**  
**Threat Characterization**  
**Session Chairs: Werner Gstattenbauer and William Walters**

- 1:40PM      **Session Introduction**
- 1:45PM      **Exploitation of a Directed Blast Device**  
**Kevin Genson \*, Brian Shaffer, Steven Kim, and Jason Brindle,**  
**IHDIV, NSWC, Indian Head, MD**
- 2:05PM      **Ballistic Evaluation of a Third-Generation Foreign Tandem Rocket Propelled Grenade**  
**Mary Duffy\*, John Runyeon, Steven Boyer, Bernard Guidos,**  
**Richard Summers and Werner Gstattenbauer,**  
**U.S. Army Research Laboratory, Aberdeen, MD**
- 2:25PM      **Assessment of a Foreign RPG-Type Munition with Enhanced High Explosive Capability and Squash-Like Effects**  
**M. Aguiló, J. Perry, J. Bruno, D. Malechuk and C. Doolittle and R. Yobs**  
**ARA, San Antonio, Texas 78216**
- 2:45PM      **Detailed Characterization of the RPG-7 Shaped Charge**  
**William Walters and Jason Angel**  
**U.S. Army Research Laboratory, Aberdeen, MD**
- 3:05PM      **Coffee Break**  
**Glasgow Hall Courtyard**
- 3:25PM      **Material Model Development and Simulation of Buried IED Detonations**  
**David Littlefield\*, Joe Jordan, Kenneth Walls, James Baylot,**  
**Kent Danielson, Stephen Akers, and James Ray**  
**Department of Mechanical Engineering,**  
**The University of Alabama at Birmingham**
- 3:45PM      **Evaluation of Construction Materials in IED Protection Packages**  
**Richard Fong\*, LaMar Thompson, Robert Koch and William Ng**  
**U.S. Army ARDEC, METC, Picatinny Arsenal, NJ**
- 4:05PM      **Performance Evaluation of Armor Systems and the Examination of Armor Technologies Using a Large IED Surrogate**  
**Sarah C. Hug\* and David Kleponis**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 4:35PM      **Tactical Wheeled Vehicle Spall Mitigation for Overmatching Explosively Formed Penetrators**  
**Valerie Hernandez\*, Brian Scott, Thomas Havel, and John Abell**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 5:05PM      **Adjourn**
- 6-8:00PM    **Reception**  
**Portola Plaza Hotel, Monterey**

**Wednesday, August 25, 2010**

**7:00AM Registration and Security Check-in, Continental Breakfast  
Naval Postgraduate School, Glasgow Hall Courtyard**

**Session III**

**Energetics**

**Session Chairs: Gavin Buttigies and Don Littrell**

**8:00AM Session Introduction**

**8:05AM Novel CL-20 Formulation for Conformal Fuzing Applications  
Anne Marie Petrock\*, Daniel Stec, Andrew Ihnen, Philip Samuels,  
Woo Lee and Brian Fuchs  
US Army ARDEC, Picatinny Arsenal, NJ**

**8:25AM BattleAxe – a Highly Lethal Reactive Material Warhead, Part II  
Paul Braithwaite\*, Colin Forsyth, Ben Goodman and Stacey Carswell  
ATK Space System, Brigham City, UT**

**8:45AM Forward Focused Fragment Ordnance Concept  
Dennis Wilson\*, John Granier, Richard Johnson,  
Donald Littrell, and Christopher Vineski  
Energetic Materials and Products, Inc., Round Rock, TX**

**9:05AM Reactive Multi-phase Blast Explosives  
Dennis Wilson\*, John Granier, Richard Johnson,  
Donald Littrell, and Christopher Vineski  
Energetic Materials and Products, Inc., Round Rock, TX**

**9:25AM Compositional Variables Contributing to Anaerobic Aluminum Reaction in  
Enhanced Blast and Combined Effects Explosive Detonations  
A.R. Davis\*, K.L. Mychajlonka and S.D. Hall, P.E. Anderson and W. Balas  
Nammo Talley, Research and Development, Mesa, Arizona**

**9:45AM Extremely Insensitive Detonating Substance (EIDS) Initiation System Progress  
Brad Hanna\* and George Hennings  
Naval Surface Warfare Center Dahlgren Division  
Dahlgren VA**

**10:05AM Coffee Break  
Glasgow Hall Courtyard**

**Session IV**  
**Hard Target Defeat**  
**Session Chairs: Michael Denigan and O. Nick Yakaboski**

- 10:25AM      **Session Introduction**
- 10:30AM      **Advanced Aft Closure and Fuzewell System for Hard and Deeply Buried Target Penetrating Warheads**  
**Ed Lawrence\*, Brian Adams, Carmelo Aresco, Dave Richard and Russell Gunter**  
**General Dynamics Ordnance and Tactical Systems, Niceville FL**
- 10:50AM      **High Fidelity Analysis of Complex Missile-Target Interaction**  
**Andrew Malechuk\*, Justin Bruno, Craig Doolittle, John Perry and Michael Fortner**  
**Applied Research Associates, Inc., Albuquerque**
- 11:10AM      **Modeling the Penetration and Perforation Behavior of Ultra High Performance Concrete**  
**Brian Plunkett\*, Mark Green, and Martin Schmidt**  
**Air Force Research Laboratory, Munitions Directorate**  
**Eglin Air Force Base, FL**
- 11:30 AM      **Viability of Oblique Cone and Cut Nose Penetrating Warheads for Hard Target Defeat**  
**Joseph Weiderhold\*, Brian Plunkett, Scott Furlow**  
**Air Force Research Laboratory, Munitions Directorate**  
**Eglin Air Force Base, FL**
- 11:50AM      **Preliminary Investigation of Airblast Propagation Through Failing Surfaces**  
**Alan Ohrt\* and Rachel Ehlers**  
**Air Force Research Laboratory, Munitions Directorate**  
**Eglin Air Force Base, FL**
- 12:10PM      **Massive Ordnance Penetrator (MOP) Technology Development and Demonstrations**  
**Robert L. Hastie\* and Darren P. Durkee**  
**DTRA/CXWW**  
**Eglin AFB, FL 32542**
- 12:30PM      **Lunch**  
**Hermann Hall Ballroom**

**Session V**

**Armor (Active)**

**Session Chairs: Richard Mudd and Rohan Banton**

- 1:30PM Session Introduction
- 1:35PM **Performance of an Active Protection Blast Warhead Against Dynamic Threats**  
**Matthew Comstock\*, Ernesto Vazquez, and Peter Rottinger Jeffrey Ball and Jeffrey Cameron , U.S. Army ARDEC, Picatinny, NJ**
- 1:55PM **Grid Armor for EFP Defeat: An Analysis of Important Parameters**  
**Carl Krauthauser\* and Robert Frey**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 2:15PM **Exploring Possible Configurations of a New Energetic Reactive Armor**  
**Edward Kennedy\*, Melissa Love and Clinton Aichs**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 2:35PM **Investigating Explosive Reactive Armor Sensitivity to Fragment Impact**  
**Rohan Banton\* and Scott Kukuck**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 2:55PM **Validation of explosive reactive armor against a repeatable explosively formed penetrator with multi-shot statistics**  
**Robert L. Doney\*, Frank Murphy and Robert Frey**  
**Army Research Laboratory, Aberdeen Proving Grounds, MD**
- 3:15PM **Break**  
**Glasgow Hall Courtyard**

**Session VI**

**Armor (Passive)**

**Session Chairs: Valerie Hernandez and Sarah Hug**

- 3:35PM **Session Introduction**
- 3:40PM **Response of Deformable Aluminum Targets to the Explosion of a Charge Buried in Saturated Sand**  
**Leslie C. Taylor\*, Ulrich Leiste, & W. L. Fourney**  
**Dynamic Effects Laboratory, University of Maryland, College Park, MD**
- 4:00PM **Development of a Mine Blast Loading Fixture to Examine Vehicle Armors and Structural Response**  
**Erick Sagebiel\*, Joseph Bradley, Carl Weiss, James Mathis, Mark Griffin , PA Cox and Scott Mullin, Engineering Dynamics Department**  
**San Antonio, Texas 78238**
- 4:20PM **High Mass Efficiency, Metal Encapsulated, Multi-hit Ceramic Armor Systems**  
**Ed Horwath\*, Carl Krauthauser, Michael Kornecki and Karen McNab**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**

- 4:40PM **The Blunting-Gap Effect, as Observed When Shooting UHMWPE Panels with Mild Steel Core Bullets**  
**Robert C. Sykes\***, Michael Coltrane and Boris Rosenoyer  
**QinetiQ North America Technology Solutions Group, Waltham, MA**
- 5:00PM **Adjourn**

**Thursday, August 26, 2010**

- 7:00AM **Registration and Security Check-in, Continental Breakfast**  
**Naval Postgraduate School, Glasgow Hall Courtyard**

**Session VI (Continued)**

**Armor (Passive)**

**Session Chairs: Valerie Hernandez and Sarah Hug**

- 8:05AM **Dual Threat, Passive Vehicle Armor Development**  
**Brian R. Scott\***, David S. Kleponis and Thomas A. Havel,  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 8:25AM **Evaluation of Composite Laminates Using Copper Explosively Formed Penetrator (EFP) Particle Surrogates**  
**Kirk A. Stoffel\***, Brian R. Scott, David S. Kleponis, Thomas A. Havel,  
Dana M. Blakenbiller and LaMar J. Thompsonψ  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 8:45AM **Effectiveness of shock compressed glass toward resisting shaped charge jet penetration**  
**Michael B. Zellner**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 9:05AM **Use of Current Models to Describe the Behavior of Glass during Supersonic Penetration by a Copper Jet**  
**Hubert W. Meyer, Jr.**  
**Bowhead Science & Technology, Aberdeen Proving Ground, MD**
- 9:25AM **Coffee Break**  
**Glasgow Hall Courtyard**

**Session VII**  
**Warhead Technologies (Shaped Charge/EFP)**  
**Session Chairs: Melissa Hobbs and LaMar Thompson**

- 9:45AM      **Session Introduction**
- 9:50AM      **The Application of Aerostable EFP Technology to a Small Caliber Warhead**  
**Maurice Grudza\* and David Jann**  
**DE Technologies Inc., King of Prussia, PA**
- 10:15AM     **Scorpion XM1100 Warhead Failure Investigation: Analysis and Results of**  
**Successful Performance Restoring Solution Implementation**  
**Frank LoPresti\*, William Ng and Henry Hsieh, David Geissler**  
**and Kyle Schaarschmidt**  
**U.S. Army ARDEC, METC, Picatinny Arsenal, NJ**
- 10:40AM     **Autonomous Mine Detection System (AMDS) Neutralization Payload Module**  
**M. Majerus\* and R. Vanaman**  
**DE Technologies Inc., Middletown, DE**
- 11:00 AM     **Advances in Precursor Charges Used to Pre-damage MOUT Wall Targets**  
**Dan Boeka\*, Arthur Daniels, Neal Ouye, Steve Hancock, and Daniel Suarez**  
**General Dynamics – OTS, San Leandro, CA**
- 11:20AM     **Shaped Charge Jets for Dual-Role Warhead Applications**  
**Jeremy Kleiser\*, John Osborn and Cody Anderson**  
**Air Force Research Laboratory, Eglin AFB, Florida**
- 11:40AM     **Evaluation of a Novel Pyramid Shaped Charge Liner**  
**Robert A. Phillabaum II\*, William P. Walters, Richard L. Summers**  
**and Daniel R. Scheffler**  
**U.S. Army Research Laboratory, Aberdeen Proving Ground, MD**
- 12:00PM     **Lunch**  
**Hermann Hall Ballroom**

**Session VIII**  
**Warhead Technologies (Blast/Fragmentation)**  
**Session Chairs: Rachel Ehlers and Tim Madsen**

- 12:55PM      **Session Introduction**
- 1:00PM      **Quantifying the Effects of Enhanced Blast Explosives  
in Combined Effect Warheads**  
**James Pham\*, Jeffrey Kraft, Dave Kafrouni, Greg Stunzenas  
and Vladimir Gold**  
**US Army RDECOM-ARDEC, Picatinny, NJ**
- 1:20PM      **Assessment of Standard NATO Trench Protection  
Against Thermobaric Munitions**  
**M. A. Aguiló\* and R. Yobs**  
**ARA, San Antonio, Texas**
- 1:40PM      **Non-Line of Sight – Launch System (NLOS-LS) Rocket-on Rocket-on-a-Rope  
(ROAR) Small Boat Lethality Test Series**  
**Christopher Glenn\* and Lee Adler**  
**Naval Surface Warfare Center, Dahlgren, VA**
- 2:00PM      **Selectable Lethality Warhead Technology**  
**Henry Hsieh\*, Peter Rottinger, Mr. Richard Fong**  
**U.S. Army ARDEC, METC, Picatinny Arsenal, NJ**
- 2:20PM      **Viper Strike Fragmentation Enhancement Device (FED) Integration**  
**Darin L. Kielsmeier\*, Greg L. Johnson, Lloyd M. Brooks, Glenn L. Romanczuk,  
Joe L. Morton and Daniel A. Wenzel**  
**USA RDECOM, Redstone Arsenal, AL**
- 2:40 PM      **Adjourn**

**Alternate Presentations**

**Session I: BALLISTICS**

**NONE**

**Session II: THREAT CHARACTERIZATION**

**“Finger Prints” of Explosively Formed Penetrators**

**Victoria Beam\* and Brian Shaffer**

**Indian Head Division, Naval Surface Warfare Center**

**Session III: Energetics**

**Design and Development of an Improved Insensitive Munitions Warhead  
for the Anti-Torpedo Torpedo**

**Edward A. Lustig Jr.\*, Michael P. Dunnigan and Diana O. Bragunier**

**Naval Surface Warfare Center Indian Head Division**

**Indian Head, Maryland**

**ARDEC Reactive Material Bullet Feasibility Phase II**

**Samantha Blais**

**US Army ARDEC, Picatinny Arsenal, NJ**

**Development of Impact Insensitive Enhanced Blast Explosives**

**Peter J. Cahill and Adam C. Phillips**

**Aerojet, Culpeper, VA**

**Improvements to Equation of State and Reactive Burn Models for AFX-757**

**David Littlefield\*, Kenneth Walls and David Lambert**

**The University of Alabama at Birmingham**

**Session IV: Hard Target Defeat**

**Hard, Low Friction Coating for Improved Penetration**

**Patrick Murray\*, Lee Hardt, Jared Grover**

**NAWCWD, China Lake, CA**

**Alternate Penetrator Case Manufacturing Methods**

**Kirk E. Herzog**

**Air Armament Center (AAC), Eglin AFB, Florida**

**The Next Air Force Hard Target Defeat Munition:**

**Boosted 2000 lb Penetrator**

**Clifton Harness**

**Air Armament Center (AAC), Eglin AFB, Florida**

## Session V Armor (Active)

### **Magneto-Hydrodynamic Modeling of Advanced Electromagnetic Armor Effects**

**M. E. Kipp\***, P. Berning, C. Hummer, O. E. Strack, and M. Keele  
Sandia National Laboratories, Albuquerque, New Mexico

### **Automatic Design Development of an Improved Abrams TUSK Underbelly Blast Kit**

**Rob Bitting**  
U.S. Army Research Laboratory, Aberdeen Proving Ground,

### **Corpuscular Particle Method for Blast Simulation**

**Rahul Gupta**  
U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

## Session VI Armor (Passive)

### **Examination of Cover and Buffer Systems for Enhanced Dwell and Mass Efficiency in Ceramic Armor Development**

**Michael Kornecki, Contractor DSI**  
U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

### **Characterization, Modeling, and Performance of Al-Zn-Mg 7020 Aluminum**

**John F. Chinella**  
U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

## Session VII Warhead Technologies (Shaped Charge/EFP)

### **Multi-Point Initiation of a Shaped Charge Warhead**

**D.L. Chamness\***, D.L. Kielsmeier, M.P. Connolly and J.C. Sweitzer  
US Army RDECOM, AMRDEC, Redstone Arsenal, AL

### **A Unique Concept for Creating a Primary Hole in a Target for a Secondary Package**

**Erick J. Sagebiel\*** and Carl E. Weiss  
Engineering Dynamics Department  
Southwest Research Institute, San Antonio, Texas

### **Explosive/Metal Interaction Experiments on Pure Tantalum Fabricated using Equal Channel Angular Pressing (ECAP)**

**Joel House\***, Michael Nixon, Joshua Debes, Philip Flater and Robert DeAngelis  
Air Force Research Laboratory, Munitions Directorate, Eglin AFB, Florida

### **Prediction of Shaped Charge Penetration at Long Standoff Distance**

**Eric R. Walzer\*** and James Painter  
NSWC CD, West Bethesda, MD

**Tandem ShoulderLaunched Warhead Penetration of Urban Targets**

**Christopher S. Meyer, Stephen J. Schraml, Robert A. Phillabaum II and Richard L. Summers**  
U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

**Differences in Concrete Block Demolition with Two Small Shaped Charges**

**Allen H. Stults**  
AMRDEC, Redstone Arsenal, AL

**Session VIII Warhead Technologies (Blast/Fragmentation)**

**Evaluation of the High Speed Design and Pk Optimization Code for Fragmentation Warheads**

**John J. Tartis\* and Patrick D. Buckley**  
Aerojet GenCorp and Survice Engineering Company, Socorro, NM

**Enhanced Lethality Program (ELP) Warhead**

**Richard Truitt\*, Eric Volkmann and John Irizarry**  
ATK Plymouth, MN

**Fragmentation Performance of the Excalibur XM982 Warhead for  
Blast-Enhanced Explosive Formulations**

**V. M. Gold\*, W. J. Poulos, and I. Wu**  
US Army RDECOM-ARDEC, PicatinnyArsenal, NJ