



Files are in Adobe Acrobat 3.0 format.



**34th Annual Gun and Ammunitions Symposium and Exhibition
Monterey, CA 26-29**

April 1999

Table of Contents

Tuesday, April 27, 1999

"Welcome & Introductory Remarks" by Mr. Bob Glantz

["NDIA Overview and Comments"](#) by Mr. Anthony J. Giovanetti

"Medium Caliber Master Plan" by COL Raymond Pawlicki

Session I

Artillery/Mortar Systems

Session Chairmen: Dr. Anthony J. Giovanetti, United Defense and Mr. Don Wilson, Naval Surface Warfare Center

"XM297 Cannon System for the Crusader System A Unique Government-Industry Team" by Mr. David Smith*, US Army Benet Laboratories and James Wildman, UDLP

"Guided Munitions: UK Concepts for the Future" by Mr. Smith, Mr. R. Meddes and Mr. A. Groves, DERA Fort Holsted, Sevenoaks, Kent, UK

"Interrupted Closed bomb Analysis of M30 & JA2 with Conventional and Plasma Igniters" by Dr. Pamela Kaste*, Ms. Amy E. Kinkehn, Ms. Rose A. Peace-Rodriguez, Mr. Miguel A. Del Guercio, Avieze-Birk, Stephen L. Howard, Michael A. Schroeder, and Robert Lieb, ARL, Aberdeen

["Future Direct Support Weapon System \(FDSWS\)"](#) by Major David Scalsky*, Mr. Richard S. Herman, U.S. Army TACOM-ARDEC, Picatinny Arsenal

"Barrel Bend of 155MM Artillery Guns" by Mr. Roger Clay,* Tech Leader, Gun Systems; Mr. John Tate, Principal Scientist; Mr. Matthew Westlake, Senior Scientist, Guns Department DERA, Fort Halstead,

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE APR 1999	2. REPORT TYPE	3. DATES COVERED 00-00-1999 to 00-00-1999			
4. TITLE AND SUBTITLE 34th Annual Gun and Ammunitions Symposium and Exhibition held in Monterey, CA on 26-29, April 1999		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense Industrial Association ,2111 Wilson Blvd,Arlington,VA,22201		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES See ADM002225					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 617	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Sevenoaks

"120MM HE M934 Melt Pour Loading" by Mr. Chester Topolski, TACOM-ARDEC

Session II

"Propellant / Munitions" by Session Chairmen: Mr. Greg Hill, Western Design & Mr. Bob Glantz

["40MM Insensitive Munitions for Combat Vehicle Armament used in the CV 90"](#) by Mr. Ulf Einefors, BOFORS Weapons Systems

"Advanced TPE Propellants for High Performance Gun Systems" by Mr. Paul Brathwaite*, Mr. Gary Dixon, Dr. Robert Wardle, Mr. Charlie Zisette, Thiokol Propulsion

"Chemical Breakdown of Energetic Materials and Resuse of Reactive Products as Epoxy Curing Agents" by Mr. Maher Tadros, Mr. Thomas Massis, Mr. Robert Patton; Sandia National Laboratories & Mr. Alan Snelson, Illinois Institute of Technology "Model-Base Gun Propellant Formulations" by Mr. Randall J. Cramer, NSWC, Indian Head "Improved Propellant for 60mm Mortar System" by Mr. Raymond Martin*, PRIMEX Technologies and Mr. Howard Shimm, US Army ARDEC

"Development of Dual Plasma Energy Pyrolysis System (PEPS) to Demilitarize Recalcitrant DOD Waste Streams" by Mr. Henry Zaghoul and Dr. Ed Smith, U.S. Army Corps of Engineers

Session III

Combat Vehicle Armaments

Session Co-chairmen: Mr. Dave Broden, Alliant Techsystems, Inc.

Mr. Don Guziewicz, PMO-TMAS

["Propellants: Problems and Solutions"](#) by Dr. Beat Vogelsanger, NITROCHEMI WIMMIS AG

["AAA-V Fire Power Program Update"](#) by LTC Clayton Nans, AAA-V Technology Center

["Bushmaster Family Continuous Improvements"](#) by Mr. Robert Waterfield, The Boeing Company

["Bradley and Medium Combat Vehicle Improvement Program"](#) by Mr. Scott Davis & Mr. Gary Chamberlain, Program Manager Bradley

"Super-40 Future Army Caliber?" by Mr. Gary Mohsler, U.S. Army TACOM-ARDEC

"40MM Case Telescoped Weapon System" by Mr. David Leslie, CTA International

Wednesday, April 28, 1999

"Introductory Remarks" by Mr. Bob Glantz

Session IV **Medium Caliber Ammunition**

Session Co-Chairmen: Mr. Ed Daniels, PRIMEX Technologies, Inc., Mr. Frank Puczycki, TACOM-ARDEC

"A Simple Method to Predict Projectile Body Engraving" by Mr. Jeff Siewert, Arrow Tech, Associates

["A Unique Fin Design for Kinetic Energy Projectiles"](#) by Mr. Chui NG, TACOM-ARDEC

["Present and Future Trends in Computer Design of Smart Munitions"](#) by Mr. Nico M. De Reus*, Rob M.E.M. van Heijster, TNO-FEL

["The Raufoss Ammunition Family for MK44 in AAA-V 30 x173 and 40MM Supershot"](#) by Mr. Einar Willassen, Raufoss Technology AS

["Development of an APFSDS-T Medium-Caliber Ammunition with Optimized Performance & Stability"](#) by Mr. Jan Hasslid, Mr. Jarl Eirik Straume, Raufoss Technology AS

"Results of the Medium Caliber Airburst Evaluations" by Mr. Tim Farrand, ARL

"35MM AHEAD Ammunition for Vehicle Armament" by Mr. Allan Buckley, Oerlikon Contraves

"35/50MM HETF (High Explosive Time Fuze) Ammunition" by Mr. Stephen Kerk and Mr. Peter Moore,* Diehl Stiftung & Co.

"Diehl DM-11 40mm HEPFF-T" by Mr. Stephen Kerk and Mr. Peter Moore,* Diehl Stiftung & Co.

["Multi-Role Aviation Weapons System \(MRAWS\) Program Status Advanced Light Armament for Combat Vehicles \(ALACV\) Program Plan"](#) by Mr. Henry Zandberg & Mr. Steve Liss, TACOM-ARDEC

Session V **Naval Weapons/Platforms**

Session Co-Chairman: Mr. Craig Smith, NSWC & Mr. Tim McAuliffe, PRIMEX Technologies, Inc.

["The Light Naval Gun Mount MN 27 GS for the CIGS Program"](#) by Dr Klaus Grenewald, Mauser-Werke Oberndorf

["New U.S. Navy 5-inch Cargo Projectile"](#) by Mr. Jed F. Ryan*, NSWC, Dahlgren

["Vertical Gun for Submarines and Small Surface Ships"](#) by Dr. Martin T. Soifer, GD Electric Boat and Mr. Ted A Kuriata, General Dynamics Armament Systems

"TISS Fire Control Growth Option Meets a SuW Requirements" by Mr. Michael Schooley, The Boeing

Company

["MILLENIUM 35/1000 Naval Gun System"](#) by Mr. N.W. Morgan, Royal Ordnance

["A Simulation Based Approach to Develop Naval Armament Systems"](#) by Mr. Pradip Kar, Mr. Paul Huang
UDLP

["Video Boroscope Inspection System \(VBIS\) Technology Advances to Support Extended Range Guided Munitions \(ERGM\) Program"](#) by Mr. Thomas Ellert, Naval Warfare Assessment Station

Session VI Armaments Systems

Session Co-Chairmen: Mr Scott Martin, Raytheon & Mr. Gary Moshier, U.S. Army TACOM-ARDEC

["Studies on German's 140MM Tank Gun System-Conventional and ETC"](#) by Dr. Joseph Kruse Rheinmeta
W&M Gmb H, Dr. Thomas Weise, TZN Unterluesz Gmb H

["Compact Autoloader for main Battle Tank Applications"](#) by Mr. Kjell Brudevold, Western Design

["Medium Caliber ETC Armament System Study"](#) by Mr. Bradley Goodell, UD; Mr. Timothy G. Farrend
ARL

"SOF Weaponry 40MM AGL with Programmable Ammunition" by Mr. Kevin Sullivan*, SACO Defense,
Inc; Mr. Jim Lugheed, Computing Devices Canada; Mr Einar Willassen, NAMMO - Raufoss

Thursday, April 29, 1999

"Welcome & Introductory Remarks" by Mr. Bob Glantz

Session VII Air Armaments

Session Co-Chairmen: Mr. Ron Jones, NSWC, China Lake & Mr. Ed Depasqual, General Dynamics
Armaments Systems

["20 MM Percussion/ Electric Gun Systems"](#) by Mr. Bland M. Burchett, NAWCWPNs, China Lake; Mr.
James Talley & Mr. Roy Neuer, GD Armament Systems; Mr. Arthur E. Clayson, Aegir Systems, Inc.

["Multi-Platform Helicopter Weaponization"](#) by Mr. Edwin J. Depasqual, General Dynamics Armament
Systems

["New Maintenance Technologies: Optimize the Multiple-Site Deployment Economics"](#) by Mr. Bill Custer
SAIC; Mr. Darrell McKinley, Naval Aviation Depot

Session VIII

Crew Served Weapons

Session Co-Chairmen: Mr. Nelson Wall, ARIES Corp. & Mr. Kevin Gravois, U.S. Air Force

["Close Combat Suppression: Need; Assessment & USE"](#) by Dr. Darrell J.J. Jaya-Fatnam, DERA, Fort Halstead

["OCSW Program Update"](#) by Mr. John Cline, TACOM-ARDEC and Mr. Ed Daniels, PRIMEX Technologies, Inc.

["OICW Fire Control System"](#) by Mr. Grant Moule*; Ms. Susan Franciscus*, Contraves Brashear Systems L.P.

["Air Bursting Systems"](#) by Mr. John Sigler, PRIMEX Technologies, Inc. and Mr. Ralph Mazeski, TACOM ARDEC

"Virtual Prototyping as a Tool for Collaborative Concurrent Engineering" by Mr. Robert A. Dombroski* & Mr. Ramon A. Espinosa, TACOM-ARDEC

["OCSW Platform Application"](#) by Mr. Dean Williams, PRIMEX Technologies, Inc. & Mr. Glenn Rossier and Mr. Brian Kenney* General Dynamics Armament Systems

["Low Cost Guided Munitions"](#) by Dr. Paul Reip, DERA

["A Simplified Method to Predict Projectile Body Engraving"](#) by Jeff Siewert, Arrow Tech

["XM297 Cannon System for The Crusader Sysetm"](#) by David C. Smith, Benet Lab., James E. Wildman, United Defense, LP

