

Affordability Through Commonality

Army and Navy Programs Coordinate Acquisition of Improved and Affordable Guided Munitions

CAPT. HERB HAUSE, USN • CHRIS GRASSANO

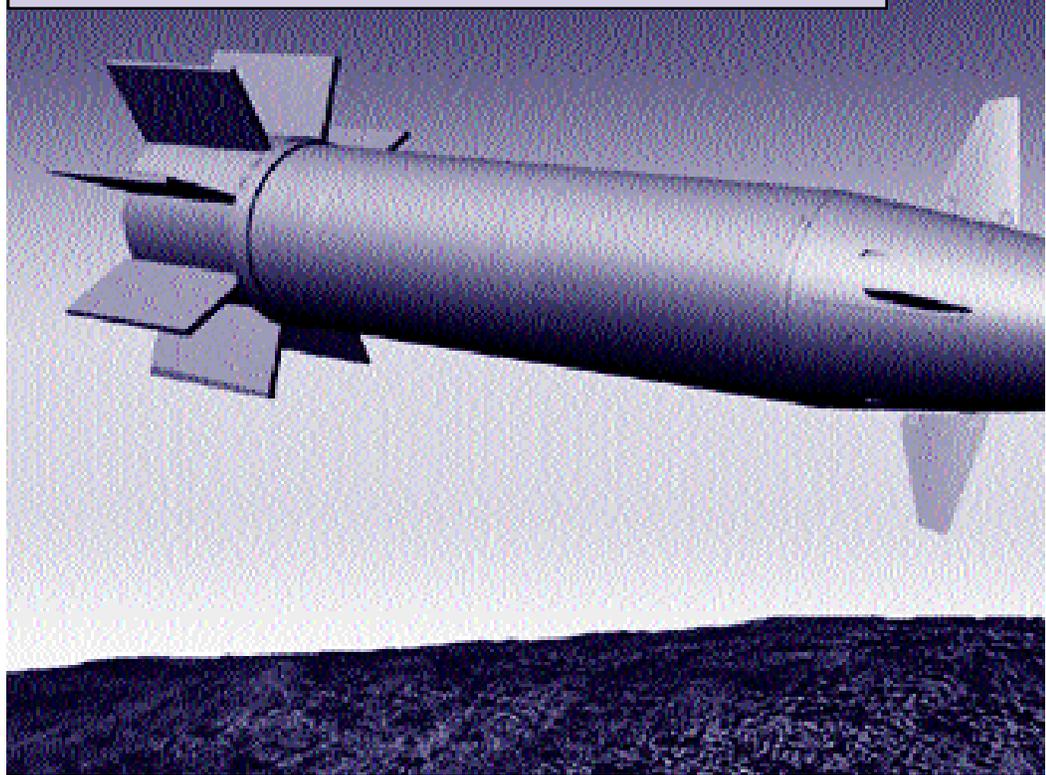
The Army and Navy have literally joined forces to develop a common approach for improved fire support capability through cooperative acquisition, development, and testing of guided munitions for both Army artillery and Naval gunfire. Affordability through commonality is the banner, and the desired end-state is more affordable and capable guided munitions for the warfighter.

Commonality Initiative Formalized

While the early groundwork for this dual-Service effort was started in 1997, it really got off the ground in 1999 when a commonality initiative was formalized with a Memorandum of Agreement (MOA) between the Department of the Army Tank-Automotive and Armaments Command—Armament, Research, Development and Engineering Center (TACOM-ARDEC) Fire Support Armaments Center (FSAC); the Program Manager for Artillery Munition Systems (PM-ARMS); the Navy's Program Manager for Naval Surface Fire Support (PMS529); and the Office of Naval Research.

The intent of the original MOA was to establish a framework for developing guidance and navigation technology for the Navy's Extended Range Guided Munition (ERGM/EX-171) and the Army's Excalibur (XM-982). A second key objective was to mitigate lethality, reliability, and safety issues related to the M80 Grenade Submunition and incorporate

The XM 982 Excalibur is being developed by Raytheon Missile Systems of Tucson, Ariz. Excalibur will be a family of modular precision-guided extended range artillery projectiles with three distinct payloads. A unitary warhead will be used against personnel, equipment, and building targets in urban or complex terrain. A sensor-fuzed munition variant will engage self-propelled artillery and armored vehicles. A dual-purpose, improved conventional-munitions version will be employed against personnel, materiel, and light armor. It will be the Army's first artillery projectile guided by a global positioning system.



these improvements into ERGM and Excalibur as appropriate. Subsequently, submunition efforts were put on hold since both programs shifted to a unitary payload.

In March 2000, a follow-on MOA was signed by the Army's Program Executive Officer for Ground Combat and Support Systems, Maj. Gen. John Michitsch (presently managed by PEO Am-

munition Brig. Gen. Paul Izzo), and the Navy's Program Executive Officer for Surface Strike, Rear Adm. Charles Hamilton. This MOA commissioned three tiers of cooperative management effort including:

- A flag-level Executive Steering Committee (ESC), which includes Army, Navy, and Strategic and Tactical Systems, Office of the Under Secretary of

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Defense (Acquisition, Technology and Logistics).

- An O-6 level Coordinating Integrated Product Team (CIPT), which includes both Services and Office of the Secretary of Defense (OSD) staff.
- Four Working Integrated Product Teams (WIPTs), which include management, technical, and warfighter representatives.

The four WIPTs are Requirements, Guidance/Navigation and Control (GNC), Lethality and Payload, and Business Case. These cross-Service WIPTs pursue initiatives including research and development, competition and pro-

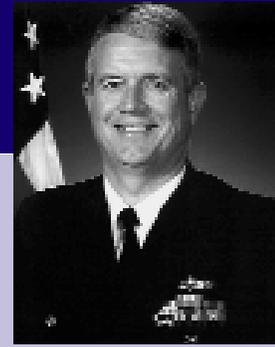


curement strategies, and hardware/software/component and procedural commonality, with a goal of more affordable guided munitions.

The CIPT performs an oversight role for the WIPTs and reports status and issues to the ESC at least semi-annually. Upon execution of the March 2000 MOA, the CIPT immediately employed the OSD-staffed Tri-Service Software Evaluation

CAPT. HERB HAUSE, USN

Program Manager, Naval Surface Fire Support Program



Capt. Herbert R. Hause, USN, is currently assigned as Major Program Manager for the Naval Surface Fire Support Systems (NSFS), PMS 529, within Program Executive Office (PEO) Surface Strike, a position to which he was assigned in February 2000. A graduate of the U.S. Naval Academy with a Bachelor of Science degree in General Management, Hause was commissioned as an Ensign in the United States Navy on June 5, 1974. He earned his Surface Warfare designation in 1976 and Acquisition Professional designation in 1994.

Hause served as a Surface Warfare Officer at sea in positions of increasing responsibility: Communications Officer, USS CONE (DD-866) (July 1974-February 1976); sequential billets as Combat Information Center Officer, Main Propulsion Assistant, and Engineer Officer, USS MITSCHER (DDG-35) (April 1976-June 1978); Assistant Material Officer, Commander Destroyer Squadron 2 (June 1978-June 1980); Weapons Officer, USS MCCLOY (FF-1038) (March 1981-October 1982); Operations Officer, Commander Destroyer Squadron 22 (January 1983-January 1985); Executive Officer, USS SAMUEL ELIOT MORISON (FFG-13) (September 1985-May 1987); and Commanding Officer, USS JESSE L. BROWN (FF-1089) (April 1991-January 1993).

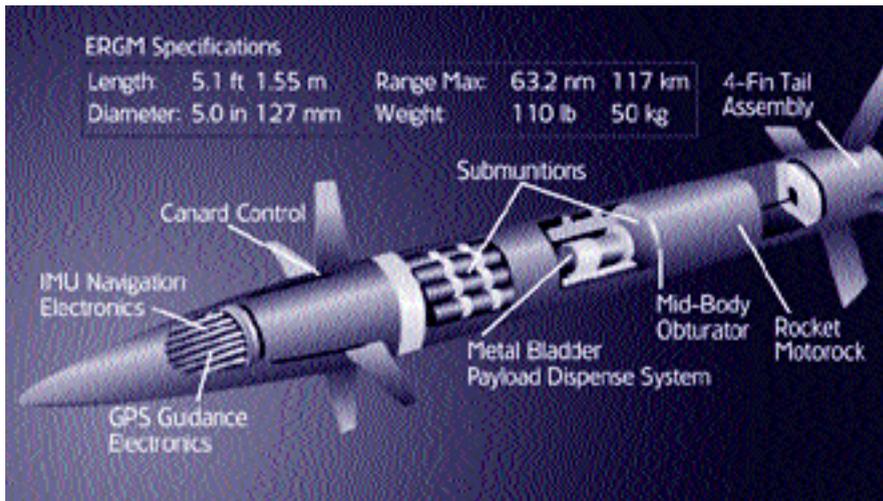
Hause's professional military training and education include Surface Warfare Officer Department Head School (June 1980-January 1981, Distinguished Graduate); Armed Forces Staff College (January 1985-June 1985); Surface Warfare Officer Executive Officer Course (June 1985-August 1985); Surface Warfare Officer Commanding Officer and Senior

Officer Ship Materiel Readiness Course (September 1990-January 1991, Honor Graduate); and Defense Systems Management College, Program Management Course (January 1993-June 1993) and Executive Course (October 1998).

Ashore, Hause served in the Operational Plans and Interoperability Directorate (J-7), Chairman of the Joint Chiefs of Staff from June 1987 to September 1990; the Naval Sea Systems Command from June 1993-August 1995 as Director, Surface Anti-Submarine Warfare Systems Division (SEA 91W4) and as Program Manager for Engineering Change 16 for the AN/SQS-53A Sonar. His program received the Vice President's "Heroes of Reinvention" Hammer Award in 1995.

From August 1995 until April 1998 he served as the Major Program Manager for Combat Systems Training Programs, PMS 430, within Program Executive Office for Carriers, Littoral Warfare and Auxiliary Ships. Major programs included the Battle Force Tactical Training System and Joint Simulation System (JSIMS) Maritime. From May 1998 to February 2000 Hause served as Deputy Program Executive Officer for Undersea Warfare.

Hause is married to the former Karen Dubac of Woodbridge, Virginia. They have four children: sons William, Thomas, and Matthew; and daughter, Jennifer. He and his family reside in Compton, Md.



The ERGM is a precision-guided munition that uses a coupled Global Positioning System (GPS) and Inertial Navigation System (INS) guidance system and aerodynamic flight control surfaces to steer the projectile to the pre-selected payload expel/dispense point. ERGM is designed to provide highly responsive precision engagement of threats to U.S. Marine Corps or U.S. Army ground combat forces operating ashore, prior to the establishment of organic fire support assets, and to supplement organic field artillery once it is ashore.

CHRIS J. GRASSANO

Deputy Product Manager, Excalibur



Chris J. Grassano is currently the Deputy Product Manager, Excalibur, in the Project Manager's Office, Close Air Support, Armament, Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, N.J., a position to which he was assigned in September 1999. As Deputy Product Manager, he is responsible for engineering and technical management functions incident to development, integration, acquisition and fielding of Excalibur, an ACAT I weapon system that will be a family of modular precision-guided extended range artillery projectiles with three distinct payloads.

Grassano holds a Bachelor of Science in Electrical Engineering from New Jersey Institute of Technology; a Master's in Business Administration from Florida Institute of Technology; and a Master of Science in Management from Florida Institute of Technology. He has completed all programs on Leadership for Senior Executives at Harvard University; and is a graduate of the Advanced Program Management Course, Defense Systems Management College. Grassano is a Level III-certified acquisition professional in three acquisition career fields: Program Management; Test and Evaluation;

and Systems Planning, Research, Development and Engineering.

His career assignments include Staff Assistant to the Deputy Director, Land Warfare, Office of the Secretary of Defense (January 1999-September 1999); Department of the Army Systems Coordinator, Office of the Assistant Secretary of the Army, Headquarters, Department of the Army (HQDA), where he was HQDA Representative for the Deputy for Systems Acquisition (January 1998-January 1999); Project Management Engineer-Program Manager's Office, Seek And Destroy Armor (SADARM), U.S. Army ARDEC (June 1994-January 1998); and Project Engineer-Telemetry Branch, U.S. Army ARDEC (March 1986-June 1994).

Grassano received the Secretary of Defense Award for Excellence in 1999. He and his wife, Joann, have three children: Janna, Cara, and Krista.

Team to review software risk and reuse potential for Excalibur and ERGM. The CIPT tasked the WIPTs to conduct feasibility and cost-benefit analysis on the potential for common subsystems and all major components.

From this, a payoff vs. ease of implementation matrix was created that has guided future efforts for the WIPTs. The CIPT also established an ERGM/Excalibur Joint Risk Management Board, which strives to establish hardware/software/procedural commonality as feasible and jointly identifies and mitigates common risks.

The Four WIPTs

The efforts of the four WIPTs are summarized in the following discussion.

REQUIREMENTS WIPT

The Requirements WIPT reviews operational requirements and projectile specifications, explores interoperability and interface requirements, and provides input to other WIPTs. This WIPT developed a Common Target Set to eliminate duplicate testing, and allows cross-Service use of test results. ERGM and Excalibur Operational Requirements Documents (ORD) were reviewed to identify areas of standardization, and this study has led to a standard approach to evaluate and document Target Location Error (TLE). The team is also reviewing ERGM and Excalibur security requirements in order to propose and implement a standard Security Classification Guide.

GUIDANCE/NAVIGATION AND CONTROL WIPT

The Guidance/Navigation and Control WIPT facilitated extensive re-use of ERGM flight software that has resulted in a significant cost avoidance for Excalibur. It also monitors the development of the Navy's Low Cost Guided Electronics Unit (LCGEU) program, which has potential to meet guidance requirements for both ERGM and Excalibur in the future. Additionally, this WIPT pursues Global Positioning System (GPS), Inertial Measuring Unit (IMU), and anti-jam challenges and proposes common solutions. The team has also drafted common interfaces' specifications to allow interoperability of sub-systems and components.

LETHALITY AND PAYLOAD WIPT

The Lethality and Payload WIPT developed a standardized explosive recommendation process to promote the use of common energetic materials for Army and Navy gun-fired munitions. This process recently facilitated the decision to use a common energetic fill for both the ERGM and Excalibur unitary warheads, which will lead to significant cost savings during production. Other cooperative efforts include:

- Standardized defeat criteria against standard target sets developed by the Requirements WIPT.
- Standardized arena performance test procedures for both unitary and submunition warheads.
- Standardized data analysis models for the calculation of lethal areas used to support Joint Munitions Effectiveness Manual (JMEM) revisions.
- Developing common payload fuzing for ERGM and Excalibur that will lead to reduced cost in production.

BUSINESS CASE WIPT

The Business Case WIPT has developed Business Case models and tools to conduct cost-benefit analyses for component/sub-component commonality, and is developing strategies for future competitive procurement. They have also conducted Common Fill analyses (in conjunction with the Lethality and Payload WIPT) and determined cost ben-

efits to the programs. The WIPT is currently coordinating common Foreign Military Sales (FMS) policy for guided projectiles.

The most recent all-up round ERGM live-fire test of June 25, 2002, at White Sands Missile Range (WSMR) was a major milestone for Naval Surface Fire Support (NSFS) and all guided projectile programs. The ERGM round was fired at tactical launch pressure; all flight systems survived the 10,100 G (gravity force) gun launch and performed superbly. The round guided to the target 38.5 Nautical Miles down range (WSMR range constraints precluded longer range) to an accuracy of 4 meters.

Using the GPS/Inertial Navigation System for flight control and navigation,

ERGM successfully acquired the maximum number of satellites, thereby producing terminal accuracy well within ORD requirements. ERGM remains on track for full land-based testing starting in fiscal 2003, and Initial Operating Capability (IOC) in fiscal 2006.

The primary goal of the Army and Navy Guided Munition Commonality efforts remains to provide the most capable and affordable guided munitions to the warfighter. As such, this dual-Service commonality initiative and cooperative organizational structure may serve as a model for future acquisition programs.

Editor's Note: Hause and Grassano welcome comments on this article. Contact Walmanjp@navsea.navy.mil.

New DAU Training Site Opens at TACOM



A ribbon cutting ceremony held on Aug. 13, 2002, officially opened the new DAU training site, located with the Army Tank-Automotive & Armaments Command in Warren, Mich. The new training site is an element of the DAU Midwest Region, which has its main campus at Wright-Patterson Air Force Base, in Dayton, Ohio. From left: Chris Paden, DAU TACOM Site Director; Army Col. Ronald Flom, DAU Commandant; Richard Bradley, Director, TACOM Learning Center; and Gerald Emke, Dean, DAU Midwest Region.

Photo by Margaret Compton