

# Army Insensitive Munitions Board (AIMB) Aids in Weapon Systems' Development and Acquisition

Kirk E. Newman

**O**ver the past 50 years, catastrophic losses have resulted from incidents involving munitions. The collateral damage from the inadvertent initiation and detonation of our own munitions has ranged from property damage to serious injury to loss of life. Though a number of these incidents can be attributed to careless handling or enemy attack, many occurrences were exacerbated by the lack of understanding as to how certain types of energetics react when subjected to unplanned stimuli (heat, impact, shock), and/or a lack of available technology to mitigate the severity of reaction. Incidents such as the 1967 USS Forrestal fire; the 1981 aircraft crash aboard the USS Nimitz; the 1991 Camp Doha, Kuwait, motor pool fire; and the 2006 shelling of an ammunition storage facility at Camp Falcon, Iraq, illustrate why the government has passed laws and the services have enacted joint insensitive munitions (IM) policy to ensure, to the extent practicable, that munitions are as safe as possible throughout their life cycle when subjected to unplanned stimuli.

Soldiers of Team Arrowhead fire high-explosive rounds in March 2009 at Fire Base Mayhem, Camp Taji, Iraq, before departing for Joint Security Station Istiqlal during the battery's M777A calibration. The AIMB ensures, to the extent practicable, that munitions such as those fired here are as safe as possible throughout their life cycle when subjected to unplanned stimuli. (U.S. Army photo by CPT Ed Shank, 1st Battalion, 108th Field Artillery Regiment, 56th Stryker Brigade Combat Team, U.S. Forces-Iraq.)

In August 1992, the Army established the Munitions Vulnerability Assessment Panel (MVAP) to provide weapons developers with access to a team of subject matters experts (SMEs) for assistance in executing the Army's IM and survivability-related program requirements throughout the munitions life cycle. The MVAP was superseded by the AIMB, which coordinates the integration of research, development, testing, and evaluation products with the practices of acquisition managers to mitigate the inherent hazards of weapon systems and ensures the performance, survivability, and interoperability of the munitions used by the warfighter.

### What is the AIMB?

The AIMB is an independent advisory authority of SMEs and technical advisors. It is chartered by the Deputy Assistant Secretary of the Army (ASA) for Acquisition and Systems Management under the ASA for Acquisition, Logistics, and Technology, the designated Army Executive Agent (AEA) for IM. The

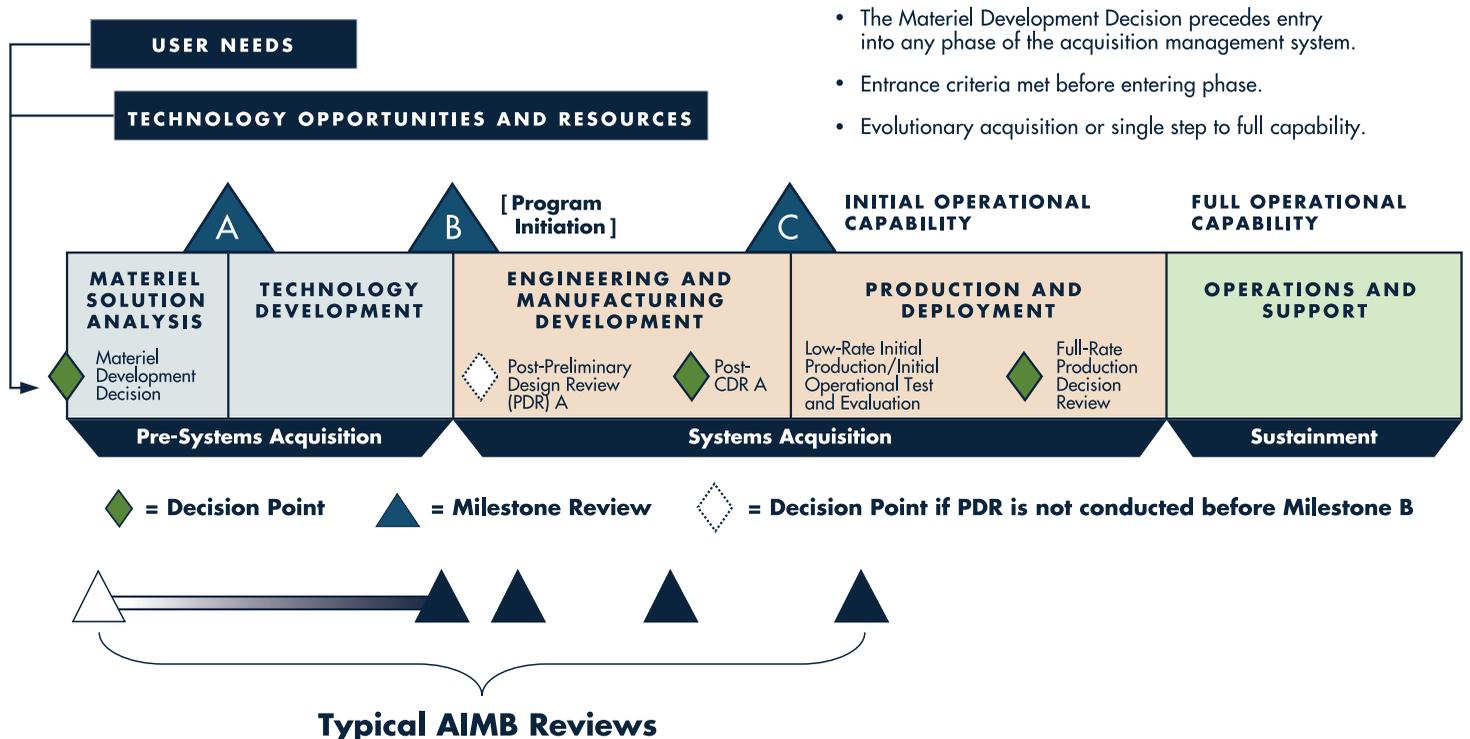
AIMB members are experts in such areas as energetic materials, warhead and propulsion development, IM technology, weapon system design, HC, and vulnerability.

AIMB provides advice to the AEA for IM on all IM matters and assists acquisition managers in the execution of their IM-related responsibilities. The Board encourages the insertion of relevant technology, ensures compliance with Army and DOD IM policies for weapon systems used by warfighters, and works with Army and joint program executive offices (PEOs) and program/product managers (PMs) in the development of their biennial IM Strategic Plans (IMSPs).

The AIMB is composed of four co-chair (core) members, five sitting members, and invited technical advisors. The Board's core membership is derived from the U.S. Army Research

Laboratory; U.S. Army Armament Research, Development, and Engineering Center (ARDEC); U.S. Army Aviation and Missile Research, Development, and Engineering Center; and the U.S. Army Space and Missile Defense Command (SMDC). The sitting membership includes participants from the U.S. Army's Aviation and Missile Command Safety Office; the ARDEC Systems Safety Office; the ARDEC Packaging and Engineering Support Division; the U.S. Army Technical Center for Explosives Safety; and the U.S. Army's Test and Evaluation Command. Invited technical advisors include IM representatives from the U.S. Navy (USN), U.S. Marine Corps

**FIGURE 1. AIMB COORDINATION WITHIN THE ACQUISITION MANAGEMENT FRAMEWORK**



(USMC), U.S. Air Force (USAF), and Missile Defense Agency (MDA). AIMB members are experts in such areas as energetic materials (e.g., high explosives, propellants, pyrotechnics), warhead and propulsion development, IM technology, weapon system design, hazard classification (HC), and vulnerability. The Board provides technical assistance and/or guidance to PEOs and PMs at each step in a weapon system's life cycle.

### AIMB's Role Within the Acquisition Management Framework

According to *Department of the Army Pamphlet 70-3, Section 10-44*, the planning and execution of an IM program plan should be initiated at the start of a munition acquisition program and continue through production and fielding of the munition. The AIMB performs tasks that are critical to the effectiveness of the Army's IM thrust, primarily within the munition acquisition process, as illustrated in Figure 1 on Page 45.

The AIMB provides technical advice to the acquisition manager by suggesting IM technical approaches to mitigate

From its inception, the AIMB has been an advocate for the programs that seek technical advice on, support for, and approval of their endeavors to comply with IM policy.

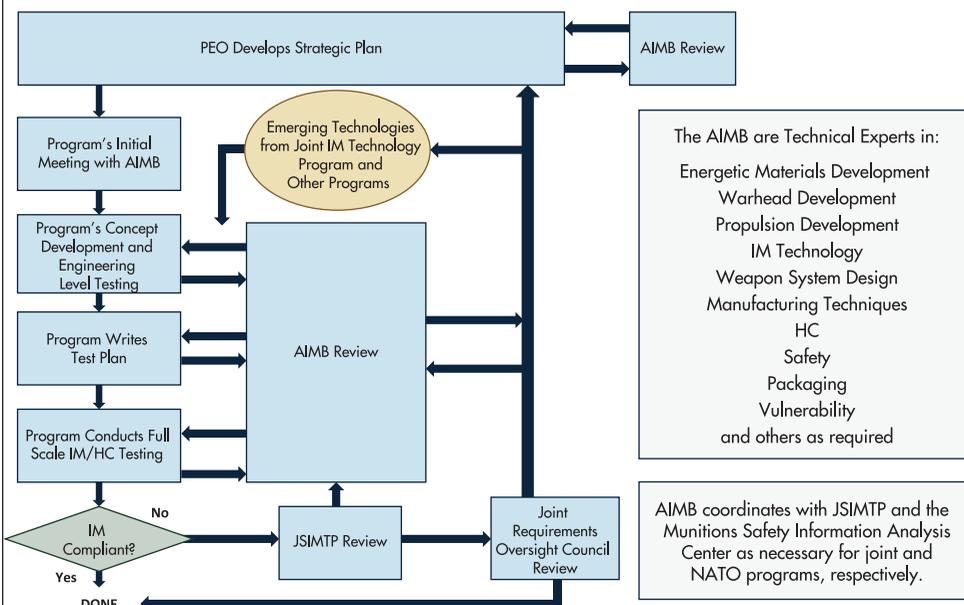
munition reactions to unplanned stimuli and identifies potential and/or existing technology gaps that may impede development of less sensitive munitions. The AIMB monitors emerging IM technologies in the areas of munition design, energetic materials, and packaging, and it develops recommendations that assist acquisition managers in achieving IM objectives. Prior to a program's Critical Design Review (CDR), the AIMB reviews the IM threat hazard assessments, test plans, test reports for munitions, and any other relevant documents. The reviews are conducted at key points during the planning and execution of the acquisition program. The AIMB assesses the compliance of munitions with IM requirements, reviews test results of munitions for which official Army IM test scores are derived, and promotes the integration of IM and HC testing. Another of the Board's key

responsibilities throughout the acquisition management process is the review of IMSPs and the supporting IM Plans of Action and Milestones (POA&Ms). As stated previously, the AIMB provides IM technical guidance to PEOs and PMs in the development of their IMSPs. This guidance serves to help coordinate and maximize the benefit of IM-related endeavors for the Army's munitions portfolio. The Board also aids PEOs and PMs in achieving their IM goals by assisting with prioritization of new IM technologies and their implementation into munitions systems and by providing advice regarding cost-effective methodologies. The AIMB's role within the strategic planning process is illustrated in Figure 2 below.

Working within the IMSP, PEOs and PMs develop POA&Ms for their priority munitions with the intent of improving the munition's IM characteristics. The AIMB reviews the POA&Ms to ensure that the information presented regarding the munitions' program status, system description, threat hazards, IM test results, technical approach, schedule, funding, procurement, and impacts will succeed in improving the IM characteristics of the subject munition. As an advocate for its constituent programs and the PEOs and PMs, the AIMB encourages frequent coordination between the Board and PMs in the development of IMSPs and POA&Ms to ensure that the Army's IM requirements are properly addressed and munitions acquisition is not adversely impacted.

**Advocate for IM Compliance**  
From its inception, the AIMB has been an advocate for the programs that seek

**FIGURE 2. AIMB ROLE WITHIN THE STRATEGIC PLANNING PROCESS**





In a fire during the load/assemble/pack operations for the M232A1 Modular Artillery Charge System (MACS) at General Dynamics-Armaments and Technical Products, Camden, AR, the IM features of the MACS vented the pressure from the nearly 6,000 pounds of burning propellant housed in and around the building and prevented injuries to personnel. (Photo courtesy of Project Manager Combat Ammunition Systems, Picatinny Arsenal.)

technical advice on, support for, and approval of their endeavors to comply with IM policy. Since 1992, more than 550 munition/system program briefings (including multiple program briefings) have been presented to the Board. This number includes programs that develop and procure weapons used by the land warfighter that are under the purview of the Army, USN, USMC, USAF, MDA, and U.S. Special Operations Command. Stressing to its constituents the importance of attaining successful IM technology development, implementation, and compliance, Board members make themselves available to programs needing extra technical assistance/guidance. To educate those who were not familiar with the IM program or the processes and requirements that support it, the AIMB served as lead for the development and revision of the *DoD Acquisition Manager's Handbook for Insensitive Munitions*.

The handbook is a single-source document for acquisition managers to locate DOD and military service

policy, procedural references, and technical information about IM policies, business rules, joint IM testing standards, and strategic planning. One of the objectives of the handbook was to ensure that all program management offices clearly understood the concepts and requirements associated with integrating acquisition management, assessment of ammunition programs, identification of potential opportunities for IM improvement, and prescribed actions to develop and execute detailed plans.

The Board often educates managers and weapon developers about other advisory boards and panels, with

which they may be required to engage over the course of their program. The AIMB chair is the Army representative on the Joint Services IM Technical Panel (JSIMTP), which assists with IM technology matters regarding IM compliance of the DOD munitions inventory and provides technical advice/recommendations concerning IM technology to program Milestone Decision Authorities, PEOs, PMs, the Office of the Secretary of Defense, and Joint Staff. Whenever feasible, the AIMB encourages interaction with Army Hazard Classifiers and the DOD Explosives Safety Board in an effort to combine testing.

### Impact on Soldiers

The following account is from a Picatinny Arsenal, NJ, employee whose son, a mortar gunner, was traveling in a convoy in the Afghanistan theater of operations when one of the vehicles was hit by an improvised explosive device (IED). This story demonstrates how IM technology has saved lives and serves as reminder of the AIMB's mission to ensure the safety

and survivability of our warfighters at home and abroad.

"I want to share my son's experience with the 60mm mortar M768 [high-explosive cartridge] with the people who developed it," the employee said. "When talking to my son, who is now in theater in Afghanistan, he told me that one of their trucks got hit by an IED resulting in four injuries, and one of them was badly burned. Later, they recovered the badly damaged truck. They discovered that there were some damaged M768 rounds inside the truck. They said that the fuzes on those rounds flew off, but the shell bodies were not detonated. They praised the people who developed the rounds because that might have saved the lives of injured Soldiers."

The AIMB serves as an advocate of programs seeking to comply with IM policy and an educator on IM technology and practices. An entity whose efforts are considered significant and vital to the success of the Army's IM endeavors, the AIMB members, with their considerable expertise, take on the added responsibility of ensuring the survivability of weapons platforms and personnel that define the AIMB. It is these experts who, when engaging their constituents, emphasize that IM is a requirement that can mitigate the severity of disaster and provide life-saving benefits.

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