IM Overview

Patrick Touzé, MSIAC
IMEMTS 2009
Munitions Standards Database (MSAS)

- NATO STANAGs and Allied Publications
- United Nations Standards
- European Standards
- Some ITOPs (DEU / FRA / GBR / USA)
- Some National standards (GBR, SWE, USA)
- Some international treaties impacting on munitions
Munitions Life Cycle regulations (Transport, Storage, Disposal,...) should be harmonized and implemented by AASTP-5 by NATO AC/326.
In Normal Environments, own munitions should remain safe and serviceable....
Or else…
In **Extreme** Environments, own munitions should react as mildly as possible, or not at all (Insensitive Munitions)...

Personnel were burning excess artillery propellant bags, about 9 ft from the vehicle. The heat from the fire induced a low-order detonation of a 155 mm round that was in the vehicle.
As **Extreme** Environments become less and less unlikely, IM are more and more needed.

**IM is one of the Top Munitions Safety Priorities of AC/326 nations**

RPG-7 available from 40+ Nations
**Insensitive munitions make the military less accident-prone**

Western European and US policy makers are placing greater pressure on defence forces to use safer or "Insensitive" munitions to inhibit their inadvertent detonation. **By Neil Gibson and Rupert Pengelly**

Insensitive Munitions – A Key Aspect of Improved Munitions Safety

Two dramatic images on the flight deck fire onboard the aircraft carrier USS ENTERPRISE (CVN-65) on 14 January 1969. A MK-32 ZUNI rocket warhead attached to an F-4 PHANTOM was overheard by the exhaust from an aircraft starting unit and detonated, setting off fires and additional explosions across the carrier. The fire was brought under control promptly when compared with previous carrier flight deck fires, but 27 fires were lost and 314 personnel were injured. The fire destroyed 15 aircraft, and the resulting damage forced the carrier to put to sea for repairs, primarily to repair the flight deck’s armored plating. The incident was reviewed by the US Navy, which concluded that the cause was the overheard exhaust from the starting unit. The report recommended that similar incidents be prevented in the future. The US Navy subsequently modified its procedures for handling aircraft starting units to reduce the risk of such accidents.

Insensitive munitions (IM), also known as "Smart" (Cassie, for instance), and "Smart Partnership for Security" (Cassie, for instance), have been developed in France since 1998. The technology allows for the pre-arming of the munitions, which can then be deployed from a carrier or other vessel. The pre-arming process is designed to reduce the risk of accidental detonation, which can occur when the munitions are exposed to water or other hazardous environments.

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In 1998, the NATO standardization agreement (STANAG 4596) was established to facilitate the development and procurement of insensitive munitions. The agreement aims to ensure that the technology is developed and deployed in a consistent manner across NATO member nations, thereby reducing the risk of accidents and improving the safety of personnel involved in the handling and use of munitions.

In the article, the authors discuss the development and implementation of insensitive munitions in NATO and other allied forces, highlighting the benefits of the technology and the steps being taken to ensure its widespread adoption. They also address the challenges and limitations of the technology, including concerns about cost-effectiveness and the need for ongoing research and development to improve the performance of insensitive munitions.

The authors conclude by emphasizing the importance of continuing to invest in the development and improvement of insensitive munitions to enhance the safety and effectiveness of military operations. They argue that this investment is crucial in ensuring the protection of both personnel and assets, and in supporting the broader goals of promoting peace and stability through more effective and safer use of military resources.
An IM Success Story – US – 2005

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MK-82 mod 2 TP
BLU – 111/B
IM on the market

- IM Technology
- Customers
- Compared IM Signature
- Compared Performance
- Compared Cost
Highlighted Land Systems

- 30-mm ammunition
- 40-mm 3P Round
- 60-mm Mortar (M720E1)
- 60-mm MAPAM
- 105-mm DPICM (M915)
- 105-mm Improved Ammunition (L50)
- Reactive Tile Armour for AFV
- Excalibur 155mm (XM982)
- 120-mm APFSDS (M829A3)
- DM63 for APFSDS-T 120mm
- TPCSDS-T 120mm training cartridge (XM1002)
- 120-mm cartridge (XM1028)
- 120-mm Mortar (M934A1E1)
- 155-mm Artillery Shell (LU-211M)
- Modular Artillery Charge System (MACS)
- Modular Artillery Top Charge Modules
- Modulares Treibladungssystem (DM72/92)
- 155-mm RH30
- Air Defence Missile VT1 01
- Anti-Personnel Obstacle Breaching System (APOBS)
- Formable explosive No. 3 Mk1
- Demolition block No. 4 Mk1
- Spider (XM7)
IM Gaps

• IM Technology – MSIAC Workshop
  – Surveys to identify gaps
  – Preliminary MSIAC Workshop 11 May 2009: prioritize gaps according to users’ needs
  – Main MSIAC Workshop in 2010

• IM “Enabling tools”
  – Harmonized, objective, scaleable, informative, relevant, environmentally friendly testing methods
  – Standardized and shared models and codes to predict energetic materials, components and munitions responses
IM Policy

• STANAG 4439 Ed.2 and AOP-39 Ed.2 promulgated on 9 Feb 2009 (ref. IMEMTS 2006, R. Guégan)

• Ongoing work to update AOP-39 again

• Proposal to modify IM Response Descriptors (ref. IMEMTS 2009, T. Eich), with impact on STANAG 4439
The need for IM is growing; let’s eat this big technological challenge two bits at a time.