# U.S. INSENSITIVE MUNITIONS POLICY UPDATE

**Presented by:**

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# Outline

- Purpose
- Background
- IM Strategic Planning
- IM Standards and Adjudication Process
- Joint IM Technology Program
- Summary

# Purpose of the Brief

- Provide an update on DoD Insensitive Munitions (IM) Program

# Insensitive Munitions Defined

- **Insensitive Munitions Are**

  Munitions which reliably fulfill their performance, readiness and operational requirements on demand, and which **minimize** the probability of inadvertent initiation and severity of subsequent collateral damage to weapon platforms, logistic systems and personnel when subjected to unplanned stimuli.

# Background

- **USC, Title 10, Chapter 141, Section 2389 (December 2001)**
  "…§ 2389. Ensuring safety regarding insensitive munitions. The Secretary of Defense shall ensure, to the extent practicable, that insensitive munitions under development or procurement are safe throughout development and fielding when subject to unplanned stimuli"

- **JROCM 150-03 (28 July 2003)**
  "…requests USD(AT&L) assistance in overseeing DoD-wide science and technology efforts to improve IM. A focused DoD-wide IM technology effort will ensure long-term IM compliance and safety."

- **USD(AT&L) Policy Memo (21 July 2004)**
  "…establishes Department of Defense Policy for the annual submission of Insensitive Munitions Strategic Plans to the Joint Requirements Oversight Council (JROC) and Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics) (OUSD(AT&L))

- **JROCM 235-06 (6 November 2006)**
  "…The Services will support and fund the …Insensitive Munitions Science and Technology enhancement …"

# IM STRATEGIC PLANNING

# What is IM Strategic Planning?

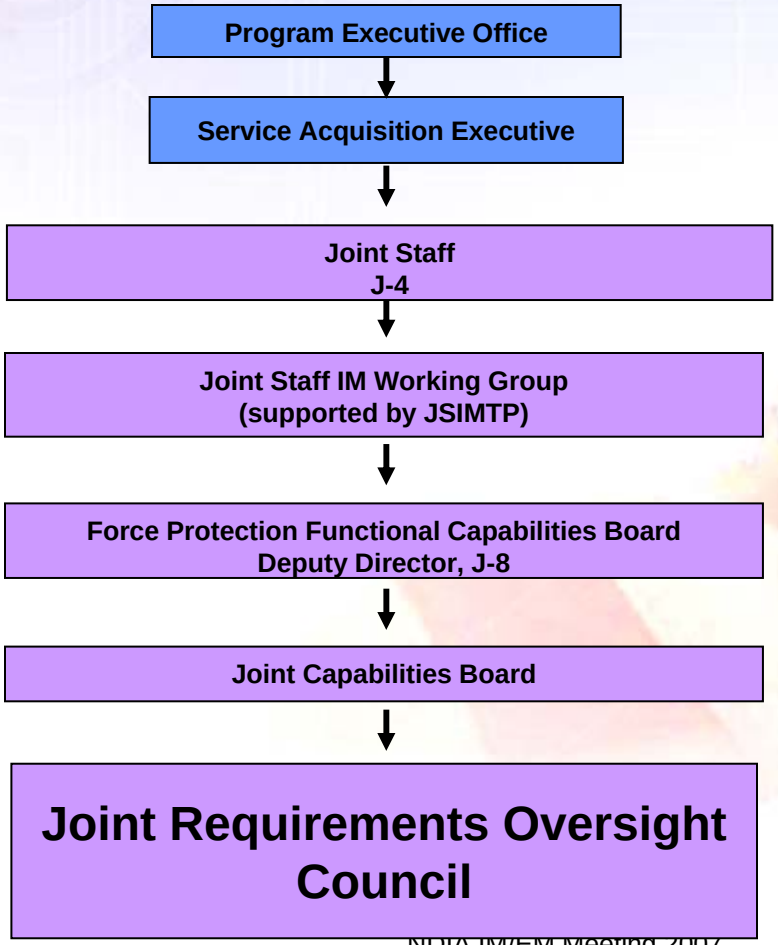
- **Insensitive Munitions Strategic Planning** is a tool that provides the Joint Requirements Oversight Council (JROC) and the Office of the Secretary of Defense (OSD) visibility and oversight of each Program Executive Office's (PEO) efforts to meet statutory IM requirements and serves as a tool for gaining greater focus on, efficiency in, and standardization of IM efforts across the Department.

# IM Strategic Plan Content and Process

## IM Strategic Plan Content

- **Complete munitions portfolio for the PEO (legacy, developmental, production, awaiting production, ATD, FCT, inventory)**
  - **For each munition:**
    - **RDT&E and procurement profiles**
    - **Baseline and predicted IM performance**
    - **Ongoing and planned technology integration efforts with identified funding**
- **IM investment priorities and prioritization criteria**
- **Standardized detailed IM POA&M for each priority program**
- **Service-specific and Joint IM investments**
- **Unfunded IM requirements**
- **Technology shortfalls**

## IM Strategic Plan Process



# IM Strategic Planning - Summary

- Previous waiver process limited JROC and OUSD(AT&L) to individual munitions without insight or recognition of other/related IM efforts or investments priorities
- Strategic Planning has increased our visibility into the total PEO munitions portfolio and enables decision making in a broader context
- IM Strategic Plans are now submitted every two years and are aligned with our budget cycle
- Retains the flexibility to address unplanned out-of-cycle procurements to meet urgent program needs

# IM STANDARDS AND ADJUDICATION PROCESS

# IM Standards - Background

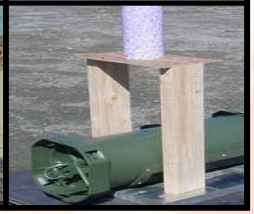
- During JROC review of FY07 IM Strategic Plan, concerns were raised over implementation of IM Standards by the Services
- JROC tasked Joint Weapon Safety Technical Advisory Panel to work with Joint Service IM Technical Panel to establish a single standardized set of IM tests and passing criteria for use by all Services.

# IM Test Overview

**IM CLASSES OF THREATS ARE RELEVANT**

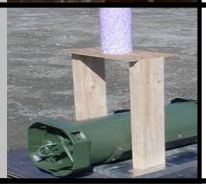
**STANDARDS ARE REPRESENTATIVE AND ONE METRIC OF MUNITION RESPONSE AND TECHNOLOGY MATURITY**

**REACTION CONSEQUENCE AFFECTS INVESTMENT STRATEGY FOR MUNITION INCREMENTAL IMPROVEMENTS & IM SCIENCE TECHNOLOGY**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Threats** | **FUEL FIRE** Such as a truck or an aircraft on a flight deck | **NEARBY HEAT** Such as fire in adjacent magazine, store or vehicle. | **BULLETS** Such as small arms from terrorists or combat | **FRAGMENTS** Such as from bombs, artillery, or IEDs | **SYMPATHETIC REACTION** Such as detonation of adjacent stores | **SHAPED CHARGE JET** RPG, Bomblets, ATGMs: Combat or terrorists |
| |  |  |  |  |  |  |
| **Tests** | Fast Cook-off | Slow Cook-off | Bullet Impact | Fragment Impact | Sympathetic Detonation | Shaped Charge Jet |
| | FCO | SCO | BI | FI | SD | SCJ |
| |  |  |  |  |  |  |

| | | | | | |
|---|---|---|---|---|---|
| **Reactions** | Detonation/ Partial Detonation | Explosion | Deflagration/ Propulsion | Burn | No Sustained Reaction |
| | Type I/II | Type III | Type IV | Type V | Type VI |
| |  |  |  |  |  |

# IM Standards - Overview

| | | Threat | Passing Criteria | Comments |
|---|---|---|---|---|
| **FCO** |  | Liquid Fuel Fire | Burning | **HC Relation** : Required for hazard classification<br>**Stimulus** : Rapid heating response<br>**Comments** |
| **SCO** |  | Slow Heating<br>3.3 °C/Hr | Burning | **HC Relation** : Required for reduced hazard class<br>**Stimulus** : Slow heating response<br>**Comments** : Additional technical studies appropriate |
| **BI** |  | .50 Cal M2AP<br>3 round burst | Burning | **HC Relation** : Required for reduced hazard class<br>**Stimulus** : Low level kinetic impact<br>**Comments** : Relevant small arms threat<br>More severe threats exist<br>Additional studies appropriate |
| **FI** |  | 18.6 gram<br>fragment<br><br>8300 +/- 300 fps | Burning | **HC Relation** : Not required<br>**Stimulus** : Combine shock, mechanical, thermal<br>**Comments** : Artillery fragments slower<br>Some KE and EFP threats more severe |
| **SD** |  | Detonation of<br>a single donor | Explosion | **HC Relation** : Required for hazard classification<br>**Stimulus** : Output of a like munition<br>**Comments** : Does not address mixed storage<br>Does not address multiple donor |
| **SCJ** |  | 81-mm Precision<br>shaped charge | Explosion | **HC Relation** : Not required<br>**Stimulus** : Shock<br>**Comments** : More severe threats exist<br>Pragmatic threat considering technology potential |

# IM Standards Philosophy

- Standards are defaults and appropriate for typical munitions
  - Each munition program should evaluate their cradle-to-grave life cycle
  - Munition-specific mitigation techniques typically in place during testing
- IM Test Parameters
  - Harmonize with hazard classification to minimize requirements
  - Representative of severe, credible threats
- IM Passing Criteria
  - Based on fire-fighting and survivability needs
  - Requirements that push technology but are not unattainable
  - Achievement results in a significant payoff
- Variations from standards
  - Make sense on a case-by-case basis
  - Exceptions to test parameters addressed though Joint service adjudication process
  - Exceptions to passing criteria addressed through strategic planning and investment prioritization
- Technically assessing the IM standards is a continuous process due to an evolving threat, improved analysis techniques, and projected operational changes

# IM Standards and Adjudication - Summary

- Single Standardized IM Tests and Passing Criteria will be used for reporting all munitions responses in the FY09/10 IM Strategic Plan submission.
- Adjudication Process still being developed.  Anticipated early FY08 stand-up.
- IM and Hazard Classification are now truly harmonized and will use the same test standards for evaluating munitions.

# JOINT IM TECHNOLOGY PROGRAM

# Joint Insensitive Munitions Technology Program (JIMTP)

- A joint, focused science & technology program with the goal of developing and demonstrating enabling technologies so that future weapon systems can become IM compliant.

# Technology Maturity Philosophy of JIMTP

**Non S&T Funding (6.4)**

IM Technology Transition Program

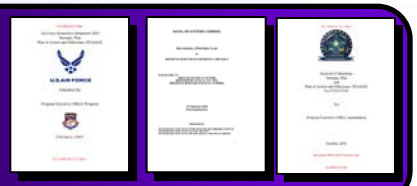
NAVSEA NAVAL SEA SYSTEMS COMMAND Ordnance Safety & Security Activity

IM Advanced Development Program

Service Lab Tech Base

JIMTP 6.2

PEO IM Strategic Plans



TECHNOLOGY READINESS LEVEL (TRL)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|

Technology Development | Technology Demonstration | System/Subsystem Development

- *Basic formulations*
- *Scale-up*
- *Case Technology*
- *Materials technology*

- *Generic hardware*
- *Integrated technology demos*
- *Materials Qualification*

- *Full-scale development*
- *System integration*

DOE

SBIRs

International

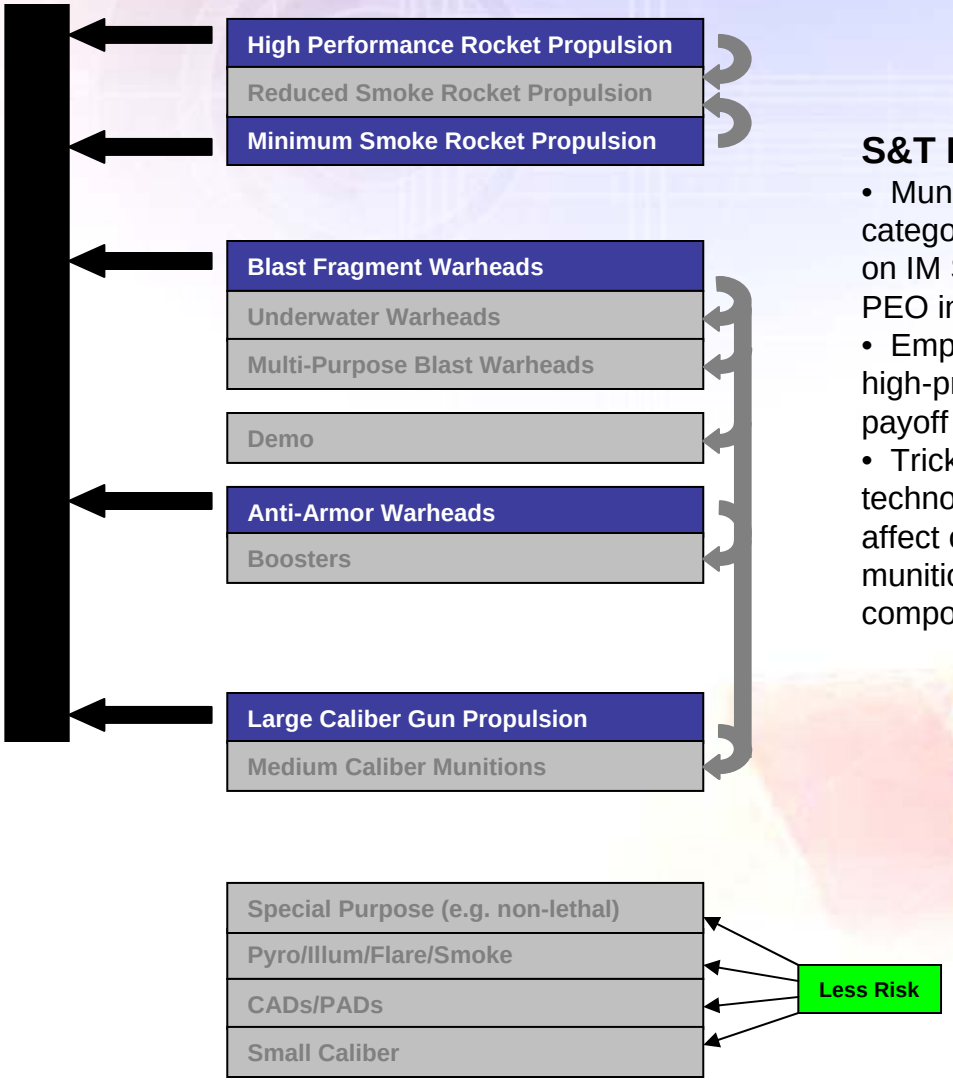
NWEC

JIMTP 6.3

Department of Defense ManTech Manufacturing Technology Program

# IM S&T Focuses on DoD Munition Portfolio

## FIVE MUNITION AREA TECHNOLOGY GROUPS




### S&T Focus

- Munition focus categories based on IM SME and PEO input
- Emphasis on high-priority, high-payoff areas
- Trickle-down technology will affect other munition component areas

# JIMTP - SUMMARY

| Program | FY06-13 |
|---|---|
| 6.2 Joint Munitions Technology | $109.2M |
| 6.3 Insensitive Munitions Advanced Technology | $109.0M |
| | Total $218.2M |

- A robust 6.2/6.3 enabling IM technology development and demonstration program
  - Focused on PEO identified technology gaps
  - Provides PEOs with mature IM technologies with proven feasibility and effectiveness, decreasing their program cost and schedule risk
- Linked to industry through DOTC/NWEC

# SUMMARY

- Insensitive Munitions continues to garner senior level interest across the DoD
- IM Strategic Planning has given the JROC and OSD greater insight into how PEOs manage their IM efforts and highlight the risk posed by the current DoD portfolio
- The single set of IM test standards and passing criteria will serve as a common yardstick for measuring the IM performance of munitions across the DoD
- JIMTP is a DoD-Wide program to develop and mature technologies for improving the response of the DoD munitions portfolio to combat, terrorist, accident threats