IM Implementation Into An Existing Inventory

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Outline of Presentation

- Australian Defence Force IM Policy
- IM Implementation Plan
- IM Implementation – Potential Options
- Introduction into Service (issues)
- Revision of DEOP114(AM1)
- Recommended Way Forward
- Acknowledgements
Australian Defence Force IM Policy

- DI(G) Log 07-10 (now DI(G) 4-3-010) – 19th April 05
  - Navy Log 49-1
  - Army Ops 25-4
  - Air Force Log 16-7

- Policy Directives:
  - All New Explosive Ordnance (EO) requirements to include a statement of compliance with the IM requirements goals specified in STANAG 4439.
  - For all new procurements, approval of non-compliance is to be sought from Head of Capability Systems and the relevant Deputy Service Chief (IM Waiver Request).
  - IM Implementation Plan is to be developed which will determine the degree of compliance of the in-Service inventory
IM Implementation Plan (IMIP)

• Defence Explosive Ordnance Publication (DEOP) 114(AM1)
  – Approved for use within Guided Weapons & Explosive Ordnance (GWEO) branch by means of a GWEO Chief Engineer’s Directive.
• DEOP 114 Provides guidance:
  • ADF IM Policy
  • IM Assessment of In-Service Explosive Ordnance
  • IM Waiver System
  • IM Data Management
  • Performance Measurement and Reporting
IM Implementation - Potential Options
IM Implementation - Potential Options - Storage Facility Protection

- Dissimilar Stacking – implemented by ADF
- Blast Barriers – not yet implemented by ADF
- Ballistic Blankets – not yet implemented by ADF
- Loading/Unloading Operations – currently implemented
- Stacking Orientation – currently implemented on case-by-case basis
- Thermal Blankets – not yet implemented by ADF
- Storage numbers – implemented by ADF
- Anti-fratricide devices – not yet implemented by ADF
IM Implementation - Potential Options
Packaging Protection

- Blast Adsorption - not yet implemented by ADF
- Fragment Protection – not yet implemented by ADF
- Thermal Protection - not yet implemented by ADF
- Bullet Protection - not yet implemented by ADF
- Blast Deflection - not yet implemented by ADF
- Venting - not yet implemented by ADF
IM Implementation - Potential Options

Operational Procedures

- Storage Selection - currently implemented
- Loading and Unloading - currently implemented
- Ballistic Blankets - not yet implemented by ADF
IM Implementation - Potential Options
Munition Modifications

- Stress Riser Grooves - not yet implemented by ADF
- Venting - not yet implemented by ADF
- Thermal Protection - not yet implemented by ADF
IM Implementation - Potential Options
Energetic Materials

• Indigenous Manufacture of IM Compliant Formulations - not yet implemented
• R&D of new formulations - ongoing activity (DSTO)
• Prototyping - ongoing activity (DSTO)
Maturity of Potential Options - Summary

- Energetic Material
- Venting
- Stress Risers
- Riser grooves
- Thermal Protection
- Fragment Protection
- Blast deflection
- Ballistic Blankets
- Loading and unloading
- Thermal blankets
- Ballistic Absorption
- Blast absorption
- Stacking orientations
- Storage numbers
- Anti-fratricide devices
- Venting
- Loading/unloading operations
- Storage selection
- Blast barriers
- Dissimilar stacking
- Munition Modifications

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EXCELLENCE.
Introduction into Service

- Any change in design of EO requires re-certification to demonstrate safe delivery of capability throughout the life of type of the item.

<table>
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<th>Trial</th>
<th>Estimated Effort (Man Hours)</th>
<th>Approximate Cost* (A$k)</th>
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<tr>
<td>Safety &amp; Suitability for Service</td>
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<td>100</td>
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<td>IM Testing</td>
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<td>150-200</td>
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<tr>
<td>Integration &amp; Performance Assessment</td>
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<td>120</td>
</tr>
<tr>
<td>Total</td>
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- Avoid design changes to EO for In-service items !!

*Based on 2005 costs
Potential IM Mitigation Strategies

Energetic Material

Venting

Stress Risers

Grooves

Thermal Protection

Fragment Protection

Blast Deflection

Bullet Protection

Blast Absorption

Ballistic Blankets

Loading and Unloading

Storage Selection

Dissimilar Stacking

Blast Barriers

Ballistic Blankets

Loading/Unloading Operations

Stacking Orientations

Thermal Protection

Venting

Anti-Fraticide Devices

Storage Numbers

New Designs

Legacy Designs/MOTS

Loading/Unloading Operations

Storage Selection

Dissimilar Stacking

Blast Barriers

Ballistic Blankets

Loading/Unloading Operations

Stacking Orientations

Thermal Protection

Venting

Anti-Fraticide Devices

Storage Numbers

New Designs

Legacy Designs/MOTS
The Way Forward – Revision of DEOP 114(AM1)

DI(G) Log 07-10
- Defence and single Service IM objectives and priorities
- List IM Status of in-Service EO and extant IM Waivers
- Priority list of in-Service EO for IM implementation
- Plan for management of IM Waivers for in-Service EO
- Identify opportunities to incorporate new IM technologies
- Roles and responsibilities of organisations providing resources
- Resources required to achieve the plan

DEOP 114(AM1)
- Addressed
- Not addressed in 1st version
- Partially addressed
- Addressed
- Not addressed in 1st version
- Addressed
- Not addressed in 1st version
Recommended Way Forward (1)

• Generate an IM Implementation Assessment (IMIA) for the top 3 priority items
• IMIA to Establish:
  – Degree of IM compliance
  – Maturity of specific Mitigation Technology
  – Opportunities for technology insertion
  – Resources required to achieve IM compliance
  – Timescales
  – Key milestone and review dates

• Once generated, the IMIA could be used to support funding requests for transition to IM.
Recommended Way Forward (2)

- Use IMIA to secure funding for transition towards IM compliance/gauge commitment to transitioning the in-service EO inventory towards IM compliance

- Investigate alternative packaging/packaging arrangements to improve IM signatures (full IM compliance may not be possible)

- Develop a predictive capability for determining IM response (computer models) as discussed in AOP-39 edn 2
Acknowledgements

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