REDUCING THE LIKELIHOOD OF UNPLANNED EXPLOSIONS AT MUNITIONS SITES (UEMS)

PREPARED FOR
Meeting of Experts on CCW Protocol V
10 - 11 April 2013

PRESENTED BY
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Presentation Summary

- Stockpile Challenges
- Minimising the Risk
- What happens when you get it wrong
- NSPA and the NATO Trust Fund
- Project Examples
- Conclusion
Stockpile Challenges

- Cold War or conflict legacy – large surplus stockpiles
- No international protocol
- Ineffective national legislation
- Inadequate resources
- Decaying infrastructure and poor maintenance
- Ageing ammunition, ineffective inspection systems and failure to dispose of dangerous and obsolete ammunition
- Poor handling, repair, maintenance and disposal systems
- Lack of trained staff
Causes of Explosive Events
2000 - 2012(Oct)

<table>
<thead>
<tr>
<th>Cause</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not known</td>
<td>74</td>
<td>24.5</td>
</tr>
<tr>
<td>Fire</td>
<td>65</td>
<td>21.5</td>
</tr>
<tr>
<td>Movement / handling</td>
<td>52</td>
<td>17.2</td>
</tr>
<tr>
<td>Demil / EOD</td>
<td>36</td>
<td>11.9</td>
</tr>
<tr>
<td>Sabotage</td>
<td>22</td>
<td>7.3</td>
</tr>
<tr>
<td>Auto-ignition</td>
<td>18</td>
<td>6.0</td>
</tr>
<tr>
<td>Lightning strike</td>
<td>15</td>
<td>5.0</td>
</tr>
<tr>
<td>High Ambient temperature</td>
<td>11</td>
<td>3.7</td>
</tr>
<tr>
<td>Human error</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Ammunition Instability</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>302</td>
<td></td>
</tr>
</tbody>
</table>
Minimising the Risk

- **REDUCE STOCKPILES**
  - Documented regulations and procedures
  - Location and suitability of storage sites and buildings
  - Training of personnel
  - Storage procedures
    - Quantity Distances
    - Mixing by type and condition
  - Handling procedures
  - Condition of ammunition
    - Surveillance and inspection
    - Planned continuous disposal
  - Access control and security measures
  - Inventory management and accounting
  - Reporting, investigating and recovery of any loss
  - Emergency procedures
  - Transportation safety and security
Ammunition Related Regulations and Procedures

International
Regional
National
Local
Location and suitability of storage

UK Ammunition Storage Site

Typical FSU Storage Site
Ammunition Training

Transport Safety

Stockpile Management

Disposal

Ammunition Safety

Management Processes

Ammunition Handling
Management of Ammunition Stockpiles

- Accounting
- Inspection
- Storage
- Security in Storage
- Surveillance and Proof
- Transportation
- Demilitarization and Destruction
Access Control and Security Measures

- Fence / wall + cleared perimeter
- Minimum number of controlled access points
- Access to authorised personnel / vehicles only
  - Entry and exit recorded
  - Searches
  - Contraband – cigarettes, lighters, mobile phones
- Perimeter and location lighting
- Intruder detection systems / CCTV:
  - Perimeter
  - Individual storage buildings
## Ammunition destruction priorities – Reducing Threat/Effect of UEMS

<table>
<thead>
<tr>
<th>Ammunition Type</th>
<th>Explosive Threat</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detonators</td>
<td></td>
<td>Reduce risk of “en-masse” explosion: Blast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fragmentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UXO</td>
</tr>
<tr>
<td>Bulk Explosives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-Tank Mines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HE-containing munitions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-tank grenades and missiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-Personnel Mines</td>
<td></td>
<td>Ottawa Convention</td>
</tr>
<tr>
<td>Cluster Munitions*</td>
<td></td>
<td>*Oslo Convention</td>
</tr>
<tr>
<td>System-based munitions (ATM, SAM)</td>
<td></td>
<td>Security and storage normally higher grade</td>
</tr>
<tr>
<td>MANPADS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke and Pyrotechnics</td>
<td>WP</td>
<td></td>
</tr>
<tr>
<td>Small Arms Ammunition</td>
<td></td>
<td>UN PoA, criminal and terrorist use</td>
</tr>
</tbody>
</table>
What Happens When You Get It Wrong
Ikeja, Nigeria – 27 January 2002

1500+ Dead
What Happens When You Get It Wrong
Florakis Naval Base Cyprus – 11 July 2011

Prior to Explosion

Following Explosion

13 killed
62 Injured
Blackout in half of the country
Cost: EUR 2 billion
Defence Minister Resigned
Foreign Minister Resigned
Afyon Depot – The Incident

In-loading 117,900 Grenades

- **DM 41** (Offensive)
- **M 26** (Offensive)
- **Mk 44** (Defensive)
- **M 14** (Thermite Incendiary)
- **M 7 CS** (Lachrymatory)
- **MKE Mod 56** (Defensive)

Explosion 1

Igloo ESH No 32

Explosion 2
Afyon Depot – Affected Area

- Explosion site
- Affected Area

25 killed
8 injured
90 homes damaged
1.8 km² contaminated
NSPA and the NATO Trust Fund
Policy Development

September 2000
- Established to assist Partner Nations meet Ottawa Convention obligations
- *NSPA (NAMSA) selected as primary Executing Agent*

June 2001
- Small Arms and Light Weapons
- All conventional munitions (incl MANPADS and Cluster Munitions)

November 2002
- Management of the consequences of defence reform

September 2004
- Inclusion of Partner Nations as potential Lead Nations
- Inclusion of Mediterranean Dialogue and Istanbul Initiative nations

June 2009
- Policy revised to allow Contact Nations (e.g. AUS, JPN) to act as Lead Nation

Current
- Policy being revised to extend the range of projects available to Partner Nations
NSPA and the NATO Trust Fund
International Treaties

- **Anti-personnel Mine (Ottawa Convention Mar 99)**
  - Albania, Belarus, Ukraine, Serbia & Montenegro, Tajikistan

- **SALW (UN Programme of Action)**
  - Ukraine, Serbia & Montenegro, Albania, Mauritania

- **Ammunition Stockpile Management (UN RES 61/72)**
  - Albania, Afghanistan, Georgia, Jordan, Mauritania, Ukraine, Tajikistan

- **ERW (Protocol V CCW)**
  - Azerbaijan, Georgia, Jordan

- **Cluster Munitions (Oslo Convention Aug 10)**
  - Ukraine
NSPA and the NATO Trust Fund
Achievements

Ukraine
- 399,200 APL (+3M PFM APL)
- 420,000 SALW
- 19,000 tonnes CA (incl 2M sub-munitions)
- 1,000 MANPADS
- Retraining demobilized servicemen
- Professional training for MoD staff

Georgia
- 526 ASM
- 8,000 Rockets
- 66 man ERW Task Force
- UXO Clearance Skra Depot

Belarus
- 700,000 APL

Serbia
- 1,404,830 APL
- 27,500 SALW
- Retraining demobilized servicemen

Albania
- 1,683,860 APL
- UXO Clearance 17 depots
- 108 million SAA carts
- 120,000 Mortars
- 7,200 tonnes

Mauritania
- 1,730 tonnes
- 141 MANPADS
- New Storage Facility
- Management Training

Jordan
- New Demilitarization Facility
- Management Training
- National ERW Impact Survey
- Mine/ERW Risk Education

Azerbaijan
- 1,272 tonnes Melanj
- 569 Ha Clearance
- 620,000 UXO cleared

Uzbekistan
- 1,023 tonnes Melanj

Tajikistan
- 1,261 APL

Moldova
- 12,000 APL
- 300 tonnes CA
- 325 tonnes Melanj
- 1,372 tonnes pesticides

Afghanistan
- New Storage Facility
- Management Training
- Helicopter maintenance training
- Building Integrity training

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Safe & Secure Facilities
National Army Depot - Afghanistan

New Storage Facility and Stockpile Management Training
Safe & Secured Facilities
National Army Depot – Mauritania (1/2)

Armed Forces Transformation
Closure and relocation of Nouakchott depot

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Depot Capacity

- 670 tonnes Ammunition per Depot

Buildings structures

- Light Structures
  - brick walled
  - metal roofed
  - concrete floor

Sitting

- Revised - Mixed
  - 5 without barricades
  - 1 with barricade

Security

- Fencing (2,100 meters)
- Access control gate
- Guards centre and towers
- Lighting
Safe & Secured Facilities
Demilitarization facility Jordan (1/2)

Additional Land Purchased
358,000 m² total

Zarqa
Safe & Secured Facilities
Demilitarization facility Jordan (2/2)

Entrance
Administration
Personnel
Dismantling Workshop
Ammunition Storage
Water
Electricity
Protection
Melting Station

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Life Cycle Management
Testing Laboratory - Jordan (1/2)

Development of a laboratory

Ageing

Check Safety and Suitability for Service

Equipment

Infrastructure Training & Maintenance

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Life Cycle Management
Testing Laboratory – Jordan (2/2)

- Storage rooms
- HPTLC analysis room
- Vacuum Stability Test Room
- Preparation room
- HPTLC plate development

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Conclusion

Contributors Welcomed

- Working with partners to improve stockpile safety which has local, national and regional safety and security implications
- Significant projects in terms of fundamental safety and security implications
- Coherent approach addressing specific challenges faced by partner nations
- Absence of international legally binding treaty for Physical Security and Stockpile Management (PSSM) of ammunition inhibits greater achievement

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