The UK Ministry of Defense Explosives Safety Vision

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UK Defense Ordnance, Munitions and Explosives Safety Regulator
Scope

- Getting Organized
- Making it all Work
- Regulating and Checking Performance
- Continuous Improvement – Mutual Recognition
Getting Organized

Demonstrably Safe, Environmentally Sound, Effective and Available Defense Capability
MoD SAFETY & ENVIRONMENTAL MANAGEMENT SYSTEM SCOPE & GOVERNANCE

DSPA
MAA
DFSR
DLSR
DMR
DNSR
DOSR
DMSR
DAIB

DSA SEMS
SofS
DG DSA
Perm Sec
SDH & VCDS
Defence Board
Armed Forces Committee

3rd Party Reporting
Annual Assurance Report
Regulator Group
Stakeholder Committees
Governance
Quarterly Performance Report
2nd Party Reporting

TLB SEMS
TLB Holders, Senior Duty Holders, CEOs

1. JFC also Force Generates
2. DE&S also Duty Holds
3. Equipment & Services require SEMS interface with Industry

JFC & SUB CMDs
NAVY CMD
ARMY CMD
AIR CMD
D NUC
DE&S
DIO
DSTL
DECA

Define Policy & regs
Assure Compliance
Enforcement
Analyse & Plan
Investigate

Define Orders
Assure Compliance
Set Objectives
Analyse & Plan
Investigate

Operational Deployment
Force Generation
Force Operating
Capability Development
Delivering Capability Enablers
• Equip
• Infra
• Services
• Support

Duty of Care
Duty Holding
Environmental Protection

Measures of Effectiveness

DSM SEMS

HLB ODH BUSINESS
UNITS
BLB DDH PROJECT TEAM
ESTABLISHMENTS & UNITS

1. Vertically Integrated
2. TDH & VCDS
3. Duty Holding to Face Environmental Protection

Application
Accountability
SEMS Hierarchy
Demonstrably Safe, Environmentally Sound, Effective and Available Defense Capability
Step 1 - Define & Issue:
- Safety Policy, Regulation & standards
- Roles & Responsibilities, Organisational structures, RACI & delegations
- Competencies, approvals, mutual recognition
- Set Objectives
- Process, Procedures, Orders
- Planning cycles
- Governance structure & battle rhythm
- TNAs & Training Design

Step 2 - Implement Safety Programs "Do"

Step 3 – Monitor Performance & Assure Compliance "Check"

Step 4 - Plan for Safety "Plan"

Step 4 – Undertake:
- Reviews of Hazard Logs & Risk Registers
- Review performance reports
- Analyse safety information (Measure of Effectiveness and Performance)
- Engagement with ITE, ISA, Subject Matter Experts, External Bodies to benchmark
- Conduct Horizon Scanning of Legislation, future Technology and Capability Equipment Programme
- Undertake OSAs to assess impact of Change of safety
- Undertake In-Year of funding (as affecting activity & safety)
- Consider SQEP & resilience of workforce

MoD Safety & Environmental Protection Management System

Step 2 - Deliver/Undertake:
- Establish & sustain safety organisations & governance
- Train & Educate workforce
- Issue delegations & report on individual & collective performance & culture
- Issue Organisational Approvals
- Issue licences
- Ensure compliance with safety policy, regulation & process
- Demonstrate leadership
- Empowered Workforce
- Ensure Just Culture
- Certify Equipment
- Maintain Equipment
- Manage safety risk to ALARP
- Retain records of decision making
- Ensure timely Corrective Action

Step 3 - Deliver/Undertake:
- Conduct assurance 1st/2nd/3rd Party
- Report & analyse safety performance
- Investigate, report & analyse incidents
- Anonymous reporting of workforce concerns
- Take Enforcement Action
- Undertake Independent Investigation
- Retain assurance records
- Undertake Information Knowledge Management to enable management reviews
Implement Steps 1 to 4 to deliver governance, to assure, to ensure

MoD SAFETY & ENVIRONMENTAL MANAGEMENT SYSTEM IMPLEMENTATION

MoD SAFETY & ENVIRONMENTAL MANAGEMENT SYSTEM SCOPE & GOVERNANCE

Defence Safety Committee

Armoured Forces Committee

SDH & VCDS

Perm Sec

Governance

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Stakeholder Committees

Defence Board

Defence Safety Committee

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MoD SAFETY & ENVIRONMENTAL MANAGEMENT SYSTEM IMPLEMENTATION

TLB Holders, Senior Duty Holders, CEOs

Organisation

Define Orders

JFC & SUB CMD

Assure Compliance

NAVY CMD

Set Objectives

ARMY CMD

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AIR CMD

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Operational Deployment

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Force Generation

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Force Operating

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Capability Development

DECA

Delivering Capability Enablers

TLB SEMS

- Equip

- Infra

- Services

- Support

- Duty Holding

- Duty Holder Facing

- Environmental Protection

- Establishments & Units

SEMS Hierarchy

1. JFC also Force Generates

2. DE & S also Duty Holds

3. Equipment & Services require SEMS interface with Industry
Regulating and Checking Performance

Demonstrably Safe, Environmentally Sound, Effective and Available Defense Capability
218 UK Statutory Rules apply to the DOSR AOR

- 129 Rules have no identified DED (added to Database)
- 89 Rules equate to 107 DEDs (below)

- 50 Dis-applications
- 35 Exemptions
- 22 Derogations
Applicable MOD Regs are (mainly) based on:

- **The disapplication from Explosives Regulations 2014** whereby we must have a scheme approved by the Secretary of State.

- **The disapplication from The Dangerous Goods in Harbour Areas Regulations 2016** whereby we must have a scheme approved by the Secretary of State.

- **The delegation within The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009** whereby The competent authority is the Secretary of State for Defence for functions in relation to classification of military explosives.

- Areas where I consider the Defence context where there is a high-risk activity and where there is **No Appropriate Statutory Regulation**
Regulation and Assurance Strategy - MOD Ranges

Applicable MOD Regs are (mainly) based on areas where I consider the Defence context where there is a high-risk activity and where there is No Appropriate Statutory Regulation
Applicable MOD Regs are (mainly) based on the fact that *The Control of Major Accident Hazards Regulations 2015 do not apply* to an establishment which is under the control of the Secretary of State for the purposes of the Ministry of Defence.
## Separation of Assurance Activities

<table>
<thead>
<tr>
<th>Scope of Activity</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Party</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Party</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; (Independent)</th>
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</thead>
<tbody>
<tr>
<td><strong>OME Acquisition</strong></td>
<td>Project Team (PT)</td>
<td>Operating Centre</td>
<td>• Risk-based</td>
</tr>
<tr>
<td>1300 items over 29 Project Teams</td>
<td></td>
<td></td>
<td>• Developing Certification Process</td>
</tr>
<tr>
<td><strong>Explosives Logistics</strong></td>
<td>Commanding Officer/Head of Establishment (HOE)</td>
<td>Standard Licence</td>
<td>• DOSR Risk-based Licence</td>
</tr>
<tr>
<td>4000 Licences over 700 locations</td>
<td></td>
<td></td>
<td>• Audits</td>
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</table>
| **Explosives Classification**     | PT Submission                             | Independent Safety Advice | DOSR Classification Panel and issue Competent Authority Document (CAD)
| UK Competent Authority for Military Explosives |                       |                      |                              |
| **Major Accident Control**        | HOE                                       | HQ Staff             | • DOSR Audit                 |
| 28 Locations                      |                                           |                      | • Certificate of Compliance  |
| **Ranges**                        | HOE                                       | HQ Annual Inspection | DOSR (3 Yr Independent Inspection) |
| 1700 Locations                    |                                           |                      |                              |
| **Lasers**                        | PT                                        | Safety Certificate   | DOSR Audit                   |
| 500 Systems                       |                                           |                      |                              |
Continuous Improvement
Mutual Recognition

Demonstrably Safe, Environmentally Sound, Effective and Available Defense Capability
Mutual Recognition – Why is it Important?
Minimum Safety Data Package (MSDP) for OME Qualification

OME safety qualification relies on two main aspects:

- Providing evidence of compliance of the design (the OME itself or sub-components) to internationally agreed standards (STANAGs etc); and,

- Providing evidence of safety assessments covering all aspects of the OME’s use (storage/handling/transport and functioning), and conducted according to test standards.
Any shared safety data package provided to a foreign safety authority (Mutual Recognition) should include, as a minimum, the following items, covering these two aspects.

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference Documents</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation Systems Qualification</td>
<td>STANAG 4187, STANAG 4368 and STANAG 4157.</td>
<td>To provide an acceptable risk level against inadvertent initiation of the payload or of the propulsion components of the ammunition.</td>
</tr>
<tr>
<td>Explosive Materials (EM) Qualification Data</td>
<td>STANAG 4170 / AOP-7 (explosive materials characteristics assessment) and STANAG 4147 (explosive materials compatibility).</td>
<td>To provide safety and functional characteristics of the EM used in the ammunition. These values allow comparison with in service systems, as well as provide initial data, to be compared with values obtained in production and/or in service surveillance (ISS).</td>
</tr>
<tr>
<td>Other Components Qualification Data</td>
<td>STANAG 4452 / AOP-52 or IEC standards (software safety), etc.</td>
<td>To provide evidence that other components will not adversely affect safety of the munition through its operational life.</td>
</tr>
<tr>
<td>Environmental Testing (Climatic and Mechanical)</td>
<td>STANAG 4370 / AECTPs.</td>
<td>To provide evidence that the munition will remain safe and function as intended through its operational life, including severe environments (temperature, humidity, shocks and vibrations, etc.).</td>
</tr>
<tr>
<td>Electromagnetic Environmental Effects (E3)</td>
<td>STANAG 4370 / AECTP-250 and AECTP-500, STANAG 1397.</td>
<td>To provide evidence that a munition sensitive to E3 will remain safe in severe electromagnetic environments (e.g. HERO, lightning and electrostatic discharge).</td>
</tr>
<tr>
<td>IM assessment</td>
<td>STANAG 4439 / AOP-39 and relevant test STANAGs.</td>
<td>To provide the level of reaction of ammunition to accidental or enemy threats (abnormal thermal or mechanical environments).</td>
</tr>
</tbody>
</table>
Provide **Design and Test Compliance Matrices** to enable national experts to evaluate another nation’s qualification results.

Provide information on any **Waivers** granted, including the justification for each waiver.

Provide **Details of Test Procedures** for other nation’s experts to understand how the test results were achieved.

**Safety Case Report**

“Minimum Safety Data Package”

Separate out **Safety and (Classified) Performance Data** so the results can be shared more readily.
Thank You - Any Questions?

Demonstrably Safe, Environmentally Sound, Effective and Available Defense Capability