MSIAC

Supporting Munitions Safety












IM IM/HC Testing Organization's Capabilities & Competences

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Background

*IM/HC: UN HC tests harmonized with IM ones

- **NATO needs munitions interchangeability**
- **IM & IM/HC* tests can be carried out**
  - **Multiple Nations organizations**
  - **Slight differently ways**
    - **Procedures not very accurately defined**
    - **Alternative procedures permitted by STANAGS**

Background

- **Needs**
  - Commonality
  - Trusted results
  - Eventually certified test organizations

Background

3rd Ed. Available by November 2010

MSIAC nations have decided to develop

Audit Criteria

For

IM Testing Organization Capabilities & Competences

Purpose

To promote the establishment of a procedure to **Capture, Quantify & eventually Certify** the **Capabilities, Competences, Know How & Dedication** to meet **IM Testing Needs** that will make a **Trustable Test Center** ***Internationally Recognized as Suitable*** to carryout **IM Certification Tests Mutually Acceptable** & **Internationally Recognized**

Purpose

- Aiming at showing the quality of the testing not only consistency
- Hoping that will lead to accreditation

Purpose

- **Support of**

Conduct and Reporting
of
Full Scale Hazard Tests
(AOP-39 Ed. 3 Annex H)

Purpose

- **Provide a check list to**
  - **Report various general standards as ISO ones**
  - **Demonstrate**
    - **Staff adequate competences**
    - **Procedure minimum requirements meet**
  - **Report Additional Capabilities & Competences**

Purpose

- **Provide a check list to**
  - **Write the technical part of an ISO17025 QA manual**
    - **ISO 17025 uses criteria and procedures specifically to determine technical competence unlike ISO 9001**
  - **Show that your organization is one stop shop in terms of IM IM/HC**

Criteria

SCO, FCO, FI, BI, SCJ & SR STANAGS
Guidance on the Assessment & Development of Insensitive Munitions (AOP-39 Ed. 3)
UN Orange Book Test Procedures Ed. 4
Expertise of IM community specialists

Criteria

Pilot audit done by FR, SP and UK

ISO/EIC 17025 General Requirements for the

Competence of Testing &

Calibration Laboratories Clause 5

Criteria

ISO/EIC 17025 criteria & procedures

- Developed to
  - Determine technical competence
  - Demonstrate that tests are as accurate and reliable as possible with applicable standards

Criteria

ISO/EIC 17025 Accreditation

- Same organization as ISO 9001 accreditation
- US National Institute of Standards and Technology uses ISO 17025 to accredit organizations testing Personnal Body Armor

Criteria

ISO/EIC 17025 Accreditation

- Demonstrate that test quality is constant
- First step towards certification showing the high quality of the tests carried out by your organizations

Audit

- **4 Questionnaires & User's manual**
  - A) Guidance on General Standards as ISO 17025
  - B) Guidance on IM testing Competences
  - C) IM Test Procedures Mandatory Requirements
  - D) Guidance on Additional IM Testing Capabilities

Audit

- **Self (internal) audit**
  - **Organization fulfills audit to identify capabilities, competences, strengths and limitations**
  - **Organization use content of the questionnaires to build ISO17025 manual**

Audit

- **Formal audit**
  - **Independent body visits & audits organizations to certify it**

General Standards

Organization to report on general standards

- Quality system such as ISO 9001/17025
- Occupational health and safety system
- Environmental system such as ISO 14000
- Possible other standard implemented

IM Testing Competences

- Details on the Quality Assurance System
- Staff knowledge, training, experience & expertise
- Info is usable to write ISO17025 QA manual

IM Testing Competences

- **Capability and past history in**
  - **Developing IM tests & writing IM test plans**
  - **Carrying out IM tests**
  - **Reporting test IM results & as per AOP-39 Ed. 3**
  - **Carrying out IM assessment**

IM Test Procedures
Mandatory Requirements

- **Aiming to demonstrate**
  - **Capability to meet mandatory requirements**
    - **NATO and UN ones compiled & compared**
    - **Most stringent requirements retained**

IM Test Procedures Mandatory Requirements

- **Self audit**
  - Criteria (over 60)
  - Rationale supporting this criteria & references
  - Sentencing data for each criteria
  - Comments including suitable requirements

IM Test Procedures Mandatory Requirements

Response Assessment Instrumentation				
Type of Criteria	Criteria	Rationale	References	Sentencing
Air blast pressure		According to STANAG 4382, 4496, 4241, 4526, 4396, 4240 and AOP-39, air blast pressures must be measured. According to AOP-39, At least two rows of blast over pressure gauges sited orthogonally should be used in every IM test.	AOP-39 Ed.3 Annex H, Para 22.1 & 22.4, p. H2-6 STANAG 4382 Ed.2, Para 16i, p. 3 STANAG 4496 Ed.1, Para 17a, p. 4 STANAG 4241 Ed.2, Para 12a, p. 3 STANAG 4526 Ed.2, Para 17a, p. 4 STANAG 4396 Ed.2, Para 12g, p. 5 STANAG 4240 Ed.2, Para 17, p. A-3 AOP-39 Ed.3 ,Annex H, Appendix 7,8,9,10, 11 and 12, Para 4, p. H7-2, H8-2, H9-2, H10-2 and H11-2 and para 5, p. H12-2	A capability to use air blast gauge is required with two rows of blast over pressure gauges sited orthogonally.

IM Test Procedures Mandatory Requirements

Shaped Charge Jet				
Type of Criteria	Criteria	Rationale	References	Sentencing
Test Parameters Instrumentation				
Meteo	Temp., wind speed & direction	According to AOP-39, meteorological conditions should be recorded throughout the duration of the test.	AOP-39 Ed. 3, Annex H, Appendix 12, Para 6.1, p. H-12-3	Record meteorological conditions such as ambient temperature, wind direction & velocities is required throughout the test.
Test Equipment				
Shaped Charge Jet Charac.	Type	According to STANAG 44526, the standard shaped charge is the 50 mm Rockeye. According D. Houchins NSWC DD, the US is requesting an 81 mm shaped charge with conditioning plates as a minimum	STANAG 4526 Ed.2, Para 12, p. 3	A capability to fire 50 mm Rockeye charge or an equivalent one is required. In the US, an 81 mm charge with conditioning plate is required.
Test Site				

Reporting Additional IM Testing Capabilities

Draw a complete picture of organizations

- Capabilities (not only mandatory ones)
- Competences, strengths and limitations

Organization to put forward their unique capabilities

Project team to review organization's specifics

Reporting Additional IM Testing Capabilities

- **Specific Test Equipment**
  - Bullet caliber & shaped charge options
  - Explosive or gun fragment projector
  - SCO oven construction and size
  - FCO stand & pool size
- **Over 50 guidance points**

Reporting Additional IM Testing Capabilities

- **Specific Test Site**
  - Test site description with pictures, size & NEQ
  - Largest amount of fuel that can be burnt
  - Maximum time allowed for a SCO
  - Maximum NEQ that can be detonated during SR
- **Specific Instrumentation**

Benefits to Carry Out Self Audit

- **Compendium of equipment, capabilities & competences to:**
  - **Train staff new in the field of IM testing.**
  - **Establish quickly competences and capabilities to test specific munitions**

Benefits to Carry Out Self Audit

- **Compendium of equipment, capabilities & competences to:**
  - **Plan future IM testing development requirements**
  - **Identify potential non-compliance prior**
    - **ISO17025 formal audit**
    - **Formal certification audit as per this procedure**

Benefits to Carry Out Self Audit

- **Identifying commitments needed in terms of**
  - Health and safety management
  - Environmental protection management
  - Quality management
- **Assurance that information**
  - Reviewed, Documented Retained.

Benefits to Carry Out Self Audit

- Documentation demonstrating competencies, capabilities and performance for amongst other thing proposals
- Larger international recognition as organizations will be reported in MSIAC Newsletter & Directory of Insensitive Munitions Testing Facilities

Summary

- **Help to write ISO 17025 QA Manual**
  - Immediately achievable
  - Step towards a MSIAC type certification
- **Available to all AC/326 nations**
  - All can see what is addressed in a audit
- **Live document**
  - New edition plan to reflect changes to UN book

Summary

Developed IM IM/HC Procedure

- Acknowledge and Certify (eventually)
  - Competences & Capacities
  - Know how & Dedication
- What makes an organization
  - **Suitable for certifying IMness**

Going beyond ISO17025

Future

- It is hope that as this procedure mature it will lead to an accreditation system such as the one for small arms interchangeability
- Need better ways to quantify Additional Capabilities & Competences
- Please help us with **Feedbacks**

MSIAC
Supporting Munitions Safety

IM Technology Gaps Workshop

Reducing Effects from Shaped Charge Jets, Fragments and Explosively Formed Projectiles

Objective: Identify how to reduce the vulnerability <u>on current operations</u> of key munitions (packaged or unpackaged) against these threats

Dutch Defense Academy
The Hague, The Netherlands
20-24 June 2011

Deadline for abstracts
15 November 2010

IM Technology Gaps Workshop