SAFETY SERVICES ORGANISATION

HAZARD AND RISK ASSESSMENTS

Introduction

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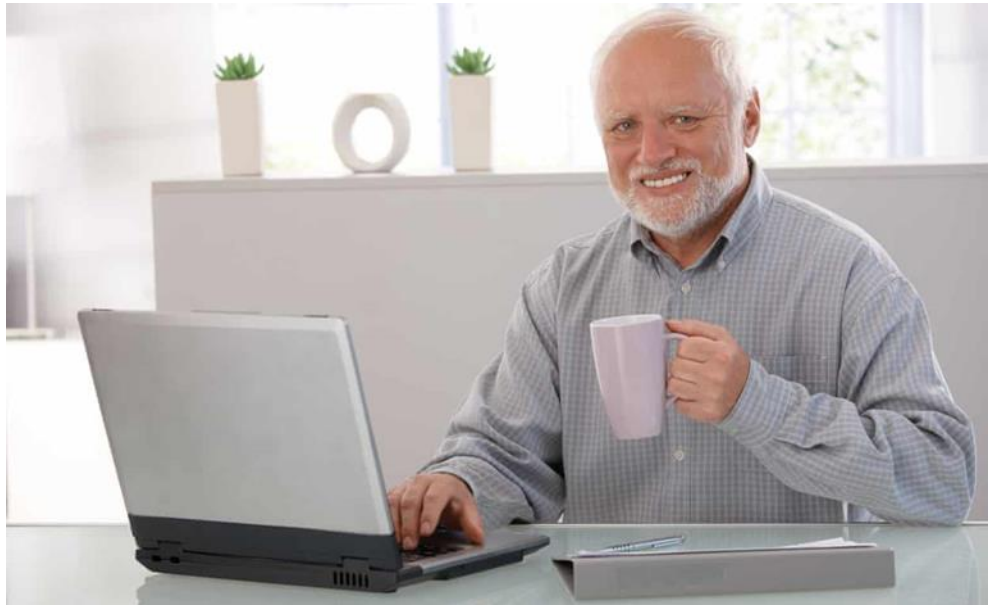
INTENDED LEARNING OUTCOMES

To understand:

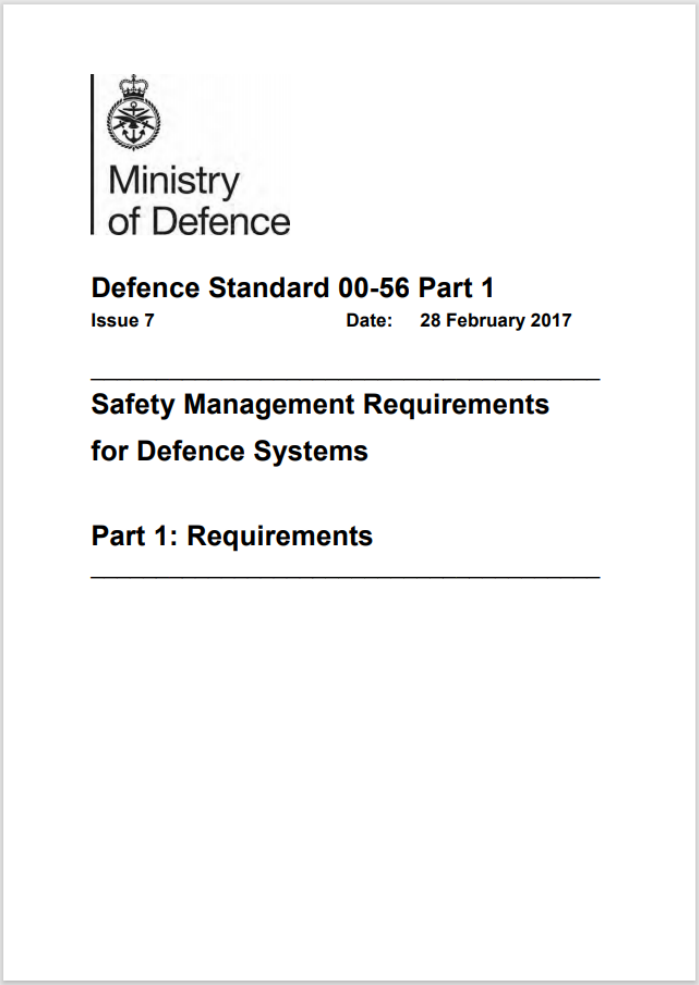
- What is a Hazard Assessment?
- What is a Risk Assessment?
- Why Risk Assessments must be conducted?
- Why people need a Risk Assessment?
- The importance of Risk Assessment upkeep and configuration management
- The different types of Risk Assessment and when and why they are likely to be conducted



RELEVANT DEFINITIONS

Def Stan 00-056, Part 1, Issue 7 - Definitions:

- **Harm**: Adverse impact on people, including fatality, physical or physiological injury, or short- or long-term damage to health.
- **Hazard**: Potential to cause Harm. e.g. A physical situation or state of a system, often following from some initiating event that may lead to an Accident.
- **Accident:** An event, or sequence of events, that causes unintended Harm.
- **Risk:** Combination of likelihood of Harm and the Severity of that Harm.
- **Likelihood:** A measure of the probability that the Accident will occur.
- **Severity:** A measure of the degree of Harm.
- **Risk to Life (RtL):** Risk of Harm.



Ministry of Defence

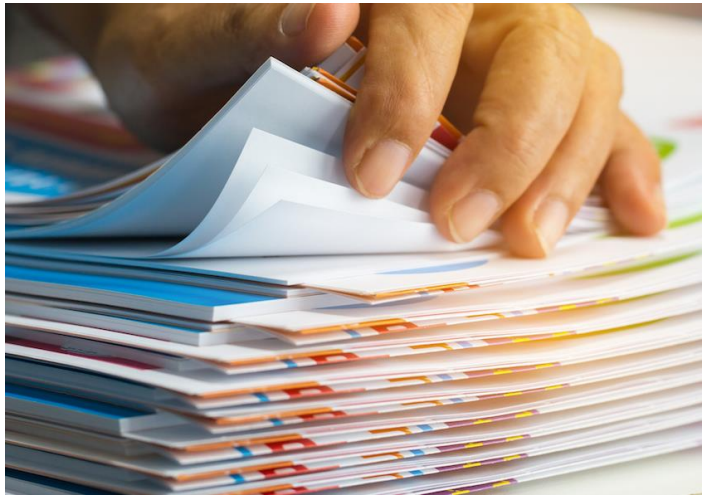
Defence Standard 00-56 Part 1

Issue 7 Date: 28 February 2017

Safety Management Requirements for Defence Systems

Part 1: Requirements

USEFUL DOCUMENTATION & RESOURCES



Useful documentation and resources:

- [1] Def Stan 00-56: The standard for "Safety Management Requirements for Defence Systems".
  - Access (Free): https://www.dstan.mod.uk/StanMIS/
- [2] The MOD's Acquisition Safety and Environmental Management System (ASEMS) Online:
  - Access (Free): http://www. https://www.asems.mod.uk/
- [3] Health and Safety at Work Act 1974
  - Access (Free): https://www.legislation.gov.uk/ukpga/1974/37/contents
- [4] The Management of Health and Safety at Work regulation 1999:
  - Access (Free): https://www.legislation.gov.uk/uksi/1999/3242/contents/made
- [5] HSE Risk Assessment - A Brief Guide to Controlling Risks in the Workplace
  - Access (Free): https://www.hse.gov.uk/research/rrhtm/rr151.htm
- [6] Joint Service Publication (JSP) 375, Volume 1, Chapter 40
  - Access (Free): https://www.gov.uk/government/publications/jsp-375-health-and-safety-handbook-volume-2

WHAT IS A HAZARD ASSESSMENT?

Hazard Assessment: Effectively a mixture of both Hazard Analysis and part Risk Assessment.

Hazard Analysis identifies all possible hazards potentially created by a product, process or application.

Risk Assessment estimates the credible likelihood and severity of harm both before and after the implementation of risk reduction measures.

Purpose: To identify potential Risks and Hazards within a specified area of work, in addition to identifying appropriate safety measures to remediate the identified Hazards.

[1, 2]

WHAT IS A RISK ASSESSMENT?

Risk Assessment:

- An examination of identified hazards.
- A means of qualitatively or quantitatively estimating the risks associated with said hazards.
- A means to notify the business and related personnel of what potential hazards may be present during work activities, and what measures are in place to reduce said risks.
- A means of demonstrating that the business is proactively managing safety such the risks identified to level deemed As Low As Reasonably Practicable (ALARP).

WHY CONDUCT A RISK ASSESSMENT?

It's a Legal Requirement!

The Management of Health and Safety at Work Regulations 1999 (Statutory Instrument) states that:

*"Every employer **shall** make a suitable and sufficient assessment of:*

a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and

b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking."

[3, 4, 10]

WHY CONDUCT A RISK ASSESSMENT? (2)

The Risk Assessment is an integral part of a Safe System of Work (SSW)

Joint Service Publication (JSP) 375, Volume 1, Chapter 40 mentions:

Health and safety legislation requires all activities to be conducted within a SSW. Within the military envelope there are three similar but distinct SSW: The standard SSW; the Operational SSW, and; a Safe System of Training (SST).

The standard SSW is defined as having four parts: Safe Persons; Safe Equipment; Safe Place, and; Safe Practice.

WHY CONDUCT A RISK ASSESSMENT? (3)

Moral Obligation

Broadly, it is unacceptable for personnel to come under harm as a result of their work. Therefore, conducting a risk assessment and proactively managing safety, demonstrates that the business cares about the health and safety of personnel, should lead to a happier and less anxious workforce.

Financial Consideration

Conducting a robust risk assessment as part of an overall Safety Management System demonstrates, to external auditors and key stakeholders, that the business is proactively managing safety.

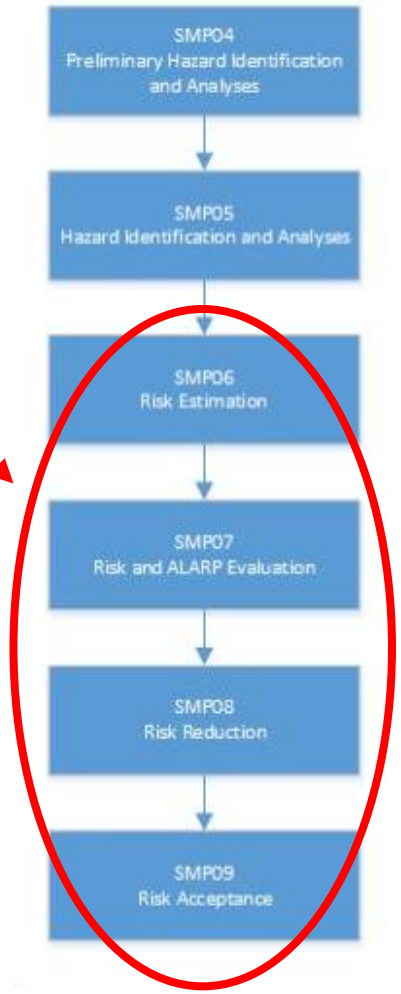
Doing so should reduce the likelihood of fines and personal injury claims, lower insurance premiums, and promote a safer way of working.

Ultimately, maintaining a reputation as a safe business.

WHEN TO CONDUCT A RISK ASSESSMENT?

As part of the wider Safety Management System - Post Hazard Identification and Analysis

Whenever it is believed that either a product, activity, facility etc, presents a potential hazard to personnel.



WHO ARE THEY FOR?

Everyone!

The Business (Employer):

- A risk assessment enables the business to demonstrate, to external auditors and key stakeholders, they are actively managing safety.
- A risk assessment should clearly present the identified hazards, risks, and proposed risk reduction measures to enable those with the delegated authority to either accept or reject on behalf of the business.

Employees:

- A risk assessment should work in parallel with operating procedures or item design documentation.
- In doing so, it enables the personnel who are undertaking activities or interacting with the item to better understand the related hazards and accidents, the causes that would lead to the realisation of the hazard, and more importantly what risk reduction measures have been put in place to protect them.

MANAGEMENT AND TRACEABILITY

- Safety Documents are ‘Live’ Documents
- Ownership of Risk Reduction Measures
- Periodic Review and Update
- Record and Justification of Changes
- Record of Acceptance

TYPES OF RISK ASSESSMENT?

- **Qualitative**
  - A qualitative risk assessment should be a systematic examination of what could cause harm to people, so that decisions can be made as to whether existing precautions or control measures are adequate or whether more needs to be done to prevent harm.
  - Where the hazards presented by the undertaking are few or simple, it is appropriate to just carry out a simple qualitative risk assessment. This can be a very straightforward process based on informed judgement and reference to appropriate guidance. Where the hazards and risks are obvious they can be addressed directly, and no complicated process or skills will be required.
- **Quantitative**
  - Quantitative risk assessment involves obtaining a numerical estimate of the risk from a quantitative consideration of event probabilities and consequences.
  - Where the hazards presented by the undertaking are numerous and complex, and may involve novel processes, detailed and sophisticated risk assessments will be needed, and it is appropriate to carry out a detailed quantitative risk assessment in addition to the simple qualitative assessment.
  - In carrying out quantitative risk assessments, special quantitative tools and techniques will be used for hazard identification, and to estimate the severity of the consequences and the likelihood of realisation of the hazards.
  - The results of this type of risk assessment will be numerical estimates of the risk, which can be compared to numerical risk criteria at the risk evaluation stage.

TYPES OF RISK ASSESSMENT?

- **Hybrid** - Qualitative and Quantitative (or Semi-Quantitative Risk Assessments)
  - When carrying out a hybrid risk assessments, simple qualitative techniques, or the use of simple modelling techniques may be appropriate. Simple modelling techniques may be used to derive order of magnitude estimates of the severity of the consequences and likelihood of realisation of hazards. These estimates can be combined to obtain estimates of the order of magnitude of the risk.
  - Hybrid risk assessments are commonly used when the hazards are neither few and simple, nor numerous and complex, for example if there are some hazards that require specialist knowledge, such as a particular complex process or technique, it may be appropriate to supplement the simple qualitative approach with a semi-quantitative assessment.

TYPES OF RISK ASSESSMENT?

- **Generic**
  - A generic risk assessment covers the common hazards for an activity or piece of equipment, and will often be applied for similar activities or equipment in different environments.
- **Site-Specific**
  - A site-specific risk assessment is one that accounts for the conduct of an activity or use of a piece of equipment at a specific location, within a specific environment, or perhaps even to account for specific personnel.
  - A site-specific risk assessment will do more than look at common hazards. It will also address the unusual. Hazards that might only apply to that specific situation, on that particular day
- **Dynamic**
  - A dynamic risk assessment is a process of assessing risk in an 'on the spot', or evolving situation, used to address unknown risks and handling uncertainty.

ILO RECAP

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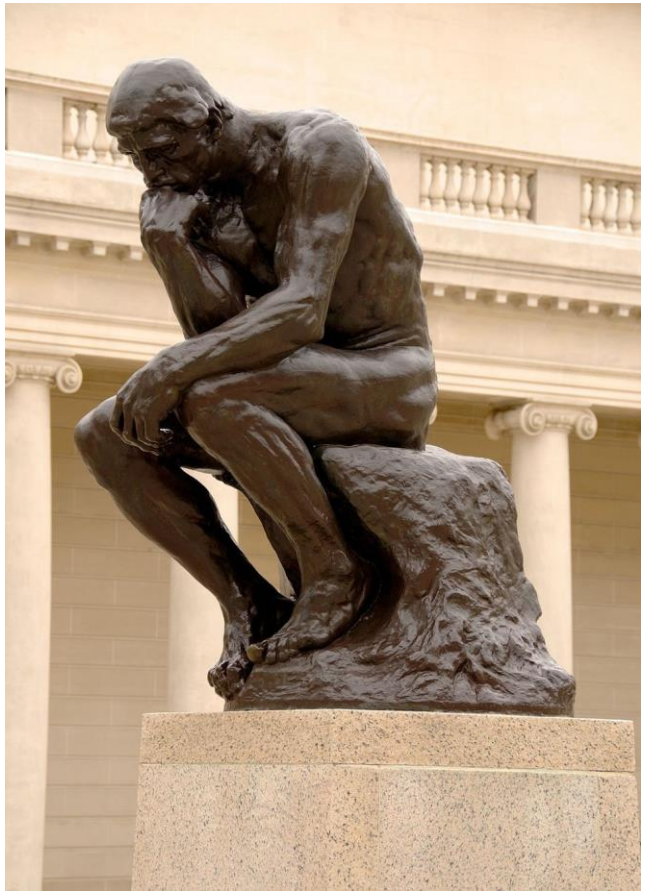

NEXT TOPICS...

Risk Assessment Key Components

- Hazards;
- Safety Requirements;
- Accidents;
- Causes;
- Risk Estimation (Pre Risk Reduction);
- Risk Reductions (Control Measures and Mitigations)
- Risk Estimation (Post Risk Reduction);
- Hazard Risk Class;
- Recommendations.

THANK YOU FOR LISTENING

ANY QUESTIONS?

REFERENCES

[1] Def Stan 00-56: The standard for “Safety Management Requirements for Defence Systems”.
[2] The MoD’s Acquisition Safety and Environmental Management System (ASEMS) Online
[3] Health and Safety at Work Act 1974
[4] The Management of Health and Safety at Work regulation 1999:
[5] HSE Risk Assessment - A Brief Guide to Controlling Risks in the Workplace
[6] Joint Service Publication (JSP) 375, Volume 1, Chapter 40
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