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There are a number of techniques which can be used to aid the implementation of Safety and Environmental Protection (S&EP) within the acquisition environment. Articles that describe these techniques have been produced and grouped together to form the ASEMS Toolkit. Additional Articles are currently in production and will be added to the toolkit when they become available.

Bow-Tie Diagram

The bow-tie technique was first developed as a technique for developing safety cases in the Oil and Gas Industry. The principle of the technique requires the identification of hazards, circumstances (threats) and events leading to the risk realisation (usually as a fault tree), and then, a tree of consequences leading from the event to the consequences and the estimated loss (usually with an event tree).

Consequence Analysis & Risk Reduction Option Selection

This guidance paper covers both the technique of Cause Consequence Diagrams and three analyses which may be used subsequently, where quantitative ALARP justification is necessary. Both Def Stan 00-56 and the MOD's POSMS manual give guidance on when quantitative ALARP justification may be required, and this is likely to be for hazards not addressed by the application of good practice and those with the highest levels of Risk.

Data Reporting, Analysis and Corrective Action System (DRACAS)

The Data Reporting, Analysis and Corrective Action System (DRACAS) is a closed loop data system for reporting and analysis, used to record information about incidents and corrective actions that have been implemented.

Event Tree Analysis

Event trees are graphical representations of binary logic models which identify and can quantify possible consequences resulting from an initiating event (e.g. component failure). The event tree provides systematic coverage of the time sequence for the event's propagation.

Fault Tree Analysis

Fault-Tree Analysis (FTA) is a graphical binary logic top-down technique that is used to describe how a specific unwanted event in a system may be caused by the effects of a single failure or combination of failures.

FMEA/FMECA

Failure modes and effects analysis (FMEA) is a reliability evaluation technique to determine the effect of system and equipment failures. This qualitative technique helps identify failure potential in a design or process i.e. to foresee failure before it actually happens. A FMECA is an analytical quantitative technique which ranks failure modes according to their probability and consequences.

Functional Safety Analysis

Functional Safety Analysis is an approach that assesses all the system functions to determine the hazards associated with what the system does. The purpose of Functional Safety Analysis is to identify hazards associated with both the correct and incorrect operation and non-operation of the system, lower level functions and human functions.

Goal Structuring Notation and Claim Trees

Goal Structuring Notation (GSN) and Claim Trees are two similar techniques used to present an explanation of how the available evidence can be interpreted to indicate the achievement of a top-level claim or assertion, for example that a system is tolerably safe.

Hazard Checklist

A Hazard checklist contains questions or topics intended to prompt consideration of a range of safety issues.

Hazard Log

The Hazard Log is a structured means of storing and referencing Safety Risk Evaluations and other information relating to an equipment or system.

HAZOP

The HAZOP procedure is a systematic methodology carried out by a multi-disciplinary team with substantial experience of the system or design. Detailed analysis of predetermined deviations from the design intent, and the associated causes, consequences, safeguards and recommendations are recorded.

Safety Risk Matrices

A safety risk matrix provides a framework for ranking or classifying safety issues according to their significance.

SWIFT

The Structured What-If Technique is a "brainstorming" method where "What-If" questions are generated using a variety of sources such as checklists, past incidents, standards and guidelines etc.

Zonal Hazard Analysis

Zonal Hazard Analysis is an analysis of the physical disposition of the system and its components in its installed or operating domain. It is used to examine Hazards and Safety concerns which result from where a system is located.

Sustainable Procurement Tool

The following toolkit provides a 5-step method for achieving a balanced, proportionate approach to sustainability within the DE&S procurement process

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