

SMM 7.0.2 Risk Assessment & Risk Management

Purpose and Responsibility

The purpose of risk assessment / risk management is to establish the procedures for identifying, assessing, and then reducing the risks for all operations on UW MAROPS ships. Although the Master is ultimately responsible for the safety of the ship and personnel, safe operations are everyone's responsibility. The risk assessment process is a tool to assist the Master and Chief Scientist in quantifying the risk.

What is "risk"? According to ISO 8402:1995 / BS / 4778 and MSC Circ 1023/MEPC Circ 392, risk is "A combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence." and "The combination of the frequency and the severity of the consequence."

IACS No 127 A Guide to Risk Assessment in Ship Operations provides guidance on the risk assessment process. A few highlights are added here: *A risk assessment is nothing more than a "snapshot". The organization, the technology, working practices, the regulatory environment and other factors are constantly changing, and subsequently arising hazards may not be included. Assessments must be reviewed regularly and in the light of experience; for example, an increase in the number of accidents or hazardous occurrences may indicate that previously implemented controls are no longer effective. **Additional risk assessments will be needed for infrequent activities or those being undertaken for the first time.** The formal risk assessment exercise is only one of many contributions to risk management. Much more important are flexibility and responsiveness to a dynamic environment and its dangers. The organization must ensure that it is sensitive to the signals provided by internal audits, routine reporting, company and masters' reviews, accident reports, etc., and that it responds promptly and effectively.*

*It is important to remember the subjective nature of risk perception; for example, one person swinging 30m above the deck in a bosun's chair may have a very different view of the risks involved from that of another person in the same situation. This divergence in responses to risk arises from differences in experience, training and temperament, and it can be considerable. Who decides what is tolerable and what is acceptable? Because the judgements of the people engaged in an activity may not coincide with those of the assessors, **it is essential that operational staff be involved in the assessment process.** They have knowledge of the activities and experience in their conduct, and they have to live with the consequences of the decisions that are taken. Furthermore, different levels of experience and training mean that the hazards and risks associated with an activity can vary greatly with the people who carry it out, and conditions may be very different from those prevailing at the time of the assessment.*

Risk is not a constant, measurable, concrete entity. Quantitative assessments of risk must be understood as estimates that are made at particular moments and are subject to considerable degrees of uncertainty.

Procedure

There are several risk assessment techniques outlined in IACS No 127 A Guide to Risk Assessment in Ship Operations - these include (but are not limited to) checklists, qualitative risk assessments, and failure mode and effects analysis (FMEA). This procedure documents two different risk assessment techniques - a simple quantitative risk assessment for repetitive operations and a qualitative risk assessment for infrequent or first time operations. Other risk assessment / risk management techniques may be proposed for specific operations and will be added to this procedure as needed.

An important component of risk assessment is that everyone involved in risky operations has the opportunity to express their concerns; all personnel are encouraged to contribute their input on their estimate of risk. It is incumbent upon the person leading the risk assessment to ensure all personnel's input is heard and discussed.

A Risk Assessment shall be completed before new or complex science evolutions that are undertaken or whenever UW MarOps, the Captain, Chief Mate, or Chief Scientist determines that one would be prudent. The various factors and how they are changing affect the safety of science operations. Factors, such as weather, equipment status, crew/science party skill, fatigue, and/or experience, need to be considered.

UW MarOps team will look ahead and decide which cruises will require a Risk Assessment

- Science evolutions that require a Risk Assessment will be identified during Cruise Planning meetings
- Additional Risk Assessments will be undertaken at other points before science evolutions as deemed necessary by UW MarOps, the Captain, Chief Mate, or Chief Scientist

Risk Assessment Documentation:

- All pre-cruise Risk Assessments will be uploaded to the cruise in MFP

Risk Assessments done on the vessel will be uploaded to SINEX

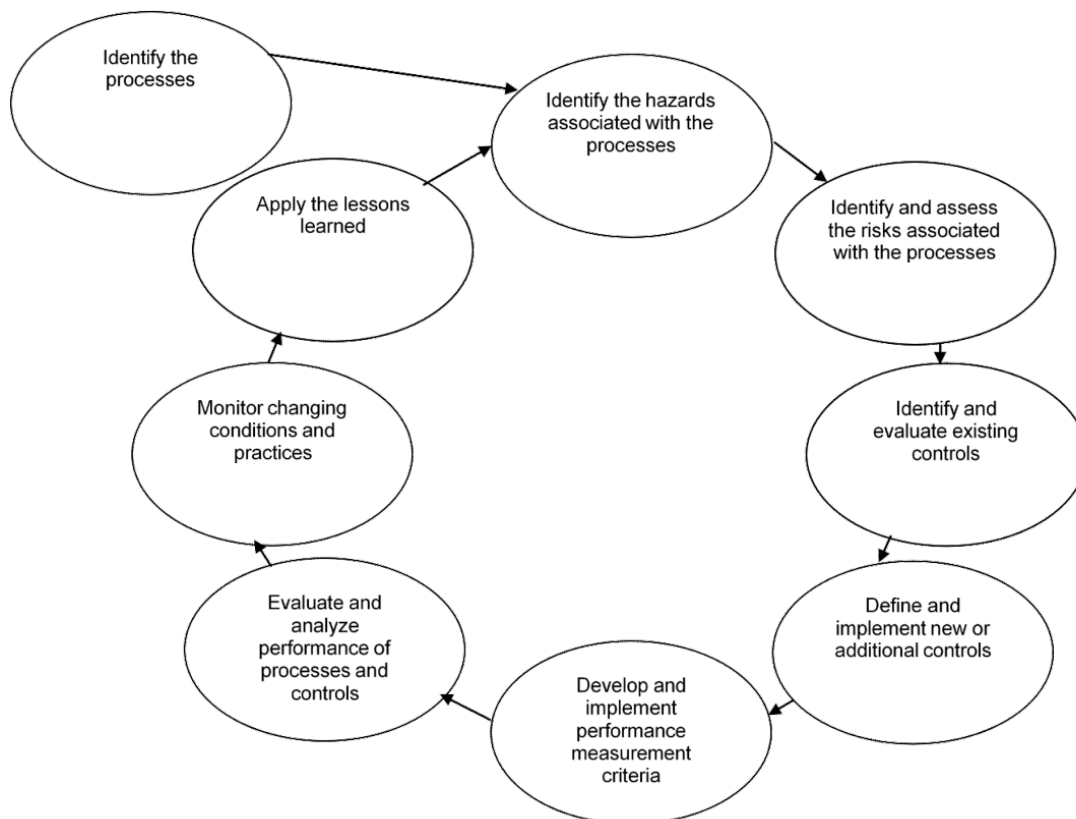
The consequences that UW MAROPS are concerned with are:

1. the health and safety of all those who are directly or indirectly involved in the activity, or who may be otherwise affected,
2. the marine environment
3. the property of the Company and others.

This SMS procedure is focused on the following:

1. the identification of hazards
2. the assessment of the risks associated with those hazards
3. the application of controls to reduce the risks that are deemed intolerable
4. the monitoring of the effectiveness of the controls

The risk assessment process may be summarized by the flowchart below.



From IACS No 127 2012/Rev.1 2021

Three different risk assessment tools are outlined in the sections below. Each can be used for different evolutions or events. The Captain will direct which Risk Assessment Tool is used for which evolution. Each Risk Assessment will be conducted by a licensed officer (deck or engineering depending on the evolution) familiar with the technique with input from those involved in the evolution.

References

- [IACS Recommendation No 127 A Guide to Risk Assessment in Ship Operations](#)