

Risk analysis for shipping under piracy threat

Hans Liwång, Chalmers University of Technology and Swedish National Defence College

Is their sufficient support for the ship owners security assessment?

Piracy off the coast of Somalia is a threat to ships, but also to international transport.

It is important for the security of international shipping to further develop the anti-piracy measures.

Ship security risk assessment is performed by the shipping industry and regulated by the International Ship and Port Facility (ISPS) Code. The code was developed during 13 months in the aftermath of the terrorist attacks in USA 2001.

In general quantitative risk assessment offers a sound and systematic basis for evaluating potential hazardous activity. The methods are however specialized and complex and an audit is vital to ensure that a logical approach and relevant data has been adopted.

Aim

The aim of this study is to evaluate how, based on probabilistic risk assessment procedures, ship security can be analysed. This to support ship owners risk management, development of anti piracy measures and rule making.

The purpose of introducing probabilistic risk assessment into the analysis of pirate attacks is to meet safety goals more effectively through a well-balanced combination of proactive and reactive measures whilst keeping focus on the intended overall purpose of the particular ship.

No, the ISPS code was developed fast and without experience from security risk analysis.

This study focus on threat assessment:

1. Identify threat scenarios.
2. Assess likelihood and potential consequences of the scenarios in relation to the ships vulnerability.

From what other areas of risk research can methods and tools be used to strengthen the analysis?

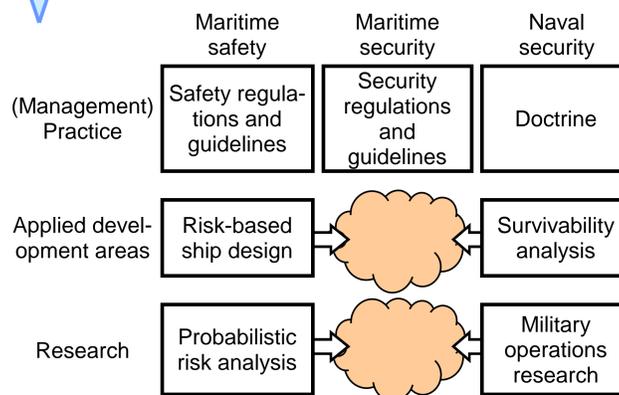


Figure 1, theory base.

Methods and tools from:

- probabilistic risk analysis,
- risk-based ship design,
- military operational research, and
- military security risk analysis.

The merits of probabilistic risk assessment has so far not been fully researched for security risks. The military practise regarding threat assessment is nevertheless a indication of that it is likely that probabilistic risk assessment also can be very well suited for security risks such as piracy.

What data is needed and how can it be collected?

Statistics on piracy incident does not describe the process of how an incident evolves and lead to attack, boarding and hostages. Therefore this study collects firsthand knowledge on piracy activity from civilian and military experts in the form of quantified assessment of the:

- pirates' capability,
- pirates' intent,
- pirates' likelihood of exploiting vulnerability,
- ship operators' risk control options.

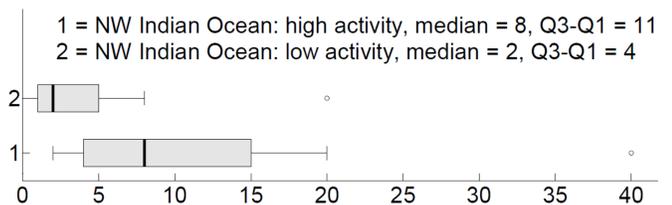


Figure 2, collected data on number skiffs at sea.

Quantifying the risk: probability of skiffs

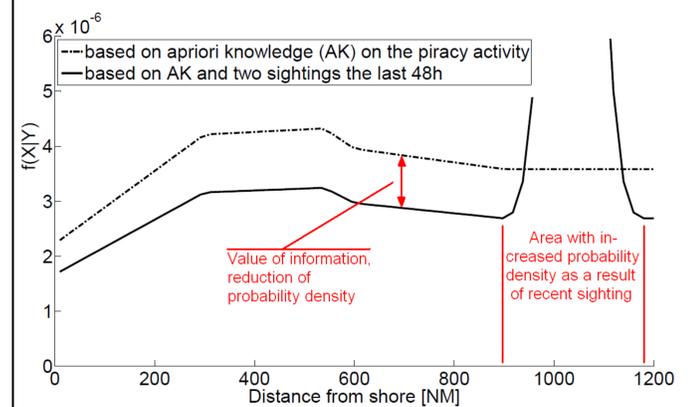


Figure 3, the value of reporting incidents. Probability density function of skiffs over cross section of the high risk area. Data on skiff endurance, use of mother ships and search methods only gives a basic a priori knowledge on the skiffs distribution. However, calculations show that the probability of a skiff encounter can be reduced with more than 20% if recent sightings are used to update the probability before deciding on the route thru the high risk area.

The study shows that...

...the ISPS code raises the awareness about maritime security but is not yet a consistent framework for evaluating risk,

...needed data can be collected but contains uncertainties that must be correctly handled,

...a quantitative analysis gives the possibility to test the reliability and validity of the risk assessment,

...awareness is the key to lower the risks and a quantitative analysis increases the understanding of the risks, i.e. supports awareness, and

...both the international community and ship-owners can increase efficiency of risk control options based on results from quantitative risk assessment.

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Contact

Hans Liwång
Swedish National Defence College
Department of military studies, Box 278 05
SE-115 93 Stockholm, Sweden
hans.liwang@fhs.se



CHALMERS

