4th Year Project Synopsis – Marine Design International Award

For generations, technological advancements have boosted the ever-evolving global maritime fleet. However, the maritime industry has, for some time, failed in one aspect of global shipping, safety occurrence analysis.

The human factor is said to be the main cause of safety occurrences or accidents in the maritime sector, yet safety occurrence analysis methods being employed are unable to systematically analyse the human involvement and pre-existing conditions which contribute to an incident.

Figure 1 Grounded vessel Priscilla, after officer on watch was distracted by mobile device and was not keeping track on vessel's path taken from MAIB: Report on the investigation of the grounding of the general cargo vessel Priscilla on Pentland Skerries

This project implemented the Systematic Occurrences Analysis Methodology (SOAM), adopted from the aviation industry to general cargo vessel grounding incidents. The study identified the most contributing human involvements were shortcomings in the observation and interpretation of vital information. The most frequently contributing pre-existing conditions were identified as issues surrounding workplace conditions and the attitudes and personality of crew.

The project highlighted the potential of improving and enhancing maritime safety occurrence investigations by adopting techniques used in similar industries, with an overall aim of improving maritime safety.

There are many potential interventions which could be employed with an aim of reducing the maritime safety incidents. From the study carried out, various areas were identified as "error-promoting conditions". Recommendations to address these issues were discussed extensively withing the study.

A few examples of recommendations are:

- Introducing global mandatory regulations regarding the effective use of Bridge Navigational Watch Alarm System (BNWAS)
- Ensure bridge layout design is adequate and stimulates personnel to fulfil duties
- Eradicate lone-watches, particularly during period of darkness

The introduction of autonomous vessels and artificial intelligence systems looks to be the forward direction of our industry, which is very exciting. However, it is vital to recognise the importance and value of the human element with regards to experience-based decision making and judgement onboard vessels.

On progressing from my academic studies to my industrial career, I hope to take forward my understanding of the unpredictability of the human element and the paramount importance of safety within the maritime sector. I hope to provide a positive contribution to the maritime industry throughout my career.

Fraser Allan