Risk Assessment – Fit for purpose?

Introduction
The list of reports from national regulators involving incidents related to entry into enclosed spaces, mooring incidents, lifeboat or rescue fall failures and falls from height just to name a few, is seemingly endless. Invariably these reports are related to tragic events which could have been avoided with a little forethought and planning.

The reports highlight many areas where various defences were breached leading to an incident, but one recurrent theme which is mentioned in the vast majority of reports is the question of risk assessment. Time after time you will read that the company does in fact have risk assessments and associated procedures which are all written into their Safety Management System (SMS). It is not uncommon for the report to stop here and not dig any deeper as to the efficacy of the SMS and actual root cause(s) of the incident – far easier to “blame” the crew for not carrying out the risk assessment or use its sister tools – permit to work, toolbox talk and stop work authority.

This insight article examines whether risk assessment is actually fit for purpose and suggests practices which may improve how risk assessment is handled, in order to assist in preventing the incidents highlighted above.

<table>
<thead>
<tr>
<th>Consequences</th>
<th>Increasing Likelihood</th>
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<tbody>
<tr>
<td>PEOPLE (P) (Health &amp; Safety)</td>
<td>ASSETS (A) (Financial, Commercial &amp; Asset Integrity)</td>
</tr>
<tr>
<td>NO INJURY or health effect</td>
<td>NO DAMAGE</td>
</tr>
<tr>
<td>SLIGHT INJURY or health effect</td>
<td>SLIGHT DAMAGE costs less than US$10,000</td>
</tr>
<tr>
<td>MINOR INJURY or health effect (~5 days to recover)</td>
<td>MINOR DAMAGE costs between US$10,000 and US$100,000</td>
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<tr>
<td>MAJOR INJURY or health effect (~7 days absence from work)</td>
<td>MODERATE DAMAGE costs between US$100,000 and US$1,000,000</td>
</tr>
<tr>
<td>PERMANENT TOTAL DISABILITY (PTD) or up to three fatalities</td>
<td>MAJOR DAMAGE costs between US$1,000,000 and US$10,000,000</td>
</tr>
<tr>
<td>MORE THAN 3 FATALITIES resulting from injury or occupational illness</td>
<td>MASSIVE DAMAGE costs in excess of US$10,000,000</td>
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Figure 1 – A typical risk assessment matrix
Current regulations
If we start by looking at the current regulations, paragraph 1.2.2 of the ISM Code states,

“Safety management objectives of the company should, inter alia:
1. provide for safe practices in ship operation and a safe working environment;
2. assess all identified risks to its ships, personnel and the environment and establish appropriate safeguards; and
3. continuously improve safety-management skills of personnel ashore and aboard ships, including preparing for emergencies related both to safety and environmental protection.”

Thus, it is absolutely clear that the company must identify all risks and establish safeguards. The International Maritime Organization builds on this basic premise with countless other references to risk assessment such as Assembly Resolution 1050(27) (https://www.imo.org/en/KnowledgeCentre/IndexofMOResolutions/Pages/A-2011-13.aspx) related to enclosed spaces.

Flag administrations similarly highlight the issues, an example being Safety Advisory 23-20 issued by the Marshall Islands (https://www.register-iri.com/wp-content/uploads/MSA-2020-23.pdf), and again related to enclosed spaces. Other organisations, too many to mention, highlight risk assessments covering the full spectrum of maritime related activities. Many of these articles are in response to an incident and mention that generic risk assessments were in place – they also frequently highlight that the risk assessment should be ship or job specific since a generic assessment is only a guide and cannot cover all aspects of a specific job in a specific place.

So, is a risk assessment actually fit for purpose?
In one sense yes – risk assessment can be an excellent tool to highlight dangers in the workplace, but only if it is used correctly, and as an integral part of a number of tools to assist with incident and accident prevention. The International Maritime Organization and other organisations would almost certainly not promote the use of risk assessment in so many areas of their work if it were not fit for purpose.

In another sense no – risk assessment can only be fit for purpose if it is used correctly and that, all too often, is the inherent problem. In many cases it is being used simply as a tick box exercise because it has to be done. This extends from the lowly seafarer not doing it, through companies not implementing it, to flag states or their recognised organisations which audit companies for a Document of Compliance (DOC), not ensuring that risk assessments are used properly. As an example, the auditor asks the company if they have risk assessment in their Safety Management System (SMS). Of course, the answer is “Yes”, the SMS is full of it. Great stuff - tick the box, onto the next question and issue the DOC. This simple example does not tell the whole story – sometimes it is indeed recognised that the risk assessments are generic in the SMS and the auditor will ask for further (random) proof that ship specific risk assessments are in place and that they being used. Equally there are many cases where this is not done.

There are many excuses as to why risk assessment is either not conducted at all, or not completed properly. Not enough personnel or not enough time are two of the favourites - which brings into question the whole topic of safe manning and hours of rest. Whilst partly relevant, a full discussion on these aspects would divert from the purpose of this article. Other reasons why risk assessment has not been conducted properly can be summed up by human factors such as complacency, culture, local practices, situational awareness and a basic lack of communication in some cases. In other words, the whole issue of a failure to properly conduct a risk assessment comes down to failings in the company safety culture.

The main objective of any risk assessment is of course to reduce any inherent risk to make it as low as reasonably practicable (ALARP). To use a well-known analogy, the idea is to fill in as many holes in the Swiss Cheese model (see figure 2 below) as possible in order to prevent an incident from occurring. It should be highlighted that risk assessment will not do this by itself – in order to be effective, it has to be used with other tools such as a robust permit to work system, a healthy company safety culture from top to bottom, toolbox talks etc. The assessment should also be thorough and not drawn up by a single entity.

Some risk assessments are so comprehensive that for every identified hazard, the risk to Personnel, the Asset (vessel, specific machinery etc.), the Environment, and the Reputation of the company are all considered. This is known as the PEAR concept.

Figure 2 - ‘Swiss Cheese’ model
An example of good practice
Whilst discussing risk assessments recently, it was commented that there was a lot of work to do in order to make them truly effective for all cases. The following story, told by a company superintendent, seems to be an excellent method of ensuring that risk assessment is used as it was always intended to be used.
The superintendent was sailing with the vessel for a short voyage and on this particular day attended a work planning meeting. At the meeting it had been decided to review one of the ship’s risk assessments as required by the company. To expand, this particular company was fairly sizeable, and with many different types of vessels within its fleet it had a full chapter of its SMS devoted to risk assessment. These were all generic, but the company required that each vessel make up its own ship specific assessment. Furthermore, the company required that all of these specific risk assessments were regularly reviewed and the results of the review were to be transmitted to the company, (so that they could show the ISM Auditor at DOC review time!).

A couple of days later the superintendent had the opportunity to conduct some training with the whole vessel’s complement (apart from watchkeepers) and so he decided to review a risk assessment. Mooring operations was the subject of choice, and, quite simply, he asked all deck officers to go to another room and identify all the hazards of mooring operations that they could. The same was done for engineer officers and the crew. Some twenty minutes later the three groups returned, and a whiteboard exercise was used to identify the hazards. Firstly, the deck officers were asked to list all of the hazards that they had identified. These were all drawn up on the whiteboard, occasionally with a little prompting to make the exact hazard more specific. On more than one occasion this ended up being two or more specific hazards. Next up were the engineer officers who were asked if they had anything that was not on the list. They did and several more hazards were identified. Finally, the superintendent turned to the crew and asked them what had been missed. To the surprise of the deck and engineer officers the crew had quite a few hazards that had not been identified. The initial risk assessment before the training session had identified twelve hazards. After the risk assessment no less than twenty three specific risks had been identified.

The learnings were clear. The more people that get involved then the more hazards you are likely to identify. In addition, listen to your crew – they can contribute a great deal if they are given the opportunity.

Although the training session stopped there, the compiling of the risk assessment was by no means complete. For each of the identified hazards specific actions need to be put in place to mitigate the risk. Too often the measures put in place have been seen to be non-specific such as “wear PPE”. If the hazard is something such as snagging your hand on a wire, then the more specific measure would be sturdy gloves – possibly even Kevlar type gloves. In addition, the focus of any mitigating measures should be those with a high consequence should something go wrong, particularly if there is a considered to be a high probability of the event occurring. All too often you can concentrate on measures which are too trivial – low consequence and low probability. Whilst these do indeed deserve some attention they detract from the main purpose of the assessment.

Conclusion
Risk assessment is part of the SMS and as such should be regarded as a ‘living document’. In other words, the SMS and constituent parts should be under constant review to reflect the specific changing requirements of individual vessels. Generic risk assessments are exactly that – generic. As such they are only provided to give guidance to vessels and certain associated tasks. Even when a generic risk assessment for a task has been compiled and then adapted to fit a specific vessel for a specific task, each and every time that task is repeated, the risk assessment requires to be re-visited and

A risk assessment is only as good as the personnel involved in managing it both on board and ashore

The superintendent witnessed next horrified him. The review consisted of the shipboard safety officer reading off the contents of the risk assessment in a dull monotone, pretty much guaranteed to send you to sleep. The audience was disinterested at best and it became obvious that this was simply a tick-box exercise being conducted because the SMS stated that it must be done. There was no attempt to actually improve upon the contents.
modified to suit the current working scenario. This is because the circumstances of a repeated task may have changed since the last occurrence i.e., different crew, different location, different weather conditions, different human element, etc. Only the nature of the task is the same. Thus, it is only when a new revision has been conducted and previously unseen latent risks have been identified that the risk assessment can be signed off and delivered as a tool-box talk.

In addition, risk assessment is the determining factor of all permits to work, isolations, lock outs, enclosed space entry, and jobs involving working over the side and at heights. It is vital that due consideration through revision for a specific task is inclusive and comprehensive. It is all too easy to manipulate a risk assessment to proceed with an inherently dangerous task when the risk assessment should actually produce a ‘stop work’ decision. As an example, using a crane for personnel ship to ship transfer, perhaps for transferring a surveyor or superintendent, when the crane does not have certification for man-riding and the crane operator has not received accredited training. It is all too easy to say, “We’ve always done it like this”, “We’ve never had an accident”, and the old chestnut, “There’s no alternative”. However, this particular task is fraught with inherent safety issues such as the crane potentially not having a secondary braking system, the crane operator not being experienced with that specific crane or in personnel transfer operations, just to mention a few.

To simplify:

- Risk assessments should be reviewed before repetition of that specific task in order to identify any change of circumstance
- Risk assessment is an excellent tool that, if used properly, can reduce risk to a lower (and acceptable) level of risk
- A risk assessment is only as good as the personnel involved in managing it
- The correct participants should be present at a risk assessment in order to arrive at the correct conclusion
- Risk assessments are vulnerable to manipulation in order to conduct a task that should otherwise not take place

FINALLY – A risk assessment is a ‘living document’ that MUST be correctly managed and implemented in order to mitigate any latent risk. Going back to the introduction, if the risk assessments had been given the full attention that they deserve in the first place, then the tragic incidents referred to may well have been avoided.

Risk assessments are vulnerable to manipulation in order to conduct a task that should otherwise not take place