Crew resource management — silly small talk or crucial dialogue?

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The first of two articles comparing the safety cultures between shipping and aviation. This Insight focuses on the value of teamwork and training, with the second discussing the importance of having good procedures, which are followed in daily operations on board.

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Human error is the main cause of most major shipping (and airline) incidents, yet the procedures in the airline industry for employing, training and monitoring performance of the crew are generally better. Jarle Gimmestad argues that the shipping industry could, adopt some of the airline industry practices.

A case in point A passenger vessel made too wide an approach while berthing and hit the concrete berth with her stern. There was damage to the vessel and the berth. Crew members were present on the poop deck and could see what was about to happen but did not warn the navigators. During the investigation the crew members were asked why they did not speak up, "We used to on previous ships," they said, "But we don't need to communicate such things any longer. The navigators have got a camera." This was confirmed by the officers on the bridge.

The persons involved were all well qualified and experienced individuals. They chose to drop communication and teamwork for a new, sophisticated piece of technology, which resulted in loss and damage.

The challenge The safety level in the marine industry is high, nevertheless the number of incidents is greater than desired:

• never have the navigation systems been more accurate and better presented on the bridge; yet still there are too many collisions and groundings
• never has the manoeuvrability of vessels been better; yet still there are accidents while berthing.

These incidents are expensive in direct costs, off hire and loss of reputation. On some occasions they even cost human lives.

Incidents occur all too often even with a naval pilot on board.

Why? There is no single cause behind the incidents. In fact the chains of events are long and complicated. However there are some distinguishing indicators:

• there is human error.
• the human error is not detected and managed in time.

I am uncertain whether we understand the impact of this. Historically we even thought we could avoid the problem. We thought that if we had a good pilot selection system and good training, we could get rid of the human error problem once and for all. Today we realise that this has not been the case. We see that even the 20:80 technical/human ratio in accident causation, is unrealistic. In a big picture perspective, human error is a contributor to almost all undesired events, regardless of industry.

"Human error – the downside of having a brain", is a part of man's normal behaviour. I really believe that the admission of this reality is the most important safety step made in decades. For instance, historically, the biggest threat to airline safety, next to gravity, is the myth of the perfect captain. In fact, this initiated a total change in airline safety work - from selection, training, even threatening pilots from making mistakes to considering mistakes as a natural part of their behaviour and building systems to detect and manage them.

So what? A vital component of managing human error is a set of safety barriers - tools to stop the development from error to incident:

• one safety barrier may be technology - a red lamp coming on if an engine limit is exceeded
• one may be an organisational initiative - a checklist to verify that everything is prepared
• another may as well be human - the proper management of the resources in a crew; an officer brave enough to speak up if the pilot is off intended course.

Safety work is to establish strong systems and transparent frameworks rather than facilitating individual selection or training. Systems which are robust enough to handle human error. In this article I will focus on the human safety barrier.

Crew Resource Management

The crew In most incidents there is nothing wrong with the technology, competence, knowledge or skills. In fact, often the best and most qualified people are there. The problem is that even they can sometimes make errors and when they do there is a paradox. The more grey hair, competence and seniority on the bridge, the less likely it is that their errors will be detected and managed. Someone saw that something was wrong, but for some reason did not speak up. Typically, the captain is manoeuvring the vessel and an officer is monitoring the progress. The officer should speak up if the captain does something wrong. He hesitates to do so until it is too late. This is all about crew resource management, or the lack of such.

Sully – The Hudson Hero When Chesley Sullenberger and his crew landed their crippled Airbus successfully on the Hudson River one misty morning in 2009, the media wanted to honour the captain. They pictured him on their front pages with the caption, "The Hudson Hero". Sully himself felt very differently. His point of view was that it had nothing to do with him - any of his colleagues could have occupied his seat and the result would have been exactly the same. The reason for the successful outcome was a good crew.

Airlines have slowly come to understand that safety is not created by superb individuals. Safety is built on leadership, coordination, communication and utilization of the resources in a crew. To optimise the human safety barrier, these are the factors to work on.

The operational dialogue I still occasionally do jump-seat rides with my airline colleagues. And I still find myself impressed by the effect of the operational dialogue between airline pilots. A continuous, low-voiced but precise, exchange of information fragments between them. Callouts with triggers, limits and tendencies. Never leaving a thought, an observation, a reflection, a selection, a decision or an execution unspoken.

Why? Not to small talk! Rather to keep communication lines constantly open and the threshold for possibility to speak up low. As well as to continuously pull your colleague into a shared situational awareness - a common and correct picture of risk exposure, suggested solutions and corrective action.

Parallels to navigating a ship? My impression is that the shipping industry still seems to focus more on the individual, the master rather than on the bridge team. Often when approaching the berth or narrows, the bridge will turn silent in individual concentration. This is done with the best intention, but it is vulnerable. The longer the silence, the higher the threshold for giving corrective inputs. On board an airliner, the amount and detail of the communication will increase considerably during the corresponding phases of passage.

When I study reports from incidents at sea, the members of the bridge team other than the captain are often not named or mentioned. Here there is room for improvement.

Speaking up I discussed this with a friend of mine. He used to be the master of a high speed passenger catamaran on the Norwegian coast. I asked him once whether his first officer would speak up in time if he was making a mistake while sailing. The officer was there listening and was highly provoked by my question. He clearly stated that he definitely would and the discussion was over.

Some days later the two navigators sailed one of their normal, daily voyages. Now the captain had a plan to test his colleague based on his firm statement. At a certain point they came abeam a green buoy were they were supposed to make a 30 degree starboard course change. This time the captain intentionally kept her steady to await his officer's input. There was reduced visibility and a rugged shoreline ahead.

At first the officer felt uneasy, looked across to his captain, out of the window to the passing buoy and into his radar screen. He then started making noises, kicking the wall with his shoe and knocking the screen with his hand. Nothing happened. The captain kept her steady, with a blank expression on his face.

The officer's final reaction? He left his chair for the toilet! To question his superior was impossible. They had been sailing together for eight years and for every second beyond the buoy it became more impossible to speak up.

The crucial initiative The last word uttered on the Airbus flight deck voice recorder, before it was choked by the Hudson River water, was Captain Sullenberger's single: "Suggestions?". Sully was looking across to his first officer, clearly indicating that he did not have all the answers and if the first officer had something to add, he should feel free!

There is a distinct difference between the two stories. The one revealing an individual captain perspective; the other demonstrating a "team in the crew" concept and the initiative to utilise its resources.

Conclusion Many of the factors contributing to operational safety are defined and indisputable. Most of them are also independent of profession and industry. This goes for leadership, communication and coordination of resources.

I also think this has a lot to do with occupational culture. The tradition of operational behaviour is very much tied up to the leader, the team and their roles on board.

Some ideas on how to improve operational safety on board ships:

• establish adequate crew and bridge resource management (CRM/BRM) training, customised to fit the company culture, focused on leadership and co-ordination of the resources on board and reinforced over time to develop the mindset
• keep the training simple, built on a few, select(ed), sharp topics – such as communication, team leadership and behaviour
• support the training with close on board follow-up to develop a culture and tradition for crew co-ordination, operational supervision and control
• establish user-friendly procedures/systems, built on teamwork philosophy and CRM/BRM behaviour
• support this mindset from within the organization and informally reward – keep telling the "good stories", walk the talk
• keep a sharp focus on safety – safety is there to prevent losses, improved efficiency is a positive bonus.

I believe this is where the possibilities of safety gain are largest in shipping. We need to develop the master's professional role further, from being the most able seaman to being the real leader of the total resources on board. We need to encourage masters not only to be their crew's captain but also the initiator of an open operational dialogue. A mentor who makes no decisions without having gathered all available input from his crew members to assure the quality of the conclusion.

Gard's perspective The shipping industry can no doubt learn from the airline industry in relation to crewing, training and communication between senior personnel. Jarle Gimmestad's* views certainly provide much food for thought. The concept of safety being built on leadership, co-ordination, communication and utilisation of the resources in a crew is extremely valuable and important but as discussed these qualities are not always present enough in shipping.

That said, it is only fair to comment that the industries are also very different in many ways, which may go some way to explain why the safety cultures and statistics are dissimilar. It is not possible to simply transpose what is done in aviation into shipping without a complete restructuring of the shipping industry.

Nevertheless, many shipping incidents could possibly be avoided by emulating some of the human safety barriers put in place in aviation. Although many ship owners already employ best practice, experience shows, from both minor and major incidents, that this is not standard throughout the industry. Perhaps the biggest underlying problem is the commercial pressure faced by ship owners.

Drawing on Gard's experience of casualties we can offer the following observations on how to improve safety on board ships:

• focus on team and leadership training to develop a trusting and open culture on board with a "speak up" environment
• have more BRM training more frequently and improved familiarisation with equipment on board
• share experience and lessons learned from incidents through workshops attended by both ship's officers and onshore personnel - the practice of merely sending out company alerts and notifications about incidents is of limited effect
• top management from ship owners should take an active part in group work sessions and safety discussions during company conferences and training workshops
• have a crew on board who can communicate effectively in English between themselves and with others
• avoid single watch-keeping operated ships and have the master on the bridge when operating within port limits and confined waters
• do not disable equipment alarms and pay attention to them when triggered
• ensure compliance with STCW - safe/appropriate manning and hours of rest.

In our next Insight, Jarle Gimmestad will look into providing safety barriers as solutions in more detail.

Questions or comments concerning this Gard Insight article can be e-mailed to the Gard Editorial Team .

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