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Enhance Maritime Safety by Distinguishing Between Emergency Situations and Crisis Situations

After about a century, many experts believe that; If Captain Edward John Smith, Master of RMS Titanic after hitting the iceberg had taken a round turn and had hit the Iceberg dead ahead again and worked ship's engines on full ahead, most probably the ship's bow might have penetrated the berg and he could have saved the ship and all souls on board.

Introduction:

There is a general consensus among experts in maritime field that human element is the most dominant contributing factor in causing maritime accidents. However different studies express various statistics for this element. It varies from 70% to 90%. The root of this variety is the diversity of attitudes and cultures among experts. Surprisingly one factor in a certain maritime community is considered as human element and in another is considered as technical fault and in another is considered faulty procedures or guidelines.

"FATIGUE" is a very good example for this allegation.

Although human element is not the main interest of this paper but the author would like to mention human errors and human violations as the two wings of human element in causing accidents. Human error is usually done unintentionally and without the knowledge of the originator/s, on the other hand human violation is done intentionally.

In general one can claim that; proper maritime training and education can greatly and positively reduce accidents in the field.

Seafarers' training is based on STCW code. The code has many strong points but there are also a number of weak points. One major weak point is; it overlooks the difference between crisis situations and emergency situations. The inability to differentiate between emergency situations and crisis situations by decision makers can be the main cause of many accidents.

Most of the Master's decisions are taken under uncertain and ambiguous conditions. According to social psychologists like Thomas Gilovich and Daniel Kahneman; humans use heuristics to help them in this type of situations. They believe that anchoring heuristic is one of them. Most of the time human brain chooses the most available anchor point for his

decisions. In a crisis situation it is very much possible that the Master either follows a pre-existing procedure for an emergency situation or a pre-existing pattern in his mind subconsciously.

If a Master is taught to ask a simple question from himself "what is the worst thing this can lead to?" this can slow down his pace and help him to think more extensively and openly.

Emergency Situations:

Professor Barnett from Southampton Solent University defines emergency situation as "*a situation outside normal operating parameters where corrective decisions and actions are based on documented procedures.*" He mentions "Man Overboard", "Steering Gear Failure" and "Fire in a Cabin" as typical examples in maritime field.

The procedures and guidelines for dealing with emergencies are part of seafarers' education and training syllabus. They are taught in almost every maritime training center by using different methods. The most effective method is using simulators. According to ISM code these procedures are documented and available on board merchant ships. The code requires free access to this type of document for almost everyone present on board.

Review of an emergency situation:

Let us now consider an actual emergency situation in fairly detailed scheme;

- ❖ Ship enroute from Persian Gulf to Hong Kong
- ❖ Distance to Kao-hisiung Taiwan about 120 N.M
- ❖ 2nd Officer's wife is feeling sever pain in her abdomen
- ❖ Clinical examination indicates the possibility of infection in appendicitis
- ❖ Medical radio consultation with an internist confirms this possibility
- ❖ Patient's life is in grave imminent danger
- ❖ Considering the situation and distance to the nearest port the Master decides to land the patient and her husband (the 2nd officer) in Kao-hisiung Taiwan
- ❖ Ship diverts and heads for the port
- ❖ Shipping company, P&I club, ship's agent, Charterer andare notified
- ❖ Patient and her companion are landed at anchorage safely
- ❖ Ship returns to her original route
- ❖ All necessary documents are prepared by the Master
- ❖ Bridge watch keeping schedule is revised and Master plays a more active role in ship's operational business
- ❖ Emergency situation is over

- ❖ 2nd officer's relief joins the ship at next port of call

In handling this type of emergency situations the Master simply acts according to the well documented procedures available on board. The documents tell him who, how and when to contact outside resources. They also tell him what kind of documents he should prepare afterwards. Most probably there are clear formatted forms for such documents. In this type of situations there are normally some people who willingly and kindly share some of the responsibilities with the Master and if there is any credit they are kind enough to share it with him too.

In such emergencies everything else works normal. The Master's mind does not require to remember several safety effective components. He does not need to focus his attention on a variety of safety related tasks. His previously learnt knowledge and skills are the proper answer to the situation. If he follows the rules and guidelines and the ship is well organized they will normally handle the emergency situation successfully.

Crisis Situations:

Crisis situations are greatly and considerably different from emergency situations. They are more complicated, in other words crisis situations can be defined as the combination of several emergency situations. Pre-documented procedures are not suitable for handling crisis situations. Most probably there are no such procedures and this is due to the diverse nature of these situations. Many experts believe if we see the two type of situations in a similar manner we create potentials for accidents. A similar example to the previously mentioned emergency situation may clarify the argument.

Review of a crisis situation:

Let us now consider the same situation with a few small changes;

- ❖ Ship is in the vicinity of a Tropical Revolving Storm (TRS) which is quite widespread in this area
- ❖ Proper navigational chart of suitable scale, corrected up to date is not available on board for Kao-hisiung
- ❖ The patient is the Chief officer himself
- ❖ The 3rd officer is young, in his first voyage although competent but without much experience
- ❖ The Master and the crew did not have proper rest due to adverse weather condition during last 72 hours
- ❖ All necessary arrangements and preparations have been done but due to the weather condition it is not possible to land the patient safely at anchorage

- ❖ The patient's condition is critical and becomes more perilous with the delay
- ❖ The delay, although justified but ruining the good reputation of the company
- ❖ It is the responsibility of the Master to decide.....

Let us review the crisis situation more profoundly now;

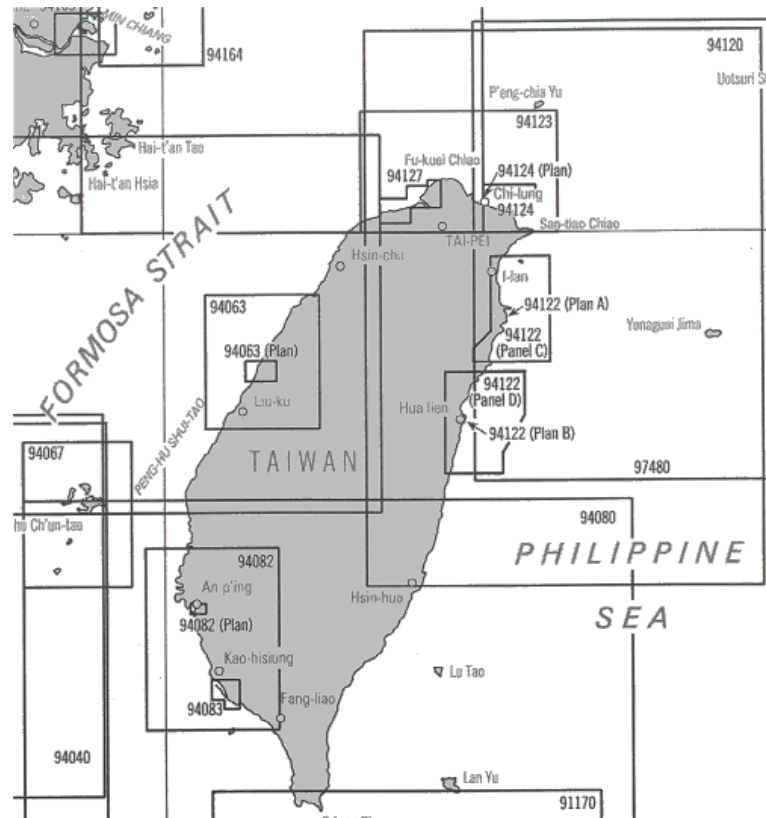
"The Ship Is In The Vicinity Of A Tropical Revolving Storm"

How close is considered in the vicinity? Can the Master predict the future movement of the TRS? How accurate his anticipation can be? Looking at the meteorological map of the area which shows the movement of the TRS, one can easily visualize that the TRS may move almost in any direction with different speeds. Can the Master justify his decisions based on this type of information at a later stage?



"Proper Navigational Chart Of Suitable Scale, Corrected Up To Date Is Not Available On Board For Kao-hisiung"

It simply means there maybe some uncharted navigational hazards. In other words it is blind navigation in the area. If an emergency arises and the Master needs to drop anchor he does not know whether it is a clear area or he is dropping the anchor on a high power supply cable or a gas pipeline.



"The Patient Is The Chief Officer Himself"

The Chief Officer is the right hand of the Master, s/he is the most experienced deck officer on board. S/He is the person who manages the ship's operation. In an emergency or operational situation he performs several tasks. S/He is supposed to remove some burden from Master's shoulders. S/He is called the Mate, it means the Companion, Associate, Friend And Co-Worker. If the chief officer is the patient himself his tasks are to be distributed among other junior officers. Officers who may not have the same qualification and experience.

"The Master and the crew did not have proper rest due to adverse weather condition during last 72 hours"

Some of the symptoms of human fatigue are; Slowed reaction time, Increased errors, Individual's underestimation of their performance degradation, Impaired judgment and decision making and Limited situational awareness.

The consequences of fatigue at sea are; increased personal injuries, groundings, collisions, health decrement and adverse physiological effects.

Some inherent characteristics are recognizable in crisis situations;

Decisions are taken based on changeable, unclear, uncertain, unstable, ambiguous, and incomplete information. Any action taken based on this type of information may lead to a catastrophe. The consequences of this type of decision taking is unpredictable and unknown.

ISM Code And Emergency Situations:

It is the principle requirement of the ISM code that; shipping companies should provide written instructions and procedures for dealing with emergencies. These procedures should be readily available on board merchant ships. Like any other management system the ISM requires recording and reporting as integral parts of the safety management system performed on board. This is for further reference of interested parties, mainly the managers, internal and external auditors and sometimes the courts.

Each procedure is normally designed to manage a single independent emergency situation. Unfortunately there is no procedure for managing a crisis situation, or it can be said that there is no procedure to manage a combination of emergency situations. The present procedures are not efficient and useful.

Training And Crisis Management:

Only when it comes to passengers and emergency situations, part A chapter V paragraph 5 of STCW requires the Masters, Chief Mates, Chief Engineers, 2nd Engineers and all those having direct responsibility for the safety of passengers to complete courses in crisis management. There is no other requirement for such trainings.

Since there is no mandatory requirement, the seafarers, shipping companies and maritime training centers are not interested in these courses. At the same time due to the extensive use of simulators the courses are fairly expensive.

The following skills are the minimum requirement for handling crisis situations;

1. Ability to distinguish between emergency situation and crisis situation
2. Ability to recognize the problem and priorities
3. Recognize all available resources for managing crisis
4. Recognize that the decisions are based on incomplete and probably wrong information
5. Ability to anticipate the consequences of the decisions
6. Ability to supervise and monitor the situation
7. Ability to change the decisions in short time, considering the observation of the situation

Discussion:

In applying aviation training and safety standards to the marine industry the OAA(Oxford Aviation Academy) has recognized for categories of non-technical skills in handling crisis situation. These are;

- 1- Leadership & Management

2- Team Work And Cooperation

3- Problem Solving Ability And Decision Making

4- Situation Awareness, Situation Control

The quality of Leadership relies on strong will, confidence and assertiveness. It also demands planning and coordination as positive skills. A successful manager should be able to manage the time and maintain standards. A proper leader should be able to solve conflicts efficiently and successfully.

Coordination and team work relies on supporting teammates and creation of open and efficient communication. These are in fact interpersonal skills. A leader must provide an atmosphere which encourages group communication. (Flin et al, 1998)

However, decision making is the process of reaching a decision based on adequate judgments. Decision making relies on problem identification, recognition of solutions and options, assessing all solutions and options, understanding risks involved and finally reaching the best decision.

This can not be done unless the individual obtains the quality of situation awareness. Situation awareness means being able to look at the situation from different angles. It also means to be able to visualize and conceptualize a reasonable time in the future of the task which is being done currently.

In summery a person in charge of managing a crisis situation must have contradictory characteristics. He should be open-minded and skeptical simultaneously to evaluate any solution to a crisis situation coming to his mind.

- ❖ One may acquire non-technical skills through simulation training.
- ❖ The training should concentrate on enriching seafarers' mind in the 4 categories already mentioned above.
- ❖ The shipping companies should evaluate the efficiency of this type of trainings.
- ❖ This evaluation should be done on two different levels; individual level and team level.
- ❖ A correct non-biased evaluation is only possible if the evaluators have access to every detailed information.
- ❖ This is only possible if the blame culture is rubbed out.