MariFuture

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The Development for this month is selected from a recent paper presented at the Bridge Conference in Rauma, Finland in June 2011. The paper expresses concerns about interpretation and sufficiency of the Collision Regulations (Colregs).

Do Colregs, in fact, apply at sea?

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ABSTRACT

It has been almost 40 years since the 1972 International Regulations for Preventing Collisions at Sea known as Colregs were introduced, and regular amendments have been taking place accordingly ever since.

Collision avoidance is believed, in a sense, to prevent groundings, the striking of fixed obstacles, as well as ships colliding with other ships. Over the last half-century despite improvements in navigational aids such as ARPA and attempts to raise the standards of training through the various STCW conventions, collisions still occur. Many studies and accident reports indicate that the accidents were caused by either human error or are associated with human error as a result of inappropriate human responses. Collisions commonly represent many of these accidents.

This paper discusses key issues regarding the application of Colregs at sea. This paper does not attempt to examine the each and every rule included in Colregs, however, it discusses the basic rules that are usually ignored or disregarded. This paper also discusses the deficiencies in the maritime education and training (MET) of seafarers which are related to concerns about Colregs. This paper is written from the viewpoint of an experienced mariner.

Keywords: *Colregs, maritime education and training, collision avoidance*

1. INTRODUCTION

Colregs is one of the internationally agreed conventions of the sea. It is vital to ensure that all seafarers have full understanding to take correct actions to avoid collisions. The International Maritime Organisation (IMO) developed the first standard for Vocational Education and Training (VET) programmes for merchant navy officers (STCW) in 1978, and it has been amended in 1991, 1995, 2003 and 2010 respectively. However, there are currently no mechanism to monitor how there standards are being applied as many VET providers have been found not to follow many requirements. Therefore, there has always been substantial diversity on the knowledge of seafarers affecting the safety of life at seethe Colregs are basically a set of rules required to be followed by all navigation officers. It is one of the most important International Conventions in seafarer's

education and training where full understanding and knowledge must be shown/performed prior taking charge of navigational watch.

The Colregs provide various guidelines as to passing, crossing overtaking manoeuvres to be made; detailing of which ships have the right of the way depending on the circumstances and the types of ships involved, and what actions these ships should take. It also describes the rules on the signals (lights, shapes and sounds signals)

The recent IMO bulletin "maritime knowledge centre" reports that more than 90% of the collisions are attributed to human factor (IMO, 2010), and this had earlier been reported by Parker (2010). Ziarati (2007), reports that the majority of those accidents and incidents are related to collisions and near misses. There is a clear indication that Collision regulations are either not understood or ignored although it is a primary set of rules for taking actions to avoid collisions.

It is interesting to note that the earlier studies had been showing that 85% percent of all accidents are either directly initiated by human error are associated with human error as a result of inappropriate human response (Ziarati, 2006). The human error reported to causing the accidents is now apparently to have increased by 5 percent in recent years. This may be linked to the revolution in automated equipments/systems on board the ships causing the number of accidents to decrease while increasing human element attributed to accidents.

The Maritime Accident Investigation Branch (MAIB) and Mariners' Alerting and Reporting Scheme (MARS) reports conclude that many of the basic principles of collision avoidance are improperly understood / applied at sea (MAIB, MARS).

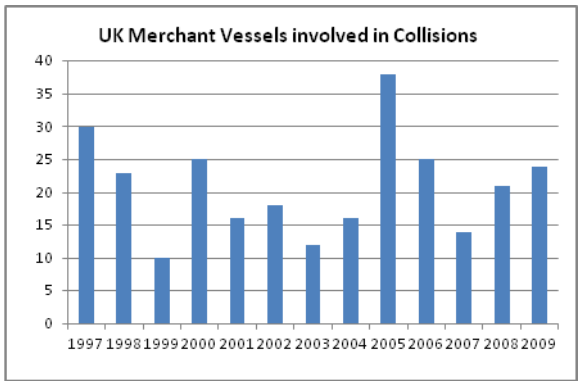

Figure 1: UK merchant Vessels involved in Collisions [Source: maritime Accident Investigation Branch 1997-2009]

The rules serve two main purposes:
a) to provide guidance to mariners on how to prevent collisions at sea
b) to serve as a basis for apportioning blame when collisions occur (Stitt, 2002)

2. COLREG IN MET

Maritime education and training programmes include Colregs training under a Navigational Watch unit which is usually supported by full mission simulator training. This basically includes a number of hours teaching in class at either a theoretical or practical level. IMO model courses, for instance deck officer programmes, include 100 hours of lecturing that cover most aspects of collision avoidance (IMO, 1999). Similarly, at senior and higher levels, the programmes include 30 hours of teaching that is considered refreshment. Those model courses are designed to provide additional guidance to MET providers as per required in Standard Training Certification and Watchkeeping (STCW) II/1 level

Across the world, countries have diverse methods of teaching the Colregs as well as having diverse methods to identify the knowledge of their deck cadet/navigational officer's competency in Colregs. Some by multiple choice questions, some with one to one exams to make sure that those deck cadets/navigational officers know / understand the Colregs.

Research conducted by (Syms, 2002) by Nautical Institute highlights the suggestions of

seafarers, that the improvement of maritime training and education (MET) systems are necessary which will help then improve the application of Colregs at sea

The same research (Sym. R.J, 2002) also reports that in northern countries such as United Kingdom, Germany and France, the application and understanding of Colregs is of a higher standard than when compared to other countries.

Ziarati (2006) extends the problems associated with Colregs application to MET programmes. Ziarati (2006) emphasises that mistakes are usually made not because of deficient or inadequate regulations, but because the regulations and standards, that do exist, are often ignored.

3. RESEARCH INTO TO COLREGS RULES

Colregs currently have thirty eight rules and four annexes. It applies to all vessels upon the high seas and in all waters navigable by seagoing vessels. The rules should be as closely in line with the international rules as possible as stated in Rule 1 (Application) of Colregs (Ford, 2003). For instance, in the United State, additional rules for vessels navigating inland are published alongside the international rules (US, 1989).

From the point of (Belcher, 2002), Colregs are intended to operate in a environment where the Navigational Officer on each vessel has a complete understanding of the situation, knowing which rules are in effect, how those rules are interpreted and what needs to be done in case the action does not occur. Thus, (Belcher, 2002), perceives that the Colregs operate in an environment of mutual comprehension, understanding and coordination, with clear logical steps ensuring clarity and predictability.

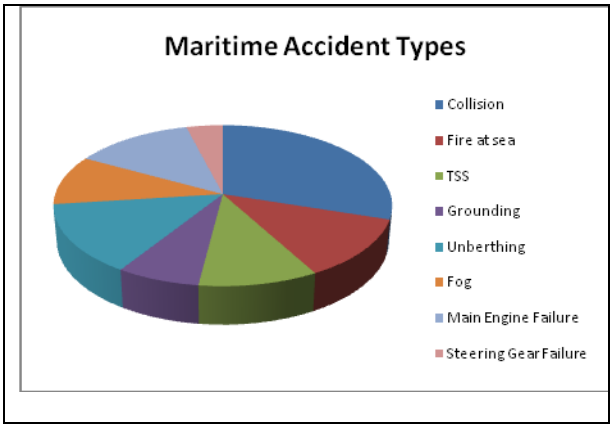

Figure 2 - Variation and Causes of Accidents [Source: UK Protection and Indemnity Club, 2007]

MAIB (2004) has conducted a safety study that reviewed 66 collisions and near collisions in their accident database. As a result of the study, the most common contributory factors in all these collisions were poor lookouts (Rule 5) and poor use of radar (rule 7(b), (c). That means that the standards of lookouts are poor and ineffective and radar is not used properly to identify the risk of collision. In fact, Colregs clearly state the necessity of maintaining lookout in rule 5 and the use of radar in Rule 7(b), (c):

"Rule 5 - Every vessel shall all the times maintain a proper lookout by sight and by hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make full appraisal of the situation and the risk of collision"

"Rule 7(b) – Proper use shall be made on radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observations of detected objects.

Rule 7(c) – Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

The examples of rule 5 and Rule 7(b), (c) are basic and easy to understand, interpret and comply with compared to other rules of Colregs. However, it is interesting to see those are the first concerns in the full study report (MAIB, 2004).

The same reports also point out that substantial numbers of accidents took place at night and in restricted visibility.

The example below shows the collision attributed by poor lookout.

Case 1 - Poor lookout

A dredger collided with a fishing vessel in the Dover Traffic Separation Scheme, in daylight, calm conditions and clear visibility. the dredger had been on passage and following the flow of traffic, and the fishing vessel not engaged in fishing, had been crossing the scheme. The vessels approached each other on a collision course for 10 to 12 minutes with the fishing vessel on the dredger's port bow. The watchkeeper on the dredger had seen the other vessel and, having identified it as a fishing vessel not engaged in fishing, was expecting her to alter course at the last minute.

With regard to the provision of a lookout, STCW 95 states that the officer in charge of the navigational watch may be the sole lookout "in daylight" provided it can satisfy the provisions in STCW for lookout requirements (STCW, 95). Despite this international requirement to maintain lookout at night, the MAIB research shows that at least three of fifteen vessels had failed to keep a proper lookout at night.

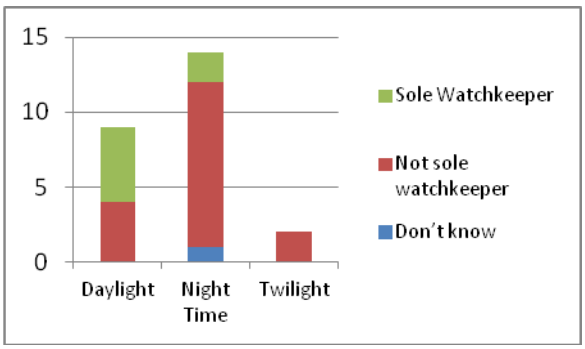

Figure 2 – Vessel failing to keep a proper lookout [Source: Maritime Accident Investigation Branch, 2004]

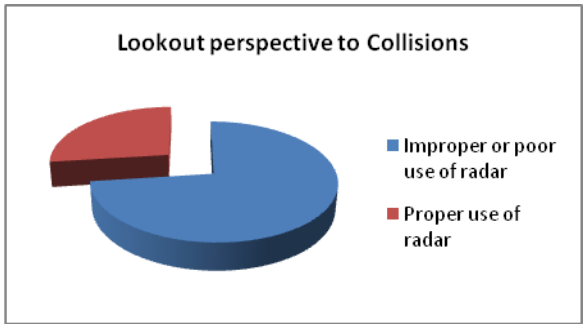

Figure 4 – Lookout perspective to Collisions [Source: Maritime Accident Investigation Branch, 2004]

In the same report, the reason for not maintaining lookout was attributed as "lack of competency". However, MAIB believes that poor visual lookout is linked to poor employment of ratings on the bridge (MAIB, 2004).

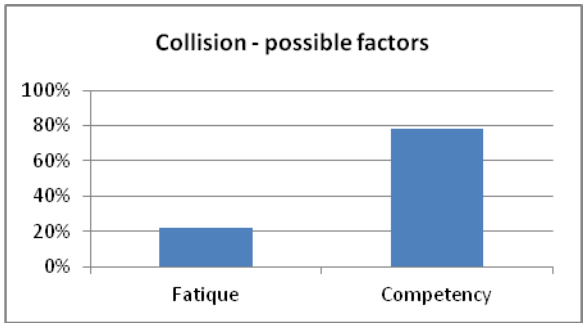

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Figure 5 – Possible factors of Collisions [Source: Maritime Accident Investigation Branch,2004]

Bridge watchkeeping practices have inevitably changed in recent years under the influence of automated systems which are being implemented in order to enhance efficiency and safety as well as overcoming the shortage of seafarers (Hwang,. C.N, 2001). As the advanced automation systems are developed and deployed on board, it influences the international rules and regulations which are under consideration for being updated in parallel to revolved systems on board the vessels.

An earlier survey conducted among seafarers highlighted the concerns regarding the application of Colregs rules at sea. The questions directed to seafarers and the results were noted that 50% of the response was showing that seafarers either ignored or disregard the Colregs rules (Syms, R.J, 2002).

In the same survey 90% of the responders identified the reason as “ignorance”, “Poor knowledge of Colregs” and “lack of training”.

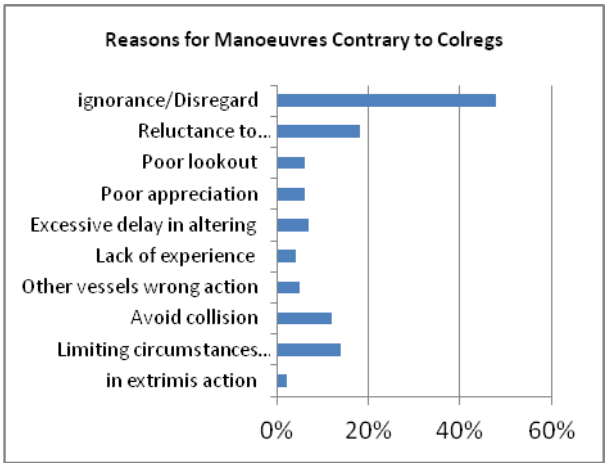

Figure 6 - Reasons for manoeuvres contrary to Colregs (Syms, R.J, 2002).

4. THE USE OF VHF AT SEA

Collisions should theoretically be avoided if all navigational officers comply with the International Rules for the prevention of collisions at Sea 1972. It is however are shocking that these regulations were contravened to varying degrees in different locations across the world, which results with many accidents investigated and reported (MAIB; MARS).

It is reported that use of VHF is becoming a common practice in collision avoidance although it is not the part of the Colregs (MCA, 2002). The MCA (Maritime and Coastguard Agency) in the UK took this issue serious and issued guidance for their seafarer network to highlight the dangers associated with the use of VHF. The summary of that same report states that

“*Although the use of VHF radio may be justified on occasion in collision avoidance, the provisions of the Collision Regulations should remain uppermost, as misunderstandings can arise even where the language of communication is not a problem”*

Similarly, MARS has been compiling the collision and near miss reports received from the seafarers to emphasize the dangers associated with the use of VHF. (MARS, 2005). MARS does state that:

“*The use of VHF should be kept to minimum and only be used, for instance, an obstruction exists on starboard side for stand on vessel, and however, reduction of speed should be preferred on communicating the intention on VHF”*

It should not normally be the case for navigational officer to use VHF to take action to avoid collisions, however, it does usually happen, and the only reason might be that using VHF is easier than learning and interpreting the 38 rules and annexes in Colregs.

(MAIB, 2004) study shows that after examination of the use of VHF in the collisions and near misses that it was only used in 14 of the 47 collisions, and was only effective in 3 of those

Case 2 - VHF assisted collision
A cargo vessel was outbound from River Humber in poor visibility. The master of the cargo vessel had the con, a helmsman was steering and the bosun was stationed on the forecastle as a lookout. The master saw the target of an inbound vessel on his radar, and he called the unknown fishing vessel using VHF with the intention of requesting to pass “green-to-green” in the channel. He received an instant response but, by then, it was too late. He received instant response but, by then it was too late. His ship was committed to the manoeuvre, and the fishing vessel was trying to pass red-to-red. They collided, causing extensive damage to the fishing vessel.

Case 3 – VHF assisted collision
Two container ship were navigating in China Sea. Risk of collision appeared however both did not realised until 3 minutes of the accident. The stand on vessel tried to contact via VHF on 3 minutes to collision instead of complying the Colregs rules. However, he got respond after several call, and disagreement took place and ships collided.

5. CONCLUSIONS

This paper only concerns significant problems associated with the Colregs rules.

It is evident that in the northern part of Europe, Colregs are taken more seriously and the probable effect is the more confident

navigational duties that officers can perform. It reduces the use and dependency to VHF.

The MET programmes are the parts of the broken segment if the Colregs today are not as effective as it should be. The MET institutions should revise their programme and make sure that the seafarers know the Colregs as required.

A set of standards for officers and higher ranks across Europe may be helpful to justify the understanding of seafarers so that Colregs can operate in an environment of mutual comprehension, understanding and coordination.

The Colregs may need to be updated to meet the improved technology demands. The more automated systems may well be included where needed.

The national authorities may take the Colregs more serious and issue similar guidance (MCA, 2002) to their seafarer network to spread the word Colregs and discourage the use of VHF at sea.

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