

Seaways

The International Journal of The Nautical Institute

Ticking the box

How MCQs measure up **p9**

Supporting your safety

20 years of MARS **p15**

Combating piracy

Six principles for success **p25**

Celebrating navigation

From sextants to ECDIS **p30**



Understanding COLREGs

Is a lack of knowledge putting ships at risk?





Focus

MARS, COLREGs and competence

“It is certainly a major concern that competence in applying COLREGs is still lacking despite the investment in state of the art training facilities around the world.”

There is a saying ‘Those that will not learn from history are doomed to repeat it’. Whilst history is of course an academic subject taught in schools and universities, we could equally well substitute the word experience for history and apply the revised saying in our daily professional lives to good effect. This is essentially what the Mariners’ Alerting and Reporting Scheme (MARS) is intended for and the 20th Anniversary of its launch is as good a time as any to reflect on its success and development over the years (see pp 15-16). As the Editor says, more reports are always welcome and there is now a noticeable diversity of operations covered which is beneficial. It was not always so, as in the early days there was a preponderance of COLREGs violation reports. Does the shift away from these indicate a welcome improvement in the application of the COLREGs?

Sadly, we fear that it does not - as the Captain’s Column this month shows (see p 4). We know that the Confidential Hazardous Incident Reporting Programme (CHIRP), which we support, still receives a number of COLREGs reports for follow-up. There appears to be a fundamental lack of understanding of the regulations by far too many mariners and, as Captain Jutrovic says, an over-reliance on VHF negotiation. In the age of AIS, he does not rule out the benefits of appropriate contact with another ship, and even queries whether the regulations should be amended to cater for it, but he does maintain that proper application of the COLREGs should make it unnecessary. He also draws attention to the dangers of the time taken for such VHF use when the situation is developing and deteriorating fast towards a collision. The consequences of not correctly applying the COLREGs, if resulting in collision or other damage, will be dealt with by a court and the blame will be apportioned resulting in a share of the damages in most cases. How this works and the precedents on which such cases are based are neatly set out without the usual legalistic jargon by Captain Lansakara (see pp 23-24). This should be required reading for all navigating officers as it will

help to focus their minds on the need to really understand the rules governing collision avoidance.

Assessing competence

Given that the current COLREGs stem from 1972 with various amendments but no fundamental changes since then, it is certainly a major concern that competence in applying them is still lacking despite the investment in state of the art training facilities around the world. Simulators are a valuable tool in this regard and have become commonplace in colleges as well as shipping company training centres. Yet there still appears to be a lack of understanding of the COLREGs. This is but one aspect for the survey ‘How good are maritime schools?’ to examine (see p 12). We encourage you to take part in GLOBALMET’s research so that improvements in the outcome of training can be proposed. Similarly, there has been interesting research undertaken on Multiple Choice Questions (MCQs) and the research team concludes, amongst other things, that they have limited value in assessing knowledge (as in depth of understanding of a subject) or competence. Given the proliferation of MCQ testing in STCW courses, this finding is particularly worrying and may partly explain the reduction in competency levels that our members consistently report to the Institute in our surveys. We would add to the causative reasons for this decrease, the reduction in experience resulting from the shortage of qualified officers and hence rapid promotion due to the well known challenges in recruitment and retention. Addressing these problem areas is an important part of our current Strategic Plan and part of the solution is to promote the benefits of mentoring and coaching – i.e. those with the knowledge and experience need to pass it on to the inexperienced. We will be developing this theme for the rest of this year and beyond. Our new publication, *The Navigator*, which is included with this issue of *Seaways*, is one of the ways in which The Nautical Institute is promoting competency and mentoring across the industry.



In close quarters and crossing situations, it is vital that OOWs know and understand the COLREGs (p 04, p23)



Mariners' Alerting and Reporting Scheme

MARS Report No. 240 October 2012

MARS 201248

Ultra violet light caused eye injury

→ Whilst changing the ultra violet (UV) lamp in the ship's fresh water steriliser unit, a crewmember inadvertently switched on the UV light and stared directly into it. Later on in the day, he experienced irritation, redness, pain and temporary blindness in the eye. He was given first aid on board and subsequently was sent ashore for treatment.

Result of Investigation

- 1 The crewmember was not wearing appropriate personal protective equipment (PPE), such as the shaded UVEX glasses which were available on board and would have filtered the UV light;
- 2 The crewmember did not read the warning notice posted at the site, which outlined the hazards of UV light.

Root cause /contributory factors

Non-compliance with procedures:

- 1 No risk assessment was carried out to understand the hazards related to the task;
- 2 Lack of compliance with the company PPE matrix.



Condition of eye some hours after brief exposure to UV light

MARS 201249

Hull damage after contacts with bunker vessel

→ A tanker at anchor was preparing to moor a large bunker vessel on her port side to receive fuel. When she was nearly in position, (bow to bow configuration with both vessels' sterns in line) the bunker vessel passed two sternlines to the tanker's port quarter, where they were belayed on bitts. The lines were hove tight. Due to the absence of any lines forward, the bow of the bunker vessel canted away, causing the sterns of the two vessels to close. Despite numerous attempts by the tanker's crew to warn them, the crew and the bridge team on the bunker vessel failed to notice or react to the impending collision. The bunker vessel's accommodation and quarter made several contacts with the tanker's side shell. In order to avoid further impact damage, the bunker vessel was cast off and the fuel transfer operation was aborted.

The next morning, following a review of the mooring manoeuvre and evaluation of the prevailing and expected sea conditions, it was decided to proceed with the fuel transfer operation. Unfortunately, due to the bunker vessel's slight residual headway, once again her sternlines tightened and drew her stern in towards the tanker, and both vessels sustained more contact damage in the stern regions. In this incident also, the bunker vessel was cast off and ordered to move away.

Both incidents were reported to the office and other concerned parties, including the classification society to survey the damage.

On the third attempt, the vessels safely moored alongside each other, and the bunkering operation was completed without further incident.

Result of investigation

- 1 There was no evidence of fatigue as all involved were found to have had sufficient rest;
- 2 An alcohol test was carried out soon after the incident with negative results;
- 3 All personnel involved were found to have sufficient experience in ship-to-ship (STS) operations and bunkering;
- 4 The bunker vessel was permanently equipped with three pneumatic rubber fenders along her parallel body. They were later considered to be too small for the vessel's size;
- 5 The bunker vessel's mooring lines were on reels. Once tightened and the winch declutched, these prevented the crew from working the ropes quickly;
- 6 A replay of voyage data recorder (VDR) data showed that the bunker vessel repeatedly failed to respond to calls over the radio, especially in the critical final stages of mooring operations.

Root cause/contributory factors

- 1 Substandard conditions: Inadequate equipment. Subsequent expert opinion confirmed that, considering the size of the bunker tanker, the fenders were too small and there were not enough of them, especially for STS operations in open anchorages;
- 2 Substandard acts / practices: Poor planning / execution of the mooring manoeuvre. The combination of securing the sternlines first, improper monitoring and residual forward movement of the bunker vessel significantly contributed to the incidents;
- 3 Inadequate work planning: The size of the bunker vessel required more detailed hazard analysis and planning for the mooring operation so that more effective control measures could have been implemented;
- 4 Inefficient communications: Apart from lack of proper discussion of the proposed mooring manoeuvres, there was a complete breakdown in communication between the two vessels at the most critical times;
- 5 System failures: Insufficient guidance in company's procedures. It was established that the company's procedures lacked sufficient information for this operation to be performed more effectively.

Corrective/preventative actions

- 1 Procedures in the SMS revised to:
 - i. Enhance the safety and efficiency of STS and bunkering operations;
 - ii. Improve risk assessment techniques for bunker transfer from bunker barges and bunker tankers at anchorages;
 - iii. Provide guidelines for better mooring planning and execution;
 - iv. Recommend means for more efficient communications between vessels.
- 2 A fleet bulletin was circulated to share the lessons learnt from the incident;
- 3 Incident to be included in officers' pre-boarding familiarisation;

- 4 An external training program in marine resources management (MRM) has been implemented for officers;
- 5 A fleet-wide campaign for improving behavioural safety and introducing concepts like 'Take 5' and 'Stop Work' has been started;
- 6 All ships provided with software for proper planning and risk evaluation for STS and bunkering operations;
- 7 The incident to be included as a case study in the company's risk management training programme.



Large bunker vessel on left rigged with three undersized fenders



View of contact damage near the tanker's stern

MARS 201250

Fracture injury during mooring operation

(Edited from Marine Safety Forum Safety Flash 12-26)

→ A seaman (AB 1) was recovering mooring lines after the vessel unberthed. While attempting to remove a recovered hawser off a dead man (or pedestal) fairlead roller, his hand got trapped between the mooring line and the roller. As his hand was dragged around the fairlead, his arm was twisted and fractured.

Result of investigation

Another AB (AB 2) and one trainee seaman, who was operating the winch, were involved in the operation. AB 1, in his statement, recounted telling the other two seamen that he was intending to take the rope off the fairlead but did not get acknowledgement of this from them. The trainee seaman, who was driving the winch did not have any visual or verbal contact with AB 1 when he started hoisting the mooring line.

Failed communication between team members was considered to be the main cause of the incident, as well as a lack of attention to his own safety on the part of AB 1.

Moreover, the electrical winch had no emergency stop arrangement. It was also observed that when the control lever was moved to the stop position, the winch drum did not stop immediately, but continued to rotate a further half revolution.

This incident reinforces the importance of proper work planning, risk assessment, toolbox talk and effective communication between all personnel involved in a task or operation. It is also very important that winch operators are properly trained so that they are fully familiar with all features of the winch, including all emergency devices.

MARS 201251

Prudent ballasting practices

→ It is advisable for bulk carriers to keep the level of ballast water in double bottom tanks below the tank top level until the entire cargo from the respective hold is completely discharged. This prudent practice is to avoid any damage to cargo by water which may potentially enter the hold via leaking double-bottom tank manhole lids, sounding and air pipes and cracks or holes in tank plating.

For greater control and safety, it is also good practice to run water into double-bottomed tanks by gravity initially, and to verify visually and by sounding the hold bilges that there is no water ingress in the holds.

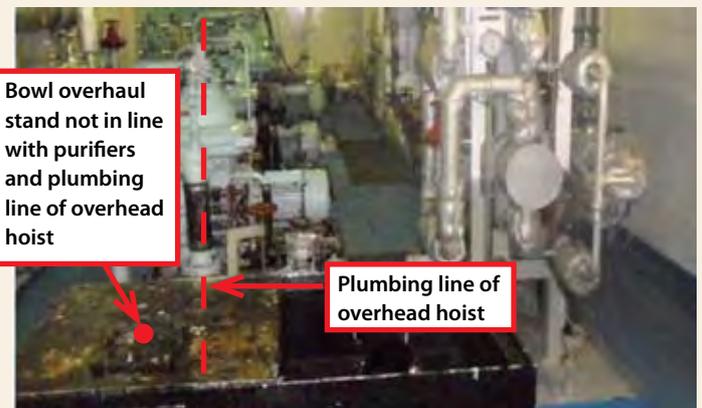
MARS 201252

Serious hand injury – fingertip severed

→ Whilst attempting to lower the purifier bowl assembly on to its overhauling stand, the fourth engineer's left index finger got trapped between the bowl and the upper surface of the workbench. The tip of the finger was severed.

Result of investigation

1 The overhead rail of the travelling chain hoist was not vertically above the bowl overhauling stand, requiring the user to pull on the suspended bowl assembly and guide it into the stand manually. This increased the risk of injury to fingers;



Stand for the overhaul of purifiers not in line with the purifiers and plumbing line of hoist. The fourth engineer was pulling on the suspended bowl assembly and attempting to lower it on the overhauling stand (indicated by the red dot) when the accident occurred



Purifier room on the sister ship – note the correct positioning of the overhauling stand – exactly in line with the row of purifiers and plumbing line of overhead chain hoist

- 2 Although a routine risk assessment was carried out before commencing the task, it was too generic in nature and did not address the specific hazards and risks involved in the operation;
- 3 Sufficient number of crew were assigned for the job;
- 4 The fourth engineer was fully fit, alert, sufficiently rested and wearing appropriate personal protective equipment (PPE). He had previously served on the same vessel in the past and was fully conversant with routine tasks;
- 5 Although the stand had been wrongly positioned ever since the vessel was commissioned, no modification request was raised by ship's staff;
- 6 None of the crew assigned to the task recognised the obvious danger arising from the wrong working practice employed – i.e. positioning a large, heavy object by hand whilst it is being lowered;
- 7 There appeared to be a training gap on board – no senior engineer or rating had coached the young fourth engineer on safe working practices;
- 8 The same arrangements in the purifier room of a sister vessel were correct in all respects with the hoist plumbing the purifiers and the overhauling stand.

Corrective action

- 1 After the accident, the overhauling stand was properly aligned to be in line with the chain hoist and purifiers;
- 2 Fleet circular issued instructing all vessels to discuss the incident at the next safety meeting;
- 3 Officers ashore will be briefed on this incident by:
 - i. Seminars conducted by the DPA;
 - ii. During pre-joining briefing with the superintendents;
 - iii. New officers joining the company will be briefed in detail during their familiarisation training in the office;
- 4 The knowledge, understanding and proper implementation of safe working practices will be verified during internal audits and other visits on board by the superintendents.



Corrective action #1 implemented – with the purifier overhauling stand positioned correctly

Lessons learnt

- 1 This accident shows again the value of conducting proper risk assessments and the importance of coaching of junior officers.
- 2 Toolbox meetings must be held with all crew related to each task. Risks and precautions shall be discussed and understood well by all assigned to the task.

MARS 201253

Fire in ship's gymnasium

→ A fire occurred in a container ship's gymnasium. The crew responded properly to the event and quickly extinguished it. As a result of the fire, there was considerable smoke and fire damage to the bulkheads, ceiling and some sports equipment.

Result of investigation

- 1 The crew had not used the gymnasium for three days prior to the incident, but the lights were left on;
- 2 It is suspected that a defective electrolytic capacitor of a panel ceiling light had overheated, and the escaping hot electrolyte and molten plastic sheath fell on and ignited a plastic mat lying on the deck directly below it;
- 3 The Chief Engineer reported that he had already detected poor quality capacitors from the same manufacturer in the past, but he had not reported this matter to the company. A check revealed a further eleven capacitors which showed evidence of overheating and ejection of electrolyte.



View of damaged deckhead panelling and the light fixture that is thought to have started the fire



View of fire-damaged bulkhead, deck and deckhead



Other capacitors that have overheated with expelled electrolyte

Corrective/preventative actions

- 1 All capacitors of the same brand were removed from light fittings on board;
- 2 Crewmembers were reminded that the prompt reporting of even relatively insignificant faults or abnormalities can prevent accidents and generally improve health and safety;
- 3 Lights in unoccupied spaces and compartments not forming part of machinery spaces, accesses and/or working areas should be switched off when not required;
- 4 A safety alert was sent to all vessels with instructions to discuss the incident at the next safety meeting and to implement the above practices.

FEEDBACK TO MARS 201235

→ I am afraid that I must take issue with the Editor's note regarding the above MARS report. I fully agree that the stopper should not be taking the weight but consider it should be engaged.

My reasoning is as follows:

Stopper scantlings appear to be designed to withstand full anchor cable load. The bitter end securing does not. If the stopper is not used

then a single failure (of the brake) could lead to loss of the anchor, and potentially the vessel. In such a scenario I think not having the stopper engaged might be extremely prejudicial at subsequent enquiry!

My practice/recommendation is:

Have the brake holding the weight. Have the stopper engaged but not holding the weight.

In the event of more cable being required, the stopper can be readily opened to allow more cable to be veered. This will ensure that any brake failure/slippage is 'caught' by the stopper, and vessel can schedule early maintenance before it becomes an 'issue'.

I will admit there is a very small chance that brake might slip (transferring load onto stopper) and the vessel might start to drag and vessel might have no power to adjust chain, but this requires a number of adverse factors/failures, so should be unlikely, particularly if the gap between cable and stopper is routinely monitored during anchored periods.

Having seen the chain locker damage when a cable has run away without load on it I would never wish to see it happen with load!

If stoppers are not meant for use in this way, but merely as a lashing when the anchor is secured, then they appear to be massively overspecified.

MARS: You can make a difference.

You can save a life, prevent injury and contribute to a more effective shipping community.

Everyone makes mistakes or has – or sees – near misses. By contributing reports to MARS, you can help others learn from your experiences. Reports concerning navigation, cargo, engineering, ISM management, mooring, leadership, design, training or any other aspect of operations are welcome, as are alerts and reports even when there has been no incident. The freely accessible database (<http://www.nautinst.org/mars/>) is fully searchable and can be used by the entire shipping community as a very effective risk assessment, loss prevention and work planning tool and also as a training aid.

Reports will be carefully edited to preserve confidentiality or will remain unpublished if this is not possible.

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