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SEAWAYS

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Building a safety culture

Training and education

GPS and solar flares

Training for the future

It is probably apparent to all that we live and work in an increasingly complex world in which there is a clear upward trend in regulation. The latter may be blamed for the equally obvious increase in the litigious reaction to mishaps and the blame mindset which certainly underpins the criminalisation of seafarers involved in accidents. Our defence against all these trends is to be as professional as we possibly can and that requires the willingness to seek continuing professional development (CPD) whether it is required or provided by the employer or not. The Institute has promoted the concept of CPD for a long time, and will continue to do so, as well as providing it through our publications and activities around the branch network, but it is clear that the maritime industry generally remains light years behind other industries and professions in its CPD requirements and application.

Regulations

Nevertheless, a glance through the pages of *Seaways* this month not only reinforces the need for CPD but shows that much good work is being done in training for the future. Understanding the regulatory framework is crucial to carrying out your work effectively and this must be done in the context of the sector in which you work. For those in the offshore world, one key question is who has the ultimate authority on board – and on occasion it is not as clear as it should be (see Captain's Column p 3). Also in the regulatory sphere, and affecting all mariners, is the issue of the Ballast Water Management Convention. Although it has not yet entered into force, it is likely to do so in the next couple of years and in any case many regional, national or local laws are already in place to counter the transfer of invasive species from one part of the world to another (see pp 15-16). Rest assured that this has huge potential for the criminalisation of seafarers so knowing and applying the regulations is absolutely essential.

Education and training

Will these be taught in the STCW courses sufficiently well amidst all the other regulations that have to be covered under business and law? We hope so but cannot be confident that it will be so. That excellent training colleges are in evidence around the world is not in doubt but do they have the trainee officers for long enough and should there be refresher courses to keep qualified officers up to date in this fast changing world? What indeed do the young professionals of today want from their career? These are questions that are being considered in the Command Seminar series this year and your input at the seminars or in response to the reports (see pp 23-25) will be welcome. An excellent start was made in Canada and we look forward to the regional events in Cape Town, Shanghai, and Bristol. In the meantime, it is good to see the developments for the present and future taking place in training colleges in the UK, Angola and India (see pp 11-14) as well as BC Ferries' safety training programme, SailSafe. These are bold investments that seek to address the key issues of professional knowledge, experience through effective sea time training, and cultural change to ensure safer and more efficient operations.

Navigation and GPS

The training task is not getting any easier, due to both the increasing complexity of technology and its vulnerability (see pp 4-5 and 6). e-Navigation comes into this as well of course (see Ireland Branch report pp 31) and the fundamental question of what navigation skills we need for the future. There seems little doubt that traditional, non-GPS, navigation expertise is still an absolute necessity and that still has to be acquired through rigorous training and constant practice. 'Use it or lose it' is an apt way to sum up the fine balance that must be stuck between technical and core seamanship skills.

Features

■ Cover: Courtesy of sohowww.nascom.nasa.gov Could solar flares pose a risk for navigators? See feature p 6.

The Nautical Institute
Mariners' Alerting and Reporting Scheme
MARS Report No 226 August 2011

Providing learning through confidential reports – an international cooperative scheme for improving safety

MARS 201147

Fall in after peak tank

After maintenance work was completed inside the after peak tank (APT), the second engineer entered the space to inspect and verify the work. The necessary pre-entry checks and entry/work permits were filled out and signed by the designated officers and the chief officer on the bridge was informed of the entry in the APT. Adequate lighting was provided inside the tank.

With the chief engineer monitoring the operation from outside the tank's manhole, the second engineer entered the tank, and climbed down the vertical ladder leading down from the entrance to the first stringer flat, followed by the oiler. As the second engineer stepped aside to make way for the oiler, he inadvertently stepped into the nearest lightening hole, lost his balance, and fell awkwardly on the stringer flat. He was able to extricate himself from the lightening hole, and exited the tank without assistance. The incident was quickly communicated to the bridge and Master via the chief engineer, and the emergency team mustered rapidly at the site. The second engineer was then examined by the Master and the designated medical officer. The fall had inflicted some bruises on his torso. He was administered first aid and resumed normal duties after being assigned light work for a day.

Root cause/contributory factors

1. The lightening hole was located very close to the landing of the vertical ladder on the stringer flat;

2. Once he reached the first stringer flat, the second engineer failed to look around and note the nearby hazards before moving aside to make way for the oiler;

3. There was no arrangement to prevent personnel from stepping through the lightening hole (e.g. temporary cover or permanent welded bars);

4. The concept of 'Take 5' (a nominal five-minute pause to conduct an informal risk assessment / task review before commencing and during various stages of work) was not properly followed.

Corrective/preventative actions

1. A safety meeting was conducted by the Master to discuss this accident and to highlight the dangers involved while working in enclosed spaces;

2. A video on personal safety was viewed by all to refresh safety awareness;

3. This incident report has been shared with the fleet with additional reference to the section in the safety manual titled 'Avoidance of slip and fall';

4. All company ships have been instructed to weld suitable steel bars across redundant lightening holes situated close to access ladder landings inside tanks and other spaces.

MARS 201148

Fatality during servicing of ship's passenger elevator (lift)

(Edited from MAIB Report No 6/2011)

A large container vessel was in port, undergoing a preliminary environmental compliance inspection, which, among other items, required the pit of the lift shaft (lift trunk) to be checked for oil residues. The lift car (elevator cage) was at the designated position on the lowest deck, but the second engineer was unable to open the lift shaft doors to gain access to the lift pit.

The chief engineer intervened to resolve the problem. Without stating his intentions, he entered the lift car, climbed through the escape hatch on the top, and shut the hatch behind him. The second engineer reset the lift controls, incorrectly assuming that the chief engineer had taken manual control of the lift from the panel on top of the lift car. However, the chief engineer had not done so, and when the second engineer reset the system, the lift was returned to its normal automatic operating mode. Suddenly, possibly in response to a random call from a higher deck, the lift car moved upwards at its usual operating speed and trapped the chief engineer against the door sill of the deck above, asphyxiating him. It is not known what the chief engineer had intended to do, but it is likely that he was leaning over the car, attempting to open the door locks manually.

Root cause/contributory factors

1. On board SMS did not adequately address all hazardous tasks and risk assessment techniques. Lift maintenance and inspection was not included in the list of activities that required risk assessments;

2. All the safety systems that could have prevented the accident had been ignored, reset or circumvented;

3. Contrary to the manufacturer's manual, which specified that at least two people were needed for work outside the lift car, the chief engineer was the sole person in the lift shaft at the time of the accident;

4. No familiarisation, training or guidance was provided to the ship's engineers for working on the lift. Working methods were developed informally and passed verbally from officer to officer.

Lessons learnt

As general good practice, before any work is commenced inside the lift shaft, it must be ensured that:

- Reliable two-way radios are used for communications;
- The local stop switch/controls are engaged to prevent the lift responding automatically to calls from other stations;
- The emergency hatch on top of the lift car (that usually activates a safety interlock) is kept open for the duration of the work.

Recommendations

The MCA publication *Code of Safe Working Practices for Merchant Seamen* provides guidance on how to conduct an initial and detailed risk assessment. It also provides detailed information on the specific risks associated with working on lifts, in *Section 21.22 – Personnel Lifts and Lift Machinery (Annex G)*. The most relevant points are summarised below:

- Regular examination of lifts must be carried out by a competent person at intervals not exceeding 6 months and a certificate or report issued;
- Any work carried out on lifts must only be performed by authorised persons familiar with the equipment and the appropriate safe working procedures;
- A formal risk assessment must be made to identify hazards associated with work on the installation, including work requiring access to the lift trunk;
- After the hazards have been suitably controlled, a permit-to-work system must be drawn up and all persons who are designated to carry out work on, or inspection of the lift installation, must comply with the stated procedures;
- Appropriate safety signs must be prominently displayed in the area and also on all remotely located controls and lift call buttons;
- Barriers must be used when it is necessary for lift landing doors to remain open to the lift trunk;
- Before attempting to gain access to the trunk, whenever possible, the mains switch should be locked in the OFF position.

■ **Editor's note**

1. The lift shaft may be considered an enclosed space unless it is previously ascertained that an extractor fan exclusively serving the trunk, has been and is in continuous operation.

2. Besides having provisions to electrically isolate the drive mechanisms, most lift installations incorporate mechanical locking arrangements to temporarily secure the lift car in a safe position when inspection, maintenance and wire rope renewal is carried out. The work team must ensure that all appropriate safety devices are properly used.

MARS 201149
Master – Pilot cooperation

I am a mooring Master at an offshore oil terminal and regularly berth large tankers to buoy moorings. Due to the nature of the installation, my embarkation on arriving ships is necessarily very close off the berth, often leaving very little time to fully discuss the approach, manoeuvres and mooring arrangements with the ship's captain, which can lead to misunderstandings and difficulties.

Recently, I boarded an incoming tanker whose harbour manoeuvring speeds were abnormally high. After reaching the bridge, and noting that the ship was making 5.5 knots, I hurriedly took over the con from the Master, ordering starboard ten on the rudder. The Master correctly acknowledged the order, but I observed him standing close to the helmsman and discreetly directing him to move the rudder to port ten. Initially, I thought that the Master's action was in error, and I repeated my helm order as starboard ten, but there was no reaction from either the Master or the helmsman. Fearing loss of control, I ordered hard-a-starboard, but this order was also not complied with by the Master, who ordered the helmsman to steady the head. At this point, I told the Master the ship was out of the ideal position due to his interference and deliberate non-cooperation. However, not wishing to endanger the terminal or the vessel, I explained the importance of complying fully with my orders and my intention to make a fresh approach. For his part, the Master expressed his fear that the vessel was in danger of hitting another mooring buoy close by, which was very unlikely due to the prevailing current. After reassuring him that I had the necessary local knowledge and ship-handling skills to safely berth the vessel, he gave me a verbal undertaking that my conning orders would be properly followed. I turned the vessel around and made a new approach. After the ship was safely moored, strained personal relations between us were set right and the tanker continues to make regular calls at the terminal.

■ **Editor's note:** This incident is very similar to MARS 201134 and once again reinforces the importance of effective Master-Pilot information exchanges. Ports, terminals, ship operators, Pilots and ship's Masters must all jointly ensure that the vessel is stopped in a safe location or maintained on a safe heading and slow speed for sufficient time for the passage/manoeuvring/berthing plan to be properly discussed and understood to mutual satisfaction.

MARS 201150
Collision during approach to anchorage

One of our tankers was proceeding with a Pilot on board to anchor in the designated area for bunkering in a large Asian port. While she approached on a southeasterly heading, a large multi-tug tow was observed right ahead on a reciprocal course. The Pilot informed the VTS of his intention to pass red to red with the tow, and after passing, to adjust the planned track to arrive at the designated spot in the anchorage area. He then ordered starboard ten in order to pass the tow to port and reduced the speed quickly from harbour full ahead to dead slow ahead. A short while later, the rudder was ordered back to midship. By then, the vessel had already attained a considerable rate of turn to starboard, so the Pilot ordered the rudder to port ten, followed immediately by port twenty and finally hard to port. However, the vessel continued her rapid swing to starboard, forcing the Pilot to order increased ahead speeds in an attempt to arrest the starboard swing. Despite these actions - putting the rudder hard to port and increasing the speed to full ahead - the vessel continued her starboard swing. Simultaneously, the vessel was closing rapidly with an anchored tanker that was lying across our path. With only about two cables clearance, the Pilot ordered full astern and emergency dropping of starboard anchor. At the time of contact, our vessel was almost parallel with the other tanker and stopped through the water, and drifted on to the other tanker, resulting in only a light contact between the two bows.

Root cause/contributory factors

1. Bridge team management failure – the Master did not exercise his right to take the con of the ship when it became apparent that a serious situation was developing. This resulted from a misplaced trust in the Pilot's experience and ability;

2. Non-compliance with safe speed requirements;

3. Insufficient consideration of reduction in manoeuvring capabilities of vessel at slow speed and in shallow water.

Lessons learnt

1. Always proceed at safe speed when navigating in congested or restricted waters so as to be ready for unexpected traffic situations/emergencies; the passage plan must document intended courses, speeds and contingency plan(s) for every leg until arrival at the designated berth;

2. Never rely unduly on others' expertise and judgment, and maintain full vigilance at all times;

3. Every member of the bridge team has the duty and right to actively participate in navigational operations, express opinions and, if necessary, query decisions taken.

MARS 201151

Sampling risks with bulk liquid cargoes

(Edited from Britannia P&I - Risk Watch Vol 18; No. 3)

Sampling is an important part of the bulk liquid cargo custody transfer process and can help in protecting the ship's interests in the event of disputes over cargo quality. The following guidance, compiled by Messrs CWA International Ltd, consultants, offers practical advice to ship's crews involved in this important activity.

1. During loading, a continuous drip sample taken using bottle and sample cage is preferred for taking samples of a homogenous cargo. If the cargo is not homogeneous, additional samples should be taken after loading from at least three levels within the cargo, viz. upper, middle and lower. Samples should also be collected after changeover of shore tanks.

2. Cleanliness of both sampling equipment and sampling ports or manifolds is important to avoid inadvertent contamination of the sample with extraneous dirt, water or previous cargo. All containers used should be clean, dry and appropriate for the type of cargo being sampled. Clear glass bottles are generally acceptable for most chemical or petrochemical products, but there are some exceptions, including caustic soda or potash cargoes, which should be stored only in plastic bottles. Lacquer-lined cans can be used for most petroleum products but are not appropriate for many chemical cargoes.

3. Poor sample labelling can lead to a sample being rejected for analysis if there is lack of identification or doubt over its origin. Information on labels should include date and time, vessel's name, port, location (e.g. cargo tank, manifold), description of cargo, type of sample (e.g. first foot, composite, running, 'Upper, Middle, Lower'), identity of sampler, and seal number. The use of seals or at least tamper-proof self-seal lids will help to maintain the integrity of the samples and should be used, if available.

4. Samples should be taken after completion of loading and again prior to commencement of discharge from ship's cargo tanks, and at the manifold at the start of loading and discharge. Occasional manifold samples should be taken, especially during discharge, and soon after loading starts, first foot samples should always be taken. If possible, samples from shore tanks before loading and after discharge should also be obtained.

5. Contamination allegations can often be resolved by reference to samples of previous cargoes and not just samples of the cargo in question. Further, allegations of contamination can be made some time after discharge. Accordingly, samples need to be retained for some time. Although space may be limited for sample storage on board ships, samples should be stored in cool, dark conditions and retained where possible for a minimum of 12 months especially if the cargo is known or expected to be the subject of a dispute. If samples are sent for storage at, for example, surveyors' premises or a local laboratory, ensure that the storage facility's initial instructions are for indefinite storage as otherwise samples are usually disposed of after a maximum of three months. A log should be kept of samples with details as per the sample labels and seal numbers.

6. Finally, many cargoes may be flammable or toxic, so it is vital that appropriate safety precautions are taken during sampling and also at the storage location of such samples. If past samples are not required, they should be disposed of in accordance with applicable regulations and procedures: the services of local cargo surveyors or testing laboratories, who are familiar with the correct disposal methods and available facilities, may be used.

Feedback to MARS 200740

(Freefall lifeboat launch)

In MARS 200740, in the section 'Before launching', item number 5 recommends 'Release securing devices' before listing four more tasks. Shouldn't that be one of the last things you would wish to do during an exercise? I am of the opinion that securing devices should be released only after all the designated crew have boarded, been checked off and have secured themselves in their seats (item number 9), or even after item number 4 (Ensure rudder is midships) in the next paragraph titled 'Once crew are in the lifeboat'.

Another factor that must be considered is the difference in drop height between the vessel's ballast and loaded conditions. I work on tankers, and the height difference on these ships could potentially be 7 or more metres, meaning that launch in ballast condition can have a significantly greater impact on both lifeboat and crew. While launch drills must always be conducted at Master's discretion, it should be in the ship's and company's interest to minimise the chance of either crew or vessel sustaining any injury/damage.

■ **Editor's note:** This is a valid observation. However, the launching sequence, whether actual or simulated, should ideally follow the davit maker's instructions. If it is felt that the safety or efficiency of launching / recovery can be improved by modifying the stated sequence or procedures, expert advice must be sought from management, class and makers, before implementing any changes.

For simulated launches, MSC/Circ.1137 gives the following guidelines:

3 Typical simulated launching sequence

3.1 Check equipment and documentation to ensure that all components of the lifeboat and launching appliance are in good operational condition;

3.2 Ensure that the restraining device(s) provided by the manufacturer for simulated launching are installed and secure and that the free-fall release mechanism is fully and correctly engaged;

3.3 Establish and maintain good communication between the assigned operating crew and the responsible person;

3.4 Disengage lashings, gripes, etc. installed to secure the lifeboat for sea or for maintenance, except those required for simulated free-fall;

3.5 Participating crew board the lifeboat and fasten their seatbelts under the supervision of the responsible person;

3.6 All crew, except the assigned operating crew, disembark the lifeboat. The assigned operating crew fully prepare the lifeboat for free-fall launch and secure themselves in their seats for the release operation;

3.7 The assigned operating crew activate the release mechanism when instructed by the responsible person. Ensure that the release mechanism operates satisfactorily and the lifeboat travels down the ramp to the distance specified in the manufacturer's instructions;

3.8 Recover the lifeboat to its stowed position, using the means provided by the manufacturer and ensure that the free-fall release mechanism is fully and correctly engaged;

3.9 Repeat procedures from 3.7 above, using the back-up release mechanism when applicable;

3.10 The assigned operating crew disembark the lifeboat;

3.11 Ensure that the lifeboat is returned to its normal stowed condition. Remove any restraining and/or recovery devices used only for the simulated launch procedure.

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