The Nautical Institute
Marine Accident Reporting Scheme
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MARS 200881
Severe food poisoning

One of our ships was at anchorage carrying out bunkering operations in the Netherlands Antilles. A group of officers and crew not involved in these duties went fishing, returning with a large barracuda. Although the ship had a good stock of frozen fish in the provision store, the crew could not resist the temptation of having a 'fresh' one for their evening meal. The chief steward cooked the barracuda and served it to officers and crew at 1800. For various reasons – and fortunately as it turned out – some crew members did not eat the fish.

The ship departed for a US Gulf port at 1930 the same evening. At about 2000, several crew members reported to the ship's medical officer, complaining of stomach ache, and were issued with activated carbon tablets. It was then established that all the unwell crew, including the master, had eaten the barracuda for dinner.

At around midnight, when it became clear that the condition of the affected crew was deteriorating seriously, the master instructed the second officer, who had not eaten the fish, to radio for medical advice. (The symptoms were mainly vomiting and diarrhoea.) Under shore advice, the condition of the sick crew members was monitored constantly overnight and the following morning, it was decided to approach the south coast of Puerto Rico for possible air-lifting of the casualties by helicopter. By this time, the master was unable to come to the bridge, and was vomiting and discharging blood.

Communications were maintained between the ship and shore, and later that afternoon, two helicopter sorties airlifted five seriously ill crew members (including the master). The helicopter team also supplied injections for the other affected crew, while the ship continued on a course to Ponce Anchorage, Puerto Rico, where she arrived later that evening. A medical team, together with the agent, boarded and examined the crew. Out of the total crew complement of 35 persons on board, 23 including the master, were landed and hospitalised ashore. After several days, all of them were repatriated to continue their recovery at home.

Investigations revealed that they were all affected by ciguatera poisoning. This is a common, non bacterial fish-borne form of poisoning, mainly found in tropical regions. It comes from eating reef fish whose flesh is contaminated with ciguatoxin. In some cases, the effects were very serious and long-lasting, especially for the master, who was still unfit for sea service a month after the incident.

Root cause/contributory factors

1. The crew was unaware of possible health hazards associated with some tropical fish;

2. Such potential health hazards were not mentioned in the company's SMS manuals, or in the relevant international guidelines such as the Code of Safe Working Practices for Merchant Seamen, MGN 61 Guidelines for Food Hygiene on Merchant Ships and Fishing Vessels etc.

Lessons learned

1. Ciguatoxin is heat/cold-resistant, so ciguatoxin-laden fish cannot be detoxified by conventional cooking or freezing.

2. The symptoms of this poisoning are very severe and can last from weeks to years – in extreme cases as long as 20 years – often leading to long-term disability.

Corrective actions

1. Information about the hazards of such fish poisoning will be included in the company's QA manuals.

2. The incident was widely circulated within the fleet and discussed during onboard safety committee meetings, and a copy of the bulletin made available for the crew in public areas.

3. Instructions issued to all ships not to eat fish caught in tropical shallow waters.

Editor's note: More details on ciguatera food poisoning can be obtained from the internet. The website www.mdpi.com/1660-3397/6/3/456/pdf mentions that CFP can result in life-long gastrointestinal (GI), cardiovascular, neurological and neuropsychiatric symptoms. Suppliers of CFP test kits can also be searched, but seafarers and their employers must take serious note of the fact that there is no effective treatment or antidote for CFP.

▲ Great barracuda (sphyraera barracuda); Typical mass 40 kg

MARS 200882
The importance of eye protection

Source: UK P&I Club, Bulletin 605, 10/08

A seaman's eyesight survived a recent incident because he was wearing eye protection when a grinder disk shattered. Had he not been wearing safety goggles, he would almost certainly have suffered serious injury and loss of an eye. Although the seaman suffered injury to his face, the safety goggles played a vital role in preventing serious eye damage.

▲ Not this…

The image above shows a crew member operating a hand-held grinder without wearing eye protection. Masters should ensure that their crews are properly briefed in all safety precautions when operating grinders and other power tools. Disregard for onboard safety rules should not be tolerated.

Operators of grinding and cutting tools should assume that the disc may shatter without warning and should ensure that the guard will deflect broken prices away from themselves. The correct component parts which support and secure discs must always be used.

Engine-room workshops are usually fitted with pedestal and bench grinders. Ship inspectors sometimes find grinders on board with no safety guard fitted. These have sometimes been removed, or not used, by crew who do not fully appreciate the risk of grinding disks shattering. A properly fitted guard will shield the user from shards of grinder disk in the event that the disk shatters while in use.

The image below illustrates good working practices on board ship:

- The grinder appears clean and well maintained;
- Safety guards fitted;
- Full-face protection available;

▲ … but follow this example

- Good safety notices and instructions.

■ Additional information from the University of New South Wales, Australia:

- Angle grinders are among the most dangerous tools in any workplace.
- Most angle grinder injuries come from metal particles lodging in the operator's eye.
- The most serious injuries come from kick-back, where the disc is thrust back violently towards the operator.
- Discs can shatter or explode, sending pieces flying in all directions.
- If subjected to pressures for which they were not designed, wheels can shatter at high speed, with the risk of serious injury to both operator and others nearby.

Wheel safety

- Cutting wheels or discs should not be used for grinding jobs, and grinding wheels should not be used for cutting jobs.
- Wheels designed for a particular revolution speed should not be used on machines of different speeds.
- Wheels should be used only for the specific material and purpose for which they are designed, and according to the manufacturer's recommendations.
- Wheels worn small through use should be discarded and never used on smaller machines.

MARS 200883
Sister ship data mix-up

I would like to draw your attention to a dangerous situation, in which I recently found myself on an international delivery voyage in the Far East involving a new 60m anchor handling tug.

The company involved had me join the vessel the day before departure. Although I was given an induction, the intense activity with joining crew, storing, fuelling and starting up a new ship meant that some detail was lost. Several documents, including the stability booklet and tank capacities, were given to me only an hour before sailing.

I sailed out straight into a typhoon, and after two days, had to deviate to land a sick engineer. After this, we started to work out the ship and found that the plans displayed in the accommodation and shown in the stability booklet, did not match the ship we were on. The tank layout did not match the tanks on board. We found that we had capacity plans for two tanks which did not exist – it took two days to work that out. According to the fresh water capacity tables, we were using 14 tonnes per day, which for 11 men is way over the mark (usually 3-5 tonnes is standard). We searched for pipe leakages or overfilled bilges but eventually concluded the tank tables were wrong.

As we delved further into all this, we found a comment in very small print hidden in the stability booklet: this stated that all the data was based on a sister ship, which although was of a similar class, had been built in another country. There are bound to be discrepancies between two such vessels.

This really is a trap for the unwary, which generates considerable stress because, as master, one cannot trust the information given. When I left the vessel, the mysteries were still being worked through.

The IMO, national administrations and classification societies accept the reproduction of plans and manuals based on detailed surveys and measurements of a sister ship, primarily to reduce costs and workload. However, the criteria of 'sister ship' must be clearly defined and care must be taken at every stage to ensure that these are not deviated from.

I was not too concerned about the actual stability on delivery because these vessels, being tugs, are inherently stable and we had no deck cargo. I was also under the usual commercial pressure to complete the delivery voyage on time. However, if a port state surveyor had asked me to show him the stability calculations for the voyage, I would have been extremely embarrassed.

I suggest that the fact that a sister ship's data is being used should be highlighted on every plan and on the front of the stability booklet. Also there should be much stricter guidelines as to what constitutes a sister ship.

MARS 200884
Fire on VLCC mast riser

A VLCC was loading crude oil from an offshore floating storage and offloading (FSO) terminal. During the operation, the terminal sighted an approaching squall and informed the mooring master and the VLCC crew. Shortly after, the squall descended on the vessels and a flash of lightning resulted in a fire on the mast riser of the loading VLCC.

The VLCC crew responded to the fire in a professional manner. They promptly extinguished it and continued with drenching and boundary cooling for about an hour, after which the FSO terminal gradually reduced the cargo transfer rate.

Root cause / contributory factors

1. Sudden oncoming squall;

2. Failure on the part of VLCC crew to detect and respond promptly to the approaching squall by ordering the stoppage of cargo transfer, purging and securing the mast riser in good time.

Lessons learned

1. When bad weather, especially a thunderstorm or rain squall, is approaching an oil terminal or tanker engaged in loading or unloading, cargo transfer must be stopped promptly and the mast riser should be purged and secured until it is determined that there is no danger from the weather.

2. The tanker and terminal staff must be fully proficient in dealing with a mast riser fire and should respond as per established safety procedures.

3. During cargo operations, a positive inert gas pressure must be maintained in the cargo tanks so as to prevent a flame from travelling down the mast riser into the tank.

Editor's note: The following extracts from the International Safety Guide for Oil Tankers and Terminals (ISGOTT) summarises industry expectations:

- **From 26 Safety Management, 26.1: climatic conditions.**
- **26.1.3 Electrical storms (lightning)**

When an electrical storm is anticipated in the vicinity of the tanker or terminal, the following operations must be stopped, whether or not the ship's cargo tanks are inerted:

- Handling of volatile petroleum.
- Handling of non-volatile petroleum in tanks not free of hydrocarbon vapour.
- Ballasting of tanks not free of hydrocarbon vapour.
- Purging, tank cleaning or gas freeing after the discharge of volatile petroleum.
- All tank openings and vent valves must be closed, including any bypass valves fitted on the tank venting system.

- **From 26.4 Guidelines for completing the ship/shore safety checklist:**

The operations should be suspended and all deck and vent openings closed on the approach of an electrical storm.

MARS 200885
Safe carriage of containers

Source: North of England P&I Club Signals issue 70

Editor's note: With the approaching northern winter, this report is a timely reminder of likely causes of container damage and stow collapses and for suitable precautions to be taken.

Some recent incidents of container losses and collapsed stows during heavy weather appear to have four principal factors as causes.

1. Lashing equipment

Investigations into a number of incidents indicated an apparently common feature of losses from, or collapsed stows on, large containerships fitted with fully automatic twistlocks of the latest design and manufacture.

Several advisories have been issued to operators, urging them to take note of these developments. They should contact their lashing equipment manufacturer and classification societies for advice and take appropriate action to reduce the risk of further incidents. Suggested actions include considering temporary reductions in container stack heights, revised weather routeing and replacement of suspect lashing equipment.

2. Cargo securing manual

The explanation sometimes offered after an incident is that 'the lashings broke'. However, this is unlikely to be the principal cause if the containers have been stowed and secured in accordance with the ship's cargo securing manual. If stowage, in terms of permitted stack weights and individual tier weights, is in accordance with the manual; if securing is carried out in accordance with the manual, using only the types of equipment specified; and if the ship's metacentric height (GM) is within the limits specified in the manual – then it is highly unlikely that the lashings will break in any reasonable circumstances, including heavy weather navigation.

What probably causes lashings to break are heavy containers stowed over lighter ones that exceed the individual tier position limits and/or the introduction of high-cube containers into a stack of containers, contrary to the cargo securing manual. This may raise the centre of gravity of the stack and the latter may also increase the securing angle of the long and short lashing beyond the designed angle of maximum effectiveness.

Consider a situation where an individual stack has a serious heavy-over-light mistake, including a high-cube (9'6") container in a lower tier, but where the stack weight has not

been exceeded. The ship's planning computer may default to stack weights and there will thus be no warning alarms. However, an experienced chief officer or master would also look at the 'lashing forces' function, where the errors would become immediately obvious. On the stack weights screen or the bay plan, the only clue indicating the presence of a high-cube container may be the letters HC (high-cube) instead of perhaps DC (dry container 8'6").

Companies and mariners should thus check whether their ships' planning software includes a facility to check the effect of stowing of high-cube containers.

3. Mis-declared overweight containers

Examination of containers left on board after a stow of containers has collapsed sometimes reveals that the containers were over the declared weight: it is possible that containers lost overside were overweight.

Operationally, mis-declared overweight containers are a difficult problem to solve. The weights are declared by the shipper mainly on trust and small under-declarations may be undetectable. Gross under-declarations may be apparent during container handling by mobile equipment or by container gantry cranes fitted with strain gauges, provided of course that those involved in shore handling are aware of the potentially serious nature of the under-declaration.

The problem is perhaps best addressed by the carrier's shore organisations as an operational issue, sending representatives to observe suspect shippers stuffing containers, or as a commercial issue, identifying shippers from the manifest that are not known customers or have been identified previously with involvement in mis-declaring weights.

4. Navigation around heavy weather

Experienced mariners prefer to anticipate heavy weather and adjust the voyage plan to avoid it. Unfortunately, some ships heave-to only when they find that normal progress is no longer possible, even though the heavy weather was forecast. Consequently the ship is stressed, the potential for cargo damage or loss overboard is increased – and no time is saved over the ship that anticipated the heavy weather.

With the extent and increased accuracy of weather information available today, plus the weather routeing available from ashore or from on-board computer systems, it should be possible for mariners to anticipate and avoid heavy weather, including having a contingency in the voyage plan for a maximum-wave-height route or set parameters for a least-damage route.

Editor's note: In addition to the above, containership crews must verify, to the extent possible, that each container that is being loaded at the bottom of any stack, particularly those towards the ends and outboard, do not have any physical defects, such as cracked corner casting, bucked post or rail etc. In severe weather, these units are subject to very high acceleration forces which may, in extreme cases, exceed the strength of the box, and result in a stow collapse. Masters and shore managers should also fully understand the phenomenon of parametric rolling, and take effective preventive / avoiding actions.

■ See also pp 12-15.

Feedback

MARS Report 200836
Anchors dislodged at sea

Regarding the above Mars Report, I do not agree with engaging the windlass gear as part of securing the anchors. This could lead to the inability to clear the anchors when there is no power to the windlass so that it may be disengaged and the anchor let go.

Editor's note: This statement is based on good seamanship and ship operators may well include this instruction in their manuals.

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MARS is strictly confidential and can help so many – please contribute.

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