The Nautical Institute
Marine Accident Reporting Scheme
MARS Report No 188 June 2008

MARS 200841
Fatality in fuel tank

A crew member lost his life while working in a fuel oil tank at a time when the ship was undergoing repairs in dry dock.

The tank had been prepared for entry on the previous day and was tested and passed by the chief officer and shipyard chemist prior to entry for inspection. An appropriate enclosed space entry permit was issued.

After the inspection of the tank had been completed by the shipyard and company representatives, the ship's bosun was instructed to secure the tank lid. The chief officer also instructed him to renew the gaskets of the manhole cover. In order to facilitate proper tightening of the tank lid with the renewed gasket, the bosun cleaned the contact surfaces of the manhole and lid. As a result, some debris had collected on the upper access ladder platform located immediately underneath the manhole, approximately two metres below the deck. The bosun sent an ordinary seaman (OS) to collect the debris; he descended to the platform and requested for a brush and dustpan to be lowered in order to sweep the platform clean. The enclosed space was safe for entry, having been visited only 30 minutes earlier by the inspection team.

While an able seaman (AB) was sent to fetch the cleaning gear, the bosun observed that the OS inside the tank appeared to be kneeling, but assumed that this pose was to facilitate better cleaning of the platform. A few minutes later, the bosun called out to the OS and lowered the cleaning gear on a rope. The OS rose from the kneeling position, with his hands extended above his head in order to collect the equipment being lowered. At this point he either suffered a black out or just lost balance and fell backwards 12 m down to the tank bottom from the platform. The platform was only provided with guard rails on two of its sides, and the unprotected side happened to be the one behind the OS.

An emergency alarm was immediately raised and the chief officer, bosun and the AB entered the tank wearing breathing apparatus. At the same time, the master informed the emergency services via the yard foreman. The shipyard rescue team arrived promptly and joined the ship's team in the tank. The OS was brought on to the deck, but regrettably was pronounced dead by the doctor.

The OS had joined the vessel as a messman and after three months onboard, on his own request, his rank was changed to OS. However, later detailed study of his appraisal reports by two previous masters revealed some discrepancies, which were not properly reviewed by the management before granting the OS's request.

The ship's enclosed space entry log revealed that the OS already had some 14 hours' previous experience of working in enclosed spaces, mainly working in void spaces and cargo tanks. The record of hours of rest for the OS revealed that he was not overworked or otherwise suffered from fatigue.

The autopsy report stated external and internal injuries as the cause of death and confirmed that the fall was not as a result of asphyxiation, alcohol or drugs. Tank atmospheric checks immediately after the accident showed that there was sufficient oxygen in the space.

Root cause/contributory factors

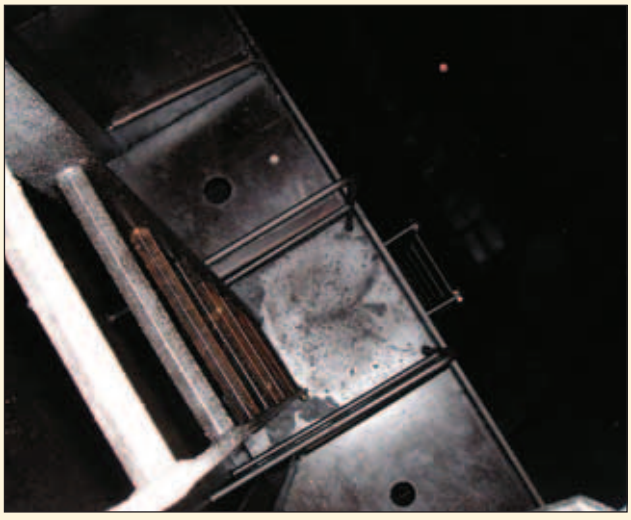
1. The upper platform on the access ladder had safety railings only on two sides, with no guard rails or chains on the tank side. This design flaw seems to have existed from the time of construction of the ship and apparently had not been rectified;

2. Although the tank entry permit was still valid, the Code of Safe Working Practices requires a fresh risk assessment and a new permit whenever there is a change in the proposed task or the personnel involved. In this case, the bosun made a hasty decision to send the OS into the tank on a seemingly simple and quick task, without going through the proper risk assessment process;

3. Probable momentary 'black out' when the OS stood up from kneeling position;

4. Lack of safety harness with lifeline;

5. The OS, although properly attired, did not have an oxygen meter with him while working inside the tank. Although this was in breach of the company requirements, it did not in any way contribute towards the accident.



▲ View of the platform from the main deck before accident. Two tiers of chain fencing were fitted on the unprotected side before leaving drydock.

Recommendations

1. Suitable securing arrangements should be put in place around the platform before the vessel departs dry dock. Such arrangements to be also put in place in similar locations on the vessel.

2. Tanks/spaces on other company vessels to be checked at a suitable opportunity to ensure proper safeguards are provided.

3. Format/contents of the company's enclosed space permit to be reviewed and amended to expand the scope of risks associated with the entry/work to be performed. Until the issue of the amended enclosed space permits, all enclosed space entries should be accompanied by a risk assessment.

4. This report to be circulated/shared not just within the company's vessels but with the shipping industry in general, to avoid any recurrence of such a tragic accident.

MARS 200842
Beaching after iron ore liquefaction

Source: Skuld Loss Prevention, issue 6, November 2007

A dry cargo ship loaded 20,000 MT iron ore fines. After sailing and when only a few nautical miles outside the port, the vessel started to develop a list. The list continued to increase and the captain intentionally ran the ship aground (beached it) to avoid capsizing.

Consequences of incident

1. Costly salvage operation;

2. Bottom and hull damage;

3. Six weeks off hire.

Root cause/contributory factors

1. The ore at the port concerned is generally saturated with water when extracted from the mine;

2. The ore was stored in the open for a prolonged period during the rainy season;

3. The shipper failed to provide certificates showing moisture content (MC) and transportable moisture limit (TML); meanwhile the ship's staff did not seem to have been aware of the unusual wetness of the cargo and the requirements under the BC Code;

4. The high moisture content, combined with the main engine's vibrations, caused the cargo to liquefy. This resulted in the ship nearly capsizing before being successfully beached by the master.

Lessons learnt

1. Every dry bulk cargo composed predominantly of fines and small particles, and that contains or is suspected to contain moisture, should be properly tested for MC and TML prior to loading.

2. The BC Code certification requirements apply to all cargoes which may liquefy regardless of whether or not the cargo is specifically identified as posing a liquefaction risk. Never assume there is no risk of liquefaction simply because a cargo is not identified as Group A in the BC Code.

3. When considering the carriage of Group A cargoes and other cargoes that have a liquefaction risk, owners should seek assurance from charterers that the certificates of moisture content and TML will be made available prior to shipment.

4. If these certificates are not available at the load port, the master should consider refusing the cargo and immediately notify the owners, who in turn should contact their P&I club for advice.

5. Any certificates provided should be checked to ensure that they are from an independent and reliable source. Certificates issued by the mining company may be unreliable.

6. Where possible, the ship's staff should examine the condition of the cargo closely before it is loaded; they should monitor its condition closely throughout loading and whenever it is brought alongside the vessel. Even when the cargo appears to be dry, it may still contain moisture in excess of TML; but if it appears clearly wet, or is stored in open conditions in rainy weather, experience indicates that the moisture content may well be above TML.

7. Even if the cargo sample passes the 'can test' described in Section 8.3 of the BC Code (no free moisture or fluid condition is seen), it does not necessarily mean that the cargo is safe for shipment, and an independent test may still be prudent. However, if free moisture is seen at the end of a can test, further testing, at least, must be done before deciding on loading the cargo and its effect on the safety of the ship.

8. Shipmasters and owners should closely follow the recommendations contained in the BC Code in all circumstances.

9. The main areas from where such wet ores are exported are India, China, Philippines, Indonesia, New Caledonia and smaller ports in the Asia-Pacific region but mariners are warned to exercise caution with such cargoes irrespective of port of shipment.

10. If in any doubt, mariners should contact the nearest P&I club correspondent for advice.

Editor's note: In the latest edition of the BC Code (2004), there is no direct reference to iron ore fines and the possibility of liquefaction may not be readily obvious. It is suggested that in the next revision of the Code, separate entries for all ore 'fines' be inserted in the individual schedule of bulk cargoes, drawing the attention of users to the liquefaction hazards of such consignments and the factors that are likely to exacerbate them.

▲ Vessel beached outside harbour entrance after iron ore fines cargo liquefied.

MARS 200843

The vanishing cargo

Source: North of England P&I Club:www.nepia.com/risk/publications/experiences/cargo.php CA004

Editor's note: This report is particularly relevant in the wake of Captain Sanjay Bhasin's article on bulk cargo shortage claims in the March 2008 issue of *Seaways*.

A bulk carrier loaded a full cargo of wheat in bulk. On completion of discharge, the carriers were officially notified of an alleged short landing of several hundred tonnes of cargo. The ship was threatened with arrest by the cargo receiver. A guarantee had to be placed to allow the ship to sail. The shortage claim was subsequently settled for a figure in excess of US$ 50,000.

Root cause/contributory factors

1. The charter party required the master to issue 'clean' bills of lading. However, the master had not been provided with a copy of the charter party and had not been advised of the requirement for clean bills until five days into the loading;

2. The cargo was brought on board in sacks, which were cut open and bled into the holds. It was observed that the wheat contained substantial amounts of foreign matter including mud, stones, and sacking material;

3. On the P&I club surveyor's advice, shore labour was employed to remove the debris from the cargo;

4. The shipper declared the weight of cargo loaded, based on the weighbridge figures of the full bags, less the weight of the empty bags returned ashore. This figure was inserted in the bill of lading and the bill was issued 'clean';

5. No draft survey was carried out;

6. The P&I club surveyor was not called when the problem first became apparent and by the time he attended, there was little he could do;

7. The shortage was at least in part due to the method of ascertaining the weight as stated in the bill of lading and the fact that a significant quantity of debris was removed from the cargo at the load port, but was not accounted for.

Lessons learnt

1. The master must be provided with a copy of the relevant charter party or at least advised of relevant clauses before loading commences.

2. If the charter party requires the master to issue clean bills of lading, he must ensure, from the very beginning, that only cargo in apparent good order and condition is allowed to be loaded.

3. At the first sign of trouble, the P&I correspondent should be contacted and consideration should be given to halting the loading operation until help arrives.

4. A draft survey should have been carried out: This would have acted as a check against the shipper's declared weight.

5. Full control of the situation must be maintained at all times.

MARS 200844

Emergency towing apparatus (ETA) brake failure

An oil tanker was in dry dock undergoing various surveys. One of the items planned for the day was the testing of the aft emergency towing arrangement (ETA). In order to test the centrifugal brake of the towing wire reel, a shore crane was used to pull the towing wire with a load measuring device attached. The operation was being monitored by the chief and the bosun.

At a particular tension, the brake failed and the entire wire unreeved and broke away from the reel. Fortunately, the strong point held and this alone stopped the heavy end of the towing from falling astern into the dock, where a cherry picker was holding aloft several workers working on the rudder. Luckily no one was injured in the incident. Damage was restricted to the wire reel and to the deck plating.

The root cause was attributed to material failure in the brake's components.

▲ 1: View of damaged towing wire drum showing broken end fittings. The centrifugal brake system is housed within the reel.

▲ 2: Heavy end of towing wire successfully held by strong point.

Feedback

MARS 200771
Timber deck cargo

1.

The logs in this report are called props and are used in paper mills to be turned into paper. It is, indeed, common practice to carry them on deck more or less unlashed, with the logs (bundled or loose) stowed and secured longitudinally on the hatch covers and along the outboard sides, with the rest of the props loaded athwartships inboard of the former stacks.

Since the risk of losing the cargo is fairly small, this kind of stowage is considered to be the most cost-effective. Another advantage of this method of stowing the deck cargo is that if you are starting to lose the cargo in adverse weather, the deck will be swept clean in a very short time thus avoiding any dangerous list or shifting of other cargo.

The problem today is that many PSC officers do not agree on stowing the props this way. But to my knowledge, up to now, there is not a safer and cost effective alternative to their transportation deck.

2.

It needs to be highlighted that athwartship stowage of logs (bundled or loose) can be allowed provided they are adequately 'boxed in' by an adequate perimeter of similar cargo stowed longitudinally.

Any vessel loading timber on deck must comply with, among other requirements, Regulation 25 (5) of the Loadline Convention; IMO Code for Safe Carriage of Timber Deck Cargoes; IMO Code of Safe Practice for Stowage and Securing of Cargoes etc; Solas Chapter II-1 Reg.25-8.1,;SC 161 IACS; and IMO Res A.749.

A sudden change of course at an inappropriate speed can surely cause an undesired heel and increase of draft in a full-bodied ship, although it is debatable if this will cause the cargo to shift.

Cross-checking of cargo weight by draft survey will become more reliable only after a day or two of uniform loading and completion of deballasting. It must also be noted that the stowage factor of logs may vary considerably.

MARS 200726
VHF Colregs school

The acronym 'Colregs' should be changed to read as 'Acolregs' (Anti-Collision Regulations), otherwise it appears that one is fostering collisions and not being sufficiently proactive to avoid them...

The Acolregs do not advocate the use of VHF but on the other hand, they do not ban its proper use. There is no doubt that use of VHF is a useful tool provided the communications are understood by both parties (ship to ship or ship to shore).

I would not associate VHF with Rule 6 but rather with Rule 7 a) and eventually with a modification with Rule 36 and explicit mentioning VHF under Annex IV.