The Nautical Institute
Mariners' Alerting and Reporting Scheme
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Providing learning through confidential reports – an international cooperative scheme for improving safety

MARS 201030
Gangway fall wire failure

The vessel was at anchor and a launch had been arranged for shore leave. Several crew members left the vessel via the port side gangway and the gangway was then returned to the stowed position. As the gangway reached the main deck level and was about to be brought inboard, the fall wire parted causing the end of the gangway to fall into the water, it being supported only at the upper platform turntable. Fortunately no one was on the gangway at the time and the launch had cleared the area.

Root cause/contributory factors

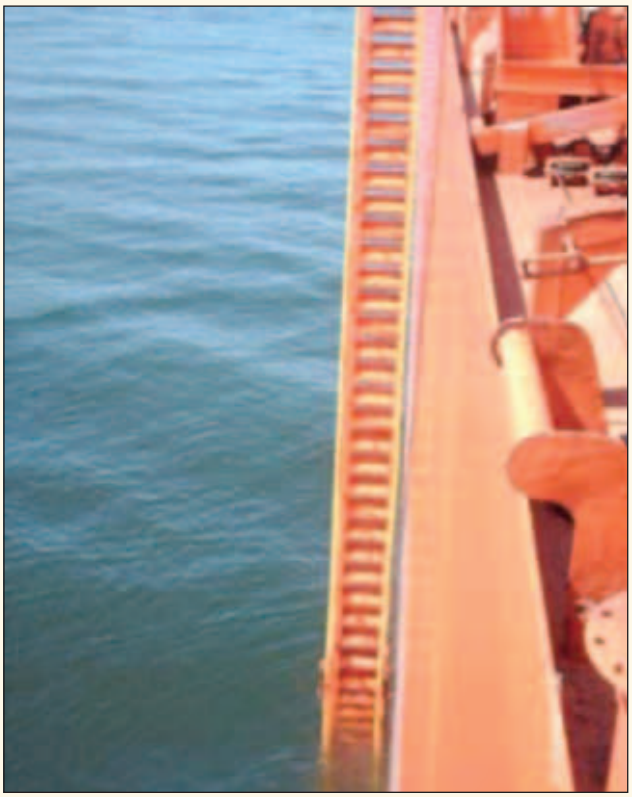
1. Lack of compliance with procedures – the fall wire failed at a damaged section that had been reported and not acted upon on two previous occasions.
2. Those aware of the damage and lack of action had not reported the matter to a more senior officer, in this case the master.
3. The fall wire had been renewed about two years back, however, investigation on board showed that some of the crew were aware that the wire had sustained further damage more recently. This had been reported to the chief officer at the time. Unfortunately, this was not acted upon, neither was the matter raised at any safety meeting nor was a near miss recorded.
4. A new chief officer joined the vessel and again, the damaged fall wire was apparently reported. Once again, no action was taken, even though the damaged section of the fall wire was visible in the stowed position being just before the drum.

Corrective/preventative actions

1. The master promptly held a safety meeting at which all present assisted in the investigation.
2. A spare wire was on board as per company requirements and this was fitted with a replacement spare being ordered immediately.

Lessons learned

All officers and crew must not hesitate in reminding their seniors if items affecting safety brought to their attention are not immediately followed up. If, following reminders the matter is still not attended to, then they must not hesitate in approaching the master or chief engineer.



▲ Figure 1: View of gangway after parting of fall wire

MARS 201031
Facial injury caused by gangway winch handle

A container feeder vessel had just berthed at a terminal for cargo operations and the seaman assigned to lower the gangway reported to the duty officer that the controls of the electrical winch motor were unreliable. Accordingly, the gangway was lowered manually by means of the winch handle and rigged for access.

With minimal manning, and the absence of a dedicated electrician, the Chief Engineer took it upon himself to attend to the problem despite having been continuously engaged in manoeuvring and maintenance tasks over the previous 12 hours without rest. At around the time the Chief Engineer completed the electrical fault-tracing and was ready to test the winch motor, the stevedores changed shift and there was also a change of watch at the gangway with a new seaman taking over. While the new seaman was adjusting

the gangway using the handle to allow the new shift to come aboard, the Chief Engineer arrived at the winch motor control stand, situated within a few metres from the seaman. In a momentary lapse of concentration, the Chief Engineer, without observing the activity going on at the gangway or warning the seaman working the winch handle, energized the motor. This caused the handle to snatch violently from the seaman's grip and strike his jaw from below with great force, throwing him on the deck. After administering first aid on board, the seaman was taken ashore to a hospital where multiple facial fractures were detected resulting in his repatriation home.

■ **Editor's note:** Minimal manning levels, overwork and fatigue may have contributed to this incident. During lifeboat drills, there have been many similar accidents when the lifeboat winch motor has been inadvertently energised with the manual handle engaged. These incidents once again highlight the importance of proper work planning and communication, especially when working under pressing circumstances.

MARS 201032
Confusing units in test certificates

As a port captain specialising in project cargoes, I regularly handle heavy lifts of 120-150 tonnes. Before starting the operations, I ask to see the test certificates for the slings that are to be used for lifting the consignments. On many occasions, only the test certificate for the original batch of wire rope used for making the sling is produced, without any document to show the safe working load (SWL) of the sling. This obviously should be less than that of the parent wire rope, allowing for the weaknesses introduced by the bending of the rope around the thimbles and splicing.

Even on the wire rope test certificates, the data is not clear. While the ultimate tensile strength of a steel wire rope is given in kilonewtons (kN), some certificates also mention the tensile strength of each steel wire in mega pascals (MPa), and it is not clear how to use this information. For example, the test certificate for a 60.5 mm diameter extra flexible steel wire rope of 6 x 37 + fibre core construction, which has been used to make heavy lift slings, shows its ultimate tensile strength as ≥ 2525 kN, and also shows the tensile stress of steel wire as 1570 MPa.

I have also frequently observed that heavy lift wire rope slings incorporating mechanically pressed splices do not have the SWL punched on the metal ferrule.

It is suggested that in order to avoid confusion among seafarers, that wire rope test certificates state breaking stress in MT as some ships' officers are not familiar with kN units and conversion factor to MT. As a further precaution, every heavy lift sling must have the SWL indelibly marked or punched on the ferrule or thimble eye in case of a conventional splice. This is very important for safe handling of heavy cargo as any misunderstanding or mishap with such operations has the potential to cause extensive damage to life and property.

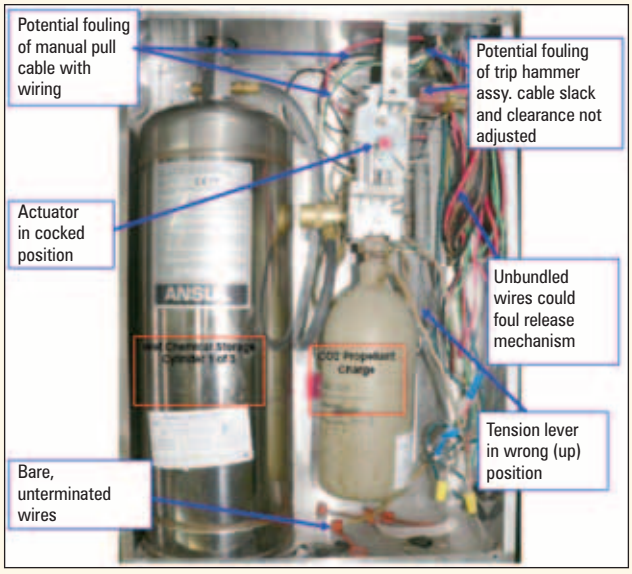
MARS 201033
Galley firefighting system found faulty

Due to the late arrival of spares just before ship's sailing, after routine servicing of the galley firefighting system by an approved shore technician, it was decided that the ship's staff would carry out the remaining work of renewing the fusible links at sea. These heat-sensitive components are designed to melt or break at a certain temperature (in this case 182ºC) and, via a system of pre-tensioned levers and cables, cause the simultaneous activation of the power supply trips to the galley cooking range and fans and the fixed foam system. When the system was opened, the following serious anomalies were noted:

- Fusible link cable tensioner in wrong position: tensioning lever was in 'up' (untensioned position), meaning that automatic operation of system would not have been possible when fusible links separated.
- Improper cable slack adjustment: cable locking clamp at the trip hammer assembly was not adjusted properly to allow the recommended slack (when cable tensioned), as instructed in the service manual.
- Sloppy wiring within actuator cabinet: poor installation of the wiring when this system installed consisted of unbundled wiring groups, damaged insulation, unterminated spare wires and fouled wires in way of manual pull cable and trigger release mechanism.
- Broken wire pulley elbow at range hood entrance: possibly due to galley gear being secured to or hung from this conduit in past, which broke a pulley elbow connection. This broken joint had potential to cause a fouled cable and inoperability of automatic fire suppression.
- It was also noted that certain special tools, essential for proper maintenance and adjustment of the system, were missing.

Corrective/preventative actions

1. Vessels fitted with similar systems advised to check for potential problems as found on our vessel. A 'cocked' indicator on the exterior of cabinet may not mean that all components of the system are ready for use;



▲ Figure 2: Actuator cabinet as found when cover opened

2. All vessels instructed to ensure availability of the service/maintenance manual on board – many can be downloaded in PDF form from the manufacturer's website;

3. All vessels instructed to ensure the timely stocking of spares and to maintain correct inventory of these and special tools;

4. The company to investigate the possibility of carrying a system recharge kit(s) on board. This would allow continued protection after the system was used in a real fire or accidentally discharged.

■ **Editor's note:** Ansul (USA) high-pressure CO2 fire-extinguishing systems: (USCG Safety Alert 05-09) also warns against inadvertent discharge, due to defective cylinder valves. Further details can be viewed on / downloaded from http://homeport.uscg.mil/cgi-bin/st/portal/uscg_docs/MyCG/Editorial/20090917/0509.pdf?id=b2af97d0c6654e7dbe1bec78791139e99849d03e or http://marineinvestigations.us

MARS 201034

Hazards from poorly maintained burning and welding equipment

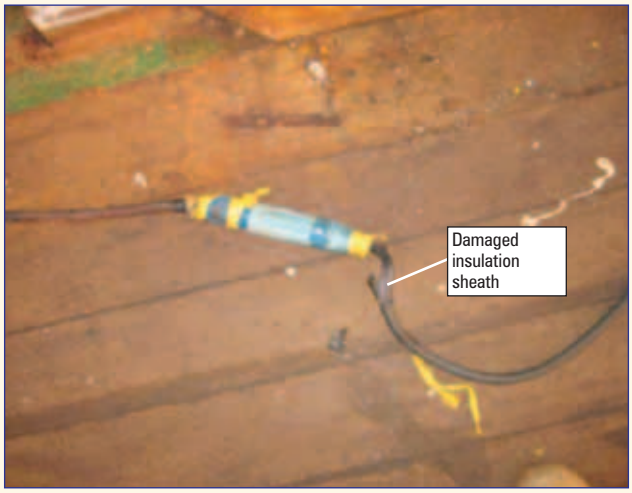
Edited from IMCA Safety Flash 09/09: http://www.imca-int.com/documents/core/sel/safetyflash/2009/IMCASF09-09.pdf

On an offshore support vessel, sub-contractors were engaged in burning and welding sea fastenings on the main deck. After flames were observed at an acetylene tank regulator, operations were suspended and the fire was successfully extinguished. After cooling, the regulator was removed for inspection (see Figure 3) and it was found that thread sealing tape had been inappropriately used in all the connections on the contractor's equipment.

▲ Figure 3: Wrongly fitted acetylene regulator pressure gauge

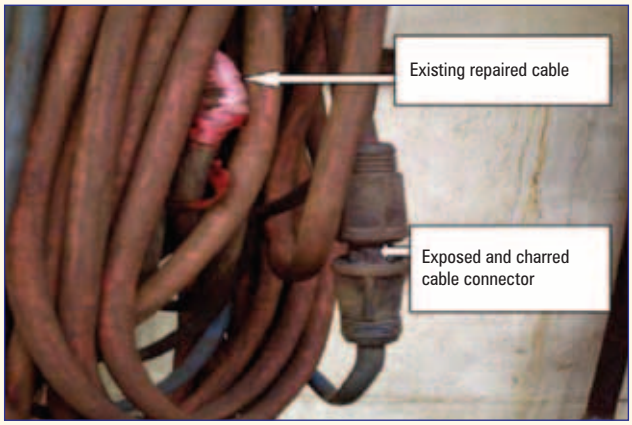
Further hazardous conditions with 'hot work' equipment on the same vessel were:

- A welding cable was found to be smoldering at a connection point where the cable had been pinched and the insulation sheath was cut and the wires exposed (see Figure 4);



▲ Figure 4: Damaged insulation sheath

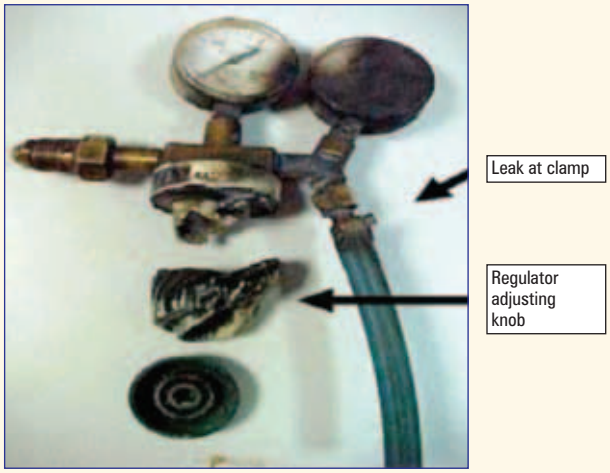
- A midway cable connector was found arcing and smoking during deck welding operations (see Figure 5);



▲ Figure 5: Midway cable found arcing and smoking

- A nozzle head was found detached from an oxy-acetylene torch.

Whether belonging to the vessel or sub-contractors, poorly-maintained burning and welding equipment present a serious hazard to personnel and vessel. In a separate incident, a welder's hand was severely burned while he was adjusting the pressure, on an oxygen regulator. The welder had oil on his hand and there was an oxygen leak from the hose clamp. The oxygen stream under pressure instantly caused the hydrocarbons (oil and grease) on his hand to catch fire, the violence of which even blew away the regulator knob. Never allow oil or grease or any organic matter to come into contact with oxygen under pressure (see Figs 6 and 7).



▲ Figure 6: Fire-damaged oxygen regulator

▲ Figure 7: Oil-coated hand severely burnt by escaping high pressure oxygen

MARS 201035

Unapproved Epirb battery replacements

Edited from USCG Alert 08-09

On some coastal vessels in US waters, recent inspections have revealed unapproved replacements of 406 MHz Epirb batteries by servicing companies that have no association with the Epirb manufacturer. These unauthorised battery installations would likely result in a failure of this critical item of lifesaving equipment, and as such are not in compliance with the operational readiness requirements of applicable regulations.

There was also evidence of water intrusion due to a crack in the top cap, which was overlooked by the servicing company as their staff appeared to be insufficiently trained in properly inspecting and servicing Epirbs. The Epirb was later condemned by the manufacturer and the customer was notified.

Every approved Epirb is tested during its approval process using a battery, or batteries, specified by the manufacturer. Approved Epirbs come with a user's manual which describes battery maintenance and replacement procedures. In order for the Epirb to remain within the conditions of its approval, the manufacturer's instructions in the user's manual must be adhered to. To ensure that replacement batteries are of the same type with which the Epirb was approved, and are correctly installed, manufacturers typically specify that battery replacements only be undertaken by the manufacturer or a manufacturer-approved shop. Any modification or changes to an Epirb must be made in accordance with the manufacturer. The use of alternative replacement parts or batteries is prohibited and may prevent the device from meeting safety regulations.

The Coast Guard strongly reminds Epirb owners and servicing facilities to be aware of the compliance implications and potential for equipment failure stemming from any modification or unauthorised battery replacement.

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

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