



**KISH P & I LOSS PREVENTION CIRCULAR KPI-LP-25-2012**  
***(MARS Sampled Accidents & Lessons To Be Learnt)***

► **Case 1- Collision and oil spill in TSS:**

A VLCC was on a loaded voyage and was transiting a busy strait by night, drawing 19.9 metres even keel. During the crucial passage, the bridge was manned by the Master, 3/O and a helmsman. The vessel was on harbour manoeuvring mode under bridge control, displaying the appropriate signals to indicate her 'constrained by draught' status.

At about 2100 hrs, after reaching her waypoint, the vessel altered course to 070T and was proceeding along the designated east-bound deep water route, close to the separation zone of the TSS. A number of vessels were proceeding in both directions within the appropriate lanes. Once on the new heading, the Master observed a container feeder vessel crossing from the west-bound lane into the separation zone and straying into the east-bound deep water route, against the traffic flow.

The Master stopped the engine and then went full astern to reduce speed. At the same time the appropriate sound signal under Rule 34 (d) was sounded on the whistle (air horn) to convey doubt as to other vessel's intentions and illegal manoeuvre.

With vessel's engine still going astern, the rogue vessel crossed about half a mile ahead. Immediately after crossing, she inexplicably began to alter course hard to starboard and turn back towards the VLCC. Reacting quickly, the Master, whilst maintaining the full astern propulsion, ordered the rudder hard to port and repeated the Rule 34 (d) sound signal, but the container vessel continued to alter her course to starboard and, on a NWly heading, was heading directly for VLCC tanker's bow. With the ship still making headway, the container vessel's port quarter came into contact with the bow. The collision resulted in multiple indentations on the vessel's bow area and a breach in the container vessel's port bunker tank, resulting in an oil spill.

**Results of the investigation:**

1-Work and rest period records indicated that the ship staff had adequately rested. The Master had exceeded the optimum work and rest hour guidelines, but not to a significant degree. In view of the sea-room limitations and extreme traffic density, the Master's lengthy period on the bridge was considered appropriate and did not contribute to the incident;

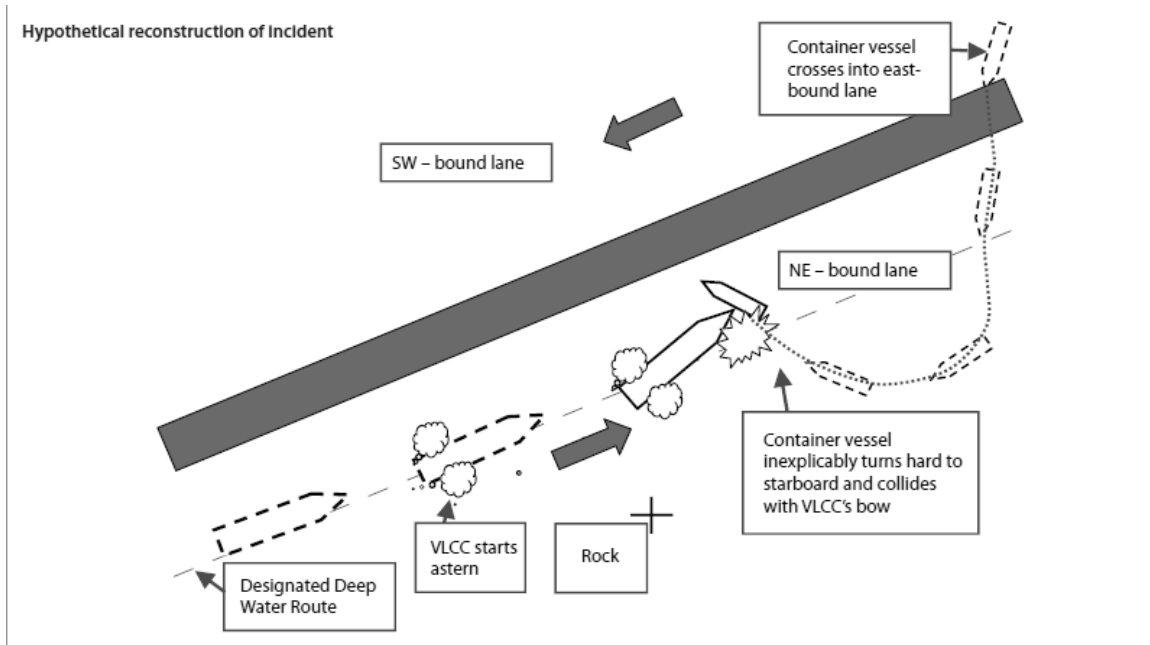
2-Alcohol tests were conducted on all staff on duty shortly after the incident and the results were satisfactory i.e. negative. (The vessel is alcohol free);

3-The Master has been in rank for the past three years and had transited the area a number of times as Master;

4-Although the vessel's bridge was manned by the Master, 3/O and a helmsman, an additional officer and lookout were required as per company's procedures for the area being transited;

5-The engine room was adequately manned at the time of the incident;

6-The manoeuvres implemented by our Master were considered to be the most appropriate under the circumstances, but due to the wrong actions by the other vessel, contact could not be avoided.



**Immediate actions taken:**

- 1-VTS was informed about the rogue container vessel as soon as it was evident that she was crossing the separation zone;
- 2-Immediately after the collision, Vessel Traffic Service (VTS) and all concerned parties were informed;
- 3-Both vessels complied with VTS orders and anchored in a designated area for investigations by port authorities;
- 4 All the ship's tanks / compartments were sounded and monitored for any ingress of water or possibility of pollution;
- 5-At anchorage, all spaces in the affected area were inspected internally by ship's staff and a class surveyor;
- 6-P&I club representatives, surveyors and superintendents boarded the vessel in the morning;
- 7-Once all the investigations were completed, a condition of class required permanent repairs on the return voyage and permission was obtained for our VLCC to resume her passage to the discharge port.

**Root cause/contributory factors:**

- 1-Violation of COLREGS Rules 5 (Lookout), 8 (Action to avoid collision),10 (Traffic separation schemes), 17 (Action by stand on-vessel) and 18(Responsibilities between vessels) by rogue container vessel;
- 2-Residual headway of own vessel despite the emergency full astern manoeuvre.

**Corrective actions:**

- 1 A navigational audit was carried out by the attending marine superintendent and all the staff were re-briefed on the company's procedures for safe navigation;
- 2-The superintendent also assessed the Master and found him capable/competent to complete the voyage and continue sailing on the vessel;
- 3-A flag state investigator visited the vessel at the discharge port to carry out an investigation and to review navigational procedures;
- 4-On the return west-bound ballast voyage, permanent repairs were carried out to the satisfaction of class.

**Preventative actions:**

- 1-An urgent circular was circulated to the fleet on the accident, highlighting the importance of maintaining the appropriate watch levels and complying with the work and rest hours guidelines when navigating in restricted waters and areas of dense traffic;
- 2-The importance of proper passage planning and ensuring that loaded VLCCs adjust speed so as to transit critical areas during daylight hours was also reiterated in the same circular;
- 3-The incident will be addressed at the next Officers' seminar and form part of pre-boarding briefing for all Masters / Chief Engineers.

**► Case 2-Engine room fire:**

On board a laden bulk carrier on passage, the engine room staff were holding a meeting before starting work for the day. At this time, in anticipation of larger electrical sea load, auxiliary engines (A/E) Nos. 1 and 2 were on parallel load-sharing configuration.

All the engineer officers were present in the engineering control room (ECR) and the engine ratings were carrying out their assigned tasks, when they noticed flames between the two running generator engines. The fire alarm system activated and the engineers immediately tripped the main supply breakers on the switchboard, stopped the auxiliary engines and all other running machinery whilst the emergency generator came on load.

Within seconds, thick black smoke seriously reduced the visibility in the engine room, forcing all the staff to evacuate the machinery space. While the crew mustered, the ventilation trips, flaps and quick closing valves were operated, and the E/R was battened down. The Self-Contained Breathing Apparatus (SCBA) team no.1 then entered the space and extinguished the fire with portable and semi-portable extinguishers. The crew continued to monitor the space from various locations for hot spots. A few hours later, they made another entry to verify that the fire was completely extinguished.

Subsequently, after carrying out all the appropriate operational safety checks, Aux. engine #3, (located on the lower platform), main engine and other machinery were re-started and the vessel resumed her passage.

**Immediate actions:**

- 1-Owners were informed and kept updated on the situation/developments;
- 2-P&I Club and Hull & Machinery underwriters were informed;
- 3-Classification society was informed and urgent attendance was requested at next port.

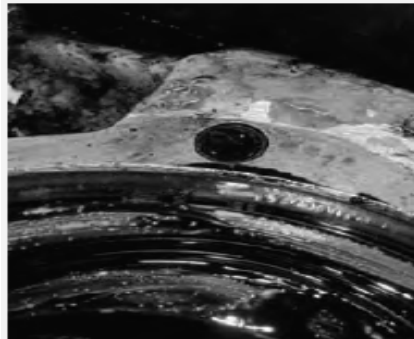
**Root cause/contributory factors:**

- 1-Sudden shearing off of one of the three bolts that secures the lubricating oil filter cover of A/E #2. The cover was displaced and lube oil under pressure splashed on to various hot components of both running generator engines and ignited;

- 2-Although the engineers reacted correctly and quickly stopped both generator engines, the lube oil priming pumps continued to operate, powered by the emergency power source. This resulted in the unintended spill of all the lube oil in the sump of the A/E #2 engine, which fed the fire;
- 3-Suspected improper tightening of the filter cover bolts and lack of proper inspection, especially as it is known that these fittings could be subject to wear down or loosen due to vibration / internal pressure;
- 4-Presence of combustible material such as felt filter covering the engine turbocharger (T/C) blowers, plastic light fixtures that added to the intensity of the fire.



View of displaced fuel filter cover



Close-up view showing sheared bolt of filter cover



View of fire damage

#### **Corrective/preventative actions:**

- 1-A special safety meeting was held on board to emphasise the importance of carrying out risk assessments, tool box meetings and discussing all the anticipated risks when allocating jobs for the day;
- 2-Anti-splash sheaths, guards for filter covers and extra securing arrangements for cover bolts were fabricated and fitted for all lube oil pipes and filters on generator engines; even though these are not formally required;
- 3-Renewal/cleaning of the filters and other critical parts of the generators will be supervised by the senior engineers;



- 4-Restoration of all engine room areas affected by the fire (coating renewal, renewal of damaged electrical wires and other associated fittings) was commenced immediately;
- 5-All auxiliary engines were made fully operational and successfully load-tested.

**Further preventative actions:**

- 1-The superintendent will review the fitting of additional screen shields between both auxiliary engine generators and at other strategic locations on the lube oil / fuel oil low pressure piping systems during the next shipboard visit. The fleet will be advised of decisions taken;
- 2-Staff on board all vessels in the fleet encouraged to carry out risk assessments for all tasks, considering 'what can happen' scenarios; and maintain a high level of situational awareness;
- 3-This incident is to be discussed as part of the on-going safety campaign;
- 4-The vessel will be visited by the superintendent at the next port to review the preventative actions put in place and to brief the onboard staff, as appropriate;
- 5-The possibility of such fires occurring on other vessels in the fleet is being reviewed by the superintendents and appropriate safeguards are being put in place on each vessel.

**► Case 3-Hand injury from falling lid:**

The crew on board a tanker was engaged in lifting some light loads out of the pump room stores hatch. The lid was raised to its open position and secured at only one of the two hinges, using a mild steel (MS) bolt. The crew then began the task of lifting out the loads by attaching a tackle to a dedicated pad-eye on the underside of the open lid. Suddenly, the open hatch lid dropped unexpectedly on to the coaming, inflicting severe crush, cut and fracture injuries on the right hand of a deck rating. The injured person was given first aid onboard and was further treated ashore before repatriation.

**Root cause/contributory factors:**

- 1-Inappropriate operation – the lid was fitted with a pad-eye of approved strength on the underside to be used for the lifting and handling of loads inside the pump room, but only with the lid properly secured in the fully closed position. In this incident, the crew not only failed to properly secure the lid in the open position, but wrongly used this fitting to lift loads out of the hatch with the lid held in the open position;
- 2-A single, non-standard pin (MS bolt without a check-nut) was used to secure the hatch lid in the open position. It is suspected that the bolt was not passed all the way through the lugs of the hold-back arrangement of the lid;
- 3-The crew failed to carry out a proper risk assessment, possibly because of the light loads (bundles of staging aluminium pipes) being handled.

**Corrective/preventative actions:**

- 1-The incident was discussed at a special safety meeting;
- 2-All hatch lids were fitted with securing pins as per original specifications and these were permanently attached with keeper chains;
- 3-All hatch lid securing arrangements were painted yellow and a prominent warning stencilled on them to ensure that the lid is properly secured when in the open position;
- 4-The pad-eye on the underside of the hatch lid was similarly marked, specifying it is to be used only when the lid is properly secured in the fully closed position.





View of pump room hatch in shut position

Dedicated padeye on underside of hatch lid intended for use only when lid is secured in closed position



Improperly secured open lid wrongly being used to lift loads



Non-standard bolt was used in place of a safer 'drop-nose' pin

#### Lessons learnt:

- 1-Lifting loads must always be considered a risky task, regardless of the weights being handled, and must be preceded / controlled by proper risk assessments, work planning and supervision;
- 2-Engine and pump room hatch lids can be very substantial in construction, and very heavy. Securing arrangements, especially in the open position, must be carefully inspected and properly used; even if the lid is to be kept open only briefly;
- 3-Work teams must be enabled and encouraged to identify and break a developing 'error chain'.

#### ► Case 4-Anchor cable rendered in severe gale:

A vessel let go her starboard anchor at an exposed roadstead at night in a near gale (30-33 knot wind), awaiting delivery on a new charter. The next morning, the wind increased to a severe gale, with gusts of 40-45 knots, and waves 3-4 metres high. After a day with the cable paid out to this scope, the attending superintendent suggested the paying out of a few links in order to 'freshen the nip' of the cable at stress points (e.g. gypsy whelps, guide roller, chain stopper and hawse pipe etc.).

The Master agreed and this operation was successfully executed by the anchor team under the supervision of the C/O at about 0900 hrs, after which the crew re-tightened the brake and re-engaged the bow chain stopper. At about 1315 hrs, the Bosun, who was working on the forecastle deck, heard a loud noise and noticed the chain stopper lifting and the anchor brake rendering slowly under heavy tension.

He immediately tightened the brake further and reported the event to the duty officer, who, in turn, informed the Master and superintendent.

**Results of investigation:**

- 1-Chain stopper support brackets were found deformed;
- 2-Securing pin of chain stopper bar found displaced and deformed;
- 3-Stopper bar also found deformed and not aligning with guillotine recess;

**Root cause/contributory factors:**

- 1-Prevailing severe weather conditions;
- 2-Possible insufficient tightening of the brake after adjusting scope;
- 3-Ineffective design of the securing arrangement on the chain stopper bar – comprising oval holes only on the counterweight side, which permitted large play in the engaged position, allowing the cable to slip from under the stopper bar.

**Immediate corrective actions:**

- 1-Near miss report sent to office;
- 2-Chain stopper support brackets and stopper pin temporarily faired;
- 3-Anchor watch and deck crew instructed to continuously monitor status of anchor cable to ensure avoidance of overstressing.

**Further planned corrective/preventive actions:**

- 1-Incident to be discussed at next safety meeting;
- 2-Chain stopper to be modified to include additional securing pin arrangement on the 'gravity' side of stopper bar;
- 3-Securing pins to be renewed with stronger material;
- 4-Pin's securing points/holes to be changed from oval to round;
- 5-Consider fitting additional chain stopper device designed to engage on a vertically-oriented link of the cable (e.g. devil's claw).

Note: The engaging of a 'guillotine' type bow stopper whilst at anchor is not advised, as this may prevent the emergency release of the anchor cable. As a good practice, the brake mechanism should be properly maintained and adjusted so that it begins to render at its designed safe holding power.