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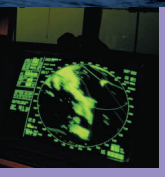
RISK WATCH

Britannia
The Britannia Steam Ship Insurance Association Limited



Navigation and seamanship

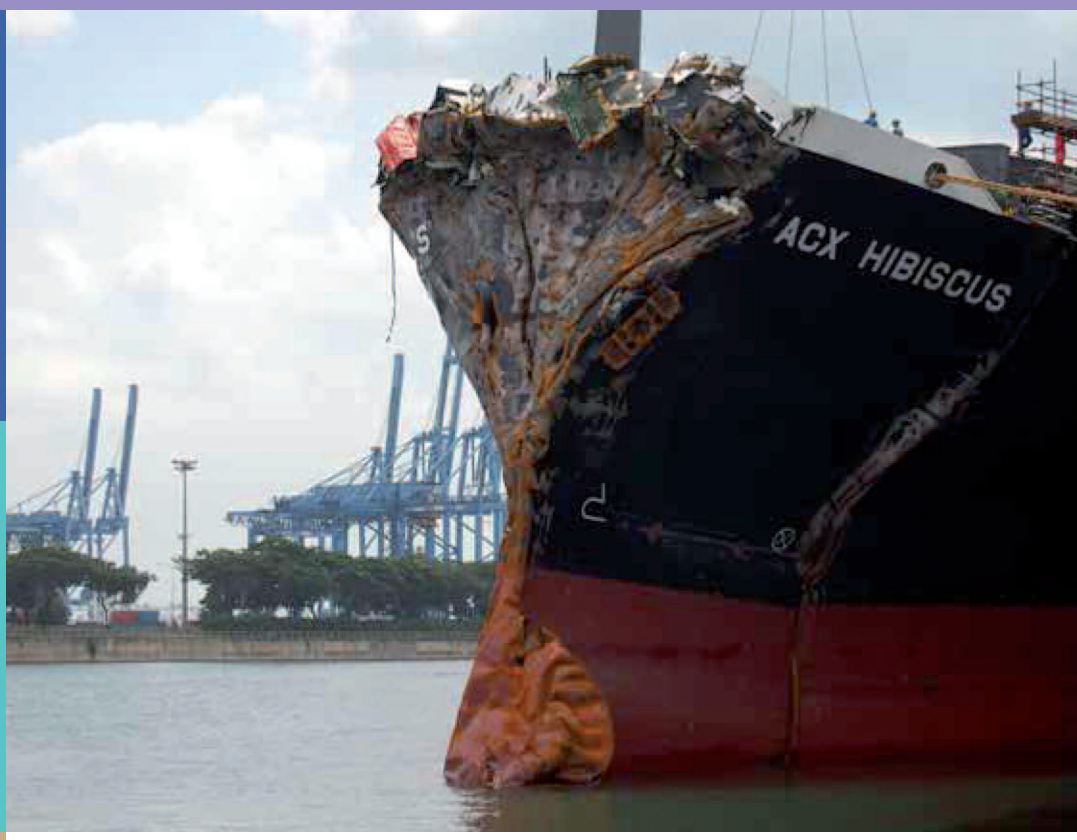
Risk management

Personal injury

Regulatory update

Restricted visibility – chief officer's neglect

An example of a collision in restricted visibility is provided in an investigation report recently issued by the British Marine Accident Investigation Branch of the Maritime and Coastguard Agency (MAIB).

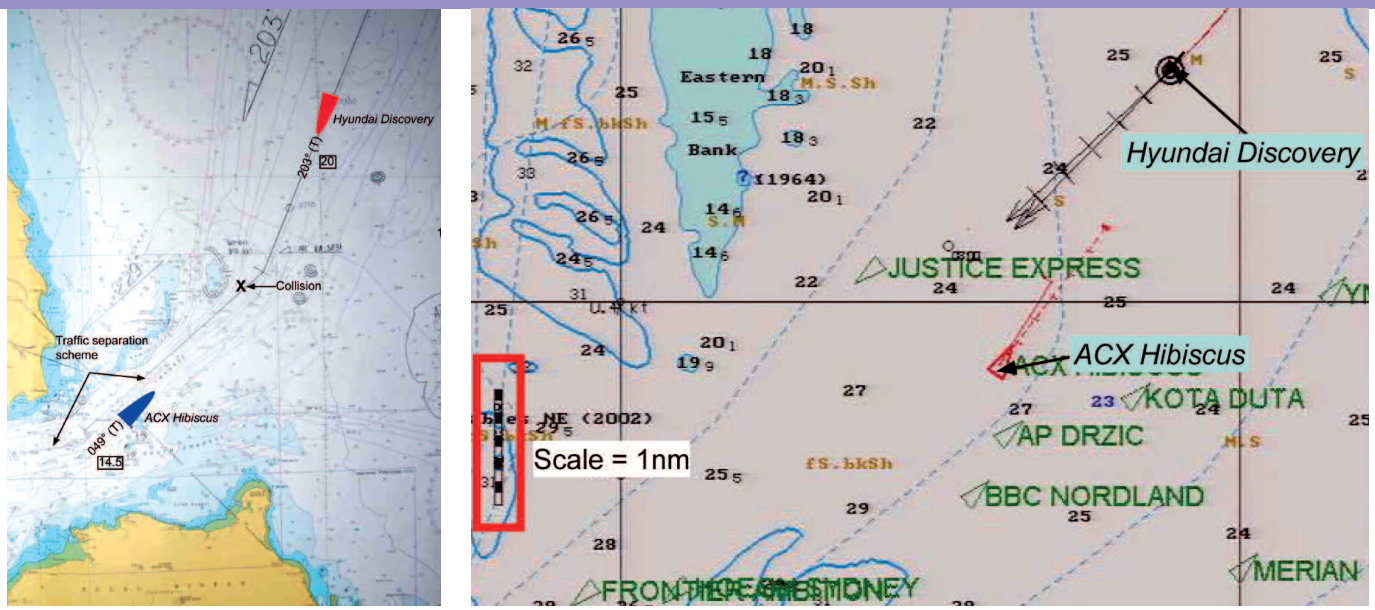


At 0400 on 11 December 2011, *ACX HIBISCUS (ACX)* departed from Singapore on passage to Laem Chabang in Thailand. *ACX's* chief officer completed his duties on deck and arrived on the bridge at 0515 to take over watch keeping duties. At 0700 *ACX* passed Horsburgh Light at a speed of 14.5 knots on an autopilot-controlled heading of 049°. *ACX* cleared the Singapore Strait Traffic Separation Scheme (TSS) at 0720. The weather was overcast with moderate rain.

At 0721 *HYUNDAI DISCOVERY (HD)* was approaching the same TSS from the East on a course of 203° at 18 knots. At around this time *HD* passed through a rain shower and visibility decreased.

At 0730 *ACX* entered a heavy rain shower and the visibility from the bridge reduced. The chief officer acquired the radar targets of several ships using his Automatic Radar Plotting Aid (ARPA) system, but did not acquire *HD* as a target.

At about 0740 *HD's* cadet looked at the AIS information that was displayed on the Electronic Chart System (ECS) and observed *ACX*. The cadet told the chief officer that he thought *ACX* would pass clear down *HD's* port side. The chief officer nevertheless altered course to starboard to a new heading of 209°. It was reported that heavy rain had reduced the visibility on *HD's* port side to approximately 5 nautical miles (nm) at around this time.



Position of *ACX HIBISCUS* and *HYUNDAI DISCOVERY* at 0751:30

Restricted visibility – chief officer's neglect (continued)

During the manoeuvre, *ACX* was lost from sight. At 0747 the chief officer again turned slowly to starboard to converge onto his next charted course of 229° and to increase his passing distance from *ACX*.

ACX continued on its heading of 049° at a speed of 14.5 knots. At 0745 it was reported that the rainfall had increased and it was estimated that the visibility from *ACX* reduced to around 2 cables. The rainfall caused the radar picture on *ACX* to become cluttered and most of the targets that had been acquired were lost from the ARPA radar screen.

By 0750 *HD* was steady on a heading of 229°, with *ACX* about 15° on the port bow at a range of 3.5nm. The ARPA on *HD* indicated that *ACX's* closest point of approach (CPA) would be approximately 7 cables on the port side. *HD's* chief officer placed the radar's electronic bearing line (EBL) over *ACX's* radar target to confirm that its bearing was opening to port as he was expecting.

At 0750 *HD's* master came briefly to the bridge to check the situation, and found that the visibility from his ship had reduced to about 5 cables in a heavy rain shower. Neither *ACX* nor *HD* made sound signals for making way in restricted visibility.

At around 0750 *ACX's* third officer arrived on the bridge ready to take over the watch. At 0751:30 *ACX's* chief officer started to turn the ship incrementally to port onto the next planned track of 350°. It was reported that the third officer looked at the radar display and found that radar targets were not seen due to clutter and that he informed the chief officer about the situation.

At 0752 ,with about 2.2nm distance between the ships, *HD's* chief officer noticed the radar trail of *ACX* change direction, indicating that *ACX* was altering its course to port, towards his ship. He immediately checked the AIS information on the ECS and confirmed that the ship turning to port was *ACX*. At 0753:15, and again at 0753:30, the chief officer called *ACX* by VHF radio.

At 0754:00 HD's chief officer asked *ACX's* third officer: 'Why are you altering course to port side?' The response from *ACX* was unclear, but it was apparent that the third officer said that his ship was turning to the north. *HD's* chief officer continued: 'Do not cross my bow …the visibility is zero you must alter course to starboard'. At 0754:20 *HD's* chief officer told *ACX's* third officer to alter course to starboard and create a minimum CPA of 3 cables. He then asked: 'The visibility is zero, what are you doing?'.

At 0754:34 *ACX's* third officer replied that: 'We are altering course to the north now'. The chief officer continued to turn *ACX* to port, passing a heading of 017°.

At 0755:00 HD's chief officer called *ACX* by VHF radio again. He stated: 'Go hard to starboard, to starboard... what are you doing?' There was no reply. At 0755:13 he sounded one long blast on the ship's whistle. He ordered hard to starboard at 0755:50, the *ACX* having just become visible at an estimated range of about 2 cables.

At around the same time, *HD* became visible to *ACX's* chief officer on his port bow. He placed the wheel hard to port and set the engine telegraph to 'emergency stop'.

At 0756:10 *ACX's* bow collided with *HD's* port side wing ballast tank adjacent to No. 2 hold. At the time of the collision *HD* was heading 229° at a speed of 18 knots and *ACX* was heading 321° at a speed of 14.1 knots.

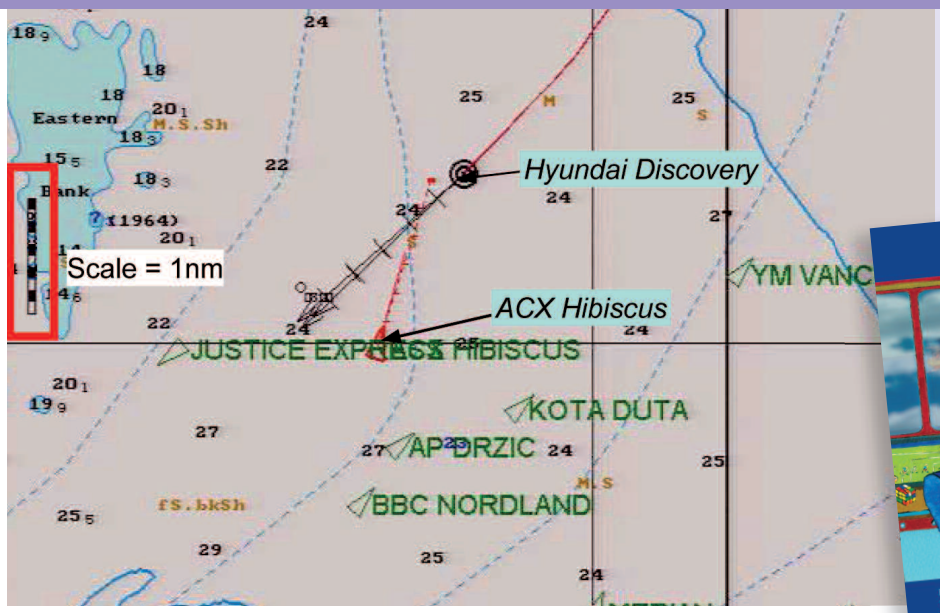
Actions of ACX's chief officer

ACX's chief officer altered his ship's course to port, in restricted visibility, into the path of *HD*. The chief officer was told by the third officer that some radar targets could not be seen because of clutter. He was further alerted by the VHF radio calls from *HD's* chief officer asking him to alter course back to starboard. Despite these warnings, the chief officer on *ACX* continued to turn his ship. It is likely that *ACX's* chief officer was adversely affected by fatigue.

Actions of HD's chief officer

The chief officer of *HD* identified that *ACX* was turning to port within a minute of the turn starting and he then had around 4 minutes to react before the two ships collided. His decision to use the VHF radio to try and persuade *ACX's* chief officer to reverse his actions was an understandable reaction in the circumstances, as the most effective way of avoiding the collision was for *ACX* to alter course to starboard. However, the VHF calls were contrary to the instructions in the SMS, offered no guarantee of success and wasted valuable time. Time can appear to pass very quickly in a stressful situation, and every minute is vital when manoeuvring a ship the size of *HD*.

The MAIB carried out a trial, using a bridge simulator, to evaluate what actions *HD's* chief officer might have been able to attempt in order to avoid the collision. *ACX* was assumed



Position of *ACX HIBISCUS* and *HYUNDAI DISCOVERY* at 0753:30

to maintain the same courses and speeds as during the accident. It showed that if *HD's* chief officer had turned hard to starboard immediately after he had observed *ACX's* alteration of course to port, *HD* would have passed clear ahead of *ACX* by 4 cables .

Restricted visibility

Both ships had either entered, or were near to, areas of restricted visibility caused by heavy rain before the collision; *ACX* for at least 25 minutes and *HD* for around 15 minutes. Immediately prior to the collision, visibility had significantly reduced in the heavy rain and was reported to be as little as 2 cables. Consequently, both ships were considered to be affected by restricted visibility as defined by the COLREGs. Neither ship was in sight of the other, and therefore rule 19 of the COLREGs – Conduct of Vessels in Restricted Visibility – applied to both *ACX* and *HD*.

Rule 19 requires that ships proceed at a safe speed, and that their engines are ready for immediate manoeuvring. This rule also states that all available means are used to establish whether a risk of collision exists. In addition, rule 35 requires that the whistle be sounded.

ACX's chief officer did not call the master to report the restricted visibility. *HD's* master was aware of the reduced visibility and reduced speed but only to arrive at the pilot station on time. Neither ship's bridge teams reduced to manoeuvring speed, enhanced their ability to keep a lookout (either by eye or radar), transferred from autopilot to manual steering or made the required sound signals. Both ship's bridge teams would have been much better prepared to respond to the traffic situation which they faced had they taken effective action to comply with the COLREGs.

Watch keeping

The *ACX's* chief officer was not aware of *HD's* presence because *HD* was not showing on *ACX's* radar display and also visibility was severely reduced. It is considered that the chief officer either did not adjust, or incorrectly adjusted, the rain clutter control to reduce the effect of the interference caused by the rain on his radar equipment. *ACX's* AIS unit should also have indicated the presence of ships closest to it, including *HD*. It was concluded that the chief officer either did not use, or misinterpreted, the AIS information that was available to him. The chief officer had insufficient situational awareness due to his ineffective use of the navigational aids that were available to him.

Had the passage planning process considered the possibility of heavy rain reducing visibility while the ship was crossing a busy traffic lane, the master of *ACX* could have identified that additional resources were needed to mitigate the risks during the alteration of course to the north. The master could have remained on the bridge to assist the watch officers or increased the watch manning.

The risks of using VHF radio for collision avoidance are highlighted in Marine Guidance Note 324 (M+F).

The full MAIB report is available on line at:
www.maib.gov.uk

Collision regulation posters: COLREGs rules 6, 19 and 35

This poster illustrates an all too frequent cause of collision where ships proceed too fast in the prevailing conditions. Rule 6 lists various factors that should be taken into consideration when fixing a safe speed:

- visibility
- traffic density
- the type of ship and manoeuvrability
- the presence of background light from shore or back scatter of own lights
- the sea state and the proximity of navigational hazards
- the draught in relation to the available depth of water.

The rule also emphasises the appropriate use of radar.

The scene played out in the poster depicts busy traffic with visibility reducing. This is a sizeable ship proceeding at 19 knots in close proximity to other ships in deteriorating weather conditions. There is an immediate need to reduce the speed and take into consideration all the factors outlined in rule 6. There is also a requirement to prepare the engines for possible manoeuvring and to start sounding the fog signal (rules 19 and 35).

The rules provide clear and concise instructions to make early and substantial action to avoid collision.

What would you do?

Risk management

Maintenance of fire safety equipment on board ship

Continuing our series of articles highlighting good practices that can be shared by Members.

SOLAS Regulation II-2/14 requires that maintenance, testing and inspection of fire protection systems and appliances on board shall be carried out based on IMO guidelines, which address the minimum recommended level of maintenance and inspections for the maintenance plan required by SOLAS.

IMO MSC.1/Circ.142 guidelines recommend that certain maintenance procedures and inspections can be performed by competent crew members who have completed an advanced fire-fighting training course, while other procedures should be performed by persons specifically trained in the maintenance of such systems i.e. authorised representatives of the manufacturer.

The on board maintenance plan should also indicate which parts of the maintenance and inspection programme are to be carried out by competent crew members and which are to be completed only by persons specifically trained in the maintenance of such systems.

The effectiveness of the actual maintenance on board will vary depending on the company's ethos, work practices and the available budget. Unfortunately, feedback and reporting from our routine surveys has made it increasingly apparent that maintenance is one of the areas that is given a lower priority when allocating available funds and manpower. This is particularly so on a ship where the operating cost is higher, due to age, condition and availability of spares. Such ships have a correspondingly lower earning potential which exacerbates the situation, particularly if the ship is idle for longer periods.

The IMO and SOLAS guidelines state that portable fire extinguishers should be examined annually by a competent person, who may be assumed to be the chief officer or second engineer, or their representatives.

The basic maintenance includes a requirement to:

- examine the extinguisher body externally for corrosion or damage that could impair the safe function of the extinguisher
- carefully check the plastic head cap for signs of UV degradation
- check the condition of the discharge hose and make sure that it meets the manufacturer's specifications
- weigh the extinguisher to check that the weight corresponds with the manufacturer's specifications and the recorded weight when first commissioned or last recharged

The third officer, perhaps in conjunction with the second officer and sometimes the fourth engineer, is usually the designated fire safety officer and therefore is the person responsible for checking and maintaining relevant fire fighting and life safety equipment.

Whilst there are always exceptions, it is unusual for these officers to be adequately trained to properly and effectively service all safety equipment on board a particular ship. It is customary for the new joining officer to get a handover from the officer being relieved. This should be written down and, if there is sufficient time, should include a brief walk through and perhaps the location of spare parts should be pointed out. There is a requirement to review the manufacturer's documentation in order to verify the recorded weight of the fire extinguishers, or to be able to decide whether the plastic cap of the extinguisher is degraded to the extent that it may need replacement. However, this requirement is unfortunately not often fulfilled, as demonstrated by a sample of pictures from recent survey reports.

On ships trading on short sea routes, or those under 3,000 gt, the requirement for safe manning is correspondingly reduced and it is not unusual for the deck officer manning to comprise a master, chief mate and one officer (in charge of a navigation watch). This naturally reduces the time and manpower available for planned maintenance routines. The owner is obliged to ensure either that ship staff are able to adequately maintain the ship, whilst taking into account the ship's trade, and also compliance with the MLC requirements, or the owner must make sure that the requisite maintenance is carried out with adequate assistance from ashore.

Crew exercises, for example fire drills, must be arranged so as to ensure minimal disruption to rest periods. Seafarers called out whilst in a rest period are entitled to a rest period to make up for the time spend on the drills.

Efficient maintenance practices must be relevant to manufacturer's recommendations and planned for appropriate intervals that are also based on usage and age of equipment. The planned maintenance routine needs to be sufficiently flexible to encompass any interim equipment failures or deficiencies.

Maintenance is important for the reassurance that the equipment will work as designed and when required but particularly in an emergency. It also provides the requisite proof, when being inspected or in the case of equipment failure, that the required duty of care was undertaken in ensuring that the equipment was in good working order. Effective and timely maintenance also reduces down time and losses due to equipment malfunctions and having all safety equipment readily available for use when needed may save lives.

A brief summary of areas to watch out for with respect to some safety equipment is shown on the following page.

Fire hoses

- all hoses shall be kept out of direct sunlight and stored in a well-ventilated location
- all hoses shall be drained and thoroughly dried before being placed in storage
- protect the male coupling threads by rolling the hoses with the coupling on the inside of the roll
- hoses should not be dragged over sharp or abrasive surfaces unless specifically designed for such service

Portable fire extinguishers

- visually inspect the fire extinguisher for corrosion and damage
- check that the extinguisher has not been used, by verifying:
  - safety pin and tamper seal are in place
  - pressure gauge indicating needle in the green area
- check that the operating instructions on the extinguisher are clear and legible
- remove the discharge hose and check for blockages and corrosion
- once the discharge hose has been removed replace the 'O' ring
- weigh the extinguisher and record on the service label – If there is more than a 10% weight loss, investigate and recharge
- wipe down the extinguisher
- ensure that the mountings are secure and in good condition before replacing the appliance

Fixed carbon dioxide fire extinguishing systems

The on board maintenance plan should be included in the ship's safety management system and should be based on the system manufacturer's recommendations including:

- maintenance and inspection procedures and instructions
- required schedules for periodic maintenance and inspections
- listing of recommended spare parts
- records of inspections and maintenance, including corrective actions taken to maintain the system in operable condition

At least every 30 days a general visual inspection should be made of the overall system condition for obvious signs of damage.

A minimum level of maintenance and inspections should be carried out annually in accordance with the system manufacturer's instructions and routine safety precautions.

Self-contained breathing apparatus (SCBA)

- SCBAs should be inspected weekly to ensure that they are in the correct pressure range
- SCBAs on ships carrying gases, chemicals etc shall be inspected at least monthly by a responsible officer
- all SCBAs shall be examined at least annually as part of the annual statutory safety equipment survey

Emergency escape breathing devices (EEBD)

- SOLAS 74 requires at least two EEBDs to be located in the accommodation spaces
- additional EEBDs to be placed in the machinery spaces based upon numbers, ease of access etc.
- sufficient spare EEBDs should be kept on board to replace units that are used, have reached their expiry date, or otherwise become unserviceable
- the EEBD should be examined and maintained in accordance with the manufacturer's instructions
- in the absence of manufacturer's instructions, hydrostatic testing should be carried out at intervals not exceeding five (5) years, unless specifically prohibited by the manufacturers

- EEBD SHALL NOT be used to enter an enclosed shipboard space in which the atmosphere is known or suspected to be oxygen-depleted or enriched, toxic or flammable

Update on ECDIS compliance

In June 2009 the International Maritime Organization (IMO) approved amendments to the International Convention for the Safety of Life at Sea (SOLAS) which made it compulsory for ships to be equipped with an Electronic Chart Display Information System (ECDIS).

Many ships today carry both paper and electronic charts on board ship, but ECDIS is mandatory on a rolling timetable from July 2012. At present, there are more than 30 different ECDIS manufacturers and each of these will offer shipowners various models combined with differing software upgrades. The Club has handled a number of incidents where ECDIS was a contributory factor to a collision or property damage claim. ECDIS has also been central to a number of reported near misses.

The primary causes for these ECDIS-assisted incidents have been identified as operational:

• Alarm features in ECDIS failing to activate

• On losing a GPS signal some ECDIS fail to display the changeover to dead reckoning (DR) mode

• GPS signal can become corrupted or jammed. Good practice suggests a cross check with other instruments to ensure ECDIS is showing the correct position. For example, in coastal waters it is recommended to display ECDIS with a radar overlay. If the chart image does not coincide with the radar image of the land mass, then navigators should be aware something is not right

• The electronic navigation chart (ENC) has not been set up correctly. As a result, important navigation features have failed to be displayed, including the following;

- Anchorages, berth and channels
- Display of the swinging circle
- Lights with complex characteristics
- Incorrect display of arcs of the light sectors
- Underwater features
- Display symbols
- Contour line in standard mode
- Small points or land depicted on small scale may not always be clearly displayed.

It is also possible for small land features to be obscured by other chart details such as names or contour details.

Most of these errors could be avoided – subject to model type – by the selection of 'all' or 'other' display mode and selecting 'Pick report'.

The root cause of these ECDIS assisted incidents include:

• Having a number of equipment manufacturers/models in the same fleet

• Lack of ship-specific equipment training and familiarisation

• Lack of continual practice and mentoring

• Lack of effective procedures and risk assessments on board and ashore

• Over-reliance on ECDIS leading to complacency and neglect of basic navigational skills, including situational awareness and lack of understanding and application of COLREGs

ECDIS standards are governed by IMO resolutions. Navigators need to be aware that there have not been any amendments to IMO or International Hydrographic Organisation (IHO) standards or any new guidelines issued that would require manufacturers to standardise the display functionality for isolated dangers and soundings. Manufacturers have significant freedom in how they design their systems to meet the requirements of the IMO ECDIS Performance Standard and there are significant differences between systems in the user interfaces, including terminology used and options available, for many features and functions. There can even be significant differences in functionality between versions of the same manufacturer's software (although hopefully manufacturers will provide documentation to highlight any such changes in new software releases).

ECDIS training

There is some confusion within the industry surrounding ECDIS training. The 2010 amendments to STCW regarding ECDIS training will not take effect until 2017. Therefore, approved ECDIS training should be undertaken as soon as possible to make sure that all officers meet the deadline prior to working on board a ship fitted with ECDIS. The requirements for training are covered by various international regulatory instruments including SOLAS, ISM and STCW. These requirements will be vetted by various parties for compliance such as Port State Control inspectors and oil major inspectors.

Training requirements

• The 40 hour generic IMO model course 1.27 which became available in 2012, to use and understand ECDIS as per STCW 2010; and

• Type specific course or familiarisation to demonstrate competency with the on board ship specific equipment

The IMO model course 1.27 is widely available through various approved training organisations. Ship type specific training or the familiarisation can be achieved by various routes, such as:

• Shore based manufacturer training followed by installation-specific familiarisation on board

• Independent training on specific systems followed by installation specific familiarisation

• Computer Based Training (CBT), followed by installation-specific familiarisation on board

• Internet/Intranet Based Training (eLearning) followed by installation specific familiarisation on board

• On board training by appropriately approved trained crew or training personnel

• Manufacturer provided training mode on the ECDIS, followed by installation-specific familiarisation on board

Summary

As illustrated in this article, a fundamental difference between paper and electronic charts is that with the former a cartographer would decide how to set out the information they felt was required by a navigator. When using electronic charts, it is up to the navigator to decide what information should be shown at any one time. This fundamental difference underpins why it is essential that every Member sets aside time and resources to conduct and refresh an ECDIS risk assessment and plan for the required training. Simply carrying out the training outlined in this article will not be sufficient. It is recommended that Members and crew also:

• Implement continuous training beyond the generic and ship type specific courses

• Ensure the company's safety culture reflects pride in the skills required for effective watch keeping and navigation practices

• Encourage mentoring activities on board with respect to ECDIS and the appointment of ECDIS champions on an individual ship/fleet basis available to all navigators

• Ensure that the ECDIS section of the safety management system, procedures and risk assessments are continuously refreshed

• Ensure all manufacturers' user manuals are readily available with succinct summaries of key tasks

• Allow plenty of time during crew hand-overs to ensure ECDIS familiarisation is addressed properly

• Use the IHO data presentation and performance checks for ships which are designed to indicate whether the ECDIS software requires upgrading

Hand injuries

Hand and finger injuries are the most commonly reported injuries and are often caused by carelessness.

The wearing of gloves is often recommended in order to avoid injury. Leather gloves protect against injury when handling rough or sharp objects; heat resistant gloves are advised for handling hot objects; rubber or PVC gloves for handling chemicals, oils and solvents.

However, whilst wearing personal protective equipment may reduce the number of injuries through accident, there is no substitute for careful planning and thinking about the potential risks involved in performing a particular task. By way of example, here are some of the cases handled by the Association.

A wiper suffered the traumatic amputation of his right index finger when the cotton glove he was wearing became caught in a rotating drill bit in the engine room workshop. In this case there was no need to wear gloves as they added no significant protection in carrying out this task.

In another case the chief officer of a bulk carrier instructed the bosun to open three of the ship's hatch covers in preparation for loading. The bosun instructed the apprentice able seaman to switch on the hydraulic motor to commence the opening of the first hatch. In accordance with standard operating procedures, the apprentice able seaman and an able seaman were acting as lookouts to ensure that no obstructions would interfere with the opening of the hatch covers. Two hatch covers were opened without incident. While the third cover was being opened, the apprentice able seaman placed his hand on the edge of the hatch wheel track and two of his fingers were crushed by the wheel. This occurred despite him having given the signal moments earlier that all was clear and the hatch could be opened. The wearing of work gloves was not obviously causative of the accident. The apprentice able seaman clearly lacked the presence of mind not to place his hand on the track. However, the question arises whether he would have been more alert as to where his hands were placed had he not been wearing the gloves (again, the gloves provided no protection for this task).

In a third case, a bosun suffered the traumatic amputation of two fingers and extensive lacerations to his hand while he was lowering the ship's accommodation ladder. The wire became stuck on the roller. He was in the process of releasing the wire when it snapped back onto his gloved hand. The glove did little to protect his hand and, regrettably, it was not possible to save the two amputated fingers. Again the question arises whether the wearing of the gloves made the bosun less aware that his hand was placed dangerously on the roller.

These accidents are by no means unusual occurrences and serve to demonstrate that caution should be exercised at all times, even when wearing personal protection equipment.

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Regulatory update

Asian gypsy moth – the season has started

The Canadian Food Inspection Agency (CFIA) has announced that the high risk period for Asian Gypsy Moth will run from 1 March 2014 until 15 September 2014. CFIA also advises that their policies as outlined in Memorandum D-95-03 (link below) will be in effect.

The CFIA highlighted the following points of note:

- Ships calling at a Canadian port for the second time without the required certification may be refused entry to Canada

- The regulated area in China has been clarified with the addition of latitude coordinates demarcating the southernmost extent of the regulated area

As a reminder:

- Agents must notify CFIA of the arrival of a high risk ship 96 hours in advance of arriving in Canadian waters

- Ships arriving without advance notification and/or certification are considered non-compliant and are subject to enforcement action

- Regulated ships inspected for AGM are subject to applicable fees as listed in CFIA's Fees Notice (8f)

CFIA's Memorandum of 14 February 2014 and links to Memorandum D-95-0-03 and the CFIA website:
http://tinyurl.com/gypsy-m

Iron ore fines (IOF)

An amended Iron Ore Schedule to the IMSBC Code will become mandatory from 1 January 2017 as part of SOLAS. It establishes an alternative testing procedure for determining the transportable moisture limit (TML) of IOF cargoes and it categorises for the first time certain types of IOF as Group A or Group C.

How this categorisation has been achieved is beyond the scope of this article but it involves consideration of goethite content and particle size. It also involves the adoption of new tests by the shippers and/or certificating authorities, some of whom may not be in a position to start carrying out these new tests as quickly as others.

Australia and Brazil have given early effect to the new categorisation schedule and testing methodology. It is anticipated that only IOF shipped from Australia will meet the criteria of having a total goethite content of 35% or more by mass, thereby permitting categorisation of the cargo as Group C. When loading IOF at any port other than an Australian port, masters should exercise caution if they are presented with a shipper's declaration for IOF which does not provide for Group A cargo.

Members are reminded of their overriding obligation to ensure that IOF cargoes to be carried comply with the IMSBC Code. If there is any doubt regarding an IMSBC Code declaration for IOF from a shipper then further guidance should be sought from the Club.

Blending cargoes

The IMO Maritime Safety Committee adopted resolution MSC.325(90) in May 2012 which set out the amendments to the SOLAS Convention which came into force on 1 January 2014 as SOLAS regulation VI/5-2 as follows:

Prohibition of the blending of bulk liquid cargoes and production processes during sea voyages

1 The physical blending of bulk liquid cargoes during sea voyages is prohibited. Physical blending refers to the process whereby the ship's cargo pumps and pipelines are used to internally circulate two or more different cargoes with the intent to achieve a cargo with a new product designation. This prohibition does not preclude the master from undertaking cargo transfers for the safety of the ship or protection of the marine environment.

2 The prohibition in paragraph 1 does not apply to the blending of products for use in the search and exploitation of seabed mineral resources on board ships used to facilitate such operations.

3 Any production process on board a ship during sea voyages is prohibited. Production processes refer to any deliberate operation whereby a chemical reaction between a ship's cargo and any other substance or cargo takes place.

4 The prohibition in paragraph 3 does not apply to the production processes of cargoes for use in the search and exploitation of seabed mineral resources on board ships used to facilitate such operations.

The question arises as to what constitutes a 'voyage'. The understanding from authorities involved in the drafting of the provisions is that a 'voyage' is intend to cover the period between ports within which express permission to undertake blending is required from the Port Authority. As a result, there would no period or location, between ports, in which blending would be permitted.

Editor's message We are always looking for ways to maintain and increase the usefulness, relevance and general interest of the articles within Risk Watch. Please forward any comments to: **rwatched@triley.co.uk**