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NAVIGATION IN ICE

Our vessels don't have Ice Class Notation and are not strengthened for navigating in ice. Vessels will not be required to navigate through the ice. Whenever voyage is fixed to the area where ice is anticipated due to seasonal change, master will seek office advice before confirming the fixture.

However, if a vessel trades to areas where ice may be encountered due to seasonal change, ice breaker assistance and advisory service will be required in order to reduce risk due to ice damage.

While anticipating below freezing temperatures and ice, prior arrival to ice prone areas, Master and Navigating officers must familiarize with relevant publications Ice Navigation in Canadian Waters (in SHEQ portal in MEMO), Mariner's Handbook and Sailing Directions with regard to ice in order to be fully aware of existing dangers and how to deal with them.

4.29 Cold/freezing weather procedures as provided in HSE Procedures Manual, Cold/Freezing weather checklist 3.3.6 and NavB15 Navigation in Ice is to be complied.

The serious danger to a ship in ice is pressure, which may result in damage to the hull or ship's bottom. The risk is greatest in close or concentrated pack ice. The danger is also present close inshore where there may also be a danger from the vessel being beset and drifting into waters dangerous to navigation.

GUIDELINES FOR OPERATION IN ICE OR IN VICINITY:

1. DETECTION OF ICE

- 1.1. Mariners navigating in the vicinity of forecast drift ice should maintain continuous visual lookout in addition to a radar watch.
- 1.2. Both radars 10 cm (S-band) and 3 cm (X-band) should in operation. It is recommended that the 10-cm radar is used for longer range detection, set on the 12 or 24-mile range scale, and the 3-cm radar is used for short range detection set on the 3 or 6-mile range scale.
- 1.3. Though Radar an invaluable aid, the limitations of radar in detecting ice should always be borne in mind, absence of an indication of ice on the radar screen does not necessarily mean that there is no dangerous ice in the vicinity. The strength of the echo received from an iceberg depends as much on the inclination of its reflecting surfaces as on its size and range.
- 1.4. Areas of open water and smooth floes look similar on the radar display. Sometimes the absence of sea clutter may also indicate that ice is present.

2. ICE REPORTS

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- 2.1. Report on meeting dangerous ice and on encountering air temperature below freezing associated with gale force winds causing severe ice accumulation on vessel as per SOLAS.
- 2.2. Monitor ice reports, information on ice is promulgated by national authorities in whose waters ice is prevalent, refer ALRS/ADRS and Sailing Directions for warning services

3. ICE ACCUMULATION

- 3.1. Be aware of that in certain conditions ice, formed of fresh water or sea water, accumulating on the hulls and superstructures of vessels can be a serious danger
- 3.2. The Master is therefore advised to exercise all possible caution whenever gales are expected in combination with air temperatures of -2°C or below. These conditions are most likely to occur with winds from polar regions, but the direction may be any that will transport sufficient cold air. If these conditions are expected, the prudent course is to steer towards warmer conditions, or to seek shelter, as soon as possible. If unable to reach shelter or warmer conditions, it has been found best to reduce spray to a minimum by heading into the wind and sea at the slowest speed possible to maintain steerage way, or if weather conditions do not permit that manoeuvre, to run before the wind, equally at the least speed that will maintain steerage way.

4. OPERATIONS IN ICE

- 4.1. Ice is an obstacle to any vessel, even an icebreaker. The ice-free long way round a difficult area whose limits are known is often the quickest and safest way.
- 4.2. When navigating in ice the, following golden rules apply:
 - a. Keep moving, even if very slowly.
 - b. Try to work with the ice movement and not against it.
 - c. Excessive speed leads to ice damage.
 - d. Always attempt to achieve a right-angle approach to any floe.
 - e. Ensure rudder is amidships before making any stern movement
 - f. Avoid anchoring in moving close pack ice.
- 4.3. Before attempting any passage through ice, it is essential to determine its type, thickness, hardness, floe size and concentration
- 4.4. Be aware that ice moves continually. Under the influence of wind and current, floating ice is much influenced by the wind. With a change of wind, ice conditions can change completely, often within hours, depending on the concentrations.

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4.5. Ice should not be entered if an alternative, although longer, route is available. Before deciding to enter the ice, the following factors need to be considered:

- a. Latest ice report detailing the type and concentration of the ice in the area
- b. Time of year, weather and temperature
- c. Area of operation
- d. Availability of ice maneuvering modes from all equipment and machinery spaces
Availability of icebreakers
- e. Availability of any airborne support
- f. Availability of potential mutual support/advice from other vessels in the area
- g. Vessel's ice class in relation to the type of ice expected
- h. State of hull, machinery and equipment, and quantity of bunkers and stores available
- i. Draught, with respect to any ice strengthened belt, and depth of water over the propeller tips and the rudder
- j. Ice experience of the person in charge on the bridge.

5. AVOIDING ICEBERGS

If an iceberg is sighted in poor visibility or at night, pass the iceberg to its windward side because there may be growlers present on the leeward side of the iceberg. Keep a sharp lookout—growlers are almost impossible to detect by radar, but can be sufficiently large to cause serious damage to the ship.

6. ANCHORING IN CLOSE VICINITY OF ICE

Icebergs are hazard in North Atlantic from late February through June and occasionally later. The hazard of floating ice is frequently combined with restricted visibility due to fog. International Ice Patrol reports and warnings are to be monitored in planning of the routes in avoiding the iceberg areas. Keep well clear of icebergs.

Anchoring in close vicinity of the ice is to be avoided. But if anchoring is unavoidable, select an anchoring position using shore features to provide lee from prevailing ice drift and use minimum amount of cable.

If floating ice appears while the vessel is anchored in port, keep a careful watch on the build-up of ice around the ship, including the anchor, berth, propeller, rudders and so on. Floating ice may also interfere with cooling suctions close to water level. Consider the use of steam heating as a precaution.

If ice engulfs the vessel while at anchor, take precautions but run the engines and move the rudder from port to starboard to keep the vessel's aft end clear and to resist ice movement from carrying

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the vessel along with it. If possible, use rudder movements to place the off side of the bow from which the anchor is deployed to protect the cable from contact with moving ice.