**NAVIGATION IN ICE CHECKLIST**

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| Vessel: |  |  | Date: |  |
| Port: |  |  | Time: |  |
| Voyage No: |  |  |  |  |

Refer to: Navigation in Ice Procedure

Prior to and during transit in ice the following steps should be taken:

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| Checks | | Tick () |
| 1. | **Consider the following points prior entry:**   1. Is there an alternate safer route to avoid ice? 2. The type / form / stage of development of ice likely to be encountered. 3. The time of year, weather & air / sea temps. 4. Availability of ice breakers. 5. Ice class of the vessel. 6. Any current defects in hull / machinery / equipment. 7. The drafts of the vessel with regard to propeller / rudder immersion (vessel to be at least at her lightest ice draft) 8. Availability / detail of ice reports / ice routing broadcasts from coast radio stations. 9. Ice experience of the deck officers. |  |
| 2. | Have the position of the ice edge / ice limit / all known ice bergs and growlers received to date been plotted? |  |
| 3 | Has the recommended ice route been received (VHF / NAVTEX / SATCOM) been plotted? |  |
| 4. | Have ice reports / ice charts been received (NAVTEX / WX FAX) and studied. |  |
| 5. | Has the approximate time of entry into ice been determined (with adequate safety margin) so that early preparation may be made? |  |
| 6 | Have the Master, Engine and all personnel been informed of the approximate Time of entry. |  |
| 7. | Have additional lookouts been posted, hand steering engaged and both steering motors switched on before entry. |  |
| 8. | Main engine to be standing by for Manoeuvring as early as practicable under the prevailing conditions. (In consultation with the Master). |  |
| 9. | Main engine to be on internal cooling as early as practicable under the prevailing conditions (in consultation with the Master). |  |
| 10. | Confirm with the C/Off that all watertight doors and under deck steel doors have been secured. |  |
| 11. | Confirm with C/Off that there is adequate ballast in tanks being used by main engine for internal cooling. Beware of high FSM of tanks used for internal cooling. |  |
| 12. | Inform Master & engine room immediately on sighting ice visually or by radar. |  |
| 13. | If vessels speed drops rapidly and stops in heavy ice reduce to dead slow and allow the propeller wash to clear the broken pieces of ice astern. |  |
| 14. | Do not force ice astern when backing the vessel off in the lead form in its wake , first ensure that the stern area is clear of the broken ice and keep in mind the possibility of damaging the stern gear and / or the hull when going astern and the possibility of stern canting into the ice. Keep minimum sternway when backing. |  |
| 15. | If vessel fails to move astern trim / list the vessel, then move astern as much as possible and try breaking the ice ahead by gathering as much ahead momentum as practicable. Be patient and retry as at time numerous such manoeuvres may be needed to break through. |  |
| **Checks** | | **Tick** () |
| 16. | If vessel becomes fast in ice frequently run engines on dead slow ahead as it is necessary to keep the area astern clear of broken ice and to prevent ice from compacting astern until help arrives. |  |
| 17. | Keep engine room regularly informed of the situation and of expected manoeuvres. |  |
| 18. | Avoid large / excessive movements of the rudder. |  |
| 19. | Sound all tanks / holds / voids twice daily or more frequently if damage anticipated. |  |
| 20. | Follow the recommended ice route avoiding excessive deviation. |  |
| 21. | Keep a very sharp lookout at all times looking for leads and open water, precisely instruct the lookouts as to their duties. Avoid ridged ice. |  |
| 22. | If vessel speed is dropping it may be prudent to leave the wheel amidships and allow the vessel to find the path of least resistance. Constantly monitoring the vessels heading. |  |
| 23. | When navigating in open waters infested with ice bergs/ bergy bits / growlers etc exercise extreme caution bearing in mind that growlers are notoriously bad targets. |  |
| 24. | Bear in mind that ice generally present a poor radar targets and growlers and bergy bits may not show on radar. |  |
| 25. | Give wide berth to all ice bergs as there are generally smaller pieces of ice around them which may extend several miles away. Extreme caution to be exercised in such areas. |  |
| 26. | Scan the radars on lower ranges to detect smaller pieces of ice. Make judicious use of the anti-sea clutter control to avoid suppressing weak echoes. Use one radar on long range to get early warning. |  |
| 27. | Use Radar on NORTH UP relative motion mode with trails set to maximum. This will help in picking up trails of targets giving intermittent echoes. Pass other ships at a safe distance of 1 to 1.5 Miles |  |
| 28. | If navigating in ice in a convoy, as a general rule do not approach the vessel ahead closer than 0.5 NM. 1 NM may be better depending upon the circumstances and Master’s discretion. Maintain continuous communication with the vessel ahead and the ice breaker. |  |
| 29. | Refer to and follow the relevant national/ international codes (as the case may be) for vessel’s transit in convoy with Ice breaker OR when manoeuvring with Ice breaker assistance |  |
| 30. | Refer to Canadian Coast Guard Ice publication / Sailing Direction / Mariner’s Handbook for further information on Ice and navigation in ice. |  |
| 31. | Transmit Ice encountered messages at the required time as recommended by the coast radio stations |  |
| 32. | Transmit a danger message if ice is encountered in unspecified areas as required by SOLAS Chapter V, Regulation 2A |  |
| 33. | Superstructure icing is possible whenever air temps are –2C or less and winds 17 Knots or more. It could be due to freezing rain / snow, super cooled fog or freezing spray. Freezing spray is the single most important cause of severe ice accretion on deck which can be very dangerous. The effect of freezing spray can be minimized by slowing down in heavy seas so as to reduce spray from the bow |  |
| 34. | If serious Ice accretion is taking place, periodically recalculate estimated GoM allowing for estimated weight of ice |  |
| 35. | Uses of search lights during hours of darkness is very helpful in search for leads when in pack ice, and also look for floating ice in relatively open waters. |  |
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| Note 1 | Sub-zero temps with bad weather may imperil the V/L’s stability with sever ice accretion due freezing sprays. | | | | |  |
| Note 2 | Refer to Cold weather precautions checklist | | | | |  |
| Note 3 | It is very easy to underestimate the hardness of Ice. Remember; force of impact varies as the square of speed and total ice thickness. The ice is probably 3 to 4 times thicker below the water than the apparent ice height above water | | | | |  |
| Note 4 | Ice breaker availability will most probably be delayed if vessel becomes fast in ice away from the recommended route | | | | |  |
| Note 5 | Heavy Ice pressure may be expected in these areas. Onshore winds and tidal currents cause pressure within ice fields | | | | |  |
| Note 6 | The direction in which they may lie may be to the windward or leeward dependant on the current, wind and size of bits. The distance of these pieces depends on previous conditions in the area | | | | |  |
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| Officer: | |  |  | Master: |  | | |
| Signature: | |  |  | Signature: |  | | |