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PASSAGE PLANNING

1. GENERAL

The development of a plan for voyage or passage, as well as the close and continuous monitoring of the vessel's progress and position during the execution of such a plan, are of essential importance for safety of life at sea, safety and efficiency of navigation and protection of the marine environment.

Prior to proceeding to sea (SOLAS V/34, STCW and IMO Res. A.893), the Master shall ensure that the intended voyage has been planned using adequate and appropriate charts and publications necessary for the intended voyage, containing accurate, complete and up-to-date information regarding those navigational limitations and hazards which are of permanent or predictable nature and which are relevant to the safe navigation of the ship.

The intended voyage shall be planned in advance, taking into consideration all pertinent information, and any course laid down shall be checked before the voyage commences. (STCW)

The Master must ensure that a “Passage Plan" is established to provide the most favourable route while maintaining appropriate margins of safety and safe passing distances off shore.

The purpose of a Passage Plan is to establish a navigational procedure to pre-plan a vessel’s route and monitor its progress along the route. A Passage Plan is a means of sharing information with all Bridge Team members, including the pilot. The Passage Plan also incorporates a system of procedures and checks to guard against "one man errors".

Passage planning is a key element of Bridge Resource Management forming the foundation the bridge team will use to ensure the vessel’s safe transit along its intended route. A voyage plan (or passage plan) is a comprehensive, berth to berth guide, developed and used by a vessel’s bridge team to identify potential problems or hazards along the route, and to adopt bridge management practices to ensure the vessel’s safe passage. During passage planning, portions of a voyage that have the potential to pose the greatest risk should receive additional review, and the limits and conditions for undertaking those portions of the voyage set in advance.

Particular attention shall be paid to high traffic areas, shallow waters, or pilotage waters where the plan incorporates appropriate margins of safety and contingency plans for unexpected incidents. The area near port approaches and in congested coastal waters shall be planned with utmost care.

Use of a Passage Plan is compulsory. Upon receipt of the voyage orders, the Second Officer[1], under the guidance of the Master, is to plan the voyage by the most expeditious route bearing in mind that the safety of the vessel is of the prime importance.

Subject to any specific requirements contained in Policies & Procedures and/or other instructions issued from time to time by the Company, the Master is free to choose his own route for any passage. However it should be clearly understood that the overriding principle in routing, as with

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all navigational requirements, is to ensure that voyages are completed safely and without damage, by the shortest safe route, taking into account all relevant factors.

As long as it is practical and safe for the vessels size and draft, routes prescribed by the Ocean Passages of the World and the Sailing Directions shall be followed. If the routing decided by the Master is significantly different from the advice of the above publications, the Master shall advise the Company about the intended routing and his reasons for choosing the particular routing.

Local regulations must be checked from Sailing Directions and Port Entry publications, to ensure that the planned passage does not contravene local requirements. Certain sensitive areas such as the Great Lakes have speed restrictions, which must be strictly complied with at all times.

The routing shall, as far as possible, be the most economical considering the size and draught of the vessel and type of cargo she is carrying. However***, at no time shall the safety of life and the safety of the vessel be compromised for economic reasons.***

The Masters, and other navigating officers, own experience is of prime importance and should always be taken into consideration when making decisions about which route to take.

The Master is responsible for ensuring that a comprehensive passage plan is made berth to berth including areas under pilotage and is executed. The Passage plan is to be comprehensive, contain full details of the voyage and be easy to interpret.

The Passage Plan form 1.3.1A must be used and completed by the Second Officer[2].

When the route planning is verified taking into consideration all pertinent information, the planned route shall be clearly displayed on appropriate charts and shall be continuously available to the officer in charge of the watch, who shall verify each course to be followed prior to using it during the voyage. Any course laid down shall be checked before the voyage commences. Special emphasis shall be given to draft in relation to available depth of water. All Navigating Officers shall verify the plan and courses on the charts.

If the entire plan cannot be completed prior to sailing, the ship may depart provided that the first part of the passage plan has been completed. The remainder of the plan must be completed as soon as possible after sailing when additional info becomes available.

In those cases when the port of destination is not known or is subsequently altered, it will be necessary for the Second Officer[3] to extend or amend the original plan as appropriate.

Any special requirements for the safe execution of the voyage should be conveyed soonest to the Company.

In case the vessel is likely to encounter hazards like ‘ice’ during its voyage, the Company must be advised on the departure port message or prior entering the hazardous waters.

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All navigating officers must read and sign the passage plan prior departure port. The plan should be kept on the chart table for use by the OOW during the voyage.

Each passage plan as well as the details of the plan should be approved by the master prior to the commencement of the voyage. Any subsequent changes in the plan must be approved and initialled. Amendments to the plan bust be maintained on board and must not be discarded.

Masters shall bear in mind that Charterers or any other person does not have any authority to force the Master to take any particular route if the Master considers the route to be unsafe. If there is any doubt regarding orders from the Charterers regarding routing, Master should seek advice from the Company, explaining the situation.

Government officials and vessel inspectors are likely to require sight of Passage Plans as evidence that satisfactory navigational standards are maintained on board.

Old passage plans should only be referred to and not actually used for current voyage. It should be borne in mind that the factors prevalent in the appraisal of a passage plan in January may not be the same for the same voyage in August due to varying factors like draft, weather conditions, risk of piracy incidents etc.

The passage meeting shall be held prior to all arrivals and departures and intermediate stages as required like approaching restricted visibility, approaching piracy areas etc. The extent of the passage meeting will vary a great deal. The Bridge Team/Pilot exchange shall incorporate a passage meeting at a suitable time.

If a voyage is not proceeding as planned or cannot be accomplished safely under existing conditions, this should be communicated honestly and quickly within the ship's management system. Adjustments to the voyage plan must be made accordingly and communicated effectively.

Completed passage plans are to be filed on board after the voyage is completed. Previously used plans may be used for reference only. Each voyage must be covered under a new passage plan adhering to all the requirements of the current voyage to be undertaken.

2. STAGES OF PASSAGE PLANNING

The aim of the bridge team is safe passage for the ship for each of its voyages. To achieve this each passage needs careful appraisal, planning, execution and monitoring.

- **Appraisal**, i.e. gathering all information relevant to the contemplated voyage or passage;
- **Planning** of the whole voyage or passage from berth to berth, including those areas necessitating the use of a pilot;
- **Execution** of the plan; and the
- **Monitoring** of the progress of the vessel in the implementation of the plan.

3. APPRAISAL

This is the process of gathering together all information relevant to the contemplated passage including ascertaining risks and assessing its critical areas. Before the plan can be made up, all relevant available corrected charts, publications and other information must be collected and studied. This will be navigational information shown on charts (ENC) and in publications such as Sailing Directions, Ocean Passages of the World, IMO Ship's Routing, light lists, current atlas, tidal atlas, tide tables, load line chart, Notices to Mariners, Mariners Hand Book, BMP for Protection against Piracy, publications detailing traffic separation and other routing schemes, distance tables. Reference should also be made to climatic data and other appropriate meteorological information which may have a bearing on the navigational aids in the area under consideration – for example, any areas subject to periods of reduced visibility.

The appraisal stage of the passage planning shall be commenced as soon as orders for the next voyage are received. Institutional knowledge of areas to be transited from previous voyages can be referred to during appraisal stage.

At appraisal stage, the limiting draft should be considered against the load line zones the vessel will transit during the voyage.

The needs of the intended voyage, taking into consideration the requirements for fuel, water (including reserves) lubricants, chemicals, expendable and other spare parts, tools, supplies and any other requirements shall be determined in advance in consultation with Chief Engineer.

In addition to the obvious requirement for charts to cover the area or areas through which the ship will proceed, it must be checked to see that they are corrected up to date in respect of both permanent and temporary Notices to Mariners and existing radio navigational warnings.

An overall assessment of the intended passage must be made by the Master, in consultation with the Second Officer[4] and other deck officers; this will be when all relevant information has been gathered. This appraisal will provide the Master and his Bridge Team with a clear and precise indication of all areas of danger and identify the areas in which it will be possible to navigate safely taking into account the calculated draught of the ship and planned under-keel clearance.

All information relevant to the contemplated passage should be considered. The following items should be taken into account (IMO Res. A.893)

- the condition and state of the vessel, its stability, and its equipment; any operational limitations; its permissible draught at sea in fairways and in ports; air draft , UKC , its maneuvering data, including any restrictions;
- any special characteristics of the cargo (especially if hazardous) and its distribution, stowage and securing on board the vessel;
- the provision of a competent and well-rested crew to undertake the voyage or passage;

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- requirements for up-to-date certificates and documents concerning the vessel, its equipment, crew, passengers or cargo;
- appropriate scale, accurate and up-to-date charts to be used for the intended voyage or passage, as well as any relevant permanent or temporary notices to mariners and existing radio navigational warnings;
- accurate and up-to-date sailing directions, lists of lights and lists of radio aids to navigation; and

3.1. Any relevant up-to-date additional information, including:

- mariners' routeing guides and passage planning charts, published by competent authorities;
- the adequacy and reliability of the charted hydrographic data along the route;
- current and tidal atlases and tide tables;
- the availability and reliability of navigational aids, coastal marks, lights and radar conspicuous fixed targets for position plotting;
- climatological, hydrographical, and oceanographic data as well as other appropriate meteorological information like ice limits etc.;
- availability of services for weather routing;
- existing ship’s routing and reporting systems, vessel traffic services, TSS etc.;
- volume of traffic likely to be encountered throughout the voyage or passage;
- if a pilot is to be used, information relating to pilotage and embarkation and disembarkation including the exchange of information between Master and Pilot;
- available port information, including information pertaining to the availability of shore-based emergency response arrangements and equipment;
- compass errors, both magnetic and gyro;
- local/ coastal warning broadcasts via Radio, Navtex, SafetyNet and any other means;
- Local regulations, including minimum distances off the coast to be maintained
- Local weather forecasts and seasonal weather patterns
- Various port authority regulations
- Owners / charterers instructions and recommendations
- Masters instructions and recommendations
- Personal experience
- Minimum UKC and overhead clearance taking into account the Company minimum requirements, the effect of trim, heel and squat
- Security/ piracy information;
- Right whale protection areas

- Speed Restrictions imposed by local regulations;
- Characteristics, condition (including engineering conditions) and operational limitations of the vessel;
- Applicable port regulations ,tug escort or assist services etc.;
- Safety margins as applicable to the size and draught of the vessel;
- Position and Characteristics of navigational marks, lights, buoys etc.;
- Waterway characteristics such as channel depth, turning areas, and navigational obstructions, based on current and up-to-date charts and navigational publications;
- Any additional items pertinent to the type of the vessel or its cargo, the particular areas the vessel will traverse and the type of voyage or passage to be undertaken;
- Engineering considerations, including pre-arrival tests and inspections, fuel tanks used, expected fuel consumption, stability, trim and draughts, and required ballast;
- Accuracy, dependability, and operating status, of available navigational aids, based on current notices to mariners and other navigational publications;
- Traffic separation systems, areas-to-be-avoided, Archipelagic sea lanes , routes expected to be transited at night, and other areas where caution should be exercised based on up-to-date charts and navigational publications;
- Procedures, expected communications and times for complying with the requirements for vessel traffic services, pilotage, tug escorts, and tug assists;
- Emergency procedures to be used while transiting for vessel casualties, pollution incidents, and personnel health and safety;
- Berthing and anchoring arrangements including water depth at intended mooring or anchorage;

The appraisal of the voyage must also take into account the marine environmental protection measures and national/international regulations that apply (MARPOL special areas, PSSA, MEHRA, ECA etc). The voyage is to be planned so as to avoid or minimize actions and activities that may cause damage to the environment.

Due consideration must be given when transiting "**Particularly Sensitive Sea Areas**" (PSSA) and Marine Environmental High Risk Areas (MEHRA) recognized as being sensitive in relation to ecological or other important aspects.

On the basis of the above information, an overall appraisal of the intended voyage or passage should be made.

Bearing in mind the condition of the vessel, her equipment and any other circumstances, a balanced judgment of the margins of safety which must be allowed in the various sections of the intended passage can now be made, agreed and understood by all concerned.

It is necessary to recognize that more up-to-date information, for example radio navigational warnings and meteorological forecasts may be received after the initial appraisal.

4. PLANNING

On the basis of the fullest possible appraisal, a detailed passage plan should be prepared which should cover the entire voyage or passage from berth to berth, including those areas where the services of a pilot will be used.
The plan itself is a tool to monitor the progress of the passage with regards to the planned parameters.

All courses must be drawn having due regard for the practice of good seamanship, economy of passage, and above all the safety of the ship.

After ensuring that the safety depth and safety contour setting are input based on expected draught, plot the intended passage on the appropriate charts taking into account the margins of allowable error. The margins of safety should be chosen so that they can be readily monitored. The Margins of safety will show how far the ship can deviate from track, yet still remain in safe water. Refer Company Form 1.3.2 for required settings.

The planned track should be plotted to clear hazards at as safe a distance as circumstances allow. A longer route should always be accepted in preference to a shorter more hazardous route. The possibility of main engine or steering gear breakdown at a critical moment must not be overlooked.

It is unlikely that every detail of a passage will have been anticipated, particularly in pilotage waters. Much of what will have been planned may have to be adjusted or changed after embarking the pilot. This in no way detracts from the real value of the plan, which is to mark out in advance, areas where the vessel must not go and the appropriate precautions which must be taken, and to give initial warning that the vessel is standing into danger.

The detailed voyage or passage plan shall include the following factors:

- The plotting of the intended route or track of the voyage or passage on appropriate scale charts: the true direction of the planned route or track should be indicated in 360 degree notation;
- All areas of danger highlighted (generic isolated danger symbol on ECDIS) , existing ship's routing and reporting systems, Precautions in Right whale areas , TSS , vessel traffic services;
- Any areas where marine environmental protection considerations apply; (MARPOL Special Areas, Particular Sensitive Sea Areas (PSSA) , Marine Environmental High Risk Areas (MEHRA) and Emission Control Areas (ECA);
- Requirements of ballast water exchange;
- Distance of each leg (the appropriate waypoints should be entered in the system and checked by another individual);

- Safe speed for each leg, having regard to the proximity of navigational hazards along the intended route or track, the manoeuvring characteristics of the vessel and its draught in relation to the available water depth including squat and heel effect when turning, as applicable;
- Estimated times of arrival at critical points in the plan;
- Areas to be avoided where the vessel is restricted either by local regulations (i.e., marine sanctuaries) or restricted due to water depth or local dangers;
- Areas covered by local regulations such as VTS, tug escort or assist services, and pilotage requirements;
- Areas with high traffic density and/or ferry crossings;
- Areas considered to be pilotage waters where the Master or a Pilot should be on the bridge;
- Areas where it is considered that the engine room should be at an increased state of readiness;
- Navigational marks to use when navigating visually near a waypoint indicating an alteration of course;
- Speed alterations necessary to achieve desired ETA en route, for example where there may be limitations on night passage, tidal restrictions or allowance for the increase of draught due to squat and heel effect when turning etc;
- Minimum clearance required under the keel in critical areas with restricted water depth (having allowed for height of tide);
- Obstacles to be passed such as bridges and overhead cables and clearance available. (It must be stressed that in calculating the air draught there may be a difference between the maximum height taken from the ship's plans and the actual maximum height. As a result Masters are to cross check this and also take into account any folding or retractable aerials which may affect their air draught calculations);
- Positions where a change in machinery status is required;
- Course alteration points, with wheel over positions where appropriate taking into account the vessel's turning circle at the planned speed and the effect of any tidal stream or current on the vessel's movement during the turn;
- Points where accuracy of position fixing is critical, and the primary and secondary methods by which such positions must be obtained for maximum reliability;
- The method and frequency of position fixing, including primary and secondary options, and the indication of areas where accuracy of position fixing is critical and where maximum reliability must be obtained;
- Use of ship's routing and reporting systems and vessel traffic services;
- Predicted weather, current, tidal, wind, swell, and visibility conditions along the route;
- VHF channels to be monitoring for pilots, tugs dock, vessel traffic system, etc.;
- Pilot boarding area for pre-planning intended manoeuvres;

- Vessel operations which require additional sea room, such as ballast exchange or pilot embarkation;
- Reporting positions for voluntary or mandatory reporting schemes;
- Contingency plans for emergencies including abort points for port, channel, and/ or berth approaches, and actions to take to place the vessel in deep water, safe waiting area, emergency berth or proceed to a port of refuge or safe anchorage in the event of any emergency necessitating abandonment of the plan, taking into account existing shore-based emergency response arrangements and equipment and the nature of the cargo and of the emergency itself.

Also contingency plans for the actions to be taken in the worst possible situations, must be thought out and noted; for example, action to be taken in cases of:

- Poor visibility
- Heavy radar clutter
- Missing buoys, or buoys not picked up on the radar
- Steering or Engine breakdown
- Blackout
- Alternative routes if the normal route is unavailable

Vessels should maintain their distance off dangers based on draught in relation to available depth, state of current, sea, wind, visibility, traffic conditions and availability of safe water.

If a navigational danger is to starboard, vessel must allow manoeuvring space to allow alteration of course to starboard for avoiding traffic.

5. EXECUTION

Having finalized the voyage or passage plan, as soon as time of departure and estimated time of arrival can be determined with reasonable accuracy, the voyage or passage should be executed in accordance with the plan or any changes made thereto.

Factors which should be taken into account when executing the plan or deciding on any departure there from include:

- the reliability and condition of the vessel's navigational equipment;
- estimated times of arrival at critical points for tide heights and flow;
- meteorological conditions, (particularly in areas known to be affected by frequent periods of low visibility) as well as weather routing information;
- daytime versus night-time passing of danger points, and any effect this may have on position fixing accuracy; and

- traffic conditions, especially at navigational focal points.

It is important for the Master to consider whether any particular circumstance, such as the forecast of restricted visibility in an area where position fixing by visual means at a critical point is an essential feature of the voyage or passage plan, introduces an unacceptable hazard to the safe conduct of the passage; and thus whether that section of the passage should be attempted under the conditions prevailing or likely to prevail. The Master should also consider at which specific points of the voyage or passage there may be a need to utilize additional deck or engine room personnel.

6. MONITORING

The safe progress of the ship along the planned tracks should be closely and continuously monitored at all times. This will include track monitoring and regularly fixing the position of the ship, particularly after each course alteration and monitoring UKC. If the Officer of the Watch (OOW) is in any doubt whatsoever, he shall immediately call the Master and, if necessary, take whatever action he may think necessary for the safety of the ship. The OOW shall ensure that the ships position is maintained within an authorized XTD , including following alterations of course to avoid collision or following a planned course alteration.[5]

The plan should be available at all times on the bridge to allow officers of the navigational watch immediate access and reference to the details of the plan.

The performance of navigational equipment shall be checked prior to sailing, prior to entering restricted or hazardous waters, and at regular and frequent intervals at other times throughout the passage, account must be taken of any system errors and the predicted accuracy of positions displayed by electronic position fixing systems.
Feedback regarding the ship's position and progress along the intended path must be given to the Master and others forming a part of the Bridge Team. Other relevant Navigational and traffic information must be freely shared within the Bridge Team to ensure safe navigation.

The position of the vessel shall be plotted using all available means. Visual or radar fixes should complement the electronic system fixes. At least two methods of position fixing should be charted, where possible. This will check the accuracy and reliability of the electronic systems. The frequency of position fixing should be such that the vessel cannot run into danger during the interval between fixes.

Verbal orders from the pilot also need to be checked to confirm that they have been carried out correctly. This will include monitoring both the rudder angle and RPM indicators when helm and engine orders are given.

Limitations of the electronic navigational aids should be known to the OOW, to avoid over-reliance on these systems.

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In restricted waters continuous track monitoring is required and this should be carried out by use of the radar and parallel indexing of a fixed known object. Any deviation from the intended course can be easily identified and corrective actions taken.

Care must be taken where the chart datum differs from the datum of the electronic systems such as the GPS. A datum shift will have to be applied. GPS derived positions should always be verified by alternative methods.

Visual navigation aids such as lights must be positively identified before use.

Advantage is to be taken of all the navigational equipment with which the ship is fitted for position monitoring bearing in mind the following points:

- positions obtained by electronic positioning systems must be checked regularly by visual bearings and transits whenever available;
- visual bearings combined with radar ranges are usually the most accurate means of position fixing;
- Use radar ranges and bearings to fix the position of the vessel at frequent intervals when radar conspicuous targets are available. A minimum of three ranges and/or bearings are required to ensure accuracy
- it is dangerous (and not acceptable) to rely solely on the output from a single positioning system;
- every fix should, if possible, be based on at least three position lines;
- transit marks, clearing bearings and clearing ranges (radar) can be of great assistance;
- Use dead reckoning techniques to check position fixes
- Use Parallel indexing techniques where appropriate to monitor the position of the vessel relative to the charted track. Fixed points such as lighthouses and headlands should always be used in preference to floating objects, which should be carefully checked for position before being used for parallel indexing.
- the use of the echo sounder as a navigational aid when making a landfall, when the vessel is in unfamiliar, restricted, or shoal waters, or at any other time when soundings may assist in establishing the vessel's position;
- buoys should not be used for precise fixing but may be used for guidance when shore marks are difficult to distinguish visually; in these circumstances their positions should first be checked by other means;
- the frequency of position fixing must be as agreed at the appraisal stage and marked on the charts;
- an informed decision in advance as to the frequency with which the position is to be fixed should be made for each section of the passage;
- Danger bearings and ranges shall be used in navigating the vessel circumstances permitting. Radar danger bearings taken to points of land must be selected carefully. Isolated rocks,

beacons, etc., which are clearly defined and shown on navigation charts and not subject to shifting with winds and currents are preferable;

Positive identification of navigation lights (lighthouses, buoys, beacons, etc.) shall be made.

Whenever a vessel is calling at a facility for the first time and at any dock or anchorage where soundings have not been verified within the last year, soundings shall be obtained around the vessel. Any new depth information so gathered shall be communicated to the Company.

Navigation (Nav) Warnings must be monitored throughout the passage. The Nav warning, temporary / preliminary notices and port information files must be checked for passage planning.

The Navigating Officers must ensure that the NAVTEX and the Sat C- EGC are set for the correct NAVAREAS for receiving the warnings.

The OOW shall monitor the integrity of information displayed on navigation equipment.[6]

7. ITEMS TO BE MARKED ON CHARTS

7.1. The following shall be marked on the chart as appropriate where it enhances safe navigation:

- Courses to steer, distances to steam, distance to go, waypoint number, course alteration points, cross track errors;
- Parallel indexing details (not from floating objects unless they have been first checked for position);
- Minimum under keel clearance required under the keel in critical areas (having allowed for height of tide);
- Primary and secondary methods of position fixing together with the maximum time interval between fixes (fix frequency);
- Prominent navigation and radar conspicuous marks;
- No-go Areas such as banks, shoals, wrecks, power cables etc; (note that these are automatically marked by means of generic isolated danger symbol, red box or by bold black soundings/contour provided the safety depth and safety contour have been correctly set up in the ECDIS. ‘No go areas’ must not be marked on the ECDIS by means of user charts as this could obscure other important information);
- Landfall targets and lights;
- Clearing lines and bearings; (Mark on the charts any transit marks, clearing bearings or clearing ranges (radar) which may be used to advantage. It is sometimes possible to use two conspicuous clearing marks where a line drawn through them runs clear of natural dangers with the appropriate margin of safety; if the vessel proceeds on the safe side of this transit she will be clear of the danger. If no clearing marks are available,

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a line or lines of bearing from a single object may be drawn at a desired safe distance from the danger; provided the vessel remains in the safe segment, it will be clear of the danger)

- Transits, heading marks and leading lines;
- Significant tides or current;
- Safe speed and necessary speed alterations including **Speed Restrictions** as imposed by local regulations;
- Planned changes in machinery status/speed;
- Minimum under keel clearance
- Change over from Auto to manual steering and vice versa
- Positions where the echo sounder should be activated;
- Crossing and high density traffic areas including high density of fishing traffic;
- Safe distance off;
- Available cross track margins; bearing and radar range measurement check lines;
- Wheel over positions, as applicable;
- Turn radius for each alteration, as applicable;
- Anchor clearance/ removal of anchor lashings;
- Normal/ Contingency/Emergency anchorage areas;
- Contingency plans;
- Abort positions/ positions of ‘No-return’. i.e. after which the ship is committed to a channel;
- VTS information and reporting points, etc.;
- Points at which accurate position fixing is critical and methods of fixing such positions when in otherwise difficult areas
- Radar-conspicuous objects like racons that are be used in position fixing clearly highlighted;
- Margins of safety (cross track margin) as determined after taking into account vessel size/dimensions of ship, direction of currents, tidal streams, tidal surge , accuracy of navigational systems in use, manoeuvring ability of the ship, weather conditions, draft including estimates of hogging/sagging, squat , Reduced depths over pipelines , heel and other such factors;
- Navigational warnings (NAVTEX, Temporary Notices etc.);
- Standby timings /calling Master /one hour notice/testing bridge gear;
- Operational notes and reminders;
- Bridge manning levels;

- Location at which procedures for changing over to Low Sulphur Fuel Oil, required for Emission Control Areas (ECA) compliance limits of Special Areas under various sections of MARPOL;

"No-go" areas must be drawn to a danger such as shallow waters, small islands, off shore installations, wreck or any obstructions/hazards close to the course line. Extensive use of no-go areas should be discouraged.

While marking No go area, depth of water in relation to draft shall be considered. No-go areas vary with change of draft and tide and will therefore also vary with the time of passage.

No-go areas will not necessary be the same for both inward and outward passages.They should not therefore be permanently marked on paper charts.
No-Go areas shall be marked both on small scale and also on large scale paper charts

To minimize the risk of getting stranded even in the occurrence of trouble on the Engine or Steering system, secure as much distance as possible from the No go area.

Note: In many areas of the world for example, Indonesian waters, there are many small islands (dot sized).

While passage planning, all these islands to be clearly identified and marked as No go areas.

Also mark down the Distance to be kept off from these islands clearly on the chart and use Parallel Indexing Techniques.

8. ABORT POINT AND POINT OF NO RETURN

Abort position is a position where the vessel, if the circumstances so require, can and will be able to abort the approach and return to safe waters without endangering the ship. This point is obviously earlier than the point of no return.

Care must be taken when marking an abort point. At the abort position, there should be sufficient sea room for the ship to safely undertake any of the following manoeuvres:

a. Turn around;

b. Stop in safe waters; and

c. Anchor position

The reasons for not proceeding and deciding to abort will vary according to the circumstances but may include:

a. Deviation from approach line.

b. Machinery failure or malfunction.

c. Instrument failure or malfunction.

d. Non availability of tugs or berth.

e. Dangerous situations ashore or in the harbor.

f. Any situation where it is deemed unsafe to proceed.

Where such a risk exists, the last point at which the planned passage can be aborted must be clearly shown in the plan depending on depth of water, sea room, turning circle etc. and marked on the chart together with a contingency plan showing the track to safer water.

When approaching constrained waters the ship may be in a position from which there is no option but to proceed. This is termed as the 'point of no return' after which the ship is committed to proceed. Termed the point of no return, it will be the position where the ship enters water so narrow that there is no room to return or where it is not possible to retrace the track due to a falling tide and insufficient UKC

Abort point and Point of no return shall be clearly understood by the bridge team.

9. DEVIATION FROM PLANNED ROUTE

If a decision is made, during a voyage, to change the next port of call of the planned route, or if it is necessary for the ship to deviate substantially from the planned route for other reasons, then an amended route shall be planned prior to deviating substantially from the route originally planned (STCW).

All deviations or corrections to an approved plan shall also be approved by the Master.

If the OOW has to deviate from the passage plan – a reporting of ice may, for example, require an alteration of course or action taken to avoid a close quarter situation/collision may take the vessel out of the navigable corridor – the OOW should prepare and proceed along a new temporary track clear of any danger. At the first opportunity, the OOW should advise the master of the actions taken. The plan will need to be formally amended and a briefing made to the other members of the bridge team. The new plan (or changes) needs to be signed of by all members of the Navigation team.

10. PLANNING WITH MALFUNCTIONING OF EQUIPMENT

Before commencing or continuing a voyage with restricted engine power or malfunctioning of equipment (such as gyro, radar, ARPA, and positioning equipment etc.), a risk assessment shall be prepared and the following shall be taken into consideration:

- Present and forecasted weather conditions.
- Direction and speed of current.

- Expected traffic direction and density.
- Number and experience of officers
- Requirement of assisting tug(s) during arrival and departure.
- Means are provided to replace or to compensate for the malfunctioning equipment.
- Any other conditions which may have influence on a safe passage.

A message with a brief explanation and confirming all aspects have been taken into consideration and found safe for the coming sea passage incl. arrival and departure is to be forwarded to the Company.

11. PASSAGE PLAN CHANGES/DEVIATION

When the port of destination changes, it will be necessary for the Second Officer[7] to amend the original plan as appropriate.
The development of the weather situation may also require the plan to be changed.
In the event of a required change of plan or change of voyage instructions (i.e. change of discharge/loading port), changes to the original plan must be meticulously researched and inserted.

Normally initial passage plan is prepared berth to berth. However, vessel may not berth directly but may be required to anchor prior berthing. In such cases the passage is to be planned to the anchorage point, incorporating new waypoints. Accordingly, changes made in the passage plan and in the safety settings of ECDIS containing safety depth and safety contours.

Once this has been done, the plan is to be resubmitted to the Master for approval, and circulated to the other Navigation Officers for acceptance. All officers shall read and sign the revised passage plan.

Should the vessel not have the charts /publications required, the contracted supplier should be contacted to supply the required electronic charts/publications to the vessel.

All amended passage plans must be retained on board along with the final passage plan and must not be discarded.

12. EVALUATION

The effectiveness of the voyage plan should be evaluated at the end of the voyage if found necessary by the Master and the bridge team.
Evaluation provides the opportunity for the bridge team to review the passage plan's strengths and weaknesses, make suggestions for improved safety or communications, and improve team problem solving skills.

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Any significant changes, which were brought about or required, shall be recorded for planning subsequent voyages. This will also help junior officers in the practical aspects of safe navigation.

REFERENCES

- IMO guidelines on voyage planning (RESOLUTION A.893 (21))
- Bridge team management by Capt A.J. Swift
- Bridge procedures guide
- SOLAS CHAPTER V
- STCW[8]

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