4.5 PASSAGE PLANNING GENERAL

4.5.1 A plan for intended passage to be prepared Prior(قبل از) sailing

Procedur:

a) It is customary (مرسوم)for the master to delegate(محول کردن) the initial responsibility for preparing the plan for a passage to the officer responsible for navigational equipment and publications . on most companies the second officer.

b) The second officer (navigating officer) has the task of preparing the detailed passage plan to the masterôs requirements Prior(قبل از) to sailing and same has to be approved by master.

c) All bridge team member should carefully study , understand and finally sign at the bottom of last page of the prepared passage plan.

d) The junior team member must never hesitate(تردید) to question a decision if they consider that such a decision is not in the best interest of the ship

e) Master to ensure that a copy of prepared plan for the current voyage to be sent to company head office attention of marine superintendent(مدیر)Prior(قبل از) sailing .

f) the marine superintendent(مدیر) is to maintain a documented evidence(مدرک) to demonstrate (اثبات)that the requirment in part ǿôis complied with(مطابق با).

4.5.2 Voyages of whatever length, can be broken down into two major stages:

a) Preparation(آماده سازی)

   i) APPRAISAL(ارزیابی)
   ii) Planning(طراحی)

b) Execution(اجرا)

   i) Organisation(سازماندهی)
   ii) Monitoring(نظارت)

4.6 PASSAGE APPRAISAL(ارزیابی) AND PLANNING

4.6.1 Before any voyage can be embarked upon or indeed, any project undertaken, those controlling the venture(مخاطرات)need to have a good idea of the risks involved.

4.6.2 The appraisal(ارزیابی) stage of passage planning examines(بررسی) these risks. If alternatives are available , these risks are evaluated(سنجیده شدن) and a compromise solution is reached whereby (که از طریق آن)the level of risk is balanced against commercial expediency(مصالح) . The appraisal (ارزیابی) could be considered to be the most important part of passage planning as it is at this stage that all pertinent (مرتبط) information is gathered and the firm foundation for the plan is built. Tht urgo to commence planning as soon as possible should be resisted time allocated to appraisal (ارزیابی) will pay dividends(سود) later.

4.6.3 Information sources:

The masterôs decision on the overall conduct of the passage will be based upon an appraisal (ارزیابی) of the available information .Such appraisal (ارزیابی) will be made by considering the information from sources including:

a) Chart catalogue
b) Navigational charts
c) Ocean passage for the world
d) Routing charts or pilot charts
e) Sailing directions and pilot books
f) Light lists
g) Tide tables
h) Tidal stream atlases
i) Notices to mariners
j) Routing information
k) Radio signal information (including vts & pilot service)
l) Climatic information
m) Load line chart
n) Distance tables
o) Electronic navigational systems information
p) Radio & local warnings
q) Ownerôs and other unpublished sources
r) Personal experience
s) Marinerôs hand book.

Having collected together all the relevant information the master , in consultation (مشورت)with his officers, will be able to make an overall appraisal (ارزیابی) of the passage.

4.6.4 Ocean Passage:

a) The passage may be a Transocean route in which case the first consideration will need to be distance between ports, the availability of (مخزن مواد اولیه) bunkers & stores, etc a great circle is the shortest distance but other considerations will need to be taken into account.

b) Meteorological conditions will need to be considered although the recommended route may be longer in distance it may well prove shorter in time and the ship suffer (تحمیل)less damage.

c) Ocean currents may be used to advantage and weather system also need to be considered , i.e, tropical revolving(چرخنده) storm.

4.6.5 Coastal Passage:

a) The main consideration at the appraisal (ارزیابی) stage will be to determine the distance tracks should be laid off coastlines and dangers . when the ship is passing through areas where IMO adopted traffic separation and routing schemes are in operation such routing will have to be followed.

b) Having made the appraisal (ارزیابی) of the intended voyage, the master will determine his strategy and then delegate(محول کردن)one of his officers to plan the voyage. On COMPANY ships this will be the second mate, irrespective (صرفنظر از)، of who actually does the planning , it has to be to the requirements of the master, who carries the final responsibility for the plan.

c) The plan needs to include all eventualities(امکانات) and contingencies(احتمالات) .

d) Passage plans should be made from berth to berth , not from pilot station to pilot station , because as per IMO resolution, despite (بااینکه)the duties and obligations of a pilot , his presence(حضور) on board does not relieve the officer in charge of the watch from his duties and obligations (وظایف) for the safetyof the ship. This makes it quite clear that it is necessary to plan from berth to berth even though it is anticipated (پیش بینی کردن) that there will be a pilot conducting the vessel at certain stages of the voyage.

4.7 PASSAGE PLANNING

Planning may be considered in two stages:

a) Ocean and open waters.
b) Coastal and estuarial(ورودی ها)

Though, at times, these two stages will merge(یکی بودن) and overlap(مشترک)

4.7.1 Charts: Collect together all the charts for the intended voyage, putting them into the correct order, Ensure that all charts and publications haven been corrected to the latest notices to mariners available.

4.7.2 No go areas : Coastal and estuarial (ورودی)charts should be examined(بررسی)and all areas where the ship cannot go carefully shown by highlighting or cross hatching .

4.7.3 Margins(حدود) of safety : Before tracks are marked on the chart, the clearing distance from the no go areas need to be considered among the factors which need to be taken into account when deciding of the size of this ñ margin of safety ñ are:

a) The dimension of the ship.
b) The accuracy of the navigational systems to be used
c) Tidal streams.
d) The maneuvering characteristics of the ship.

Margins of safety will show how far the ship can deviate(منحرف)from track , yet still remain in safe water

4.7.4 Safe water: areas where the ship may safely deviate(منحرف)

4.7.5 Ocean and open water tracks, Coastal and estuarial tracks

Tracks should be drawn on the small scale charts according to the decisions made at the appraisal (ارزیابی) stage regarding the route to be taken.

4.7.6 Chart change : it should be quite clearly shown on the chart.

4.7.7 Track considerations(مراعات): the ship always has to remain in safe water and remain sufficiently far off a danger to minimise the possibility of grounding in the event of machinery breakdown or navigational error.

4.7.8 Distance off: it will depend on followings:

a) The draught of the ship relative to the depth of water.
b) The weather condition.
c) The direction and rate of the tidal streams or current.
d) The volume of traffic.
e) The age(تاریخ)and reliability(اعتبار)of the survey(عمق سنجی).
f) The availability of safe water.

4.7.9 Regulations(آیین نامه ها): both company and national regulations regarding off shore distances must also be observed.

4.7.10 Deviation from track: it may be necessary to deviate from track , e.g. having to alter for another ship even so , such deviation from track should be limited so that the ship does not enter areas where it may be at risk or closely approaching the margins of safety

4.7.11 Underkeel clearance: it is important that the reduced under keel clearance has been planned for and clearly shown.

4.7.12 Tidal window: in tidal areas, adequate UKC may only be attainable(حاصل شدن)during the period that the tide has achieved at given height. Outside that period , the area must be considered no go . Such safe periods called the tidal window, must be clearly shown so that the OOW is in no doubt(تردید)as to whether or not it is safe for this ship to proceed.

4.7.13 Stream/ current allownce : current information , set and rate is often available on the chart though more detailed information is given in ocean passage for the world , routing charts , and pilot books. Tidal information is available from charts, tide tables , and further local information being available in pilot books.

4.7.14 Course alteration and wheel over : in confined waters when navigation on large scale charts and where the margins of safety may require , the ship has to commenc(آغاز کردن)altering course at the wheel over position , some distance before the track intersection in order to achieve the new planned track.

4.7.15 Parallel indexing : the parallel index (PI) is a useful method of monitoring cross track tendency in both poor & good visibility and also is the simple and effective method of continuously monitoring a ship;s progress.

4.7.16 ARPA mapping: may be used in addition to and not to the exclusion (تحت الشعاع قرار دادن) of other systems.

4.7.17 Way points: a way point is a position , shown on the chart, where a planned change of status will occur.
It will often be a change of course but may also be an event such as:

a) End or beginning of sea passage .
b) Change of speed.
c) Pilot embarkation point.
d) Anchor station etc.

4.7.18 Aborts and contingencies: no matter how well planned and conducted a passage may be, there may come the time when , due to change in circumstances, the planned passage will have to be abandoned.

a) Aborts: when approaching constrained waters , the ship may be in position beyond which it will not be possible to do other that proceed .
Termed the point of no return, it will be th 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.

b) A position needs to be drawn on the chart showing the last point at which the passage can be aborted and the ship not commit hereself .The position of the abort point will vary with the circumstances prevailing - e.g. water availability , speed , turning circle , etc , but it must be clearly shown, as must a subsequent planned track to safe water be marked on the chart.

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

i) Deviation from approach line.
ii) Machinery failure or malfunction .
iii) Instrument failure or malfunction
iv) Non availability of tugs or berth.
v) Dangerous situation ashore or in harbour.
vi) Any situation where it is deemed unsafe to proceed.

d) Contingencies : Having passed the abort position and point of no return still needs to be aware that events may not go as planned and that the ship may have to take emergency action .

e) Contingency planning will include:

i) Alternative routes
ii) Safe anchorage.

iii) Waiting areas.
iv) Emergency berth

f) Contingency plans will have been made at the planning stage & clearly shown on the chart.

4.7.19 Following should be clearly stated & included in the passage planning .

a) Various methods of position fixing.
b) Primary and secondary position fixing.
c) Radar conspicuous objects, visual & navaids.
d) Landfall lights.
e) Radar targets.
f) Buoyage.
g) Fix frequency.
h) Fix regularity.
i) Additional information i.e.

1. Reporting points
2. Anchor clearance
3. Pilot boarding area
4. Tug management
5. Traffic Areas
6. Transits (ranges)
7. Compass error
8. Leading lines
9. Clearing marks.
10. Head mark
11. Clearing bearing
12. Range of lights
13. Geographical range
14. Luminous range
15. Normal range
16. Landfall lights
17. Extreme range
18. Echo-sounder
19. Chart overcrowding

4.7.20 Planing book : in addition to the charts whole of the passage plan should be written into planing book for reference.

4.7.21 Conning note book: depending upon the length and complexity of the passage, or certain parts of it, is good practice(کار) for an abbreviated edition of the plan to be made into a note book so that the person having the Conn , other that a pilot , can update himself as and when required without having to leave the conning position to look at the chart.

4.7.22 Masterôs approval: on completion, the plan must be submitted to the master for his approval.

4.7.23 Plan change : all members of the bridge will be aware that even the most through plan may be subject to change during the passage. it is the responsibility of the person in charge to ensure that changes are made with the agreement of the master and that all other members of bridge are advised of such change.

4.8 Executing The Plan

4.8.1 Tactics: The plan having been made, discussed and approved , execution of the plan now has to be determined . By this is meant the methods used to carry out the plan, including the best use of available resources. Final details will have to be confirmed when the actual timing of the passage can be ascertained .

4.8.2 The tactics to be used to accomplish the plan can then be agreed and should include:

a) ETAS for tide : expected times of arrival at critical points to take advantage of favorable tidal streams.

b) ETA for day light : ETA at critical points where it is preferable to make a day light passage or with the sun behind the ship.

c) Traffic conditions: Traffic conditions at focal points.

d) Destination ETA : ETA at destination, particularly where there may be no advantage gained by early arrival.

e) Tidal streams: tidal stream information , obtained from the chart or tidal stream atlases , can be included in the planned passage when the time of transit of the relevant area is know. Ideally , course to steer should be calculated Prior(قبل از) to making the transit, though in fact , strict adherence to the planned track will actually compensate for tidal streams .Current information can also be obtained and shown on the chart.

f) Plan modification : it must always be born in mind that safe execution of the passage may only be achieved by modification of the plan in case of navigational equipment becoming unreliable or inaccurate or time changes having to be made , e.g. delayed departure.

g) Watchkeeping officer : the officer of the watch shall have full knowledge of all safety and navigational equipment on board the ship and shall be aware and take account of the operating limitations of such equipment . master to ensure that all bridge team personnel including newly joined navigating officers are familiar with all navigational equipment and they are capable of undertaking the navigational watch and if found necessary,should be accompanied with a competent navigating officer.

h) Additional personnel: in order to achieve safe execution of the plan , it may be necessary to manage the risks by utilising additional decks or engine personnel.

i) This will include an awareness of positions at which it will be necessary

j) To call the master to the bridge for routine situations such as approaching the coast , passing through constrained waters, approaching the pilot station , etc.

i) To call the master to the bridge for routine situations such as approaching the coast , passing through constrained waters, approching the pilot station, etc.

ii) To change from unattended to manned machinery space.

iii) To call an extra certificated officer to the bridge

iv) To make personnel , in addition to the watch keeper available for bridge duties such as manning the wheel , keeping lookout , etc.

v) To make personnel, in addition to the watchkeeper available for deck duties such as preparing pilot ladders, clearing and standing by anchors, preparing berthing equipment , engaging tugs , etc.

k) Briefing: before commencing the voyage there is considerable advantage to be gained by briefing all concerned . This may take place over a considerable period of time. As the actual commencement of the voyage approaches , certain specific personnel will have to be briefed so that work schedules and requirements can be planned. In particular , any variation from the routine running of the ship - e.g. doubling of watches , anchor party requirements , etc , must be specifically advised to involved personnel, requirements, etc, must be specifically advised to involved personnel, either by the master or the navigator. Such briefing will require frequent updating and at different stages there will have to be rebriefing as the voyage progresses. Briefing will make individuals aware of their own part in the overall plan and contributes to their work satisfaction

i) Fatigue : Prior(قبل از) to the commencement of the passage and, in certain cases, during the passage, it may be necessary for the master to ensure that rested and unfatigued personnel are available are available . This could include such times as leaving port and entering very heavy traffic areas or bad weather conditions or high risk situations such as transiting a narrow strait, etc.

This availability can be achieved , within the limits of the total number of persons available , by ensuring that watchkeepers of all description are relieved of their duties well in advance of being required on watch in order that they may rest.

m) Voyage preparation : This will normally be the taskof a junior officer who will prepare the bridge for sea. Such routine tasks are best achieved by the use of a check list, but care has to be taken to ensure that this does not just mean that the checklist is ticked without the actual task being done.

n) Bridge Preparation : As and when diected by the master the officer responsible should prepare the bridge by:

i) Ensuring that the passage plan and supporting information is available and to hand.

ii) Charts should be in order, in the chart drawer and the current chart available on the chart table.

iii) Checking that chart table equipment is in order and to hand -e.g.pens, pencils, parallel rules, compasses , dividers, note pads etc.,

iv) Checking that ancillary watchkeeping equipment is in order and to hand . e.g. binoculars, azimuth rings, aldis lamps etc.

v) Confirming that monitoring and recording equipment e.g. course recorder, engine movement recorder is operational and recording paper replaced if necessary.

vi) Confirming that the master gyro is fully operational and follow - ups aligned The magnetic compass should be checked.

vii) Checking that all instrument illumination lamps are operational.

viii) Checking navigation and signal lights.

ix) Switching on any electronic navigational equipment that hass been shut down and operating mode and position confirmed.

x) Switching on and Confirming the read outs of echo sounders and logs and confirming associated recording equipment.

xi) After ensuring that the scanners are clear , switching on and tuning radars and setting appropriate ranges and modes.

xii) Switching on and testing control equipment - i.e. Telegraphs, steering gear as appropriate.

xiii) Switching on and testing communications equipment both internals and external (VHF & MF radios, Navtex, inmarsat and GMDSS system as appropriate).

xiv) Testing the whistle.

xv) Ensuring that clear view screens and wipers are operational and that windows are clean.

xvi) Confirming that all clocks and recording equipment are synchronised.

xvii) After ensuring that there is no relevant new information on the telex , fax or navtex , advising the master that the bridge is ready for sea.

4.9 Monitoring The Ship's Progress

4.9.1 Monitoring is ensuring that the ship is following the pre-determined passage plan and is a primary function of the officer of the watch for this , OOW may be alone, assisted by other shipôs personnel , or acting as back up and information source to another officer having the Conn.

4.9.2 Monitoring consists of following a series of functions, analysing the results and taking action based upon such analysis.

4.9.3 Fixing method: The first requirement of monitoring is to establish the position of the ship. This may be done by a variety of methods,ranging from the very basic three bearing lines, through a more technical use of radar ranges/ bearings , to instant readout of one of the electronic position fixing systems - e.g. Decca, loran or GPS.

4.9.4 The result in above para, though, is always the same. However the fix has been derived , you finish up with no more than a position . It is how this information is used that is important.

4.9.5 Visual bearings : As stated above , fixing methods vary Basic fixing consists of more that one position line obtained from taking bearings using an azimuth ring on a compass.

4.9.6 Gyro or magnetic, the bearing are corrected to true , drawn on the chart and the position shown . Three position lines are the minimum required to ensure accuracy.

4.9.7 Poor visibility or lack of definable visual objects may prevent a three- bearing fix being made . In this case radar- driven ranges may be included in the fix and under some circumstances make up the whole of the fix.

4.9.8 In any case a mixture of visual or radar bearing and radar ranges is acceptable Electronic position fixing may also be used , particularly where there are no shore-based objects to be observed and the radar coastline is not distinct.

4.9.9 Frequency: Fix frequency may have been determined at the planning stage. Even so this may have to be revised , always bearing in mind the minimum frequency is such that the ship can not be allowed to get into danger between fixes.

4.9.10 Regularity : Fixing needs not only be accurate and sufficiently frequent, it also needs to be regular.

4.9.11 Estimated Position: Regular fixing also allows a fix to be additionally checked . Eeach time a position had been fixed , it is good practice(کار) to estimate the position that the ship should have reached at the next fix.

4.9.12 Sounding : It is a good practice(کار) to observe the echo sounder reading at the same time when taking a fix and writing this reading on the chart beside the fix. If the observed reading is not the same as indicated on the chart then the OOW should realize that something is wrong It may be that the chart is wrong, it may be that the ship is standing into danger.

4.9.13 Cross Track Error : Having fixed the position , the OOW will be aware of whether or not the ship is following the planned track and whether or not the ship will be at the next way point at the expected time. If the ship is deviating from the planned track he must determine whether or not such deviation will cause the ship to stand in to danger and what action he should take to remedy the situation apart from deviating from track to avoid an unplanned hazard such as an approaching ship, there is seldom justification not to correct the deviation and get the ship back on to the planned track.

4.9.14 The OOW must use his judgment as to how much he needs to alter course to return to track, bearing in mind that even when he has returned to the planned track he will need to leave some of the couse correction on in order to compensate the cause of earlier deviation.

4.9.15 To observe the International regulations for prevention of collisions at sea.

4.9.16 Irrespective of the planned passage ,no ship can avoid conforming with the requirements of the , ñ rule of the roadò these rules are quite clear , are internationally accepted and understood by all OOWs.

4.9.17 Rule 16 States: Every vessel which is directed to keep out of the away of another vessel shall , so far as possible, take early and substatial action to keep well clear.

4.9.18 Despite the requirement to maintain track, rule & makes it quite clear that the give - way ship must keep clear , either by altering course or if this is impossible then by reducing speed, or a combination of both these factors.
Proper planning will ensure that the ship will never be in a situation where such action can not be taken.

4.9.19 In areas of heavy traffic and proximity of dangers, the person having the Conn will have to hold a delicate balance of other ship avoidance and planned track maintenance .The Priority (قبل از)will be to avoid collision , but not at the expense of a grounding.

4.9.20 Non - navigational emergencies : The planning should have allowed for contingencies but even the best plan can not allow for every conceivable situation . Situation awareness and careful assessment of the situation, coupled with principles of the bridge team management will help prevent a bad situation becoming worse.

4.9.21 Time management : In the event that the ship is ahead of or behind the planned ETA at the next way point , the OOW must use his judgment as to whether he adjusts the speed or not. In Some instances, as for example when it is imperative that the shipôs ETA is critical to make a tide , then ETAôs have to be adhered to

4.9.22 The keeping of an efficient lookout needs to be interpreted in its fullest sense and the OOW needs to be aware that lookout includes the following items.

a) Aconstant and continuous all- round visual lookout enabling a full understanding of the current situation and the proximity of dangers, other ships and navigation marks to be maintained.

b) Visual observation will also give an instant update of environmental changes, particularly visibility and wind.

c) Visual observation of the compass bearing of an approaching ship will quickly showwhether or not is changing and whether or not in need to be considere a danger.

d) Visual observation of characteristics of lights is the only way of positively identifying them and these increases the OOW situation awareness.

e) The lookout will also include the routine monitoring of ship control and alarm systems.e.g.regularly comparing standard and gyro compasses and that the correct course is being sterred.

f) Electronic aids should not be overlooked or ignored under any circumstances, but it should be born in mind that echo-sounders, radars, etc, are aids to navigation, not merely single means of navigation.

g) Also included in the concept of lookout should be the advantageous use of VHF . monitoring of the appropriate channels may allow the ship to be aware of situations arising long before it is actually in the affected area.

4.9.23 Underkeel clearance: routine observation of the echo-sounder should become one of the proceduress of the watch.

4.9.24 Way Points: Way points are good indicators of whether the ship is on time or not . If not, then something has occurred or is occurring which has affected the passage and the OOW will take steps to correct this occurrence.

4.9.25 Transits (ranges) : Transits can be used as a wheel - over also to confirm that the ship is on schedule.

4.9.26 Leading lines: The transit of two readily identifiable land- based marks on the extension of the required ground track and usually shown on the chart are used to ensure that the ship is safely on the required track.

4.9.27 Natural leading lines: Sometimes the OOW may be able to pick up a nav. mark in line with an end of land which confirms that the vessel is on track.

4.9.28 Clearing Marks and bearings : Clearing marks and clearing bearings , whilst not being considered to be definitive fix, will indicate to the OOW that his ship is remaining in safe water.

4.9.29 Light Sectors : The changing colours of sectored lights can alos be used to advantage by the OOW who should be very aware of , will indicate that the ship is standing into danger.

4.10 Navigation With Pilot On Board

4.10.5 Planning: Awell planned passage will not stop at the pilot boarding area

4.10.6 The planning will continue from sea to berth , or vice versa , the boarding of the pilot being part of the plan.

4.10.7 The areas where the pilot actually has the Conn will still have been planned by the navigator. This enables the master and OOW to compare the progress of the ship with the planned track and also enables them to be aware of the constraints and other details of the passage. Abort and contingency planning will assist should the ship experience navigational or other problems.

4.19 Summary Of Passage Planning And Quick Reference

4.19.1 Passage appraisal (ارزیابی): The appraisal (ارزیابی)could be considered to be the most important part of passage planning as it is at this tage that all pertinent information is gathered and the firm foundation for the plan is built.

4.19.2 Information sources: The masterôs decision on the overall conduct of the passage will be based upon an appraisal (ارزیابی)of the available information . Such appraisal (ارزیابی)will be made by considering the information from sources including :

a) Chart catalogue

b) Navigational charts

c) Ocean passage for the world

d) Routing charts or pilot charts

e) Sailing directions and pilot books

f) Light lists

g) Tide tables

h) Tidal stream atlases

i) Notices to mariners

j) Routing information

k) Radio signal information (including Vts and pilot service)

l) Climatic information

m) Load line chart

n) Distance tables

o) Electronic navigational systems information

p) Radio and local warnings

q) Ownerôs and other unpublished sources

r) Draught of vessel

s) Personal experience

t) Marinerôs hand book.

u) Having collected together all the relevant information the master , in consultation with his officers , will be able to make an overall appraisal (ارزیابی)of the passage.

4.20 **Passage planning :**

a) Charts: Collect together all the charts for the intended voyage,

b) No go areas: Coastal charts should be examined(بررسی)and all areas where the ship can not go should be highlighted.

c) Margins of safety: Asafety margin is required around the no go areas.

d) Safe water: Areas where the ship may safely deviate are considered to be safe water.

e) Ocean and open water tracks: Ocean and open water tracks should first be drawn on the small - scale charts.

f) Coastal and esturial tracks: Coastal and esturial tracks should be first drawn on the small scale charts covering large portions of the coastline.

g) Chart change: It should be quite clearly shown on a chart the position where it is required to transfer to the next chart.

h) Track consideration : when it does become necessary to approach a danger , there are general minimum rules that should be followed.

j) Distance off: Consider the distance off a danger that ship should maintain .

k) Regulations : Both company and national regulations regarding offshore distances must be observed.

l) Deviation from track: Ideally the ship will follow the planned track but under certain circumstances it may be necessary to deviate from such track.

m) underkeel clearance: It is important that the reduced UKC has been planned for and clearly shown.

n) Tidal window: In tidal areas, adequate underkeel clearance may only be attainable during the period that the tide has achieved a given height.

p) Steam / current allowance: In open sea situations tracks correction is often made after the ship has been set off track by the tidal stream and/or current.

q) Course alterations and wheel- over: In confined waters when navigatin on large scale charts and where the margins of safety may require the ship to commence altering course at the wheel - over position some distance before the track intersection in order to achieve the new planned track.

r) Parallel indexing: The paraleel index is a useful method of monitoring cross track tendency in both poor and good visibility.

s) ARPA mapping: Many modern ARPAs have the facility to generate synthetic maps which can be stored in a retrieval system.

t) Way points: Away point is a position shown on the chart, where a planned change of status will occur.

u) Aborts: Termed the point of no return , it will the position where the ship enters water so narrow that there it is no room to return or where it is not possible to retrace the track due to a falling and insufficient UKC.

v) Contingencies(حوادث غير مترقبه) : The bridge team still needs to be aware that events may not go as planned and that the ship may have to take emergency action.

w) Position fixing: A variety of position fixing methods is available but it must not be assumed that any one of these methods will suit all circumstances.

x) Primary and secondary position fixing : The passage plan should include information as to which fixing methods are to be used.

y) Radar conspicuous objects & visual navaids: The navigator will have to determine and plan his primary and secondary methods of fixing and has to study his chart at the planning stage and decide which radar conspicuous marks and visual aids are to be used at each stage of the passage.

z) Landfall lights: These should have been clearly shown on the charts so that the OOW can concentrate on actually looking for the light concerned , not looking on the chart trying to discover which lights should be visible.

aa) Radar targets: A little time spent at the planning stage will soon determine which are the targets to look for and use, highlight on the chart racons and other radar conspicuous object which will be used for position fixing.

ab) Buoyage: Whenever buoys or other floating navmarks are being used as position fixing aids, their own position must be first checked and confirmed that they are as shown on the chart . Such position can be determined at the planning stage by noting their range and bearing from a known fixed object.

ac) Fix frequency : It is necessary to establish the required frequency of the fixing . A ship close to danger will need to be fixed much more frequently than one in the open sea.

ad) Fix regularity(ترتيب): It is good practice(كار) to ensure that fixes are in fact made at the established frequency not as and when the OOW thinks fit.

ae) Additional information : A lot of additional information can be shown on the plan which will remind the OOW of his obligations(وظيفه)or reminding him to make certain preparations .

Such information will include:

i) Reporting points
ii) Anchor clearance
iii) Pilot boarding area
iv) Tug engagement
v) Traffic areas

af) Transists (ranges) : The line on the chart upon which an observer would see two identifiable objects in line.

ag) Compass error: Transis may be used to determine gyro and magnetic compass errors by comparing charted and observed bearings.

ah) Leading lines: By observing that the the leads are in line the navigator is assured (اطمینان)that his ship is on the planned track.

aj) Clearing marks: Can be used to ensure that a ship is remaining within a safe area or is not approaching a danger.

ak) Head mark: A readily identifiable conspicuous(واضح) object shown on the chart which lies on the projection of the required track at that part of the passage is often required to be followed.

al) Clearing bearing: A single identifiable charted object may be used as clearing bearing and should be shown on the chart as NLT NMT (not less than / not more than)

am) Range of lights: The maximum range at which a navigational light can be seen depends upon three separate factors:

i) The combined height of eye of the observer and the elevation of the light.
ii) The intensity (شدت)of the light.
iii) The clarity of the atmosphere.

an) Geographical range: The greater the elevation of the light, the greater the distance at which it will be visible , equally, the greater the height of eye of the observer , the greater he will see the light . These two factors combined will give a maximum range of visibility called the geographical range and may be obtained from tables in the list of lights.

ap) Luminous range: This is the maximum distance at which the light can be seen and is dpendent upon the intensity of the light and the atmospheric visibility prevailing

aq) Nominal range: The range shown on the chart is usually the nominal range - i-e, the luminous range when meteorological visibility is 10 miles.

ar) Landfall lights : The arcs of maximum visibility should be drawn on the landfall (شبه،سایه ساحل)chart so that the OOW is aware of the likelihood of seeing lights and which ones he should see first.

as) Extreme range: Lights will come into view according to their height, their intensity and the ambient(پیرامون) visibility . In the event that a light is not sighted as expected, then the oow will be aware that the ship is note where he anticipated (انتظار داشتن)it to be or that the light is unlit or obscured in could or that there is poor visibility between the ship and the light. The actual cause must be determined by his own judgment . The fact is that there is something not quite as it should be.

at) Echo - sounder : It is good practice(کار) to switch the echo - sounder on Prior(قبل از) to a landfall being made as in the case of a light at maximum range, the actual decrease in soundings will make the OOW more aware that he is approaching danger.

au) Chart overcrowding(شلوغی بیش از حد) : Due to much information needing to be shown on the chart, in some cases this overcrowding can be reduced by writing the required information clear of the track-e.g, on the land and drawing attention to it by a connecting line.

av) Planning book: The whole of the passage plan should be put into COMPANY VOYAGE PLAN BOOK (TV 071) ~~a planning book~~ in addition to the chart so that it can be referred to at a later date. In addition , times of high and low water , times of sunrise and sunset, VHF working frequencies to be also put into planning book.

aw) Conning note book : It is good practice(کار) for an abbreviated edition of the plan to be made into a note book so that the person having the conn, other than a pilot , can update himself as and where required without having to leave the conn position to look at the chart.

ax) Masterôs approval : On completion , the plan must be submitted(تقدیم) to the master for his approval .

ay) Plan changes: All members of the bridge team will be aware that even the most through plan may be subject to change during the passage, it is responsibility of the person who make such change to ensure that changes are made with the agreement of the master and that all other members of the team are advised of such changes.

4.20.1 Executing the plan; Tactics: The plan having been made , discussed and approved , execution of the plan now has to be determined , by this is meant the methods used to carry out the plan, including the best use of available resources. Final details will have to be confirmed when the actual timing of the passage can be ascertained (محقق شده). The tactics to be used to accomplish the plan can then be agreed and should include:

a) ETAs for tide: Expected times of arrival at critical points to take advantage of favourable tidal steams.

b) ETA for day light: ETAs at critical points where it is preferable to make a day light passage or with the sun behind the ship.

c) Traffic conditions : Traffic conditions at focal points.

d) Destination ETA: ETA at destination , particularly where there may be no advantage gained by early arrival.

e) Tidal streams: This information obtained from the chart or tidal stream atlases can be included in the planned passage when the time of transit of the relevant area is known. Current information can also be obtained and shown on the chart.

f) Plan modification : It must always be born in mind(همواره مد نظر بودن) that safe execution of the passage may only be achieved by modification of the plan in the case of navigational or equipment becoming unreliable (غیر قابل اطمینان) or inaccurate (نادرست)or time change having to be made - e.g, delayed departure

g) Additional personnel: In order to achieve safe execution of the plan it may be necessary to manage the risks by utilising (بهره بردن)additional deck or engine personnel which include;

i) To call the master to the bridge for routine situations.

ii) To change from unattended(اتوماتیک) to manned machinary space.

iii) To call an extra certified officer to the bridge.

iv) To make personnel , inaddition to the watch keepers, available for bridge duties such as manning the wheel, keeping look out, etc.

v) To make personnel, in addition to the watch keepers, available for deck duties such as preparing pilot ladderôs clearing and standing by anchors, preparing berthing equipment, engaging tugs, etc.

h) Briefing: Before commencing the voyage there is considerable(مهم) advantage to be agained by briefing all concerned (دخیل). This may take place over a considerable period of time.

j) Fatigue(خستگی): Prior(قبل از) to commencement (آغاز)of the passage and in certain cases, during the passage , it may be necessary for the master ensure that rested and unfatigued personnel are available.

k) Voyage preparation : This will normally be the task of junior officer who will prepare the bridge for sea.

l) Bridge preparation: At the time designated by the master the officer responsible should prepare the bridge by.

i) Ensuring that the passage plan and supporting information is available and to hand.

ii) Charts should be in order, in the chart drawer and the current chart available on the chart table.

iii) Checking that chart table equipment is in order and to hand.

iv) Checking that ancillary (کمکی،فرعی)watchkeeping equipment is in order and to hand.

v) Confirming that monitoring and recording equipment e.g. course recorder, engine movement recorder is operational and recording paper replaced if necessary.

vi) Confirming that the master gyro is fully operational and follow - ups aligned.

vii) The magnetic compass should be checked.

viii) Checking that all instrument illumination lamps are operational and their light levels adjusted as required.

ix) Checking navigation and signal lights.

x) Switching on any electronic navigational equipment and operating mode and position confirmed.

xi) Switching on and confirming the readouts of echo sounders and logs.

xii) After ensuring that the scanners are clear , switching on and tuning radars and setting appropriate ranges and moes.

xiii) Switching on and testing control equipment - i.e., telegraphs, steering gear.

xiv) Switching on and testing communications equipment both internal and external.

xv) Testing the whistle.

xvi) Ensuring that clear view screens and wipers are operational and the windows are clean.

xvii) Confirming that all clocks and recording equipment are synchronised.XVIII) Ensuring that the work place is in correct order.

xviii) Ensuring that the work place is in correct order.

xix) After ensuring that there is no relevant new information on the telex, fax or Navtex, advising the master that the bridge is ready for sea.

4.20.2 Monitoring the shipôs progress: Monitoring is ensuring that the ship is following the pre-determined passage plan and is a primary function of the officer of the watch. For this, he may be alone, assisted by other shipôs personnel; or acting as back up and information source to another officer having the Conn. Monitoring consists of following a series of functions analysing the results and taking action based upon such analysis:

a) Fixing method: The first requirement of monitoring is to establish the position of the ship.

b) Visual bearings: The gyro or magnetic bearing are corrected to true drawn on the charrt and the position shown.

c) Frequency: Always bearing in mind the minimum frequency is such that the ship can not be allowed to get into danger between fixes.

d) Regularity: Fixing needs not only to be accurate and sufficiently frequent it also needs to be regular.

e) Estimated positions: It is good practice(کار) to estimate the position that the ship should have reached at the next fix.

f) Soundings: It is good practice(کار) to observe the echo- sounder at the same time as fixing and writing this reading on the chart beside the fix.

g) Cross track error: Having fixed the position the OOW will be aware of whether or not the ship is following the planned track and whether or not the ship will be at the next way point at the expected time.

h) International regulations for preventing collisions at sea: Irrespective (صرف نظر از)of the planned passage , no ship can avoid confirming with requirements of the rule of the road.

j) Non- navigational emergencies: The planning should have allowed for contingencies(احتمالات) but even the best plan can not allow for every conceivable (محتمل)situation . situation awareness(آگاهی) and careful assessment (ارزیابی دقیق)of the situation , coupled(هر دو) with principles of bridge team management will help prevent a bad situation compounding(ترکیب) and becoming worse(بدتر).

k) Time management : In the event that the ship is ahead of or behind the planned ETA at the next way point , the OOW must use his judgment as to whether he adjust the speed or not.

l) Look out: A good out does not just mean that he personally keeps a good visual look out of the ship surroundings . The keeping of an efficient look out needs to be interpreted in its fullest sense and the OOW needs to be aware that look out includes the following items:

   i) A constant and continuous all-round visual look out enabling a full understanding of the current situation and the proximity of dangers, other ships and navigation marks to be maintained .

   ii) Visual observation will also give an instant update of environmental changes, particularly visibility and wind.

iii) Visual observation of the compass bearing of an approaching ship will quickly show whether or not its bearing is changing and whether or not it needs to be considered a danger.

iv) Visual observation of characteristics of light is the only way of positively identifying them and these increases the OOW situation awareness.

v) The look out will also include the routine monitoring of ship control and alarm system-e.g. regularly comparing standard and gyro compasses and that the correct course is being steered.

vi) Electronic aids should not be over looked or ignored, under any circumstances but it should be borne in mind that echo-sounders,radars,etc , are aids to navigation , not merely single means of navigation.

vii) Also included(در خصوص) in the concept(تصورات) of look out should be the advantageous (مفید)use of VHF monitoring of the appropriate(مقتضی) channels may allow the ship to be aware of situations arising long before it is actually in the affected area(منطقه تهدید).

viii) A routine should be established for major course alterations including:

* Checking astern Prior(قبل از) to altering.
* Checking both visually and by radar, along the bearing of the new track.

m) Under keel clearance : Routine observation of the echo-sounder should become one of the procedures of the watch..

n) Way points: Way points are good indications of whether the ship is on time or not.

p) Transits (ranges) : Transits can be used for wheel - over, but can also be used to confirm that the ship is on schedule or that it is remaining on track.

q) Leading lines: I.E, The transit of two readily identifiable land- based marks on the extension of the required ground track and usually shown on the chart are used to ensure that the ship is safely on the required track.

r) Natural leading lines: E.G,a navmark in line with an end of land which will confirm that the vessel is on track.

s) Clearing marks and bearings: Whilst not being considered to be a definitive fix, will indicate to the OOW that his ship is remaining in safe water.

t) Rising/ dipping distances: Making a landfall or running along a coastline , observing rising and dipping distances of poweful lights and marking this on the chart with the observed bearing can also help assure the OOW that the ship is in the anticipated position.

u) Light sectors: The changing colours of sectored lights can also be used to advantage by the OOW and in certain instances (بطور مثال), which the OOW should be very aware of , will indicate that the ship is standing into danger.

4.20.3 For more detailed information/explanation refer to the navigation policy ï procedure manual, passage planning.