EXERCISES

Organization of the Watch at Sea

1. Master's Responsibilities

The Master is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational watch taking into accounts the current circumstances and conditions.

In particular, he must ensure that the efficiency of all watchkeeping personnel is not diminished by tiredness and that duties are so organised that the first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty.

2. Organisation of the Watch at sea

Unless otherwise instructed by the Master, a navigational watch is maintained in all circumstances at sea and at anchor. The Watch is conducted by a certificated Officer, assisted by a Helmsman at night or when this is necessary in accordance with current regulations or circumstances of which the Master is the sole judge.

3. The role of watch

The role of watch is established at the beginning of the voyage by the Chief Mate, in accordance with the directives of the Master and in conformity with the instructions of the Company and of the STCW 95 and COLREG 72 conventions, relevant IMO Resolutions, ISM Code. They are modified if necessary at each change of crew.
The watch list is displayed on the bridge, in the engine control room and in the common areas or similar place. One Role of watch is displayed on each **INDIVIDUAL FAMILIARIZATION MANUAL** present in each crew cabin.

4. Watch of the Officers

During his working time, the Officer must provide the watch on the bridge and must not leave this station in any circumstances before being relieved.

5. Watch of the Helmsman (STCW Section A-VIII/2- Part 3.1 - 15)

The Helmsman takes the watch at the bridge during darkness, in accordance with Rules and whenever circumstances so require (density of traffic, restricted visibility, narrow passage, monitoring of cargo, on request of the Officer on Watch...)
In daytime, when he is not on the bridge, the Watch Helmsman must stay in permanent contact with the Officer on the bridge by means of radio. The Officer of the Watch checks at the beginning of the watch the correct functioning of the means of communication with the Helmsman. The dead man alarm system will be in operation during the time that the watch is conducted by a sole officer. The time for starting and cancelling this device will be set in the Ship's Log.
The Officer of the Watch has the ability to call back the Helmsman on bridge, whenever he finds it necessary. He reports accordingly to the Master. It is the Master's decision when to use the dead man alarm system with respect to the rules.

References to be consulted:

- STCW 95
- Colreg 72
- Letters to Masters
- Bridge Team Management
- IMO Résolutions
- ISM Code

Attached: Blank Watch Rolls

EXERCISES
Organization of the Watch at Sea

W A T C H P L A N AT SEA

At Sea:		Phone #	Rank	Name	Phone #
0000-0400/1200-1600	**2nd Officer**	**32**	**AB**		
1200 - 1600			**CADET**		
0400-0800/1600-2000	**Chief Officer**	**31**	**AB**		
0400 - 0800			**CADET**		
0800-1200/2000-2400	**3rd Officer**	**33**	**AB**		
2000-2400			**CADET**		

EXERCISES
Master's standing and special orders

1. Introduction

The Officers of the watch need to clearly know the behaviour that the Master expects from them when he entrusts them with the responsibility of handling the ship.

By his standing and special orders, the Master will therefore give clears and unambiguous written instructions and directives.

Standing and special orders from the Master are overriding this manual and the SMS.

2. Master's Standing orders

Standing orders have to be signed by the Master and the Officers on Watch when joining the ship.
Standing orders must be available for consultation on the Bridge at all times.

These standing orders concern the following points:

- The circumstances in which it is necessary to call the Master
- Actions to prevent collisions
- Maximum M/E speed and torque
- The use and the upkeep of nautical charts
- The use of sounding equipment, radars and other navigational equipment
- The change from automatic pilot to manual steering
- The reinforcement of the watch in certain special circumstances (density of traffic, reduced visibility, narrow passages, etc...)
- The need to check information in order to reduce to the minimum the risk of human error
- Weather forecasts
- Conditions of navigation in bad weather or in restricted visibility
- Precautions in the event of very cold conditions
- Precautions against flooding
- Radio-communications
- Provisions for embarking/disembarking the pilot
- Safety and protection of the environment
- Security matters
- All others points which are considered important by the Master

3. Special orders from the Master

As necessary, the Master will write his "**Special or Temporary orders**" in the Bridge Order Book or in the Bridge Log Book.
When taking on the watch, the officers will read and sign these instructions. If they have the slightest doubt as to their meaning, they must obtain clarification from their predecessor or, if not available, from the Master himself.

EXERCISES
Master's standing and special orders

These **Master's Standing orders and Special orders** specify what behavior the Master expects from the Officers who are entrusted with the responsibility of handling the vessel during Bridge watch.

Standing and Special orders from the Master are overriding SMS manuals.

1. The Officer of the Watch (hereby further referred as OOW) at sea is the Master's representative and his primary responsibility at all times is the safe navigation of the vessel. He must at all times comply with **Regulations for the Prevention of Collision at Sea, Regulations for the International Convention Of Safety of Life at Sea,** or the usual practices of good seamanship. These are to be strictly adhered to at all times during normal vessel operations.
2. He shall keep his watch on the Bridge and **under no circumstances shall he leave his watch until properly relieved by another licensed Officer.** In a vessel with separate Chartroom, the OOW may visit this when essential, for a very short period of time for the necessary performance of his duties, but he shall previously satisfy himself that it is safe to do so.
3. It is of special importance that at all times the OOW ensures that an efficient look-out is maintained. If the OOW is acting as the sole look-out, he must not hesitate to summon assistance to the Bridge and when for any reason he is unable to give his undivided attention to the look-out, such assistance should be immediately available.
   The OOW is responsible for the conduct, actions and performance of the personnel of his watch, instructing them of proper watch standing duties and ensuring that the same is carried out.
4. The speed of the vessel, i.e. Engine RPM is set up by the Master and must not be changed without Master's instructions except in case of immediate danger when OOW shall bear on mind that the engines are at his full disposal and he shall not hesitate to use them. However, timely notice of intended variations of engine speed shall be given when possible.
5. The course of the vessel must not be changed without Master's authority, except as planned or to avoid immediate danger in which case the OOW must bear in mind that steering gear and attached Helmsman are at his disposal and he should not hesitate to use them decisively and swiftly in case of need. It is highly dangerous to allow a situation to develop with the vessel under automatic steering to the point where the OOW is without assistance and has to break continuity of the look-out in order to take emergency action.
6. The OOW continues to be responsible for the safe navigation of the vessel despite the Master's presence on the Bridge, until the Master informs him explicitly that he has assumed the command and this is mutually understood.
7. When the Pilot is on board, his presence on the Bridge does not relieve OOW from his duties or reduce it in any way. The OOW shall co-operate closely with the Pilot and maintain an accurate check of the vessel movement. If he is in any doubt as to the Pilot actions or intentions, he shall seek clarification from the Pilot and if doubt still exists he shall notify the Master immediately.
8. It is of extreme importance that the efficiency of the watch-keeping personnel is not impaired by fatigue, alcohol or drugs. The Bridge watches schedule may be temporary modified by the Master, particularly on occasions when living ports, to ensure that watch-keeping personnel i9s not affected by fatigue.
9. The OOW shall not hand over the watch to the relieving officer if he has any reasons to believe that the later is apparently under any disability which would preclude him from carrying his duties effectively. If in any doubt, the OOW should inform the Master accordingly.
10. The relieving OOW shall not take over the watch until his vision is fully adjusted to the light conditions and he has personally satisfied himself regarding:
    - 10.1 the position, course and speed of the vessel;
    - 10.2 prevailing and predicted tides, currents, weather, visibility and the effect of these factors upon course and speed;
    - 10.3 the navigation situation including but not limited to the following:
        a. the operational condition of all navigational and safety equipment being used, or likely to be used during the watch
        b. the presence and movement of all vessels in sight or known to be in vicinity
        c. conditions and hazards likely to be encountered during the watch
11. The relieving OOW should be informed of and follow the Master's orders and other special instructions.

12. It is essential that the watches are relieved punctually and the relieving OOW must be on the Bridge at least 10 minutes prior to the time he is to take his watch. **Watch relief shall be deferred until action being taken to avoid immediate or imminent navigation hazard has been completed.**

13. The OOW shall make regular checks ensuring that:
    - 13.1 the Helmsman or the automatic pilot is steering correct course;
    - 13.2 the Standard compass error is established at least once per watch and after any major alteration of course if possible. The Standard and Gyro compasses should be frequently compared and repeaters should be synchronized with their master compass;
    - 13.3 automatic pilot is available for immediate use in the manual mode at all times;
    - 13.4 the navigation and signal lights and other navigation equipment are functioning properly;
    - 13.5 the position on the DSC VHF and MF/HF are up-dated manually each watch, if not automatic.
    - 13.6 the vessel is maintained on intended track within the tracks specified margins of safety.

14. The change-over from automatic to hand steering and vice-versa should be made by, or under supervision of a responsible Officer.

15. The OOW should be thoroughly familiar with the use of electronic aids to navigation carried, including their limitations.

16. The echo-sounder is valuable aid to navigation and should be used whenever appropriate. The OOW should validate echo-sounder readings against chart values and if in any doubt call the Master immediately.

17. A proper record of the movement of the vessel shall be kept during the watch. The deck Log Book should be completed with all relevant details being entered.

18. The OOW shall collect weather forecasts by all means available and the Master is to be notified immediately if significant deterioration of weather condition is expected.

19. The OOW shall use on Radar at all times having the other one on Stand-by mode. When reduced visibility is encountered, congested traffic or when in coastal navigation, both Radars are to be in operation and OOW shall select appropriate range scale suited to the conditions, plot well on time potentially dangerous targets and be fully aware of the developing situation. The alarm level for CPA and TCPA should be set to realistic levels but not less than 0.5 NM and 10 Min respectively. If practicable, the CPA is to be maintained on 2 NM when the vessel is in restricted visibility, when passing very large or fast objects and if the other vessel frequent change of speed and/or heading raises suspicion of his intentions. The audible alarm should be turned "on".

20. The largest scale chart suitable for the area, corrected with the latest notices including navigation warnings received by Navtex and EGC, shall always be used. Fixes should be taken at frequent intervals, more frequently when in coastal waters. Whenever circumstances allow, the position should be taken by more than one method. In coastal waters radar positions should have preference over GPS positions. The OOW should identify prominent coastal features including lights, buoys etc.

21. The OOW should be aware of the information contained in the various nautical publications carried on the vessel.

22. If OOW should radio communicate either with VTS, Pilot station or the other vessels, the data exchanged should be brief, accurate and precise. The OOW should be aware of the danger of using VHF in collision avoidance. However, if engaged in such communication, the clear identification of the other vessel is to be verified by other means, such as AIS targeting and by taking Radar bearing and distance.
    VHF is not to be used for personal communication.

23. The OOW shall take frequent and accurate compass bearings of approaching vessels to ascertain is the risk of collision exists. This should be in addition to ARPA plotting. Early and positive action should be taken to avoid collision or a close quarters situation. Such action shell be in accordance with COLREG and should be monitored consequently to ensure that it is having the desired effect.

24. When reduced visibility is encountered or suspected, the first responsibility of OOW is to comply with relevant rules of the "Regulations for Prevention of Collision at Sea" with particular regard to proceeding at a safe speed, sounding of fog signals and having engine ready for immediate maneuvering. In addition he shall:
    - 24.1 inform the Master
    - 24.2 post look-out and Helmsman
    - 24.3 operate additional radar
    - 24.4 if necessary change over to hand steering

All actions to avoid collision, such as alteration of speed or course, shall be made in ample time and shall be substantial (successive small alterations of course should be avoided) so as to give sufficient sea-room for other vessel.

25. **The OOW should never fail to call Master at any time if he is in any doubt whatsoever.** In absence of any specific orders, the Master will be called immediately under the following circumstances:

UNDERWAY

a) If restricted visibility is encountered or suspected
b) If the traffic condition or the movements of other vessels are causing concern
c) If difficulty is experienced in maintaining course
d) On failure to sight land or sea mark by the expected time
e) If land or sea mark is sighted unexpectedly
f) On the breakdown of the engines, steering gear or any essential navigational equipment
g) In heavy weather if in any doubt of the possibility of weather damage
h) In any other emergency situation in which you are in any doubt

AT ANCHOR

a) if movements of the other vessels are causing concern
b) if the vessel is dragging her anchor
c) if the state of weather and sea is expected to deteriorate
d) if restricted visibility is encountered or expected
e) on the approach of any unidentified craft attempting to come alongside
f) In any other emergency situation in which you are in any doubt

Despite the requirement to notify Master immediately in foregoing circumstances, the OOW should, in addition, not hesitate to take immediate action for the safety of the vessel when the situation requires.

26. At anchor the OOW should be aware and consider the following:

26.1 condition of the holding ground, weather and prevailing tidal conditions and traffic flow
26.2 anchor position and swinging circle
26.3 possibility of dragging. Vessel position shall be checked frequently by different methods. The possibility of vessels dragging nearby should be also considered.
26.4 distance to surrounding vessels and navigational dangers should be recorded and monitored.
26.5 proper lights and shapes to be displayed

If the weather deteriorates or there is a risk of dragging, in addition to calling Master immediately, the engines shall be made ready for manouevre.

27. The master and the OOW shall be aware at any time of the serious effects of operational or accidental pollution of the marine environment and shall take all possible measures to prevent such pollution.

At: _____ Date: _____

Master: _____

****** ALL OFFICERS TO READ AND SIGN BELOW ******

	Name	Date	Signature
Chief Officer	_____	_____	_____
Second Officer	_____	_____	_____

EXERCISES
Master's standing and special orders

Third Officer _____ _____ _____

EXERCISES
Watch at Sea

1. Preliminary note

The safety of the ship is an absolute priority. No task, no situation, no previous instruction can justify the taking on or the acceptance of the slightest risk for the ship.
Some important principles concerning the taking of the watch and extracts from the STCW95 Code (Part A - chapter VIII) are shown below.

2. Responsibilities of the Officer on Watch

The Officer on Watch is the representative of the Master and he is primarily responsible at all times for:

- The safe navigation of the ship
- The compliance with the International Regulations for Preventing Collisions at Sea
- The safety of life at sea
- The avoidance of damage to the environment
- The compliance with all the rules, including ISM and ISPS Code.

He receives his instructions from the Master either directly or through his standing or special orders. He gives clear orders, instructions to the crew member under his responsibility. These crew members report to him.

3. The watch

A proper look-out shall be maintained at all times. It consists of (but is not limited to):

- Maintaining a continuous vigilance by sight and hearing as well as by all other available means, with regard to any significant change in the operating environment.
- Full appraising of the situation and the risk of collision, stranding and other dangers to navigation,
- Detecting ships or aircrafts in distress, shipwreck persons, wrecks, debris and other hazards to safe navigation.

The look-out must be able to give full attention to the keeping of a proper look-out and no other duties shall be undertaken or assigned which could interfere with that task.
The duties of the look-out and helmsman are separate and the helmsman shall not be considered to be the look-out while steering.
When the helmsman is assigned to the look-out (in case of poor visibility), this remains under the responsibility of the Officer on watch, who will give his instructions in consequence.

4. Reinforced Look-out

At any time, the Master or the Officer of the watch has the ability to reinforce the look-out. For safety or security raisons, the Master has the ability to maintain a look-out on decks or other places whenever he finds it necessary.

5. Calling the Master

Calling the Master, at any time, must be considered as a normal action. This is an essential reflex when in a doubt, an event which is outside routine or with a potential danger. The confidence which must be established between the Master and the Officers on watch can only exist if the Master knows that he will be always called in good time and whenever necessary and that the Officer on watch knows that he can call the Master without worrying, at any time, and for any reason.

The Officer in charge of the navigational watch shall notify the Master immediately:

- If restricted visibility is encountered or expected, in accordance with the Master's standing orders,

- If the traffic conditions or the movements of other ships are causing concern,
- If difficulty is experienced in maintaining the heading and following the planned course,
- On failure to sight land, a navigation mark, or to obtain soundings by the expected time,
- If, unexpectedly, land or a navigation mark is sighted or a change in soundings occurs,
- On breakdown of the engines, propulsion machinery remote control, steering gear or any essential navigation equipment, alarm or indicator,
- If the radio equipment malfunctions,
- In very bad weather, if in any doubt about the possibility of weather damage to the ship or to the cargo,
- If the ship meets any hazard to navigation, such as ice or a derelict,
- On receipt of any distress message located nearby or any other message which requires a response or rapid action,
- In any other emergency or safety or security situation, or in case of any doubt.

Despite the requirement to notify the Master immediately in the foregoing circumstances, the Officer in charge of the navigational watch shall in addition not hesitate to take immediate action for the safety of the ship, the lifes, the cargo and the prevention of environment.
In particular and in case of necessity, the Officer in charge of the navigational watch shall not hesitate to use the hand steering, the engine and the sound signalling equipment, and summon supplementary crew if needed.
The directives and instructions of the Master take priority over the procedures and provisions of the manual.

5. Routine and periodic inspections on the bridge

- Prior to taking over the watch
  Refer to Card Bridge-040 “Taking over the Watch”

- At the beginning of the watch:
  Relieving officer must be aware of standing orders and other special instructions of the Master.

  - Check the position of the vessel
  - Work out the dead reckoning on chart
  - Check the errors of gyro and magnetic compass and record it on the Bridge log book.
  - Check the settings displayed on the automatic pilot.
  - Check the Main Engine RPM and parameters.
  - Check the set point of the heading alarm
  - Check the condition of the navigation lights.
  - Read the nautical information (Navtex, Standard C,..) and weather information (Facsimile, Navtex, standard C,...).
  - Inspect the settings and the operational condition of the equipments in service
  - Compare the indications of the GPS between themselves and with those of the SATCOM C.
  - Verify the volume (sufficiently high), squelch (not higher than 1/3 of the maximum value) and the channels monitored on the VHF.

- At close intervals
  - Make an all-round view of the sea.
  - Make an all-round radar survey of the sea.
  - Check position (frequency should be adapted in accordance with local conditions or Master’s instruction) Position must be compared with dead reckoning
  - Compare the indications shown on the GPS.

EXERCISES
Taking over the Watch

1. Aptitude to take over the watch

The Officer in charge of the watch shall not hand over the watch to the relieving Officer if there is a reason to believe that the latter is not able of carrying out the watchkeeping duties effectively (STCW 95), in which case the Master shall be notified.

2. Taking over the watch

Taking over the watch, even though brief must be complete. It will concern, compulsorily:

- the position, the heading, the drift, the speed and the course followed by the ship,
- the visibility,
- the ships and the navigation marks in view,
- the radar situation,
- the operational parameters of the M/E,
- the state of the transmission resources (Satcom C, Navtex…) as well as the latest notices received concerning navigation,
- and other relevant information.

The Officer in charge who is being relieved must not leave the bridge until he is sure that his successor is completely informed and that he has effectively taken the ship well in hand. The relieving Officer shall notify the Officer in charge when he takes over the watch.

2. Manoeuvring in progress

If, at any time the officer in charge of the navigational watch is to be relieved when a manoeuvre or other action to avoid any hazard is taking place, the relief of that officer shall be deferred until such action has been completed and the situation is safe.

3. Taking over the watch Check-list

When taking over the watch, the relieved and relieving officers on watch must refer to the Check-list “Taking over the watch” Bridge-040.

The relieving officer will enter « Taking over the watch performed in conformity with procedure and check-list N° …» and he will sign the Bridge Log Book.

4. Disputes between Officers on Watch

Any dispute between the Officers on Watch who are being relieved or relieving on a point which could influence the correct progress of the watch to come must immediately be brought to the knowledge of the Master who will decide on the action to be taken.

EXERCISES
Taking over the Watch

TAKING OVER THE WATCH CHECK-LIST	
The Officer who hands over the watch shall verify that:	
1. The personnel of the relieving watch is physically able to fully fullfill his tasks, notably as regards to their adjustment to night vision	
2. The relieving officer has read and understood the Master's special orders concerning the operation of the ship	
The relieving officer have been informed of the following elements:	
3. The fix position on the chart, the course, speed and draft of the ship	
4. The tides, currents, weather conditions and forecast visibility, as well as incidences on the factors on the heading and the speed or on keeping to the station	
5. The running parameters of Main Engine and the status of its remote control (bridge or engine control room)	
6. The courses to be followed by the ship during his watch	
7. The ships and other navigation marks (buoys and lights), any dangers that they represent navigational warnings and hazards likely to be encountered during the watch	
8. The gyrocompass error and the heading indicated by the magnetic compass	
9. The course settings displayed on the automatic pilot	
10. The radar situation, the range display, the movement chosen (true or relative), the targets plotted, any dangers that they represent	
11. The status of the transmission resources (Satcom B and C, Navtex) and the latest emergency or other messages received	
12. The status of the various bridge devices, in particular for fire safety, leaks, and any other information found to be useful	
13. The security measures taken if any	
14. **The relieving officer confirms that he is informed of all these points and that he perfectly handles the situation and accepts to take over the watch**	

EXERCISES
Passage Planning

1. General

Passage plan for the voyage must be done in accordance with the correct maritime customs and in compliance with the OMI Resolution A 893(21) / Guide for Voyage Planning. It aims to ensure the best safety conditions for:

- the crew and the passengers,
- the ship,
- the cargo,
- and the protection of environment.

2. The Bridge Operating Team

Passage planning (including drawing the courses) is prepared from **berth to berth** by the Navigation Officer in accordance with the Master's directives and with the instructions given by the Charterer or the Ship Owner. The planning is checked (and signed) by the Master, and brought to the knowledge of the Officers on Watch before getting under way.

Briefing prior to departure

Prior to departure, the Master shall organise a meeting gathering all the crew members involved in the conduct of the vessel. He shall make a statement of the particularities of the voyage: true courses, dangers for the navigation encountered in particular areas, safety level changes during the passage, "special" areas in which particular care will have to be taken to prevent pollution of the environment (garbage and waste disposal, sulphur rates in fuel oil…) and any other suggestions which may have consequences on the passage plan…

He shall remind the basic rules of the ship positioning control (the officer on duty having to point out the route at the beginning of his watch, using at least two different means of positioning, keeping the habit of referring to visible landmarks, not to be overconfident on the accuracy and reliability of the navigation devices, etc.)

The Master, the Chief Engineer, the Chief Officer, the Officers on duty, the Helmsmen and the Men on Watch form a team called **Bridge Operating Team (BOT).**

The Pilot shall be asked to join the team if necessary.

The BOT shall be informed of any important alteration implying a change in destination, in sailing conditions due to the weather, in safety or security conditions or any change which may imply new threats to the environment or for any other reason that the Master may consider useful, in order to take the appropriate corrective actions if necessary.

Note: Enforcing all – or part of - the above mentioned instructions, according to the local prevailing circumstances and conditions (navigation in high risk areas, navigation in overcrowded areas…) is the Master's responsibility.

3. Passage plan sheet (berth to berth)

The passage plan sheet (see sample copy Bridge-075), **signed by Master**, must be available **prior to the commencement of the voyage or passage**, and correctly displayed on the chart table at the disposal of the Master, the Officers on Watch and the Pilot. It will be filed in the Bridge Record Binder so as to keep only the current voyage and the preceding one. The passage plan which is generated using ECDIS can be used for this purpose if it contains all the relevant information and is **signed by Master**.

4. Documents to be consulted and information to be collected

EXERCISES
Passage Planning

All information relevant to the passage should be collected and analysed. Such information may be found in the following documents issued from SMS Library (updated by DPA Letter).
The Chart-Track software, as well the publications issued from the UK Hydrographic Office, allows the monitoring of new editions and corrections of nautical documents.

List of nautical documents on board (but not limited to):

- Mariner's Handbook
- Catalogue of Admiralty Charts and publications
- Admiralty Notices to mariners
- Navigational Charts, as well as the Routeing Charts and the "Pilots Charts"
- Ocean Passages for the world
- Routeing guides (recommended tracks)
- Admiralty Sailing Directions
- Admiralty List of Lights and Fog Signals
- Admiralty List of Radio Signals
- Admiralty Tide Tables
- Tidal streams charts
- Chart for application of the International convention on Load Lines
- Weather and Oceanographic Nautical Information
- Area and Coastal Warnings (Navtex, Safetynet…)
- Local warnings broadcasted by VHF (MRCC, VTIS…)
- Weather forecasts (Weather Charts, Port Master's Office…)
- Distance tables
- Port Authorities, Company information…

5. Items concerning the condition of the ship and constitution of the crew to be taken into account

All information relevant to the conditions of the ship has to be collected and analysed. Among these but not limited to:

- The ship must be seaworthy
- The condition and the availability of the main engine and auxiliaries, the anchoring gear, the navigation and radio-communication equipment…
- The cargo condition, lashing and stability
- The cargo type (Dangerous goods onboard or not)
- The trim, the ship's draft/air draft, and the limitation of shearing forces and bending moments,
- The manoeuvring characteristics of the ship.
- The availability and the experience of the operating personnel…

6. Main rules for planning and plotting courses

The Navigation Officer will prepare the passage in accordance with the Master's instructions. He must also keep in mind the following rules:

- Collect the relevant information and ensure that the documents to be used are up to date.
- Choose charts with the appropriate scale, updated with the latest corrections.

6.1 Plot safe courses:

EXERCISES
Passage Planning

The courses are to be plotted on the charts for the complete passage taking into account the following points (but not limited to):

- Ensure that the GPS setting is in accordance with Navigational Chart reference (WGS84),
- Ensure a sufficient clearance under the keel in all circumstances, taking into account:
  - the forecast tide status and any squat effect,
  - the influence of wind and barometric pressure,
  - the accuracy of the hydrographical data,
  - the change of water density,
  - the effects of rolling and pitching,
  - the ship's hogging and sagging,
  - the reliability and accuracy of ship's drafts observed and calculated (The ship's speed could be reduced to limit the squat effect when passing shallows waters),
  - the safe distance from any obstruction or danger.
- Leave allowance for manoeuvring and altering the course depending on the ship's characteristics and the local conditions (weather, currents, etc.),
- Plan easy change of course,
- Choose ocean courses depending on the weather forecast / currents,
- Ensure that an easy check of the ship's position is possible (by alignment, guard course, radar distance…),
- Courses in way of traffic separation scheme (joining and/or crossing) should be in accordance with the COLREG,
- Check that the appropriate navigation instruments are available and that the instrument errors have been taken into consideration. Where necessary, they are to be set to the ship's time or UTC,
- Take into account the times and distances required for speed increasing and slow down,
- Anticipate emergency situations and prepare emergency response plan (emergency anchoring, alternative courses),
- Consider dangerous or forbidden area.

6.2 Information to bear on Passage Plan

All information relevant to the safety of the passage has to be clearly pointed out on the passage plan. This includes but is not limited to:

- The areas to be avoided,
- The true course – true bearing, distance between turning points, important land/seamarks,
- The Way Points, and when necessary turning radius,
- The safe bearing and safe distances from dangers,
- The temporary and permanent navigation dangers such as wrecks, undersea cables, military exercises areas, war zones, shallow waters and other obstructions,
- Changes in the VTS areas, VHF reporting points and calling channels, points to pick-up the pilot,
- For navigation using GPS, any corrections which must be made to the positions shown on the chart and any other special useful information in the area concerned.

The following information will also be shown on the charts in accordance with Master's instructions, but do not overload the chart with too much information:

- Sounding lines in order to check the echo-sounder,
- Lights visibility,
- Currents,
- Arrangements concerning the pilot ladder and the anchoring position, the points for calling the Master, the time for the crew to standby or the time for the watch to be doubled,

- Radar bearings and distances from important land/seamarks,
- Minimum underkeel clearance,
- Areas for Security Level change,
- Special instruction to prevent the pollution of the environment (SECA areas for example).

NB: the information will be written on the charts using pencil only.

7. Use of charts

- **Paper charts**

Make sure that the charts for the passage to come are all available in a drawer in their order of use.
Only the chart in use and routine chart will be available on the chart table.
Used charts will be immediately removed but the courses and indications shown will not be erased before the end of the crossing and with Master's agreement.

- **Electronic charts**

The turning points (Way point) must perfectly correspond between the different navigation aids (electronic charts, GPS, radar …) and the track on the paper charts.

8. Security Level

The information about the ship security level, as well as the port of call security level is to be mentioned on the Passage Plan. Whenever necessary, updating the assessment is to be carried out (see Ship Security Plan)

9. Results of the passage

On completion of each passage, the following will be calculated:

- time of sea passage,
- distance
- average log speed and ground speed
- time and distances in manoeuvre

These data will be recorded in Log Book and used for Master's and C/E reports.

10. Debriefing

A final debriefing shall be organised to enable the Bridge Operating Team to report the possible corrective actions to be taken for a smoother running of the next voyage: estimated positions, information sources, positioning systems used, conduct of the vessel, steering and propulsion, sea keeping qualities of the ship, cargo stowage, quality of watch keeping, meteorological observations, communications, etc.

EXERCISES

Passage Plan - Example

From: **Security level:**

To: **Security level:**

Voy N°:

Quay to quay distance: **Ship's Security level:**

Full away distance:

Minimum Under keel clearance:

Average speed Knots	Crossing time

Point	Lat/Long	Wpt No.	Rv	Distance	Covered	Remains	Security Level	COMMENT*

<u>* Relevant Port of refuge or safe anchorage area or machinery status change are also indicated in this column.</u>

EXERCISES

Passage Plan - Example

Chart sequence:

Light books to be used:

Nautical instructions to be used:

Other documents to be consulted:

Tide status

Departure port

	AM		PM	
Date	**Time**	**Depth**	**Time**	**Depth**

Nautical information to be consulted:

Arrival port

	AM		PM	
Date	**Time**	**Depth**	**Time**	**Depth**

Weather forecast information to be consulted:

Pilot communications:
Departure time: **VHF**

Arrival time: **VHF**

Vessel Traffic Services:

Port communications:
(VHF frequencies)

EXERCISES
Passage Plan - Example

Departure from:

		Port	Sea
		metres	metres
Ship's draft	**bow**		
	stern		
Trim			
Maximum vertical clearance			

Arrival at:

		Port	Sea
		metres	metres
Ship's draft	**bow**		
	stern		
Trim			
Maximum vertical clearance			

Passage plan approved by: Master ……

Signature ……

Date …….

EXERCISES
Pilot

1. Pilot Boarding

In due time (local regulations, master's order …) the Officer on Duty will contact the pilot station or the Port Authority.

- Information to be given to the pilot station and/or to the Port Authority :
  - ETA at the pilot station
  - Ships maximum draft (air draft eventually)
  - Ship security level

- Information requested from the pilot station and/or the Port Authority :
  - Position and time of pilot boarding
  - Pilot boarding speed
  - Pilot ladder arrangements
  - Port facility security level

He will give his instructions for the arrangement of the ladder (port or stbd side, level above water)
He will make sure that the points scheduled in the "Preparation for Arrival" card Bridge-160 have indeed been dealt with and will fill in the check list for Pilotage.

2. Responsibility for operating the ship

Despite the duties and obligations of pilots, their presence on board does not relieve the Master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship.

3. Information exchange between the Pilot and the Master

The information exchange between the Master and the pilot consists in a double flow of information from the Master to the pilot and from the pilot to the Master.

From the Master to the Pilot:
The Master needs to advise the pilot of the handling characteristics of his ship, in particular any unusual features and relevant information such as anchor condition, engine type and control and personnel availability". .

- The Pilot-Card is to be given to the Pilot on his arrival.
- The pilot is to know the position of the life saving devices at his disposal

From the Pilot to the Master:

- The passage plan from the pilot station to berth
- The weather conditions,
- The preparation and the progress of the manoeuvre,
- The position of the berth,
- The use of tugs and the use of other services (mooring boat and quay mooring man).These services have to be clearly explained by the Pilot to the Master
- Under keel clearance

The Master and/or the officer in charge shall co-operate closely with the pilot and maintain an accurate check on the ship's position and movement.

4. Application of the directives of the pilot

EXERCISES
Pilot

The navigation between pilot station and berth has been discussed between the pilot and the Master. The passage is carried out at pilot advice and Master's order.
If in any doubt as to the pilot's actions or intentions, the officer on watch shall seek clarification from the pilot and, if doubt still exists, shall notify the Master immediately and take whatever action is necessary before the Master arrives.

5. Pilot disembarking

In due time (local regulations, master's order …) the Officer on watch will know:

- Position and time of the Pilot disembarking
- Maximum vessel's speed for disembarking
- Instructions for the pilot ladder arrangement
- All requests done by Pilot for disembarking

Pilot's leaving will be under the responsibility of an Officer, Pilot will be accompanied by Officer from Bridge to pilot ladder.

6. Recordings with pilot on board

The officer on watch will record in the Bridge Log Book the following information (but not limited to):

- Pilot's name
- Boarding / Leaving time
- Navigation points or marks
- Other manoeuvring steps
- Etc …

7. Check-list for pilotage

The check-list for pilotage is to be filled and signed by Master and Pilot.

Attached: Pilot card

EXERCISES
Pilot

PILOTAGE – Check List

This checklist is to be completed by the Master or officer on watch upon arrival of the pilot on the Bridge.	
1. The pilot is informed of ship's heading, speed, engine setting and draught.	
2. The Pilot is informed of position of life saving appliances provided on board for his use	
3. Details of proposed passage plan have been discussed with pilot and agreed with Master	
• Radio-communications and reporting requirements	
• Bridge watch and crew stand-by arrangements	
• Deployment and use of tugs	
• Berthing/anchoring arrangements	
• Expected traffic during transit	
• Pilot change over arrangements if any	
• Tide, currents, wind force/direction, visibility expected during pilotage	
4. Pilot card and ship's particulars have been handed to the pilot	
5. The responsibilities within the bridge team for the pilotage have been defined and are clearly understood	
6. The language to be used on the bridge between ship, pilot and shore have been agreed	
7. The correct lights, flags and shapes are being displayed	
8. Others: i.e. basic information for use of the RADARS (mode) and VHF (change of channels)	

Port	**Date**	**Master**	**Pilot**
ARRIVAL / DEPARTURE		**Name/Signature**	**Name/Signature**

EXERCISES
Pilot

PILOT CARD

M/V **DATE : _____**

CALL SIGN: C 6 T T 2 **PORT : _____**

IMO No.: 9286267 **MMSI: 311768000**

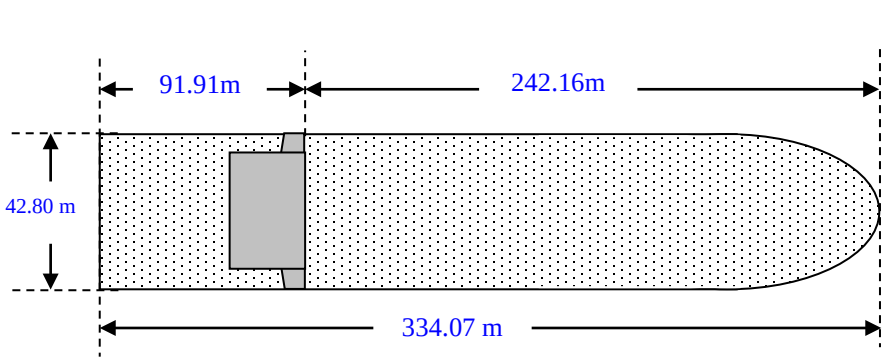
Displacement: **135161.8 mt** Deadweight : **101530 mt** **Year built: 2004**

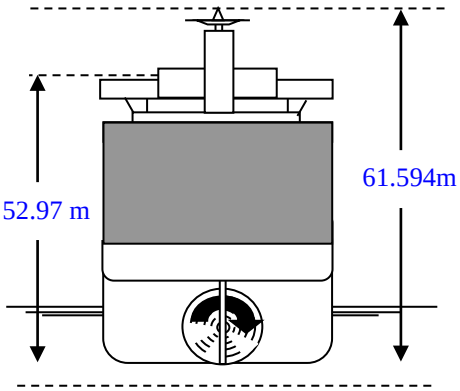
Gross Tonnage: **91,038** Net Tonnage: **55,521**

Summer draft: **14,522 m** Containers capacity **8,478 TEU**

Length 0A: **334.07 m** Breadth: **42.8 m**

Draught aft: m fwd: m **Air draft :** m





Main engine: Hyundai-B&W 12k98mc (MCR:93,360HP/69670Kw x 94 rpm)
Propeller: Right-hand type 6 blades fixed pitch propeller
Thruster: one bow thrusters, Power: **2,500 Kw / 3,350 HP**

	Speed rpm	Loaded - ballast	
Full ahead	65	17.19	19.60
Half ahead	50	13.22	15.07
Slow ahead	35	9.25	10.55
Dead Slow ahead	24	6.34	7.23
Dead slow astern	24		
Slow astern	35		
Half astern	50		
Full astern	65		

Rudder: semi balanced hanging type
Maximum angle: **35 °**
Time hard-over to hard-over: **25 sec.**
Anchors: weight **14 mt**
Cables PS: **13 shackles**;
STD: **14 shackles**
1 shackle = **27.5 m**
Time from full ahead(sea) to full astern(man) = 7min 10 sec.
Min. Ahead: 20RPM @ 5.24 Kts
Max. output astern: 27%

Maximum number of consecutive starts: More than **17**

EXERCISES
Pilot

Life jacket located at: **Chartroom**

EXERCISES
Coastal Navigation Narrow Waters

1. Preparation

Coastal navigation and navigation in narrow waters has been planned by the passage plan.
The navigation Officer will consult relevant publications (Admiralty or SHOM publications)

Before arriving near to the coast and to narrow waters, the Officer on Watch will check in particular the following (but not limited to):

- The charts and official documents are updated with the latest corrections
- The current ship's draft is displayed on bridge
- The effect of SQUAT effect has been considered
- Tide of current information are available for the time of the passage
- The traffic separation schemes have been considered
- The latest nautical and weather information has been collected and analysed (Navtex, Notice by VHF, facsimile...)
- The routes have been traced at a safe distance from dangers
- The chart with the appropriate scale is to be used
- The Engine Room has been advised
- The watch will be reinforced if necessary and the Helmsman will take the steering manually
- The second steering motor will be started and the steering tested manually
- The two radars will be in service and set to compatible scales with the current navigation
- The recording sounding equipment will be used (date and time)
- The water tight doors will be closed.
- All measures have been taken to protect the environment from pollution (MARPOL)

2. Fix the ship's position

The Officer on Duty, at the beginning of his watch, has to point on the route, the ship's estimated hourly position. Roman numerals have to be used for estimated position. Actual position and estimated position are to be compared periodically.
In coastal waters the officer on watch shall positively identify all relevant navigation marks" (STC W section A – VIII convention 2-48)

The position will be determined by various relevant methods (bearing, distance, electrical radio aid, etc.) at regular intervals which become increasingly short as land approaches and depending on weather or sea conditions (wind, current) and navigation traffic. Fixes obtained by GPS shall be used only to confirm the ship's position.

In case of a large difference between actual position and the planned course, the planned course must be re-joined as soon as possible and within ***safe practice***. A new course must not in any circumstances be re-drawn to join directly the following way point.
The gyro error and the deviation of the magnetic compass will be checked regularly.
When navigating in narrow waters, radar piloting techniques (clearing circle or bearing, off-center EBL, etc.) can be used as long as the Officer on Duty is familiar with these techniques.
Passing over observable alignments shall be used to check the gyro error.

N.B: Coastal navigation should give the opportunity to compare the GPS position with the observed position.

3. Traffic separation scheme

These traffic separation schemes are described in the SHIP'S ROUTING Binder published by OMI. Ships routing is part of the ships navigation publications bridge library.
When navigating in or near these traffic separation schemes, ships must conform absolutely to rule 10 of the regulations for preventing collisions at sea (COLREG).

4. Report systems (VTS)

These systems are described in the Admiralty or SHOM publications, and their compulsory or voluntary system nature is given there. SINREP, SURNAV, AMVER, CALDOREP are some examples.
These reports generally include information on the characteristics of the ships in particular, her crew, draft, cargo, position, route and speed. The Officers on Duty will take care to prepare the report in due time. If the length of the report constitutes a risk, a waiting time will be requested from the organisation concerned, the report will only be started again when that risk is no longer present.
Sending these messages should not disturb the officer on watch from his essential tasks, in particular the safety of navigation.

EXERCISES
Navigation in Restricted Visibility

PRECAUTIONS TO BE TAKEN IN CASE OF RESTRICTED VISIBILITY

Master to be advised immediately. (STCW 95)

Depending on the circumstances, the Officer on Duty will decide whether it is necessary to take all or part of the following measures. He will comply with the Master's standing and special orders, in particular with the minimal visibility when he must call him.
The Officer on Duty will enter actions taken with reference to this list in the Log Book. He will, however, indicate points which have not been satisfied and why, as well as the measures taken which are not planned in this list.

1. Advise the Master	
2. Comply with rule 19 of the Regulations to prevent collisions (COLREG)	
3. Use the audible signals and navigation lights as per COLREG	
4. Call the Helmsman and an other watchman, if necessary, to reinforce the look-out by sight and hearing	
5. Maintain a close watch on the 2 radars	
6. Maintain a close VHF watch on Channel 16 and other appropriate VHF channels for the navigation area	
7. Advise the Duty Engineer to keep engine ready for immediate manoeuvre if not AUT	
8. Proceed at a Safe speed according to COLREG	
9. Start the second steering motor if necessary (hand steering if necessary)	
10. Adjust electric production for manoeuvring conditions and according to engine instructions.	
11. Check closure of all watertight doors	
12. Make sure that the GPS and the navigation aids are operating correctly	
13. Start the echo sounder if necessary	
14. Consider the possibility of anchoring if there are doubts concerning the position	
15. Bring attention to AIS information, but with caution due to possible erroneous information	

EXERCISES
Navigation in bad weather & very cold conditions

1. General

Under some circumstances a ship may have to sail in bad weather conditions. Due to bad weather, the passage plan can be modified. Consequences are possible to endanger the crew, the ship, the cargo. Sailing in bad weather may affect ship schedule and have commercial and economical consequences.

In order to anticipate bad weather and, as far as possible, to avoid navigation in disturbed areas, all relevant information and means should be used. Among these:

- Local observations: wind, sea, clouds, and the monitoring of their evolution (barometric pressure, temperature,…)
- Regular information from shore based services (weather charts by facsimile or other means)
- Weather forecast (Navtex, Safetynet, Bulletins distributed by VHF…)
- Taking into account of advises from meteorological routeing (if any)
- Consulting of Nautical publications in a way of preventing and managing navigation in bad weather

The Master can also make contact with the "***Fleet Navigation & Support Center***" which can help and support him if necessary

.

A regular and permanent follow-up of the weather condition is one of the main tasks of the Officer on watch. The Officer on Watch should advise the Master of any significant change or abnormal development in weather conditions.

2. Measures to be taken when bad weather is announced

- Advise the Master
- Check special instructions in Master's orders
- Take all measures according to check-list "Measures to be taken in bad weather"

The actions taken will be recorded in the Bridge Log Book, by reference to this list.

3. Measures to be taken in bad weather

With the Master's agreement, provisions of the check-list measures to be taken in bad weather (2nd part, points 18 to 20), will be freely adopted (but not limited to).The Officer on Watch will record, in the Log Book, all steps taken.

Due to sea conditions specific steps may have to be implemented:

- Crew: fatigue, stress, injury may happen because of ship movement. Measures should be taken to reduce these movements to acceptable standards, as far as possible
- Propulsion: power and torque must be checked at regular intervals, and have to be reduced in order to avoid damage to propulsion plant.
- Hull: excessive fatigues and stresses have to be considered and appropriate measures should be taken to reduce them to accepted level, in order to avoid damage to ship structure.
- Cargo: Lashing equipments: maximum load should be considered and ships movement (rolling, slamming, pitching and swinging) reduced to acceptable value in order to avoid breaking of lashing equipments and loss of cargo.

Therefore following factors must be taken into consideration (but not limited to):

- Condition of the sea and of the wind
- Heading compared to the sea and the wind

- Any ballast impacts slamming, ballasting conditions in a way of stability
- Ship's speed
- Clearance under the keel
- Age of the ship, condition of the structure of the ship etc.
- Proximity of dangers

4. Special conditions

Special care has to be taken in following situations:

- Reduction of ship stability on the crest of the waves, when sea is coming from aft or quarter and where resonance phenomena may happen.
- The natural tendency to fall across the waves inducing excessive rolling
- Parametric rolling for big ships when reducing speed, sea head on.

A sea with a wave length of between 1 and 1.5 times the length of the ship is particularly dangerous.
The Officers of the Watch must be aware that they can encounter exceptional waves in certain regions and under certain conditions.

5. Navigation in very cold conditions

Check special instructions in Master's orders and take all measures according to check-list "Measures to be taken in case of very cold conditions".

EXERCISES
Navigation in bad weather & very cold conditions

MEASURES TO BE TAKEN IN CASE OF BAD WEATHER

Depending on circumstances, the Officer on Watch will take all or a part of the following measures, according to Master's standing orders or special instructions.
The Officer of the Watch will enter the actions taken referring to this list in the Log Book. He will, however, indicate points which were not satisfied and why, and also measures taken which are not planned in this list.
Actions to be taken in addition to the Engine Procedure Engine-110.

This Inspection Sheet must be completed in case of risk of bad weather.	
1. Advise the Captain	
2. Advise the Engine Room Department (Engine Procedure Engine-110)	
3. Advise the crew and passengers of the risk of bad weather	
4. Check closure of the all watertight doors as well the hold hatchways	
5. Lock the scuppers / Check the scuppers	
6. Lash all the equipment and mobile objects on the deck and in stores	
7. Have all the equipment and mobile objects in the Engine Room and stores lashed	
8. Have all the equipment and mobile objects in the kitchen, the lockers and the accommodation lashed	
9. Check and rework, where necessary, the lashing of the containers	
10. Check the lashing of the gangway and pilot ladders	
11. Check the lashing of the anchors and install bucklers on hawse pipes	
12. Close the ventilation dampers on the deck	
13. If possible, change the stability module in order to moderate the rolling acceleration	
14. If necessary change the course to avoid dangerous areas in bad weather	
15. Take the manoeuvring winches out of gear and brake on, electric breakers open	
16. Open the inlet seawater valve on bilge eductor for chain lockers and fwd stores	
This Inspection List must be completed in case of bad weather on Master's orders	
17. Prohibit access of external decks to the crew and the passengers	
18. Alter course to reduce the effects of rolling and pitching	
19. Reduce the speed to suit the forces and fatigue on the ship and on the cargo, nevertheless keeping sufficient speed to be able to handle	
20. Start the second steering motor whenever necessary.	
21. Be ready to switch on manual steering if necessary	
22. Adjust electric production to be ready for manoeuvring conditions if necessary	
23. In case of a tropical storm, or winds higher than 50 knots, transmit weather reports or danger messages (see SOLAS Chapter V)	

EXERCISES
Navigation in bad weather & very cold conditions

24. Double watch may be requested for sharp look out and safety	

MEASURES TO BE TAKEN IN CASE OF VERY COLD CONDITIONS

Depending on circumstances, the Officer on Watch will take all or a part of the following measures, according to Master's standing orders or special instructions.
The Officer of the Watch will enter the actions taken referring to this list in the Log Book. He will, however, indicate points which were not satisfied and why, and also measures taken which are not planned in this list.
Actions to be taken in addition to the Engine procedure Engine-140.

In case of snow, freezing or frost:

Remove snow or ice which has accumulated on access and passages on decks. If this is not possible, prohibit access.	☐
In port, make sure that the gangway is free of ice and snow.	☐
Always drain the bilge wells when a risk of cold weather is announced.	☐
The crew must be warned of the risk of cold, particularly when there is wind, and to wear appropriate clothing for moving and operations on deck	☐
When starting equipment make sure that it is not jammed (Radar, crane, provisions crane, winches, etc.)	☐
In port, make sure that : - the locks are disengaged on hatch covers - the hatch covers spreader sockets, as well the lashing eyes are free.	☐
When opening hatch covers check that the seals are not wrenched off.	☐
The controls for winches, control stations and repeaters on the wings must be protected.	☐
When ballasting, the risk of ice in the ballast can complicate all the operations and this must be taken into account.	☐
Collect any useful tools to clear important and dangerous amount of ice such as shovels, scrappers, etc…	☐

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EXERCISES
Preparation for Arrival at the Port or at Anchor

1. Master's order

The Master gives his instructions in his Special Orders and/or on the chart:

- The time/position where he must be advised,
- The position where to start the slow down for manoeuvring speed,
- If necessary, instructions for arrival and details of the tasks to be accomplished (calling the pilot, the Master, personnel, etc.) and on the provisions to be taken (reinforcement of the watch).

2. Directives for preparation for arrival

A minimum list of points to be checked is shown in the "**Check list before arrival**" here-enclosed. The chronology of the arrival preparations is given as an indication only; it can be modified in accordance with circumstances and depending on the instructions from the Master (within/outside working hours, the waters,…)
The officer of watch will record actions taken referring to this list in the Log Book.

End of Sea passage (EOSP)

- Record the time and the position in Log Book, and transmit the information to ECR
- Switch to manual steering when necessary
- Check if thruster(s) are available
- Call the crew in due time, for manoeuvring stations.

Finished with engine (FWE)

- Time of FWE to be given to ECR and recorded in the Log Book
- In accordance with ECR :
    - Stop the thruster(s)
    - Transfer the control of the propulsion system to the Engine Room if necessary
- Stop the steering motors
- In night-time, switch on the deck lights (decks, gangway, deckhouse)
- Switch off the navigation lights
- Make sure that special lights according to local regulation are switched on.
- Make sure that arrangement of flags is correct ("H" flag down, as well special shapes)
- Set the radars on "Standby"
- Switch off Echo Sounder and recorders (sounder, course, engine orders)
- VHF set on louder volume but must be kept audible. Same action for ASN VHF and MF/HF
- Up dating of AIS information ("Moored" or "At anchorage")
- Stow away the binoculars, sextants, Walkie-Talkies to prevent stealing

When Leaving the bridge

- Lock all Wheelhouse doors.
- Switch the deck alarms to the "Port" mode (in accordance with Ship's Procedure)

EXERCISES
Preparation for Arrival at the Port or at Anchor

CHECK LIST BEFORE ARRIVAL AT PORT OR ANCHORAGE		
The Officer on Duty will enter actions taken referring to this list in the Log Book. He will however indicate the points which have not been satisfied and why, as well as the measures taken which are not planned in this list.		
1	ETA reported to Pilot Station at appropriate time	
2	Vessel Traffic Information Report made (if required by local regulation)	
3	Passage plan, Port Information File, Sailing Directions, other navigation information on hand	
4	Minimum and maximum depths of water in port approaches, channels and at berth calculated	
5	Draft/Trim limitations noted	
6	Ballast re-arranged if necessary to meet Draft/trim limitations	
7	Drafts/Trim calculated and displayed on bridge	
8	Tide and current information calculated and posted	
9	Navigational warnings received	
10	Weather report received	
11	VHF channels for various Port Services posted	
12	Vessel Information for Pilot Card ready	
13	Master called	
14	Duty engineer informed of ETA and vessel's intentions	
15	All navigation equipment tested and availability confirmed	
16	Whistle controls	
17	Steering gear tested in primary and secondary systems / both pumps running	
18	Bridge / Engine Room Clocks synchronised	
19	Recorders (Course, Engine orders, sounder) checked and signed	
20	All appropriate flags / Light signals displayed	
21	Manual steering engaged in sufficient time for helmsman becomes accustomed	
22	Pilot ladder arrangements prepared	
23	Anchors ready to use	
24	Gradual decrease of Main Engine from sea speed to manoeuvring speed	
25	Prior to Pilot boarding , test Main Engine Astern	
26	Bow thruster(s) ready	
27	Crew called to stations Fore and Aft	
28	Primary and secondary communications between Bridge and Mooring stations verified	
29	Mooring equipment prepared and Winches tested	

EXERCISES
Anchoring

1. Preparation before anchoring

Prior refer to Card Bridge-160 "Preparation for arrival at the port or at anchor"

The anchor position is fixed by Port Authorities or Master who will plan the approach of anchorage area.
The Anchor party is advised in due time and informed which anchor to be used and how many shackles to be paid out. The anchor party will wear safety goggles during the anchoring.
The Chief engineer is also advised in due time according to his instructions.

The Officer on Duty will take all dispositions according to the check-list here enclosed. Actions taken referring to this list will be recorded in the Log Book.

2. Anchoring

Anchoring is under the Master's responsibility.

When the anchor is dropped
The duty officer will fix the position on the appropriate chart with the largest scale available.

When vessel has been brought up
The duty officer will make arrangements according to the check-list here enclosed.

3. The watch at anchorage

Watch organization

Except special orders from Master, same dispositions are applied as for ocean navigation watch: dead man alarm system used during daylight and calling helmsman if necessary.

Routine for the OOW

The officer on watch must:

- Make sure (at sufficiently frequent intervals) of the good holding of anchor position with landmark/seamark, radar and GPS,
- Make a good and sharp lookout and check any movement of vessels in vicinity,
- Check windlass and chain from the bridge (if video camera fitted),
- Ensure that the ship exhibits the appropriate lights and shapes and that appropriate sounds signals are made in accordance with all applicable regulations,
- Observe meteorological and tidal conditions (reverse of current) and the state of the sea,
- Arrange or maintain piracy measures if necessary (according to Security Level),
- Ensure that the state of readiness of the Main Engine and other machinery is in accordance with the Master's and Chief Engineer's instructions,
- Make a proper watch on VHF channels as per local regulations or Master's instructions.
- Takes measures to protect the environment from pollution by the ship.

The officer on watch must notify the Master if:

- The vessel is dredging on the anchor,
- Important change in swinging of the vessel,
- Important change of weather conditions,
- Another vessel is dropping anchor to close from the ship or is dredging his anchor,
- Visibility deteriorates,
- Any other doubtful situation (VHF calls, change of planning for cargo operations…) and

according to Master's orders.

In all circumstances the fact of warning the Master does not exonerate the Officer of the Watch from taking immediate measures to ensure the safety of the ship and of persons, or to prevent from any pollution.

4. Getting underway from anchorage

Getting underway remains under the Master's responsibility with or without pilot contribution (according to local conditions and rules)
Before getting under way, the officer on watch will check prior to departure the points listed in the card Bridge-080 "Check-list before getting under way".

- The Anchor party is advised in due time to heave up anchor.
- In night time, the OOW will adjust the deck lights according to instructions
- The OOW report on the Log Book the time of starting to heave up anchor.

When the anchor is aweigh, the officer on watch will:

- Switch off the anchor lights,
- Switch on the navigation lights,
- Haul down the anchoring shapes,
- In restricted visibility, sound the appropriate signal,
- Report on Log Book the time of getting under way,
- Note the state of anchor when the anchor is high,
- Check any vessel's movement into anchorage area and advise the master for any close-quarter situation.
- Fix the ship's position on the chart regularly; taking into account drift due to ship's speed and current.

Following Master's instructions:

- The anchor will be brought home and secured
- The anchor party released
- The deck light will be adjusted.

EXERCISES
Anchoring

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CHECK LIST ANCHORING

The Officer on Duty will enter actions taken referring to this list in the Log Book. He will however indicate the points which have not been satisfied and why, as well as the measures taken which are not planned in this list.

Preparation before anchoring		
1	Anchoring position fixed by Master or Port Authorities	
2	Chief engineer advised	
3	Anchor party advised	
4	Check echo sounder and start his recorder	
5	Thruster(s) ready if agreed by Master	
6	Switch on lights on forecastle and/or alleyways at night time	
7	Record direction/force of wind and current	
8	Anchoring shapes, lights and flags ready	
9	Anchor party advised of which anchor to be used and how many shackles to be paid out	
When letting go the anchor		
10	Fix the position on the appropriate chart and note time of anchoring	
When vessel has been brought up		
11	At night : switch on anchor and deck lights and switch off navigation lights according to instructions	
12	On day time, exhibit anchor shape	
13	In restricted visibility, sound appropriate signals as per regulation	
14	Note position, time, and anchor used and numbers of shackles which are paid out	
15	Report to Port Authorities (Position and time + instructions)	
16	Draw the swinging circle on the chart	
17	Switch on the anchor alarm on GPS if fitted	
18	Stop thruster(s)	
19	Stop one radar if possible	
20	Stop steering motors (depending of weather conditions)	
21	Engine on Stand-by with notice as Master's orders	
22	Up dating of AIS information ("At anchorage")	
At anchorage		
23	Good watch on VHF channels required by local regulation and on Master's instructions	
24	Check of position at regular and frequent intervals	
25	Observe any movement of vessel on anchorage area	
26	Maintain a proper look-out and arrange/or maintain inspections rounds according to Sec. level	

EXERCISES
Use of the propulsion system

DEPARTURE PROCEDURE

- ONE HOUR NOTICE TO ENGINE ROOM.
- AFTER 40 – 45 MINUTES BLOW MAIN ENGINE. COMMAND IS IN ENGINE ROOM.
- CHECK THERE IS NO OBSTRUCTION FOR PROPELLER.
- AFTER ALL VALVES ARE CLOSED CH. ENG. WILL GIVE COMMAND ON THE BRIDGE. **BRIDGE** LAMP FLASHES AND BUZZER SOUNDS ON THE *BRIDGE IND. PANEL – (COMMAND POSITION)*.
- PRESS IT. LAMP CONTINUES WITH STEADY LIGHT.
- ON *ME TELEGRAPH RECEIVER (SUB TELEGRAPH MODE)* **FWE** LAMP FLASHES. PRESS **STAND BY**. LAMP FLASHES AND BUZZER SOUNDS TILL ENGINEERS CONFIRM.
- CHECK THAT THERE IS ENOUGH STARTING AIR. ABOUT 28 BARS.
- FIRST COMMAND IS USING A LOT OF AIR DUE TO SLOW TURNING.
- AFTER DEPARTURE AND FAOP PRESS **AT SEA** ON *ME TELEGRAPH RECEIVER (SUB TELEGRAPH MODE).*IT MUST BE ACKNOWLEDGED BY ENGINE ROOM.

CHANGING COMMAND TO THE BRIDGE WING:

- TURN ANTI-CLOCKWISE ENGINE ROOM TELEGRAPHS HANDLE FOR 90 DEG.
- PRESS **PORT OR STARB. BRIDGE WING** ON *BRIDGE IND. PANEL (COMMAND POSITION).*
- IF HANDLES ARE NOT MATCHING YELLOW LAMPS FLASHES. ADJUST HANDLE ON THE WING TO MATCH WITH HANDLE ON THE BRIDGE AND THE LAMPS CONTINUE WITH STEADY LIGHT.

CHANGING COMMAND FROM THE BRIDGE WING TO THE BRIDGE:

- TURN CLOCKWISE ENGINE ROOM TELEGRAPHS HANDLE FOR 90 DEG.
- PRESS **BRIDGE**. LAMP CONTINUES WITH STEADY LIGHT.

ARRIVAL PROCEDURE

- 25 TO 30 MILES BEFORE PILOT STATION OR ANCHORAGE GIVE 1 HOUR NOTICE TO ENGINE ROOM.
- MAXIMUM RPM ARE 94.
- FROM 94 RPM TO 65 RPM (MANEUVERING RPM) TAKES ABOUT 30 MINUTES I.E. 12.5 NM.
- FROM 80 RPM TO 65 RPM (MANEUVERING RPM) TAKES ABOUT 15 MIN. I.E. 5.5 NM.
- FROM 65 RPM (FULL MANEUVERING RPM) TILL 0 RPM (SPEED 6 KNOTS) TAKES ABOUT 8 MIN. I.E. 3 NM.
- ALL ABOVE SUBJECT TO SHIP'S LOAD, CURRENT AND WIND.

AT SEA

- CHECK THAT MAX TORQUE AND MAX POWER ON REQUIRED RPM ARE NOT EXCEEDED. NOTES ARE ON THE *BRIDGE IND. PANEL.*

SEE ALSO "KONGSBERG" INSTRUCTION FOR BRIDGE OFFICER ON DUTY.

EXERCISES
Use of the radar and the ARPA system

Bridge Master E Radar OPERATION:

Note: Before Switching-on / Using Radars, Check and Confirm that there are no Person/s on radar mast or near the Radar Scanner, and that the Scanner is clear from any obstructions.

Getting Started:

In Stand By mode:

The following operations should be carried out to select **Transmit** mode**. Note –** if a **Scanner Control Unit** is fitted, and it is set to **OFF, ensure that it is safe to switch it ON (i.e. that no one is working on, or is in the vicinity of, the scanner).**

- If fitted, ensure that the scanner control unit is on.
- Using the trackball , position the screen cursor over the **Transmit** soft-key.
- Left click to select (press and release the left key associated with the trackball).

Screen Cursor:

The position of the on-screen cursor is controlled by the **trackball.** When the cursor is outside the video circle it is displayed as a **small white arrow.** As the arrow moves over a caption which can be selected, the **box** around that caption is highlighted in white and two small boxes (representing the left and right keys) appear next to the arrow head cursor one or both of these boxes is filled in white to indicate which key(s) are active. **When the cursor is positioned over a highlighted caption**, a single **click with the left key will normally select** or **deselect a function**. A **single click with the right key will normally show additional options.**

Range Scale:

Left click **on the plus (+) or minus (-) sign** to increase or decrease the range selected. A left click below the **RANGE** caption will reveal a list of the ranges available; left click on the range required or right click to exit.

Range Rings:

A set of **fixed range rings,** displayed as a number of equally spaced concentric circles (normally six) can **be switched ON or OFF.** Left click on the **RR** caption box to toggle Range Rings **ON or OFF.** When switched-on, the distance between consecutive range rings is displayed.

Motion Mode:

Left click the **motion mode** caption to toggle between **RM(T) and TM,** a right click will reveal a list of options ; left click on the option required , or right click again to exit.

RM (R) – Relative Motion, Relative Trails

RM (T) – Relative Motion, True Trails

TM (T) – True Motion

Presentation Mode:

Left click on the **presentation mode** caption to toggle between **N Up and C Up. A right** click will reveal a list of options**; left click** on the options required**, or right click** again to hide list.

H Up (Head Up): Unstabilized, Ship's Heading marker vertical.

N Up (North Up): Stabilized, True north 000 deg. At top of video circle.

C Up (Course Up): Stabilized, Ship's heading at time of selection, at top of video circle. Must be reset after a change of course.

EXERCISES
Use of the radar and the ARPA system

Selecting Transceiver:

The currently selected transceiver **(TX A or B) via the interswitch. X-Band or S-Band (X) or (S); Master or Slave selection;** the return to standby key (STBY) and Transmitter pulse length selection (SP, MP or LP).

Centre Key:

Left click to place the own ship at the center of the video circle. To off –centre own ship, position cursor over own ship's position, press and hold down left key, place cursor at required position. release the key. a right click on the soft key will reveal **MAX VIEW** ahead option, left click on option to select, or right click again to remove option without further action.

Ship's Heading:

Shows **COG if SOG** is selected for ship's speed, blank if **STW** selected. **True Heading** always displayed. If **GYRO Compass** is fitted, readout flashes **ON and OFF** until compass is aligned. To align compass, left click on the readout, move trackball left or right to align heading, left click when correct heading set.

Ship's Speed:

Shows an abbreviation of the speed mode selected, e.g. **MAN, NAV, and ECHO REF.** Left click on the caption to reveal a list of speed modes available, then left click on the mode required, when Echo Ref mode first selected, left click on acquired target to select that target as the echo reference. Can only be changed when Manual Speed Mode (MAN) selected. left click on readout, move trackball left or right to change readout, left click to accept new speed.

Vector Mode:

Left click on **VECTORS** caption to toggle for **Relative (R) or True (T)** vector mode.
To select a new vector time, left click on **TIME** readout, move trackball left or right to change time, left click to accept new time.

Trails Mode:

Right click TRAILS caption to toggle for ' trails shown ' or ' trails hidden ' . to select a new trails time, **left** click to reveal options available, left click on the options required; **RESET, LONG, PERM - (Permanent), or OFF.**

Alarms:

To acknowledge an alarm, left click on the **ALARM** caption box. right click to access list of acknowledged alarms, audible Buzzer and Watch Alarm.

Target Data:

Normally used for the display of Target data.

User Specified Data:

Left click on top line of box to toggle for display of required data. A right click will reveal a list of options**, left** click on option required, or right click again to exit. The options available are **Own Ship's Position, Waypoint Data.**

EXERCISES
Use of the radar and the ARPA system

Soft Key Function: A left click will access the menu for the function. A right click will provide additional functionality.

AZ – Acquisition Zones, or
GZ - Guard Zones
PI - Parallel Indexing
TOOLS – rotating cursors. etc.
ARPA – Automatic Plotting Aid
ATA – Automatic Tracking Aid
EPA – Electronic Plotting Aid
SYSTEM – System; (Memory cards, etc.)
NAV – Navigation; (Routes, Tracks)
TRIAL – Trial Maneuver
MAPS – Maps; (Creating, Editing, etc.)
BRILL – Brilliance; (Day/Night, etc.)

EXERCISES
Use of the GPS

LEICA MX420 DGPS OPERATION

Powering up the MX420

- Press power-on button momentarily and wait for GPS to acquire.

Turning off the MX420

- Press power-on momentarily , then yes , or Press and Hold power-on button for 3 seconds,

Man over Board (MOB)

- Press and Hold the **MOB** key for 3 seconds.
- To Disable **MOB**, Press the E=> Cancel MOB.

Present Position

- **Press the POS button once or twice to scroll through the following Pages :**
- **POS1 –** Position display and COG & SOG
- **POS2 -** Position , Altitude , Magnetic Variation , & Time
- **POS3 -** Position & Log

Waypoint: How to Create a Waypoint?

- **Using Lat/Long Entry :**
    - Press the **WPT** button until **WPT1** screen appears
    - Press the **E** key.
    - Press the **Make new WPT** soft key.
    - Select **Lat/Lon (wpo)** soft key.
    - Enter the **Lat.&Long**. Coordinates**.**
    - Press the **Done** soft key.
    - Press the **E** key to finish entry or editing.

- **Using Quick Save of Ship's Position :**
    - Press the **Mark Position** key momentarily.
    - Waypoint is saved in the next vacant waypoint memory.

To Start the ROUTE :

- Press the **RTE** key to show **RTE1** display.
- Press the **E** key.
- Press the **Insert Route** soft key.
- Press **Insert forward** or **Insert reverse** soft key.
- Press the **E** key.

To End or Turn ROUTE off:

- Press the **RTE** key to show **RTE1** display.
- Press the **E** key.
- Press the **Erase Route** soft key.
- Press **Yes** soft key.
- Press the **E** key.

To Reset Cross Track Error (XTE):

- Press the **NAV** key to show **NAV2** display.
- Press the **E** key.
- Press Reset **XTE** soft key.

To Calculate Tide:

EXERCISES
Use of the GPS

- Press the **Tide** key to show the **TIDE1** display.
- Press the **E** key.
- Press the **Change** soft key repeatedly until the desired tide station name is displayed.
- Press the **E** key.

Alarms:
General Alarm icon

How to view the Alarm Log?

- Press the **AUX** key to show **AUX1** screen.

How to Clear the Alarm Log?

- Press the **AUX** key to show **AUX1** screen.
- Press the **E** key.
- Press **Reset log** soft key
- Press the **E** key to exit.

How to Set the Alarms?

- Press the **CFG** key.
- Highlight **Alarms**.
- Press **E** key.
- Select the alarm to activate, namely :

- **Approach Alarm (Arrival)**
- **Anchor Watch**
- **Cross-Track Error Alarm (XTE)**

Note: Do not forget to press E key to finish alarm settings or editing.

EXERCISES
Use of the GMDSS station

SKANTI TRP 1000 MF/HF DSC RADIOTELEPHONE OPERATION:

1. Display.
2. Indicator lamps. Condition when lit:
   Tx: Transmitting.
   CALL: DSC (see button 9) call for you received.
   ALARM: Alarm call received.
3. Keyboard.
4. Shift key. Press and hold for yellow functions.
5. DISTRESS button. Protected by shield. To use, lift the shield and press for 3 seconds, guided by the text displayed.
6. Tuning control.
7. ON/OFF push button.
8. Volume control.
9. TEL/DSC function switch.
   In TEL mode radiotelephone parameters are shown and selected.
   In DSC mode DSC parameters are shown and selected.
10. Opens the ADDR BOOK in DSC mode.
11. Tx CALL: Press to start creating a DSC call.
12. Opens the Rx log over received calls in DSC mode.
13. Soft keys. The function of each key is described in its respective line at the right edge of the display.

EXERCISES
Use of the GMDSS station

Switching ON/OFF
Press the ON/OFF button.

Setting Backlight Level
Press the **shift** key followed by the **DIM** key.
The backlight is changed from zero to maximum in four steps.
Repeat until the desired setting is reached.

Switching Loudspeaker ON/OFF
Press the **shift** key followed by the **SPK** key.

Volume Control
Press the **Volume** key to adjust the loudspeaker sound volume.

Switching Squelch ON/OFF
(SSB Telephony mode)
Press the **shift** key followed by the **Squelch** key.
When squelch is ON, the receiver output is muted in speech pauses.

Setting Transmitter Power Level
Press the **shift** key followed by the **Power** key.
The output power is set to **HIGH, MED or LOW**.
Repeat until the desired setting is reached.

Manual Call Functions
Telephony Channel Display Functions:

Soft keys:

1st arrow – Switches to frequency display for viewing or altering frequencies.
2nd arrow - Switches to Station display for selection of another station.
3rd arrow – Steps to the next lower channel number of the station.
4th arrow – Steps to the next higher channel number of the station.

Frequency Display Functions:

Soft keys:

1st arrow – Switches to Channel display and previous channel number.
2nd arrow – Moves the arrow to Tx before keying in a Tx frequency.
3rd arrow – Steps between SSB telephony, AM telephony and Telex mode.
4th arrow – Steps between Tune, Clarify and RF-Gain tuning functions.

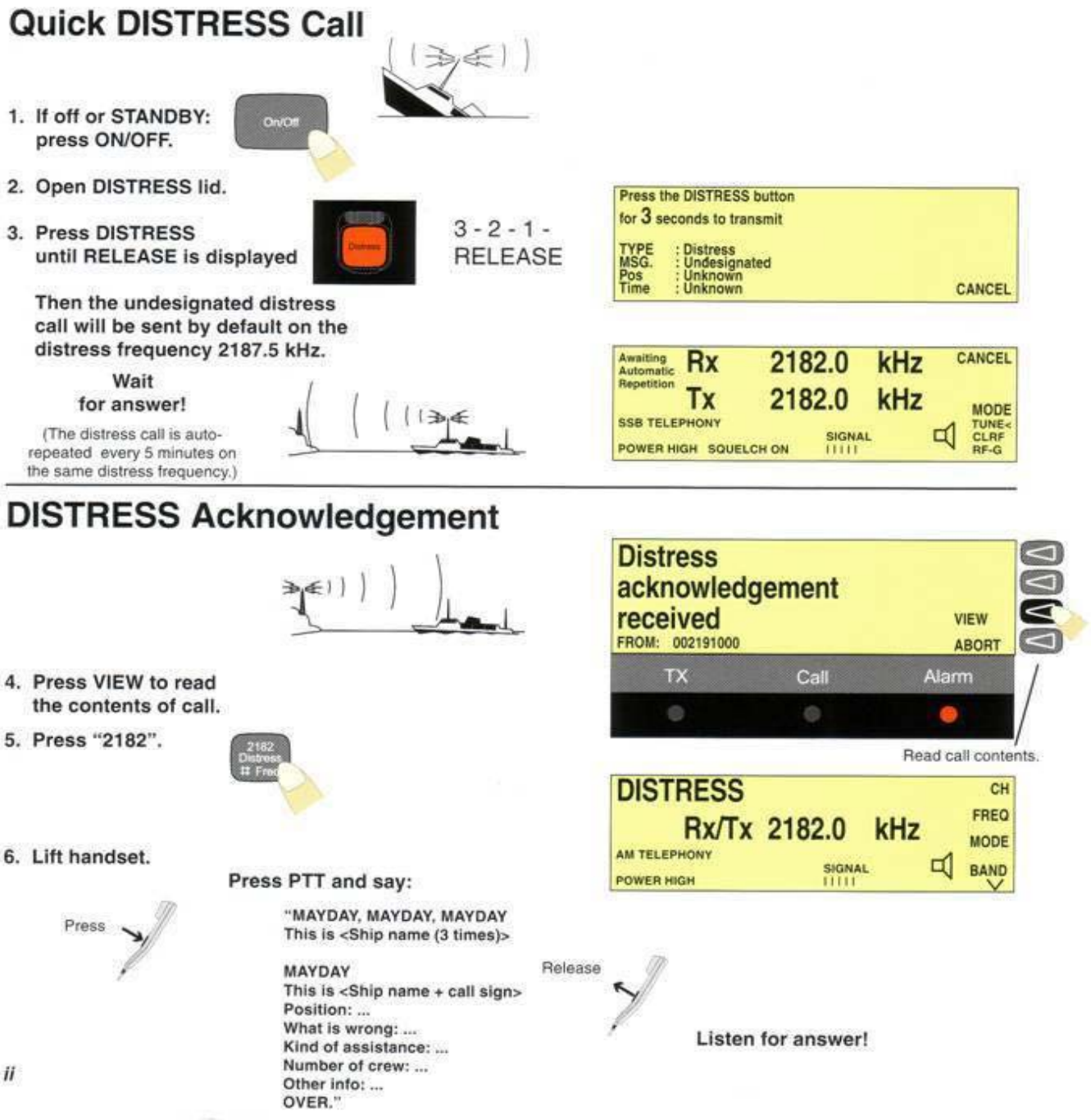
Tuning
Press the **Tune** key to adjust **frequency or RF-gain** of the receiver.

Station Display Functions:

Soft keys:

1st arrow – Selects the station and switches to channel display for choice of channel number.
2nd arrow – Returns to channel display without selecting the station.

3rd arrow – Selects previous station.
4th arrow – Selects next station.



Distress Telephony Frequencies:
To switch to Distress frequency display: press 2182 Distress Freq key.
Distress Frequency Display Functions:

Soft keys:
1st arrow – Switches to channel display for and previous channel number.
2nd arrow – Switches to Frequency display.
3rd arrow – Selects between AM and SSB mode of emission on 2182 kHz.
4th arrow – Steps to distress telephony frequency in the next higher band.

EXERCISES
Use of the GMDSS station

Distress and safety telephony traffic frequencies are: 2182 kHz, 4125 kHz, 6215 kHz, 8291 kHz, 12290 kHz, and 16420 kHz.

EXERCISES
Safety measures to rig the gangway

Rigging Gangway Ladder

Rigging an accommodation ladder is a routine duty carried out as a regular event during port calls and therefore does not require a check list to be filled out.

However the following precautions should be observed regardless of the vessel being still or underway.

- Rigging of the gangway ladder shall be done under the supervision of a responsible person who is in direct contact with the bridge or duty officer by means of a walkie talkie.
- Any person going overboard to rig the stanchions on the ladder should wear a safety harness which is attached to a life line and secured to a strong point.
- All other person involved in rigging the ladder should as a minimum wear a flotation vest.
- The access area should be free of any obstructions and/or loose equipment.
- The appropriate sign for max. load should be posted on or near the gangway ladder.
- A lifebuoy should be available for immediate use.

EXERCISES
Safety measures to rig the pilot ladder

- Rigging of the pilot ladder shall always be done by two deck ratings, one being assigned as a responsible person who shall be at all times in direct contact with the bridge or duty officer by means of a walkie talkie.

- The walkie talkie is to be always hanging on shoulder strap thus giving the operator both hands free in case of need.

- Any person engaged in pilot ladder rigging shall as a minimum wear a flotation vest. Two flotation vests should be always available at the Shop's office.

- The pilot access area should be free of any obstacles, loose equipment and clean of any liquids or substances that may affect safe passage through the area.

- Should any part of the rigging equipment fails, the person in charge shall inform the duty officer or bridge immediately and alternative means are to be employed.

- A lifebuoy should be available for immediate use.

- If at any moment and for any reason the person in charge for rigging pilot ladder considers rigging procedure to become unsafe, he shall stop his actions and inform the duty officer or bridge immediately.