ΑΚΑΔΗΜΙΑ ΕΜΠΟΡΙΚΟΥ ΝΑΥΤΙΚΟΥ

Α.Ε.Ν ΜΑΚΕΔΟΝΙΑΣ

ΠΤΥΧΙΑΚΗ ΕΡΓΑΣΙΑ

BRIDGE PROCEDURES - MASTER STANDING ORDERS

ΕΠΙΒΛΕΠΩΝ ΚΑΘΗΓΗΤΗΣ: ***ΠΑΠΑΛΕΩΝΙΔΑ ΠΑΡΑΣΚΕΥΗ***

ΤΟΥ ΣΠΟΥΔΑΣΤΗ: ***ΛΑΔΑΝΑ ΧΡΗΣΤΟΥ***
ΑΓΜ: ***3022***

ΝΕΑ ΜΗΧΑΝΙΩΝΑ 2015

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Ημερομηνία ανάληψης της εργασίας:
Ημερομηνία παράδοσης της εργασίας:

Α/Α	*Ονοματεπώνυμο*	*Ειδικότης*	*Αξιολόγηση*	*Υπογραφή*
1	**ΝΙΚΟΛΑΟΣ ΤΣΟΥΛΗΣ**	***ΠΛΟΙΑΡΧΟΣ Α'***		
2	**ΠΑΠΑΛΕΩΝΙΔΑ ΠΑΡΑΣΚΕΥΗ**	***ΚΑΘΗΓΗΤΡΙΑ ΑΓΓΛΙΚΩΝ***		
3				
ΤΕΛΙΚΗ ΑΞΙΟΛΟΓΗΣΗ				

Ο ΔΙΕΥΘΥΝΤΗΣ ΣΧΟΛΗΣ: ΤΣΟΥΛΗΣ ΝΙΚΟΛΑΟΣ

CONTENTS

Introduction

We should recognize that shipping is one of the safest methods of transport worldwide, and that it is likely that most navigators will have long careers at sea without major incidents. This will be the result of competence, preparation and good teamwork. But for having a safe voyage, in addition to good teamwork all the navigators should follow closely Bridge Procedures.

Bridge Procedures are constituted from fixed rules coming straight from the International Maritime Organization (IMO), which help officers to overcome mistakes and avoid any omissions during their work onboard. In addition to Bridge Procedures we have Master Standing Orders for the safe operation of the ship's bridge at all times. The standing orders are a set of guidelines to ensure safe ship navigation and operations whether at sea or at port.

The last decade the maritime industry adopted a formal approach to teamwork separated from the aviation industry and defined by the IMO as Bridge Resource Management (BRM). For having a functional and productive BRM it is important to combine variable factors such as human and technical resources. If we manage and utilize effectively all these resources we will ensure the safe completion of the vessel's voyage. In essence, BRM is the process and practice of using all available information and assistance to ensure that navigators make the best possible decisions and that those inevitable mistakes are captured and mitigated before they can cause any harm.

In conclusion, there are three basic factors at which all navigators should show great attention:

1. Bridge fixed Procedures
2. Master Standing Orders
3. Bridge Checklists

If the bridge's officers manage to follow the guidelines emanating from this three factors, it is sure that navigational accidents caused by human errors will be reduced to very low numbers or even better they will be eliminated.

Chapter 1

1.1 General principles of the ISM Code

The ISM Code provides an International standard for the safe management and operation of ships and for pollution prevention.

The purpose of ISM Code is:

- To ensure Safety at Sea
- To prevent human injury or loss of life
- To avoid damage to the environment and to the ship.

SOLAS adopted the ISM Code in 1994 and incorporated it into chapter IX. By 1998 much of the commercial shipping community was required to be in compliance with the ISM code. By 2002 almost all of the international shipping community was required to comply with the ISM Code.

In order to comply with the ISM Code, each ship class must have a working Safety_Management_System (SMS). Each SMS consists of the following elements:

- Commitment from top management
- A Top Tier Policy Manual
- A Procedures Manual that documents what is done on board the ship, during normal operations and in emergency situations
- Procedures for conducting both internal and external audits to ensure the ship is doing what is documented in the Procedures Manual
- A Designated Person Ashore to serve as the link between the ships and shore staff and to verify the SMS implementation

- A system for identifying where actual practices do not meet those that are documented and for implementing associated corrective action
- Regular management reviews

Another requirement of the ISM Code is for the ship to be maintained in conformity with the provisions of relevant rules and regulations and with any additional requirements which may be established by the Company. The Company should establish procedures, plans and instructions, including checklists as appropriate, for key shipboard operations concerning the safety of the personnel, ship and protection of the environment. The various tasks should be defined and assigned to qualified personnel.

This Code is intended to reflect best navigational practice on merchant ships operating today in all sectors and trades. It embraces internationally agreed standards adopted by the International Maritime Organization (IMO) and attempts to bring together the good practice of seafarers with the aim of improving navigational safety and protection of the marine environment. The need to ensure the maintenance of a safe navigational watch at all times, supported by safe manning levels on the ship, is also a fundamental principle of the Code.

It is a very important task for every company which is operating a ship, to control at every time the knowledge, the certification and the physical and mental attitude of its employees. The way that tis can be achieved by the company is contained into SOLAS Chapter V (regulation 14). According to this regulation:

1. Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned.

2. For every ship to which chapter I applies, the administration shall:
   .1 establish appropriate minimum safe manning following a transparent procedure, taking into account the relevant guidance adopted by the organization and
   .2 issue an appropriate minimum safe manning document or equivalent as evidence of the minimum safe manning considered necessary to comply with the provisions of paragraph 1.

3. On all ships, to ensure effective crew performance in safety matters, a working language shall be established and recorded in the ship's log-book. The company, as defined in regulation IX/1, or the master, as appropriate, shall determine the appropriate working language. Each seafarer shall be required to understand and, where appropriate, give orders and instructions and to report back in that language. If the working language is not an official language of the State whose flag the ship is entitled to fly, all plans and lists required to be posted shall include a translation into the working language.

4. On ships to which chapter I applies, English shall be used on the bridge as the working language for bridge-to-bridge and bridge-to-shore safety communications as well as for communications on board between the pilot and bridge watch keeping personnel, unless those directly involved in the communication speak a common language other than English.

1.2 ISM regulations for the bridge team

Regarding to the good BRM (Bridge Resource Management) all the Companies should emphasize at SOLAS Chapter V (regulation 15), which refers to Principles relating to bridge design, design and arrangement of navigational systems and equipment and bridge procedures. According to this regulation:

1. All decisions which are made for the purpose of applying the requirements of regulations 19, 22, 24, 25, 27 and 28 and which affect bridge design, the design and arrangement of navigational systems and equipment on the bridge and bridge procedures shall be taken with the aim of:

1.1. facilitating the tasks to be performed by the bridge team and the pilot in making full appraisal of the situation and in navigating the ship safely under all operational conditions

1.2. promoting effective and safe bridge resource management

1.3. enabling the bridge team and the pilot to have convenient and continuous access to essential information which is presented in a clear and unambiguous manner, using standardized symbols and coding systems for controls and displays

1.4. indicating the operational status of automated functions and integrated components, systems and/or sub-systems

1.5. allowing for expeditious, continuous and effective information processing and decision-making by the bridge team and the pilot

1.6. preventing or minimizing excessive or unnecessary work and any conditions or distractions on the bridge which may cause fatigue or interfere with the vigilance of the bridge team and the pilot and

1.7. minimizing the risk of human error and detecting such error if it occurs, through monitoring and alarm systems, in time for the bridge team and the pilot to take appropriate action.

Major revisions to the International Convention on Standards of Training, Certification and Watch keeping for Seafarers (the STCW Convention), and its associated Code were adopted at a Diplomatic Conference in Manila, the Philippines, on 21–25 June 2010.[13] The amendments, to be known as “The Manila amendments to the STCW Convention and Code” entered into force on 1 January 2012 with full compliance by 1 January 2017. Amongst the amendments adopted, there are a number of important changes to the Convention and Code. The sections of the STCW Manila Amendments that contain requirements related to non-technical skills are:

1. Reg. A-II/1 for Bridge Resource Management

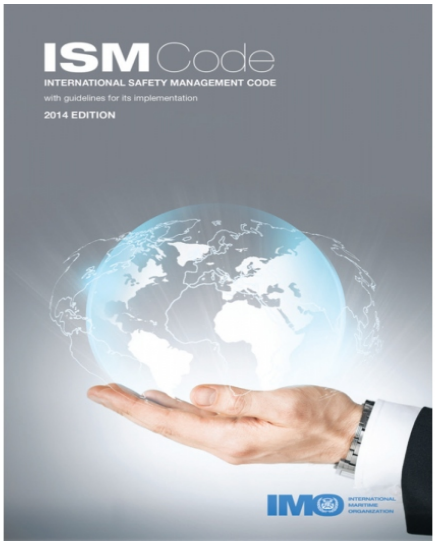
2. Reg. A-III/1 for Engine-room Resource Management

3. Reg. A-II/2 and A-III/2 for Use Leadership and Managerial Skills

4. Reg. A-II/1, A-III/1 and A-III/6 for Application of Leadership and Team working Skills

It is important to stress that an essential part of bridge organization is adherence to correct procedures, which should set out in clear language the operational requirements and methods that should be adopted when navigating. All the information coming from SOLAS requirements should be seen as an attempt to codify these best practices and provide a framework upon which owners, operators, masters, officers and pilots can work together to achieve consistent and reliable performance.

Seafaring will never be without its dangers, but the maintenance of a safe navigational watch at all times, the good and appropriate use of the bridge equipment and the careful preparation of passage plans, are at the heart of good operating practice. If the SOLAS requirements and the ISM Code can help encourage such good practices, they will have continued to serve their primary purpose.



Chapter 2

BRIDGE RESOURCE MANAGEMENT (BRM)

Purpose of a good BRM

BTM/BRM is said to be the effective management and utilization of all resources, human and technical, available to the bridge team to ensure the ship's safe navigation. A key safety aspect of BTM/BRM is the implementation of defences against single-person errors with the aim of avoiding serious incidents. Case studies consistently show that this 'challenge and response' aspect to BTM has failed.

In a significant number of navigational incidents, the watch keepers have had bridge team management training and so this questions, therefore, the effectiveness of bridge team management training. There is strong evidence that this training is, in many instances, not being conducted well. This training is costly and it is assumed that owners would want to know that it was effective.

SOLAS which adopted the ISM Code in 1994 and incorporated it into chapter IX and the IMO (International Maritime Organization), attach the utmost importance to safe navigation. Safe navigation means that the ship is not exposed to unnecessary danger and that all times the ship can be controlled within acceptable margins.

At all times, safe navigation requires effective command, control, communication and management. It demands that the situation, the level of bridge manning, and the operational status of navigational systems, the ship's engines and auxiliaries are all taken into account.

It is people that control ships, and it is therefore people, together with management and teamwork, who are the key to reliable performance. People entrusted with the control of ships must be competent to carry out their duties. People also make mistakes and so it is necessary to ensure that monitoring and checking prevent chains of error from developing. Mistakes cannot be predicted and, once a mistake has been detected, it is human nature to seek to fit circumstances to the original premise, thus compounding a simple error of judgment.

Passage planning is conducted to assess the safest and most economical sea route between ports. Detailed plans, particularly in coastal waters, port approaches and pilotage areas are needed to ensure appropriate margins of safety. Once completed, the passage plan becomes the basis for navigation. Equipment can fail and the unexpected can happen, so contingency planning is also necessary.

The above comments apply equally to maneuvering and operations conducted using any Dynamic Positioning (DP) capability of the ship. Ship maneuvers in and around a worksite must be the subject of a comprehensive operational plan covering contingencies and appropriate “escape” maneuvers.

Ergonomics and good design are essential elements of good bridge working practices. Watch keepers at sea need to be able to keep a look-out, as well as monitor the chart and observe the radar. They should also be able to communicate using the VHF without losing situational awareness.

When boarding or disembarking pilots, handling tugs or berthing, it should be possible to monitor instrumentation, particularly helm and engine indicators, from the bridge wings. Bridge notes should be provided to explain limitations of any equipment that has been badly sited, pointing out the appropriate remedies that need to be taken.

Elements to combine for a good management of Bridge Resources

In summary, good management of bridge procedures combines:

- Clarity of purpose
- The ability to delegate authority as appropriate
- Effective organization
- Motivation and the ability to motivate others

This issue of Standard Safety is unable to cover every scenario where P&I claims involving navigational errors occur, but there is overriding evidence that:

- the number of navigational incidents is increasing
- the cost of navigational incidents is increasing
- the impact of navigational incidents on company reputations is becoming more serious
- the predominant cause of these navigational incidents is human error due to poor training and auditing for compliance with COLREGS and SMS procedures.

Preventing these accidents is not difficult. The techniques for safe navigation are widely known and when mastered and professionally carried out, the navigational risks are reduced.

Chapter 3

THE BRIDGE TEAM

Watch keeping Principles

Watch systems shall be so arranged that the efficiency of all watch keeping personnel is not impaired by fatigue and that duties are so organized that the first watch at the commencement of a voyage and subsequent relieving watches are sufficiently rested and otherwise fit for duty.

The master of every ship shall ensure that watch keeping arrangements are adequate for main-training a safe watch or watches, taking into account the prevailing circumstances and conditions and that, under his/her general direction:

1) officers in charge of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they shall be physically present on the navigating bridge or in a directly associated location at all times
2) radio operators are responsible for maintaining a continuous radio watch on appropriate frequencies during their periods of duty
3) an appropriate and effective watch or watches are maintained for the purpose of safety at all times, while the ship is at anchor or moored and, if the ship is carrying hazardous cargo, the organization of such watch or watches takes full account of the nature, quantity, pack-ing and stowage of the hazardous cargo and of any special conditions prevailing on board, afloat or ashore.

The need for seamanship

Before taking a ship to sea the Master must satisfy himself that the ship is seaworthy. He will need to know, amongst other things, that:

- The cargo is stowed safely
- The ship is properly battened down

- All moveable objects are secured
- Bridge equipment tested and operational
- The main engine, auxiliaries and the steering gear are fully operational
- Personnel are back on board, properly rested and ready to perform their duties.

3.1 Officers responsibilities

Under the STCW watch keeping Officers are primarily responsible at all times for the safe navigation of the ship with particular regards to avoidance of collision and standing. As master's representative, they are in charge of the bridge and therefore in charge of the bridge team, until they are properly relieved.

They must ensure strict compliance with:

- Company's shipboard operational procedure pertaining to the navigational watch keeping or bridge procedures.
- Master's Standing Orders.
- Maintaining a Safe Manning Level for bridge watch at all times for the prevailing circumstances and conditions.

Wrong actions on their part could be detrimental to the safety of life property and protection of environment. It is imperative that they fulfil their duties to best of their ability.

For maintaining a safe watch, officers must keep in mind the three letters ASK:

A for attitude,
S for skill, and
K for knowledge.

Accident statistics indicate that the majority collisions and grounding incidents are attributed to carelessness or a complacent attitude and not due to lack of knowledge and skill. At the end of the watch, the OOW hands over the navigation of the vessel to the relieving officer.

Handing/Taking over a navigational watch is of great importance. This is an appropriate time to check:

- The position,
- Set due to current and the wind,
- Weather and visibility,
- Course and speed,
- Errors on the compasses,
- Status of the navigational equipment, and
- The traffic in the area.

Such checks allow correction to prevent continuation of any error. It also requires that the watch keepers should also check that:

- The vessel is following the planned passage,
- All the risks have been recognized and the preventive measures are being taken and
- The equipment is functioning normally.

3.2 Omissions and Distractions during the officer's watch

As stated earlier, maintenance of continuity is paramount. The changing over of watch is an opportune time to check all aspects of navigation and to ensure that no errors or omissions are being carried over. The errors or omissions though not intentional could cause serious consequences and therefore need a closer review. The types of errors or omissions that have been made are:

- Ambiguity in position fixes due to error in the plotting methods
- Position fixes from various sources not matching
- Position fixes being obtained from only one source and not being verified by other navigational aids,
- Charted depths not matching with the obtained soundings,
- Error on equipment, such as error of compass, being wrongly applied, etc.

The watch-keeping officer may carry on with these errors without realizing the same. This is the reason that the relieving officer is required to review the status all over again.

Distractions could be caused due to:

- Workload, stress or fatigue
- Unexpected VHF call which occupies the full attention of the OOW and results in the exclusion of more urgent needs
- Unexpected calls from engine room,

- Inadequacy and confusion due to lack of experience
- These errors, if not rectified in time, could result in formation of an error chain. An effective way to detect an error is by cross checks. Error thus detected can be eliminated. The effective time to correct such errors is at the time of handing over / taking over watch as the crosschecks can now be carried out by a second person.

  This process of error proliferation occurs every day and some times it is fatal.
  The key elements to successful handing / taking over and to reduce possibility of errors therefore are:

- Carry out 'Checks' on navigational status,
- "Plan' for eventualities during the watch, and
- 'Be Prepared' for taking appropriate action.

3.3 Process of handing / taking over a watch

1. Receive true course, gyro course and compass course from the outgoing OOW.
2. Ensure helmsman /lookout is capable of carrying out his duty and has taken over duty properly.
3. Read, understand and sign the Master's standing instructions and daily orders.
4. Check the ship's position, planned course and course being steered by gyro and magnetic compass. Ensure the course board is updated with current courses.
5. Check error on compass and that it is being applied correctly
6. Verify the speed and draught of the ship. Ensure present draft is prominently displayed on the draft board
7. Observe prevailing weather and sea condition, visibility, sea state, tides and their effect on present course
8. Understand the operational status of all navigation equipment

9. Be aware of the presence and movement of all traffic in vicinity
10. Be aware of conditions and hazards likely to be encountered during the watch
11. Be aware of the effects of heel, trim, water density and squat on under keel clearance
12. Understand the state of internal ship systems, engine and cargo monitoring, communications and crew availability
13. Ensure that the required lookout and helmsman, as appropriate, are on duty, alert and properly instructed.
14. Obtain from outgoing OOW verbal instructions, if any, and occurrences of importance during previous watch.
15. Read log entries made by outgoing OOW
16. Take full charge of the watch on time
17. If at any time the OOW is to be relieved when a maneuver or other action to avoid any hazard is taking place, the relief of that officer shall be deferred until such action has been completed.
18. Obtain a positive report about rounds made in accommodation, remote areas and where necessary, on deck.

Composition of the navigational watch

An effective bridge organization should efficiently manage all resources available to the bridge and promote good communications and teamwork. The bridge organization should be properly supported by a clear navigation policy incorporating shipboard operation procedures, in accordance with the company's safety management system onboard ship as required by the ISM code.

In determining that the composition of navigational watch is adequate to ensure maintenance of a proper lookout, you should consider relevant factors including the following:

- Visibility, state of weather and sea;
- Traffic density and other activities occurring in the area in which the ship is navigating
- The additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated maneuvers
- The fitness for duty of any crewmembers on call that are assigned as members of the watch.
- Knowledge of and confidence in the professional competence of the ship's officers and crew.
- The experience of each OOW, and the familiarity of the OOW with the ship's equipment, procedures and maneuvering capability.
- Activities taking place on board the ship at any particular time, including radio communication activities, and the availability of assistance to be summoned immediately to the bridge when necessary.
- The operational status of bridge instrumentation and controls, including alarm systems.
- Rudder and propeller control and ship maneuvering characteristics.
- The size of the ship and the field of vision available from the conning position;
- The configuration of the bridge, to the extent such configuration might inhibit a member of the watch from detecting by sight or hearing any external development.
- Any other relevant standard, procedure or guidance relating to watch-keeping arrangements and fitness for duty.

Continuity in watch keeping

In the performance of his duties, the OOW carries out a number of functions almost simultaneously. This naturally keeps him quite busy.

Let us list out the number of tasks / functions that demand his attention. The Master being the overall in charge needs to be kept informed of progress of the voyage. The information that is required by the Master is normally recorded as standing orders or the specific orders in Bridge Order book or on some ships called Bridge Night order book.

Chapter 4

MASTER ON BRIDGE

Ship operations are complex and require utmost precision. It is therefore the constant endeavor of the ship's officers to ensure that high level of professionalism is in progress at all times.

Junior officers are often concerned that they might be inconveniencing the Master by calling him to the bridge. However, Masters need to be called as soon as possible if a difficult situation is developing, as he is most likely to be able to help the OOW resolve the problem. Masters have more confidence in OOWs who demonstrate their willingness to call the Master than those OOWs who allow dangerous situations to develop. The OOW, by calling the Master early, will be able to learn from the experience of the Master when he comes to the bridge. The OOW has a duty to call the Master early and this must be the guiding principle at all times.

The Master has the ultimate responsibility for the safe and efficient operation of the ship. He is likely to be the most experienced navigator on the ship and will probably have dealt with most situations before. The OOW therefore has a duty to comply with his orders and to keep the Master informed of progress. The OOW should ask the Master about any unusual or potentially dangerous occurrences.

If the Master has to be called in an emergency he will arrive on the bridge in a hurry and will need some time to assess the situation. The OOW must be ready to brief the Master immediately he arrives, starting with the most threatening situation and then informing him of the general scene, i.e. other ships in the area, what they are doing and proximity to land.

Some examples of situations where the Master will expect to be called are listed below, but each Master will define his own requirements:

- A give way vessel standing on
- The ship found to be unexpectedly heading for land
- The presence of a fishing fleet
- Difficult multi-ship encounters

- Situations where the work load on the bridge has become excessive
- Making a landfall
- Significant alter course positions
- Times of reduced visibility
- When there is a change in the sea state
- When revolutions decrease by more than 15%
- Any unusual occurrences such as changes in the weather, unusual ship.

The Master will always prefer to be called early, before the ship is in a dangerous situation. This often requires judgment on behalf of the OOW and to help resolve this issue the Master will often request to be called whenever a vessel is to approach within a specified CPA. There are specific regulations about calling the Master, because the Master has the ultimate responsibility for ship safety. The OOW must keep him informed of threatening situations.

The international resolution states:

"The officer of the watch should notify the Master immediately in the following circumstances:

- if restricted visibility is encountered or expected
- if the traffic conditions or the movements of other ships are causing concern
- if difficulty is experienced in maintaining 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 change in soundings occurs on the breakdown of the engines, steering gear or any essential navigational equipment
- in heavy weather, if in any doubt about the possibility of weather damage.

- if the ship meets any hazard to navigation, such as ice or derelicts
- in any other emergency or situation in which he is in any doubt.

Despite the requirement to notify the Master immediately in the foregoing circumstances, the OOW should, in addition, not hesitate to take immediate action for the safety of the ship, where circumstances so require. The Master's appearance on the bridge does not relieve the OOW of his responsibilities. The OOW is still in charge of the watch until the Master formally takes charge. It must be made clear immediately who is in charge of the watch. To avoid any confusion the OOW must assume he is in charge of the watch unless formally relieved by the Master.

If the call is made during the hours of darkness, the Master will require a little time to become accustomed to the conditions. The OOW must take this into account and allow for this period when deciding to call the Master. It may be necessary to obtain the services of the helmsman and additional lookouts. These watch keeping tasks should be completed by the OOW immediately they are required. The OOW should not delay or await the arrival of the Master on the bridge. Under no circumstances is the OOW allowed to leave the bridge.

4.1 Master Standing Orders for ensuring the good teamwork of the Bridge Team

The Master, being the overall in-charge of everything on board, is responsible for the functioning of the vessel is every aspect. Thus, it is obvious for him to promulgate his requirements with respect to the safety of navigation and other operations carried out on the ship.

Keeping this intention in mind, the Master puts his requirements into writing to avoid any confusion in the matter. Officers onboard thereafter, become familiar with the Master's "Standing and Night Orders".

Ship's officers are familiar with the plethora of codes, conventions, rules and regulations that cover every nook and corner of shipboard activity, ranging from the daily routines as well as the rare circumstances that call for specialized actions. Combine that with the requirements of the company, and the officer has quite a bit in his plate!

Keeping this whole array of requirements in mind, the Master chalks out the orders best suited to his personal judgment and to the capabilities of the officers, considering the nature of the vessel, her trade patterns and bridge team practices. These orders might also reflect anything that has caused concern in the past or something that might've upheld high standards of teamwork.

Basically, it is a written document establishing ground rules so as to establish a system of engagement to develop mutual confidence.

The standing orders are a set of guidelines to ensure safe ship navigation and operations whether at sea or at port. These set of guidelines by the Master encompass a very wide array of aspects of navigation and rules of conduct for the officers. Standing orders are to be followed at all times by the officer on duty and is duly signed by every officer on board, making them liable to adhere to the orders. That is to say that the standing orders are in-force and applicable at all times the ship is at sea, at port or at anchor.

The following is an example of the Master's Standing Orders:

For the whole period of his watch the Officer of Watch is responsible for safety of the vessel. The Officer of watch shall be guided by the contents of International Regulation and Guidelines, but paying particular attention to the followings:

- At sea, when the vessel is underway you must be on bridge at least 10 (ten) minutes before relieving the watch, sign the night order book, acquaintance yourself with ship's position, speed, weather presence, movement of ship in sight or known to be in vicinity and obtain any pertinent information the Officer being relieved may has to pass on.

- The Duty Officer of Watch is keeping a GOOD LOOK OUT using by all means available, visual, and audible and electronics.

- The International Regulation for Preventing Collision at Sea is to be strictly observed. DO NOT hesitate to use the whistle or engine's in obeying the regulations. Altering course for another ship, to do so boldly and sufficient time to let any other ship be in no doubt at your intention.

- As the Officer of Watch, when vessel is underway you should be on the bridge all the times. DONOT LEAVE the bridge until another officer or my self properly relieves you.

- Do not seat or lean on, it can make you fall asleep or un-alertly, be sure your rating on watch is thoroughly familiar with his duties and keep alert.

- Unnecessary conversion with the man at wheel or with irrelevant person appears on the bridge is not conductive to keep a proper watch.

- Make a regular check to ensure that helmsman or automatic pilot is steering the courses. When navigating in coastal water, use largest scale charts suitable for the area and correct with the latest available information.

- Do not hand-over the watch to the relieving officer if you have reason to believe that the later is obviously not capable carrying out his duties effectively, in which case you should notify me accordingly.

- As the officer of watch, you should notify or call me immediately in the following circumstances:
    1. If restricted visibility is encountered or expected.
    2. If the traffic condition or movements the other ship is causing concern.
    3. On failure or sight land, navigation mark or obtain sounding by the effective time.
    4. If difficulty is experienced in maintaining course.
    5. On breakdown of the engine, steering gear or any essential navigation equipment.
    6. If unexpectedly and or navigation mark is sighted or sounding occurs.
    7. In heavy weather, if doubt the possibility of weather damage.
    8. If the ship meets any hazard to navigation such derelicts etc.
    9. If any other emergency or situation in which you are in doubt.

- Give passing ship a good or wide berth in ample time. Do not try to bluff the other ship cut of his right away. Let the other ship know in plenty time what you intended to do so. Keep at least three (3) miles off passing if possible, more of you think it is necessary. Use VHF to exchange the necessary information in order to avoid collision situation.

- When alone on the bridge, you should always keep in mind that the time for taking action for ship's safety while there is still time to do so. If weather start

to make-up or you think it may be necessary to change course or slow down, take immediate action for the safety of the ship where so require.

- Do not let ship pounding, if you think she will pound or shows a tendency to pound, put the telegraph on “stand by”, put the ship on hand steering, if necessary slow down.Try to notify the Engine Room, but in case emergencies DO NOT hesitate to slow down, stop or go astern. CALL MASTER in time to get on the bridge better soon than late.

- If you found yourself among a fleet of fishing crafts, put the engine telegraph on “ stand by ” , a man on hand steering and CALL MASTER. Watch out for small craft and fishing vessel on fishing bank and along the coast. Many of them do not carry proper lights, some may carry special lights or shapes, BE SURE you know what they mean.

- In poor visibility, the RADAR must be always kept on. Do not wait until for or other cause shuts in all around you.

- When approaching a port, marking land fall or steaming along the coast, be sure you know the characteristic of the lights, you will pick-up and the time you should see them.

- Check the course on the chart every time, there is a change of course on your watch. Let me know immediately if there is an error or the course will lead the ship into danger. Please, check with two mean of position by crosschecking. Either by manual, Radar or GPS.

- The ship to be put on hand steering all the time, the Telegraph on standby during fire and boat drill, when pilot has gone, when within five (5) miles of the coast, when approaching or steaming along the coast, when within three (3) miles of another ship in situation and when you as Officer of Watch may think necessary.

- In port, whether at dock, at buoys or at anchor, the draft must be taken and entered in the log at the following time, 0800 hrs and 1700 hrs, Incoming OOW or outgoing OOW at the time should take the draft. Make sure yourself acquainted with LOADLINE permitted. When the draft is on the applicable mark, Fresh Water Allowance being considered, let me know. If I a not onboard, let Chief Officer know the situation. If we are taking Bunker or Freshwater at time, let Chief Engineer knows also.

- During loading or unloading cargo, you as OOW should pay strict attention to the followings: AA) Do not leave the deck unattended (except going to CCR for cargo checking reason) to ensure safety of the vessel, crews and cargo (to avoiding cargo overflow).BB) Before loading commence all deck scuppers must be fitted properly, safety and firefighting equipment prepared and make ready for use at anytime.CC) The Duty Officer and rating while performing the jobs during cargo operation are compulsory to wear safety gear.DD) Shore leaved board is fitted, no deck Officer or deck rating is going ashore without first informed the Chief Officer or Master.

- In all circumstances, while at anchor OOW should,
    1. Determine and plot the ship's position on the appropriate chart as soon as practicable, when circumstance permit, check at sufficiently frequent intervals whether the vessel is remaining securely and at anchor by taking bearing of fixed navigation marks or readily identifiable shore objects.
    2. Ensure that an efficient lookout is maintained and inspect around of the ship are made periodically.
    3. Observe tidal condition and state of seas.
    4. Notify me and undertake all necessary measure if anchor drag.EE) Ensure the state of readiness of the main engine and other machinery is accordance with my instruction.
    5. if visibility deteriorates, notifies me and comply with the applicable regulations for preventing collision at sea (COLREG).

6. Ensure that vessel exhibit the appropriate lights and shapes and sound signals are made at all time as required.
7. Take measure to protect the environment from pollution by the ship and fully complying with applicable Pollution Regulations (MARPOL).

- The proper DSC facilities shall be tested at least once a week by mean of a test call.

A good officer when face with unusual circumstances will apply COMMON SENSE AND GOOD PRACTICE OF SEAMAN to the situation and take act accordingly. If you find yourself thinking about calling Master then the time has clearly come to do so.

4.2 Master's Night Orders

The night orders are a supplement to the standing orders that come into force as the Master proceeds to take rest during the night. The standing orders are in force at all times whereas the night orders add specific points to the withstanding standing orders. The Master writes the night orders every night, with specific regard pertaining to the existing state of the weather, sea and traffic.

These are generally handwritten and again, duly signed by every OOW. One should read these orders carefully because the Master uses his experience and expertise to determine safe navigation in is absence and therefore lays down instructions as to the plotting intervals, temperature/pressure reading intervals and so on and so forth. The captain is liable for the entire ship and putting that trust onto the officers is a very big deal.

The following is an example of the Master's Night Orders:

- Required to be written by master before he is going to take a rest at night.

- A set of instructions to OOW in written format.

- Depends on the events expected at the night.

- Generally includes following points:

    1. To comply with standing orders.
    2. Follow the laid courses.
    3. Check and plot positions at required intervals.
    4. Keep proper look out and comply with ROR.
    5. Calling master at required position, if applicable.
    6. Anti-piracy watch if required.
    7. Preparations before proceeding to pilot stations:

- Inform ETA.

- Slow down one hour (or as required for engine) before end of passage position.

- Call master at the marked position.

- Rigging pilot ladders in time.

- Stand by crews in time.

- Check the vessel's position frequently if at anchor.

- Calling master if in any doubt.

The Master exercises due experience and knowledge every time he takes over command. He assesses every situation keeping in mind the extent of the capabilities of his bridge team, the ECR team, the crew and the technical facilities at his disposal. This makes the standing as well as the night orders an extension of his personal judgment on matters of ship safety and security.

All seafarer's are familiar with the term "The Master's word is final". Well, let us just say that this is why these orders are put down in writing; to make their striking importance crystal clear. Keeping such high importance in mind, the orders should be executed with the same fervor.

The most crucial point would be to adhere to the orders, minimizing any scope of human error. However, it is only natural to err and therefore, any such error should be brought to a senior officer's notice immediately.

When the Master has clearly mentioned in both the standing as well as the night orders that he must be called in case of any doubt, the OOW must do so as soon as the need to think the same arises. Often, the orders clearly state, "If you find yourself thinking about calling the Master, the time has clearly come to do so". When the Master puts that faith on to the Officers, it must be honored to the highest level of professionalism.

Every OOW should also remember that he signs the orders at the bottom, clearly adhering to a clause that very candidly binds him to it, stating "Please sign below, indicating that you understood these orders, which will be supplemented by the Master's Night Orders each night when the vessel is at sea or at anchor or when required."

Chapter 5

THE BRIDGE EQUIPMENT

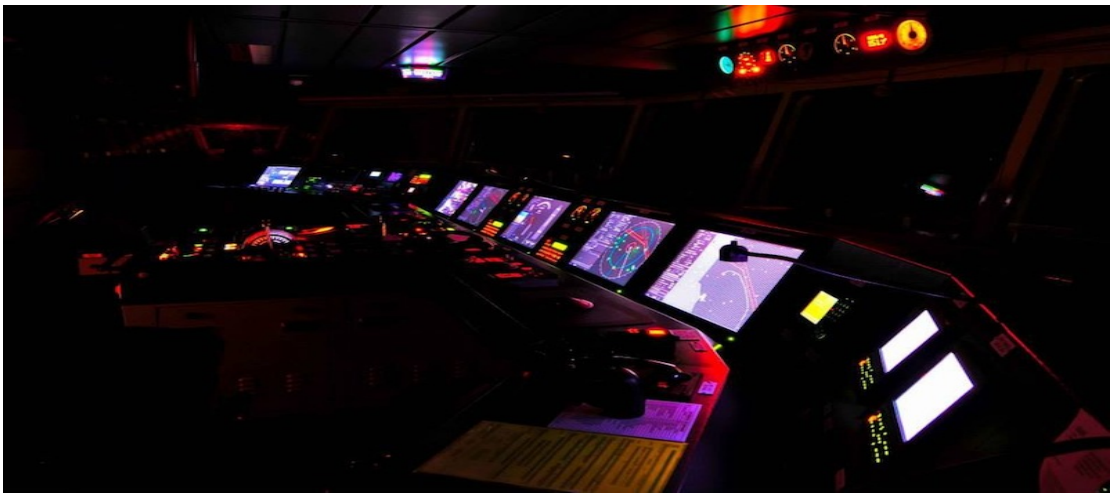
The importance of the proper use and maintenance of the bridge equipment

It is important that the Master and the watch keeping Officers are completely familiar with all the navigational and communications equipment, charts and publications onboard.

Bridge watch keeping Officers should acquaint themselves with the contents of operating manuals for equipment, particularly with regard to the setting up of controls and the procedures to be followed in the event of equipment failure.

It is important that, when electronic navigation systems (ECDIS and ECS) are fitted, full use is made of their capabilities including waypoint and other alarms, the determination of cross track error and depth of water. Such use will stimulate interaction with the OOW and provide barriers to the vessel departing from its planned track. Periodic checks on the equipment should be carried out. Equipment found to have operational defects should be brought to the attention of the master and recorded in the logbook and on the Pilot Card.

Regular preventive maintenance of all equipment should be carried out according to instructions set out in the shipboard maintenance procedures manual and manufacturer's manuals. A full set of charts and publications appropriate for the intended voyage should be available onboard and kept up to date.



5.1 What constitutes the bridge equipment

RADAR:

The OOW should be familiar with the differences between X and S-band radars, and be aware that the X-band radar is capable of operating in the 9GHz frequency band for the detection of search and rescue transponder (SART) devices.

VOYAGE DATA RECORDER (VDR) AND (S-VDR):

VDR and S-VDR equipment has been mandated for carriage on both new ships (VDR) and existing ships (S-VDR) according to schedules agreed at IMO. Similar to the black boxes carried on aircraft, VDR equipment enables accident investigators to review procedures and instructions in the moments before an incident and helps to identify the cause of any accident. Additionally S-VDR the vessel operator and owner with information that can enhance ship operation and management, and provides the owner/operator with a comprehensive record of events during a given period.

AIS:

AIS is a maritime mobile band VHF broadcast system that can send both dynamic and static ship information, such as MMSI, call sign, position, course and speed, to other AIS transponders and base stations. Recent years have seen AIS functionality expand to include the sending of a variety of additional information, such as ETA, waypoints, data from navigational aids such as buoys and lighthouses, rate of turn, time stamp, ship type, type of cargo, draught, dimensions, passenger details and text messages.

All ships of 300 gross tonnage and upwards engaged on international voyages, and cargo ships of 500 gross tonnage and upwards not engaged on international voyages, and passenger ships irrespective of size shall be fitted with AIS, as required by IMO.

STEERING GEAR AND THE AUTOMATIC PILOT:

The OOW should ensure that the SOLAS requirements for the operation and testing of the steering gear are observed.

Steering control of the ship will comprise manual steering, probably supplemented by an automatic pilot or other track control system. An emergency back-up steering position, usually in the steering gear flat is required.

The role of the auto pilot is to steer the ship automatically. The auto pilot can either be operated independently or, in an integrated bridge, controlled by a navigation system. When operated as an independent system, the course to steer will need to be set manually on the autopilot and the autopilot will steer that course until a new course is entered.

COPASS SYSTEMS:

Magnetic Compass

The magnetic compass is generally fitted above the bridge on the centerline with a periscope, so that the compass is readable from the helmsman's position. A compass deviation card should be maintained and posted on the bridge. The compass will need to be swung at intervals during the ship's life, and particularly after major steel conversion work to the ship. Caution should be observed when using the magnetic compass on ships carrying magnetic cargoes such as iron and steel.

Gyro Compass

It is recommended that the gyro compass should be run continuously. If a gyro compass stop for any reason, it should be restarted and subsequently checked before use to ensure that it has 'settled' and is reading correctly. Speed and latitude corrections need to be applied to the gyro compass. Where the gyro has no direct speed log or position input, manual corrections will have to be made as required.

ECHO SOUNDERS:

The navigational echo sounder should be expected to operate down to depths of at least 200 meters (approximately 110 fathoms).

The echo sounder should always be used when making a landfall and kept switched on in coastal waters. If the echo sounder is fitted with a shallow water alarm the alarm should be set to an appropriate safe depth.

Care should be taken to check that the units of soundings on the echo sounder are the same as those used on the chart in use. When comparing echo and chart soundings, allowance must be made for the draught of the ship and any water stand or tidal effects.

GLOBAL POSITIONING SYSTEM (GPS):

The Global Positioning System operated by the United States, and the Global Navigation Satellite System (GLONASS), operated by the Russian Federation are currently available for civilian use on ships.

Since 2001, the artificial degradation applied by the United States authorities to GPS transmissions and known as Selective Availability (SA) has been removed. The previous commercial global positioning capability with the accuracy of the order of 100 meters was improved by this measure to offer accuracy of the order of 10 meters, or better at which the receiver antenna is possible. Greater navigational accuracy than that offered by the above systems is provided by specialized equipment including GPS based equipment, and is used by those who require increased positional fidelity.

Chapter 6

PASSAGE PLANNING

OVERVIEW

Passage planning is necessary to support the bridge team and ensure that the ship can be navigated safely between ports from pilot station-to-pilot station through risk assessment of hazards and waypoint selection. The passage plan should cover ocean, coastal and pilotage waters. The plan may need to be changed during the voyage, the bridge team on each watch should be consulted and briefed to ensure that the revised plan is understood. The passage plan should aim to establish the most favorable route while maintaining appropriate margins of safety and safe passing distances offshore.

When deciding upon the route, the following factors are amongst those that should be taken into account:

1. The marine environment
2. The adequacy and reliability of charted hydrographic data along the route
3. The availability and reliability of navigation aids, coastal marks, lights and radar conspicuous targets for fixing the ship along the route.
4. Any routeing constrains imposed by the ship, e.g. draft, type of cargo.
5. Areas of high traffic density
6. Weather forecasts and expected current, tidal, wind, swell and visibility conditions
7. Areas where onshore set could occur
8. Ship operations that may require additional searoom, e.g. tank cleaning or pilot embarkation
9. Regulations such as ships' routeing schemes and ship reporting systems
10. The reliability of the propulsion and steering systems on board.

The indented voyage should be planned prior to departure using appropriate and available corrected charts and publications. The Master should check that the tracks laid down are safe and the chief engineer should verify that the ship has sufficient fuel, water and lubricants for the intended voyage. In addition, the duty of the Master to exercise professional judgment in the light of changing circumstances remains a basic requirement for safe navigation.

RESPONSIBILITY FOR PASSAGE PLANNING

In most ocean going ships it is customary for the Master to delegate the task of preparing the passage plan to the officer responsible for navigational equipment and publications. In other ships, the Master may plan the voyage himself. Irrespective of who carries out the task of passage planning, it remains the responsibility of the Master to ensure that the passage plan provides the basis of safe navigation for the intended voyage. While responsibility for the plan in pilotage waters rests with the Master, any necessary amendments may take place subsequent to the Master-Pilot exchange.

NOTES ON PASSAGE PLANNING

In accordance with I.M.O. resolution there are four distinct stages in the planning and achievement of a safe passage:

- Appraisal
- Planning
- Execution
- Monitoring

CHARTS AND PUBLICATIONS

Only official nautical charts and publications should be used for passage planning, and they should be fully corrected to latest available notices to mariners and radio navigation warnings. Any missing charts and publications needed for the intended voyage should be identified from the chart catalogue and obtained before the ship sails. For coastal and pilotage planning and for plotting each course alteration point or (waypoint), large scale charts should be used. For ocean passage planning and open water legs, the largest scale charts that are appropriate should be used.

DETAILS OF PLANNING THE VOYAGE

The navigating officer must plan the tracks showing the true course of each leg. Also he must calculate the leg distances, any speed changes required in the route. He must also include abort point for critical maneuvers. Furthermore in the passage plan the turn radius and wheel over positions for each course alteration must be recorded. The maximum allowable off-track margins for each leg are also necessary to be written.

At any time during the voyage, the ship may need to leave the planned leg temporarily at short notice. Marking on the chart relatively shallow waters and minimum clearing distances in critical sea areas is one technique which will assist the OOW when having to decide quickly to what extend to deviate without jeopardizing safety and the marine environment. However, in using this technique, care should be taken not to obscure chart features. On paper charts, only pencil should be used.

The passage plan should also take into account the need to monitor the ship's position along the route, identify contingency actions at waypoints, and allow for collision avoidance in line with the **COLREGS.** Appropriate details of the passage plan may be copied so that the plan can be readily referred to at the main conning position.

PASSAGE PLANNING AND VESSEL TRAFFIC SERVICES

Vessel traffic services (VTS) have been introduced, particularly in ports and their approaches, to monitor ship compliance with local regulations and to optimize traffic management. VTS can only be mandatory within the territorial seas of a coastal state. VTS requirements on ships should form part of the passage plan.

This should include references to the specific radio frequencies that must be monitored by the ship for navigational or other warnings, and advice on when to proceed in areas when traffic flow is regulated. VTS reporting requirements may be marked on charts, but further details will be found in sailing directions and lists of radio signals.

Chapter 7

BRIDGE CHECKLISTS

Checklists are predetermined lists of criteria against which the recorder answers yes or no. They are highly selective, only giving the recorder the opportunity to record a decision concerning the criterion. There are no details to check the recorder's decision. Checklists show the sequence of developmental progress and it is a practical way of measuring progress. They can be used as a work planning tool for individualizing the work onboard and also as a screening tool for developmental lags.

On the following pages are listed some of the most important checklists which are used from the bridge Officers of cargo ships, for different circumstances.

ANCHORING AND ANCHOR WATCH CHECKLIST

SHIP NAME:	**PORT:**

This Checklist is to be completed by the Officer on Watch prior to Anchoring and a Log Entry made.	**INITIALS**
Has an Anchoring Plan been prepared taking into account:	
Speed Reduction in ample time?	
Direction/Strength of Wind, Current?	
Tidal Stream when maneuvering at low speeds?	
Need for adequate sea room particularly to seaward?	
Have the following been informed of the time of “Standby” for Anchoring	
The Master?	
The Engineroom?	
The Anchor Party?	
Is the following equipment ready for use?	
Anchor(s)?	
Lights/Shapes?	
Sound Signalling Apparatus?	
Anchor Marking Buoy?	
Has an Anchor Watch been established?	
Have instructions been issued to the Officer of the Watch/Engineroom on the following matters?	
Determining and regular checking of Anchor Position?	
Notice for Main Engines especially if weather deteriorates?	
Anti-fouling precautions?	
OFFICER’S ON WATCHSIGNATURE:	**DATE:**

NAVIGATION IN ICE CHECKLIST

SHIP NAME:	
This Checklist is to be completed by the officer on Watch on each occasion that ice is expected and a Log Entry made	**INITIALS**
Have the following been informed of the conditions?	
The Master?	
The Engineroom?	
The Crew? GALLEY/SALOON DEPARTMENT	
Have all Watertight Doors been shut, as appropriate?	
Has Speed been adjusted?	
Is Deck Machinery running?	
Have Lookouts been posted?	
Have instructions been issued on the following matters?	
Monitoring Ice Advisory Service Broadcasts?	
Transmitting Danger Messages in accordance with SOLAS 1974 – Chapter V – Regulation 2(a).	
Have any local ice navigation regulations been followed?	
Have requirements of 3.5.3 (Navigating in Ice) been followed and still in effect?	
Request for ice advisor confirmed from local agent/port/authority	
CHIEF OFFICER'SSIGNATURE: NASTER DATE:	

NAVIGATION IN COASTAL WATERS AND (TSS) CHECKLIST

SHIP NAME	
This checklist is to be completed by the officer on Watch once per Watch and a Log Entry made.	**INITIALS**
Have all Charts and Nautical Publications to be used, been corrected up to date?	
Have the following factors been taken into consideration in preparing the Passage Plan?	
Advice/Recommendations in Sailing Directions?	
Ships Draught?	
Effect of “Squat” on Under keel Clearance in shallow Water?	
Tides and Currents?	
Available Navigational Aids and their accuracy?	
Weather, particularly in areas renowned for poor visibility?	
Position Fixing Method to be used?	
Daylight/Night Time passing of danger points?	
Any requirements for Traffic Separation/Routing Schemes?	
Traffic likely to be encountered – Flow Type, Volume?	
Are Local/Coastal Warning Broadcasts being monitored?	
Is participation in Area Reporting Systems being followed?	
Is the ship’s position being Fixed at regular intervals and is “Continuous Track Monitoring” in use?	
Have Courses been laid off well clear of obstructions?	
Are the Errors of Gyro/Magnetic Compasses being checked regularly?	
Is the Echo Sounder in operation where required?	
OOW’sSIGNATURE: **DATE:**	

NAVIGATION IN RESTRICTED VISIBILLITY CHECKLIST

SHIP NAME:	
This checklist is to be completed by the officer on Watch on each occasion that restricted visibility is encountered and a Log Entry made.	**INITIALS**
Has the following equipment been brought into operation?	
Radar, ARPA or other Plotting Facilities?	
Fog Signalling Apparatus?	
Manual Steering?	
Navigation Lights?	
Watertight Doors, as appropriate?	
Have extra Lookouts been posted?	
Have the Master and Engineroom been informed and engines put on “Standby”?	
Are the 1972 International Regulations for Preventing Collisions at Sea being complied with, particularly with regard to proceeding at a safe speed?	
Other checks (list):_____ _____ _____	
OOW’sSIGNATURE: **DATE:**	

NAVIGATION IN DEEP SEA (OPEN WATER) CHECKLIST

SHIP NAME:	
This Checklist is to be completed by the 2nd Officer at least once per day and a Log Entry made.	**INITIALS**
Has the Passage Plan been updated as required?	
Have all Charts and Nautical Publications to be used, been corrected up to date?	
Are Navarea Warning Broadcasts being monitored?	
Is participation in Area Reporting Systems (e.g. AMVER) being monitored?	
Is the ship's position being Fixed at regular intervals appropriate to the prevailing circumstances and conditions?	
Are the Errors of Gyro/Magnetic Compasses being checked once per Watch?	
Is Radar Performance being regularly checked?	
Is keeping a Look-Out being given Priority?	
Any other relevant items?	
OFFICER'S ON WATCHSIGNATURE:	**DATE:**

BRIDGE EQUIPMENT FAMILIARIZATION CHECKLIST

SHIP NAME:	
This Checklist is to be completed by new officers as soon as possible after joining and a Log Entry is made.	INITIALS
Has the operation of the following equipment been studied and fully understood:	
Bridge lighting, including controls for deck and overside illumination?	
Alarms including unmanned engine room dead man alarms (where fitted)?	
Communications facilities – internal (e.g. sound powered and electronic telephones), external (e.g. VHF radio), portable radios and public address systems?	
Sound signaling apparatus including whistles, bells and gongs?	
Automatic Identification System (AIS)?	
Electronic navigational position fixing systems (e.g. GPS)?	
Electronic charts and display equipment?	
Echo sounder?	
Navtex and Weather Fax.	
Gyro compass/repeaters (including errors and requirements for taking errors)?	
Emergency fire pump, ventilation and watertight door controls?	
Navigational lights, including emergency navigation, not under command and other signal lights?	
Radar and associated plotting aids, including ARPA?	
Emergency arrangements in the event of a main power failure?	
Magnetic compass (including deviations)?	
Safety equipment (e.g. pyrotechnics, EPIRB, SART)?	
Speed/distance and course recorders?	
Bridge fire detection panel and controls?	
General alarm and fire alarm signalling arrangements?	
Have you been trained in the operation of the steering gear, including manual, auto-pilot, emergency changeover and testing arrangements including the off-course alarm.	

Are you familiar with the stowage of chart and hydrographic publications?	
Have you been trained and familiarized by a senior officer in the routine and emergency operation of all main propulsion machinery and thrusters, including all changeover arrangements from bridge to engine room control (normal/Emergency) and all overrides and emergency stops?	
Have you been trained and familiarized in the operation of the GMDSS Radio Equipment?	
Have you been trained and familiarized in the operation of Ship Security Alert System?	
Other checks:	

OOW's SIGNATURE:	**MASTER's SIGNATURE:**	**DATE:**	

NAVIGATION IN ADVERSE WEATHER

SHIP NAME	
This Checklist is to be completed by the officer on Watch on each occasion that adverse weather is forecast.	**INITIALS**
Have the following been informed?	
The Master?	
The Engineroom?	
The Crew?GALLEY DEPARTMENT	
Have all moveable objects been secured at the following locations?	
On Deck?	
Below Deck?E/R	
Ports, Deadlights?GALLEY	
Has the Crew been warned to avoid Upper Deck areas made dangerous by weather?	
Have Speed and Course been adjusted as necessary?	
Have Safety Lines/Hand Ropes been Rigged where necessary?	
Has the Ship's Accommodation been secured and all Ports and Deadlocks closed as necessary?	
Have instructions been issued on the following matters?	
Have all Weather Deck Openings been secured?	
Monitoring Weather Reports?	
Transmitting Weather Reports to the appropriate authorities or, in the case of Tropical Storms, Danger Messages in accordance with SOLAS 1974 – Chapter V – Regulation 2(a)?	
OOW's SIGNATURE:	**MASTER's SIGNATURE:**	**DATE:**

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