

Periodic checks of navigational equipment

The OOW should undertake daily tests and checks on bridge equipment, including the following:

1. Manual steering should be tested at least **once a watch** when the automatic pilot is in use.
2. Gyro and magnetic compass errors should be checked **once a watch**, where possible and after any major course alteration
3. Compass repeaters should be synchronized, including repeaters mounted off the **bridge**, such as in the **engine control room** and at the **emergency steering position**.

Checks on electronic equipment should both confirm that the piece of equipment is functioning properly and that it is successfully communicating to any bridge system to which it is concerned. To ensure adequate performance, information from electronic equipment should always be compared and verified against information from different independent sources.



Compliance with SOLAS Chapter V/19

a) Automatic Pilot

1. In areas of high traffic density, in conditions of restricted visibility and in all other hazardous navigational situations where the automatic pilot is used, it shall be possible to establish human control of the ship's steering immediately.
2. In circumstances as above, it shall be possible for the officer of the watch to have available without delay the services of a qualified helmsman who shall be ready at all times to take over steering control.
3. The changeover from automatic to manual steering and vice versa shall be made by or under the supervision of a responsible officer.
4. The manual steering shall be tested after prolonged use of the automatic pilot, and before entering areas where navigation demands special caution.

b) Operation of Steering Gear

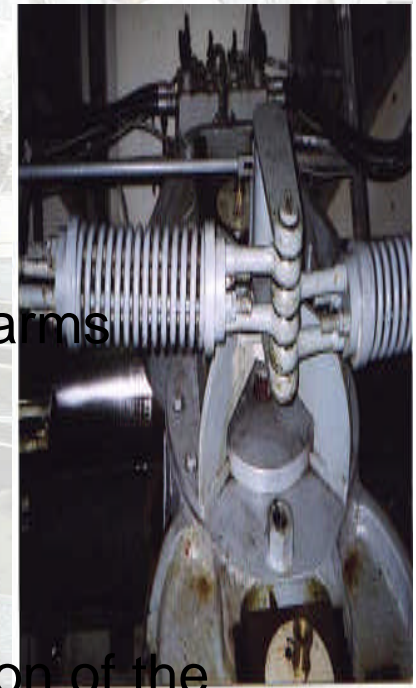
In areas where navigation demands special caution, ships have **more than one steering gear** power unit in operation when such units are capable of simultaneous operation.



c) Testing and Drills on Steering Gear

Within 12 hours before departure, the ship's steering gear shall be checked and tested by the ship's crew and entered in the logbook. The test procedure shall include, where applicable, the operation of the following:

- The main steering gear
- The auxiliary steering gear
- The remote steering gear control systems
- The remote steering gear control system power failure alarms
- The steering positions located on the navigation bridge
- The steering gear power unit failure alarms
- The emergency power supply
- The rudder angle indicators in relation to the actual position of the rudder
- Automatic isolating arrangements and other automatic equipment



Compliance with SOLAS Chapter V/19, cont.

d) The checks and Tests shall include;

1. The full movement (hard rudder) of the rudder according to required capabilities of the steering gear;
2. A visual inspection of the steering gear and it's connecting linkage; and hydraulic liquid level.
3. The operation of the means of communication between the Navigation Bridge and steering gear compartment.
4. Simple operating instructions with a block diagram showing the changeover procedures for remote steering gear control systems and steering gear power units shall be permanently displayed on the Navigation Bridge and in the steering gear compartment
5. All ship's officer concerned with the operation or maintenance of steering gear shall be familiar with the operation of the steering systems fitted on the ship and with the procedures for changing from one system to another.

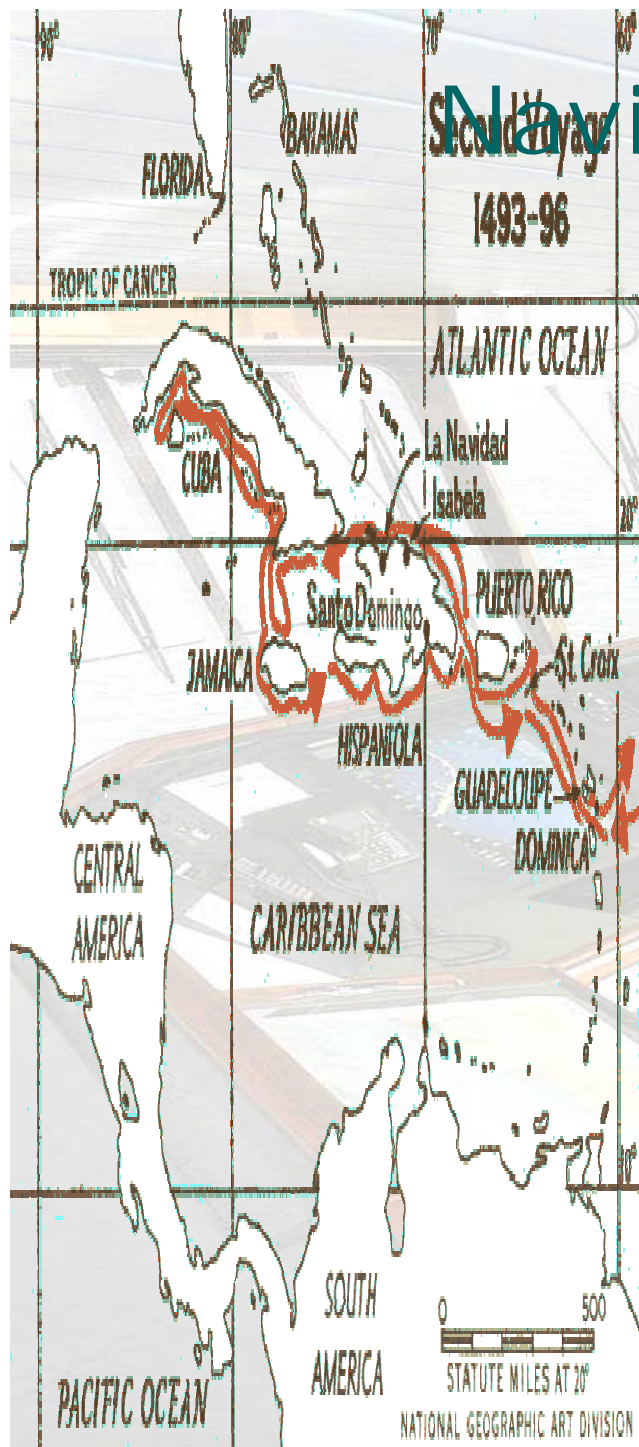
In addition to the routine checks and tests prescribed above, **emergency steering drills** shall take place at least **once every three months** in order to gain proficiency in emergency steering procedures. These drills shall include direct control from within the steering gear compartment, the communications procedure with the Navigation Bridge and, where applicable, the operation of alternative power supplies.



Navigation in Coastal Waters

The **largest scale charts** on board, suitable for the area and corrected with the latest available information, should be used. Fixes should be taken at **frequent intervals**; whenever circumstances allow, fixing should be carried out by **more than one method** to allow verification/counter checking.

The officer of the watch should positively identify all relevant navigation marks, visually checked if allowable.



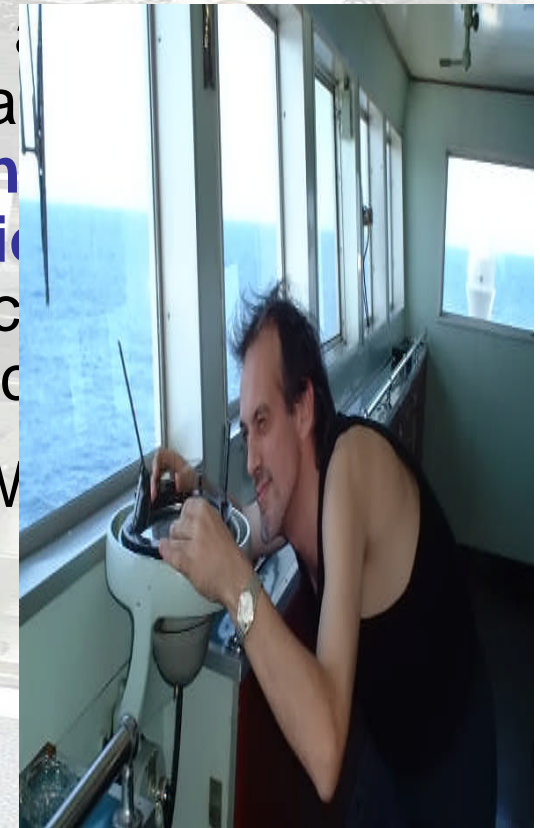
Conduct of the watch in clear weather

The OOW should take frequent and accurate compass bearings of approaching ships as a means of early detection of risk of collision and should bear in mind that such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large ship or a tow or when approaching a narrow channel or a range.

He should also take early positive action in compliance with the **International Regulations for Preventing Collisions at Sea, 1972** and having

He should also take early positive action in compliance with the **International Regulations for Preventing Collisions at Sea, 1972** and subsequently check that such action has had the desired effect.

In clear weather, whenever possible, the OOW should carry out radar practice.



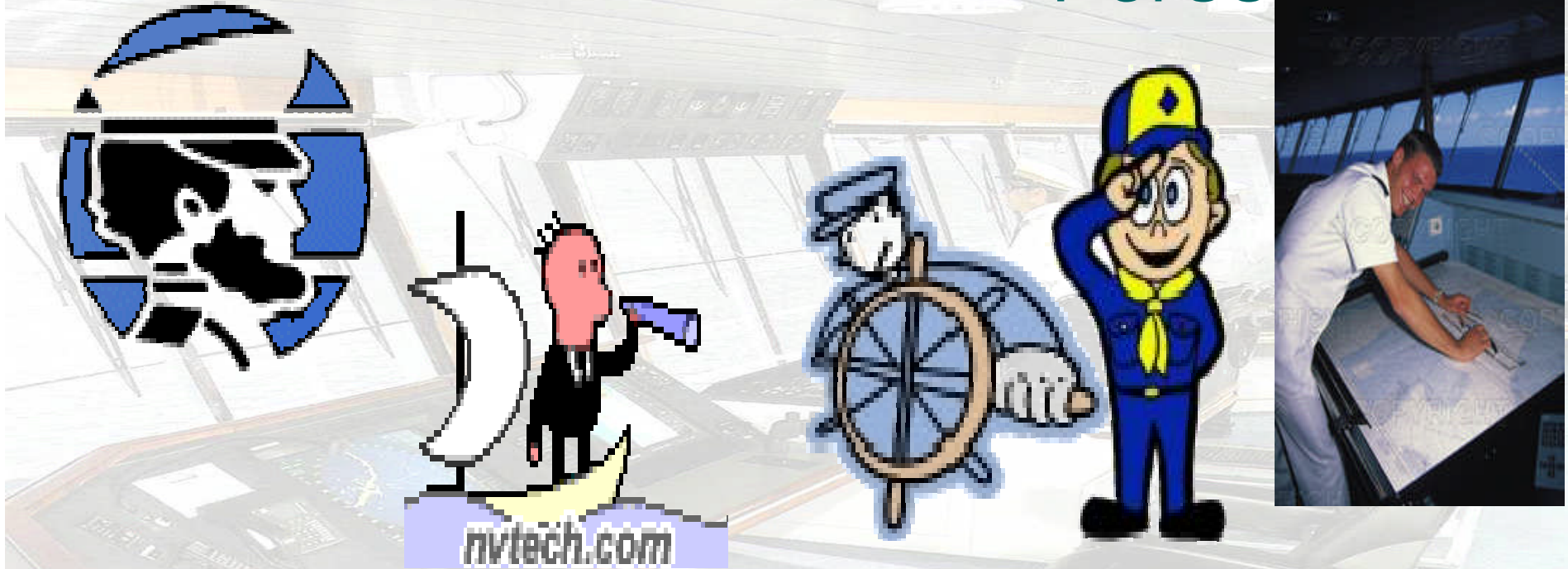
Actions to take in restricted visibility

When restricted visibility is encountered or expected, the first responsibility of the officer of the watch is to comply with the relevant rules of the International Regulations for Preventing Collisions at Sea, with particular regard to the **sounding of fog signals**, proceeding at a **safe speed** and having the **engines ready** for immediate maneuvers. In addition, the OOW shall:

- a. Inform the **master**
- b. post a proper **look-out and helmsman** and, in congested waters, revert to hand steering immediately;
- c. exhibit appropriate **lights**,
- d. operate and use the **radar**.



Briefing of Watch keeping Personnel



The **officer of the watch** should give watch keeping personnel all appropriate instructions and information, he should verify if the watch personnel understand their respective duties and know how to discharge them.

Bridge Team Composition

Master - The ship owner's representative, overall in command and responsible of the ship and for the performance of watchkeeping officers and also the pilot.

Officer of the Watch (OOW) - Officer in charge of a bridge navigational watch. The Master's representative at the bridge and responsible for conning the ship during his watch .

Extra Officer on the Bridge - Officer assisting the Master and the OOW on the bridge as required.

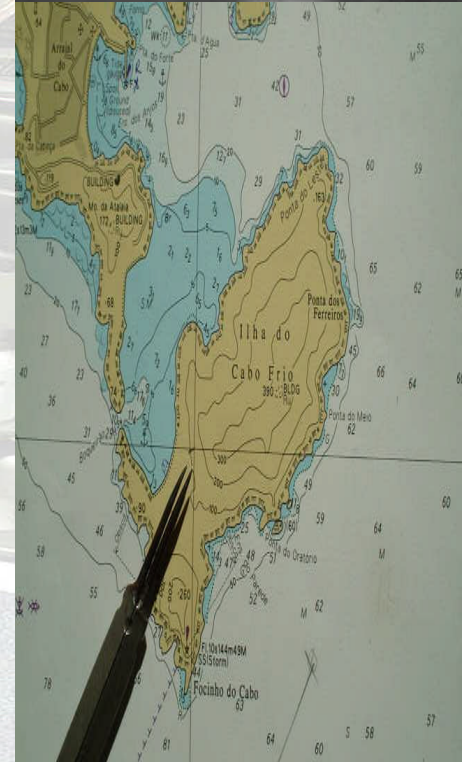
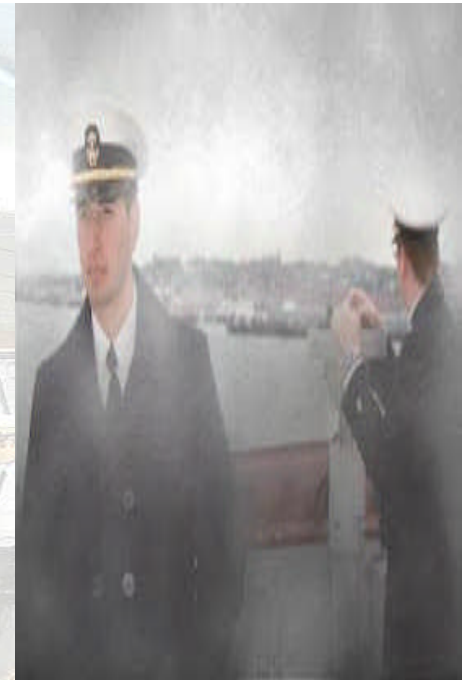
Helmsman - Deck rating assigned to keep a navigational watch .111d/or to carry out helm orders from the conning officer.

Lookout - Deck rating appointed by the Master to observe and report all relevant observations for safety of navigation.

Pilot - Usually a local expert hired to assist in the safe navigation of a vessel in port or restricted areas.

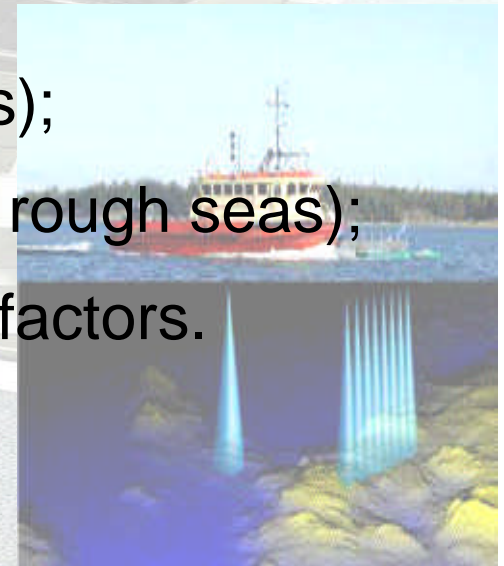
The **"Master"** controls the movement of the vessel in compliance With the Rules of the Road and recommended traffic schemes consistent with good seamanship practices. He regulates the course and speed, ensures the safe navigation of the vessel, and supervises the overall watch organization.

The **"Watch Officer"** assists the master and usually mans the radar. He establishes the vessel's position and advises the conning officer of such position and other information such as drift, existence of navigation dangers, course and speed of other vessel in the vicinity. He will monitor the execution of helm and engine orders, coordinate all internal and external communications, record all required entries in logbooks and perform other duties as required the master.



Under certain circumstances, the Master may consider it necessary to have the support of **two navigating officers**, one as OOW, the other as back-up or radar observer. The master must clearly state the responsibilities of the two officers supporting the master will indicate that the ship is in a very high-risk situation such as:

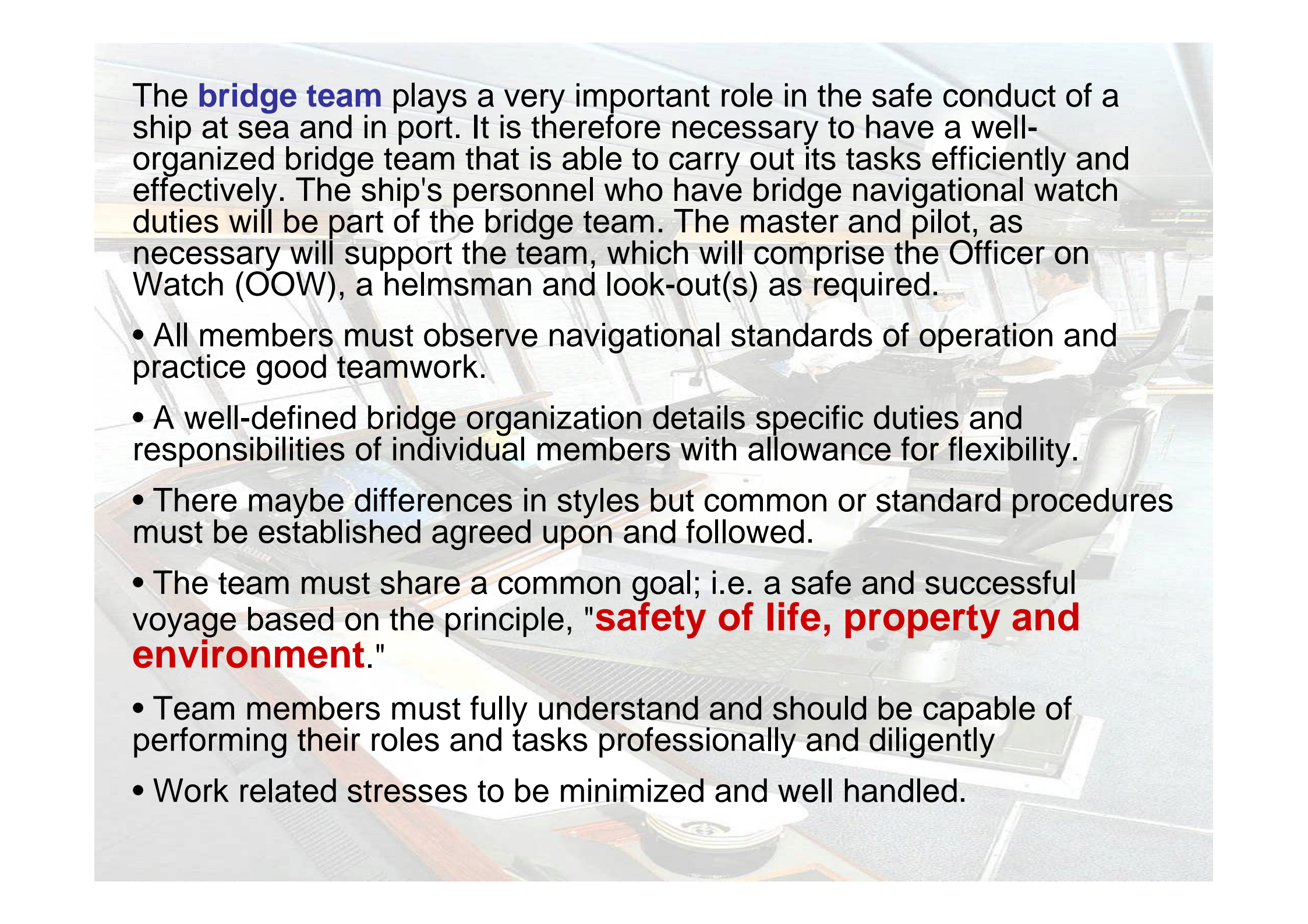
1. **narrow margins** of safety requiring very careful track maintenance such as transiting channels and approaching traffic congested areas;
2. **reduced under-keel clearance** like when vessel navigate in coastal and shallow waters;
3. **heavy traffic** (narrow channels and passages);
4. **heavy weather conditions** (storms and very rough seas);
5. **poor visibility**; or any combination of similar factors.



The additional officer's role is to provide the master with **radar-based traffic information**, assist in **locating buoys or landmarks** as in the case of landfall and to giving general **backup to the OOW** on the chart or whatever tasks the master deems appropriate under varying conditions (like assisting in communications, internal coordination and other supportive roles).

It is difficult to establish hard and fast rules as to how the tasks of the bridge team should be distributed. It may depend upon the abilities and experience and personal factors of the personnel involved, the circumstances requiring the additional personnel involvement types of bridge equipment and the layout of the bridge. The important thing to bear in mind is that each member of the team knows what role that he is required to carry out and the roles of other members of the team. As stated above this must preclude unnecessary duplication of tasks and, more importantly, **ensure that other tasks are not ignored or overlooked.**





The **bridge team** plays a very important role in the safe conduct of a ship at sea and in port. It is therefore necessary to have a well-organized bridge team that is able to carry out its tasks efficiently and effectively. The ship's personnel who have bridge navigational watch duties will be part of the bridge team. The master and pilot, as necessary will support the team, which will comprise the Officer on Watch (OOW), a helmsman and look-out(s) as required.

- All members must observe navigational standards of operation and practice good teamwork.
- A well-defined bridge organization details specific duties and responsibilities of individual members with allowance for flexibility.
- There may be differences in styles but common or standard procedures must be established agreed upon and followed.
- The team must share a common goal; i.e. a safe and successful voyage based on the principle, "**safety of life, property and environment.**"
- Team members must fully understand and should be capable of performing their roles and tasks professionally and diligently
- Work related stresses to be minimized and well handled.

The basic principles for effective bridge teamwork procedures

Whenever a ship is put at sea, the master and navigating officers have duties both in public and commercial law to navigate competently at all times. Upon their actions depend the successful outcome of the voyage, safety at sea and protection of the marine environment. Watchkeeping officers, through their diligence and professionalism, provide a highly valued service to society.

Competence in navigation and seamanship is based upon a sound **knowledge of principles and rules, experience at sea** and **proficiency in carrying out duties diligently**. This applies particularly to Bridge Team Organization, which have to be brought on the bridge. Every maritime accident has brought an impact in the shipping world. Accidents happen from time to time, and often their result leads to the formulation and implementation of new regulations, requirements or recommendations by various national or international maritime authorities, organizations and companies. Such are geared towards addressing these particular incidents by providing attainable solutions, one of that is providing training for the people concerned.

The basic principles for effective bridge teamwork procedures, cont.



Statistics show that about **80% of maritime accidents** are caused by **human error**. In such case, people on board ships are the central focus and the main contributor to accidents that happened. The greatest responsibility in ensuring that a ship reaches its destination safely and efficiently lies in the hands of every mariner. How accidents can be avoided and prevented at sea depends on the people on board who can either make them happen or not. In a broad perspective, the goal of every mariner is centered in the **safety of life, property and the environment**.

Effective bridge team organization should minimize if not eliminate the risk that an error on the part of one person could result to a dangerous situation. The bridge organization should be properly supported by a clear navigation policy incorporating shipboard operational procedures, in accordance with the ship's safety management system.



Assignment of duties and procedures for the bridge team personnel to work as effective team

Duties should be clearly assigned, limited to those duties that can be performed effectively, and clearly prioritized. Team members should be asked to confirm that they understand the task and duties assigned to them.

The positive reporting on events while undertaking tasks and duties is one way of monitoring the performance of bridge team members and detecting any deterioration in watch keeping performance.

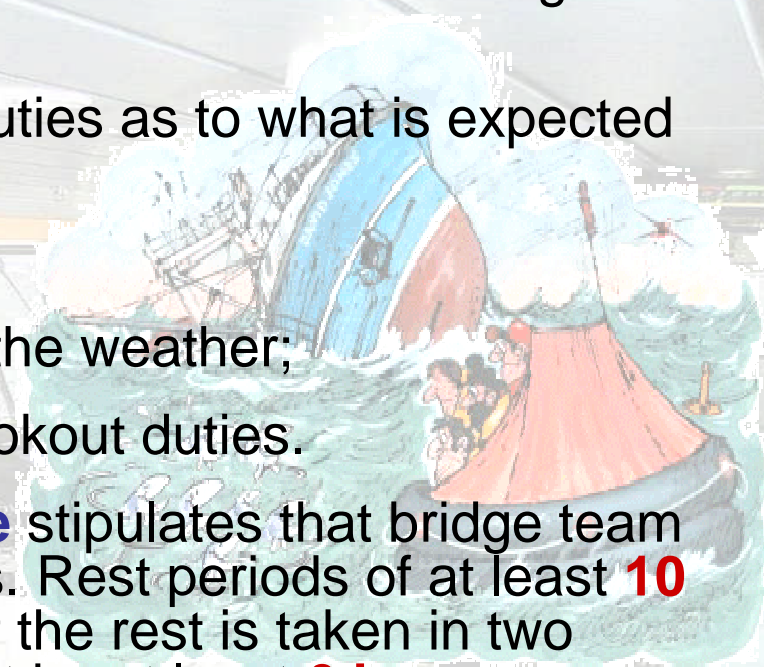
There is a general obligation under the **ISM Code (International Safety Management Code)** and the **STCW Convention** for ship's personnel new to a particular ship to receive ship specific familiarization in safety matters. For those personnel that have a direct involvement in ship operations such as watchkeeping, a reasonable period of time must be allocated for new personnel to become acquainted with the equipment that they will be using and any associated ship procedures. This must be covered in written instructions that the company is required to provide to the master.

It is the responsibility of the **OOW** to ensure that the seaman assigned watchkeeping in duties:

- has been properly instructed in look-out duties as to what is expected of him;
- knows how to report observations;
- is adequately clothed and protected from the weather;
- physically and emotionally prepared for lookout duties.

In order to prevent fatigue, the **STCW Code** stipulates that bridge team members must take mandatory rest periods. Rest periods of at least **10 hours** in any 24 hour period are required. If the rest is taken in two separate periods, one of those periods must be at least **6 hours**. However, the minimum period of 10 hours may be reduced to not less than 6 consecutive hours provided that any such reduction does not extend beyond two days, and not less than 70 hours is provided during each seven--day period.

The STCW Code also advises governments to prescribe a **maximum blood alcohol level** of **0.08%** for the ship's personnel during watchkeeping and to **prohibit alcohol consumption** within **4 hours** prior to commencing a watch.

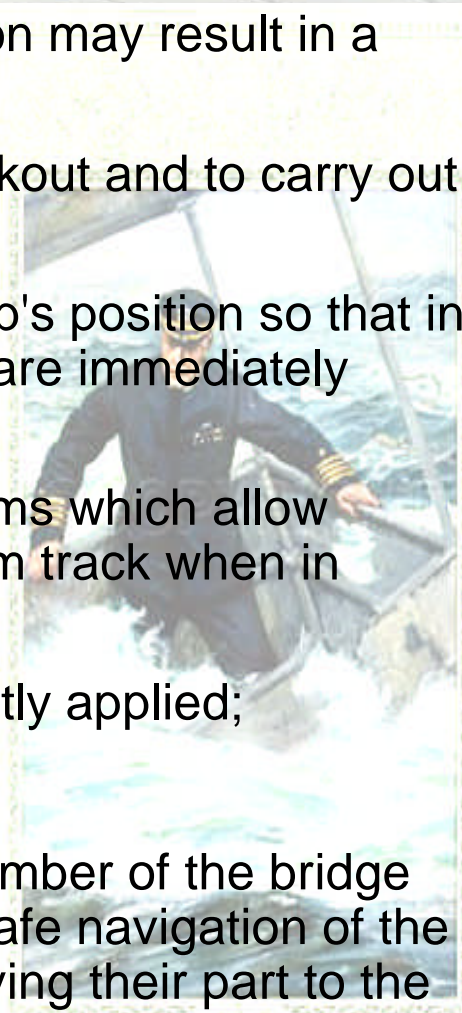


Bridge Teamwork

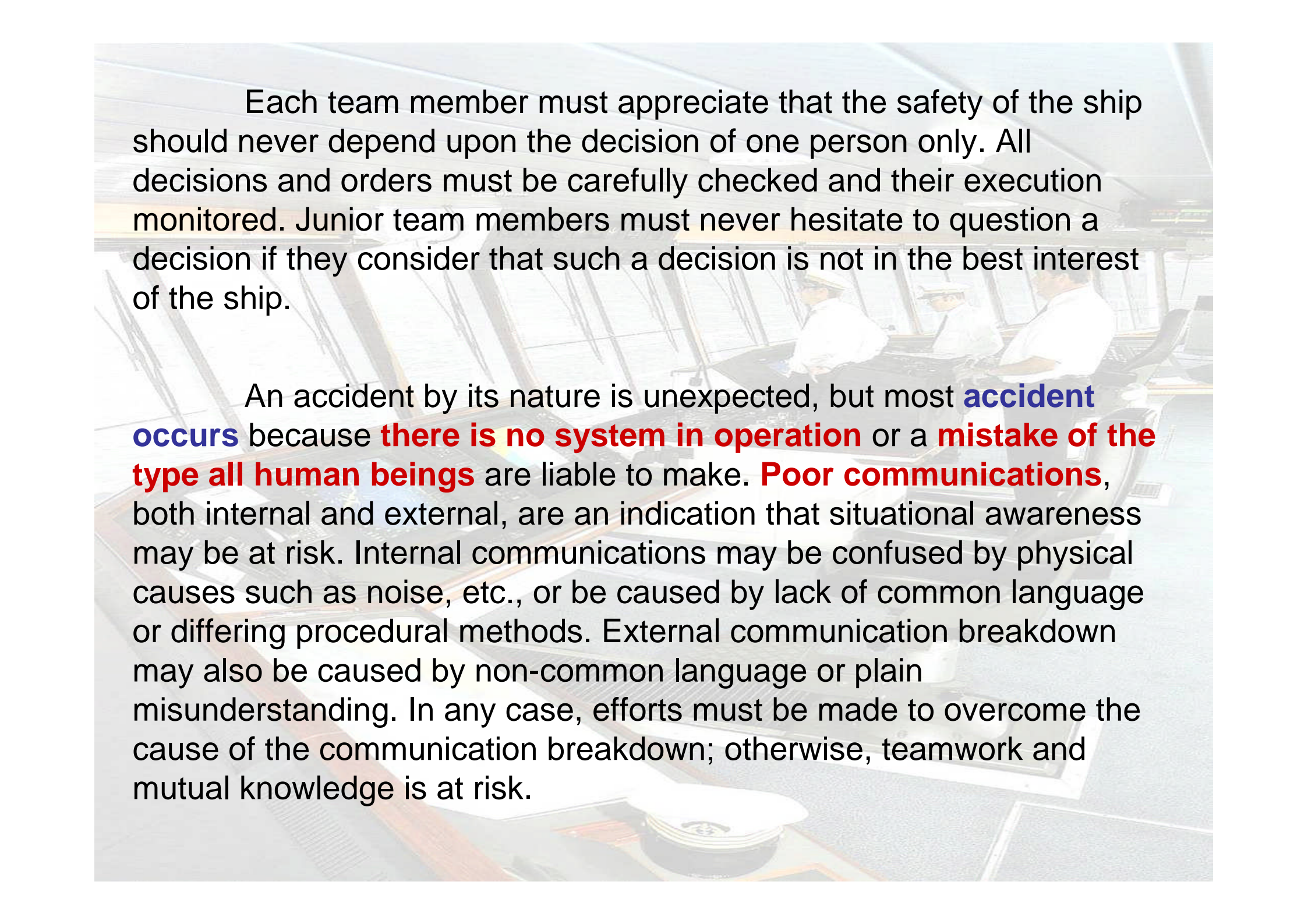
An efficient bridge organization will include procedures that:

1. eliminate the risk that an error on the part of one person may result in a disastrous situation;
2. emphasize the necessity to maintain a good visual lookout and to carry out collision avoidance routines;
3. encourage the use of all means of establishing the ship's position so that in the case of one method becoming unreliable others are immediately available;
4. make use of passage planning and navigational systems which allow continuous monitoring and detection of deviation from track when in coastal waters;
5. ensure that all instrument errors are known and correctly applied;
6. accept a pilot as a valuable addition to a bridge team.

Individual role can only be achieved by each member of the bridge team realizing that he has a vital part to play in the safe navigation of the ship and that safety depends upon all personnel playing their part to the utmost of their ability.



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Each team member must appreciate that the safety of the ship should never depend upon the decision of one person only. All decisions and orders must be carefully checked and their execution monitored. Junior team members must never hesitate to question a decision if they consider that such a decision is not in the best interest of the ship.

An accident by its nature is unexpected, but most **accident occurs** because **there is no system in operation** or a **mistake of the type all human beings** are liable to make. **Poor communications**, both internal and external, are an indication that situational awareness may be at risk. Internal communications may be confused by physical causes such as noise, etc., or be caused by lack of common language or differing procedural methods. External communication breakdown may also be caused by non-common language or plain misunderstanding. In any case, efforts must be made to overcome the cause of the communication breakdown; otherwise, teamwork and mutual knowledge is at risk.