1 BRIDGE ORGANISATION

1.1 OVERVIEW

General principles of safe manning, consistent with those agreed by IMO, should be used to establish the levels of manning that are appropriate to any ship.

At all times, ships need to be navigated safely in compliance with the COLREGS and also to ensure that protection of the marine environment is not compromised.

An effective bridge organisation should manage efficiently all the resources that are available to the bridge and promote good communication and teamwork.

The need to maintain a proper look-out should determine the basic composition of the navigational watch. There are, however, a number of circumstances and conditions that could influence at any time the actual watchkeeping arrangements and bridge manning levels.

Effective bridge resource and team management should eliminate the risk that an error on the part of one person could result in a dangerous situation.

The bridge organisation should be properly supported by a clear navigation policy incorporating shipboard operational procedures, in accordance with the ship's Safety Management System as required by the ISM Code.

1.2 BRIDGE RESOURCE MANAGEMENT AND THE BRIDGE TEAM

1.2.1 Composition of the navigational watch under the STCW Code

In determining whether the composition of the navigational watch is adequate to ensure that a proper look-out can be maintained continuously, the master should take into account all 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 attention necessary when navigating in or near traffic separation schemes or other routeing measures, or within industrially controlled work zones;
- the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;
- the fitness for duty of any crew members on call who are assigned as members of the watch, including compliance with applicable work hour regulations;
- knowledge of and confidence in the professional competence of the ship's officers and crew;
- the experience of each OOW, and the familiarity of that OOW with the ship's equipment, procedures and manoeuvring capability;
- activities taking place on board the ship at any particular time, including radiocommunication 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 manoeuvring characteristics;
- the size of the ship and the field of vision available from the conning position;
- the configuration of the bridge, to the extent that such configuration might inhibit a member of the watch from detecting by sight or hearing any external development;
- if working in an active DP mode, the need for a dedicated, competent DPO to be in charge of the positioning of the ship and the operation of the DP system;
- any other relevant standard, procedure or guidance relating to watchkeeping arrangements and fitness for duty.

1.2.2 Watchkeeping arrangements under the STCW Code

When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, inter alia, must be taken into account:

- the need to ensure that the bridge is never left unattended;
- weather conditions, visibility and whether there is daylight or darkness;
- proximity of navigational hazards which may make it necessary for the OOW to carry out additional duties;
- use and operational condition of navigational aids such as radar or electronic position-indicating devices, DP systems and their associated position reference systems, and any other equipment affecting the safe navigation of the ship;
- whether the ship is fitted with automatic steering or any form of dynamic positioning ability;
- whether there are radio duties to be performed;
- unmanned machinery space (UMS) controls, alarms and indicators provided on the bridge, procedures for their use and limitations;
- any unusual demands on the navigational watch that may arise as a result of special operational circumstances.

1.2.3 Reassessing manning levels during the voyage

At any time on passage, it may become appropriate to review the manning levels of a navigational watch.

Changes to the operational status of the bridge equipment, the prevailing weather and traffic conditions, the nature of the waters in which the ship is navigating, fatigue levels and workload on the bridge are among the factors that should be taken into account.

A passage through restricted waters may, for example, necessitate a helmsman for manual steering, and calling the master or a back-up officer to support the bridge team. If the ship is engaged in operations necessitating manoeuvring control using DP, then it is usually necessary to deploy one or more additional officers to act exclusively in the capacity of DPO.

1.2.4 Sole look-out

Under the STCW Code, the OOW may, in certain circumstances, be the sole look-out in daylight conditions (see section 3.2.1.1).

If sole look-out watchkeeping is to be practised on any ship, clear guidance should be given in the shipboard operational procedures manual, supported by master's standing orders as appropriate, and covering as a minimum:

- under what circumstances sole look-out watchkeeping can commence;
- how sole look-out watchkeeping should be supported;
- under what circumstances sole look-out watchkeeping must be suspended.

It is also recommended that, on each occasion, before sole look-out watchkeeping commences the master should be satisfied that:

- the OOW has had sufficient rest prior to commencing watch;
- in the judgement of the OOW, the anticipated workload is well within his capacity to maintain a proper look-out and remain in full control of the prevailing circumstances;
- back-up assistance to the OOW has been clearly designated;
- the OOW knows who will provide back-up assistance, in what circumstances back-up must be called and how to call it quickly;
- designated back-up personnel are aware of response times and any limitations on their movements, and are able to hear alarm or communication calls from the bridge;
- all essential equipment and alarms on the bridge are fully functional.

1.2.5 The bridge team

The bridge team is established so that the most effective use can be made of available manpower in order that established work procedures are followed, risk is minimised and ships are navigated safely. All ship's personnel who have bridge navigational watch duties will be part of the bridge team. The master and pilot(s), as necessary, will need the support of the team, which will comprise the OOW, a helmsman and look-out(s) as required.

The OOW is in charge of the bridge and the bridge team for that watch, until relieved.

It is important that the bridge team works together closely, both within a particular watch and across watches, since decisions made on one watch may have an impact on another watch.

The bridge team also has an important role in maintaining communications with the engine room and other operating areas on the ship.

1.2.6 The bridge team and the master

It should be clearly established in the company's Safety Management System that the master has the overriding authority and responsibility to make decisions with respect to safety and pollution prevention. The master should not be constrained by a shipowner or charterer from taking any decision which, in his professional judgement, is necessary for safe navigation, in particular in severe weather or reduced visibility.

The bridge team should have a clear understanding of the information that should be routinely reported to the master, of the requirements to keep the master fully informed, and of the circumstances under which the master should be called (see bridge checklist B13).

When the master has arrived on the bridge, his decision to take over control of the bridge from the OOW must be clear and unambiguous (see section 3.2.7).

The master should consider the benefit of the OOW retaining control of navigation. Such action could strengthen the bridge team as the master may provide more effective support and monitoring in this role.

1.2.7 Working within the bridge team

1.2.7.1 Assignment of duties

Duties should be clearly assigned, limited to those duties that can be performed effectively, and clearly prioritised.

Team members should be asked to confirm that they understand the tasks 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 watchkeeping performance.

1.2.7.2 Co-ordination and communication

The ability of ship's personnel to co-ordinate activities and communicate effectively with each other is particularly vital during emergency situations. During routine sea passages, port approaches and pilotage, the bridge team personnel must always work as an effective team.

A bridge team which has a plan that is understood and is well briefed, with all members supporting each other, will have good situational awareness. Its members will then be able to anticipate dangerous situations arising and recognise the development of a chain of errors, thus enabling them to take action to break the sequence.

All non-essential activity or distractions to watchkeeping should be avoided.

Caution should be exercised regarding the use of mobile phones by members of the bridge team (see section 3.1.4).

1.2.8 New personnel and familiarisation

There are obligations under the ISM Code and the STCW Convention for ship's personnel who are new to a particular ship to receive ship specific familiarisation in safety matters. The ISM Code also requires training needs in support of the SMS to be both identified and implemented.

For those personnel who have a direct involvement in ship operations such as watchkeeping, a reasonable period of time must be allocated for them to become acquainted with the equipment that they will be using and any associated ship procedures. The familiarisation procedures must be covered in written instructions that the company is required to provide to the master.

An officer must be responsible for the bridge equipment and for one-to-one training of new personnel, in a common language, ideally supported by checklists (see bridge checklist B1). This responsibility specifically includes navigational aids as fitted, including but not limited to ECDIS, ECS, ARPA, AIS, Radar and Echo Sounder. Self-teaching manuals, videos or computer based training programmes are examples of other training methods that could be used on board ship.

1.2.9 Prevention of fatigue

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 for at least 6 consecutive 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 rest is provided during each seven day period.

The International Labour Organization (ILO) in its Convention ILO 180, which is subject to port state control, stipulates a minimum rest period for seafarers in any seven day period of 77 hours. This standard is likely to be more widely enforced following the adoption in 2006 of the ILO Maritime Labour Convention.

Detailed guidance is available in the ISF publication *ILO Maritime Labour Convention 2006 – a Guide for the Shipping Industry*. The IMO and ILO workhour requirements are complicated, as are the mandatory requirements to maintain individual seafarers' workhour records. ISF has therefore produced computer software (*ISF Watchkeeper*) to help ship operators comply.

IMO has published guidance regarding fatigue mitigation and management - *Guidance on Fatigue*.

1.2.10 Alcohol consumption

The STCW Code advises governments to prescribe a maximum blood alcohol level of 0.08% for ship's personnel during watchkeeping and to prohibit alcohol consumption within 4 hours prior to commencing a watch. Port states, flag state administrations and companies may have more stringent policies.

The Oil Companies International Marine Forum (OCIMF) has established a maximum blood alcohol level of 0.04%.

1.2.11 Use of English

The STCW Code requires the OOW to have knowledge of written and spoken English that is adequate to understand charts, nautical publications, meteorological information and messages concerning the ship's safety and operations, and adequate to communicate with other ships and coast stations. In 2001, IMO adopted the Standard Marine Communication Phrases (SMCP) which replace the Standard Marine Navigational Vocabulary (SMNV).

Communications within the bridge team need to be understood. Communications between multilingual team members, and in particular with ratings, should either be in a language that is common to all relevant bridge team members or in English.

When a pilot is on board, the same rule should apply. Further, when a pilot is communicating to parties external to the ship, such as tugs, the ship should request that the pilot always communicates in English or a language that can be understood on the bridge. Alternatively, the pilot should be asked to explain his communications to the bridge team, so that the ship is aware of the pilot's intentions at all times. (See SOLAS Chapter V Regulation 14.4.)

1.2.12 The bridge team and the pilot

When a pilot is on board a ship, he will temporarily join the bridge team and should be supported accordingly (see section 3.3.3).

1.3 NAVIGATION POLICY AND COMPANY PROCEDURES

Every shipowning or management company should have a safety management policy. It should provide practical guidance concerning safe navigation and include a clear statement emphasising the master's authority. The company should establish in the SMS that the master has the overriding authority and the responsibility to make decisions with respect to safety and pollution prevention and to request the company's assistance as may be necessary. The guidance should cover:

- allocation of bridge watchkeeping duties and responsibilities for navigational procedures;
- procedures for voyage planning and execution;
- chart and nautical publication correction procedures;
- procedures to ensure that all essential navigation equipment and main and auxiliary machinery are available and fully operational;
- advice concerning emergency responses;
- ship position reporting procedures;
- accident and near miss reporting procedures;
- recording of voyage events;
- procedures for familiarisation training and handover at crew changes;
- a recognised system for identifying special training needs;
- company contacts, including the designated person under the ISM Code.

1.3.1 Master's standing orders

Shipboard operational procedures manuals supported by standing instructions based upon the company's navigation policy should form the basis of command and control on board.

Master's standing orders should be written to reflect the master's own particular requirements and the circumstances particular to the ship, her trade and the experience of the bridge team currently on board.

Standing orders and instructions should operate without conflict within the ship's Safety Management System.

Standing orders should be read by all officers upon joining the ship, and signed and dated accordingly. A copy of the orders should be available on the bridge for reference.

1.3.1.1 Bridge order book

In addition to general standing orders, specific instructions may be needed for special circumstances.

At daily intervals, the master should write in the bridge order book what is expected of the OOW, with particular reference to his requirements during the hours of darkness. These orders must be signed by each OOW when going on watch.