**SHIP HANDLING AND MANEUVERING**

**IN CASE OF STEERING FAILURE**

**Standard Wheel Orders**

All wheel orders given should be repeated by the helmsman and the officer of the watch should ensure that they are carried out correctly and immediately. All wheel orders should be held until countermarked. The helmsman should report immediately if the vessel does not answer the wheel.

When there is concern that the helmsman is inattentive s/he should be questioned:

“What is your heading?” And s/he should answer:

“My heading is … degrees”

|  |  |
| --- | --- |
| **ORDER** | **MEANING** |
| 1. Amidships | Rudder to be held in the fore and aft position |
| 1. Port/starboard five | 5° of port / starboard rudder to be held |
| 1. Port/starboard ten | 10° of port / starboard rudder to be held |
| 1. Port/starboard fifteen | 15° of port / starboard rudder to be held |
| 1. Port/starboard twenty | 20° of port / starboard rudder to be held |
| 1. Port/starboard twenty five | 25° of port / starboard rudder to be held |
| 1. Hard – a – port / starboard | Rudder to be held fully over to port / starboard |
| 1. Nothing to port / starboard | Avoid allowing the vessel’s head to go to starboard/port |
| 1. Meet her | Check the swing of the vessel’s head in a turn. |
| 1. Steady | Reduce swing as rapidly as possible. |
| 1. Ease to five / ten/ fifteen / twenty | Reduce amount of rudder to 5°/10°/15°/20°/ and hold |
| 1. Steady as she goes | Steer a steady course on the compass heading indicated as the time of the order. The helmsman is to repeat the order and call out the compass heading on receiving the order. When the vessel is steady on that heading, the helmsman is to call out: “Steady on…” |
| 1. Keep the buoy/mark/beacon… on port side / starboard side |  |
| 1. Report if she does not answer the wheel |  |
| 1. Finished with wheel, no more steering |  |

When the officer of the watch requires a course to be steered by compass, the direction in which s/he wants the wheel turned should be stated followed by each numeral being said separately, including zero, for example:

|  |  |
| --- | --- |
| **ORDER** | **Course to be steered** |
| Port, steer one eight two | 182° |
| Starboard, steer zero eight two | 082° |
| Port, steer three zero five | 305° |

On receipt of an order to steer, for example, 182°, the helmsman should repeat it and bring the vessel round steadily to the course ordered. When the vessel is steady on the course ordered, the helmsman is to call out:

“Steady on one eight to”

The person giving the order should acknowledge the helmsman reply.

If it is desired to steer on a selected mark the helmsman should be ordered to:

“Steer on … buoy / … mark / … beacon”.

The person giving the order should acknowledge the helmsman reply.

### **Steering control**

Steering control of the ship will comprise manual steering, probably supplemented by an automatic pilot (autopilot) or other track control system.

In areas of high traffic density, in conditions of restricted visibility and in all other potentially hazardous situations a helmsman should be available on the bridge, ready at all times to take over steering control immediately.

When steering the ship under autopilot, it is highly dangerous to allow a situation to develop to a point where the OOW is without assistance and has to break the continuity of the look-out in order to take emergency action and engage manual steering.

Changing between automatic and manual steering should always be made in good time under the supervision of the OOW. Manual steering should be tested after prolonged use of the autopilot.

**Use of override controls**

Manual steering override controls can be used on those occasions when the autopilot is engaged and the OOW needs to take immediate and direct control of the steering.

Override controls typically have a non follow-up type of operation and are likely to differ from the main steering control position where follow-up control is usual.

The OOW needs to be familiar with the operation of the steering control systems on the bridge, as well as the method of control at the emergency steering position.

**Manoeuvring data**

Ship's manoeuvring data is contained on the Pilot Card and Wheelhouse Poster (see annexes A3 and A4). Some ships also have a manoeuvring booklet. The OOW needs to be familiar with this data.

It is important not only to record on the Pilot Card the ship's draught, but also any permanent or temporary ship idiosyncrasies that could affect the manoeuvrability of the ship. A ship may, for example, have a tendency to steer to port at full speed, but steer to starboard at slow speed.

## **STEERING GEAR AND THE AUTOMATIC PILOT**

### ***Testing of steering gear***

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

### ***Steering control***

Steering control of the ship will comprise manual steering, probably supplemented by an automatic pilot (autopilot) or other track control system. At each steering position there should be a gyro repeater and rudder angle indicator. An emergency back-up steering position, usually in the steering gear flat, is also required.

If an autopilot is fitted, a steering mode selector switch for changing between automatic and manual steering, and a manual override control to allow the OOW to gain instant manual control of the steering, will be required.

***The autopilot (heading/track controller)***

The role of the autopilot is to steer the ship automatically. The autopilot 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 manually set on the autopilot and the autopilot will steer that course until a new course is entered. When linked to an integrated system, the autopilot will be able to receive cross track error (XTE) commands and track-keep automatically.

***Automatic track-keeping (if fitted)***

Track-keeping control allows the ship to maintain its planned track, whereas course-keeping only ensures that the ship is pointing in the right direction. Wind and currents can, for example, move the ship sideways and off its track while the ship's heading remains unchanged.

For a ship to operate an automatic track-keeping system, the autopilot should be adaptive and able to perform turns automatically between track legs, using either pre-set turn radius or rate of turn values.

Turns are commenced at a wheel over position, only after the OOW has acknowledged the wheel over position alarm and is satisfied that it is safe to execute the turn.

If a malfunction occurs when track-keeping, the system should alarm and revert immediately to course-keeping mode.

If the malfunction occurs while the autopilot is on a track, the autopilot should continue to steer the pre-set course of that track. If the autopilot is performing a turn when the malfunction occurs, the autopilot should complete the turn at the pre-set turn value and take up the course of the next track.

An autopilot performing automatic track-keeping functions and its alarm outputs should always be closely monitored.

The ability of the autopilot closely to follow a planned track will depend upon the accuracy of the XTE information sent to the autopilot from the navigation system.

### 

### ***Off-course alarm***

As part of the steering control system there should be an off-course alarm facility to warn the OOW when the ship excessively deviates from its course. The alarm should be in use at all times that the autopilot is in operation.

The use of the off-course alarm does not relieve the OOW from frequently checking the course that is being steered.

Non-activation of the off-course alarm will not always mean that the ship is maintaining its planned track. The ship may be moved off its track by wind and currents even though the heading remains unchanged.

### **THE CHECKLIST FOR STEERING FAILURE**

|  |  |  |
| --- | --- | --- |
| Action to be carried out: | | |
|  |  |  |
|  |  | Inform master |
|  |  |  |
|  |  | Prepare for anchoring if in shallow water |
|  |  |  |
|  |  | Exhibit ‘not under command’ shapes/lights |
|  |  |  |
|  |  | Commence sound signalling |
|  |  |  |
|  |  | Broadcast URGENCY message to ships in the vicinity if appropriate |
|  |  |  |
| In case of a STEERING FAILURE | | |
|  |  | Inform engine room |
|  |  |  |
|  |  | Engage emergency steering |
|  |  |  |
|  |  | Take way off the ship |
|  |  |  |
|  |  | Prepare engines for manoeuvring |
|  | | |
|  | | |
| Other actions | | |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**URGENCY MESSAGES**

An urgency message is one containing urgent information relating to a ship, aircraft or person. For example:

* man overboard;
* lost propeller;
* permanent loss of power;
* announcing and identifying medical transports; .
* communications concerning medical advice.

The urgency signal should only be sent on the authority of the master.

If using terrestrial communications, the urgency announcement should be made on one or more of the DS.C distress frequencies contained. The actual urgency message which follows should be sent on one or more of the radio telephony/telex frequencies for follow-up distress traffic.

If using satellite communications, it should be noted that ship earth stations only have 'distress' and 'routine' priority levels. Inmarsat has therefore devised a system of two-digit codes for urgency and safety communications. Not all coast earth stations accept all the codes.

**Standard Urgency Message**

**Structure**

After the transmission of a DSC Urgency Call switch the transmitter to VHF Channel 16 or frequency 2182 kHz (if not automatically controlled) and commence the urgency traffic as follows:

PAN-PAN (repeated three times)

ALL STATIONS (repeated three times)

THIS IS

* The 9 digit Maritime Mobile Service Identity code (MMSI) plus name / call sign

or other identification of the vessel calling

* The position of the vessel
* The text of the urgency message

|  |  |
| --- | --- |
| **PRIORITY: URGENCY- MV Seaborne (call sign DKEL-MMSI-Code 235 786 000); posn.69 degr.29 min.N/042 degr.53min. E** | **SMCP in VHF-communication**:**her DSC-alert has been acknowledged;**  **VHF-message begins:**  **“PAN PAN-PAN PAN-PAN PAN**  **All stations, all stations, all stations +identification and position”** |
| Vessels has problems with her manoeuvrability due to problems with her steering gear. | “I am maneuvering with difficulty; I have problems with steering gear”. |