CONTENTS

TECHICAL SHIP PROCEDURES

1. SCOPE

All personnel and crew shall bear in mind that the primary objective of the vessels Officers and Crew complement is to ensure that the vessel is operated in a SAFE, EFFICIENT AND COST-EFFECTIVE MANNER.

The engineering procedures and operations described throughout this Section reflect basic engineering knowledge and practices.

On some ships, some of these procedures and operations are automated and monitored by automatic sensory equipment.

In such cases, sound engineering judgement and interpretation will dictate how the procedures and operations shall be applied.

This means that each Engineer shall always take into account while exercising his engine room duties the safety of:

a. Officers and Crew
b. The Vessel
c. The Protection of the Environment
d. The Cargo

2. REFERENCE

In addition to the standing instructions and procedures contained in this section of the Ship Management Manual, which refer specifically to the engine room, it shall be Company policy that the following be utilized as a guide to safe engine room operations and maintenance.

a. Chief Engineer’s Standing Orders.
b. Chief Engineer’s Order Book.
c. Officers Job Descriptions - Section 4.4 of Fleet Procedures Manual.
d. Company HSE Procedures Manual.
e. International Convention for the Prevention of Pollution from Ships 73/78 (MARPOL), 2011 Consolidated Edition.
f. United States Code of Federal Regulations relating to oil transfer operations, oil discharges and operation of sewage plants in U.S. waters.
g. I.M.O. International Convention for the Safety of Life at Sea as amended.
h. Vessels Ship Maintenance and Administration Programs.
i. Maker's instruction manuals and handbooks for vessels main machinery and auxiliary equipment.

3. GENERAL GUIDELINES

DUTY ENGINEER - The Chief Engineer should be informed immediately in all cases of doubt or indecision by any watch standing officer.

The Engine Room when not on unmanned status shall be adequately and safely manned. Ref. Section 16.4[1] below.

Chief Engineer shall issue his Engine Room standing orders for the Engineer Officers reflecting his requirements specific to ship and trade. The standing orders shall not conflict with the SMS.

Each watch standing Engineer Officer shall read, sign, date[2] and follow Engine Room standing orders issued by Chief Engineer. Engine Room Standing orders to be posted in Engine Control Room.

The Chief Engineer shall use the Engine Room Order Book to issue specific orders for specific situations to be followed by the Duty Engineers during his absence from the Engine Room. Each duty Engineer must sign the Order Book for the period of his duty.

All international, government, local port and terminal rules and regulations to be strictly complied with.

Every engineer shall completely familiarize himself with all ships equipment along with valves and pipe systems.

All engine room equipment to be operated within the parameters set by each manufacturer.

Pumping of bilges must be approved by Chief Engineer and Bridge. In cases of doubt the Master is also to be contacted. Date, time, position and approximate quantity pumped to be recorded in Oil Record Book and discharge to be in accordance with MARPOL and U.S. Clean Water Act Regulations via the approved bilge water separator.

All engine room personnel shall wear clothes in accordance with Company Regulations:

a. Safety Shoes.
b. Company supplied coveralls.
c. Hard hats for lifting operations and working on deck in Port (PPE Matrix).
d. Eye and hearing protection.

Each watch standing engineer shall strictly comply with the Company Alcohol policy as defined in Company Drug and Alcohol Policy.

The “DEADMAN” alarm system is to be activated whenever there is one man alone in the Engine Room.

[1] W 48 / 2022
[2] W 48 / 2022

4. MANNING OF ENGINE ROOM

Standard watch keeping arrangements are:

a. Manned Watches: Duty Engineer and one Eng. Rating

b. UMS: Duty Engineer, plus Rating to assist if required.

For the different possible watch keeping arrangements see the below matrix

[3]E/R Manning level	Personnel	Scenario/Requirement
UMS[4]	Only for managing alarms[5]	Only on vessels with certified UMS operations. The Duty Engineer plus Duty Oiler (if required) shall be assigned to attend the E/R alarms.
Manning Level II	Duty Engineer + Duty Oiler	At sea/anchorage/port
Manning Level III	Chief Engineer + Duty Engineer + Duty Oiler	Arrival/departure ports, channel / river / canal transits. Chief Engineer may delegate this responsibility to the Second Engineer for meeting rest hours requirement.

The electrician can be on call (at Chief Engineer Discretion); duty engineer is to know the Electricians whereabouts at all times.

Second Engineer will cover for the Chief Engineer during a longer stand-by (over four hours) due to hours of rest. As far as possible, the work/rest hour requirements shall be met when planning the manning level.[6]

The Chief Engineer shall identify and discuss with the Master the planned changes for every passage of the ship as well as the unplanned changes in the E/R and increase the manning levels as required for the passage.[7]

In an emergency , the Chief engineer shall set a manning level appropriate to the situation. The EOOW shall take measures as early as necessary.[8]

[3] W 48 / 2022
[4] W 32 / 2024
[5] W 32 / 2024
[6] W 48 / 2022
[7] W 32 / 2024
[8] W 32 / 2024

[9]Examples of events /operations requiring PLANNED manning changes :	Examples of events /operations requiring UNPLANNED manning changes :
Arrival / departure	Navigation hazards
Cargo operations	Machinery faults
Bunkering	Adverse weather
Fuel change overs	Electrical blackout
Planned machinery overhauls	Fire
Docking for surveys and trial runs	Flooding

4.1. Unmanned Machinery Space at Sea

On ships equipped to run U.M.S. and on which all alarms and call systems are functioning, the minimum manning will be as follows:

One licensed Duty Engineer on call to respond to engine alarms.

Normally there should be no need for additional watch keepers in the Engine Room.

Nothing stated in this section shall inhibit the Chief Engineer and Master from increasing the level of engine room manning should navigational or operational circumstances dictate that additional manning is prudent. Machinery alarms are to be acknowledged by a licensed Engineer only. The bridge must be kept informed on the level of engine room manning. In every case when one person is required to enter the engine room area an agreed method of communication between the person in the engine room and the duty deck officer must be in place. Reporting times should not exceed 15 minutes. Where the “Deadman” alarm is fitted, it should be set to 15 minutes. If the deadman alarm time setting cannot be adjusted to 15 mins reporting is to be maintained. Duty engineer to inform Bridge/CCR once outside the ER after rectifying fault.

The engineers call alarm must be maintained in good order and tested monthly. The test results must be recorded in the engine logbook.

4.2. Manning in Port

Depending on ship operations, the level of manning required will be decided by the Chief Engineer. Either the Chief Engineer or Second Engineer must be on board at all times. The Duty Engineer shall always be available.

[9] W 32 / 2024

4.3. Operation with Unmanned Engine Room

4.3.1. For Engineer on Duty

4.3.1.1. Before the unmanned period begins, the following is to be carried out:

a. Ship specific checklist to be filled used and ensure below items are included in the checklist.

b. Check that all the machinery is operating satisfactorily.

c. Check that all service tanks (fuel oil, lubricating oil, etc.) are sufficiently full for the intended unmanned period.

d. Check that the necessary pumps with valves are “stand by”.

e. Check that the necessary automatic control functions are in service.

f. Check that the pre-requisites concerning the electric power supply are in order.

g. Check that the safety systems for the main engine, auxiliary engines and boilers are in service.

h. Check that there are no blocked alarms on the alarm monitoring system, consulate with Chief Engineer if alarm is required to be blocked.

i. Check that no alarm signals which indicate an abnormal condition are indicated on the alarm panels and also that all monitoring points are connected up.

j. Carry out a performance test of the alarm system.

k. Make an entry in the engine room log that the above-mentioned duties have been carried out.

l. There must not be ER ratings in E/R if duty engineer is not present.

4.3.1.2. For transfer of machinery space monitoring control, to the bridge.

a. Duty Engineer to inform the deck officer on duty that the machinery plant is ready for unmanned operation. Confirmation is to be received from the bridge that a period of unmanned operation may begin. The duration of the unmanned period is to be agreed upon.

b. Inform the deck officer on duty of one’s whereabouts during the unmanned period. The engineer on duty is to stay in a location at which he can at all times be notified by the alarm system and called by the bridge.

c. Monitoring control is transferred through the actual signalling system for transfer of this control. When acknowledgement has

been received from the bridge, the engine room may be left unattended.

d. The changeover to unmanned engine room is to be entered in the engine room/deck log.

4.3.1.3. Actions following Indicated Failure

a. In event of any alarm, the Duty Engineer is to proceed immediately to the engine room.

b. On arrival in the engine room, the alarm signal is to be acknowledged, which automatically also informs the bridge that the engineer on duty is in the engine room. If the latter is not the case, confirmation must be given in another way.

c. After the necessary actions and/ or corrections have been undertaken, the deck officer on duty is to be informed of whether the unmanned period may continue. Monitoring control is to be transferred to the engine room if necessary.

4.3.1.4. Transferring Monitoring Control of the Machinery Space to the Engine Room.

a. If the officer on duty wishes to transfer the monitoring control to the engine room, the engineer on duty is to be contacted.

b. If the engineer on duty wishes to transfer monitoring control to the engine room, he is to use the signal system for transfer of this control.

c. The changeover to manned engine room is to be entered in the engine room and deck log.

4.3.1.5. For Transfer of Propulsion Remote Control from Engine Room to Bridge and Vice Versa.

a. Instructions are to be followed as drawn-up on the basis of the actual signal system and clearly displayed at the engine room control stand.

4.3.2. For Deck Officer on Duty

4.3.2.1. For the Transfer of Monitoring Control of the Machinery space to Bridge.

a. The deck officer on duty is to confirm to the engineer on duty that an unmanned period can start. The duration of the unmanned period is to be agreed upon.

b. The name and whereabouts of the engineer on duty are to be noted in logbook.

c. Performance testing of the alarm system on the bridge is to be carried out (lamp and buzzer test).

d. It is to be checked that the emergency device (if any) for overriding of automatic shutdown / load reduction is not in activated position.

e. It is to be checked that the fire alarm system for the engine room is connected.

f. If the above points are complied with, the signal for transfer of monitoring control from the engine room to the bridge is to be acknowledged. Confirmation that transfer has been affected will be given by a signal indication on the bridge.

g. The changeover to unmanned engine room is to be entered in the deck logbook.

4.3.2.2. Actions following Alarm Failure Condition, which does not activate an Automatic Shut Down or Load Reduction of the Main Engine.

a. Following an alarm condition, the alarm signal is to be acknowledged and any order indicated on the sign by the alarm lamp is to be carried out. This may entail stopping or load reduction of the main engine. (e.g. slow steaming)

b. If the ship is in a manoeuvring position which implies that the manoeuvrability must be maintained to prevent (extensive) damage to the ship (collision or grounding), the main engine is then to be stopped as soon as the manoeuvring situation permits this.

c. The engineer on duty is to be summoned and is to confirm that the alarm message has been received.

d. When the engineer on duty has arrived in the engine room and has acknowledged the alarm signal, the bridge will be automatically informed of this through the existing signal system. If this is not the case, acknowledgement must be given by other means.

e. After the engineer on duty has undertaken the necessary precautions and/or improvements in connection with alarmed failure condition, the bridge will be informed of whether the unmanned period may continue. Monitoring control is transferred to the engine room if necessary.

4.3.2.3. Precautions and actions following indicated failure connection which activates automatic shut down or load reduction of the main engine.

a. If the ship is in a manoeuvring situation, which implies that its manoeuvrability must be maintained to prevent (extensive)

damage to the ship (collision and grounding), the emergency device for cancelling an automatic shutdown/ load reduction can be used.

b. The engineer on duty is to be summoned and is to acknowledge receipt of message.

c. The main engine is to be stopped as soon as the manoeuvring situation permits this.

4.3.2.4. For Transfer of Engine Plant Monitoring Control from the Bridge to the Engine Room.

a. The deck officer on duty is to contact by telephone the engineer on duty and inform him that he wishes to transfer monitoring control to the engine room.

b. If the engineer on duty wishes to transfer monitoring control to the engine room, the existing signal system is to be used to transfer this control.

c. Acknowledgement of the transfer is made by signal indication on the bridge. The changeover to manned engine room is entered in the deck logbook.

4.3.2.5. For Transfer of Main Engine Manoeuvre Control from Bridge to Engine room and vice versa.

a. Instructions are to be followed as drawn-up on the basis of the actual signal system and clearly displayed on the bridge.

5. BOILERS

Prior to becoming involved in the operation of oil-fired boilers, all operators must study and become fully conversant with the “Manufacturer’s” operating instructions. Boilers and ancillary equipment are to be used within the safe working parameters as directed in the Manufacturer’s operating specifications.

In the event of the need to deviate from the normal start-up/operating procedures, the Chief Engineer will have the applicable alternate standing instructions available. These must be read, understood, and followed by all operators.

If the equipment operator is in any doubt regarding any part of the above instructions, he/she must consult the Chief Engineer before proceeding with the operation.

5.1. General Operating Instructions

a. The following points have been found to be generally pertinent and essential to the operation of oil-fired auxiliary boilers.

b. Before start up after a standstill period, make sure no fuel has accumulated in the furnace due to e.g. leaky solenoid valves.

c. When starting up make sure the boiler furnace pre-purging routine is in order.

d. During standstill periods, standby heaters to be utilized.

e. Make sure the boiler fuel oil temperature is sufficient to ensure a viscosity within the specified parameters.

f. Boilers to be internally inspected according to the PMS.

g. An enclosed space entry permit must be completed prior to entering a boiler.

h. Boiler refractory, especially the burner quarl, to be regularly inspected.

i. Water washing to be done according to standing instructions.

5.2. Safety & Environmental

a. Boilers are pressure vessels, and the start-up routine is only to be carried out by those persons suitably approved by the Chief Engineer.

b. Such persons should be familiar with the oil-fired steam boiler start-up/operating instructions in general and have studied the Manufacturer's operating manual.

c. The first start up after any maintenance shall be attended by either the Chief Engineer or Second Engineer.

d. Under no circumstances should a steam boiler be operated without a correctly set safety valve in operation.

e. All safety devices are to be tested weekly.

f. Emergency Operating Procedure for the boilers in manual mode should be posted on the relevant boiler control panels.

g. If any of the boiler safety monitoring devices are defective the engine room should be manned until such a time as the fault has been rectified.

5.3. Soot Blowing

a. The emission of funnel sparks must be controlled under the following instances:

   i. During departure from port;

   ii. Soot blowing of economizers;

   iii. Soot blowing of boilers; and

   iv. Dry cleaning of main and auxiliary engines.

b. In engines fitted with water traps, spark arrestors, or diffusers, these are to be inspected and cleaned regularly. Water traps to be maintained and in operational condition.

c. Permission is to be attained from the bridge before dry cleaning main and aux engine turbo chargers and / or soot blowing economizers and boilers. This is to be recorded in the engine room log. The Chief Engineer is to monitor the exhaust emissions during these procedures and any abnormal occurrences are to be investigated as soon as possible.

d. When departing port and once the pilot is away, the Master must make use of the load ramp-up program unless traffic /safety conditions necessitate otherwise. This is to reduce the shock load on the funnel which will in turn reduce the amount of sparks emitted from the funnel stack.

e. All soot blowing operations are to be done at sea ONLY. If extended port stays are envisaged then all soot blowing to be conducted just prior to arrival.