

# CHECKS ON BOARD

Preventive measures to reduce deficiencies

## Machinery

### ME / AE / Others & Propulsion MARPOL

#### Assigned to:

Master  C/O  \_\_NWO  other:  
 C/E  \_\_TWO \_\_\_\_\_

#### Remarks / Findings:

Date: Initial Signature:


It is normal for some technical systems to fail from time to time. Managing failures is part of the safety management system. In such a case:

Use the available **ISM tools** of the company!

**Be aware:** an inspection pursues two main objectives:

- 1) The ship was safely navigated into the port(s).
- 2) The ship can be safely navigated to the next port(s).

The inspection thus aims at both: the past & future.

 Further details: see enclosed information sheet.

#### Organizational & MARPOL

01. **Engine Log Book**      
Appropriate records available, not obscured by corrections, signed by responsible engineers / chief engineer.
02. **ORB Oil Record Book**      
Maintained, signed by responsible engineers and master of the vessel.
03. **ORB – IOPP – Tank Capacity**      
Harmonized basic and administrative figures, capacities & measurement units do not deviate from each other.
04. **ORB Sludge & Waste Oil**      
Quantity of sludge and waste oil generation reasonable. Related disposal corresponds to discharge receipts.
05. **MARPOL VI**      
NOx Technical Files available and updated to the extent necessary. EIAPP valid/updated.
06. **SEEMP**      
Plan available & ship specific. Engineers familiar with it.
07. **FO Compliance**      
Fuel oil compliant regarding flash point & ECA areas of the voyage.
08. **FO Changeover/ECA**      
ECA appropriately addressed, FO change over procedure with instructions available & not limited to valve plan. Engineers familiar. Appropriate records filed with proven time calculations (changeover calculator).
09. **FO Bunker Delivery**      
Appropriate bunker delivery note(s) for all used fuel and the representative sample(s) available. Sample(s) available & duly stored under controlled conditions.
10. **Bunker Procedure**      
Available. Engineers familiar. Appropriate records filed. Sampling point in good order and operational.
11. **SOPEP/SMPEP**      
Available. Location & procedures known by engineers.
12. **Standard Discharge Connection**      
Ready for use with available nuts, screws, gaskets.
13. **Incinerator**      
Operating manual & type approval available. Operating personnel trained.
- UMS**
14. **UMS Unmanned Machinery**      
If certified for UMS operation: Relevant systems incl. alarm indication available & operational incl. cabin, mess room etc.

**Maintenance****15. Maintenance – Planning & Records**    

An effective system for planning and monitoring is in place (e.g. PMS or equivalent) considering makers instructions. Records of maintenance and repair work are kept & available. Operating instructions, maintenance instructions and drawings for ship machinery & equipment essential to the safe operation of the ship are written in a language understandable to the relevant officers & crew members.

**16. Maintenance – Overdue Jobs**    

PMS or equivalent do not indicate overdue jobs with high potentials for safe operation.

**17. Spares**    

Sufficient spare parts for certain equipment and for critical equipment available as necessary.

**Safety Systems****18. Machinery Safety Systems**    

Systems including alarm functions and fuel oil leakage alarm and audible/visual signals are operational.

**19. Alarm Testing**    

Adequate procedures & records of alarm testing available.

**20. Machinery Remote Control System**    

Failure alarm operational.

**Fire Safety & Spill****21. Cleanliness of E/R and Bilges**    

Controlled condition, free of oil & chemical spills. No visible oil leakages from machinery and pipes, no drip trays or rags placed to stop spills temporarily.

**22. High-Pressure Fuel Lines**    

Lines are protected by appropriate guards (spray shield, jacketed pipe system). Guards are not damaged/oil soaked.

**23. Stairs, Guards & Floors**    

Satisfactory means for safe passage, free of oily residues/grease, not posing a fire risk or hazardous slippery surface.

**24. FO Tank & Sounding Pipes**    

Closing devices intact, self-closing devices not in open position (engine & service spaces, passageways, deck area). Manholes closed by all nuts and fully sealing.

**25. Oily Rags & Combustible Garbage**    

Safe means for collecting and disposing of oil, paper, rags and other wastes available to minimize the potential for fire and personnel injury. Hazardous waste appropriately stored.

**26. Remote Controls Fan & Pumps**    

Fully operational with functional ID lamps as designed.

**Oily Water Separator (OWS)****27. OWS & 15ppm Alarm**    

Visually clean, in good condition & fully operational. Appropriate records available. 3-way valve operational.

**28. Service Pump**    

Pump discharges into the sea only via OWS, no bypass. Shore discharge line: blocked & secured.

**29. (Suspicious) Connection to Sea**    

No (suspicious) connection available enabling a discharge to sea from waist oil or sludge tank. Any original overboard lines and valves are permanently secured or disconnected and an appropriate warning note is displayed.

**30. OWS Time Stamp**    

Time stamp regularly checked and in order.

**31. OWS Manuals & Instructions**    

Operating & maintenance manuals available. Calibration certificate or evidence of replacement for 15ppm alarm available (Only for equipment approved by MEPC.107(49)).

**Condition & Operation in general****32. General Condition**    

No structural defects of the engine room and service spaces. No defects of fireproof insulations.

**33. Valves**    

Valves are maintained and free of obstructions. Hand wheels and levers are complete and not broken.

**34. Floor Panels & Guards**    

Complete & secured against slipping and falling. Hazards are marked or protected. Chains or other safeguards for openings are in place as designed. No risk of falling.

**35. Modifications**    

No unapproved modifications or unapproved fixed/flexible hoses at main or auxiliary engines or machinery.

**36. Insulation of Piping**    

Complete and in appropriate condition, protecting as designed, not oil-soaked.

**37. Gauges & Thermometers**    

Instruments are intact and operational and display the values correctly and reliably.

**38. Wires & Rods**    

Remote control wires & rods, trip mechanisms and valve handles are in a safe and maintained condition.

**39. Controlled No. of Temporary Repairs**    

Only limited No. of pipe clips, cement boxes and other temporary repairs present, documented at PMS.

**40. Stern Tube Seal**    

Controlled condition without oil or seawater leakage.



### Work Shops & Stores

#### 41. Tools incl. Electrical Tools

Tools are in good working order with operational guards in place, e.g. guard screen at grinders, lathes. Power tools & related equipment safely insulated.

#### 42. Gas-Welding

Condition of the welding system corresponds to the safety specifications/maker's instruction. Hoses not worn, cylinders safely stored and secured, storage area marked.

#### 43. Heavy Parts / Spares / Steel Plates

Safely stored and lashed at designated locations, protected from moving and slipping under all sea conditions, with safe and effective means for transport and handling.

#### 44. Chemicals / Hazardous Substances

Chemicals/other hazardous substances are safely stored at designated locations, lashed & protected against mechanical impacts. Appropriate instructions & PPE available. Operating instructions & MSDSs are available for all substances incl. cleaners, adhesives & paint.

#### 45. Electrical Safety

Workshops, workplaces and technical equipment are tidy, in good condition, free of rubbish and protected against electrical hazards.

### Sewage

#### 46. Treatment System

Sewage treatment system including aeration blower and alarm panel in order and operational. Instructions posted and appropriate. Instructions & protections for chemical handling available. Sight tubes clear. Composition of treated sewage according to manufacturer (e.g. verified by supplied test-kit). Maintenance: subject to the PMS.

#### 47. Means of Disinfection

Diameter and composition of disinfection tablets or the disinfection liquid in accordance with the type approval and/or written advice of the manufacturer of the STP, UV lamps operational as designed.

#### 48. Holding Tank (in use)

Appropriate documentation & approvals with record of ISPP certificate and approved piping drawing on board.

#### 49. Untreated (if applicable)

Approved sewage discharge rate table (MEPC.157(55)) on board and duly taken into account.

### Escape

#### 50. Escape & Exits Machinery

Escape routes and emergency exits from the engine room are appropriately identified and marked, clear of any obstructions and spills, appropriately illuminated under regular and emergency lighting conditions. All doors and escape hatches can be opened in escape direction under all lock state/lock and key conditions related to the ISPS requirements.

#### 51. EEBD

Available as per F&S Plan, pressure in operational range with controlled expiry/service date and readable operating instructions. Stowage position marked (e.g. IMO label).

### Power Management

#### 52. Switch Boards

Main & emergency switchboard, junction boxes: appropriate protection against accidental contact and fluids, insulating floor/matt of an approved type located in front of switch boxes (engine room, deck, service spaces and other areas).

#### 53. Emergency Switch Board

Instructions available and posted. Simulated blackout test ready to be demonstrated under load during an inspection.

#### 54. Emergency Generator - Readiness

Fully operational & ready for immediate use. Well maintained, regularly tested. Appropriate records available.

#### 55. Emergency Generator

Operating instructions to start engine available / posted: Key personnel of the department is able to demonstrate the start by both main and secondary means.

#### 56. Emergency Generator

Ready for power load test during inspections. Alternative means of start readily operational (capacity 3 starts / 30min). Engineers familiar with secondary alternative means of start.

#### 57. Emergency Generator

Quick-closing valves of the emergency generator room are marked and operational

#### 58. Battery Room

Clean & tidy, ventilated and appropriately marked (warning notices). Equipment & foundation maintained and in good condition. Protected from physical damages. PPE available as necessary

#### 59. Power Management

Available capacity sufficient for essential & emergency service under all present maintenance conditions.

### Steering Gear

#### 60. Steering Gear

Operational with appropriate angle indicator and means of communication. Clear changeover instructions available. If equipped with a steering repeater compass, the course information is synchronised.

#### 61. Condition & Room

No oil leakage. Walkway protected against slipping and/or guard rails available and not obstructed by spares or drums.

### Information to prepare for inspections

## Machinery

### ME / AE / Others & Propulsion

#### Objectives

Generally, the inspection pursues two main objectives:

- 1) The ship was safely navigated into the port(s).
- 2) The ship can be safely navigated to the next port(s).

**The inspection thus aims at both the past and the future.**

Therefore, inspectors examine existing records such as logbooks, checklists and maintenance records. Together with the general impression and results of direct interviews, which also give an indication of the familiarization and understanding of the company procedures of the crew members, a picture emerges.

Besides this, all machinery safety and pollution prevention devices, whether required or not, must be in an operational condition. Since the ECR is the central command station, other vital safety and control systems that come together here must be functional, e.g. alarm panels including their visual and acoustical indications.

While it is not possible to determine the condition of the machinery without performance trials, the general condition may initiate or may not initiate a more detailed inspection. The latter also depends on the number and nature of the deviating conditions and will certainly be carried out if the impression is given that the machinery is not being operated or maintained sufficiently.

**Keep the facilities ready for use. Also, keep yourself ready and familiar!**

**Keep paperwork up-to-date, transparent and orderly.**

**Avoid giving the impression of poor organization as this would prompt an inspector to look more closely.**

#### Technical failure and reporting

It is normal for technical systems to fail from time to time. As per SOLAS and the company's ISM/SMS system, reporting and documentation of any such failures should be part of the routine and an essential standard. The engine team should not try to hide or disregard a deficiency – instead, the team should discuss deficiencies/deviations: **Use the available ISM tools of the company.**

#### Need advice?

##### BG Verkehr - Ship Safety Division

Machine Dep.   ✉ [maschine@bg-verkehr.de](mailto:maschine@bg-verkehr.de)

Nautical       ✉ [nautik@bg-verkehr.de](mailto:nautik@bg-verkehr.de)

ISM/ILO       ✉ [ism-mlc@bg-verkehr.de](mailto:ism-mlc@bg-verkehr.de)

#### Notes on sources of the checklist

01.	Eng. Log Book	SOLAS V/28
02.	Oil Record B.	MARPOL I/17
03.	Oil Record B.	MARPOL I/6.3, I/17
04.	Sludge waste oil	MARPOL I/17, MEPC.1/Circ.736/Rev.2
05.	MARPOL VI	MARPOL VI/13
06.	SEEMP	MARPOL VI/6, 26, 27
07.	FO compliance	MARPOL VI/18
08.	FO ECA	MARPOL VI/14
09.	FO delivery	MARPOL VI/18
10.	Bunker procedure	ISM 7
11.	SOPEP/SMPEP	MARPOL I/37
12.	Overboard conn.	MARPOL I/13
13.	Incinerator	MARPOL VI/16
14.	UMS	SOLAS II-1/part E
15.	PMS plan&record	ISM 10, SOLAS II-1/26
16.	PMS overdues	ISM 10
17.	Spares	MSC-MEPC.7/Circ.3
18.	Machinery safety	SOLAS II-1/31, 38
19.	Alarm testing	ISM 10
20.	Machin. controls	SOLAS II-1/31
21.	Cleanliness	SOLAS II-1/26
22.	High pressure	SOLAS II-2/4, MSC.1/Circ.1321
23.	Stairs, guards	MLC A4.3, MSC/Circ.834
24.	Tk sounding pipe	SOLAS II-2/4.2
25.	Rags & garbage	SOLAS II-2/4, MSC/Circ.834, Circ.601
26.	Remote Fan&PP	SOLAS II-2/5
27.	OWS 15ppm	MARPOL I/14, MEPC Res.107(49)
28.	Service P/P	MARPOL I/14, I/15
29.	OWS ... to sea	MARPOL I/14, I/15
30.	OWS time stamp	MARPOL I/14, ISM 10
31.	OWS manuals	MEPC Res.107(49) para.4, 6
32.	General cond.	SOLAS II-2/11, MLC A4.3
33.	Valves	MLC A4.3, ISM 10, SOLAS II-1/35,48
34.	Floor & guards	MLC A4.3, MSC/Circ.834
35.	Modifications	SOLAS II-1/26
36.	Pipe insulation	SOLAS II-1/26, II-2/4
37.	Gauges & therm.	ISM 10, SOLAS II-1/4.2, II-1/26
38.	Wires & rods	ISM 10
39.	Tempor. repairs	ISM 10
40.	Stern tube	ISM 10
41.	Tools	MLC A4.3
42.	Welding	MLC A4.3
43.	Spares	MLC A4.3, MSC/Circ.834
44.	Chemicals	MLC A4.3
45.	Electr. safety	MLC A4.3, SOLAS II-1/45
46.	Sewage treatm.	MARPOL IV/9
47.	Sewage treatm.	MARPOL IV/9
48.	Sewage treatm.	MARPOL IV/9
49.	Sewage treatm.	MARPOL IV/9
50.	Escape	SOLAS II-2/13, MSC/Circ.834
51.	EEBD	SOLAS II-2/13, MSC.1/Circ.1432
52.	Switch board	SOLAS II-1/45, MSC/Circ.834
53.	Emerg. sw.bo.	SOLAS II-1/43, 45
54.	Emerg. generat.	SOLAS II-1/43-45, ISM 10
55.	Emerg. generat.	ISM 6, 7
56.	Emerg. generat.	SOLAS II-1/43-44
57.	Emerg. generat.	SOLAS II-2/4.2, ISM 10
58.	Battery room	MSC.1/Circ.1434, ISM 1.2
59.	Power managem.	SOLAS II-1/26
60.	Steering gear	SOLAS II-1/29, V/26
61.	Condition&room	MLC A4.3, SOLAS II-1/29



### Common deficiencies noted

#### OWS

- 3-way-valve inoperable
- Poor condition / oily spots / residues / leaking, signs of severe or alarming spill
- Time stamp incorrect
- Overboard line not blanked off
- Suspicious line possibly enables to by-pass OWS for direct overboard pumping
- 15ppm-alarm/oil filtering equipment inoperative

#### Fire prevention

- High pressure jacketed fuel oil pipes defective
- FO pipe insulation oil soaked / worn out / oil-wetted

#### General condition

- E/R not maintained in clean & tidy condition, poor garbage management, oily bilges, oily machinery

#### Main and auxiliary engine

- FO, LO or water leakage
- Defects, broken or missing insulation

#### Power Management

- Emergency generator does not start (manually, automatically)
- Key members of engine crew not able to start the emergency generator or to demonstrate how to start
- No. of auxiliary generators leading to poor power management

#### MARPOL – others

- Sewage discharge rate not displayed or not known, treatment system inoperable, direct overboard valve in open position
- FO (S)ECA conditions not met, sulphur content exceeded, inconsistency in changeover figures, key members of the crew not able to demonstrate changeover or FO bunkering procedure

#### Various

- Tools incl. electrical tools in poor condition
- Sensor defects (speed, crankshaft position, mist, etc.)
- Conditions for UMS operation not met

### Common grounds for PSC detention

- Invalid certificates
- Alleged violation of the discharge requirements C
- Emergency equipment (e.g. fire pump) inoperative
- Missing flag state exemption
- Cleanliness in engine room
- Emergency generator inoperative
- Quick-closing valves inoperative
- Emergency control stations / panels inoperative
- Lack of familiarization with steering gear, OWS or other equipment
- Spill & fire hazard, e.g. wetted by oil

### Further information that may be of interest

#### Procedures for Port State Control, 2021

#### Extracts of IMO Res. A.1185(32)

#### Operation of machinery

*The PSCO may determine if responsible ship's personnel are familiar with their duties related to*

*Operating essential machinery, such as: emergency and standby sources of electrical power; auxiliary steering gear; bilge and fire pumps; and any other equipment essential in emergency situations.*

*Emergency generator: actions which are necessary before the engine can be started; different possibilities to start the engine in combination with the source of starting energy; and procedures when the first attempts to start the engine fail; and*

*Standby generator engine: possibilities to start the standby engine, automatic or by hand; blackout procedures; and load-sharing system including emergency stop*

*Steering gear: which type of auxiliary steering gear system applies to the ship; how it is indicated, which steering gear unit is in operation; and what action is needed to bring the auxiliary steering gear in operation.*

*Bilge pumps: number and location of bilge pumps installed on board the ship (including emergency bilge pumps); starting procedures for all these bilge pumps; appropriate valves to operate; and most likely causes of failure of bilge pump operation and their possible remedies; and*

*Fire pumps: number and location of fire pumps installed on board the ship (including the emergency fire pump); starting procedures for all these pumps; and appropriate valves to operate.*

LSA: starting and maintenance of lifeboat engine and/or rescue boat engine;

Local control: procedures for those systems, which are normally controlled from the navigating bridge;

Radio installation: use of the emergency & independent sources of electrical power;

Batteries: maintenance procedures;

Safety: emergency stops, fire detection system and alarm system operation of watertight and fire doors (stored energy systems); and change of control from automatic to manual for cooling water and lube oil systems for main and auxiliary engines.

### **MARPOL – Oil/oily mixtures from machinery spaces**

The PSCO may determine if all operational requirements of MARPOL Annex I have been met, taking into account:

- quantity of oil residues generated;
- capacity of the sludge and bilge water holding tank; and
- capacity of the oily-water separator.

An inspection of the ORB should be made. The PSCO may determine if reception facilities have been used and note any alleged inadequacy of such facilities.

The PSCO may determine whether the responsible officer is familiar with the handling of sludge and bilge water. The relevant items from the guidelines for systems for handling oily wastes in machinery spaces of ships may be used as guidance. Taking into account the above, the PSCO may determine if the ullage of the sludge tank is sufficient for the expected generated sludge during the next intended voyage. The PSCO may verify that, in respect of ships for which the Administration has waived the requirements of regulations 14(1) and (2) of MARPOL Annex I, all oily bilge water is retained on board for subsequent discharge to a reception facility.

When reception facilities in other ports have not been used because of inadequacy, the PSCO should advise the Master to report the inadequacy of the reception facility to the ship's flag State, in conformity with the Format for reporting alleged inadequacies of port reception facilities (MEPC.1/Circ.834/Rev.1, appendix 1 of the annex), as may be amended.

### **MARPOL – Sewage**

The PSCO may determine:

- if all operational requirements of MARPOL Annex IV have been met; the PSCO may determine if the sewage treatment system, comminuting and disinfecting system or holding tank has been used and note any alleged inadequacy of the system or holding tank; and
- that appropriate ship's personnel are familiar with the correct operation of the sewage treatment system, comminuting and disinfecting system or holding tank.

The PSCO may determine whether appropriate ship's personnel are familiar with the discharge requirements of regulation 11 of MARPOL Annex IV.

When reception facilities in other ports have not been used because of inadequacy, the PSCO should advise the master to report the inadequacy of the reception facility to the ship's flag State, in conformity with the waste reception facility reporting requirements (MEPC.1/Circ.834/Rev.1, as may be amended).

### **MARPOL – Air pollution prevention**

The PSCO may determine whether:

- the master or crew is familiar with the procedures to prevent emissions of ozone-depleting substances and sulphur when equivalent arrangements are in place;
- the master or crew is familiar with the proper operation and maintenance of diesel engines, in accordance with their Technical Files;
- the master or crew has undertaken the necessary fuel changeover procedures or equivalent, associated with demonstrating compliance within a SOx emission control area;
- the master or crew is familiar with the garbage screening procedure to ensure that prohibited garbage is not incinerated;
- the master or crew is familiar with the operation of the shipboard incinerator, as required by regulation 16.2 of MARPOL Annex VI, within the limit provided in appendix IV to the Annex, in accordance with the operational manual;
- the master or crew recognizes the regulation of emissions of volatile organic compounds (VOCs), when the ship is in ports or terminals under the jurisdiction of a Party to the 1997 Protocol to MARPOL in which VOCs emissions are to be regulated, and is familiar with the proper operation of a vapour collection system approved by the Administration (in case the ship is a tanker as defined in regulation 2.27 of MARPOL Annex VI); and
- the Master or crew is familiar with bunker delivery procedures in respect of bunker delivery notes and retained samples as required by regulation 18 of MARPOL Annex VI.