

Notice of the Maritime Safety Administration of the People's Republic of China

Marine Notice No. 5 / 2024

Notice of the Maritime Safety Administration of the People's Republic of China on carrying out the Special Action to Prevent Malfunctions in Ship Mechanical and Electrical Equipment

In order to implement the requirements of the Three-Year action plan to address the root cause of water traffic safety, further improve the level of ship safety, reduce the risk of ship mechanical and electrical equipment failures, and prevent and curb the occurrence of water traffic accidents, in accordance with the Maritime Traffic Safety Law of the People's Republic of China, the Regulations on the Administration of Domestic River Traffic Safety of the People's Republic of China, and the Ship Safety Supervision Rules of the People's Republic of China, our bureau has decided to carry out a Special Action to Prevent Ship Mechanical and Electrical Equipment Failures nationwide. The relevant matters are hereby announced as follows:

1、 Implementation time

The special operation will start from [April 7, 2024](#) and end on [October 31, 2024](#).

2、 Carry out self-inspection of ship electromechanical equipment

Chinese ships should strengthen the maintenance and upkeep of ship mechanical and electrical equipment. Shipping enterprises should refer to the "[Special Self Inspection Guidelines for Preventing Ship Mechanical and Electrical Equipment Failures](#)" (attached) to develop key inspection items for ship mechanical and electrical equipment applicable to their own ships. Ships should conduct Pre-Arrival and Pre-Departure self-inspections as required, and promptly rectify any problems or hidden dangers found during self-inspections.

Ship agents should promote and warn foreign ships planning to enter China, supervise the maintenance and hidden danger investigation of mechanical and electrical equipment in advance.

China Classification Society, domestic ship inspection agencies, and foreign ship inspection agencies in China should strengthen the inspection and testing of newly built, renovated, mechanical and electrical equipment maintenance and updates of ships, improve the quality of inspection, and reduce the risk of ship mechanical and electrical equipment failure.

3、 Fault report of ship electromechanical equipment

If a ship experiences mechanical and electrical equipment failure, it should proactively report to the local maritime management agency and accept special safety inspections from the maritime management agency as required. For those who fail to proactively report mechanical and electrical equipment malfunctions, once discovered, they will be dealt with strictly and severely in accordance with the law.

4、 Carry out special inspections of ship electromechanical equipment

Maritime management agencies at all levels conduct detailed inspections of ship mechanical and electrical equipment in conjunction with daily ship safety inspections. If it is found through various channels that a ship has experienced mechanical and electrical equipment failures, a special inspection should be carried out in principle. For ships that have experienced two or more mechanical and electrical equipment failures within 12 months, the maritime management agency will invite shipping companies and ship inspection agencies to jointly carry out inspections and require ships to submit fault analysis reports and preventive measures for ship mechanical and electrical equipment failures.

Attachment:

Special Self Inspection Guidelines for Preventing Ship Mechanical and Electrical Faults

China Maritime Safety Administration

April 3, 2024

<Attachment>

Special Self Inspection Guidelines for Preventing Ship Mechanical and Electrical Failures

Ships should conduct self-inspection of their safety technology and mechanical and electrical equipment in accordance with relevant provisions such as international conventions and domestic laws and regulations, and conscientiously implement the main responsibility for safety production.

1、 Is the main propulsion device (prime mover) functioning properly

To prevent the failure of the main propulsion device, self-inspection should be carried out from the aspects of oil, gas, water, and electricity, mainly targeting the fuel system, lubricating oil system, air system, cooling water system, and main engine control system.

- 1) Whether the fuel system of the main propulsion device is normal (fuel supply unit, high-pressure oil pump, oil pipe, oil leakage monitoring, fuel heating, automatic switching of fuel pump [if any], etc.).
- 2) Whether the communication facilities between the control panel and the driver's car clock are normal, and whether the nearby tachometers and other instruments are normal.
- 3) Whether the starting air system of the main propulsion device is normal (including the pressure of the main starting air cylinder, main air compressor, main starting valve, cylinder starting valve, air distributor, etc.).
- 4) Whether the main engine oil system is normal (whether there are any signs of leakage in the pipelines and filter joints, whether the pressure gauge displays normally, whether the sensor joints are firm, and whether the oil pump automatically switches [if any]).
- 5) Whether the cooling water system of the host is normal (whether there are any signs of leakage in the pipelines and coolers, whether the pressure gauge displays normally, whether the sensor connector is firm, and whether the cooling water pump automatically switches [if any]).
- 6) Whether the host controls the air system properly (controlling air pressure, controlling whether there is water in the air, etc.).
- 7) Measures for the main engine to reverse (adjustable blade pitch control system, clutch).

2、 Is the security, monitoring, and remote-control equipment of the main propulsion device functioning properly

To prevent the failure of the security system of the main propulsion device, self-inspection is required from the aspects of oil mist concentration detector, oil pressure loss protection, and reliability of overspeed protection function.

- 1) Is the main diesel engine overspeed alarm and emergency shutdown device functioning properly.
- 2) Is the main diesel engine lubricating oil low pressure, cylinder liner water high temperature alarm, and automatic shutdown protection device functioning properly.
- 3) Whether the main diesel oil mist concentration detector and the main bearing temperature detector are normal.
(Only applicable to seagoing vessels, unmanned engine rooms on ships that diesel engines with a power greater than 2250KW or a cylinder diameter greater than 300mm)
- 4) Is there any alarm record related to the security and automatic parking devices of the main propulsion system in the centralized monitoring system. (Applicable only to seagoing vessels)
- 5) Is the lubricating oil low pressure alarm device of the gear transmission device normal? Is the lubricating oil high temperature alarm device of the gear transmission device with an input power greater than 1470kW normal. (Applicable to seagoing vessels only)
- 6) Is the lubricating oil low pressure alarm device normal for gear transmission devices with input power greater than 370KW and is the lubricating oil high temperature alarm device normal for gear transmission devices with input power greater than 1470kW. (Applicable only to inland vessels)

3、 Is the ship's steam boiler functioning properly

Boilers can adjust the oil and water temperature through steam heating to ensure that diesel engines operate within normal operating conditions. To prevent boiler failures, it is recommended to conduct self-inspections in the water supply system, combustion system, safety protection, and other aspects.

- 1) Whether the water supply system is normal (number of water pumps equipped, water quality, water level indicator devices, etc.).
- 2) Is the combustion system functioning properly (ignition, fuel supply, air supply, etc.).
- 3) Is the security system functioning properly (safety valve, air supply, flame extinguishing, low water level alarm, etc.).

4、 Is the main power supply of the ship normal

To prevent main power failure, preventive self-inspection should be carried out from three aspects: the prime mover, generator, and main distribution board.

- 1) Whether the main power capacity is sufficient (focus on single or multiple generator failures and ships equipped with side thrust devices, desulfurization towers, and ballast water treatment devices).
- 2) Whether the starting and operation of the prime mover are normal (fuel, lubricating oil, cooling water, etc.).
- 3) Whether the security system function of the prime mover is normal (such as overspeed protection, low pressure of lubricating oil, high temperature of cooling water, etc.).

4) Whether the main distribution board and generator unit control panel are normal (automatic start, stop, parallel, disconnection, load distribution, graded unloading control, etc. of the generator unit).

5) Is the insulation monitoring function of the main distribution board normal.

5、 Is the emergency power supply normal

When the main power supply of a ship fails, the emergency power source (mainly the emergency generator) can serve as an independent energy source to provide power for important equipment such as the steering gear. The inspection of emergency power sources for ships can be conducted through self-inspection of emergency generators, emergency distribution boards, emergency battery packs, and other aspects.

1) Whether the emergency generator starts and operates normally (fuel, lubricating oil, cooling water, etc.).

2) Does the emergency generator starting device meet the requirements. (Applicable only to seagoing vessels)

3) Is the reserve fuel of the emergency generator sufficient.

4) Is the emergency generator mode switch for automatic starting in the automatic position.

5) When the main power is lost, can the emergency equipment be powered within 45 seconds (required for inland ships within 30 seconds) according to regulations.

6) Is the insulation monitoring function of the emergency distribution board normal.

7) Is the emergency battery pack functioning properly.

8) Is the quick closing valve of the emergency generator fuel tank working properly.

9) Are the various load unit switches on the emergency generator distribution board in the open position.

10) Is the compressed air cylinder supply pipeline of the emergency generator (located in the emergency generator room) closed to the check valve.

11) Is the fuel leakage alarm of the high-pressure oil pipe of the emergency generator normal.

6、 Is the steering device working properly

To ensure the effective operation of the steering device and prevent steering device failures, self-inspection can be carried out from the aspects of the power system, hydraulic system, alarm device, and operation of the steering device.

1) Can the steering device start automatically after power failure. (Applicable only to seagoing vessels)

2) Can the steering device receive power within 45 seconds when the main power is lost. (Applicable only to seagoing vessels, with a rudder stock diameter exceeding 230mm)

- 3) When a single fault occurs in the power equipment of the electrically controlled servo, it should be able to switch to the standby power equipment for use within 10 seconds. (Applicable only to inland vessels)
- 4) Is the capacity of the hydraulic oil storage tank of the steering device sufficient to refill at least one power execution system (including the reservoir).
- 5) Check if the low-level sound and light alarm of the hydraulic oil reservoir of the steering device (inside the cab and machine room) is normal.
- 6) Whether the sound and light alarms (short circuit protection, overload alarm, phase failure alarm) of the steering device are normal (at the main engine or in the control room and cab of the normal control main engine). (Applicable only to seagoing vessels)
- 7) Check if the steering performance test is normal.
- 8) Whether the communication facilities between the driver's cab and the rudder compartment are in good condition.

7、 Are the crew members competent and familiar with the operation of mechanical and electrical equipment within their responsibilities

To prevent ship mechanical and electrical failures caused by human factors such as improper crew operation, it is recommended to conduct self-examination from aspects such as crew certification, ship staffing, crew practical operation, and emergency response capabilities.

- 1) Whether the crew members hold a valid Certificate of Competence and whether the ship meets the minimum safety staffing requirements.
- 2) Can crew members have effective language communication during daily work and emergency situations.
- 3) Whether the responsible crew members are familiar with the operation, testing, and emergency response procedures of the main propulsion device (high temperature alarm testing for the lubricating oil system and cooling system, overspeed alarm testing, fuel casing failure [leakage] alarm testing, emergency shutdown, and emergency response procedures for engine out of control, etc.).
- 4) Whether the responsible crew members are familiar with the operation, testing, and emergency response procedures of the ship's boiler (low water level, flame extinguishing, air supply alarm, etc.).
- 5) Whether the responsible crew members are familiar with the operation, testing, and emergency response procedures of the ship's main power supply (fuel leakage alarm testing, parallel and disconnection testing, insulation testing, and emergency response procedures for the entire ship's power loss).
- 6) Whether the responsible crew members are familiar with the operation, testing, and emergency response procedures of the emergency generator (such as starting, connecting, and disconnecting the emergency generator).
- 7) Whether the responsible crew members are familiar with the operation, testing, and emergency response procedures of the steering gear (conversion of the steering gear system, inspection and

testing of the steering gear before sailing, alarm testing of the steering gear, emergency steering drills, etc.).

8、 Whether the system documents related to electromechanical equipment are effectively implemented on ships

Whether the system documents related to mechanical and electrical equipment are effectively implemented on ships is an important part of preventing mechanical and electrical failures. Self-inspection is mainly carried out from the aspects of onboard resources and human resources, formulation of onboard operation plans, emergency preparedness, reporting and analysis of accidents and dangerous situations, and maintenance of ships and equipment.

1) Does the company ensure that the captain receives necessary support (ship shore communication records, spare parts material application and supply records, system document reports, technical support, etc.).

2) Is the company equipped with qualified and certified crew members to meet various safety operation requirements on board.

3) Does the company ensure that crew members can effectively communicate while fulfilling their safety management system responsibilities.

4) Does the company establish procedures, plans, or instructions for the operation of mechanical and electrical equipment.

5) Does the company include mechanical and electrical equipment failures in emergency situations, identify them, and develop emergency response procedures (such as emergency operations and drills for main engines, ship power outages, and steering gear).

6) Does the company develop a maintenance plan for mechanical and electrical equipment and implement it according to the plan.

9、 Other issues that may cause ship mechanical and electrical failures

In addition to the inspection of the mechanical and electrical equipment itself, attention should also be paid to the possibility of other systems causing problems with the ship's mechanical and electrical equipment. For example, the mis-operation of the fuel quick closing valve may cause accidental interruption of the main/auxiliary engine fuel supply, lack of protective facilities for mechanical and electrical equipment, injury to crew members, manual emergency stops of equipment, and failure of the bilge water system leading to engine room flooding. Extra attention should also be paid to the fatigue issues of crew members on board and the departure of ships after maintenance in the factory.

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