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CIRCULAR

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Notice of the Maritime Safety Administration of the People's Republic of China on the Special Action to Prevent Mechanical and Electrical Equipment Failures on Ships

Dear Sir/Madam,

On April 3, 2024, the Maritime Safety Administration (MSA) of the People's Republic of China issued a notice on the special action to prevent mechanical and electrical equipment failures on ships (hereinafter referred to as the "Notice"). We hereby

prepare this Circular to introduce the contents of the Notice and provide loss prevention suggestions for the reference of the Club and their Members.

Background

In recent years, Chinese maritime authorities have paid special attention to the major risks to ship safety caused by mechanical and electrical equipment failures. Shanghai MSA has successively issued the“Announcement of Shanghai Maritime Safety Administration on Strengthening the Safety Management of Ships With Machinery Failure”and the “Notice on Further Strengthening the Safety Self-inspection of Ships Planning to Enter the Yangtze Estuary Deepwater Channel”. Through the formulation and implementation of these specific administrative regulations, the safety management of ships entering and leaving Shanghai port has been further strengthened, which has effectively reduced such risks and prevented and contained the occurrence of water traffic accidents.

The Period, Targets and Inspection Approaches of the Special Action

Period

The special action will start from April 7, 2024 and end on October 31, 2024.

Targets

The targets of the special action initiated by China MSA to prevent ship mechanical and electrical equipment failures are the ships that entering the Chinese ports (including seaports and river ports).

Inspection Approaches

The special inspection approaches include:

1. The MSA at all levels shall conduct detailed inspections on ship's mechanical and electrical equipment in combination with their routine safety inspections.

2. If it is discovered through various channels that a ship has experienced mechanical and electrical equipment failures, in principle, a special inspection shall be followed.

3. For ships that experienced two or more mechanical and electrical equipment failures in the past 12 months, the MSA will invite their shipping companies and ship inspection institutions to jointly carry out inspections, and require ships to submit accident analysis reports and preventive measures for mechanical and electrical equipment failures.

Additionally, ships experienced mechanical and electrical equipment failure should proactively report to the local MSA and accept special safety inspections as required. For ships that fail to proactively report mechanical and electrical equipment failures, once discovered by the MSA, more stringent and severe penalties will be imposed in accordance with the law.

Self-inspection Requirements of the Special Action

Chinese ships shall strengthen the maintenance of their mechanical and electrical equipment. And the shipping companies shall develop key inspection items for mechanical and electrical equipment that applicable to their own ships with reference to the "Special Self-inspection Guidelines for Preventing Ship Mechanical and Electrical Equipment Failures" (attached). Ships shall also conduct pre-departure self-inspection according to the requirements, and timely rectify any deficiency or hidden problem identified during the self-inspection.

Foreign ships planning to visit Chinese ports should conduct appropriate maintenance on their mechanical and electrical equipment and the hidden problem investigation in

advance.

China Classification Society, domestic ship inspection institutions, and foreign ship inspection institutions in China shall strengthen their inspection and testing on the ships newly built, rebuilt, as well as repaired and renewed with respect to mechanical and electrical equipment, so as to improve their inspection quality and reduce the risk of mechanical and electrical equipment failure.

Our Suggestions

This special action is similar to the "Concentrated Inspection Campaign" scheme which is organized by the major PSC MoU around the world. During this special action, China MSA will inspect the mechanical and electrical equipment of ships entering Chinese ports. To ensure ships successfully pass the special inspection, we propose several countermeasures which are listed hereunder for the consideration of ships and their owners or managers:

1. Guided by the attached "Special Self-inspection Guidelines for Preventing Ship Mechanical and Electrical Equipment Failures" and in combination with the ship's "Pre-departure inspection checklist", the ship shall conduct detailed technical inspections and tests on the main propulsion device and its auxiliary equipment, boilers, main power supply, emergency power supply, steering device, etc., to ensure the ship's mechanical and electrical equipment are in a reliable working status and well prepared for the forthcoming inspection.

2. Assign sufficient and competent crew members onboard to meet various safety operation and emergency response requirements.

3. Ensure the ship safety management system (SMS), especially the parts related to the routine operation, maintenance, testing, emergency management, and

accident/near miss reporting are effectively implemented. Crew members should be able to operate and test various mechanical and electrical equipment properly and effectively in comply with corresponding procedures or instructions, and able to report mechanical and electrical equipment failure related accidents or near misses and rectify the deficiencies identified therefrom.

4. The SMS should contain drill and training plan that relevant to mechanical and electrical equipment failure, so that the ship can conduct drill or on-scene training in accordance with the plan, improve the operation and emergency response capabilities of the crew, and familiarize the crew with the emergency response measures and their respective emergency responsibilities in the event of mechanical and electrical failure accidents. The emergency drills/training scenarios related to mechanical and electrical equipment failures may include but are not limited to: main engine (M/E) failure, M/E emergency local control, blackout, emergency steering, operation and testing procedures for emergency generators, etc.

5. If a mechanical and electrical equipment failure accident occurs, appropriate actions and measures should be taken immediately to minimize or even eliminate the adverse effects of the accident. The ship should also proactively report to the local MSA and cooperate with and accept special safety inspection of the local MSA.

If you have any queries, please feel free to contact Huatai Beijing headquarter (pni.bj@huatai-serv.com) or its local branch offices.

Attachment

Special Self-inspection Guidelines for Preventing Ship Mechanical and Electrical Equipment Failures

Ships shall carry out self-inspection on their technical safety status as well as the mechanical and electrical equipment in accordance with international conventions, national laws, regulations and other relevant provisions, and conscientiously fulfill their primary safety responsibility of production.

1. Is the main propulsion device (prime mover) working properly

To prevent the failure of main propulsion device, it is necessary to carry out self-inspection on the fuel, gas, water and electricity, and shall mainly focus on the fuel system, lube oil system, air system, cooling water system and engine control system, etc.

(1) Is the fuel system of the main propulsion device working properly (oil supply unit, high-pressure oil pump, oil pipe, oil leakage monitoring, fuel heating, automatic switchover of fuel oil pumps (if fitted), etc.).

(2) Are the communication facilities on the bridge and the control console, such as the telegraph as well as the tachometers and other instruments in its vicinity in normal condition.

(3) Is the starting air system of the main propulsion device working properly (pressure of the main starting air bottle, main air compressor, main starting valve, air cylinder starting valve, air distributors, etc.).

(4) Is the M/E lube oil system working properly (are there any traces of leakage from

the pipeline and filter connector, is the pressure gauge reading normal, is the sensor connector secure, and the automatic switchover of the lube oil pumps (if fitted) etc.).

(5) Is the M/E cooling water system working properly (are there any traces of leakage from the pipeline and cooler, is the pressure gauge reading normal, whether the sensor connector is secure, and the automatic switchover of the cooling water pumps (if fitted) etc.).

(6) Is the control air system of the M/E working properly (pressure of the control air, whether the control air contains water, etc.).

(7) Measures for reverse the M/E (pitch control system of the controllable propeller, clutch).

2. Are the auxiliary equipment of the main propulsion devices, such as the safety protection and remote control system, etc. functioning properly

To prevent the failure of the safety protection system of the main propulsion device, self-inspection is required on the oil mist concentration detector, lube oil pressure loss protection, and reliability of the over-speed protect function, etc.

(1) Are the over speed alarm and emergency stop device of the main diesel engine functioning properly.

(2) Are the main diesel engine lube oil low pressure alarm, cylinder liner water high temperature alarm and automatic stop protection device functioning properly.

(3) Are the main diesel engine oil mist concentration detector and the main bearing temperature detector working properly. (only applicable to diesel engine power greater than 2250KW or cylinder inner diameter greater than 300mm with UMS on seagoing ships)

(4) Are there any alarm records related to the safety protection and automatic stopping devices of the main propulsion system in the centralized monitoring system. (applicable to seagoing ships only)

(5) Is the lube oil low-pressure alarm device of the gear box working properly, and is the lube oil high-temperature alarm device of the gear box with input power greater than 1470kW working properly. (applicable to seagoing ships only)

(6) Is the lube oil low-pressure alarm device for the gear box with input power greater than 370KW working properly, and is the lube oil high temperature alarm device for the gear box with input power greater than 1470kW working satisfactorily. (applicable to inland river ships only)

3. Is the ship's steam boiler working properly

The boiler can adjust the oil and water temperature through steam heating to ensure that the working condition of the diesel engines are within the normal scope. To prevent boiler failure, it is recommended to conduct self-inspection on the water supply system, combustion system, safety protection, etc.

(1) Is the water supply system working properly (the number of water supply pumps fitted, quality of water supply, water level indicator, etc.).

(2) Is the combustion system working normally (ignition, oil supply, air supply, etc.).

(3) Is the safety protection system working properly (safety valve, air supply, flame extinguishing, low water level alarm, etc.).

4. Is the ship's main power supply in normal condition

To avoid the main power failure, preventive self-inspection should be carried out on the prime mover, generator and the main distribution board.

(1) Is the main power supply capacity sufficient (focus on single or multiple group generator failures, and ships equipped with side thruster, as well as ships that have installed EGCS, BWTS additionally, etc.).

(2) Is the prime mover starts and runs properly (fuel, lube oil, cooling water, etc.).

(3) Is the safety protection system of the prime mover functioning properly (over speed protection, lube oil low-pressure, cooling water high-temperature, etc.)

(4) Are the main switchboard and generator control panel in normal condition (automatic start, stop, synchronization, unload, load distribution, graded unloading control of generator unit, etc.).

(5) Is the insulation monitoring function of the main switchboard working normally.

5. Is the emergency power supply working satisfactorily

Should the main power supply of a ship fails, the emergency power supply (mainly the emergency generator) can serve as an independent energy source to provide power for vital equipment such as the steering gear. The inspection of emergency power sources can be carried out by self-inspection on the emergency generator, emergency distribution board, emergency battery pack, etc.

(1) Is the emergency generator starts and operates satisfactorily. (fuel, lube oil, cooling water, etc.)

(2) Does the starting devices of emergency generator meet the requirements. (applicable to seagoing ships only)

(3) Is the reserve fuel for emergency generator sufficient.

(4) Is the mode switch of the automatic starting emergency generator placed in the automatic position.

(5) Can emergency equipment be powered within 45 seconds (within 30 seconds for inland river ships) in accordance with regulations when the main power is failed.

(6) Is the insulation monitoring function of the emergency distribution board working properly.

(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 switches of various load unit on the emergency generator distribution board placed in open position.

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

(11) Is the fuel leakage alarm of the emergency generator high-pressure oil pipeline functioning properly.

6. Is the steering device working properly

To ensure the effective operation of the steering device and to prevent steering device failure, self-inspection could be carried out on the power system, hydraulic system, alarm device and operation of the steering device.

(1) Is the steering device able to start automatically after power failure. (applicable to seagoing ships only)

(2) Is the steering device able to receive power within 45 seconds in the event of main power failure. (applicable to seagoing ships with a rudder stock diameter exceeding 230mm only)

(3) When a single failure occurs to the steering gear power equipment of electric control type, it should capable to switch to the standby power equipment within 10 seconds. (applicable to inland ships only)

(4) Is the capacity of the hydraulic oil storage tank of the steering device sufficient to refill at least one power actuation system (including the reservoir).

(5) Are the audible and visual low level alarm (both on the bridge and in the machine space) of the steering device hydraulic oil reservoir functioning properly.

(6) Is the sound and light alarm (short circuit protection, overload alarm, phase failure alarm) of the steering device functioning properly (in the M/E space or in the ECR and bridge where the M/E is normally controlled). (applicable to seagoing ships only)

(7) Is the steering performance test satisfied.

(8) Are the communication facilities between the bridge and the steering gear compartment in good condition.

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

To prevent ship mechanical and electrical failures caused by human factors such as improper operation, it is recommended to conduct self-inspection from aspects of

crew certification, ship manning, practical operation and emergency response capabilities of the crew members, etc.

(1) Are the crew members hold valid “Certificate of Competency” and dose the ship meets the minimum safety manning requirements.

(2) Are the crew members have effective language communication during their routine work and in emergency situations.

(3) Is the responsible crew familiar with the operation, testing, and emergency response procedures of the main propulsion device (lube oil and cooling system high temperature alarm test, over speed alarm test, fuel casing failure (leakage) alarm test, emergency procedures of emergency shutdown and M/E failure, etc.).

(4) Is the responsible crew familiar with the operation, testing, and emergency response procedures of the ship's boilers (low water level, flame extinguishing, air supply alarm, etc.).

(5) Is the responsible crew familiar with the operation, testing, and emergency response procedures of the ship's main power supply (fuel oil leakage alarm test, main generator synchronization and unload test, insulation test, blackout emergency response procedures, etc.).

(6) Is the responsible crew familiar with the operation, testing, and emergency response procedures of the emergency generator (start-up, synchronization and unload of the emergency generator).

(7) Is the responsible crew familiar with the operation, testing, and emergency response procedures of the steering device (switchover of the steering gear system, pre-departure inspection and testing of the steering gear, steering device alarm test, emergency steering drills, etc.).

8. Are the SMS documents related to mechanical and electrical equipment effectively implemented onboard

Whether the system documents related to mechanical and electrical equipment are effectively implemented onboard is vital in preventing mechanical and electrical equipment failures. The self-inspection should be conducted mainly on the onboard resources and human resources, onboard operation plan formulation, emergency preparedness, reporting and analysis of accidents and near misses, as well as the maintenance of the ship and equipment.

(1) Does the company ensure that the master receives necessary support (ship shore communication records, application and supply records of spare parts and provisions, SMS document reports, technical supports, etc.).

(2) Dose the company assigns qualified and certified crew members to meet various safety operation requirements onboard.

(3) Does the company ensure that crew members can effectively communicate while fulfilling their SMS responsibilities.

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

(5) Does the company list the mechanical and electrical equipment failures in emergency situations, identify them and develop emergency response procedures (emergency operations and drills on M/E, blackout and steering gear, etc.).

(6) Does the company develop and effectively implement a maintenance plan for mechanical and electrical equipment.

9. Other issues that may cause mechanical and electrical equipment failures

In addition to the inspection of the mechanical and electrical equipment itself, attention should also be paid to the possibility that other systems may cause problems to the ship's mechanical and electrical equipment. For example, the malfunction of the fuel quick closing valve may cause accidental interruption of the fuel supply to the main/auxiliary engines, manual emergency shutdown of the equipment due to crew injure which attributed to the absence of protective facilities for mechanical and electrical equipment, or engine room flooded due to bilge water system failure. Additional attention should also be paid to the crew fatigue onboard and to the ships leaving the shipyard after maintenance.