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LIBERIA MARITIME AUTHORITY

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Subject: ENGINE ROOM FIRE PREVENTION – COMPLIANCE WITH SAFETY REGULATIONS, MARINE NOTICES, AND MANDATORY ENGINE ROOM SAFETY STANDARDS

Ref:

(a) SOLAS Chapter II-2
(b) ISM Code – Sections 1.2.2, 7, 10
(c) International Code for Fire Safety Systems (FSS Code)
(d) MSC.1/Circ.1321- Guidelines for Measures to Prevent Fires in Engine-Rooms and Cargo Pump-Rooms
(e) Liberian Marine Notice FIR-001 – Fire-Protection Systems & Appliances
(f) Liberian Marine Notice INS-001 – Safety Inspections of Liberian Ships
(g) Liberian Marine Notice SAF-003 – Enclosed Space Safety & Procedures
(h) Marine Advisory 02/2026 – CO_2 Actuating Heads
(i) Marine Advisory 07/2024 – PSC Engine Room Fire Safety Focus

Dear Shipowners/Operators/Masters/Engine Department Personnel:

The purpose of this Marine Advisory is to reinforce the **mandatory compliance requirements** that govern Engine Room fire prevention, fire protection readiness, and safe machinery-space operations on Liberian-flagged vessels.

Recent Engine Room fire incidents indicate that non-compliance with established regulations, Marine Notices, and safety requirements remains a significant causal factor.

This Advisory summarizes:

- Required compliance elements
- Common areas of non-compliance
- Lessons learned through anonymized examples
- Mandatory actions to ensure conformity with Liberian and IMO standards

This Advisory does not address investigation procedures, evidence collection, or reporting steps beyond basic regulatory obligations.

Engine Room Fire Trends

Fires aboard Liberian-flagged vessels during 2025–2026 have been reviewed and the number of incidents in the Engine Room have been identified as follows:

- 46 fires in 2025, of which 21 involved the Engine Room
- 7 fires in 2026 (YTD), of which 4 involved the Engine Room

The pattern continues to show that heat sources combined with fuel/oil spray, incomplete ventilation shutdown, improper system readiness, and inadequate training remain core risks.

Marine Casualty Summaries -Background:

The Administration has reviewed recent Engine Room fire incidents with similar root causes and a summary of representative, anonymized cases provided below.

First Case – Engine Room Fire During Navigation Under Pilotage

A fire originated in the vicinity of auxiliary diesel generator machinery. Ventilation flaps, particularly upper-level closures, could not be fully secured, allowing continued oxygen supply and enabling rapid fire growth.
Crew members assigned to activate the CO_2 system were not fully familiar with the activation sequence, resulting in incomplete cylinder discharge.

Second Case – Auxiliary Engine Internal Mechanical Failure

A sudden mechanical failure caused fuel and lubricating oil to spray onto hot engine surfaces. Heavy smoke forced the evacuation of the Engine Room. The water mist system did not activate due to a lack of emergency power interconnection, resulting in significant structural and equipment damage.

Third Case – Fuel System Component Failure (Filter Cover Failure)

A diesel engine filter cover failed during operation, resulting in lubricating-oil spray onto the lubricating oil and exhaust components. The fire was extinguished, but the surrounding cabling, lights, and machinery sustained heat and smoke damage.

Fourth Case – High-Pressure Fuel Pipe Failure (Main Engine)

A high-pressure fuel line ruptured, projecting atomized fuel onto the exhaust manifold and causing immediate ignition. Ventilation was secured, and CO_2 was released, extinguishing the fire. Affected main-engine units and Engine Room systems require further engineering assessment and root-cause analysis.

Key Safety Failures Identified in four outlined cases

- Fuel/oil spray contacting uninsulated or inadequately shielded hot surfaces.

- Missing, damaged, oil-soaked, or deteriorated thermal insulation.
- Incomplete closing of Engine Room ventilation flaps and dampers.
- Crew unfamiliarity with CO_2 activation sequence, remote cabinet use, and pilot cylinder initiation.
- Water-mist systems are not fully functional on emergency power.
- Improper torque, workmanship deficiencies, or vibration leading to component failure.
- Emergency response without full PPE and BA sets.
- Inadequate maintenance records or incomplete testing logs.

Flag Administration Requirements and best practices

Review and Amend Safety Procedures

- Update Safety Management Systems (SMS) to reflect Engine Room fire trends and lessons learned.
- Ensure emergency shutdown, ventilation closure, and CO_2 activation procedures are clearly documented and practiced.
- Verify all fixed firefighting systems meet the requirements of Marine Notice FIR-001.

Enhance Crew Training

- Train crew on fuel system integrity, hot-surface shielding, emergency CO_2 activation, ventilation control, and water-mist operation and the relevant maintain records.
- Drill full-cycle Engine Room fire response, including blackout scenarios and smoke-filled conditions.
- Ensure engineering crew are trained, through actual scenarios, in escaping the engine room for familiarity with ship specific installations.

Improve Supervisory Oversight

- Require verification of critical machinery-space conditions (fuel lines, lagging, closures, firefighting equipment status) during routine rounds and before high-risk operations.
- Include fire-risk assessment in superintendent and internal audit checklists.

Fleet-Wide Awareness

- Issue internal fleet safety alerts summarizing deficiencies and corrections.
- Incorporate lessons learned into pre-joining briefings and recurrent training.

Required Actions to Prevent Recurrence

These fleet-wide actions are mandatory and align with Liberian regulatory requirements:

1. **Fuel System Integrity**

    - Inspect all high-pressure fuel pipes, clamps, and shielding for wear, corrosion, improper torque, or vibration marks.
    - Replace any suspect components immediately.

- Verify proper torqueing and alignment practices.

2. **Hot-Surface Prevention**

   - Restore or replace all missing or deteriorated insulation.
   - Remove oil-soaked lagging without delay.
   - Establish routine inspections for hot-surface exposure risks.

3. **Ventilation & Emergency Shutdowns**

   - Test and verify the full closure of **all** Engine Room flaps, dampers, skylights, and ventilation stops as per prescribed rules and Company procedures.
   - Document closure times and defects for corrective action.

4. **CO_2 System Readiness**

   - Verify all actuating heads are correctly configured for operational readiness.
   - Conduct regular CO_2 activation drills, including simulated remote cabinet and pilot cylinder activation.
   - Maintain complete testing and maintenance records as required by FIR-001.

5. **Water-Mist and Foam Systems**

   - Ensure water-mist systems operate in accordance with their approved design and power-supply arrangement.
   - Replace any restricted or unapproved firefighting media.
   - Perform functional and distribution testing. Following testing of water-mist, a blow through of the spray heads is recommended to clear any potential debris from forming clogs.

6. **PPE and Fire Party Readiness**

   - Ensure fire suits, BA sets, and radios are fully functional and readily available.
   - Require full PPE for all Engine Room fire responses and drills.

7. **Safety Inspections**

   - Comply fully with the safety inspections as per INS-001, including Engine Room fire-risk checks.
   - Where crew are permitted to perform inspections and maintenance per FIR-001, ensure they have the proper training and are provided with the necessary maker's instructions.

The Administration reminds all operators that robust Engine Room fire prevention is a mandatory requirement and a critical safety obligation.

For more information, please contact the Investigations Department at investigations@liscr.com.

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