



Risk Assessment Solutions

“Don’t Cure, Prevent”

Circular 03/06/2015

Subject: “Fire prevention in the engine room” - Important Safety & PSC Issue!

Case: Recently, it has been reported that a cargo vessel faced difficulties in a USA Port, when the Port State Control Officers boarded the vessel for a detailed PSC inspection. Amongst other findings, the PSC Officers noticed that the vessel had excessive oil leaks in the engine room, which could cause a hazard and put crew’s life in danger in case of a fire. As a result the following deficiency (*code 30*) was imposed:



Fire Triangle

“Vessel has excessive oil leaks in the engine room causing a fire risk or potential hazard to the crew”

In connection to the above case and in order to assist our Clients to avoid similar hazards we would like to remind the following **SOLAS Ch. II/ Reg. 4, §1** :

“The purpose of this regulation is to prevent the ignition of combustible materials or flammable liquids. For this purpose, the following functional requirements shall be met:

- 1. Means shall be provided to control leaks of flammable liquids*
- 2. Means shall be provided to limit the accumulation of flammable vapors*
- 3. The ignitability of combustible materials shall be restricted*
- 4. Ignition sources shall be restricted*
- 5. Ignition sources shall be separate from combustible materials and flammable liquids and*
- 6. The atmosphere in cargo tanks shall be maintained out of the explosive range.”*

Referring to the above mentioned regulation and in order to assist further, “Prevention at Sea” recommends that our Clients should consider the following, related to the fire prevention onboard the vessel.

Additional SOLAS Requirements

The following safety key measures have become mandatory **SOLAS (Ch. II- 2 Reg. 4)** requirements for all vessels since **July 2003**:

- jacketed (double) pipes in high pressure fuel oil delivery lines*
- insulation of all high temperature surfaces (> 220°C) at risk of flammable oil impingement after a failure of an oil line*
- spray shields for flammable oil lines (fuel, lubrication and hydraulic oil) located immediately above or near potential ignition sources.*

[Source: Gard]

ISM requirements

The safety management objectives of the Company should:

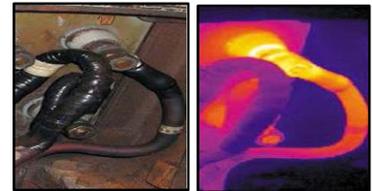
1. Provide for safe practices in ship operation and a safe working environment
2. Assess all identified risks to its ships, personnel and the environment and establish appropriate safeguards
3. Continuously improve safety management skills of personnel ashore and aboard ships, including preparing for emergencies related both to safety and environmental protection

In line with the aforementioned, an effective Safety Management System should enclose:

- a. Familiarization procedures with the potential fire hazards and possible sources
- b. Preventive inspections to detect potential fire hazards on regular basis
- c. Regular training
- d. Evaluation of crew technical knowledge and performance
- e. Emergency procedures in case of fire

What to look for?

- **HOT SURFACES:** Most fuel oils may spontaneously ignite if they hit surfaces with temperatures above 250°C. In accordance with SOLAS requirements all surfaces above 220°C are to be *shielded or insulated*.



[Source: Gard-Thermo scanning cameras]

- **FUEL LEAKAGES:** Sources of fuel leakages appear to be randomly distributed between flexible hoses, couplings, clogged filters and fractured pipes. Attention should be also paid to installation, location and condition of all these components. We recommend that oil systems, within engine rooms, in operation should be inspected periodically, additionally to regular class inspections.

Important Measures related to Fire Prevention in the engine room

(In accordance with the IMO MSC.1/Circ.1321)

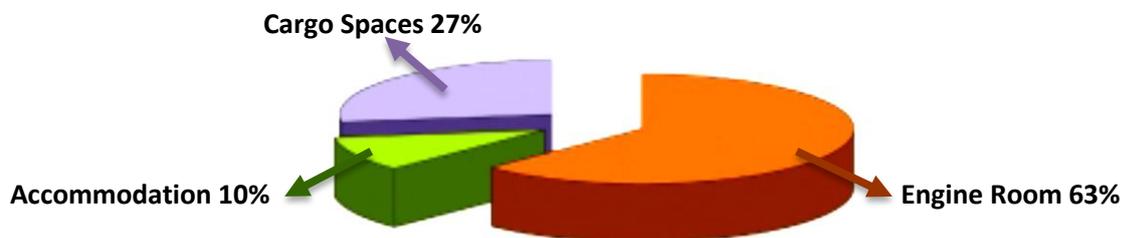
- The **waste bins** used for oily rags storage should have covers. Oily rags should not be disposed at other places. Receptacles with covers should be provided/ allocated at each floor and on both sides.
- The **high pressure fuel oil pipes** should not be tightened to control a leakage, while the engine is running. Also, no oil should be placed into turbochargers during operation.
- The **watertight doors** in the engine room compartments should be properly closed, when this is required.
- It is suggested to ensure that all **quick closing valves** and **fire dumpers** are functioning in a proper way at all times.
- It is essential the **pressure regulating valves** of fuel oil systems, to be fitted with the appropriate rubber diaphragm, for the use with fuel oil, taking into account that all of them are incorporated with leakage glands and rupture indicators.
- When removing **cylinder head valves** for maintenance purposes, the opportunity should be taken to examine fasteners for signs of fatigue and also that all nuts run freely on their threads.
- **Short sounding pipes** should be always kept shut with plugs. They should not be left in an open position.
- It is important to verify the effective functioning of **water - mist systems** (prompt activation of the system, adequate production of the water-mist, un-interrupt supply of water-mist, endurance of operation and sufficient water-mist coverage).
- It is essential also to ensure that **dry pipe distribution network** and **discharge nozzles**, used in the high expansion of fixed fire foam extinguishing system, are properly maintained, so as any potential blockage resulting from corrosion of the dry pipe with rust, to be avoided.



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- It is also suggested to verify the continuous supply of power to the emergency fire pump. **An independent power source** should be considered as an alternative solution (driven by an independent diesel engine, if feasible), in cases where the power supply is damaged by fire.
- **Flexible fuel hoses** should be replaced at the time, when there is a doubt of their proper operating condition.
- **Deck heads**, especially those in low-headroom machinery spaces, should be supervised periodically for accumulation of combustible residuals and cleaned as necessary.

Causes of fire



[Source: DNV]

To assist further, we offer our clients through our “PaSea Risk Assessment Program” the service of assessing onboard or remotely, through the “Distance Assessment”, whether the vessel is in conformance with the PSC requirements by calculating the Ship’s “PaSea” Factor.

We remain at your disposal for more details,

Prevention at Sea