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## Engine Room Fire Safety - Condition survey findings

It is well known that fires on ships require a lot of effort to combat, put all those on board in a life-threatening situation and present extreme danger to the vessel. Engine room fires are particularly difficult to tackle due to the possibly confined nature of the scene and an abundance of fire triangle elements: heat, fuel and air. A fire in the engine room can have disastrous consequences and is best prevented by all available means.

Condition surveys conducted by the Club repeatedly expose worrying examples of substandard fire safety in engine rooms which are entirely avoidable.

Primary sources of ignition in the engine room include hot exhaust manifolds of engines, boilers and indicator valves of the engines. When flammable liquids leak on, splash over, or are sprayed onto an exposed high temperature surface they can auto-ignite. Reportedly up to 70% of all engine room fires are set off by fuel leaks. SOLAS Ch II-2 Reg 4 para 2.2.6 requires that surfaces with temperatures of 220°C and above must be properly insulated.

Exhaust gas casing, indicator valve shields and lagging degrade with time due to vibration, repeated heating and cooling down or disassembly and refitting during maintenance. The crew must make sure that high temperature surfaces are adequately protected at all times when there is a risk of flammable oils being sprayed over the surface.

The importance of engine room cleanliness and a general fire safety culture cannot be overemphasized.



**Damaged and missing insulation of the engine exhaust gas turbocharger and uptakes**



**Oil stained engine entablature**



**Oily bilges in the Engine Room**

Dirty bilges, stained engine entablature and makeshift solutions such as leak collectors and plastic hoses may be set on fire by hot work such as welding or grinding. These will also provide an additional source of fuel to sustain and spread an engine room fire. Proper housekeeping along with the timely identification and elimination of oil leaks are of utmost importance for the prevention of fires in engine rooms.

Other key items which require constant attention of the crews and the managers are:

- Proper maintenance and use of fire doors. Frequently fire doors are found to be kept tied open, door self-closing devices are misadjusted and fail to close the door properly and door seals are torn or missing.
- Self-closing valves on oil tank level sight glasses are fixed in an open position and won't close in case of fire.
- Fuel pipe quick closing valves not operational or wedged open preventing them from performing their function.
- Proper garbage management; oil soaked rags present a fire risk as they may be ignited by hot work in the vicinity, or may self-heat and ignite spontaneously.
- Oil soaked piping thermal insulation.
- Fire dampers and shutters inoperative / space served not marked / open-close position marking faded or unreadable.
- Fire escape routes and exits not marked conspicuously. Emergency Escape Breathing Devices in unserviceable condition or not sited in strategic positions.

Awareness of the risks associated with such malpractice and a well promoted and established safety culture will provide

additional barriers against possible fire situations.



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The IMO's circular MSC.1/Circ.1321 provides practical guidelines to prevent engine room fires.

Results of various engine room fire incident investigations can be found here

- NTSB – Caribbean Fantasy Engine Room Fire - August 2016
- NTSB - Gunde Maersk Engine Room Fire - December 2015
- MAIB - Arco Avon Engine Room Fire - August 2015

Members requiring further guidance should contact the Loss Prevention department.