

## **BIMCO**

### **1. What can be done to improve the fire detection in a container cargo under deck?**

Presently, given the placement of containers in the cargo hold and how the present smoke detection works, which is that the smoke travels through an extraction system and travels a long way to the detection sensor before triggering an alarm.

Many a times, these detectors are located on the bridge of a ship, which means the smoke has to travel a very long distance before it gets analysed and alarms the crew member. With the increase in the size of the ship this problem gets worse.

While the smoke is travelling, the fire is getting intense and spreading at the same time.

Not only this, but the cargo ventilator fans in the cargo also holds, which are running most of the time is aerating the fire, by supplying fresh oxygen in order for the combustion to carry on and intensify. These fans also dissipate the smoke from reaching the smoke extraction lines, therefore, more time is wasted before the alarms are activated.

There have been cases where the fire was first spotted by a member of the crew, rather than the fire detection system.

Therefore, we need to find ways to reduce the time between the actual start of the fire to the time it is detected positively by the ship's crew members. The first few moments of a fire are crucial and the present set up does not help to act fast.

### **2. What can be done to improve the fire detection in a container cargo on deck?**

Detecting a fire on deck can be equally difficult if not more, depending on the placement of the burning container.

If a burning container is located in front of the accommodation and possibly on the top tier, the crew, especially the bridge officers will most probably, not miss it.

If the same container is located on the sides near the walkways, the crew working on deck will detect sooner or later.

But if the same container is located in the middle of a stow, hidden behind the accommodation block or in a place where the movement of crew is minimum, it is quite difficult to detect the burning container before it reaches a stage where it produces visible flame, smoke that can be seen or smelt or smoke that produces strong enough odour for the crew members to detect it. Until then, a burning container on deck, in most cases are not detected.

We need to look into this in detail to ensure that any burning container on deck is known to the ship's staff at the earliest possible time.

### **3. What can be done to enable a more precise and quick-fire localisation?**

At present, the best possible localisation for a fire underdeck is to know which cargo hold is on fire. Some of the ships carry up to 120 containers in a single cargo hold. To pin-point where in the

cargo hold a container is on fire, we need better detection system. The system needs to be better in two ways – the reduce the time of detection and locate where exactly in the cargo hold, (in terms of length, breadth, and height of the cargo hold) the fire is burning in a more accurate manner.

The existing detection systems are clearly not enough to reach this level of localisation.

#### **4. What can be done to compensate the deficiencies of CO<sub>2</sub> with regard to smothering a fire in a container stow under deck?**

Co<sub>2</sub> has been both successful and unsuccessful in fighting fires.

The fires where Co<sub>2</sub> has been unsuccessful, has created some devastating effects.

Co<sub>2</sub> fights the fire by cutting off the oxygen of the fire. But if the fire happens because of a chemical reaction which produces its own oxygen, Co<sub>2</sub> extinguishment is quickly put out of the equation.

Secondly, whenever Co<sub>2</sub> is used, it should cut off the oxygen supply by creating an air-tight barrier until the fire is completely extinguished and the cargo temperature reduces enough to ensure there is no reignition. Currently, the cargo holds of a containership do not have such airtight sealing. Therefore, these shortcomings have to be compensated.

#### **5. What can be done to improve the confinement of a fire in containers under deck to the particular cargo hold?**

This can be achieved by

1. Detection of the fire by the quickest possible means.
2. Cutting the ventilation to create an air-tight compartment. This can be achieved easily for under-deck cargo but presently the cargo hatch cover design does not allow an air-tight sealing.
3. Activation of the firefighting system (fixed or portable).
4. Cutting off one or more of the fire triangle (heat, oxygen, fuel).
5. Boundary cooling of the area to prevent hotspots and to stop the spread of fire by radiation.

#### **6. What can be done to improve the confinement of a fire in containers on deck to the particular bay or section thereof?**

For fires on deck, the available ways to suppress the fire is to cut off either the fuel or heat as cutting of the oxygen supply is difficult unless the container is still intact, and a firefighting medium exists within the container.

Cutting off fuel – When a cargo in a container is burning, it is again difficult to cut off the fuel in that container however, it is still possible to cut off the cargo in the other containers from the fire so they do not start burning as well.

Cutting off Heat – This is probably the most effective way of dealing with a fire on deck unless the fire is of a nature where water cannot be used such as live electric fire, oil fire etc.

## **7. What can be done to improve active firefighting on deck bearing in mind reduced crew and local conditions?**

We have seen in the Maersk Honam case that the presence of the extra portable fire fighting equipment did not help the crew members much.

The ships are getting bigger, and the number of containers is increasing.

As of now, there is no requirement of a permanent fire-fighting system for on deck cargo except fire hydrants and hoses, but these cannot be operated without the presence of crew on site.

Without looking into more fixed firefighting systems that can be operated remotely, increasing the number of portable fire fighting equipment may not solve the problem in all cases of on deck firefighting systems.

## **8. What can be done to protect vital ship structures under deck and on deck from excessive heat?**

To look into adding more heat resistant material. To look into ways of cooling down these structures from the beginning of the fire so the rise of temperature is better controlled.

## **9. What can be done to improve the protection of deck house and life-saving appliances?**

There are a number of existing systems on other types of ships such looked into such as water curtains, water spray systems etc.

Location of Life saving appliances and improvement on these to better resist a fire incident can be looked into.

## **General comments**

1. Solutions need to be flexible and should look into all possible fire scenarios.
2. Increasing number of ships are now fuelled with LNG, which can have devastating effects in case of fires. Therefore, improvement in fire safety systems is a must. ‘
3. Once more advance technological systems are put in place, there is a need to improve the crew training as well.