

**Appendix**

**From: Sanjay Chandra <sanjay@fleetship.com> 10/28/2010 12:54 PM**

Dear Roger,

We find that the present MARPOL regulations do not provide sufficient support to the ship staff to comply with the requirements. The existing oily water separator and incinerator are difficult equipment to handle by the ship staff with frequent alarms and breakdowns. They also have limitation on detergents, oil content etc.

There are alternatives such as IBTS ( Integrated bilge treatment system) and Evaporation tanks for evaporation of bilge water which are being approved by class on case to case basis.

We have as a pilot project, installed these on 35 ships in our fleet, with excellent result where these have become the primary means of handling the bilge and the OWS is for emergency or secondary means.

We would like these to become a mandatory requirement on ships as these will support the ship staff in complying with the requirements of MARPOL.

Please find attached a paper we would like to submit and we hope that this can be introduced in the upcoming advisory committee meeting on behalf of Hong Kong flag.

If required we would be happy to come and give a presentation.

Thanks in advance for your assistance and let us know if you require any clarification.

Kind Regards

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SAFE CREW, SAFE SHIP, CLEAN SEAS

## **CHALLENGES IN COMPLYING WITH MARPOL AND THE PROPOSED SOLUTION.**

During the last few years we have seen a big and a visible trend for the criminalization of sea farers.

If we review the cases we find that nearly all of them are related to pollution.

The pollution cases can also be broadly divided into two major issues.

One is related to accidental discharge of oil due to an accident involving grounding/ collision etc.

The second and quite prevalent issue has been related to willful discharge of engine room bilges or sludge from engine room by bypassing the oily water separator and/ or not using the incinerator.

This has been very strictly enforced in US and many seafarers have been subjected to US laws where the differences between violations of MARPOL versus a willful harm to another human being, the consequences are the same.

### **Why are the staff forced into these action?**

If we consider the media hype and awareness among the floating staff, it would be quite obvious that the consequences of violation are probably known to all but it still takes place.

On reviewing the cases and with interaction with the staff, we find that most of the time the staff has opted for this route to take an easy way out.

The existing means of oily water separator and incinerator at times are not adequate for the bilge/ sludge accumulation on board, and the staff look for alternate means leading to violation.

### **What are the means available to ship staff for complying with the MARPOL requirements?**

From the time when the MARPOL has been made mandatory, the equipment

identified for handling the bilges has been the oily water separator and for sludge, it has been the incinerator.

### ***Oily water Separator***

The technology for the separation has been not changed much. Most of the Oily water separators rely on filtration technique to achieve the required PPM for the discharge overboard. Some makers have tried to use the centrifugal means of purification but the equipment is quite sensitive and requires a high skill level to operate. The cost difference between the two type of equipments is significant and most of the yard and owners for obvious reason use filtration type of equipment to install on board.

The tendency is basically to comply and generally no one is really bothered on the difficulties which will be faced later.

The filtration equipment is most of the times is of a capacity which is bare minimum. Typically we see it at 2 M3 / hour which will not cope with leaking sea water pipes and pump glands of old tonnage.

Moreover this equipment cannot work with any contamination of detergents, mud from river waters, Chemicals used for routine cleaning of engine room, soot contaminated water from the exhaust boiler washing etc.

If the staff on board wants to clean the engine room for oil, then without chemical usage the option is limited.

Another drawback is that this equipment has a limitation on the oil content that can be handled. Typically beyond 1000 PPM cannot be handled by this equipment.

Final result is that this equipment is a challenge for the ship staff to cope up with the bilge generation.

### ***SLUDGE HANDLING***

The methodology used for handling the sludge had been by burning it.

The capacity of the incinerator to a great extent has been left with yards and the owners. As is very typical, this is again left to bare minimum just to get into the compliance circle.

To cope up with the sludge handling, the incinerator is frequently required to be run from 12 to 18 hours in a day.

If we have to run a boiler which has treated fuel to burn to run for 18 hours every day, it will be a challenge.

Here we are expected to run an equivalent boiler with sludge, water contamination, using traditional burning equipment and expect this to run without any difficulty for 18 hours a day. We are also expected to burn the garbage/ plastics in this equipment.

The sludge has heavier contaminants drained from fuel such as catfines, sediments which create havoc with the fuel burning equipment.

Results are frequent flame failures, adjustments to air/fuel ratio, clogging of the silencers, which requires continuous monitoring by the ship staff.

Over and above this if the fuel on board is of poor quality, which happens often, the staff is now left with a huge increase in sludge generation to cope with.

The sludge tank capacity is limited. The present mandated capacity by MARPOL is insufficient to cope up with normal operation. If this normal operation becomes abnormal due to bad fuel, overflowing purifier etc. the staff is left with no support to handle this.

Even if the staff wants to land the sludge, the ports where this is easily available or terminals which allow this are very few. EU countries have implemented landing of bilge and sludge which is very helpful but unfortunately this is not followed by most of the countries who are signatory to MARPOL.

### **Lack of Redundancy**

When we review the critical equipment on board a vessel, we see that wherever possible there is a redundancy provided to take care of the eventuality of failure

of equipment.

For the propulsion, there are two LO pumps, two jacket water pumps etc., for power plant-a standby generator, two purifiers, two compressors, emergency fire pump, two life boats etc.

However for MARPOL where the maximum number of seafarers has ended up behind bars, there is no redundancy.

### **Proposal for addressing this redundancy**

If we consider a typical Bilge water on board a vessel, there would be maybe 10 tons of water mixed with 400 or 500 liters of oil.

If we remove or handle the water and the oil separately, the 400 or 500 liters of oil can be separately handled.

One of major sources of water in the engine room is the water condensation from main air cooler and the leaks from the sea water pumps.

### **IBTS**

This is a concept developed by MEPC circular which by design allows the separation of the water and the oil in the engine room. All water drains lead to the clean drain tank and this water is allowed to be pumped out directly overboard.

We have installed this on many of our vessels and we find that with this equipment the routine operation of the oily water separator is negligible where most of the bilge is separated out at its origin. The engine room is clean and oil free. Oily water separator is always available in the event of failure of sea water pipeline, big leakage etc.

### **EVAPORATION TANK**

As the regulation towards more stringent discharge becomes inevitable, evaporation tank is a means where the bilges can be disposed in a 0 ppm condition.

The concept is based on installing a tank in the upper parts of the engine room and then heating this water with the steam. Origin of the major steam requirement for evaporation is from the waste heat.

An extraction fan is installed to extract the evaporated steam to the atmosphere.

The left over contents are drained back to the sludge tank where they are treated as sludge.

This has been installed on vessels and it was found that the daily evaporation capacity of upto 3 to 5 tons a day can be achieved which easily copes up with the normal and even emergency bilge generation.

With no major moving parts the capability of the staff to handle the bilge water improves considerably. The oily water separator usage again gets limited and compliance easier.

This will also handle the muddy water, detergent water, chemical contaminated bilges etc.

#### SOOT TANK

Many of the existing vessels have a tank which collects the washing from the exhaust boiler and this is directly disposed overboard in the designated garbage area.

The big advantage in this is that the engine room bilges will not get contaminated with this soot water and the handling will be greatly enhanced.

#### CAPACITY OF THE BILGE HOLDING TANK

The present capacity of the bilge tank is such that the failure of an equipment and/ or excess leakage leaves the staff with no recourse to store the water for disposal ashore if required.

The capacity should be increased as per the attached proposal.

## Capacity of sludge tank

The present capacity of the sludge tank is such that if the incinerator is not being able to be used, the vessel does not have sufficient capacity to retain the sludge. There is no redundancy in this.

The reception means are limited.

In view of the above, the sludge tank capacity should be enhanced as per the attached proposal to provide redundancy to the vessel.

We would request that the above to be considered and our attached proposal be made mandatory in MARPOL Annex-I to ensure that compliance is made easy.

Sanjay Chandra



# **PROPOSAL FOR AMMENDMENT OF MARPOL ANNEX-I**

***Proposed by***

***Fleet Management Limited, Hong Kong***





## **OBJECTIVE**

MARPOL should identify alternative means of disposal for bilge and sludge in Annex-I in addition to the existing requirements of having oily water separator and incinerator on board.

## **PROPOSAL**

The following should be made mandatory in new building and should be incorporated in the equipment requirement for MARPOL as per Annex I effective 2011. The requirement should also be applicable to existing ships applicable on first docking after 2011.

## **BILGE HANDLING**

### ***AA) IBTS should be made mandatory for all vessels.***

1. The concept of Integrated bilge treatment system should be included as a mandatory requirement in the MARPOL Annex-I.
2. All vessels should be provided with clean drain tank which has drain from air cooler and all water drains being lead directly to the clean drain tank.
3. Clean drain tank to have a direct overboard with a separate system as mandated by MEPC.1/ circular 642.

### ***BB) Pipeline drawing approval.***

1. Drains to bilge holding tank to be reviewed. All drains originating from oil/water interface and from oil source, such as waste oil tank drains, air compressor drain, scavenge drain are not to be lead to Bilge holding tank tank but to be lead to sludge tank.
2. Class to review the drawing basis above and approve the drawing on behalf of flag.



CC) **Soot Drain tank**

Soot drain tank to be mandatory on all vessels fitted with exhaust boiler with a direct connection for overboard of the soot wash water to be provided.

DD) **Evaporation tank**

A tank designed to evaporate the bilge water by means of heating the same through steam/ thermal oil to be provided in addition to the Oily water separator.

1. The capacity of the evaporation tank for daily evaporation should not be less than 1.5 times the installed capacity of the oily water separator to be provided on board. For example if the capacity of the bilge separator is 2 m<sup>3</sup>/ hour an evaporation tank capacity to be capable of evaporating 3 m<sup>3</sup>/ day to be provided.
2. The design of the evaporation tank should take care of the following aspects.
  - Basic automation for safe operations such as
    - High level cut off
    - Low level steam shut off
    - Low level extraction fan cut off
    - Local and remote level gauge
    - Pump start- stop switch at the tank.
    - The overflow arrangement to be provided from the tank to sludge tank.
    - A separate dedicated pump to be provided for the transfer of bilge water to the evaporation tank.
  - The tank to be well insulated and means for cleaning the tank to be provided.
  - Access arrangement to the tank for monitoring to be provided.



- Spill tray to be provided at the base of the tank.
- Coating of the tank to be of sufficient thickness, so as to protect the steel from corrosion.

### **SLUDGE TANK CAPACITY**

Sludge tank capacity to be increased from the present calculated quantity. Retention capacity should be for 3 months.

$$V = 0.015 \times \text{rated fuel consumption at MCR} \times 90 \text{ m}^3$$

Where V= Capacity of the sludge tank.

The above capacity is exclusive of smaller sludge tanks for FO and LO purifiers which are used for the initial retention and transfer to main holding sludge tanks.

### **BILGE TANK CAPACITY**

Bilge tank capacity to be amended as follows. This should be made mandatory instead of guideline.

Main Engine Rating (KW)	Capacity ( m3)- (minimum)
Up to 1000	4
Above 1000 up to 20000	P/150
Above 20000	60 + P/300

Where P= main engine rating