Risk Assessment Solutions

# "Don't Cure, Prevent"

## Circular 01/05/2015

**Subject: "Oily water separator (OWS) operational issues" - Important PSC Issue!**

***Case:*** Recently, it has been reported that a cargo vessel faced difficulties in Singapore when the Port State Control Officers boarded the vessel for a detailed PSC inspection. Amongst other findings, the PSC Officers noticed that crew members were not familiarized with the Oily water separator operational and testing procedure. As a result, the following deficiency (code 30) was imposed:

***"All key members who are in charge of the Oily Water Separator do not know how to operate it"***

In connection to the above, and in order to assist our clients to avoid any potential complication with Port State Control Inspectors, we would like to emphasize/ highlight the **MARPOL Annex I/ Reg. 15** requirements pursuant to the above case:

*"**§6** Any discharge into the sea of oil or oily mixtures from ships of 400 gross tonnage and above shall be prohibited except when all the following conditions are satisfied:*

1. *The ship is proceeding en route*
2. *The oily mixture is processed through an oil filtering equipment*
3. *The oil content of the effluent without dilution does not exceed 15 parts per million*
4. *The oily mixture does not originate from cargo pump-room bilges on oil tankers*
5. *The oily mixture, in case of oil tankers, is not mixed with oil cargo residues"*

Referring to the above mentioned regulation and in order to assist further, *"Prevention at Sea"* would like to remind our Clients the following with regards to the Oily Water Separator operation and testing.

### ❖ History

The international requirements for Oily Water Separators are stipulated under MARPOL aiming to prevent discharge of oil to the sea and require ship's crews to keep track of oil movements within the ship and to shore through the Oil Record Book.

Under the aforementioned regulations every ocean going vessel is required to ensure that it does not discharge bilge water containing oil at more than 15 parts per million clean water. This requirement has been adapted by most flag state regulations and as such the presence of Oily Water Separator is considered mandatory. It should be noted that the MARPOL regulations do not specifically require the use of OWS equipment but only set the requirements in the case the ship intends to discharge its bilge liquid overboard. Under certain circumstances ships could be allowed to store their bilge liquids in tanks at all times and discharge to shore and thus do not need to have an OWS aboard.

The Maritime Environmental Protection Committee (MEPC) of the IMO has published new regulations as part of the MEPC 107(49), July 18, 2003 where stricter performance standards for OWS are set. Resolution MEPC.107(49) paragraph 4.2.9 requires that the 15ppm bilge alarm is capable of recording the date and time, and the operating status of the 15ppm bilge separator. The recording device should also store data for at least 18 months and should be able to display or print a record for official inspections as required. If the 15ppm bilge alarm is replaced, means should be provided to ensure the data recorded remains available on board for 18 months.

Furthermore, Resolution MEPC.107(49) requires that all routine and repair maintenance on the 15ppm bilge separator and alarm are recorded and that ship staff training should include familiarization with the operation and maintenance of the equipment. IMO Circular MEPC.1/Circ 677 requires that all oily water separator (OWS) operations including diagnostics should be logged in the Oil Record Book (ORB).

These new regulations have come into effect as of January 01, 2005 and thus OWS of new type needs to be installed on vessels built on or after January 01, 2005.

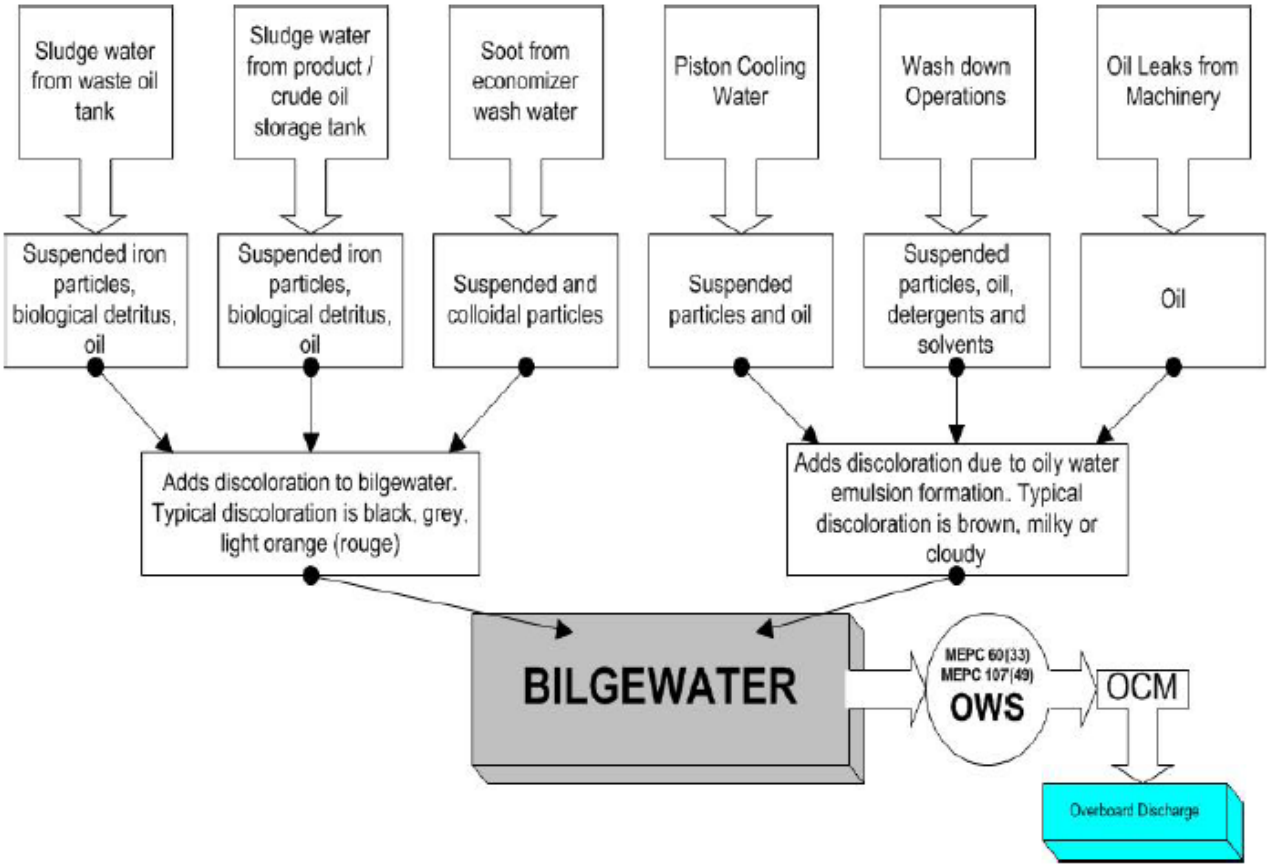
**[Source: Lloyd's Register]**

## ❖ Bilge Water Sources

The following consists of a non-exhaustive list of sources as many other sources may contribute in the accumulation of bilges:

1. Simple condensation from its various sources (cooling equipment, atmospheric condensation, intercoolers)
2. Drains (boilers, sinks, air compressors, fuel oil purification drains)
3. Engine room washdown water
4. Leakage (packing glands, broken lines)

**In the following diagram, an example of Sources of Contamination Characteristics in Bilge Water is provided**




Source IMO MEPC.1/Circ 677

## ❖ Dos and Don'ts

The following operational factors should be considered which affect the Oily Water Separator (OWS) performance and proper recording:

- The OWS overboard manual discharge valve is to be kept locked and the keys to be kept by the Chief Engineer. The Chief Engineer decides when the OWS should be operated
- The overboard valve should be locked by utilizing a numbered fill and such number to be recorded in the Oil Record Book under code I. Same entry to be made also in the Engine Log Book
- When the OWS is set up for operation, all parameters should be checked thoroughly. Generally, this includes flushing the OWS and gradual inclusion of the bilge well line or the bilge tank line flow to the OWS.
- During flushing procedures, the OCM should be checked to make sure that indicated figures are correct.

- Upon decision to operate the OWS, the start up time should be noted and the position of the vessel should be checked. Once OWS operation is completed, the end time should be marked and the discharged amount water mixture should be recorded in the Oil Record Book.
- Avoid chemical emulsions as they act as surfactants and they hold the oil drops together in emulsified state. Such surfactants may be the detergents used for cleaning, alkaline chemicals used for boiler cleaning etc.
- Avoid turbulence and using the OWS in times of heavy rolling.
- Ensure optimal use of chemicals
- Whenever a back flush is suggested by the manufacturer, it should be done as per the recommended frequency.
- Frequent cleaning of sensors
- Ensure proper maintenance and operating procedures in a step by step manner.
- Whenever primary bilge tank is provided, it should be used properly and not bypassed as the effectiveness of the OWS is increased.
- Keep checking the back pressure of the coalescers and renew same whenever required.
- Periodic cleaning of the OWS to be performed by removing any water scale, dust, bacteria from the internal faces.
- Do not avoid maintenance routines on the bilge pump.
- The outlet pipe of the OWS (between OWS and overboard valve, from flange to flange) should be opened up to check for traces of oil.
- Although not mandatory, it is suggested a glass to be retrofitted for monitoring the effluent on the return line.


Oily inside of oil water separator


After cleaning

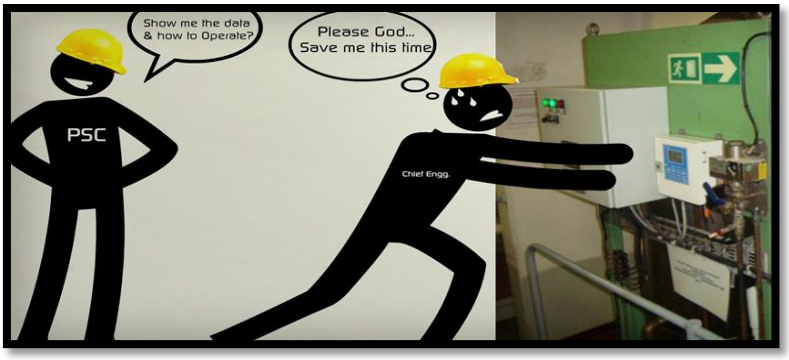

Oily inside of discharge pipe


After cleaning


Oily coalescer


After cleaning

**[Source: NKK]**




**[Source: Marine Insight]**

## ❖ Be prepared for a PSC inspection

- Ensure that the seafarers in charge are aware of the OWS operation procedures.
- No heavy corrosion, holes exist on the outer casing.
- Operation of valves in good order.
- Oil Record Book entries in order.
- Pressure gauges in good order.
- Sampling test for filtered water from test cock is taken.
- OCM operates satisfactorily
- Alarm functions properly
- Automatic stopping device is in good order.
- Ensure no oil or dirty inside the discharge pipe.
- The discharge pipe is not wasted.
- No by-pass fittings
- The inspector may also ask the crew to obtain a sample of the OWS effluent in a clean tank/container. The sample should be similar in appearance to the outlet flow from the OCM and should have no visible oil sheen.
- The PSC Officer may also inspect that all the valves of the piping system operate satisfactorily and that there is no oil trace in the pipes which are connected to the OWS.
- With regards to the OCM and the 15 ppm alarm, the inspector shall identify that the system operates satisfactorily, the alarm functions properly and that the automatic stopping devise with the 15ppm – alarm arrangement is working smoothly at all times.

❖ **Tips to remember**

Furthermore, seafarers will be asked to ensure that the OWS is free of illegal by-passes. This can be done by visual inspection of the connections and pipelines in the machinery room of the vessel. No connections are permitted to pass the separator, the 15 ppm alarm, the 3-way-valve or the automatic stopping device, allowing bilges to be discharged directly overboard.

OCM to be calibrated and tested on a regular basis in accordance with the makers' instructions. It should be noticed that testing is usually performed by flushing with water and the meter indicating zero or by simply blocking the sensor by sticking a pen or another object into the sensor tube. These methods however may not be adequate, as such tests merely indicate that if the sensor is blocked it will alarm or will prompt zero indication, but does not indicate whether the sensor actually responds at 15 ppm or at greater volumes. Therefore very often, the PSC Officers may request for an actual test made by utilizing the bilge tank or the suction from the bilge wells.

Finally, according to our experience, it has been reported in the past that although the sensor has been tested with sea water in the presence of the Port State Authorities, a non-zero indication was delivered (lower than 15 ppm) by the sensor indicating that its reading was incorrect. It was proven that the sensor was indeed indicating the correct value resulting from the condition of the sea water sample taken for testing purposes (at port).

**Working or not?**

Our company is offering a wide range of 'deficiencies', case studies, clarification on the PSC deficiencies, Audits, inspections. We are also in a position through our "Prevention at Sea Risk Program" to calculate the **Ship Detention Risk and provide solutions to avoid unpleasant delays.**

We remain at your disposal for more details,

**Prevention at Sea**