

SYSTEM FOR AN OIL SPILL COLLECTING VESSEL

The present invention relates to an oil spill collecting
5 system for use with a sea going vessel.

The system is intended to be used aboard oil spill
collecting vessels to improve the separation of water
from oil in difficult weather conditions.

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Existing oil spill collecting systems collect the water-
oil dispersion by means of oil-collecting booms and
transfer it into one or several collecting tanks, in
which a coarse separation of water from oil takes place.

15 A major part of the intake water is conveyed via the
water outflow port to the sea, and the oil, with some
residual water dispersed in it, is transferred via a
controllable flow hatch into a separation tank, located
in the athwartships direction in the hull. In addition,
20 a mechanically operated oil collecting system is used for
transferring oil from the collecting tank into the
separation tank via the deck hatch of the separation
tank. Pumps with surface suction inlets in the
separation tank are used for transferring the oil into
25 cargo tanks, while water is pumped with permanently
mounted submerged pumps via the sea chest to the sea.

Due to the higher susceptibility of the vessel types used
for oil collecting to pitch about their athwartships
30 axis, oil and water will be dispersed in heavy sea in
such separation tanks which are located transverse to the
longitudinal axis of the vessel. In addition, such
described systems do not necessarily fulfill
international recommendations for spill oil collecting
35 conditions. For instance, in order to comply with the
international B/5 recommendation, a vessel must be able

to withstand a hull side collision in the athwartships direction of the ship with a maximum extension of one fifth of the ship's width so that there is no damage to the cargo tanks.

5 The aim of the invention is to overcome the
aforementioned drawbacks of the prior art and to provide
a completely novel type of system to eliminate the
problems associated with heavy sea and to satisfy
10 international recommendations.

The system as defined in the claims may be implemented by
locating separation tanks of oblong shape and substantial
depth relative to their width on both sides of the ship
15 and aligned in the direction of the ship's longitudinal
axis and arranging that the water/oil mixture flows, in
use, in the direction of the tank's longitudinal axis and
is controlled by a plurality of individually adjustable
suction inlets of water pumps which are located on the
20 bottoms of the tanks.

Because rolling is the heaviest movement of the ship's
motion, dispersion of oil in water in longitudinally
located, deep in respect to their width, oblong tanks is
25 clearly less than in systems of prior art technology. In
addition, the system in accordance with the invention
provides for the cargo tanks, into which the separated
oil is collected, to be given full protection against
collisions from the sides of the ship by the separation
30 tanks in order to satisfy the B/5 recommendation.

A system embodying the invention will now be described,
by way of example only, with reference to the
accompanying diagrammatic drawings, in which:

35 Figure 1 shows a partially diagrammatic side view of a

vessel;

Figure 2 shows a cross-section of the vessel at the mechanically operated collecting tanks;

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Figure 3 shows the ship's main deck from above; and

Figure 4 shows the arrangement of the ship's tanks from above.

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The water/oil dispersion collected from the sea is transferred into a spill oil collecting vessel 1 via an inflow port 5 to a mechanically operated collecting tank 2. From there the oil is transferred further using a mechanical oil collecting system 7 (e.g. a brush operated recovery system of type LORI) via a deck hatch 9 (Figure 3) into an oblong separation tank 3, which is deep relative to its width and which is aligned with the ship's longitudinal axis. The transfer of the water/oil mixture also takes place via an adjustable hatch 10 into the separation tank 3. According to the illustrated embodiment, the length of the separation tank 3 is preferably about 30% of the ship's length and may be in the range of 20 to 100%, and its width is about 20% of the ship's width and may be in the range of 15 to 25%. The depth/width ratio of the separation tank 3 is about 2.0 and may be in the range of 1.8 to 2.2. During frozen water conditions, the oil/ice mixture is elevated via a deck hatch 8 of a collecting tank 2 into the vessel.

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Water is released to the sea from the collecting tank 2 via water outflow ports 6. Oil is transferred from the separation tanks 3, using one or several surfaces suction pumps and one of several permanently mounted submersible pumps, into cargo tanks 4 while the water is correspondingly pumped via one or several individually

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adjustable suction inlets of submersible pumps via the sea chest to the sea. In one embodiment, three suction inlets of the submersible pump are adapted to suck at the ends and in the middle of the separation tank 3 separately so that their mutual suction effect can be individually adjusted to obtain the highest possible uniformity of the oil/water mixture. The collecting and separation tanks 3 are located according to Figures 4 and 2 to protect the cargo tanks 4 from side collisions.

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Within the scope of the invention, a spill oil collecting vessel can be equipped, for instance, with only one oblong separation tank which is deep relative to its width, and which is aligned along the ship's longitudinal axis. The separation tank can also be located at the center of a ship and several separation tanks can be arranged in a row.

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CLAIMS

1. An oil collection system for use in a sea going vessel, the system comprising
- 5 at least one mechanically operated collecting tank, at least one oil separation tank into which a water/oil mixture to be separated can be transferred from the collecting tank, the or each separation tank containing means for separating the
- 10 oil from the mixture and means for removing the excess water from the tank, the or each separation tank or a combination of said tanks being of oblong shape and deep relative to their width, and being aligned in the longitudinal direction of the
- 15 vessel, the length of the separation tank or combination of tanks being at least 20% of the length of the vessel, and
- 20 at least one cargo tank into which the oil separated from the water/oil mixture can be transferred from the separation tank, the system being such that the flow of the water/oil mixture is arranged to take place in the longitudinal direction of the separation tank and is
- 25 controllable by a plurality of individually adjustable suction inlets of at least one pump, said inlets being at the bottom of the separation tank or combination of tanks.
2. A system as claimed in claim 1, wherein the width
- 30 of the separation tank or combination of tanks is in the range 15-25% of the width of the vessel.
3. A system as claimed in claim 2, wherein the width
- 35 of the separation tank or combination of tanks is 20% of the ship's width.



4. A system as claimed in any one of the preceding claims, wherein the ratio of the depth to the width of the separation tank or combination of tanks is in the range 1.8 to 2.2.

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5. A system as claimed in claim 4, wherein the depth/width ratio is 2.

6. A system as claimed in any one of the preceding claims, wherein the separation tank or combination of tanks is arranged on the hull side of the vessel.

7. A system as claimed in any one of the preceding claims, wherein a separation tank or combination of tanks is located at each side of the cargo tank.

8. A system as claimed in any one of claims 1 to 5, wherein the separation tank or combination of tanks is located on the centre line of the ship.

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9. A system as claimed in any one of the preceding claims, wherein there are a plurality of separation tanks arranged in a row.

10. An oil collecting system substantially as herein described with reference to the accompanying drawings.

