

**Subject: Technical Information No. 2011-004**  
**Rate of Discharge of Untreated Sewage from Ships**



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## **1. Introduction**

### **1.1 General**

The discharge of raw sewage into the sea can create a health hazard, while in coastal areas; sewage can also lead to oxygen depletion and an obvious visual pollution - a major problem for countries with large tourist industries.

Untreated sewage, which may be discharged at more than 12 nautical miles from the nearest land, should not be discharged instantaneously but at a moderate rate of discharge when the ship is en route and proceeding at a speed not less than 4 knots, while the rate should be approved by the Administration based upon standards developed by the Organization.

The purpose of this Technical Information is to remind Res.MEPC.157 (55) "Recommendation on standards for the rate of discharge of untreated sewage from ships". This Recommendation provides the standard and guidance for the approval and calculation of a moderate rate of discharge.

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### **1.2 Changes**

This edition dated 2011.Jan.02 and any other necessary changes related to this document will be announced after this date.

## 2. Adoption

A "recommendation on standards for the rate of discharge of untreated sewage from ships" through Res.MEPC.157 (55) was adopted at the 55th session of the MEPC. Consequently, this recommendatory standard was included to the revision of Regulation 11.1.1 under MARPOL Annex IV by Res.MEPC.164 (56) and entered into force on 13 December 2008.

### Note:

If any ship applied to approval of rate of discharge of untreated sewage operates without approval, it may cause a PSC deficiency or detention.

**Untreated sewage:** sewage that has not been treated by a type approved sewage treatment plant, or that has not been comminuted and disinfected.

## 3. Applications

A moderate rate of discharge applies to the discharge of untreated sewage that has been stored in holding tanks.

This standard does not incorporate the dilution of sewage with water or Greywater into calculations of the discharge rate. Therefore the rate is a conservative estimate and it is recognized that discharges of sewage in accordance with this standard will present a higher level of protection to the marine environment due to mixing prior to the actual discharge in addition to the mixing action of the ship's wake.

The contents of this recommendation are applicable for:

- A Ship subject to MARPOL Annex IV fitted with a sewage holding tank.
- A Ship subject to MARPOL Annex IV which discharges untreated sewage at the open sea even though "a sewage treatment plant" or "a comminuting and disinfecting system" is fitted on board.

## 4. Table for rate of discharge of untreated sewage

### 4.1 Calculation of discharge rate:

The maximum permissible discharge rate is 1/200,000 (or one 200,000th part) of swept volume as follows.

$$DR_{\max} = 0.00926 V D B$$

$DR_{\max}$ : Maximum permissible discharge rate ( $m^3/h$ ).

**V:** ship's average speed (knots) over the period.

**D:** Draft (m).

**B:** Breadth (m).

### Note:

**Swept Volume:** ship breadth  $\times$  draft  $\times$  distance travelled.

The calculated swept volume of the ship is to be determined for drafts up to and including the summer draft assigned in accordance with Article 3 of International Convention on Load Lines, 1966.

Where a ship is to discharge sewage from a holding tank using a pump calibrated at a fixed rate, the pump can either be:

- Calibrated at a the rate permitted at 4 knots; or
- Calibrated for a specific minimum ship's speed in excess of 4 knots.

Where the intended actual discharge rate exceeds that permissible at 4 knots, the actual discharge rate may need to be reduced or the speed increased. The rate and speed is to be detailed in the approval issued by the Administration.

### Note:

The maximum permissible discharge rate specified in 4.1 refers to the average rate as calculated over any 24 hour period, or the period of discharge if that is less, and may be exceeded by no more than 20% when measured on an hourly basis.

### 4.2 Example

For the case of a ship with the following particular, calculation for the discharge rate shall be as follows.

Ship type: *Bulk Carrier*.

Maximum service speed: *15 knots*

Permissible minimum speed for discharge: *4 knots (the minimum fixed value)*.

Maximum summer draft: *10 m*

Draft in the lightweight: 5 m  
 Breadth: 32 m

$$DR_{\max} = 0.00926 \times 32m \times 5m \times 4 \text{ Knots} = 5.92 \left( \frac{m^3}{h} \right)$$

$$DR_{\max} = 0.00926 \times 32m \times 5m \times 5 \text{ Knots} = 7.40 \left( \frac{m^3}{h} \right)$$

$$DR_{\max} = 0.00926 \times 32m \times 10m \times 15 \text{ Knots} = 44.44 \left( \frac{m^3}{h} \right)$$

#### 4.3 Document to be submitted

- An application (on the subject of approval to discharge rate of untreated sewage)
- A "Tabular Discharge Rate" referred to Annex I

### 5. Approval

#### 5.1 Approval of rate by administration

The Administration should approve the rate of discharge specified in 3.1 based upon the ship's maximum summer draft and maximum service speed. Where sewage is to be discharged at a different combination of draft and speed one or more secondary discharge rates may also be approved.

#### 5.2 Approval of rate by Society

Once the discharge rate of untreated sewage is approved from this Society, the table on the discharge rate would be endorsed and a Letter of Compliance would be also issued.

Be advised that both the Letter of Compliance and the approved table sheet should be kept with ISPP Certificate.

Wherever untreated sewage is discharged instantaneously, the discharge work of untreated sewage shall be recorded on the official Log Book to demonstrate compliance with the approved rate.

- Ship's speed at the time of discharge (kts).
- Ship's draft at the time of discharge.
- Time and position (Longitude and latitude) at the beginning and completion of discharge.

- Discharged amount (amounts of sewage in the holding tank before discharging and after discharging).

### 6. Conclusion

Before undertaking a sewage discharge in accordance with this standard, the crew member responsible for sewage operations should ensure that the ship is en route, is more than 12 nautical miles from the nearest land and the navigation speed is consistent with the discharge rate that has been approved by the Administration. Ships with high discharge requirements are encouraged to keep notes of calculations of the actual discharges to demonstrate compliance with the approved rate.

Tables 1 & 2 represent an example of notes for crews to decide on what rate of discharge shall be taken for an especial ship.

**Table 1. Table of Discharge Rate for a ship**

Discharge Rate (m <sup>3</sup> /h)					
Spd (kt)	4	6	8	10	12
5	4.63	6.94	9.26	11.57	13.89
6	5.56	8.33	11.11	13.89	16.67
7	6.48	9.72	12.96	16.20	19.45
8	7.41	11.11	14.82	18.52	22.22
9	8.33	12.50	16.67	20.83	25.00

### 7. References

- KR technical information on Urgent Notice for Approval of rate of discharge of untreated Sewage
- NKK technical information on Approval of Discharge Rate of Untreated Sewage from Sewage Holding Tank
- IMO, Res.MEPC.157 (55)