

Sewage management on board Glacial Bear

I. Purpose of the document

This procedure presents the Company Policy for sewage management.

II. Scope

Ship: Deck & Engine Officers

III. Definitions

Sewage: Wastewater including Black Water, Grey Water, Mixed Water, Bio Sludge, Treated Water.

Grey Water: Wastewater from the sinks, showers and the Laundry.

Black Water: Wastewater from the toilets.

Mixed Water: Mix of Grey and Black Water

Bio Sludge: Black Water generated by the pre-filtration unit that contains most of the solids.

Treated Water or Effluent: Black Water, Mixed Water and Grey Water after passing through the TECNICOMAR ECOMAR70 S

TECNICOMAR ECOMAR70 S: Advanced Wastewater Treatment System that Commute, disinfect and generate Bio Sludge as a by-product

Polar Area: Area defined by the Polar Code

Fast ice: Sea ice attached to the coast, ice wall, ice front, or between shoals or grounded icebergs

Ice shelf: A floating ice sheet of considerable thickness showing 2 to 50m or more above sea level, attached to the coast

IV. Content

The wastewater produced on board is either accumulated until discharged overboard or treated through an Advance Wastewater Treatment System.

1. Advanced Wastewater Treatment System:

Manufacturer: TECNICOMAR ECOMAR70 S

Design Review: The system complies with IMO Resolution MEPC.227(64), including Section 4.2 for Special Areas

Capacity: 7000 liters/day

2. Wastewater Process:

The system treats batches of sewage using:

1. Special chemical-physical treatment
2. Flocculation processes
3. Final post-treatment prior to overboard discharges

Treatment Process for Black, Grey Water and Mixed Water:

- Fully automatic operation
- Continuous auto-run cycle
- No operator intervention needed

The unit is designed to work in extreme temperature and vibration conditions

4. Minimization of Wastewater

Minimization of Wastewater must be emphasized in order to increase the holding capacity of the ship.

Therefore, it is a matter of utmost importance to reduce as much as possible the consumption of fresh water in the crew accommodation, the galleys and the technical areas.

Leaks of water taps must be reported.

Taps must not be left open with water running.

Washings must be carried out correctly but without excess.

5. Discharge

The discharges of wastewater are carried out as follows unless specified otherwise by local regulations or in special areas:

- Bio Sludge must be discharged at more than 12 NM from the coast and at a speed of more than 4 Knots.
- Untreated Black Water, Mixed Water and Grey Water must be discharged at more than 12 NM from the coast and at a speed of more than 4 knots.
- Treated Water may be discharged at any location

Particularities for Polar Area:

- Untreated Black Water, Mixed Water and Grey Water can be discharged at a distance of more than 12 nautical miles from any ice-shelf or fast ice, and as far as practicable from areas of ice concentration exceeding 1/10.
- Treated Black Water, Mixed Water and Grey Water can be discharged as far as practicable from the nearest land, any ice-shelf, fast ice, or areas of ice concentration exceeding 1/10.

6. Discharge procedures

Beginning of discharge:

- 1/ When discharge of wastewater is possible the Officer of the Watch on the bridge advises the Engine Control Room stating the type of wastewater that can be discharged and the time the discharge is expected to stop.
- 2/ The Engine Officer of the Watch is to advise the Bridge when the discharge is starting.
- 3/ The Officer of the Watch on the bridge makes the entry accordingly in the Sewage Discharge Logbook.

End of discharge:

- 1/ 30 mins before entering an environmental limit, the Officer of the Watch on the Bridge advises the Engine Officer of the Watch.
 - 2/ The Engine Officer of the Watch then confirms to the Bridge when the valve(s) is (are) closed with the final quantities discharged.
 - 3/ The Officer of the Watch on the bridge makes the entry in the Sewage Discharge Logbook.
- The Officer of the Watch on the bridge is to always monitor the distances to the environmental limits and must advise the Engine Control Room immediately if the ship enters the limits because of traffic, safety or other navigation reasons.

7. Record keeping

Sewage Discharge Logbook.

8. Environmental Guidelines

Sewage may be discharged to reception facilities in ports.