

GUIDELINES FOR THE CARRIAGE OF POTABLE WATER FOR SUPPLY TO OFFSHORE LOCATIONS

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1 INTRODUCTION

At present there is a myriad of legislation relating to potable water quality for shore based requirements and vessel domestic potable water. No clear guidance has been written specifically for cargo potable water delivered to offshore locations. This document is intended to give clear guidance on the requirements for cargo potable water.

2 SCOPE

These guidelines have been written to standardise cargo potable water quality delivered by vessels supporting offshore locations within the UK sector.

The guidelines do not cover the requirements for the carriage of Domestic Potable Water, potable water carried for use on board vessels.

3 AIM

The purpose of this document is to ensure the quality of cargo potable water carried on vessels for supply to offshore locations meets minimum standards. It provides ship owners and operators, offshore locations, logistics providers and others within the supply chain with an understanding of the requirements to ensure delivery of a wholesome supply of potable water to the end user.

4 LEGISLATION

EC Directive 98/83
The Water Supply (Water Quality) Regulations 2000
The Water Supply (Water Quality) (Scotland) Regulations 2001

5 GUIDANCE

Merchant Shipping Notice M1214 - Recommendations to prevent contamination of ships freshwater storage and distribution systems
MCA Leaflet MCA/13 - Legionella & Legionnaires' Disease
World Health Organization Guidelines for Drinking-water Quality Third Edition

6 DEFINITIONS

- Potable Water Water of a quality suitable for drinking and cooking
- Cargo Potable Water Potable water carried on offshore support vessels for supply to offshore locations

7 MAINTENANCE

7.1 Maintenance of Vessel Cargo Potable Water Tanks

All cargo potable water tanks on vessels should be reserved solely for that purpose. Tanks should be opened up, emptied and inspected at intervals not exceeding 12 months for inspection and maintenance.

The maintenance of cargo potable water tanks should be in the vessel planned maintenance system and audited under International Safety Management (ISM) Code.

Minimum cleaning standards - should include all of the following:

- Physically clean
- Touch up coating as necessary
- Fill tank with a solution of super chlorinated water at a concentration of 50 ppm chlorine and leave for a period of not less than 4 hours. Certain operators have a requirement for this solution to be kept on board for 10 hours
- Discharge tank completely
- Flush out with clean potable water
- Discharge tank completely
- Fill with potable water

Or

Any other MCA approved method

All pumps and pipe work should be flushed through with the super chlorinated water and then with clean potable water prior to filling tanks

7.2 Maintenance of Hoses Used for the Transfer of Cargo Potable Water

Only dedicated hoses should be used for the transfer of cargo potable water. When not in use, hoses should be stored in such a way to avoid contamination.

Shore-side Hoses

Hoses and stand pipes should be treated and then flushed with potable water prior to each use in accordance with local water authority requirements.

In addition hoses should be cleaned at least every week. Hoses should be filled with super chlorinated water (50ppm) and allowed to stand for at least 10 minutes. They should then be emptied and flushed through with potable water for 2 minutes prior to being used.

Hoses should be replaced annually. If hoses are only used for occasional delivery of potable water they should be inspected annually and replaced as appropriate.

Offshore Hoses

Maintenance of offshore hoses is not covered by the scope of these guidelines and is the responsibility of the installation management.

8 SAMPLING REGIME

Vessel Tanks

Contents of cargo potable water tanks should be tested on a 3 monthly cycle to ensure that tank hygiene remains within the defined standards.

Shore-side Storage / Holding Tanks

Contents of shore side potable water storage tanks should be tested monthly.

Shore-side Stand Pipes

Fixed shore-side stand pipes should be tested every two months.

Stand pipes that are only fitted for delivery should be treated as part of the hose and maintained as detailed in Section 6.2.

9 MICROBIOLOGICAL AND CHEMICAL TEST REQUIREMENTS

Bacteriological Quality Guidance / Chemical Parameter	
Required Test	Limit
Enterococci	0 /100ml
E.coli	0 /100ml
Coliforms	0 /100ml
Hydrocarbons	< 10 ppb
Chlorides	<250 mgCl/l

Coliforms/ E.Coli / Enterococci

Legislation limit is 0 counts per 100ml

These indicator organisms are used to assess the microbiological quality of water as reliable indicators are not available for many other pathogens. The use of the indicator bacteria, E.coli, Enterococci and coliforms, as a means of assessing the potential presence of water borne pathogens is paramount for checking water quality and protecting public health. Frequent testing for these faecal indicators is still the most sensitive and specific way of assessing the quality of potable water.

Hydrocarbons

Test for hydrocarbons is conducted due to the potential for cross contamination with fuel and oil.

Chlorides

Legislative limits <250 mgCl/l

Test for chlorides is conducted due to the potential for cross contamination with sea water.

10 TVC

The original guideline for acceptable levels of bacterial contamination in mains/drinking water was laid down by the World Health Organisation (WHO) to be no more than 100 cfu/ml at 22 C and 10 cfu/ml at 37 C. WHO now consider this to be an unrealistic restriction and suggests that the TVC trend is monitored for any abnormal change.

For an indication of the general condition of the water, a TVC at 22°C and 37°C check will be taken on each sample.

The results should show **no abnormal change**.

In order to measure this, the results should be trended and analysed with reference to the historical levels achievable within that vessel, company or area, depending on the information available.

11 LEGIONELLA

Currently testing for Legionella is not a requirement for potable water.

The danger of infection caused by Legionella bacteria is caused when it gains entry to the respiratory system. This can occur from water suspended in air in the form of a fine mist as created by showers or tap sprays.

Maintenance of cargo potable water tanks, pipe work, pumps and hoses as defined in these guidelines should control any contamination by Legionella in the water carried.

Should an operator require cargo potable water to be tested for Legionella the following test limit applies:

Test	Limit
Legionella	<100 cfu/l (cfu = colony forming units)

12 POTABLE WATER DISINFECTION

There is a requirement for vessels carrying potable water to maintain a minimum free residual chlorine level of 0.2 ppm and not more than 0.5 ppm. Where potable water is treated to another approved standard e.g. chloramination, treatment should be in compliance with that standard.

Super chlorination should be conducted as part of the cargo potable water tank maintenance. In addition, if a sample from any cargo potable water tank exceeds the test limits detailed above then the tank should be super chlorinated. Following treatment the tank should be filled, sampled and retested. This should be repeated until satisfactory results are obtained.

TREATMENTS

Chlorination: Add a chlorination solution at 0.2 ppm ratio to the quantity of potable water to be treated. Please note that this treatment can be conducted either by the vessel supplying or the installation receiving the potable water.

Super Chlorination: Add a chlorination solution at 50 ppm ratio to tank volume and fill both tank and pipe line to capacity. When the tank and line is full leave for a minimum of 4 hours then discharge the contents overboard (DO NOT REUSE). Potable water can now be loaded and tank retested.
NOTE: When super chlorination is required due to test results exceeding the limits, cargo must not be transferred or discharged prior to receipt of satisfactory test results.

Always refer to manufacturers instructions to achieve ratios required. Also refer to Material Safety Data Sheets for safety and storage information.

Appendix 1 – Sampling Protocol

1.0 PURPOSE

This method presents a procedure for the collection of potable water for microbiological, chemical and hydrocarbon analysis from Offshore Support Vessels.

2.0 REFERENCES

BS EN ISO 5667-3:1996 BS 6068-6.3:1996 Water Quality Sampling Guidance on the Preservation and Handling of Samples

3.0 SUMMARY OF METHOD

A known volume of water is collected from either the bunker line or directly from storage tank sample points. Sufficient time should be allowed for adequate flushing of pipe lines and potable water tank sample points prior to sample collection. The sample should be transported to the laboratory for testing within 6 hours (or 24 hours if the samples can be stored under refrigerated conditions).

4.0 APPARATUS

- Sterile 500 ml screw top bottle containing 0.4 ml 3% thiosulphate solution
- Sodium hypochlorite solution / steri-wipes
- TCE washed 1L glass bottles
- 500ml glass chemistry sample bottle

5.0 PROCEDURE

- Prior sampling ensure that sufficient bottles have been prepared and are available for the job.
- Prior to sampling, ensure that the discharge end of the line / sample point is free from physical debris. If debris is detected, wipe around the end with a steri-wipe, alternatively use sodium hypochlorite solution if available.
- Start the pump / open the sample point and allow the water to flush through for 1 minute. If the tank being sampled is at the extremities of the vessel, allow a longer flushing time.
- If sampling from the discharge line the water will be pumped with considerable force and personnel should take up position behind the discharge line.
- Remove the cap from the sterile screw top microbiological sample bottle, taking care not to touch the inside of the cap or the neck of the bottle. Do not put the cap down.
- Fill the bottle completely, without rinsing, by holding it within the stream of water. Replace the cap tightly.

- Label the bottle, stating the location, tank number, date and time of sampling.
- Remove the top from the 1L hydrocarbon glass sample bottle and fill completely by holding it within the stream of water. Ensure that hands and sample point are free from oily residue.
- Label the bottle, stating the location, tank number, date and time of sampling.
- Remove the top from the 500 ml chemistry sample bottle and fill completely by holding it within the stream of water.
- Label the bottle, stating the location, tank number, date and time of sampling.
- During the sampling procedure, check for particulate material, discolouration and discernible odours and report any observations on the sampling record sheet.
- Collect information regarding maintenance to the potable water tanks i.e. have they been painted recently, contaminated etc. This information should be recorded on the sampling record sheet.
- When collecting samples from tanks due consideration should be given to the pumping rate and the length of the pipe line being flushed between each tank.
- The samples along with the sampling record sheet should be transported to the laboratory for testing within 6 hours (or 24 hours if the samples can be stored under refrigerated conditions).

6.0 HEALTH AND SAFETY

- Unknown Samples: Unknown samples should be handled as though they contained potentially pathogenic bacteria.
- Sodium Hypochlorite solution: Refer to the MSDS for handling instructions.
- Personal protective equipment must be worn for the duration of the sampling (high visibility waterproof trousers and jacket, hard hat, safety glasses and waterproof boots).