



## 7.5.7 Quality of Potable Water

Originator:

Dutch Wegman

Approved By:

Albert F. Suchy

### 1. Purpose

The purpose of this procedure is to set forth guidelines for testing of potable water on WHOI vessels to ensure that the water is safe for consumption.

### 2. Responsibility

It is the responsibility of the Chief Engineer of each vessel to write ship specific sampling procedures and to then ensure that the sampling is carried out and properly recorded. A minimum Oxygen Reduction Potential (ORP) value of 650mV is to be maintained on each tank; this level guarantees that any harmful organisms will be killed immediately.

### 3. General

Potable water is stored in 2 or more tanks onboard each ship. The water is produced by evaporation, reverse osmosis or provided by hose from a shore side supply.

Each potable water tank shall be inspected twice in a 5-year period to detect corrosion, wastage or other faults. All coatings are to be NSF approved for potable water for the capacity of that tank. Upon completion of any tank work or intrusion by personnel, the tank will be sanitized by one of the two following methods; (a) in accordance with NAVMED P-5010, Chapter 6, attached on page 2 or (b) introduce ozone to the tank until an ORP level of 650mV has been reached and maintained for at least four hours.

Each potable water tank on WHOI vessels is treated to guarantee purity by bubbling ozone into the water. The ozone is fed from a Delta Marine Int'l. unit custom built for each specific application. Each unit is programmed to treat a number of tanks on a rotating basis. By experience, the number of hours of treatment per day is set to ensure that the proper level of ozone concentration is maintained. Each tank shall be tested weekly to ensure that there has been no failure of the ozone supply to each tank. The results of the testing shall be logged in NS5 as a standard job.

### 4. Testing and Recording

Each vessel is provided with an Oxygen Reduction Potential meter with detailed instructions for its use. Water is to be drawn from each tank as outlined in the ship specific procedures and tested and the results logged in an NS5 standard job.



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### NAVMED P-5010, Chapter 6-22. Disinfection of Potable Water Tanks and Systems

1. There are two types of disinfection procedures:
  - a. Mechanical cleaning and chemical disinfection.
  - b. Chemical disinfection only.
2. Mechanical cleaning of tanks includes all measures necessary to clean tanks of foreign materials, rust, and other substances that are present within the tanks.
3. Mechanical cleaning and chemical disinfection will be accomplished when the condition of the tanks has deteriorated to the point where the chlorine demand has increased significantly and bacteriological evidence indicates that the tank has become grossly polluted. After any tank has been mechanically cleaned, it will be chemically disinfected. Mechanical cleaning and chemical disinfection must be accomplished under the following conditions:
  - a. Tanks of new ships or tanks which have been rehabilitated or repaired.
  - b. Where sludge or rust accumulation seriously impairs the quality of water delivered.
  - c. Tanks which have been loaded with non-potable ballast water.
  - d. Voids or tanks converted from nonpotable water to potable water tanks. Note: Procedures for converting fuel or similar tanks for storage and transport of potable water are covered in Article 6-31.
4. Butterworthing or mechanical cleaning at sea with sea water is permissible, but must always be followed by chemical disinfection. Mechanical cleaning, especially when done with sea water, promotes rusting of the tanks and is a laborious and time-consuming procedure.
5. Chemical disinfection is required when the following conditions exist:
  - a. Tanks in which there is continued bacteriological evidence of contamination after normal disinfecting procedures.
  - b. Pipelines, valves, pumps, etc., that have been dismantled, repaired or replaced.
  - c. Tanks which have been entered.
  - d. New or contaminated hoses.
6. Tanks which have been filled with clean sea water ballast (not in harbors or within twelve miles from the harbor) do not require mechanical cleaning, but must be chemically disinfected before reloading with potable water. This disinfection is accomplished by chlorinating the ballast water to 100 ppm. Water must be tested at hourly intervals to ensure maintenance of the proper FAC residual. After four hours contact time, the FAC must not be less than 50 ppm. If at anytime during this four-hour period the FAC residual falls below 50 ppm, sufficient chlorine must be added to bring the residual to 100 ppm and the four-hour period started again. The chlorinated sea water ballast may be carried to the destination and discharged upon arrival. The tank is ready for use after



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flushing with potable water. After filling, it is recommended bacteriological testing be conducted.