

MARITIME SAFETY STANDARD FOR THE CLEANUP OF POTABLE WATER STORAGE TANKS ON BOARD FLOATING EQUIPMENT

1.0 PURPOSE

Establish the procedure for the cleanup and maintenance of potable water storage tanks on board floating equipment and vessels used to transport the vital liquid. The purpose of the Standard is described in brief, clear, and concise manner, in a single three- to four-line paragraph.

2.0 BACKGROUND

This Standard fully replaces the working instructions of 8 sections of the STANDARD OPERATING PROCEDURES FOR THE POTABLE WATER SYSTEM ON BOARD EIMU-MFP FLOATING EQUIPMENT OF THE AUTORIDAD DEL CANAL DE PANAMA, dated May 2000, and the memorandum responding to the MARINE SAFETY UNIT dated October 31, 1991; subject: Marine Potable Water Installations of the former Panama Canal Commission.

3.0 SCOPE

This Standard applies to all Panama Canal Authority (ACP) employees, contractors and third parties performing work or activities on facilities or areas under the responsibility of the Panama Canal Authority.

4.0 LEGAL FOUNDATION

This Standard is established pursuant to Agreement No. 12 of the Board of Directors of the Panama Canal Authority (ACP), Occupational Safety and Health Regulations, Chapter III, Article 22, numeral 1, and Chapter IV, Article 26.

5.0 DEFINITIONS

For purposes of this Standard, the following definitions shall apply:

5.1 Canal Waters: Those found within the geographic area that follow the course of the Panama Canal, and are contiguous to it from the Pacific to the Atlantic oceans. These include anchorage areas, the ports of Cristobal and Balboa, shorelines and areas in which activities, exclusively compatible with the operation of the Canal, are carried out.

5.2 Valves, faucets and cocks: Elements which control the flow and direction of water in the water distribution system on board.

5.3 Pumps: Elements for pumping water in either direction.

5.4 Residual chlorine: The portion of chlorine remaining in the water once it has reacted to the organic fraction present in the water.

5.5 Turbidity: Clarity of water.

5.6 Hypochlorite of lime: A solid chemical agent of the general formula $\text{Ca}(\text{OCl})_2$ utilized for the disinfection of the distribution of potable water system on board. Commercially identified as HTH, it contains a chlorine concentration of approximately 70%.

5.7 Parts per million (ppm): A concentration unit expression which indicates the proportion that exists between the solute and the means of dissolution in milligrams / Liter (mg/L).

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5.8 Solute: A solid fraction, liquid or gaseous, which defines the active substance indicating the proportion with relation to its aqueous dissolution.

5.9 System lines: The entire distribution and interconnection waterline system (mains).

5.10 Potable drinking water: Potable water with a minimal residual chlorine concentration of 0.8 ppm, and a maximum turbidity 0.5 NTU.

5.11 NTU: Nephelometric Turbidity Unit.

5.12 Board, to: To touch, strike, or collide with another ship, and arrive. To go aboard a ship.

5.13 Accidents: Are incidents involving injuries or damage to human life, the environment, the vessel, or its cargo.

5.14 Bail, to: To extract water or another liquid from a bilge, compartment, inner bottom, etc. of a ship, by using either pumps, bailers, or by any other means. To flood is to inundate.

5.15 Right, to: To restore a keeled ship to an upright position. Lighterage is to lighten a ship's load. Stowage is the proper distribution of load or ballast.

5.16 Water (H₂O): A colorless, odorless and tasteless substance formed by the combination of one volume of oxygen and two of hydrogen. As a polar liquid, it is the most powerful known solvent. In part, this results from its high dielectric constant, and also because of its ability to hydrate ions. In each liter of water at normal conditions there are approximately 10⁻⁷ moles of every ionic species. For this reason, on the pH scale, a neutral solution has a value of 7.

5.17 Water sample: That which is collected to perform physics, physiochemical or microbiological analyses. Pre-flushed water sample: That obtained upon opening a tap, or the like; it, therefore, represents the water lodged in the run before the collection. Post-flushed water sample: That obtained after a flow of water has been released, discarding the first collection. It is considered representative of the water supplied by the system.

5.18 Citric acid: A white, crystalline, carboxylic acid of great importance to animal and vegetable cells. It is present in various fruits. Its systematic name is 2-hydroxypropane 1,2,3-tricarboxylic acid. The formula is: HO₂CCH₂C(OH)(CO₂H)CH₂CO₂H.

5.19 Mooring: To make fast; tie a line. The operation of securing a ship with mooring lines onto a pier, loading platform, dike, buoy or another vessel. Sail - raise anchor, to get under way. The Boatman is the operator in charge of assisting a ship during its moorage, securing or releasing it from the pier with lines that attach it to the bollard, bitts or cleats.

5.20 Bulwark: The inner portion of the side of the ship. A topgallant bulwark is a guardrail in the shape of a caisson located alongside the edges.

5.21 Trimmed by the stern: Carry loads astern. Too much aft draft.

5.22 Trimmed by the head: Carry loads forward. Too much forward draft.

5.23 Approved: Accepted by the competent authority.

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5.24 Shipowner: Person or association legally constituted and the lawfully recognized owner or manager of the floating equipment.

5.25 Sheer: Curvature in longitudinal direction usually given to a ship, elevating its extremes.

5.26 Berth: To bring a ship close to another ship, land, dock, or landing place. To moor alongside another ship or dock, in such manner that it is in contact with its side. To go aground. To dry dock the vessels. To strand a ship onshore or on a shoal. To moor in tiers is when ships are moored along their sides.

5.27 Stretch: Gripe — tighten a line, knot securely. Check — firmly restrain a line that runs. Haul in to recover a line, to rouse in.

5.28 Port: The port side, or left side of a ship, viewed aft to fore. A “port” is the voice that commands “to heave or proceed towards the left”.

5.29 Coliform bacteria: Bacteria (small single-celled microorganisms which reproduce by spore fission) that serve as an indicator of contaminants and pathogens when found in water. These are usually found in the intestinal tract of human beings and other hot-blooded animals.

5.30 Side: Each one of the sides of a ship.

5.31 Barge: A flat-bottomed vessel, of full geometry and heavy construction without a self-propelled system. A Lighter is a larger barge generally with no means of propulsion, serving in ports to load and unload merchandise.

5.32 Bitt: A metallic part, single or in pairs, solidly bolted or welded on the deck, around which cables are wrapped to secure them.

5.33 Side: The upper part of the side of a ship. Board, external side of a ship considered to be from the surface of the water to the side of the ship.

5.34 Coaming: A raised border or frame of a ship’s hatch, which objective is to prevent the entry of sea and weathering water that washes the deck, and from objects falling to the bottom decks or holds.

5.35 Ship: All type vessels, with or without propulsion, utilized or which could be utilized as a means of transportation over water. Boat (generic denomination) and craft are, rather, self-propelled.

5.36 Line: Any one of the cords used on board. Lashing is a mooring line, rope or chain that holds the ship.

5.37 Draft: The depth to which the keel bottom of a ship is immersed, measured from the waterline.

5.38 Ship’s bottom — immersed part of the hull.

5.39 Hull: Exterior framework of a ship including its deck. Plating is the set of metal plates with which the skeleton or ribs of the ship are covered.

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- 5.40** Wind cone: Vane that indicates the direction of the wind.
- 5.41** Compartment: Each one of the sections of a ship's interior partitioned off with bulkheads.
- 5.42** Cofferdam: A sealed void between two partitions, whose objective is to prevent the filtration of products from one tank to another.
- 5.43** Cleat. A crutch-shaped part, secured in the center, used for lashing.
- 5.44** Corrosion: Rust formation on iron or steel due to oxidation or contact with certain acids.
- 5.45** Side: Each of the ship's sides forming its hull fore and aft, from waterline to board.
- 5.46** Centerline: Is the center line of the deck that runs fore to aft, parallel to the keel. Profile is the projection over the ship's longitudinal plane, represented by the vertical cut passing through the center line.
- 5.47** Logbook: A book with ruled pages conveniently classified in which elements are recorded to keep track of estimates, situations, observations, and notable navigation events, logged by each official before yielding guard duty.
- 5.48** Quarantine: A determined number of days of isolation imposed on a ship while in port or anchorage by public health authorities as a precautionary measure for preventing the spread of infection.
- 5.49** Deck: Platform or surface that extends throughout the length and breadth of a ship.
- 5.50** Deficiency: The condition of a ship that does not comply with the stipulations set forth in pertinent regulations, standards and agreements.
- 5.51** Unload: The action and effect of removing the load from a ship.
- 5.52** Disembark: To remove or unload cargo from on board *a ship* and take it to land. Also applies to individuals.
- 5.53** Disinfection: Decontamination of fluids and surfaces. To disinfect a fluid or surface, a variety of techniques are available, such as ozone disinfection. Often disinfection means the elimination of microorganisms with a biocide. Coliform index: A water purity point based on a Coliform bacteria count.
- 5.54** Displacement: Is the weight of the volume of water removed by the submerged part of a ship, and is, therefore, its weight.
- 5.55** Drydock: Watertight enclosure or chamber constructed to contain water that is filled with water through the opening that closes a lock gate through which ships that are in drydock sail, and are dry because the water is drained from the dock. The floating dock is a construction that considerably alters its waterline, lifting the ships for careening or repair. Shipyard: Place where ships are constructed and repaired. Slipway: Appropriate area where ships are moved to land for the purpose of being repaired, painted, etc.

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5.56 Measuring device: A device intended for measuring parameters. For example: pressure, temperature, or volume.

5.57 Dissolution: Dissolution is a homogenous mixture of two or more substances. Dissolutions are formed with solvent and solute. It is characterized by not having fusion or boiling temperature. A synonym of solution.

5.58 Main component mass solvent is a solution that possesses the same physical condition as the dissolution.

5.59 Inner bottom: Inner bottom of ships which is divided into several compartments.

5.60 Craft or floating equipment. One of the general denominations with which a small-tonnage vessel is designated.

5.61 Ship, to: Enter into a craft. Introduce elements into a craft.

5.62 Emergencies: Irregular situation or series of circumstances produced in sudden and unexpected manner, which could originate damage to individuals, property and/or the environment, and which require immediate action.

5.63 List: Inclination; angle formed by the ship with respect to its resting position.

5.64 Hatchway: An opening in the deck to make way for persons and objects.

5.65 Length: In general terms, the length of craft or floating equipment taken along the center line. Length overall is that included between the uppermost end of the stem and the most protruding aft.

5.66 Tight: Watertight bulkhead and space or compartment limited by it.

5.67 Stow: To distribute and place cargo inside a ship in a manner that it occupies the least possible space, and is well-secured from the slightest movement.

5.68 Starboard: Right side of a ship. "To starboard" is the voice that commands to "turn or head to the right."

5.69 Examine: Inquire, investigate, and scrutinize an item with diligence and care. Recognize the quality of things, looking out for defect or error.

5.70 Freeboard: Distance vertically measured along the sides of a ship and at mid-length, between the uppermost edge of the deck and the load line.

5.71 Man-rope: Line or rope which, propped up by stanchions (iron or steel belaying pins vertically placed to serve as a handrail or man-rope support), are located on the sides for the safety of the crew. Sill is the part of the upper hull which rises from the deck to safeguard people.

5.72 Scupper: Pipe whose inlet hole is found in the stringer, and its outlet hole on the side; allows for deck drainage.

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5.73 Incidents: Events that cause, or may cause damages to property, craft or the environment.

5.74 Inspection: A visit on board a ship to verify both the validity of its pertinent certificates and other documents; and, the general condition of the ship, its equipment and crew.

5.75 Detailed inspection: That which is carried out in great detail when there exists justifiable reason to believe that the condition of the ship, its equipment, or crew do not conform to the complete particulars of the certificate.

5.76 Leader (boatswain): Foreman (navy petty officer), in charge of operations and field activities (ship maneuvers and labor), and is responsible for the workers (seamen), under the command of the supervisors (officers).

5.77 Waterline: Level to which the water reaches the borders of the hull.

5.78 Pay out. To loosen a line, or to somewhat slacken a line that is taut. Give slack to a line or rope. To let go, is to completely or immediately unlash a secured object. To unberth a ship from a pier or another ship, etc. To let go amain means to pay off. Slacken applies to a line when it is loosened.

5.79 Bulkheads: Transverse and longitudinal partitions with which compartments are subdivided inside a ship.

5.80 Beam: The extreme width of a vessel. The main section is the transverse section which corresponds to the longest beam of the ship.

5.81 Maneuver: Ship or vessel movement or its evolution. Toil performed on board. Tackle - gear and running rigging for handling a ship or performing some task on a ship.

5.82 Corrective measures: Actions that apply to the equipment, activities, processes, programs, procedures, vehicles or system of any nature in an agency, including the installation of equipment or Works performance, with the object of controlling, minimizing or preventing environmental contamination, or restoring, recovering, compensating, or minimizing damages caused to the environment or to the natural resources.

5.83 Preventive measures: Actions which apply, jointly or separately, to one or more activities, processes, programs, procedures, practices, vehicles or Systems of any nature of an agency, including the installation of equipment or Works performance, with the object of preventing contamination or environmental contingency risks.

5.84 Monitoring: Close observation of a system, generally to detect changes.

5.85 Ride at the lines, hoses and electric cables is to get caught within any narrowness. To jam is when a cable is pressed tightly between two objects that prevent it from sliding freely.

5.86 Pier: A harbor structure built on the shore of a river, or along a basin, so that vessels may be moored alongside to load or unload.

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5.87 Neutralization: Process by which an acid or basic solution becomes neutral. Acid solutions are neutralized with basic solutions and vice versa. A stoichiometric reaction of an acid and a base in volumetric analysis. The point of neutralization or final point is detected with indicators.

5.88 Upper hull: The part of the hull that is above the surface of the water.

5.89 Immersed hull: The portion of the hull that is below the waterline.

5.90 Lockers: Small enclosures or divisions built inside a ship to store supplies (*necessary elements in a vessel to toil or set sail*) and provisions, and each is designated in accordance with its contents.

5.91 pH: Base 10 logarithm of the inverse of the hydrogen-ion concentration of a solution. In pure water at 25°, the hydrogen-ion concentration is 1.00×10^{-7} moles l^{-1} , from which the pH is neutral on 7. The increase in acidity increases the value of $[H^+]$, decreasing the pH value below 7. The increase in the hydroxide-ion concentration $[OH^-]$ causes the H^+ to diminish proportionally, increasing the pH value over 7 on basic solutions. The approximate pH can be obtained through the use of indicators: The most precise measurements utilize electrode systems.

5.92 Stern: The after part, or rear of a vessel.

5.93 Prevention: Set of actions or measures adopted or foreseen with the objective of preventing or reducing risks.

5.94 Stem: The forward part, or front of a ship. The part that overhangs from the front of a ship.

5.95 Door: Steel, iron, etc. plate or wooden frame used to close an opening in a bulkhead, cabin, locker or chamber.

5.96 Harbor: Site, shelter, or refuge in the coast protected from the battering of the sea, wind, and current action, with anchorage for ships and craft.

5.97 Depth: Height of a ship, from the uppermost part of the keel to its deck.

5.98 Drain: Also called a blow-off cock or a blowdown. The place through which the emptying of an equipment or installation is effected. Extraction points are those in the water installation through which water can be extracted.

5.99 Hogging: Motion in the hull bolting, by which the heel becomes bent, rising in the center and falling at its ends, causing a loss of sheer.

5.100 Keel: Solid ribbing running from the bottom of the hull, fore-and-aft. It is the spine or backbone of a ship in all its extension. Rising from it are the frames (*or the ship's transverse structural rib members*), the stern (*the outermost part of the ship's stem which gives form to the extremity*) and the sternpost (*the part bolted to the after end of a keel and forms the main frame*).

5.101 Lanyard: Short line joined by one of its ends to an object to hold it, such as the braided line of marine blades and lifebuoys (*surface floats of different types to sustain persons in the water*) to secure them to the wrist or neck.

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5.102 Refit: Inspect, cleanup, and repair of all the parts that make up a ship.

5.103 Manhole: Opening made on the sides, top or bottom compartments, tanks, etc. for access to their interior.

5.104 Tow: To haul another ship or any floating object.

5.105 Rescue: Removal or assistance in the evacuation of the occupants of a ship involved in an accident / incident, or of the individuals exposed to it.

5.106 Review: Check with attention and care. To subject something to new testing in order to correct, amend, or repair it.

5.107 Sediment: Material found in the bottom of a stream that results from the sedimentation of suspended matter. Sedimentation: The effect by which gravity allows for suspended particulate matter in a stream to separate from it.

5.108 Bilge: The lowermost part of a hull interior where water that penetrates into it is collected.

5.109 Situation: Determination and knowledge of the place where a ship is located.

5.110 Solution: Liquid system of one or more species intimately dispersed among each another at molecular level. The system is completely homogenous. The main component is called *solvent* (generally liquid in pure state), and the minor component is called *solute* (gas, liquid, or solid).

5.111 Solvent: Liquid for dissolving other matter (solid, liquid or gas) to form a solution. Generally, the solvent is the main component of the solution.

5.112 Sounder: Instrument to capture depth and bottom quality, generally consisting of the plummet (weight carried by the sounding line to enable it to sink to the bottom to define the depth), and the *sounding line* (to which the leads are attached at its ends to carry knots and signals that indicate the fathoms).

5.113 Superstructure: Everything located above the weathering deck.

5.114 Tank, cistern or water tank: Iron or steel containers or receptacles installed on board intended to contain liquids to be transported.

5.115 Trimming tanks: Tanks utilized for righting the ship; generally located fore and aft, filled with water. Forepeak tank, watertight enclosed space located at the fore lowermost end, to correct the ship's trim: Afterpeak tank, same as the previous one, but installed at the aft.

5.116 Locker: Small cabinet in a ship utilized to store various objects.

5.117 Tonnage: The displacement of a ship in tons; that is, its weight.

5.118 Transship: Transfer people and objects from one ship to another.

5.119 Crew: Seafarers on board a ship to maneuver and service it.

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5.120 Verify. Prove that something that was questionable is true. Check or examine the veracity of something.

6.0 GENERAL

6.1 Procedure for the cleanup of potable water storage tanks.

6.1.1 Completely drain (empty) all the water in the potable water distribution system on board the floating equipment (tugboat, barge, crane, or other). The drainage must include the storage tanks, all the distribution system lines, including valves, wrenches, cocks and pumps.

6.1.2 Once this operation is completed, shut down all the valves and cocks that were opened to drain the system.

6.1.3 Add fresh potable water to the storage tank (or tanks) and fill to 1/3 its total capacity with the hose dedicated for this operation. This hose must be stored in a clean PVC-covered tube capped on both ends. Verify in advance the turbidity and residual chlorine concentration of water from the intakes (be it hydrants or access lines).

6.1.4 Prepare, in a 5-gallon capacity plastic bucket, the hypochlorite of lime (HTH) solution required for your floating equipment. Consult the table of weights required.

6.1.5 Dissolve all the HTH and pour this solution into the water storage tank on board.

6.1.6 Utilize safety equipment that is appropriate and recommended by the ACP Office of the Industrial Hygienist.

6.1.7 Finish filling the potable water storage tank (see 6.3.), submerging the dedicated filling hose nozzle approximately 2 feet below the surface of the liquid, to improve the efficiency and uniformity of the dissolution.

6.1.8 Disinfect the filling hose (submerging it into a 1% HTH solution) before inserting it into the tank.

6.1.9 Open all wrenches, valves and cocks of the on-board distribution system and verify that through all outlets there is a flow of a solution containing 50 ppm of residual chlorine. Once the concentration has been checked, close all the outlets and maintain the system shut down for 24 hours.

6.1.10 Add the required amount of water to the tank to replenish the water lost while filling all the distribution system with the 50 ppm solution.

6.1.11 Drain the storage tank and all the distribution system as was initially done.

6.1.12 Verify that the chlorine consumption was less, or equal to 75% of the residual chlorine concentration in the system. If the consumption of chlorine is greater than 75%, disinfect again.

6.1.13 Collect the super-chlorinated solution in a tank and neutralize before discharging at the center or body of superficial water (see table of requirements).

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6.1.14 If the disinfection was effective, rinse out all the storage system, as well as the distribution system, filling the potable water tank completely with freshwater, and draining, through all the outlets of the water lines, until the residual chlorine concentration is equal to, or less than 2ppm.

6.1.15 Fill the storage and distribution system again with fresh potable water and leave at rest for a minimum of 16 hours.

6.1.16 Coordinate with the Miraflores Potable Water Treatment Plant for the sampling and verification of the sanitary quality of water on board.

6.2 Delivery of potable water to floating equipment.

6.2.1 All floating equipment points to be supplied with potable water shall be identified.

6.2.2 Water used to fill the floating equipment tanks shall be of assessed quality, in accordance with the Standard currently in effect.

6.2.3 Sources which supply potable water to floating equipment shall be specifically identified and may be incorporated with the floating equipment units (barges) or located on land.

6.2.4 The transfer of water to floating equipment tanks is carried out in accordance with the Standard currently in effect.

6.2.5 The handling, care and storage of hoses used for the transfer of potable water shall be followed in accordance with the Standard currently in effect.

6.2.6 Potable water supplied to floating equipment shall have minimal residual chlorine within 1.0 ppm at the moment of transfer.

6.2.7 Potable water transferred to floating equipment shall be negative for Coliform bacteria, based on bacteriological analysis made no more than one week before.

6.2.8 It is necessary to establish monitoring programs and corrective measures for all points in which the floating equipment is supplied with potable water.

6.3 Potable water storage on floating equipment.

6.3.1 Potable water shall be stored in tanks whose construction, location, design and protection comply with the Maritime Safety Standard currently in effect at ACP.

6.3.2 Tanks shall be filled from water sources of assessed quality which have been specifically designated for this purpose.

6.3.3 The handling of used tubing for filling the tanks shall follow the Maritime Safety Standard currently in effect at ACP.

6.3.4 The following situations shall be avoided which commonly compromise the potable water quality in floating equipment storage tanks:

6.3.4.1 Accumulation of sediment at the bottom of the tank.

6.3.4.2 Damages to the protective mesh on the runoff pipe.



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6.3.4.3 Entry of contaminants through physically damaged areas.

6.3.4.4 Contamination during repairs.

6.3.4.5 Filtrations and crossed connections between the tanks and potable water pipelines and those containing non-potable water.

6.3.5 The inspection, cleanup, and maintenance of potable water tanks are important water quality control measures on floating equipment, and they must follow the guidelines of the Maritime Safety Standard currently in effect at ACP.

6.3.6 It is necessary to establish monitoring and implementation systems of the corrective measures to be applied when conditions arise that endanger the quality of potable water in the tanks.

6.3.7 In Table 6.1 there is a summary of common dangerous conditions, control measures, monitoring procedures, and corrective actions.

Table No. 6.1 Dangerous events, control measures, monitoring procedures, and corrective actions

Common Events and Conditions	Control Measures	Monitoring Procedures	Corrective Measures
Sediment in the bottom of the tank	Routine cleanup	Routine inspections Documentation	Procedures for cleanup of potable water storage tanks.
Damages to the runoff pipeline mesh	Routine inspection, repair and maintenance	Routine sanitary inspection	Replace or repair
Interconnections between tanks and potable water tanks or non-potable water lines	Cross-interconnection control program	Routine inspections, repair and maintenance	Replace or repair
Defects in the potable water storage tank	Routine sanitary inspection	Routine inspections, repair and maintenance	Replace or repair
Deterioration of the smell, color and taste of the water	Adequate chlorine concentration to inhibit the growth of bacteria	Monitor residual chlorine, ph, temperature, turbidity. Periodic bacteriological sampling	Investigate and correct

6.4 Water sources.

6.4.1 Water sources shall be flushed every day to prevent them from becoming stagnant.

6.4.2 If the water sources have filters installed, these should be located in visible places, and they should be changed or maintained in accordance with the manufacturer's instructions.

6.5 Neutralization.

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6.5.1 All wastewater or hyper-chlorinated water shall be neutralized before being discharged into the environment.

6.5.2 Neutralization shall be performed by adding the appropriate amount of citric acid according to the following table.

Table No. 6.2 Neutralization up to pH 7 of hyper-chlorinated waters resulting from disinfection of floating equipment

Chlorine Concentration (ppm)	Citric Acid Weight (g/1000 gallons water)	Citric Acid Weight (lb/1000 gallons water)
10	17	0.0374
20	38	0.0827
30	58	0.1280
40	80	0.1733
50	100	0.2186

7.0 RESPONSABILITIES

7.1 The Shipfitter or Operator is responsible for:

7.1.1 Providing the floating equipment with appropriate containers in which to prepare the HTH solution and its means of agitation.

7.1.2 Providing the floating equipment with the means of disinfection, HTH and form of measuring the required quantities of HTH, in accordance with the equipment.

7.1.3 Providing the floating equipment with the personal safety devices required by the operation in accordance with the provisions of the industrial hygienists.

7.1.4 Ensuring periodic disinfection coordination of the potable water distribution system on board.

7.2 The Maritime Safety Unit (OPXI-S) is responsible for:

7.2.1 Establishing the minimum requirements, in coordination with **EAA**, regarding potable water equipment which **ACP** and third-party floating equipment must carry *on board*.

7.2.2 Resolving consultations or exceptions to the present Standard, in coordination with **EAA**, as indicated in points 8.0 and 9.0

7.2.3 Providing the necessary recommendations based on the minimum requisites which have not been contemplated in this Standard.

7.3 The Floating Equipment Inspectors of the Maritime Safety Unit are responsible for:

7.3.1 Verifying compliance with this Standard.

7.4 The Water Division (EAA) is responsible for:

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7.4.1 Performing pertinent sampling to determine if the water quality complies with the minimum requirements.

7.4.2 Providing the necessary training and advice on the use of the equipment indicated in this Standard.

7.4.3 Resolve consultations or exceptions to this Standard, in coordination with **EAA**, as indicated in points 8.0 and 9.0

7.4.4 Provide the necessary recommendations based on the minimum requisites which have not been contemplated in this Standard.

8.0 CONSULTATIONS

All information or clarifications regarding the contents or application of this Standard shall be requested in writing to the Maritime Safety Unit.

9.0 EXCEPTIONS

Deviations or temporary exceptions in complying with this Standard shall be requested in writing to the Maritime Safety Unit.

10.0 DURATION

This Standard is in effect until modified or revised.

11.0 REFERENCIAS

11.1 ISO 15748-1:2002- Ships and marine technology- Potable water supply on ships and marine structures—Part 1: Planning and design.

11.2 ISO 15478-2- Ships and marine technology – Potable water supply on ships structures- Part 2: Method of calculation. (Applies to the planning, design and configuration of potable water supply systems on ships, stationary or floating marine structures and inland waterway crafts, It serves to determine the quantity of potable water to be carried on board, the capacity of the pressurized reservoirs and water heaters, the pumping capacity, etc)

11.3 Manual or Naval Preventive Medicine: Chapter 6: Water Supply Afloat. Section VI Cargo Water. In: <http://www.vnh.org>.