



DoD MANUAL 4715.06, VOLUME 1

REGULATIONS ON VESSELS OWNED OR OPERATED BY THE DEPARTMENT OF DEFENSE: MARINE SANITATION DEVICES (MSDs)

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Purpose: This manual is composed of several volumes, each containing its own purpose. In accordance with the authority in DoD Directive 5134.01 and the July 13, 2018 Deputy Secretary of Defense Memorandum:

- This manual implements policy, assigns responsibilities, and provides procedures for environmental compliance of vessels owned or operated by DoD.
- This volume:
 - Implements Section 1322 of Title 33, United States Code (U.S.C).
 - Implements and administers policies and details procedures governing the design, construction, installation, and operation of MSDs, and provides procedures for certifying that such devices are consistent with Environmental Protection Agency (EPA) standards in accordance with Part 140 of Title 40, Code of Federal Regulations (CFR).

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SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY. This volume:

a. Applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this volume as the “DoD Components”).

b. Does not apply to those DoD Components that do not:

- (1) Own or operate public vessels.
- (2) Have shore facilities that service DoD vessels or other authorized vessels.

1.2. POLICY. In accordance with the policy in DoD Instruction 4715.06, DoD will plan, program, and budget to achieve, maintain, and monitor compliance with applicable environmental requirements.

1.3. INFORMATION COLLECTIONS. The certification process referred to in Paragraph 4.3., does not constitute a public collection in accordance with Part 1320 of Title 5, CFR.

1.4. SUMMARY OF CHANGE 2. This change is administrative and updates references and organizational symbols to reflect the reorganization of the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, pursuant to the July 13, 2018 Deputy Secretary of Defense Memorandum.

SECTION 2: RESPONSIBILITIES

2.1. ASSISTANT SECRETARY OF DEFENSE FOR SUSTAINMENT (ASD(S)). Under the authority, direction, and control of the Under Secretary of Defense for Acquisition and Sustainment, the ASD(S):

- a. Oversees compliance with the requirements of this volume.
- b. Approves or disapproves requests for additional exemptions from the requirements of this volume.

2.2. DoD COMPONENT HEADS. The DoD Component heads:

- a. Implement the procedures in this volume.
- b. Verify that supplemental DoD Component guidance and procedures are in accordance with this volume.
- c. Designate a technical authority to evaluate and approve systems and equipment for installation on vessels.
- d. Administer DoD certification of MSDs.
- e. Review and coordinate DoD Component-affiliated requests for exemptions from the requirements of this volume.

2.3. SECRETARIES OF THE MILITARY DEPARTMENTS. In addition to the responsibilities in Paragraph 2.2., the Secretaries of the Military Departments:

- a. Program, budget, and account for funds necessary to train personnel and install appropriate MSDs aboard vessels and transfer equipment at port facilities under their authority.
- b. Develop, procure, and install appropriate MSDs for vessels and transfer equipment at port facilities under their authority.
- c. Use the standards in Section 4 in all specifications for the development of vessel design and procurement, as well as new port facility installations under their authority.
- d. Update appropriate operational regulations applicable to vessel commanders and vessel masters, specifying proper sewage-handling procedures for vessels under their authority.

SECTION 3: REQUIREMENTS AND EXEMPTIONS

3.1. GENERAL. The requirements of this volume apply to all DoD vessels (referred to in this volume as “ships”) that have installed toilet facilities and are owned or operated by DoD Components.

3.2. EXEMPTIONS.

a. General Exemptions. In accordance with Section 1322(d) of Title 33, U.S.C., the Secretary of Defense has determined that, at certain times and under certain circumstances, compliance with the requirements of this volume for certain ships would excessively and unreasonably detract from their military characteristics, effectiveness, or safety and would therefore not be in the interest of national security. Consequently, the following ships are exempt from the standards and requirements in this volume:

(1) Ships transiting on U.S. navigable waters and territorial seas that are, because of their design or equipment failure, incapable of holding total ship-generated sewage onboard for later discharge on the high seas or at pier-side sewage collection facilities. The discharge of ship-generated sewage into U.S. navigable waters and territorial seas will:

(a) Occur as far from land as possible.

(b) Be limited without endangering the health, safety, or welfare of the crew or other personnel aboard.

(2) Ships conducting or taking part in military operations and exercises, including training and readiness exercises and operations, within U.S. navigable waters and territorial seas when holding total ship-generated sewage on board will:

(a) Interfere with operational effectiveness; or

(b) Pose a threat to the health, safety, or welfare of the crew or other personnel aboard.

(3) Ships anchored or moored within U.S. navigable waters and territorial seas where:

(a) Sewage reception facilities or services are not readily available; or

(b) Use of these facilities or services is not practical because of heavy weather, poor visibility, or unsafe conditions and holding ship-generated sewage on board would interfere with operational effectiveness or pose a threat to the health, safety, or welfare of the crew or other personnel aboard.

(4) Ships being repaired or overhauled where the operation of the MSD will:

(a) Interfere significantly with the repair or overhaul; or

(b) Pose a threat to the health, safety, or welfare of the crew or other personnel aboard.

b. Exempted Ship Requirements. Commanding officers and ship masters of ships exempt under the conditions of Paragraph 3.2. will limit discharge of ship-generated sewage into U.S. navigable waters, territorial seas, and EPA no-discharge zones in accordance with Title 33, U.S.C. to the maximum extent possible without endangering the health, safety, or welfare of the crew or other personnel aboard.

c. Requests for Additional Exemptions. Requests for individual ship or ship-class design and installation exemptions will be reviewed and coordinated by the affiliated, lead DoD Component and addressed to the ASD(S) via the chain of command. Requests include technical, performance, cost data, or projected ship inactivation schedules that sufficiently demonstrate that the exemption is warranted based on:

- (1) Potential ship inactivation.
- (2) Impacts to the ship's operational performance requirements.
- (3) Impacts to the ship's designed space, weight, or power requirements.
- (4) Retrofitting that is cost-prohibitive.

SECTION 4: GENERAL REQUIREMENTS

4.1. MSD DESIGN AND OPERATION.

a. MSDs will be designed, operated, and maintained to prevent the overboard discharge of untreated or inadequately treated sewage into U.S. navigable waters, territorial seas, and EPA no-discharge zones in accordance with Section 1322(f) of Title 33, U.S.C., except as provided in Paragraph 3.2.

b. Before operating or maintaining sewage disposal or transfer equipment, personnel will be trained in the proper procedures, including hookup and transfer of sewage to shore facilities.

c. There are five types of MSDs as shown in Table 1.

Table 1. Types of MSDs

MSD TYPES	DESCRIPTION – CERTIFIED BY A DOD COMPONENT OR THE UNITED STATES COAST GUARD (USCG)
I	Flow-through device that is able to produce an effluent with a maximum fecal coliform bacterial count of 1,000 per 100 milliliters and with no visible floating solids.
II	Flow-through device that is able to produce an effluent with a maximum fecal coliform bacterial count of 200 per 100 milliliters and a maximum total suspended solids concentration of 150 milligrams per liter.
III	Device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage and that holds untreated or treated sewage onboard for discharge in legally designated areas or at proper shore facilities.
III-A	Device that treats and holds the treated sewage. This type includes reduced flush devices that ultimately evaporate or incinerate the sewage to a sterile sludge or ash.
III-B	System consisting of drain piping, holding tanks, pumps, valves, connectors, and other equipment used to collect and hold shipboard sewage waste for later transfer to a shore sewage system or sewage barge, or for overboard discharge when in unrestricted waters (also known as a collection, holding, and transfer system).

d. Ships with Type I MSDs installed on or before January 31, 1978, comply with this volume if the device meets design performance standards, as defined in Part 140 of Title 40, CFR. Type I or II MSDs that become inoperable and require removal will be replaced with certified Type II, III-A, or III-B MSDs.

e. Ships on which construction began on or after January 30, 1975, equipped with toilet facilities will have the certified Type II, III-A, or III-B MSDs with the capability for pumping collected or treated sewage and collected graywater to appropriate shoreside reception facilities.

f. Ships may not discharge treated or untreated sewage in freshwater lakes (excluding the Great Lakes), freshwater reservoirs, or other freshwater impoundments whose inlets or outlets prevent ships from entering or leaving, or in rivers incapable of interstate navigation. MSDs on

ships that operate in these waters will be designed or modified and operated to prevent accidental discharge into the waters.

g. When in port, ships will collect all shipboard sewage and graywater, treated or untreated, for transfer to proper shoreside reception facilities, if so equipped.

h. Ship personnel will package used solvents or other industrial wastes for disposal ashore rather than piping them to MSDs or dumping them down sinks or deck drains.

i. Ships equipped with Type III-A and Type III-B MSDs capable of segregating sewage and graywater will be configured to collect only sewage while operating in the territorial seas of the United States. Collecting graywater while transiting on the territorial seas significantly reduces tank-holding capacity and may result in the unnecessary overboard discharge of sewage before reaching pier-side facilities or unrestricted waters.

4.2. MSD CERTIFICATION REQUIREMENTS.

a. The DoD Components must use USCG approval and certification requirements (see the Department of Homeland Security and USCG directives in Part 159 of Title 33, CFR), or develop their own requirements equal to the USCG requirements. DoD Component requirements may be more stringent than the USCG's.

b. To be eligible for procurement, MSD manufacturers must follow certification procedures outlined in Paragraph 4.3.

4.3. MSD CERTIFICATION PROCEDURES.

a. Selection of MSD. In response to a government request for a proposal, each manufacturer must submit a technical description of the MSD for review by the DoD Component(s) that includes:

- (1) System concept and schematics.
- (2) Design capacity.
- (3) Weight and physical dimensions.
- (4) Components and construction materials.
- (5) Materials and chemicals required for operation.
- (6) Power requirements.
- (7) Staffing requirements.
- (8) Performance data.

(9) Drawings, technical manuals, reliability and maintainability test plans, failure modes and effects analysis, and maintenance and engineering analysis.

(10) Copies of USCG MSD certifications for identical or similar MSD systems, if available.

b. Type II or Type III-A MSD Laboratory Evaluation.

(1) An EPA-certified or DoD Component-approved laboratory must test and evaluate any Type II or Type III-A MSD, at the manufacturer's expense, before the design is submitted to DoD for review. The laboratory testing will demonstrate the ability of the system to meet the requirements of Part 159 of Title 33, CFR and any additional DoD Component-specified performance requirements. At the discretion of the DoD Component, for ships where large-capacity MSDs are being procured, the laboratory evaluation may be conducted on fully functional scaled-down MSDs.

(2) The DoD Component Technical Authority will then conduct a technical review of the MSD design and all laboratory test and evaluation (T&E) data.

(3) Once the manufacturer laboratory evaluation and DoD Component Technical Authority review are complete, the manufacturer will submit a fully functional Type II or Type III-A MSD to a DoD-designated laboratory for technical evaluation to verify that it meets these additional requirements:

(a) MSDs will meet:

1. The DoD Component-specified technical, performance, and integration requirements.

2. The requirements of applicable DoD Component safety instructions.

3. The requirements of applicable DoD Component medical instructions. A health hazard assessment will also be conducted before certifying any MSD design for shipboard operations.

(b) Type II MSDs will meet the fecal coliform bacteria, visible floating solids, and total suspended solids performance criteria contained in Part 159 of Title 33, CFR and defined in Table 1.

(c) Incinerator-type MSDs will meet the EPA air-pollution requirements for incinerators.

(4) The DoD-designated laboratory will submit a report of such T&E to the DoD Component Technical Authority.

(5) The DoD Component Technical Authority will then review the laboratory report and ensure that the device meets the design, construction, and performance standards of this section.

(6) Based on the results of the laboratory evaluation, the DoD Component Technical Authority will decide whether the MSD performance is in accordance with all requirements and is capable of meeting all DoD certification requirements when installed.

c. Type II or Type III-A MSD Ship T&E.

(1) If the DoD Component Technical Authority review of laboratory T&E concludes that further data is needed to decide if the MSD meets design, construction, and performance standards, the device may be installed aboard a ship for verification T&E.

(2) Verification T&E will establish that the device meets the requirements of Part 159 of Title 33, CFR and DoD Component-specified technical and performance requirements while treating ship-generated sewage.

(3) The MSD will be loaded to its design capacity with ship-generated sewage and operated according to the manufacturer's manual of instructions. For Type II MSDs, the influent must contain fecal matter.

(4) Four effluent samples a day, taken at peak usage periods, will be collected from the steady-state operating MSD for 10 consecutive days.

(a) A certified laboratory will analyze the samples for fecal coliform, visible floating solids, and total suspended solids to find whether Type II MSDs comply with the performance criteria in Part 159 of Title 33, CFR and defined in Table 1 and the DoD Component-specified performance requirements.

(b) All testing methodology will be in accordance with the Department of Homeland Security and USCG directives, including Part 159 of Title 33, CFR and the American Public Health Association, American Water Works Association, Water Environment Federation Standard Methods.

(5) Based on the results of the ship T&E, the DoD Component Technical Authority will decide whether the MSD performance is in accordance with all requirements and capable of meeting all DoD certification requirements when installed.

d. Type III-B MSD Evaluation.

(1) Manufacturer and DoD Component laboratory T&E of Type III-B MSDs is not required and will only be performed at the discretion of the DoD Component.

(2) For Type III-B MSDs, the DoD Component Technical Authority may evaluate the ability of the MSD to meet DoD certification and other performance requirements based on the data provided by the manufacturer in accordance with Paragraph 4.3.b.(3)(a).

e. Individual Ship DoD Certification Testing. Each ship MSD installation will be certified by the DoD Component Technical Authority to meet the requirements of Part 159 of Title 33, CFR and those provided in the definition of Type III-B MSD in Table 1, or to meet more stringent DoD Component-specified performance requirements.

(1) Type II and Type III-A MSDs.

(a) Before final DoD Component Technical Authority certification of individual ships equipped with a Type II or Type III-A MSD, at a minimum, the device will be tested to verify that the MSD treats ship-generated sewage at design capacity to meet the requirements of Part 159 of Title 33, CFR or more stringent DoD Component-specified performance requirements.

1. Testing will be conducted in accordance with the requirements of Paragraph 4.3.c.

2. Ship testing may be conducted for only the first ship in a class as a representative for the ship class unless there is significant change to the MSD, manning, or mission, as determined by the DoD Component Technical Authority.

(b) The operational capability of Type II and Type III-A MSDs will be reassessed every 5 years or sooner, as determined by the DoD Component Technical Authority.

(2) Type III-B MSD. Before final DoD Component Technical Authority certification of individual ships equipped with a Type III-B MSD, the installation will be tested to verify the MSD meets the requirements of Part 159 of Title 33, CFR or more stringent performance requirements as specified by the DoD Component.

4.4. SHIP-TO-SHORE CONNECTION.

a. Ships must be equipped with fittings necessary to connect to shoreside waste disposal facilities worldwide.

b. In addition to any DoD Component-specified ship-to-shore connections, ships must be equipped with:

(1) North Atlantic Treaty Organization Standardization Agreement 4167- compliant fittings, including North Atlantic Treaty Organization 100-millimeter (mm) cam-lock quick-disconnect coupling.

(2) International Maritime Organization flange of 210-mm outside diameter, 16-mm thickness, and 4 holes, 18 mm in diameter, equidistantly placed on a bolt circle of 170 mm slotted to the flange periphery. The slot width is to be 18 mm.

(a) The inner diameter of the flange will be sized to fit mating hose or piping and associated bolts and nuts will be 16 mm in diameter and of suitable length.

(b) The flange operating pressure will meet 6 kilograms per square centimeter.

GLOSSARY

G.1. ACRONYMS.

ASD(S) Assistant Secretary of Defense for Sustainment

CFR Code of Federal Regulations

EPA Environmental Protection Agency

mm millimeter

MSD marine sanitation device

T&E test and evaluation

U.S.C. United States Code

USCG United States Coast Guard

G.2. DEFINITIONS. These terms and their definitions are for the purposes of this issuance.

discharge. Any release, such as escape, spilling, leaking, pumping, pouring, emitting, emptying, and dumping of sewage, oil, or oily waste from a ship.

DoD vessel. A vessel owned or operated by DoD when engaged in noncommercial service.

failure. Any malfunction that causes an MSD to shut down or, if not corrected, could prevent sewage processing or prevent the MSD from meeting the applicable performance requirements provided in the definitions of the five types of MSDs. Failure does not include malfunctions of short duration that may be corrected while the system is receiving sewage and before overboard discharge or system shutdown is required.

fecal coliform bacteria. Organisms associated with the intestines of warm-blooded animals that are commonly used to show the presence of fecal material and the potential presence of organisms capable of causing human disease.

graywater. Water that is discarded from deck drains, lavatories, showers, galleys, laundries, and shipboard medical facilities, not including industrial wastes, infectious wastes, and human body wastes.

industrial waste. Wastewater or semi-solid material generated in shipboard processes, such as manufacturing, production, and maintenance that use hazardous materials (e.g., metal plating, acid cleaning, photo processing, solvent cleaning, and painting materials).

manufacturer. A person, group, or company that makes, assembles, or imports MSDs for ships.

MSD. Equipment installed in a ship to receive, hold, treat, or discharge sewage.

public vessel. A vessel owned, or bareboat chartered and operated, by the United States, except when the vessel is engaged in commerce.

sewage. Human body wastes and wastes from toilets or other receptacles intended to receive human body wastes.

ship. See definition for “DoD vessel.” Exemptions to the definition of ship in this volume are listed in Section 3.

tank. An enclosed space that carries liquid in bulk and is formed by the permanent structure of a ship or a stand-alone container, not part of the permanent structure of the ship, used for similar purposes.

technical authority. An official in a technical oversight office who approves systems and equipment for installation on ships and administers certification requirements.

territorial seas of the United States. The belt of the seas measured from the line of ordinary low water along a part of the coast that is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of up to 3 nautical miles.

total suspended solids. The weight of material retained on a standard glass-fiber filter dried between 217.4 and 221 degrees Fahrenheit (103 and 105 degrees Celsius) to a constant weight and divided by the volume of the sample. Total suspended solids are expressed in milligrams per liter.

United States. Includes all States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands.

unrestricted waters. Waters seaward of the territorial seas of the United States.

U.S. navigable waters. The territorial seas of the United States and waters shoreward of the territorial sea baseline.

vessel. Watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including hydrofoils, air-cushion vehicles, submersibles, and floating craft.

visible floating solids. The weight of material kept on the screen after passing quickly through a U.S. Sieve No. 12 and drying to a constant weight in an oven at 217.4 degrees Fahrenheit (103 degrees Celsius) divided by the volume of the sample. Visible floating solids are expressed in milligrams per liter.

REFERENCES

- American Public Health Association, American Water Works Association, Water Environment Federation, “Standard Methods for the Examination of Water and Wastewater,” 22nd edition, January 5, 2012¹
- Code of Federal Regulations, Title 5, Part 1320
- Code of Federal Regulations, Title 33, Part 159
- Code of Federal Regulations, Title 40, Part 140
- Deputy Secretary of Defense Memorandum, “Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment,” July 13, 2018
- DoD Directive 5134.01, “Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)),” December 9, 2005, as amended
- DoD Instruction 4715.06, “Environmental Compliance in the United States,” May 4, 2015
- North Atlantic Treaty Organization Standardization Agreement 4167, “NATO Pollutant Discharge Connection for Sewage and for Oily Water,” October 27, 1982, as amended
- United States Code, Title 33

¹ Copies may be purchased from the Internet at <http://www.awwa.org/store/productdetail/gclid/ci-a9zhwusqcfcxm7aodjhaaqw.aspx?productid=28493774>