

**BUREAU
VERITAS**

Ballast Water Management Systems

November 2011

**Guidance Note
NI 538 DT R01 E**

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MARINE DIVISION

GENERAL CONDITIONS

ARTICLE 1

1.1. - BUREAU VERITAS is a Society the purpose of whose Marine Division (the "Society") is the classification ("Classification") of any ship or vessel or structure of any type or part of it or system therein collectively hereinafter referred to as a "Unit" whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

The Society:

- prepares and publishes Rules for classification, Guidance Notes and other documents ("Rules");
- issues Certificates, Attestations and Reports following its interventions ("Certificates");
- publishes Registers.

1.2. - The Society also participates in the application of National and International Regulations or Standards, in particular by delegation from different Governments. Those activities are hereafter collectively referred to as "Certification".

1.3. - The Society can also provide services related to Classification and Certification such as ship and company safety management certification; ship and port security certification, training activities; all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board.

1.4. - The interventions mentioned in 1.1., 1.2. and 1.3. are referred to as "Services". The party and/or its representative requesting the services is hereinafter referred to as the "Client". **The Services are prepared and carried out on the assumption that the Clients are aware of the International Maritime and/or Offshore Industry (the "Industry") practices.**

1.5. - The Society is neither and may not be considered as an Underwriter, Broker in ship's sale or chartering, Expert in Unit's valuation, Consulting Engineer, Controller, Naval Architect, Manufacturer, Shipbuilder, Repair yard, Charterer or Shipowner who are not relieved of any of their expressed or implied obligations by the interventions of the Society.

ARTICLE 2

2.1. - Classification is the appraisal given by the Society for its Client, at a certain date, following surveys by its Surveyors along the lines specified in Articles 3 and 4 hereafter on the level of compliance of a Unit to its Rules or part of them. This appraisal is represented by a class entered on the Certificates and periodically transcribed in the Society's Register.

2.2. - Certification is carried out by the Society along the same lines as set out in Articles 3 and 4 hereafter and with reference to the applicable National and International Regulations or Standards.

2.3. - It is incumbent upon the Client to maintain the condition of the Unit after surveys, to present the Unit for surveys and to inform the Society without delay of circumstances which may affect the given appraisal or cause to modify its scope.

2.4. - The Client is to give to the Society all access and information necessary for the safe and efficient performance of the requested Services. The Client is the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out.

ARTICLE 3

3.1. - The Rules, procedures and instructions of the Society take into account at the date of their preparation the state of currently available and proven technical knowledge of the Industry. They are not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.

Committees consisting of personalities from the Industry contribute to the development of those documents.

3.2. - The Society only is qualified to apply its Rules and to interpret them. Any reference to them has no effect unless it involves the Society's intervention.

3.3. - The Services of the Society are carried out by professional Surveyors according to the applicable Rules and to the Code of Ethics of the Society. Surveyors have authority to decide locally on matters related to classification and certification of the Units, unless the Rules provide otherwise.

3.4. - The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not in any circumstances involve monitoring or exhaustive verification.

ARTICLE 4

4.1. - The Society, acting by reference to its Rules:

- reviews the construction arrangements of the Units as shown on the documents presented by the Client;
- conducts surveys at the place of their construction;
- classes Units and enters their class in its Register;
- surveys periodically the Units in service to note that the requirements for the maintenance of class are met.

The Client is to inform the Society without delay of circumstances which may cause the date or the extent of the surveys to be changed.

ARTICLE 5

5.1. - The Society acts as a provider of services. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty.

5.2. - The certificates issued by the Society pursuant to 5.1. here above are a statement on the level of compliance of the Unit to its Rules or to the documents of reference for the Services provided for.

In particular, the Society does not engage in any work relating to the design, building, production or repair checks, neither in the operation of the Units or in their trade, neither in any advisory services, and cannot be held liable on those accounts. Its certificates cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.

5.3. - The Society does not declare the acceptance or commissioning of a Unit, nor of its construction in conformity with its design, that being the exclusive responsibility of its owner or builder, respectively.

5.4. - The Services of the Society cannot create any obligation bearing on the Society or constitute any warranty of proper operation, beyond any representation set forth in the Rules, of any Unit, equipment or machinery, computer software of any sort or other comparable concepts that has been subject to any survey by the Society.

ARTICLE 6

6.1. - The Society accepts no responsibility for the use of information related to its Services which was not provided for the purpose by the Society or with its assistance.

6.2. - If the Services of the Society cause to the Client a damage which is proved to be the direct and reasonably foreseeable consequence of an error or omission of the Society, its liability towards the Client is limited to ten times the amount of fee paid for the Service having caused the damage, provided however that this limit shall be subject to a minimum of eight thousand (8,000) Euro, and to a maximum which is the greater of eight hundred thousand (800,000) Euro and one and a half times the above mentioned fee.

The Society bears no liability for indirect or consequential loss such as e.g. loss of revenue, loss of profit, loss of production, loss relative to other contracts and indemnities for termination of other agreements.

6.3. - All claims are to be presented to the Society in writing within three months of the date when the Services were supplied or (if later) the date when the events which are relied on were first known to the Client, and any claim which is not so presented shall be deemed waived and absolutely barred. Time is to be interrupted thereafter with the same periodicity.

ARTICLE 7

7.1. - Requests for Services are to be in writing.

7.2. - Either the Client or the Society can terminate as of right the requested Services after giving the other party thirty days' written notice, for convenience, and without prejudice to the provisions in Article 8 hereunder.

7.3. - The class granted to the concerned Units and the previously issued certificates remain valid until the date of effect of the notice issued according to 7.2. here above subject to compliance with 2.3. here above and Article 8 hereunder.

7.4. - The contract for classification and/or certification of a Unit cannot be transferred neither assigned.

ARTICLE 8

8.1. - The Services of the Society, whether completed or not, involve, for the part carried out, the payment of fee upon receipt of the invoice and the reimbursement of the expenses incurred.

8.2. Overdue amounts are increased as of right by interest in accordance with the applicable legislation.

8.3. - The class of a Unit may be suspended in the event of non-payment of fee after a first unfruitful notification to pay.

ARTICLE 9

9.1. - The documents and data provided to or prepared by the Society for its Services, and the information available to the Society, are treated as confidential. However:

- clients have access to the data they have provided to the Society and, during the period of classification of the Unit for them, to the **classification file** consisting of survey reports and certificates which have been prepared at any time by the Society for the classification of the Unit;
- copy of the documents made available for the classification of the Unit and of available survey reports can be handed over to another Classification Society, where appropriate, in case of the Unit's transfer of class;
- the data relative to the evolution of the Register, to the class suspension and to the survey status of the Units, as well as general technical information related to hull and equipment damages, are passed on to IACS (International Association of Classification Societies) according to the association working rules;
- the certificates, documents and information relative to the Units classed with the Society may be reviewed during certifying bodies audits and are disclosed upon order of the concerned governmental or inter-governmental authorities or of a Court having jurisdiction.

The documents and data are subject to a file management plan.

ARTICLE 10

10.1. - Any delay or shortcoming in the performance of its Services by the Society arising from an event not reasonably foreseeable by or beyond the control of the Society shall be deemed not to be a breach of contract.

ARTICLE 11

11.1. - In case of diverging opinions during surveys between the Client and the Society's surveyor, the Society may designate another of its surveyors at the request of the Client.

11.2. - Disagreements of a technical nature between the Client and the Society can be submitted by the Society to the advice of its Marine Advisory Committee.

ARTICLE 12

12.1. - Disputes over the Services carried out by delegation of Governments are assessed within the framework of the applicable agreements with the States, international Conventions and national rules.

12.2. - Disputes arising out of the payment of the Society's invoices by the Client are submitted to the Court of Nanterre, France.

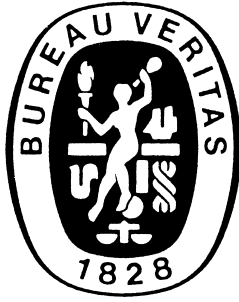
12.3. - Other disputes over the present General Conditions or over the Services of the Society are exclusively submitted to arbitration, by three arbitrators, in London according to the Arbitration Act 1996 or any statutory modification or re-enactment thereof. The contract between the Society and the Client shall be governed by English law.

ARTICLE 13

13.1. - These General Conditions constitute the sole contractual obligations binding together the Society and the Client, to the exclusion of all other representation, statements, terms, conditions whether express or implied. They may be varied in writing by mutual agreement.

13.2. - The invalidity of one or more stipulations of the present General Conditions does not affect the validity of the remaining provisions.

13.3. - The definitions herein take precedence over any definitions serving the same purpose which may appear in other documents issued by the Society.



GUIDANCE NOTE NI 538

NI 538 Ballast Water Management Systems

SECTION 1 BALLAST WATER MANAGEMENT SYSTEMS

November 2011

Section 1 Ballast Water Management Systems

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SECTION 1

BALLAST WATER MANAGEMENT SYSTEMS

1 General

1.1 Background

1.1.1 Ballast water is essential to the safe and efficient operation of modern shipping, providing balance and stability to un-laden ships. However, it may also pose a serious ecological, economic and health threat.

Indeed, the uncontrolled discharge of ballast water has been recognised as a major vector for the translocation of aquatic species across bio-geographical boundaries. As many as 10,000 non-indigenous species (NIS) of plants and animals are transported per day in ships around the world.

In favourable conditions, introduced species can survive the journey in ballast tanks and establish a reproductive population in the host environment.

In some cases, it may become invasive, out-competing native species and multiplying into pest proportions that causes rapid change in the biodiversity of local marine ecosystems, therefore threatening the local environmental balance and economic resources, and possibly generating health hazards for humans. This fact was first recognised internationally in 1992 within the Convention on Biological Diversity (CBD).

In this context, some States have adopted national regulations (for example USA, Australia, Brazil) whereas the International Maritime Organisation (IMO) was requested to develop a global response that eventually took the form of an international convention adopted in 2004.

Note 1: For more information, see <http://globallast.imo.org>

1.2 The International Convention on Ballast Water Management

1.2.1 Objectives

The "International Convention for the Control and Management of Ship's Ballast Water and Sediments" (BWM Convention) aims to achieve:

"The prevention, minimisation and ultimate elimination of the transfer of Harmful Aquatic Organisms and Pathogens" through "the adoption of appropriate rules on ballast water discharge".

1.2.2 Structure

The Convention was adopted by the International Conference on Ballast Water Management for Ships on the 16th February 2004. It contains twenty-two articles and one Annex, the latter containing the operational requirements or regulations. This annex is structured as per Tab 1.

Table 1 : Contents of the Ballast Water Convention

Section A	General provisions
Section B	Management and control requirements for ships
Section C	Special requirements in certain areas
Section D	Standards for Ballast Water Management
Section E	Survey and certification requirements for Ballast Water Management
Appendix I	Form of International Ballast Water management Certificate
Appendix II	Form of Ballast water Record Book

1.2.3 Application

The BWM Convention applies to all (new and existing) ships designed or constructed to carry ballast water and entitled to fly the flag of a Party to the Convention or which operate under the authority of a Party.

A few exceptions exist, in particular for:

- Ships that only operate in waters of their flag State
- Permanent ballast water not subject to discharge
- Warships.

1.3 Definitions

1.3.1 Ballast Water

Water with its suspended matter taken onboard a ship to control trim, list, draught, stability or stresses of the ship.

1.3.2 Ballast Water Management

Mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of Harmful Aquatic Organisms and Pathogens within ballast water and sediments.

1.3.3 Ballast Water Management System (BWMS)

Any system which processes ballast water such that it meets or exceeds the Ballast Water Performance Standard in Regulation D-2. The BWMS includes Ballast Water Treatment Equipment, all associated Control Equipment, Monitoring Equipment and Sampling Facilities.

1.3.4 Ballast water capacity

Ballast Water Capacity means the total volumetric capacity of any tanks, spaces or compartments on a ship used for carrying, loading, or discharging Ballast Water, including any multi-use tank, space or compartment designed to allow carriage of Ballast Water

1.3.5 Harmful Aquatic Organisms and Pathogens

Aquatic organisms or pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas.

1.3.6 Active substance

Substance or organism, including a virus or a fungus that has a general or specific action on or against Harmful Aquatic Organisms and Pathogens.

1.3.7 Sediments

Sediments mean matter settled out of Ballast Water within a ship.

1.3.8 Constructed

In respect of a ship, constructed means a stage of construction where the keel is laid or construction identifiable with the specific ship begins, assembly of the ship has commenced comprising at least 50 tonnes or one percent of the estimated mass of all structural material, whichever is less or the ship undergoes a major conversion.

1.3.9 Major conversion

Major conversion means a conversion of a ship which changes its ballast water carrying capacity by 15 percent or greater, or which changes the ship type, or which, in the opinion of the administration, is projected to prolong its life by ten years or more, or which results in modifications to its ballast water system other than component replacement-in-kind.

1.4 Guidelines for the implementation of the BWM Convention

1.4.1 IMO guidelines in support of the Ballast Water Convention are listed in Tab 2.

Table 2 : IMO guidelines in support of the Ballast Water Convention

#	Scope	IMO resolution	Convention ref.
G1	Sediment reception facilities	MEPC.152(55)	Article 5
G2	Ballast water sampling	MEPC.173(58)	Article 9 Article 12
G3	Ballast water management equivalent compliance	MEPC.123(53)	Reg. A-5
G4	Ballast water management and development of ballast water management plans	MEPC.127(53)	Reg. A-2 Reg. B-1
G5	Ballast water reception facilities	MEPC.153(55)	Reg. B-3.6
G6 (1)	Ballast water exchange	MEPC.124(53)	Reg. D-1 Reg. B-4
G7	Risk assessment under regulation A-4 of the BWM Convention	MEPC.162(56)	Reg. A-4
G8	Approval of ballast water management systems	MEPC.174(58)	Reg. D-3
G9	Approval of ballast water management systems that make use of active substances	MEPC.169(57) (2)	Reg. D-3.2
G10	Approval and oversight of prototype ballast water treatment technology programmes	MEPC.140(54)	Reg. D-4
G11	Ballast water exchange design and construction standards	MEPC.149(55)	Reg. D-1
G12	Design and construction to facilitate sediment control on ships	MEPC.150(55)	Reg. B-5.2
G13	Additional measures regarding ballast water management including emergency situations	MEPC.161(56)	Reg. C-1
G14	Designation of areas for ballast water exchange	MEPC.151(55)	Reg. B-4.2
(1) As a complement to (G6) "Guidelines for ballast water exchange", the IMO-MEPC adopted specific guidelines for ballast water exchange in the Antarctic area, MEPC.163(56), relevant to Regulation A-3 of the BWM Convention.			
(2) Replaces MEPC.126(53).			

2 Ship requirements

2.1 Scope

2.1.1 The main ship requirements concern the implementation of two standards that are intended to achieve the objectives of the BWM Convention:

- Ballast Water Exchange Standard (based on dilution)
- Ballast Water Performance Standard (based on treatment)

Note 1: In the long-term, only the Performance Standard will be required. The Exchange Standard should be considered as a transitory measure (see also [2.4]).

2.2 Ballast Water Exchange Standard

2.2.1 The Ballast Water exchange process aims to mitigate the potential harmful effects of translocated species by diluting the discharged water in a large amount of sea water (see Tab 3).

There are three methods for performing the BW exchange standard that have been evaluated and accepted by the IMO. They are described as follows:

- Sequential: A process by which a ballast tank intended for the carriage of ballast water is first emptied and then re-filled with replacement ballast water to achieve at least a 95 per cent volumetric exchange.
- Flow-through: A process by which the replacement ballast water is pumped into a ballast tank intended for the carriage of ballast water, allowing water to flow through overflow or other arrangements
- Dilution: A process by which replacement ballast water is filled through the top of the ballast tank intended for the carriage of ballast water with simultaneous discharge from the bottom at the same flow rate and maintaining a constant level in the tank throughout the ballast exchange system

Note 1: "Flow-through" and "Dilution" are considered as "Pump through" methods that require exchanging three times the volume of each ballast water tank. Otherwise, it should be demonstrated that at least 95% volumetric exchange is achieved.

Table 3 : Description of the Ballast Water Exchange Standard

Reference	Description
Reg. D-1	At least 95% of volumetric exchange or, if using the pumping-through methods, three times the volume of each ballast water tank.
Reg. B-4	The Ballast Water exchange shall be conducted at least 200 miles from the nearest land and in water at least 200 metres in depth
Guidelines	- Ballast Water exchange (G6) - Designation of areas for ballast water exchange (G14) - Ballast water exchange in the Antarctic area (MEPC.163(56)) - Ballast Water exchange design and construction standards (G11)

2.3 Ballast Water treatment systems

2.3.1 General

The Ballast Water performance process aims to preclude the potential harmful effects of translocated species by preventing the uptake of species or removing/killing them before the discharge of ballast waters. This implies the use of dedicated treatment techniques that may include the use of Active Substances (see Tab 4).

Note 1: Regarding treatment methods, the BWM Convention does not provide specific requirements. However, treatment equipment (systems) should be type approved following the IMO guidelines, and moreover, technologies that make use of active substances should be also approved by the relevant IMO committee (MEPC).

Table 4 : Description of the Ballast Water Performance Standard

Reference	Description		
Reg. D-2	Organism category		Regulation
	Viable organism (plankton)	≥ 50 μm	< 10 cells per m³
		10-50 μm	< 10 cells per ml
	Toxicogenic Vibrio cholera (O1 & O139)		< 1 cfu per 100 ml or < 1 cfu per 1g zooplankton samples
	Escherichia coli		< 250 cfu per 100 ml
	Intestinal Enterococci		< 100 cfu per 100 ml
Guidelines	• Approval of Ballast Water Management Systems (G8) • Approval of ballast water management systems that make use of active substances (G9) • Approval and oversight of prototype ballast water treatment technology programmes (G10)		
Note 1: cfu : Colony forming unit.			

2.3.2 Mechanical systems

As previously stated, the chemical or physical processes are usually preceded by solid-liquid separation: filtration, cyclonic separation or flocculation technology.

a) Filtration:

The filtration system aims to remove the sediments, and particles off the water ballast during the intake, using discs or screen filters. These filters can be self-cleaning with a back-flushing cycle; the waste water is backed to the water source.

b) Cyclonic separation:

The cyclonic separation aims to separate solide particles from the water by centrifugal forces. The water is injected with a high velocity implying a rotational motion. The centrifugal force increases the velocity of particle relative to the water. Particles with a density greater than water can be separated; the effectiveness of the system depends on particles density, the particle size, the speed of rotation and the residence time.