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Discussion Paper: Canadian Implementation of the Ballast Water Convention

Transport Canada
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1. Executive Summary

Ballast water, required for the safety and stability of ships, is also a vector for the introduction of aquatic invasive species. Canada has a long history of actions to reduce this risk, and a history of co-operation with the United States in our shared waters (such as on the Great Lakes). Canada's current *Ballast Water Control and Management Regulations* (the "Regulations") are effective. On the Great Lakes, no new species attributed to ships ballast water has been reported since 2006.

Despite the success of the current Regulations, the principal approach of these Regulations (requiring ships to exchange their ballast water in the open ocean) has certain limitations. In response, the International Maritime Organization adopted the *International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* (the "Convention") that would require ships to limit the number of potentially invasive organisms discharged. Coming into force of this Convention, which Canada ratified in 2010, is at hand. Accordingly, Transport Canada is preparing to implement the Convention by way of amendments to the Regulations.

This document outlines the proposed approach for implementing the Convention in Canada. Most vessels on international voyages (including Great Lakes vessels operating bi-nationally on the Great Lakes St. Lawrence Seaway system) would be subject to the proposed regulatory approach, other than those under 50 m in length having less than 8 m³ of ballast water capacity.

Principal aspects of the proposed regulatory approach include Convention requirements for vessels to:

- develop an approved ballast water management plan,
- undergo surveys and carry Certificates to demonstrate that the plan is being followed,
- keep records of ballasting activities, and
- manage ballast water discharges:
 - initially by performing ballast water exchange in the open ocean when voyage patterns and safety considerations allow, and
 - eventually by adhering to a ballast water performance standard limiting the number of organisms discharged in ballast water.

To respond to unique Canadian environmental and operating conditions, Transport Canada is also proposing certain requirements that are more stringent than those of the Convention, notably that vessels would:

- perform saltwater flushing of residual sediment in empty ballast tanks before entering Canadian fresh water ports,
- continue ballast water exchange and flushing, even after transitioning to the Convention's performance standard, and
- fit a system suitable for very fresh water if planning to load or move ballast water on the Great Lakes.

Generally, international compatibility of proposed ballast water requirements will be ensured because parties to the Convention will have equivalent regulations. Although the United States has not ratified the Convention, our two countries have agreed to establish compatible programs for ballast water under the *Great Lakes Water Quality Agreement*. Accordingly, without contravening Canada's obligations under the Convention, Transport Canada's proposed requirements would align as much as possible with requirements of the United States Coast Guard and proposed requirements of the United States Environmental Protection Agency.

The remainder of this discussion paper provides background and context for the proposed regulatory approach, outlines the proposed approach in detail, discusses issues relevant to implementation by the bi-national Great Lakes fleet and describes certain other changes proposed for Canadian regulations.

Given the scope of changes to the Regulations needed to implement the Convention, this paper is being distributed for advance discussion before the commencement of the formal regulatory process. Accordingly, this document avoids regulatory language in presenting Transport Canada's proposed approach to implementing the Convention in Canada. Following this discussion process, the more formal regulatory process will begin.

1.1. How to provide your views on this document

Any interested party is invited:

- to discuss this paper during the meeting of the Ballast Water Working Group at the upcoming meeting of the Canadian Marine Advisory Committee (to be held in Ottawa on November 8, 2012), and/or
- to provide written comments to Transport Canada by January 31, 2013.

Written comments, and requests for further information, should be directed as follows:

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2. Introduction

2.1. Ballast water risks and Canada's regulations to date

Ballast water is required for the safety and stability of ships, but its uptake is known to pick up aquatic plants and animals. Thus, discharge of unmanaged ballast water is one way that potentially invasive species can be introduced to Canada's waters. Aquatic invasive species are of concern across Canada, but their prevalence and impacts have been particularly devastating in the fresh waters of the Great Lakes and St. Lawrence Seaway system. This bi-national trade route supports thousands of jobs on both sides of the border and serves as a critical transportation corridor for commodities such as iron ore, coal, minerals and grain.

Canada has long been active in addressing this risk. In early 1980s Canada developed the concept of ballast water exchange (emptying ballast water tanks in non-sensitive areas and refilling them with low-risk water) to protect sensitive aquaculture in the Grande Entrée Lagoon of the Magdalen Islands. This success led Canada, with the cooperation of shipowners, to publish voluntary ballast water management guidelines in 1989 for vessels entering the freshwaters of the St Lawrence River and the Great Lakes. These guidelines asked vessels arriving from outside Canada's Exclusive Economic Zone to undertake ballast water exchange in mid-ocean, or in certain designated alternative exchange zones selected for their depth and salinity.¹ In 1991, following a joint Canada-Australia proposal, the International Maritime Organization (IMO) adopted international voluntary ballast water exchange guidelines along the lines of the Canadian approach. Building on the success of the 1989 and 1991 guidelines, Canada extended the voluntary guidelines to all waters under Canadian jurisdiction in 2000.

On the Great Lakes, regulatory actions by the United States (U.S.) have also been important to Canadian waters, notably mandatory requirements for ballast water exchange that took effect in 1993. The Canadian Saint Lawrence Seaway Management Corporation (in coordination with its U.S. counterpart) added this requirement to its practices and procedures in 2002.

In 2006, Canada established the *Ballast Water Control and Management Regulations* (SOR 2006/129) (the "Regulations") under the *Canada Shipping Act* which required vessels entering Canada to manage their ballast water. Management options included ballast water exchange in mid-ocean, retention of ballast water onboard, transferring of unexchanged ballast water to a reception facility, or fitting ballast water treatment technology. The Regulations also introduced a requirement for vessels choosing the exchange option to flush any residual sediment in otherwise empty tanks with open ocean water if they were bound for the Great Lakes. This was a direct result of scientific research that suggested residual ballast water and

¹ By replacing ballast water picked up in port with saltwater from the open ocean, ballast water exchange reduces the risk that harmful aquatic organisms and pathogens are transferred between coastal areas in ships ballast water. It is particularly protective for freshwater ecosystems, such as the Great Lakes, as most saltwater organisms in exchanged tanks cannot survive when discharged into a freshwater environment.

sediments could also facilitate new invasions. Scientific research also demonstrated that exposure to high salinity is extremely effective in killing high-risk freshwater and estuarine organisms contained in residual ballast water and sediments.

Today, one hundred percent of vessels entering the St. Lawrence Seaway from outside Canada's exclusive economic zone are inspected under a bi-national program before entry into the Great Lakes. All ships must meet the regulatory requirements or take corrective action to meet these standards. Scientific research has demonstrated the effectiveness of this program, and in fact recommended it for other freshwater ecosystems around the world². No new non-native species attributed to ship's ballast water has been reported on the Great Lakes since 2006.

Despite this success, Transport Canada and other regulators around the world share an awareness of limitations associated with ballast water exchange as a management strategy. First, ballast exchange is complicated by structural considerations, especially for vessels built for service in shallow waters (e.g. the St Lawrence Seaway); for this reason, all vessels require a Ballast Water Management Plan, which takes into account structural safety in developing a vessel-specific implementation. Second, scientists have expressed concern that exchange does not protect saltwater ports to the same extent as freshwater ports. Third, the properties of ballast water vary by location, by season and even by time of day, which reduces consistency of the risk reduction associated with the practice. For these and other reasons, ballast water requirements around the world have been moving toward ballast water performance standards to limit the absolute number of viable organisms discharged in ballast water.

2.2. International Convention

The need for a global approach to ballast water management led to the development of an international convention on ballast water management through the IMO: the *International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* (the "Convention"). Under the Convention, vessels must plan their ballast water management and strictly limit (according to certain timelines) the number of organisms they discharge in ballast water. In order to comply with the performance standard in the Convention, most vessels will eventually need to fit a ballast water treatment system (a "Treatment System") to filter or kill the vast majority of organisms in their ballast tanks.

Seeing a need for uniform implementation of compatible requirements, and recognizing the need to further strengthen the Regulations, Canada ratified the Convention in April 2010. The benefits to Canada of adopting this multilateral approach are threefold. First, Canada can be assured that foreign vessels carrying Canadian exports adequately protect the environment as they discharge foreign ballast water while loading cargo in Canadian ports. Second, it provides the greatest assurance that Canadian vessels calling on foreign ports will be accepted around the world. Third, it gives Canada a voice in international standards for ballast water

² Bailey, S.A., Deneau, M.G., Jean, L., Wiley, C.J., Leung, B. and MacIsaac, H.J. (2011) Evaluating efficacy of an environmental policy to prevent biological invasions. *Environmental Science and Technology* 45, 2554-2561.

management, compliance and enforcement in order to ensure that ballast water requirements are actionable, practicable and protective.

By ratifying the Convention, Canada has undertaken certain obligations, such as to apply the international performance standard to vessels identified by the Convention, to follow certain procedures in approving the use of Treatment Systems, to survey and certify compliance by Canadian-registered vessels, and to complete the transition to the performance standard according to a schedule that is intended to allow for uniform implementation by parties to the Convention. As a party to the Convention, Canada cannot generally establish less stringent requirements than those of the Convention (e.g. to adopt lower standards or to exempt ships covered by the Convention). Canada does have certain limited rights to provide additional time for vessels to comply with the Convention's performance standard (see section 3.2³). As a party to the Convention, Canada has the right to apply more stringent requirements than the Convention as needed to protect the Canadian environment (under Convention Article 2.3).

2.3. Required regulatory changes and regulatory plans

The Convention has not yet come into force. Its provisions become binding on Canada one year after its ratification by at least 30 countries which collectively represent 35 percent of the world's merchant shipping tonnage. As of September 11, 2012, it had been ratified by 36 countries representing 29.07 percent of the world's merchant shipping tonnage. Accordingly, in the expectation that the ratification requirements will be achieved in the near future, Transport Canada is preparing to fully implement the Convention.

Many provisions of the Convention are already included in the current *Ballast Water Control and Management Regulations* (SOR/2011-237), which have been recently brought under the new regime of the *Canada Shipping Act, 2001*. To meet Canada's obligations under the Convention, however, further amendments will be required. While the focus of proposed regulatory changes is the implementation of the Convention, Transport Canada will also take the opportunity to propose other amendments to current requirements (see section 5).

2.3.1. Vessels to be affected by proposed regulatory amendments

Article 3 of the Convention does not require regulation of vessels that only operate in waters under the jurisdiction of Canada (or only in waters under the jurisdiction of Canada and on the high seas), unless Canada determines that their ballast water discharge would impair or damage Canada's environment, human health, property or resources, or those of adjacent or other states. Accordingly, Transport Canada has asked Fisheries and Oceans Canada to provide scientific advice on risks posed by domestic ships in various Canadian regions. Transport Canada plans to establish appropriate science-based regulations for these vessels in future regulatory amendments.

Under the Convention, Canada has the responsibility to determine equivalent requirements for pleasure craft in Canada that are used solely for recreation or competition or craft used

³ Unless otherwise specified in the text, section references are to sections within this document.

primarily for search and rescue. These vessels must be less than 50 metres in length overall, and have a maximum Ballast Water capacity of 8 cubic metres. Transport Canada does not anticipate adding requirements for these vessels at this time.

Canada's obligations under the Convention apply to all other Canadian vessels. Canada has studied this obligation, which includes Canadian vessels that transit waters under the jurisdiction of any another country at any time (including internal waters). This includes Canadian vessels that transit the U.S. waters of the Great Lakes-St. Lawrence Seaway system. It also applies to vessels that currently receive exemptions under sections 4(3) and 4(4) of the Regulations (SOR 2011/237).

Vessels flagged to parties of the Convention are also subject to its provisions when in waters under Canadian jurisdiction. By ratifying, Canada has also agreed to give "no more favourable treatment" to ships of non-parties.⁴ This requires all non-Canadian vessels, including foreign-flag vessels that transit Canadian waters, to follow the Convention approach while in waters under Canada's jurisdiction⁵. This includes vessels of the U.S. transiting internal Canadian waters of the Great Lakes-St. Lawrence Seaway system.

⁴ Paragraph 3.3 of the Convention.

⁵ This includes requirements to undergo the required surveys, carry the required Ballast Water Convention certificate from their flag administration (or a certificate of equivalence), maintain a ballast water record book of all ballasting operations (whether in Canada or otherwise), and carry a ballast water management plan approved by their flag administration. These requirements are discussed further in section 3.

3. Proposed ballast water management under Canadian implementation of the Convention

Upon coming-into-force of the Convention, the proposed regulatory approach would require that most⁶ domestic and foreign vessels operating in waters under Canadian jurisdiction comply with its provisions. Notable aspects discussed below include Convention requirements to:

- meet survey requirements and carry a valid Ballast Water Convention Certificate,
- have a ballast water record book on board,
- have an approved ballast water management plan, and
- meet the exchange and performance standards of the Convention as appropriate.

Compliance with the Convention will require advance preparation by shipowners. This section explains the Convention's approach, and highlights differences proposed for its implementation in Canadian ballast water management requirements.

3.1. Ballast water exchange standard for vessels entering Canadian waters from outside the Exclusive Economic Zone

The first stage of the Convention implementation is already a part of the Regulations: shipowners are required to perform ballast water exchange. Like the Regulations, the Convention's approach does not require vessels to divert from their intended voyages to comply.

Canadian Regulations for ballast water exchange are presently more stringent than those of the Convention, requiring that vessels undertake ballast water exchange in water at least 2000 metres deep (as opposed to the Convention's 200 metres). The proposed regulatory approach would continue the present requirement in the Regulations, formalizing the current expectation that exchanged ballast water have a salinity of 30 practical salinity units (PSU)⁷. Under the proposed regulatory approach, these measures would be implemented pursuant to Convention Article 2.3, which allows Canada to establish more stringent requirements.

The ballast water procedure in the Convention predates Canadian requirements for the Great Lakes, established in 2006, that require vessels to flush empty ballast water tanks as a part of the ballast water exchange procedure. Scientific research indicates that residual ballast water and sediment is an important vector for introduction of ship-mediated non-native species.⁸ For this reason, and to broaden the protection to all Canadian fresh waters, the proposed regulatory approach would require that all vessels required to undertake ballast water exchange also perform saltwater flushing of empty ballast tanks before entering Canadian

⁶ See section 2.3.1

⁷ 1 PSU is approximately equal to 1 part per thousand.

⁸ Duggan, I.C., van Overdijk, C.D.A., Bailey, S.A., Jenkins, P.T., Limén, H. and MacIsaac, H.J. (2005) Invertebrates associated with residual ballast water and sediments of cargo-carrying ships entering the Great Lakes. *Canadian Journal of Fisheries and Aquatic Science* 62, 2463-2474.

waters with salinity lower than 2 PSU. These measures would also be implemented pursuant to Convention Article 2.3.

3.2. Ballast Water Performance Standard and Timeline

The Convention establishes a performance standard that limits the number of organisms that a vessel is permitted to discharge (see Table 1). The Convention does not specify the method that a shipowner must use to meet the performance standard. In Canada, proposed methods for compliance would include retention of ballast onboard, transferring ballast water to a reception facility, or treatment using a shipboard Treatment System⁹. Transport Canada, however, anticipates that most vessels will fit a Treatment System.

Table 1: Ballast Water Performance Standard (IMO D-2 Standard)¹⁰

Category		Vessel must discharge less than
Organisms greater than or equal to 50 µm in minimum dimension		10 viable organisms per m ³
Organisms less than 50 µm and greater than or equal to 10 µm in minimum dimension		10 viable organisms per mL
Indicator microbes	Toxicogenic <i>Vibrio cholerae</i> (O1 and O139)	1 CFU per 100 mL or 1 CFU per 1 g (wet weight) zooplankton samples
	<i>Escherichia coli</i>	250 CFU per 100 mL
	Intestinal Enterococci	100 CFU per 100 milliliters.

The Convention gives vessels time to comply with its performance standard. Once the vessel's implementation date is reached, a Canadian-flag vessel covered by the Convention must not discharge any ballast water anywhere in the world unless it meets the performance standard. A foreign-flag vessel must not discharge any ballast water in Canada unless it meets the performance standard. Under the Convention, it is the responsibility of the vessel to comply with this requirement.

Most vessels covered by the Convention will need to comply with the performance standard according to the Convention schedule found in Table 2 in order to be accepted both in Canadian and foreign ports.

⁹ Regulation B-3.7 of the Convention also allows Canada discretion to accept "other methods" of compliance; such methods must be approved in principle at IMO, and must provide at least the same level of protection as the performance standard. Transport Canada will consider accepting such methods in Canada after their approval at IMO. For example, Transport Canada is encouraged by ongoing discussion at IMO on the use of appropriate potable water (whether from a land source or generated onboard a ship) as an alternative way to meet the performance standard.

¹⁰ CFU=Colony forming unit. 1 m³ = 1000 L.

Table 2: Latest date for compliance with the performance standard

Ballast water capacity	Date of Construction	Vessel must comply with performance standard
Less than 1500 m ³	Before January 1, 2009	by its first intermediate or renewal survey on or after January 1, 2016
	On or after January 1, 2009	upon coming into force of the Convention
1500-5000 m ³	Before January 1, 2009	by its first intermediate or renewal survey on or after January 1, 2014
	On or after January 1, 2009	upon coming into force of the Convention
Greater than 5000 m ³	Before January 1, 2012	by its first intermediate or renewal survey on or after January 1, 2016
	On or after January 1, 2012	upon coming into force of the Convention

Under the Convention, Canada has a limited right to grant extensions to the installation timeline pursuant to Regulation A-4 of the Convention¹¹. Such extensions require consultation with other affected states and notification to IMO. Where extensions are granted, they are only to the date of applicability for the performance standard, cannot exceed a period of five years, must take into account risks involved in specific trading patterns and can only be granted based on a list of ports or locations that exhaustively covers a vessel's trade. Transport Canada is proposing two such extensions for vessels, which are briefly described in the following two sections and discussed fully in Annex A.

3.2.1. Great Lakes-St. Lawrence Seaway system vessels

Vessels operating exclusively on the Great Lakes and St. Lawrence Seaway system¹² are faced with unique challenges as they operate in waters shared with the U.S. The U.S. is not a party to the Convention and has not yet approved any ballast water treatment systems. While the U.S. has put requirements in place for performance standards that are the same as required by the Convention, dates for vessels to comply with these standards are later than those shown in Table 2. (The installation timelines are based on dates of scheduled drydocking as opposed to intermediate or renewal surveys as set out in the Convention.)

In order to ensure compatibility of requirements in Canada and the U.S., and recognizing the success of existing ballast water requirements (under which no new species attributed to ships ballast water has been reported on the Great Lakes since 2006), Transport Canada is proposing application of extensions allowed under Regulation A-4 of the Convention to align

¹¹ Regulation A-4 of the Convention provides, in certain circumstances, for time-limited exemptions from the performance standard timelines under Regulation B-3 of the Convention and/or any additional measures under Regulation C-1 of the Convention. In this discussion paper, for greater clarity, the term *extension* is used in place of *exemption* because of the time-limitations of Regulation A-4 of the Convention.

¹² Transport Canada proposes to define such vessels as those that operate exclusively in waters of the Great Lakes and St. Lawrence River upstream of Anticosti Island.

implementation dates for vessels operating exclusively on the Great Lakes and St. Lawrence Seaway system in both countries (see Annex A).

The words “operating exclusively” link to the requirement of Regulation A-4 of the Convention that vessels must “operate exclusively between specified ports or locations.” Vessels granted an extension could under no circumstances travel outside the waters upstream of Anticosti Island. A vessel that left these waters would no longer qualify for its extension and would thereafter have to stay in Canadian waters unless fully in compliance with the Convention approach. The proposed regulatory approach would require that—once the Convention came into force—a vessel wishing to enter (or re-enter) exclusive Great Lakes service and benefit from this extension first undergo a complete tank cleaning.

3.2.2. Vessels operating within a single Great Lake

The U.S. Coast Guard has established exemptions for vessels that operate exclusively within a single U.S. Coast Guard Captain of the Port zone, an approach also proposed by the U.S. Environmental Protection Agency for application on the Great Lakes. These zones essentially correspond to individual Great Lakes (with Lakes Huron and Michigan combined). Pursuant to its responsibilities for compatibility under the *Great Lakes Water Quality Agreement*, Transport Canada is proposing to grant five-year extensions under Regulation A-4 of the Convention for vessels that operate exclusively between ports on a single Great Lake (or exclusively on Lakes Huron and Michigan combined).

3.2.3. Vessel-specific extensions

Pursuant to Regulation A-4 of the Convention, Canadian or foreign-flag vessels not captured by the above two extensions could be invited to submit an application if an extension of the installation schedule is needed. If approved, a permit would be issued by Transport Canada under the proposed regulatory approach. Such vessels would be required to:

- only propose extensions consistent with the conditions of the Convention,
- submit a robust scientific risk assessment consistent with IMO Guideline G7 (*Guidelines for risk assessment under Regulation A-4*), and
- obtain the concurrence of other affected countries before applying.

Besides provisions for experimental treatment systems (see section 3.4.4), Regulation A-4 of the Convention is the only mechanism that Canada can use to provide flexibility for ships whose operations come under the Convention (see section 2.3.1).

3.3. Ballast Water Management Plan

Under the Convention, each vessel is required to carry a ballast water management plan (a “Management Plan”) approved by its flag administration. This vessel-specific plan lays out the method by which the vessel will comply with the requirements of the Convention, including methods for ballast water exchange if necessary and for coming into compliance with the performance standard. The plan must designate a shipboard officer who has the responsibility to ensure that the plan is properly implemented. Officers and crew must be familiar with their duties under the plan.

Transport Canada anticipates that most vessels will opt to install a Treatment System to meet the performance standard. Where this is the case, the Convention requires that the specific Treatment System to be installed be identified in the Management Plan, along with associated installation plans and drawings. Treatment Systems must be appropriate for the ballast water to be treated (e.g. fresh water, cold water).¹³

For Canadian-flag vessels, Transport Canada is proposing to grant approval of Management Plans through recognized organizations (namely classification societies, which are specialized marine engineering firms). The plan must be revised over time as needed (e.g. in preparation to transition from the exchange to the performance standard) and revisions would require re-approval. (See Annex A for Management Plan considerations for Great Lakes ships.)

It is important to note that the vessel's obligation to maintain and implement an approved Management Plan is independent of the vessel's obligation to meet the exchange or performance standard (as appropriate).

3.4. Ballast Water Treatment Systems

If a Management Plan calls for fitting a certain Treatment System to comply with the performance standard, the Convention requires that the system first be type-approved by the vessel's flag administration. The vessel must carry the type-approval Certificate for the treatment system on board.

It is important to note that the primary obligation of a vessel is to meet the performance standard, as opposed to simply fitting a type-approved Treatment System. While Treatment Systems are expected to be the main means of compliance, they are not guaranteed to perform in all conditions. For example:

- the quality of ballast water (and assemblage of organisms contained within this water) encountered during operation of a Treatment System may differ from that encountered during type approval testing¹⁴, and
- Treatment Systems are complex systems that require careful operation and maintenance.

¹³ See section 4 for more on this point.

¹⁴ This point is further elaborated in paragraph 1.5 of Convention Guideline G8 (*Guidelines for Approval of Ballast Water management Systems*):

"1.5 The requirements of Regulation D-3 stipulate that ballast water management systems used to comply with the Convention must be approved by the Administration, taking into account these Guidelines. In addition to such ballast water management system approval, as set forth in Regulation A-2 and Regulation B-3, the Convention requires that discharges of ballast water from ships must meet the Regulation D-2 performance standard on an on-going basis. Approval of a system is intended to screen-out management systems that would fail to meet the standards prescribed in Regulation D-2 of the Convention. Approval of a system, however, does not ensure that a given system will work on all vessels or in all situations. To satisfy the Convention, a discharge must comply with the D-2 standard throughout the life of the vessel."

Thus, vessel owners have the responsibility to ensure that the system is fit for any particular application, and use a different option to manage ballast water in other circumstances. This aspect of ballast water performance standards is common between parties to the Convention and other jurisdictions (e.g. the U.S.).

As with any expensive shipboard system, Transport Canada recommends that vessel owners carefully select Treatment Systems for their particular application based on the technology used and the testing the system has undergone.

3.4.1. Type-approvals for Canadian-flag ships

The Convention requires that Canadian-flagged ships using Treatment Systems carry a Canadian Type Approval Certificate for the Treatment System. Transport Canada expects to delegate the issuance of these Certificates to classification societies.

A system would be type-approved for use onboard Canadian ships only if it fully complied with Convention Guideline G8 (*Guidelines for Approval of Ballast Water Management Systems*).¹⁵ A determination of compliance could take into account:

- Test results and documentation showing adherence to the requirements in Guideline G8,
- Issuance by another country of a type approval Certificate in accordance with Guideline G8 on the basis of public and transparent test results and documentation, or
- Issuance of a type approval Certificate by the U.S. under its Environmental Technology Verification program on the basis of public and transparent test results and documentation.

Under the proposed regulatory approach, issuance of a Certificate would be refused (or an issued Certificate would be suspended or cancelled) where a Treatment System did not clearly and transparently meet the requirements of Guideline G8 or was shown not to meet the performance standard.

3.4.2. Requirement to continue ballast water exchange

Under Convention Article 2.3, which allows for more stringent measures, Transport Canada proposes to require that vessels using a Treatment System that enter Canadian waters having a salinity of 2 PSU or lower be required to meet both the ballast water exchange standard described in section 3.1 (including saltwater flushing and non-deviation provisions) as well as the performance standard.

The principal benefits of this strategy are expected to include: a reduction in risk of organisms discharged (particularly into fresh water) due to purging of coastal organisms from tanks, a reduction in propagule viability due to osmotic shock and an integrated backup in case of

¹⁵ Under the Convention, before a Treatment System can be type approved, systems that make use of an active substance (e.g. biocides) must first be approved by IMO under Guideline G9 (*Procedure for approval of ballast water management systems that make use of active substances*).

undetected or unexpected Treatment System failure. Additional scientific work to quantify these benefits is currently underway.

3.4.3. Requirements for operation of Treatment Systems on the Great Lakes

Due to their unique environmental characteristics, the Great Lakes pose significant challenges to the operation of many Treatment Systems. Low water temperatures pose challenges to active processes for treatment and subsequent neutralization of chemicals before discharge. Salinities on the Great Lakes are amongst the lowest in navigable waters around the world, and accordingly Treatment Systems that would otherwise extract active substances (e.g. chloride ions) from components of seawater require supplementation with an alternative source of these substances for safe and effective operation on the Great Lakes.

To ensure safety for ships, crews and the environment, the proposed regulatory approach would require that, effective on the date of their publication, vessels operating on the St. Lawrence Seaway system that use a Treatment System for ballast water management do the following:

1. meet both the performance and exchange standards before entering the Great Lakes (as described in section 3.4.2), and
2. Either:
 - a) carry onboard a type approval Certificate stating explicitly that the Treatment System has undergone successful land-based or shipboard testing¹⁶ in waters of 0.1 PSU salinity or lower, or
 - b) undertake not to load ballast water and be subject to a verification exit salinity inspection (see section 3.7).

Together, these requirements would ensure that all ballast discharged or moved between ports on the Great Lakes is properly managed. The first condition would ensure that all incoming ballast water poses the lowest risk, and is well suited to treatment by the onboard Treatment System. The second condition would ensure that Great Lakes fresh water used as ballast is adequately treated before discharge.

These requirements would be implemented in consultation with the U.S., and under Convention Article 2.3 that allows for more stringent measures.

3.4.4. Prototype Treatment Systems

Regulation D-4 of the Convention sets out requirements for operation of prototype ballast water treatment technologies. Vessels actively participating in a program from their administration to evaluate promising treatment technologies can receive a five-year extension to the timeline set by the Convention for meeting the performance standard. Pursuant to the Convention, Canada would recognize compatible programs of other countries, providing the

¹⁶ Testing must be carried out in compliance with Convention Guideline G8 (*Guidelines for Approval of Ballast Water Management Systems*) or the U.S. Environmental Technology Verification program guidelines.

vessel is carrying an appropriate statement of compliance from its flag administration and the five-year extension window has not passed.

Transport Canada would accept applications by Canadian vessels for installation of promising treatment technologies. Applicants would be required to ensure the consistency of application dossiers with the requirements of Regulation D-4 of the Convention and its Guideline G10 (*Guidelines for Approval and Oversight of Prototype Ballast Water Treatment Technology Programmes*).

3.5. Ballast water specific surveys and Convention certification

The Convention requires that vessels undergo specific ballast water surveys that demonstrate compliance with its ballast water management approach, and verify that the vessel corresponds to its Management Plan. Based on these surveys, an international Convention Certificate is issued, to be carried onboard the vessel.

Under the Convention, ships require a Certificate in order to legally operate. For foreign-flag ships, Canada will accept Convention Certificates as evidence of the required surveys. For ships whose flag is not a party to the Convention, an equivalency Certificate is required that shows the vessel has been surveyed and has an approved Management Plan that complies with the Convention approach.

3.5.1. Requirements for Canadian-flagged vessels

For Canadian-flagged vessels, Transport Canada proposes to delegate surveying functions to classification societies under the Delegated Statutory Inspection Program. (See Annex A for survey and certification considerations for Great Lakes ships.)

It should be noted that the Convention requires specific timing for the surveys, which is further explained in Annex B. In order to have a Certificate on the day that the Convention comes into force, it is necessary for vessels to schedule their initial survey in advance of this date. Recent discussions at IMO have confirmed that Canada can issue Certificates in advance of coming into force of the Convention.

3.6. Recordkeeping and reporting

Under the Convention, vessels must keep records of their ballasting activities in the form of a ballast water record book. The record book must contain records of each operation concerning ballast water. This includes records of all uptake, exchange, treatment, circulation and discharge, as well as reasons for any exceptional or accidental discharges. Vessels subject to an extension (as described in section 3.2) must note this in the record book. Entries in this book (which may be kept electronically or as part of a Treatment System) must be retained for a total of five years, and be available onboard for at least two years.

The proposed regulatory approach would require that vessels submit a ballast water report form at least 96 hours before arriving in, or transiting through, Canadian waters. For vessels on

voyages of less than 96 hours, the form would be required prior to departure. The existing form would be modified to require reporting of:

- whether the vessel is carrying a Convention Certificate, or equivalent or not,
- whether the Treatment System's type-approval Certificate states explicitly that it has undergone successful land-based or shipboard testing in waters of 0.1 PSU salinity or lower (see section 3.4.3).

3.7. Compliance and Enforcement

From the point of view of ensuring that ballast water management is safe for ships, crews and the environment, the Convention establishes clear roles for the IMO, the flag administration, the port administration and the vessel:

- IMO: Approves the use of active substances in ballast water treatment systems.
- Flag Administration: Issues Type Approval Certificates for Treatment Systems, approves vessel-specific Management Plans, and issues Convention Certificates to vessels on the basis of survey requirements.
- Vessel: Carry valid Certificates, carry and implement an approved Management Plan, maintain a record book and operate pursuant to the Convention. The vessel is required to meet the performance standard on every discharge once required to do so (must meet the exchange standard before).
- Port Administration: Ensure that vessels operate in accordance with its obligations in waters of that administration.

3.7.1. Transport Canada's obligations under the Convention

Under the Convention approach, Canada, as a port state, has obligations to detect violations and enforce the Convention, notably to ensure that discharges meet the exchange and performance standards (as appropriate).

Article 9 of the Convention allows Transport Canada to verify Certificates, record book entries and sample any vessel's ballast water. Furthermore, if the vessel is not carrying valid Certificates that correspond with the ship and its equipment, or if the crew is not familiar with or not implementing the ballast water management plan, then a more detailed inspection may be undertaken. Article 10 of the Convention allows Canada to warn, detain or exclude ships that are in violation of their obligations, and Article 8 requires Canada (as both a port and flag state) to establish sanctions in law that are sufficient to discourage violations of the Convention.

3.7.2. Transport Canada's planned approach to compliance and enforcement

Transport Canada proposes to carry out compliance and enforcement activities in accordance with its *Policy on Compliance and Enforcement of the Canada Shipping Act, 2001*.¹⁷ This Act provides significant penalties for violations of the Regulations. Transport Canada will adhere to the Government of Canada policy of graduated escalation of severity of enforcement responses.

Transport Canada's experience is that education of vessels and masters is the best way to ensure good compliance with the Regulations. Often it is vessels or crews arriving in Canada for the first time that need to take remedial measures to ensure ballast discharges are compliant. One important reason that Canada requires 96 hours of notice before a vessel arrives is to ensure that sufficient time still exists for the master to undertake remedial ballast water management in cases where non-compliance would otherwise occur.

Transport Canada expects to direct vessels to remedy deficiencies in equipment or procedures before discharging ballast water, such as by using a different method of ballast water management if necessary. Transport Canada is considering adding an additional provision to the Regulations that would require a vessel to take corrective action if directed by a marine safety inspector to remedy a violation, thus preventing the release of potentially invasive species (e.g. requiring onboard treatment of ballast water by the addition of brine).

Other than for scientific purposes, Transport Canada anticipates performing full scale biological sampling of vessel discharges only in cases where there are specific grounds to suspect violation of the Regulations. Transport Canada would continue to use sampling for salinity measurements where needed to evaluate compliance with the exchange standard and the requirements described in section 3.4.3.

Pursuant to the Convention's Guideline G8 (*Guidelines for Approval of Ballast Water Management Systems*), a Treatment System can include bypass valves that allow the system to be isolated in an emergency. The proposed regulatory approach would require that, where a vessel is so equipped, operation of the valves must trigger an alarm and be logged in the control system of the Treatment System; if this were not the case then no discharge would be allowed in Canadian waters.

¹⁷ See <http://www.tc.gc.ca/eng/marinesafety/tp-tp13585-policy-ce-csa2001-1356.htm>

4. Implementation by the bi-national Great Lakes fleet

Transport Canada is aware of specific concerns in the bi-national Great Lakes fleet relating to implementation under the timelines of the Convention, centering on the efficacy and availability of approved treatment systems. The issue of lack of type-approvals by the U.S. Coast Guard has already been addressed in section 3.2.1, above, which also discusses proposed timeline extensions for Great Lakes vessels. This section focuses on two other concerns: the availability of ballast water treatment systems that perform in fresh water and practical considerations for shipboard installation.

The purpose of this section is not to provide a definitive assessment of mechanisms for implementation by the Great Lakes fleet. Such an analysis is not feasible with the information available to Transport Canada due to the variability amongst Great Lakes vessels. Instead, the goal is to present Transport Canada's considered position on the issue, by way of opening a more specific discussion on how Great Lakes vessels can be brought into compliance with the approach and timelines discussed in section 3.

4.1. Expected dates for meeting the performance standard

Transport Canada has established an expected date of compliance for existing vessels operating on the Great Lakes.¹⁸ The results of this analysis are given in Table 3, showing that every vessel has at least until 2014 to comply, and that a large majority of vessels will not be required to comply with the performance standard until 2016. The three vessels required to comply before 2016 are smaller vessels (former ocean-going general cargo carriers) with an average of less than 2000 m³ of ballast water capacity.

Table 3: Estimated years of compliance by Canadian and U.S. Great Lakes vessels

Flag	2014	2015	2016	2017	2018	2019	2020	Total
Canada	3	1	17	12	18	7	17	75
U.S.			13	12	15	5	9	54
Total	3	1	30	24	33	12	26	129

¹⁸ For the purposes of discussion, Transport Canada attempted to identify all the ships in both U.S. and Canadian fleets that would be installing treatment systems for exclusive Great Lakes service. Because there is no formal list of such vessels it is possible that a few may have been missed, or a few vessels that also are in service in other areas domestically or internationally may have been included.

For each vessel identified, the date of construction was obtained, and the date of previous and next drydocking was obtained using the Environmental Protection Agency's public electronic notice of intent database for its Vessel General Permit. Where necessary the vessel's date of next drydocking after December 1, 2013 was estimated by adding five year increments to the date of next drydocking in the public database. Some Great Lakes vessels can obtain a single year extension to the drydocking schedule, which is not captured in this analysis.

Transport Canada is aware that some Great Lakes vessels may be constructed shortly after December 1, 2013. These vessels will be required to comply with the performance standard by the U.S. For this reason, a further delay in Transport Canada's compliance date beyond December 1, 2013 is of no benefit to these vessels. Moreover, as discussed in section A.3 of Annex A, these vessels will also be subject to port state control procedures and will need a Management Plan prior to their maiden voyage.

4.2. Selection of Treatment Systems for Great Lakes vessels

Currently 28 Treatment Systems have received type-approval pursuant to the Convention's Guideline G8 (*Guidelines for Approval of Ballast Water Management Systems*). Transport Canada expects that most manufacturers will promptly seek U.S. Coast Guard type approval for commercial reasons.

Great Lakes water poses special challenges for Treatment Systems because of its physical, chemical and biological parameters (e.g. temperature, salinity and organism distribution). As the greatest challenge is the low salinity on the lakes, these systems can be categorized based on their tested or expected performance in Great Lakes water (see Table 4).

Table 4: Categories of Treatment Systems for use in fresh water

Category	Description
1 – Tested in fresh water	<p>These systems have received type approval and have been tested in fresh water. Given type approvals expected in fall 2012, this option includes the RWO CleanBallast system, DESMI OceanGuard and Siemens SiCure.</p> <p>Other systems are expected to test in fresh water in the near future at the Great Ships Initiative, at the new high flow-rate facility at Dalhousie University's Aquatron in Halifax, Nova Scotia, or at other testing facilities capable of freshwater testing worldwide.</p>
2 – Expected to work in fresh water	<p>There is good reason to believe that the designs of many Treatment Systems are applicable to fresh water. For instance, systems that operate on the basis of ozone treatment or ultraviolet light are utilising processes that are not dependent on the salinity of the water.</p> <p>While these systems still require freshwater testing, this could be done under additional shipboard testing (see section 3.4.3). This shipboard testing could be organized by a vessel owner, by a consortium of owners, be undertaken cooperatively by owners and manufacturers or be required by the purchaser as a condition of contract.</p>
3 – Can be augmented to work in fresh water	<p>Some treatment systems require certain reagents to function that are normally extracted from seawater. For example, electrolytic systems extract Chloride ions from seawater. Some of these systems can function in fresh water if the necessary reagent is kept onboard and introduced into the system directly. This may be suitable either as an occasional or regular application depending on the particulars of the vessel and its trading pattern.</p> <p>Some of these systems may have already received shipboard testing in fresh water with the addition of reagents. Those that have not could be tested in fresh water using one of the approaches suggested under category 2.</p>
4 – Not expected to work in fresh water	Some treatment systems may be inherently unsuited to operation in fresh water.

Consideration of Treatment Systems in the first three categories is relevant and necessary given the substantial time remaining for installation of Treatment Systems as discussed in section 4.1. First, several Treatment Systems are already available in Category 1. Second, there remains ample time for Treatment Systems to move from Category 2 to Category 1, and Transport Canada anticipates that several Treatment Systems will do so. Third, ample time remains for vessel operators to consider use of systems in Category 3 before the requirement to comply with the performance standard comes into force.

Transport Canada is aware that Great Lakes vessels have certain characteristics (including short voyage times and high ballast flow rates) that may eliminate certain treatment systems from consideration. However, Transport Canada's position is that if vessels decide to use a Treatment System to meet the performance standard they will find an available Treatment System within the first three categories.

Transport Canada is also very encouraged by efforts underway by the Great Lakes maritime community to develop new solutions and is optimistic that these will be elaborated, receive type-approval and join Category 1.

4.3. Considerations for installation onboard Great Lakes ships

Transport Canada is aware that Great Lakes vessels are generally older than other vessels, and have challenges relating to physical installation of a Treatment System onboard the vessel. Partly because of the age range of the fleet, there are a wide variety of vessels sailing on the Great Lakes, and the challenge for installation on all these vessels is not the same.

Transport Canada has considered the design and history of the vessels identified in Section 4.1 and their histories. While it is not possible to create a simple taxonomy that describes every ship on the lakes, and while acknowledging that every vessel is unique, Transport Canada observes that some broad categories can be established for the purposes of discussion (see Table 5).

Having considered the vessels of the Great Lakes fleet from the perspective of physical installation of Treatment Systems, Transport Canada acknowledges that certain Great Lakes vessels may incur more expensive engineering and installation costs to physically fit Treatment Systems than others. Despite this, Transport Canada's position is that all vessels can physically install Treatment Systems. Ultimately, the decision to fit a Treatment System is a commercial one.

Table 5: Broad Categories of Great Lakes vessels,
in order of increasing challenge for fitting of a Treatment System¹⁹

Broad Category	Number of Vessels	General Observations
Fore-Aft Traditional Straight Deckers	14	Ample space generally available in engine room to accommodate treatment system and piping.
1000 foot bulkers	11	Once a Treatment System is selected, there is ample space in engine room to install and for piping.
Fore-Aft Self-Unloaders	23	Unloading gear may pose challenges for pipe routing, but ample space is available in engine rooms for installation of Treatment Systems.
Tug-Barge	12	The barge half of these vessels has ample space for installation of Treatment Systems and piping, but operation may be a challenge if barge is unmanned.
Ex-Deep Sea General Cargo Carriers and Bulkers	21	These vessels have limited space in the engine room for Treatment Systems and piping, and may need to select a modular Treatment System.
All-Aft Self-Unloaders	21	Unloading gear poses challenges for pipe routing, and smaller engine room space may necessitate use of a modular Treatment System.
1000 foot bulkers with one ballast pump per tank	2	Once a Treatment System is selected, very complex piping challenges given scale of vessel and design of ballast system.

¹⁹ Twenty-five vessels were not easily categorized. On average these vessels were considered to present a similar challenge to fore-aft self-unloaders.

5. Other Proposed Amendments to the Regulations

Transport Canada would like to take this opportunity to propose other amendments to the Regulations as follows:

1. Transport Canada is proposing a minor correction to paragraph 3(c) of the Regulations. The phrase “the owner and the operator of a pleasure craft” would be replaced by “the owner **or** operator of a pleasure craft.”
2. Alternate exchange zones, would be reviewed by Fisheries and Oceans Canada to ensure they reflect the most current scientific knowledge.
3. Transport Canada is concerned that vessels are storing treated and/or untreated sewage in ballast tanks when passing through zones where sewage discharges are prohibited. As sewage can damage Treatment Systems, it is proposed that vessels be prohibited from using ballast water tanks to store sewage. Use of former ballast tanks would be accepted only if permanently disconnected from ballasting systems.²⁰
4. Further to the last point, Transport Canada is considering if regulatory actions are needed relating to the use of ballast tanks to retain cargo washings that could damage Treatment Systems.
5. Some vessels are being designed without sampling ports, which are required to allow inspectors to test for salinity of ballast water and sediments. Transport Canada is considering adding requirements for Canadian vessels to be equipped with sampling ports, where alternative means do not exist to obtain a sample of ballast water.
6. Transport Canada is considering a prohibition on disposal of ballast water sediments in Canadian waters, requiring instead that such sediments be disposed of at a shore-side reception facility or outside of Canada in waters at least 200 nautical miles from shore and at least 2000 m deep.

²⁰ This issue is currently subject to discussions at the IMO. As the management and discharge of sewage is subject to the *Vessel Pollution and Dangerous Chemicals Regulations*, an amendment to these Regulations to allow temporary storage of sewage in other designated areas may also be required.

Annex A. Details of proposed extensions under Regulation A-4 of the Convention

A.1. Conditions of extensions

The following table explains the extensions proposed in section 3.2, and provides information on how the extensions would meet the requirements of the Convention.

Table A-1: Proposed Extensions pursuant to Convention Regulation A-4

Condition of Regulation A-4	Rationale for extensions for Great Lakes Ships (§ 3.2.1)	Rationale for extensions for Lake Areas (§ 3.2.2)
Extensions must be granted to a ship or ships on a voyage or voyages between specified ports or locations; or to a ship which operates exclusively between specified ports or locations;	The extension would be for vessels operating exclusively in or between any ports upstream of Anticosti Island.	Four separate extensions would be granted as follows: <ul style="list-style-type: none"> - Vessels operating exclusively between ports or locations on Lake Ontario. - Vessels operating exclusively between ports or locations on Lake Erie. - Vessels operating exclusively between ports or locations on Lake Huron, Lake Michigan and the interconnecting channels between them. - Vessels operating exclusively between ports or locations on Lake Superior.
	The Convention requires Canada to take account of the expressed views of other countries. As two U.S. states (Minnesota and Wisconsin) have permits requiring vessels to fit treatment systems before 2013, ports in those states would not be included in extensions, and Canadian vessels would be required to comply with the timelines of the Convention if they wish to make port calls in, or transit waters of, these states.	
Extensions must be effective for a period of no more than five years subject to intermediate review;	<p>The extension would be granted until:</p> <ul style="list-style-type: none"> • Dec. 1, 2013 for vessels built on or after Dec. 1, 2013. • The first scheduled drydocking after Jan. 1, 2014 for vessels built before Dec. 1, 2013 that are between 1500-5000 m³ in ballast water capacity. • The first scheduled drydocking after 2016 for all other vessels built before Dec. 1, 2013. <p>The extension will be subject to intermediate review.</p>	Extensions would be granted for five years, subject to intermediate review.

Condition of Regulation A-4	Rationale for extensions for Great Lakes Ships (§ 3.2.1)	Rationale for extensions for Lake Areas (§ 3.2.2)
Extensions must be granted to ships that do not mix Ballast Water or Sediments other than between the ports or locations specified in paragraph 1.1;	In order to benefit from the extension, vessels would need to operate exclusively between the Great Lakes ports identified. Any foreign vessels operating exclusively between such ports would also be eligible for coverage under the extension.	
Extensions must be granted based on the Guidelines on risk assessment developed by the Organization.	Canada has conducted a risk assessment that is compatible with Guideline G7 (<i>Guidelines for risk assessment under Regulation A-4</i>) that considered the relative risk of ballast water moved between ports in the Great Lakes St. Lawrence Seaway system. Taking into account this assessment and the success of current ballast water requirements, which already greatly reduce the risk of aquatic species invasions ²¹ , and the limited extensions required in order to allow Canadian vessels to comply with U.S. requirements, Transport Canada has concluded that over the timeframe proposed the continued operation of existing Regulations would be low-risk. Moreover, the modest delay in implementation would be necessary to achieve a uniform implementation of ballast water requirements, which is a principle of the Convention, and is consistent with Canada's obligations under Articles 2.4 and 13.3 of the Convention and under the Great Lakes Water Quality Agreement.	Each individual Great Lake is considered to be a single ecological entity ²² . Accordingly, vessels that operate exclusively within a lake are currently considered to pose a low risk for the introduction of aquatic invasive species. This extension would also be consistent with Canada's obligations under Articles 2.4 and 13.3 of the Convention and under the Great Lakes Water Quality Agreement. While the U.S. approach that this extension is modelled upon aligns with current scientific views relating to ecological regions on the Great Lakes, future study is warranted to determine the long-term protectiveness of this approach.

²¹ Bailey, S.A., Deneau, M.G., Jean, L., Wiley, C.J., Leung, B. and MacIsaac, H.J. (2011) Evaluating efficacy of an environmental policy to prevent biological invasions. *Environmental Science and Technology* 45, 2554-2561.

²² Abell, R.A., Olson, D.M., Dinerstein, E., Hurley, P.T., Diggs, J.T., Eichbaum, W., Walters, S., Wettengel, W., Allnutt, T., Loucks, C.J. and Hedao, P. (2000) *Freshwater Ecoregions of North America*. Island Press, Washington, District of Columbia.

Condition of Regulation A-4	Rationale for extensions for Great Lakes Ships (§ 3.2.1)	Rationale for extensions for Lake Areas (§ 3.2.2)
Extensions shall not impair or damage the environment, human health, property or resources of adjacent or other States. Any State that the Party determines may be adversely affected shall be consulted, with a view to resolving any identified concerns.	<p>Extending the currently successful Great Lakes ballast water regime for a short time would maintain the environment, human health, property and resources of both Canada and the U.S.</p> <p>Although the effect of this proposed extension is to align with the U.S. timeline, Transport Canada would seek the formal concurrence of the U.S. Coast Guard and Environmental Protection Agency before issuing the extension.</p>	<p>Current research suggests that these voyages are low risk and consequently would not damage the environment, human health, property or resources of adjacent or other States.</p> <p>Although the effect of this proposed extension is to align as much as possible with U.S. exemptions, Transport Canada would seek the formal concurrence of the U.S. Coast Guard and Environmental Protection Agency before issuing the extension.</p>

A.2. Management plans, surveys, certifications and record-keeping under proposed extensions

Canadian Great Lakes vessels benefiting from an extension as described above would not be required to conduct ballast water exchange (due to non-deviation provisions) and would not yet have fit a Treatment System. A Management Plan for such vessels would not provide any increased protection for ships, crews or the environment. Accordingly, Transport Canada proposes that, as long as vessels are benefitting from this extension, they not be required to carry an approved Management Plan.

Survey and certification is intended to provide flag administration oversight over the implementation of Management Plans. Since these vessels would not be preparing a Management Plan, they could not be surveyed or receive Certificates. A notation to this effect would be placed in other vessel certification documents. Upon approval of a Management Plan for a Great Lakes ships (e.g. when a Treatment System is to be fitted), surveys would be required as described in section 3.5 and Annex B. The dates for subsequent intermediate and renewal ballast water surveys would be calculated from the vessel's date of initial survey.

As Regulation A-4 of the Convention does not provide a basis for relieving a vessel of its obligation to keep a ballast water record book, ships benefiting from an extension as described above would still need to follow the recordkeeping and notification described in Section 3.6.

All of these provisions, as well as the issuance of the extensions, would be communicated to IMO and relevant other countries.

A.3. Initial delivery to the Great Lakes

It should be noted that new vessels being delivered to the Great Lakes and St Lawrence Seaway region from overseas shipyards after the Convention comes into force would not be operating exclusively on the Great Lakes. Such vessels on their delivery voyages would be subject to port state control by other states while enroute to Canada. Like all vessels engaged in international operation, they would require a Certificate under the Convention from their flag state and must carry an approved Management Plan onboard. If seeking subsequent coverage under one of the extensions proposed above after arrival on the Great Lakes, such vessels may need to consider an alternative option for ballast water management on their maiden voyage or would need to undertake complete tank cleaning on arrival in order to receive the extension.

Annex B. Details of the surveys required by the Convention

Survey	Timing	Purpose
Initial Survey	Before vessel's first Convention certification	This survey verifies that the Management Plan and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the Convention
General Inspection	Annual	This inspection of the vessel, arrangements and material or processes associated with the Management Plan ensures that the ship and its equipment, systems and processes are maintained to conform with the provisions of the Convention. The inspection ensures that the ship will remain fit to proceed to sea without presenting a threat of harm to the environment, human health, property or resources.
Intermediate Survey	Within three months before or after the second Anniversary date or within three months before or after the third Anniversary date of the Convention Certificate	This survey replaces an annual survey, ensuring that the equipment, associated systems and processes for ballast water management fully comply with the applicable requirements of the Convention and are in good working order

At least every five years, a Renewal Survey repeats the procedure of the initial survey, and an intermediate survey follows accordingly.

An additional survey is required after a change, replacement, or significant repair to the structure, equipment, systems, fittings, arrangements and material in the ballast system.