



**REPUBLIC OF
THE MARSHALL ISLANDS**

**OFFICE OF THE
MARITIME ADMINISTRATOR**

Marine Guideline

No. 2-11-10

5/10

**TO: ALL SHIPOWNERS, OPERATORS, MASTERS AND OFFICERS OF
MERCHANT SHIPS, AND RECOGNIZED ORGANIZATIONS**

**SUBJECT: Time-Sensitive Extension for Compliance with New York State Ballast Water
Treatment System Standards.**

- References:**
- (a) New York State Department of Environmental Conservation (DEC) Letter regarding Clean Water Act Section 401 Certification for Commercial Vessel and Large Recreational Vessel General Permit, 17 December 2008**
 - (b) Final National Pollution Discharge Elimination System General Permit for Discharges Incidental to the Normal Operation of a Vessel, 5 February 2009**
 - (c) Marshall Islands Marine Notice 2-011-30**

PURPOSE:

The purpose of this Guideline is to recommend that Marshall Islands (MI) flag vessel owners and operators who operate or plan to operate in New York waters and are subject to the United States Environmental Protection Agency's Vessel General Permit (VGP) for Discharges Incidental to the Normal Operation of a Vessel (see Marine Notice 2-011-30) file for an extension of the implementation date for compliance with the State of New York's ballast water treatment system requirements (see Condition 2 of reference (a), above, or as attached in Appendix 1).

The New York requirements are conditions of the state concurring with the federal permit and are enforceable conditions under the VGP. This means that the VGP will not be able to be used in New York waters (i.e., no calling in New York ports or transiting New York waters), unless the State's conditions, including ballast water treatment system requirements, are met. Importantly, noncompliance with the requirements of the VGP constitutes a violation of the Federal Clean Water Act.

The problem that has arisen is that there exists no available technology to meet DEC Condition 2, which is 100 times more stringent than the treatment standards of the IMO Ballast Water Management Convention. Consequently, no vessel can currently meet the requirement. The DEC standard is being challenged in federal court by a number of industry associations. However, to ensure compliance at this point in time, vessel owners and operators must request an extension from the DEC by **30 June 2010**.

APPLICABILITY:

The DEC Condition 2 requirement applies to vessels subject to the VGP. New York interprets this standard as applying to vessels discharging ballast as well as to those merely transiting its waters. As a result of this widened scope of application, the Republic of the Marshall Islands Maritime Administrator (“Administrator”) recommends that companies owning or operating any of the following categories of vessels submit a letter requesting a two-year extension. A letter for each vessel is not necessary as the template was designed to cover an owner or operator’s entire fleet.

- **Vessels that currently call in New York ports regardless of whether they discharge ballast water in New York State waters.** (*Industry interprets the Certification as applying only to actual “discharges,” but DEC interprets the requirement as applying to the mere operation of a vessel in its waters.*)
- **Vessels that may in the future call in a New York port.** (*A vessel that does not have an extension will not be able to call in a New York port. Therefore, if there is any chance that a vessel in your fleet may call in New York in the future, then a request for extension should be filed.*)
- **Any vessel that transits New York waters enroute to a port in another state.** (*DEC interprets the Certification to require installation of treatment technology aboard vessels, even if such vessels only transit through New York waters but do not discharge ballast in those waters. This interpretation is being challenged in federal court. In the meantime, vessel owners/operators are encouraged to seek an extension for their vessels that transit New York waters.*)
- **A vessel constructed before 1 January 2013, which, during the term of the requested extension, may be purchased, chartered, operated or otherwise be controlled by your company.** (*This part of the extension applies only to existing vessels for which you would otherwise be eligible to request the extension, if they were currently under your control.*)

REQUIREMENTS:

MI owners/operators should file a letter requesting a two-year extension (until 19 December 2013) of the implementation date of the Condition 2 requirements by **30 June 2010**.

The template provided in Appendix 2 was drafted for industry use by the World Shipping Council in conjunction with their legal counsel. The Administrator has amended the first paragraph of section IV of the document to include work done on the issue by the Chamber of Shipping of America. The template provides excellent background information and the Administrator recommends utilizing it as the basis for your extension letter, noting that it will need to be amended to reflect your company and fleet.

The letter may be emailed to the address as provided in the template. It is recommended that a delivery receipt from DEC be requested and that a copy of the letter and the confirmation of delivery be kept in your files.

Appendix 1

NEW YORK STATE CERTIFICATION, CONDITION #2

2. By not later than January 1, 2012, each vessel covered under the VGP that operates in New York waters, shall have a ballast water treatment system that meets the following standards, subject to the exceptions listed below.
- (A) *Standard for organisms 50 or more micrometers in minimum dimension:* Any ballast water discharged shall contain less than 1 living organism per 10 cubic meters.
- (B) *Standard for organisms less than 50 micrometers in minimum dimension and more than 10 micrometers in minimum dimension:* Any ballast water discharged shall contain less than 1 living organism per 10 milliliters.
- (C) *Standards for indicator microbes:*
- (i) Any ballast water discharged shall contain less than 1 colony-forming unit of toxicogenic *Vibrio cholera* (serotypes O1 and O139) per 100 milliliters or less than 1 colony-forming unit of that microbe per gram of wet weight of zoological samples;
 - (ii) Any ballast water discharged shall contain less than 126 colony-forming units of *escherichia coli* per 100 milliliters; and
 - (iii) Any ballast water discharged shall contain less than 33 colony-forming units of intestinal enterococci per 100 milliliters.
- (D) **This condition does not apply to vessel(s):**
- (i) operating exclusively within waters of New York Harbor and Long Island Sound. For purposes of this condition, “waters of New York Harbor and Long Island Sound” has the same meaning as in Condition #1, or
 - (ii) that carry only permanent ballast water, all of which is in sealed tanks that are not subject to discharge, or
 - (iii) of the National Defense Reserve Fleet that are scheduled to be disposed of through scrapping or sinking, or
 - (iv) operating exclusively within Lake Ontario or exclusively within Lake Erie.

No extensions will be made to this implementation date, unless an entity covered under the permit makes a request for an extension to the Department and can provide sufficient justification for such a request. Any such extension request shall state and demonstrate that: (1) there is a shortage in supply of the technology necessary to meet the limits set forth in this certification, or a vessel-specific engineering constraint, or other factor related to the availability and installation of technology beyond the vessel owner/operator’s control, that delays the technology being available and installed in time to comply with this standard; (2) the unavailability of supply or installation constraint is the only reason the January 1, 2012 date cannot be met; and (3) the vessel has exhausted all other options to comply with this standard. Any extension request must be made no later than June 30, 2010, and the extension request shall indicate when the vessel will come into compliance with this deadline.

Appendix 2

NEW YORK STATE REQUEST FOR EXTENSION TEMPLATE

{COMPANY LETTERHEAD}

[Insert Date]

Via email to fgzagors@gw.dec.state.ny.us

Mr. Francis Zagorski
New York State Department of Environmental Conservation (DEC)
Division of Water, 4th Floor
625 Broadway
Albany, New York 12233-3505

RE: Request for Extension of Implementation Date for Condition 2 of DEC's
Clean Water Act 401 Certification for Commercial Vessel and Large Recreational
Vessel General Permit

Dear Mr. Zagorski:

I am writing on behalf of [*Company Name*], of which I am [*Title of Person Signing the request*]. On December 17, 2008, the New York State Department of Environmental Conservation ("DEC" or the "Department") issued a revised final Clean Water Act 401 Certification to the EPA's Commercial Vessel and Large Recreational Vessel General Permit (the "Certification"). Condition 2 of the Certification, which is set to take effect on January 1, 2012 for all existing vessels covered by the Certification, requires the installation of ballast water treatment systems capable of meeting specified numeric discharge standards.¹ Condition 2 also states that an extension of the implementation date may be granted if the technology required to comply with the condition will not be available for installation in time to comply with the standards.

There is currently no Condition 2 compliant ballast water treatment technology, and there is no realistic expectation that such technology will be available in the foreseeable future. In addition, there is no current or realistically anticipated protocol for testing potential technologies for compliance with the Condition 2 standards. Therefore, we request a two-year extension of the implementation date for Condition 2 of the Certification until December 19, 2013 for all of our vessels that operate in or might operate in New York waters.

¹ The standard contained in DEC Condition 2 is approximately 100 times (100X) the standard contained in the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which was adopted in 2004 by the International Maritime Organization. The BWM Convention will enter into force twelve months after at least thirty states representing 35% of the world's tonnage have ratified it. As of this writing, 22 IMO member states representing 22.65% of the world's tonnage have ratified the Convention.

Section IV below provides a detailed explanation of the current state of such technology, the lack of availability of technology that exceeds the current IMO standard, and when technology compliant with the DEC's Condition 2 standards might be available. Before turning to that discussion, we first describe the vessels covered by this extension request and the extension criteria set forth in the Certification.

I. Vessels Covered by this Extension Request

[*Company Name*] is a Company organized under the laws of [*Jurisdiction*]. A listing of [*Company Name*]'s current fleet that operates in New York waters, by vessel name and IMO number, is attached hereto as Exhibit 1². The composition of our fleet serving any particular port or region changes over time. Because of changes in shipper demand, drydocking schedules, maintenance issues, and in ports called by a given vessel service, it is likely that the specific vessels that we use to provide our services calling the Port of New York/New Jersey will change over the next three years. Because we cannot today identify with certainty the vessels that we might deploy for service in New York waters between now and the end of 2013, we expressly intend this extension request to cover both (1) vessels that currently serve the Port of New York/New Jersey (i.e., those on Exhibit 1) and also (2) vessels that may be transferred into such service between now and the expiration of the VGP. Because we cannot by definition identify the second group of vessels at this time, they are not listed on Exhibit 1. However, such vessels are either already included in the master Notice of Intent (NOI) list maintained by the U.S. E.P.A., or they will be added to that list if they begin U.S. vessel calls within the duration of the VGP.³ Because the basis for our extension request is the lack of available compliant technology that could be installed on any vessel, regardless of vessel size, age, or type, the identity and characteristics of any particular vessel are not relevant to the extension factors set forth in the Certification. If an extension is appropriate for any vessel, it is appropriate for all our vessels.

II. Geographic Scope of the Extension Request

Our extension request applies to all vessels we operate that the Department believes are covered by Condition 2 of the Certification. The DEC apparently interprets the Certification to require installation of treatment technology aboard vessels, even if such vessels only transit through New York waters but do not discharge ballast water in New York waters. We believe that the application of the Certification conditions to such transiting vessels is in error for two reasons. First, the Certification applies only to "any ballast water discharged," which would not include vessels that do not discharge in New York waters. Second, the underlying federal permit itself only applies to "discharges." Thus, the federally permitted "activity" that triggers state certification requirements under 33 U.S.C. § 1341(a) is the discharge of a pollutant, not the mere operation of a vessel, the latter being an activity that does not require any federal water quality related permit.

We do not expect the DEC to revisit the transit issue in the context of this extension request. That issue will be resolved in the courts. We raise it here only to avoid any ambiguity about either our legal position or the scope of our extension request. Specifically, we wish to clearly state our

² As noted above, Exhibit 1 is attached. Exhibits 2-10 are hereby incorporated by reference. Those exhibits have been provided separately to DEC by the World Shipping Council, of which we are a Member.

³ That list is available at <http://cfpub.epa.gov/npdes/vessels/vesselsnoisearch.cfm>

position that the Certification cannot lawfully cover transiting vessels and we reserve all of our rights with respect to that issue, now and in the future. Notwithstanding the preceding sentence, our extension request expressly includes our vessels that today or in the future may fall into that category. As a logical and a scientific matter, if proper grounds exist for granting an implementation date extension to vessels that actually discharge in New York waters, then proper grounds necessarily also exist for granting an extension to transiting vessels that do not discharge in New York waters. If DEC were to grant such an extension until the expiration of the current VGP as requested, then the issue of whether transiting vessels are properly covered by the Certification conditions under this particular permit would be effectively resolved, at least with respect to Condition 2.⁴

III. Standard for Granting an Extension

In the Certification, DEC provided that an extension could be granted upon a showing that:

(1) there is a shortage in supply of the technology necessary to meet the limits set forth in this certification, or a vessel specific engineering constraint, or other factor related to the availability and installation of technology beyond the vessel owner/operator's control, that delays the technology being available and installed in time to comply with this standard; (2) the unavailability of supply or installation constraint is the only reason the January 1, 2012 date cannot be met; and (3) the vessel has exhausted all other options to comply with this standard.⁵

The extension criteria cover a wide range of potential situations and technical obstacles, including issues that might vary on a vessel-specific basis. With respect to the present extension request, however, the three related criteria effectively merge into one. As noted above and as discussed in detail below, the basis for this extension request is the lack of any available technology that is commercially available for installation by the Condition 2 deadline of January 1, 2012. The question is not one of shortage of supply, adaptability to particular types of vessels, available installation resources, or drydock space. Instead, the problem is that technology meeting the enumerated standards does not exist. Even the establishment of a methodology for testing compliance at the Condition 2 level is a number of years away.

Next we turn to the question: "When is it reasonable to believe that compliant technology might become available?" Although the certification does not define any particular standards for measuring the availability of water treatment technology, we note that New York has, for purposes of

⁴ This extension request is directed primarily to Condition 2, because that is the condition with the most immediate compliance deadline and the most immediate extension request deadline. If an extension is granted only with respect to Condition 2, however, the legal issue regarding the application of the Certification to transiting vessels would remain as an active dispute with respect to Condition 3. We believe that the evidence discussed below regarding the unavailability of technology to meet the Condition 2 standards demonstrates that it is equally certain that the Condition 3 standards cannot be met by the stated deadline. The deadline for Condition 3 extension requests is only one year away, and every indication is that there will not be the sort of exponential advance in technology during that year that would be necessary to meet the Condition 3 implementation deadline. The purposes of administrative efficiency and legal and practical certainty would be well served by extending both the Condition 2 and Condition 3 implementation deadlines now until December 19, 2013, and we urge DEC to take this approach. We note that the State of Pennsylvania has adopted this approach.

⁵ DEC Certification page 6.

its State NPDES program, adopted the federal Clean Water Act definitions and standards with respect to availability of such technologies. 6 NYCRR § 750-1.2(10), for example, adopts the federal definition of “best available technology economically achievable (BAT)”, stating that: “BAT effluent guidelines, as established by EPA, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.” Thus, the Clean Water Act requires industry to adopt the most effective treatment technologies that have actually been developed and are commercially available for installation. Neither federal law nor New York law incorporating federal standards expects a regulated industry to do what is not feasible.

Applying these technology availability standards, an extension is appropriate if a treatment technology capable of meeting the Condition 2 standards cannot be installed on our vessels by January 1, 2012. We describe below the current state of available technology and the level of technological advances that we anticipate between now and the Condition 2 implementation date. Based on correspondence with leading ballast water treatment technology vendors, the professional opinion of a leading researcher in the field, and our review of comments filed in the open U.S. Coast Guard (USCG) notice of proposed rulemaking⁶ (NPRM) on ballast water treatment standards, it is evident that there is currently no technology available at any price that meets the Condition 2 discharge standards. Moreover, there is no indication that any such technology will become commercially available during the life of the current VGP.

IV Availability of Technology to Meet DEC Condition 2 Standards

In an effort to determine whether technologies meeting the DEC Condition 2 discharge standards are available, the World Shipping Council (“WSC”), which is the maritime trade association that represents the international liner shipping industry, undertook an analysis of the comments to the USCG NPRM; requested information regarding system performance, testing, and certification from 36 treatment technology vendors; and, commissioned a review on the availability of 100X IMO technology. The Chamber of Shipping America (CSA), which represents United States based companies that either own, operate or charter oceangoing tankers, container ships, dry bulk vessels engaged in both the domestic and international trades and companies that maintain a commercial interest in the operation of such oceangoing vessels, also has analyzed existing comments and information on the availability of ballast water treatment technology. The WSC and CSA have come to the same conclusions about the availability of technologies to meet the DEC Condition 2 discharge standards. As an (owner/operator) of vessels that are currently or have the potential to be impacted by the DEC Condition 2 Standards, *[Company name]* fully concurs with and supports the WSC and CSA analyses and findings.

The analyses demonstrate that technology will not be available to meet the 100X IMO standard on existing vessels starting in 2012 and that technology meeting the 100X IMO standard

⁶ The Coast Guard published a notice of proposed rulemaking on August 28, 2009, for the purpose of establishing uniform national ballast water discharge standards and adding an approval process for ballast water treatment technology intended for use on board vessels. 74 Fed. Reg. 44632. Under the National Invasive Species Act (“NISA”), the Coast Guard must approve any alternative methods of ballast water management that are used in lieu of mid-ocean ballast water exchange. 16 U.S.C. 4711(c)(2)(D)(iii); *see also* 25 C.F.R. § 131.2035 (implementing same). Providing an extension of the Condition 2 and Condition 3 deadlines would avoid any conflict associated with requiring installation of treatment technology before the Coast Guard has determined how such systems will be tested and approved with respect to both efficacy and safety.

will not become available until after the term of the current VGP expires at the end of 2013. Not only can available treatment technologies not reliably achieve a treatment standard more stringent than the IMO standard, but no scientifically valid testing protocols exist that can be used to demonstrate that a treatment system can reliably achieve any standard more stringent than the IMO standard. The analysis also identifies compliance and potential safety issues that could arise if New York, which has stated that it will not certify treatment technologies as meeting the New York standards, were to require vessels to install treatment technologies that have not been approved by the USCG.

A more detailed discussion of these points follows.

A. Treatment Technology Vendor Responses Demonstrate that Technology Cannot Meet the DEC Condition 2 Standards

On March 1, 2010, WSC sent letters to 36 leading ballast water treatment technology vendors with questions about the treatment standards the technology will meet, the testing standards used to evaluate the technology, and the equipment's production, availability and installation requirements.

Eleven companies provided responses. Respondents included five companies that had obtained Type Approval Certification demonstrating that their technology meets the IMO standard based on IMO testing protocols (Hyde Marine, OptiMarin, Techcross, NEI, and Nutech/NK-03), five companies that were working towards but had not yet obtained Type Approval Certification that their systems could meet the IMO standard (Ecochlor, Resource, Marengo, Aura Marine, and Atlas-Danmark), and one company (Hamann AG) which stated that it had "temporarily resigned from the ballast water treatment market" after recent tests indicated that its ballast water treatment system requires additional testing. Respondents to the WSC letter included five of the seven treatment technology vendors that the California State Lands Commission identified as having "demonstrated the capability to comply with California's [1,000X IMO] performance standard" in its October 2009 *Update on Ballast Water Treatment Technologies for Use in California Waters*.

None of the respondents provided documentation, certifications, or any other material demonstrating that their systems would be able to meet the 100X IMO standard starting in 2012.

Respondents stated that they are not capable of knowing whether their systems would be able to meet the 100X IMO standard, because there is no approved ballast water treatment testing protocol to test systems to standards above the IMO standard. In fact, all respondents (with the exception of Hamann AG, which, as noted, has left the ballast water treatment business) commented on the need for adequate testing protocols to be able to evaluate technologies' ability to treat ballast water to standards more stringent than the IMO standard.

Hyde Marine's response expressed a theme common to most of the responses: "We are confident that the Hyde Guardian will perform very well under even the most demanding conditions. We cannot, however, state that it will be capable of meeting the 100X or 1,000X IMO ballast water treatment standards because it has not been tested to those standards. To our knowledge there are no existing testing protocols, testing standards, or test methods that would allow an approved test facility to test to these levels and, because of the very significant volumes required, shipboard testing

appears to be totally impractical.”

NEI Treatment Systems agreed with the USCG finding in its NPRM that “there is not now a testing protocol capable of establishing that a technology achieves the phase-two standard and testing results under existing protocols do not provide sufficient statistical confidence to establish that technologies consistent meet the phase-two standard” and stated that the USCG’s finding also applies to a 100x IMO treatment standard.

In describing the capabilities of their system, Techcross cited test data obtained pursuant to their IMO Type Approval Certification testing that showed that the Techcross system did not consistently meet the 100X standard. Just as Techcross was unable to show that it can comply with the 100X IMO standard using the testing protocol under the IMO certification process, it is generally true that test data obtained pursuant to the IMO testing protocol cannot demonstrate that a treatment system can comply with a 100X more stringent standard. We discuss this issue in further detail in sub-section C below.

Only one of the respondents -- Resource Ballast Technologies -- responded affirmatively to the question of whether its technology would be able to meet the 100X IMO standard. Like Techcross, Resource noted that it used the test data obtained from their IMO Type Approval testing to arrive at this conclusion. Resource stated: “We believe that the system will be and is capable of meeting the desired standards. In the absence of testing methods we have continued to use the IMO standards as a testing guideline.” Later in their response, Resource candidly acknowledged that additional testing would be needed to verify that their system can meet the 100X IMO standard, stating: “Our company does not plan to issue a certificate indicating that it is able to meet the 100X or 1000X standards without testing and verifying that the system is capable of meeting the desired standards.” Regarding whether the company would obtain national or third party certification that their system meets the 100X IMO standard, Resource stated: “100X – Yes, our company would perform the relevant tests to prove the efficacy of the system at 100X IMO standards. The tests would be conducted by the University of Cape Town together with Anchor Environmental Consultants. We do however await a valid testing procedure or the completion of our type approval tests prior to the commencement of the 100X verification.”

In summary, no vendor responding to the WSC inquiry could provide a data-backed representation that it could supply a Condition 2 compliant technology by January 1, 2012 or any other date.

Comments to the USCG NPRM and Responses from a Ballast Water Treatment Technology Expert Illustrate That Technology Cannot Meet the DEC Condition 2 Standards

The USCG received many comments to its NPRM on the subject of whether the NPRM’s proposed phase-two (1000X IMO) standard could be achieved. Those comments support the conclusion that 100X IMO technology is also not available. Although some of these comments refer to the USCG proposed phase-two (1000X IMO) standard, the points are also relevant to the availability of 100X IMO standard technologies, because the 100X IMO standard would also require the development of new, more stringent testing protocols and major improvements in the capabilities of ballast water treatment technology vendors, which today are unable to demonstrate that they can exceed the IMO standard.

In a joint set of comments, International Maritime Technology Consultants, Inc. along with a number of U.S. ballast water treatment technology vendors (Hyde Marine, Severn Trent de Nora, Pinnacle Ozone Solutions, and Ecochlor -- two of which appear on the CSLC list of technologies that have allegedly “demonstrated the capability to comply with California’s [1,000X IMO] performance standard”) -- reached the conclusion that: “No current technologies have been verifiably tested to a higher standard [than the IMO standard], no test protocols are available, and no facilities are currently capable of conducting this testing.”⁷

In his comments to the USCG NPRM, Dr. Mario Tamburri, Director of the Maritime Environmental Resource Center, which is one of four independent ballast water treatment testing facilities, directly addressed whether any technologies could exceed the IMO standard. He stated: “There are now seven ballast water treatment systems that have received Type Approval Certifications from various Administrations (Germany, Korea, Liberia, Marshall islands, Norway, and United Kingdom), and likely, another three or four appear close to being certified. While a careful review of testing approaches and results for systems certified by other Administrations is required (as described appropriately in the NPRM), it is clear that several commercial treatment systems are effective, reliable, safe, and currently available to meet the proposed Phase 1 [i.e., the IMO standard] discharge standard. However, there are no treatment systems that have been proven to meet any more stringent limits. This is not simply due to the limitation in measuring stricter standards (as described above) but more a result of the basic abilities of current treatment technologies.”⁸

Similarly, Dr. David Wright of the University of Maryland Center for Environmental Science commented to the USCG NRPM that: “...currently available treatment systems are barely able to meet current (IMO/USCG phase one) standards.”⁹

The Water & Wastewater Equipment Manufacturers Association (WWEMA), in its comments to the USCG NPRM, stated: “Technology does not exist to meet the Phase II standard...”, and “it is impossible to measure for such minute numbers of organisms as called for in Phase II, thus making it impossible to prove the efficacy of treatment systems and ensure compliance by ship owners.”¹⁰

In response to a WSC request for additional views on the testing and availability of 100X IMO treatment technologies, Dr. Tamburri provided WSC with a statement in which he expanded on and reiterated the points he made in his comments to the USCG NPRM. This letter is attached as Exhibit 4.

When asked to provide his professional opinion regarding whether 100X IMO ballast water treatment technology -- i.e., the DEC Condition 2 standard -- will be commercially available for shipboard installation in 2012, Dr. Tamburri reiterated that: “there are no treatment systems that have been proven to meet any more stringent limits [*than the IMO/USCG proposed phase 1 standard*]. This is not simply due to the limitation in measuring stricter standards but also a result of the basic

7 Exhibit 5, page 4 (emphasis added).

8 Exhibit 6, page 3 (emphasis added).

9 Exhibit 7, page 3 (emphasis added).

10 Exhibit 8, page 3.

abilities of current treatment technologies.” He then added: “From my experience, it is clear that developers/vendors of ballast water treatment systems are not simply designing and building equipment to just meet IMO D2 discharge standards, but rather, they are all trying to kill/remove all organisms. While treatment systems currently available or in development might be refined (e.g., increase chemical dose, addition of two units in a row, etc.) for enhanced performance, it is my professional opinion that no existing approach can simply be adjusted to effectively, reliably, and safely be 100X IMO by 2012.”¹¹

In summary, the above comments by scientists, vendors, and treatment technology trade associations are consistent with what vendors have told WSC: treating ballast water to standards significantly above the IMO standard is not currently feasible.

B. Can IMO Testing Protocols Be Used to Demonstrate Compliance With the 100X IMO Standard?

As discussed above, no testing protocols exist to determine if treatment technologies can reach the 100X IMO or more stringent ballast water discharge standards. Nevertheless, some treatment technology vendors at times have attempted to extrapolate the test results obtained from IMO type approval testing to bolster marketing claims that their systems might potentially meet the 100X or more stringent standards. Such claims are not scientifically valid. The IMO testing protocol was not designed to deal with stringencies above the IMO standard. The IMO test protocol, for example, contains requirements for land-based and shipboard testing, challenge water organism concentrations, pre-treatment sampling, in-line sampling, and treated discharge sampling volumes and frequencies. These requirements were designed and calibrated for the IMO standard by teams of scientists to enable a system that passes the testing protocols to earn Type Approval Certification by a national government that it meets the IMO standard. In the absence of such a scientifically valid testing protocol, there is no common measuring stick to validate a vendor’s claims that a treatment technology could reliably meet any standard that is significantly stricter than the IMO standard.

The USCG discusses this issue in its NPRM and concludes that testing results under existing (i.e. IMO) protocols do not provide sufficient statistical confidence to establish that technologies can consistently exceed the USCG proposed phase-one (IMO BWM Convention) standard. In its NPRM, the U.S. Coast Guard states:

“We note that a number of states have already adopted ballast water discharge standards using more stringent standards. We have considered information concerning whether technology to achieve this standard can practicably be implemented now or by the compliance dates under consideration. Although some technologies may be capable of achieving the phase-two standard, we believe there is not now a testing protocol capable of establishing that a technology achieves the phase-two standard and testing results under existing protocols do not provide sufficient statistical confidence to establish that technologies consistently meet the phase-two standard.”¹²

¹¹ Exhibit 4, page 4 (emphasis added).

¹² Source: 74 Fed. Reg. 24465 (August 28, 2009) (emphasis added)

Dr. Mario Tamburri, in response to the question of whether it would be scientifically valid to use the test results derived from testing a treatment technology in accordance with the IMO testing protocol to determine if the technology can meet or exceed the 100X IMO standard, stated: “No, it would be inappropriate to extrapolate results from current IMO G8/G9 land-based and shipboard testing to predict treatment performance to stricter standards of 100X IMO D2 or beyond. While there are several challenges to determining if treatment systems can meet 100x D2, the main reasons why extrapolation is not possible is the sampling approach and volumes suggested in G8 do not provide the resolution (or statistical power) required to state, with any reasonable level of confidence, that a treatment meets these more stringent standards.”¹³

Dr. Tamburri’s response then cited two independent analyses that discuss statistically valid ballast water sampling approaches and noted: “it is clear from both analyses that currently feasible sampling volumes and approaches can at best provide a detection limit equal to that of the D2/Phase 1 [IMO] discharge standards. Therefore, reported values of zero (0) organisms, for a particular category or test trial, do not imply complete removal but simply a value below detection limits.”¹⁴

In its comments to the USCG NPRM, the Royal Netherlands Institute for Sea Research (NIOZ), an independent marine laboratory that has conducted testing on approximately twenty ballast water treatment systems, reached a similar conclusion -- that the sampling volume of treated ballast water that must be sampled must increase as the treatment standard being evaluated becomes more stringent. NIOZ stated: “For the Phase One Standard, the volume size for the smaller size organisms is not a serious problem for the fraction >50 microns at least one cubic meter of water needs to be sampled. In practice, certainly on a ship and done in triplicate, sampling this volume is not an easy task. Moreover, disposing this water in the engine room is not a trivial matter. Any reduction in the standard by a factor of ten, and keeping the counting error constant, will result in a proportional increase in sample volume of the same order. A Phase-Two Discharge standard of .001 (a thousand fold more strict number) will require a sample volume of at least 1000 cubic metric water.”¹⁵

Based on NIOZ’s analysis, a 100X IMO standard would require a sample volume of at least 100 cubic meters of treated ballast water. For reference, the IMO testing protocols require a sample volume of one cubic meter of treated ballast water. This further demonstrates that it is not scientifically valid to use IMO test protocol results to assert that a technology can meet the 100X IMO standard.

In his response to WSC, Dr. Tamburri well summarizes the difficulty in trying to prove that a treatment technology can treat ballast water to a standard above the IMO standard: “In summary, G8 or any other currently available testing approach, may be able to demonstrate the ability of a treatment system to meet D2 and USCG Phase 1 standards but the results will not provide any valuable insight on the ability of a system to meet 100X IMO.”

13 Exhibit 4, page 1 (emphasis added).

14 Exhibit 4, page 2 (emphasis added).

15 Exhibit 9, page 3 (emphasis added).

C. Discussion Regarding When 100X IMO Technologies Might Become Available

Treatment technologies meeting the 100X IMO standard are not available. Not only will technology need to improve beyond where it is today, but a scientifically valid land-based and shipboard testing protocol will need to be developed that can be used to demonstrate whether a technology performs in a way that meets or exceeds the 100X IMO standard. Once such a protocol has been developed, independent marine laboratories will need to be certified that they can properly perform testing pursuant to the new testing protocols. Then treatment technology vendors will need to subject candidate technologies to land-based and then shipboard testing before the technologies can be certified as meeting the 100X standard.

How long will these steps take?

In joint comments to the USCG NPRM, ballast water treatment technology companies Alfa Laval, OceanSaver, and OptiMarin (all of which have received Type Approval Certification indicating their systems meet the IMO standard) wrote:

“In order for a vendor to develop a Ballast Water Management System it is essential to have appropriate test protocols and methods to analyze compliance. To date, as stipulated by the USCG itself in the proposed rules, no such protocols are available.... These protocols (and appropriate analysis methods) need to be developed not only for system development and testing, i.e. land based and onboard testing, but also for “random checks” (onboard verification once the system is in operation.”¹⁶

They also noted that:

“In order for a vendor to develop a Ballast Water Management System a certain time is of course required. Figure 1 below outlines an ideal situation in order for a system to be developed, tested, approved, selected, and installed before 2016 (when all newbuildings are required to meet phase-two standards). This simple exercise shows that in order to meet the proposed [2016] timeline for phase-two, the development of such systems should already have started.”¹⁷

In its comments to the USCG NPRM, the Royal Netherlands Institute for Sea Research (NIOZ) described the length of the IMO type approval certification process as follows: “the average certification procedure takes at least 1 year, often longer if the ship board tests are carried out after the land-based tests are completed. In cases that chemicals and/or active substances will be used or can be created during the process, this can take up to three years.”¹⁸

In its comments to the USCG NPRM, International Maritime Consultants et al discussed briefly the time required to test and certify treatment technologies: “The time required to test and certify technology to the Phase 1 standard is 12 to 24 months or longer depending on facility availability. This testing and certification to a higher Phase 2 standard will certainly require more time.”¹⁹

¹⁶ Exhibit 10, page 4 (emphasis added).

¹⁷ Exhibit 10, page 3.

¹⁸ Exhibit 9, page 3.

¹⁹ Exhibit 5, page 4.

Dr. Tamburri elaborated in his letter to WSC on the subject of when a 100X IMO or more stringent testing protocol may become available and when testing facilities may be capable of verifying whether technologies can meet or exceed a 100X IMO (or more stringent) standard:

“It is my opinion that nationally and internationally we are still working to assure scientifically rigorous, statically sound, and standardized testing at the IMO D2 and USCG Phase 1 standards level. While reasonable D2/Phase 1 testing is being conducted, and will improve, no protocols or test facilities currently exist to address any more stringent standards and it is difficult to predict when this might be possible. The biggest challenge is the collection/analysis of appropriate sample volumes (thousands of m³) to provide appropriate statistical confidence, while assuring the detection of extremely rare, live microscopic organisms, without artifact or losses in sample handling and processing. To gain the required level of resolution for 100X IMO, it is likely that our current approaches of sample collection and analyses will be inadequate (it is not simply a question of being able to filter more water). Perhaps indirect measures that utilize the detection of dilute genetic material (e.g., mRNA²⁰), chemical signals (e.g., ATP²¹), or optical properties (e.g., bioluminescence²²) for extremely rare, taxonomically diverse live organisms in enormous volumes of ballast water can someday be developed and validated to address this need. However, even with significant and sustained support for such method development efforts, we are very likely several years from approved 100X IMO protocols and test facilities.”²³

On the subject of when 100X IMO compliant technologies would most likely become commercially available, Dr. Tamburri stated:

“In fact, I believe that new treatment approaches, which have yet to be considered, will likely be required to meet these stricter discharge standards. Given that it is difficult to predict when new innovations like this might be developed and made available, assigning a firm date for the implementation of 100X IMO would be inappropriate and ineffective.”²⁴

Based on the above information from technology vendors and subject matter experts, it is reasonable to project that the development, testing and certification of technologies to meet the 100X IMO or more stringent standards would take approximately 5-6 years, once a land-based and shipboard testing protocol has been developed. This assumes, of course, that the 100X IMO treatment standard is achievable, which is a major and untested assumption.

We understand that the USCG and the U.S. Environmental Protection Agency (EPA) are currently working on a land-based protocol for evaluating treatment technologies. (Note: We do not know if this testing protocol is capable of determining if technologies can meet standards more stringent than the IMO standard. For the sake of this discussion, we assume this is the case). We

20 Nitin N, Santangelo PJ, Kim G, Nie S, Bao G, 2004. Peptide-linked molecular beacons for efficient delivery and rapid mRNA detection in living cells. *Nucleic Acids Res* 32:58-65.

21 Schneider SW, Egan ME, Jena BP, Guggino WB, Oberleithner H, and Geibel JP, 1999. Continuous detection of extracellular ATP on living cells by using atomic force microscopy. *PNAS* 96:12180-12185.

22 Urata M., Iwata R, Noda K, Murakami Y, and Kuroda A, 2009. Detection of living Salmonella cells using bioluminescence. *Biotechnol Lett* 31:737-741.

23 Citation... (emphasis added).

24 Id.

also understand that prior to instituting a full USCG approval process, the federal government agencies need to develop a shipboard testing protocol as well as to approve laboratories to perform testing of candidate technologies. Because the USCG has indicated that it plans to finalize its NPRM at the end of 2010, it is unlikely that the USCG and EPA will have a completed testing protocol for treatment standards more stringent than the IMO standard prior to 2012. This means that technologies to meet or exceed the 100X IMO standard may not be available, assuming the treatment standard is achievable, until 2017 or 2018.

D. The California State Lands Commission Report Does Not Establish that the Condition 2 Standard Can Be Met

In October 2009 the California State Lands Commission (CSLC) report on Ballast Water Treatment Technologies provided a list treatment technologies and claimed that seven technologies – Alfa Laval, Ecochlor, Hamann AG, Hyde Marine, Oceansaver, OptiMarin, and Techcross – have “demonstrated the capability to comply with California’s [1,000X IMO] performance standard”.²⁵ We discuss the CSLC’s statement because DEC’s 401 Certification made reference to the CSLC standards and claims regarding the availability of ballast water treatment technologies.

The CSLC statement does not demonstrate that 100X IMO (or 1000X IMO) treatment technologies are available. Hamann AG has left the business of ballast water treatment because of difficulties it experienced in meeting the IMO treatment standard. Hyde Marine, Ecochlor and other treatment technology vendors filed joint comments to the USCG NPRM stating that: “No current technologies have been verifiably tested to a higher standard [than the IMO standard], no test protocols are available, and no facilities are currently capable of conducting this testing.”²⁶ Of the five treatment technology companies identified in the CSLC report that replied to the WSC letter, none of the companies provided documentation that demonstrates that they can reliably meet the California standards.

Dr. Mario Tamburri, who has been a participant in the CSLC technology review panel, has stated in his comments to the USCG NPRM: “These reviews are meant to determine if treatments might have the capability to meet the California discharge standard but do not conclude (or certify) that there are any treatment systems that can consistently or routinely meet all of the California discharge standards.”²⁷

In his letter to WSC, Dr. Tamburri elaborated on the comments he made to the USCG NPRM:

“The CSLC reviews also provide little, or no, information on methods used to collect treatment performance data or their detection limits. Typically zero (0) is reported when no live organisms (for a specific category) are found, rather than below detection limit, even when the detection limits of sampling approach and analytical methods used are several orders of magnitude above the California discharge standards (as describe above).

²⁵ October 2009 Update: *Ballast Water Treatment Technologies for Use in California Waters*. California State Lands Commission (October 2009).

²⁶ Exhibit 5, page 4.

²⁷ Exhibit 6, page 3 (emphasis added).

Furthermore, the CSLC report does not consider the initial challenge conditions during testing. This is significant because, in some cases, the challenge water (or initial ballast water being treated) started with very few organisms, making it impossible to distinguish treatment effect from natural mortality of planktonic organisms in ballast tanks.²⁸

Finally, Dr. Tamburri summarized his opinion of the CSLC report:

“In reviewing all the available information, it is my professional opinion that there are no current ballast water treatment systems that can consistently and reliably meet the California discharge standards. This appears to be the same conclusion drawn by the USCG, as part of their proposed rule making process, that proposes to begin with national standards (Phase 1) in line with IMO D2 and to work towards more stringent standards (Phase 2) similar to the California regulations.”²⁹

In summary, because all available scientific evidence indicates that there are in fact no treatment technologies capable of meeting the California standard and no treatment technology vendors will certify or warranty that their systems can comply with the California standard, reliance by the DEC on the CSLC’s scientifically and statistically questionable statements about the availability of technology to comply with CA’s standards cannot constitute an adequate factual basis for the DEC to find that Condition 2 compliant technology is available. Unsubstantiated claims do not become true in New York simply because they have already been made in California. We therefore believe it is incumbent on DEC to independently verify the validity of CSLC’s claims.

E. Practical Difficulties in Complying with the DEC Condition 2 and the USCG NPRM

In August 2009, eight months after the Vessel General Permit Certification was issued, the U.S. Coast Guard, in coordination with the U.S. Environmental Protection Agency and the White House Council on Environmental Quality, published a notice of proposed rule making (NPRM) on “Standards for Living Organisms in Ships’ Ballast Water Discharged in U.S. Waters.” The U.S. Department of Homeland Security published a regulatory agenda stating that the USCG NPRM is expected to be finalized in December 2010.³⁰

The USCG NPRM states: “This NPRM would require that all vessels that operate in U.S. waters, are bound for ports or places in the U.S., and are equipped with ballast tanks, install and operate a Coast Guard approved ballast water management system (BWMS) before discharging ballast water into U.S. waters.”³¹ The NPRM explains that: “We would establish an approval program, including requirements for designing, installing, operating, and testing Ballast water management systems to ensure these systems meet required safety and performance standards.”³² The USCG approval of ballast water treatment technologies would therefore not simply confirm that each system complies with the applicable ballast water treatment standard, but also that installing and operating the system would not adversely affect a vessel’s ability to comply with existing safety and performance standards.

28 Exhibit 4, page 4 (emphasis added).

29 Exhibit 4, page 5 (emphasis added).

30 75 Fed. Reg. 21809 (April 26, 2010).

31 74 Fed. Reg. 44634 (August 28, 2009)

32 74 Fed. Reg. 44640 (August 28, 2009)

We cannot see how a vessel could reasonably be expected to comply with both DEC Condition 2 and the USCG rules, because the USCG has not established a ballast water treatment technology approval process, has not approved any technologies to meet the IMO or any other ballast water treatment standards, and is not likely to accomplish either of these tasks for the 100X IMO standard by 2012. Although it is possible that the USCG will complete development of land-based and shipboard testing protocols for approving systems to meet the IMO standard by 2012, U.S. approved land-based and shipboard protocols for credibly evaluating treatment technologies to 100X IMO standards and more stringent standards would not be available for several years after such protocols are approved.

V. Summary

We hereby submit this extension request to DEC because there currently is no ballast water treatment technology that would enable us to comply with DEC Condition 2 standards. Further, there is no realistic expectation that such technology will be available in the foreseeable future. We also note that there is no current or realistically anticipated protocol for testing potential technologies for compliance with the Condition 2 standards. We have also discussed in this request why the existing IMO testing protocols cannot be used to make a scientifically valid argument that a technology can meet the 100X IMO standard.

For the reasons set forth above, *[Company]* respectfully requests DEC grant it an extension of the implementation date of Condition 2 to the Certification until December 19, 2013.

Sincerely,

[Insert Name of Signing Official]

[Title of Signing Official]

[Phone Number]

[Email Address]

Exhibit 1

The vessels listed below represent **[Name of Carrier]**'s current fleet operating in New York waters. In addition to these listed vessels, this request for an extension applies also to any vessels that the carrier might deploy in services operating in New York waters between the date of this extension request and December 19, 2013.

[Name of Carrier] provides service using vessels that are under various ownership and chartering arrangements. For purposes of cross-referencing the vessels on the list below and the vessels in EPA's eNOI database (<http://cfpub.epa.gov/npdes/vessels/vesselsnoisearch.cfm>), we note that the following owner/operator entities are currently associated in the EPA eNOI database with the vessels that we employ: **[list relevant owners/operators from eNOI]**. The vessels may also be matched by IMO number.

IMO Number	Vessel Name
123456	The Example
654321	The Example 2