KNR 03 KNORR BALLAST WATER MANAGEMENT PLAN

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1. Background

On July 28, 2004, the Coast Guard published final rules mandating a Ballast Water Management Program for U.S. waters. These rules essentially made the voluntary rules found in 33CFR151 mandatory. On June 14, 2004, the Coast Guard published final rules making previously voluntary reporting of submission of Ballast Water Management Reports mandatory.

Ballast water is carried by ships to provide stability and to adjust a vessel's trim for optimal steering and propulsion. The use of ballast water varies among vessel types, among port systems, and according to cargo and sea conditions. Ballast water often originates from ports and other coastal regions in one area, which are rich in planktonic organisms, and is discharged in new areas. As a result, a diverse mix of organisms is transported and released around the world with the ballast water of ships.

Today, ballast water appears to be the most important vector for marine species transfer throughout the world. The discharge of ballast water or sediment into the waters of port states may result in the establishment of harmful aquatic organisms and pathogens, which may pose threats to indigenous human, animal and plant life, and the marine environment. Although other media have been identified as being responsible for transferring organisms between geographically separated water bodies, ballast water from ships appears to have been among the most prominent.

2. Purpose

The purpose of a Ballast Water Management Plan is to reduce environmental and health problems resulting from harmful aquatic plants and animals carried from abroad in ships' ballast water. The Plan provides for safe and effective procedures for ballast water management and a means for keeping records to document the vessel's ballast water management practices. All vessels bound for U.S. ports are required to submit reports to the Smithsonian Environmental Research Center (SERC). Information received from these reports will be entered into a national database for the purpose of determining the patterns of ballast water delivery and management in the waters of the United States.

Ballasting operations on board R/V KNORR are generally necessary to improve stability, adjust the vessel's trim and/or to correct a port or starboard list. Although there could be many factors that contribute to creating the conditions necessary for ballasting, the most common are:

- adverse weather
- loading/depleting the vessel's fuel supply;
- loading/offloading of container vans;
- loading/offloading of scientific equipment, and

- loading of ship's stores.

The purpose of this procedure is to provide the guidelines for Ballast Water Management on board the research vessel KNORR. In order to safely and effectively manage this ballast water, the Master shall use this plan as guidance for handling ballast water and the necessary reporting associated with it.

3. Operational Procedures

As long as conditions permit, every effort will be made to conduct ballast operations in "open ocean" (at least 200 miles from shore) and in "deep water" (at least 2000 meter water depth). While in port and where operationally possible, ballast water will be retained in the ballast tanks. If it becomes necessary to load ballast while in port or in waters not 200 miles from shore or at least 2000 meters deep, a ballast water exchange method will be used as recommended by the "Guidelines For The Control And Management Of Ships' Ballast Water". This guideline calls for the exchange of the "in port" water with "open ocean" water. If practicable, the "in port" water will be exchanged as soon as operationally permitted. The goal is to minimize the discharging of water taken on in one port into the waters of another port. Therefore, one of the recommended ballast water exchange methods shall be accomplished when operationally permitted.

The ability to safely conduct the ballast water exchange depends upon weather and sea surface conditions, and it is not always possible to perform an exchange. It is important to note that due to the free surface effects on stability, the vessel's Trim and Stability Booklet recommends that no more than two tanks should be slack at any one time.

There are two primary methods of exchanging ballast water. The "flow through exchange" method is accomplished by overflowing the tank from the top until three volumes of water have been changed out. The second method is the "empty/refill exchange" and entails pumping out the tank until it is empty, or nearly so, and then refilling the tank with "open ocean" water.

The ballast system on the KNORR is composed of ten segregated ballast tanks. The ballast pump is a self-priming, centrifugal, Flomax Model MP 15, rated at 225 gpm, 25 psig, and 1750 rpm. A 7.5 HP motor drives the pump. The ballast pump motor is powered from the emergency switchboard (EP-406). The pump is remotely operated from the Engineer's Control Console (ECC).

The ballast pump takes suction from the outlet of the ballast/emergency bilge manifold and its independent bilge suction. The inlets to the manifold are connected to the seachest crossover. Check valves provide backflow protection, intrinsic to each inlet of the manifold. The main bilge piping is connected to the outlets of the forward and aft ballasting manifolds and to the discharge line for the ballast pump.

Intakes situated in the ballast tanks and Anti-Roll tank are connected to the inlets of two manifolds. Backflow protection is only provided for the Anti-Roll tank by an intrinsic check valve in the forward manifold to prevent contamination of the tank with seawater. The Anti-Roll tank is filled with fresh water. Check valves are not provided in the other inlets of the ballast manifolds to allow the tanks to be filled and drained. The inlets to the forward and aft ballast suction manifolds are:

Forward Ballast Suction Manifold:

Seawater Ballast Tank	(3-31-2)
Seawater Ballast Tank	(4-16-2)
Seawater Ballast Tank	(3-0-0)
Seawater Ballast Tank	(4-24-0)
Seawater Ballast Tank	(4-16-1)
Seawater Ballast Tank	(3-31-1)
Anti-Roll Tank	(4-31-0)

Aft Ballast Suction Manifold:

Seawater Ballast Tank	(4-84-2)
Seawater Ballast Tank	(4-94-4)
Seawater Ballast Tank	(4-94-3)
Seawater Ballast Tank	(4-84-1)

Ballast Tanks

TANK	CAPACITY	LOCATION
Forepeak Ballast	10,095	3-0-0
#1 SW Ballast Port	7,322	4-16-1
#1 SW Ballast Stbd	7,322	4-16-2
#2 SW Ballast Center	13,444	4-24-0
#3 SW Ballast Port	9,493	3-31-1
#3 SW Ballast Stbd	9,493	3-31-2
#4 SW Ballast Port	14,605	4-84-5
#4 SW Ballast Stbd	14,605	4-84-6
#5 SW Ballast Port	7,552	4-94-3
#5 SW Ballast Stbd	8,885	4-94-4
Total Capacity	102,816	

The ballast pump can discharge overboard through a solenoid-operated valve controlled at the ECC and powered from the motor operated valve distribution panel

(3-38-1) (6EP-113). The pump can also discharge to the independent ballasting main bilge piping for filling of the ballast tanks.

The ballast system diagram is attached as Appendix I to this procedure.

4. Alternative Procedures Under Extraodinary Conditions

If, due to weather, equipment failure, or other extraordinary conditions, the vessel is unable to affect a ballast water exchange before entering the EEZ (Exclusive Economic Zone), the ballast water shall be retained on board. However, if the ballast water must be discharged, the Master must employ another approved method of ballast water management, or request permission from the USCG, Captain of the Port, to exchange the vessel's ballast water within an area agreed to by the COTP at the time of the request and must discharge the vessel's ballast water within that designated area.

5. Responsibilities

The Master of R/V KNORR has the overall responsibility in all matters regarding the Ballast Water Management Plan.

The Assistant Engineers under the supervision of the Chief Engineer shall be responsible for the ballast pumping operations. They shall maintain a thorough knowledge of the ship's ballast tank and pumping arrangements. They shall be aware of the different times required to undertake the various ballast water exchange operations. The Engineers shall report all ballast operations to the Deck Officer on Watch.

The Deck Officer on Watch shall be responsible for keeping a record of all ballast operations in a Ballast Water Management Log.

6. Record Keeping

The reporting required in this ballast management plan shall utilize the form established by IMO in resolution A.868. This resolution is attached as Appendix II. This form has been enlarged and is attached in Appendix III. This form is to be used to record all ballast water that is taken on board the vessel and its disposition.

(a) Ballast water reporting requirements exist for each vessel bound for ports or places in the United States regardless of whether a vessel operated outside of the EEZ.

(b) The Master, owner, operator, agent or person-in-charge of a vessel to whom this section applies must provide then information required by 151.2045 in electronic or written form to the Commandant, Coast Guard or appropriate COTP as follows:

1) For any vessel bound for the Great Lakes from outside the EEZ
   i. You must fax the required information at least 24 hours before the vessel arrives in Montreal, Quebec to either the USCG COTP Buffalo, Massena Detachment (315-769-5032), or the St. Lawrence Seaway Development (315-764-3250).
2) For any vessel bound for the Hudson River north of the George Washington Bridge entering from outside the EEZ (which includes the equivalent zone of Canada). You must fax the information to the COTP New York (718-354-4249) at least 24 hours before the vessel enters New York, New York.
3) For any vessel not addressed above, if your voyage is less than 24 hours, you must report before departing your port or place of departure. If your voyage exceeds 24 hours, you must report at least 24 hours, before arrival at your port or place of arrival at your port or place of destination. All required information is to be sent to the National Ballast Information Clearinghouse (NBIC) using only one of the following means:
   i. Internet at: http://invasions.si.edu/NBIC/bwform.html;
   ii. E-mail to NBIC@BALLASTREPORT.ORG;
   iii. Fax to 301-261-4319; or
   iv. Mail to U.S. Coast Guard, c/o SERC (Smithsonian Environmental Research Center), P.O. Box, 28, Edgewater, MD 21037-0028.

(c) If the information submitted changes, you must submit an amended form before the vessel departs the waters of the United States.

For the purposes of this procedure, the Master is responsible for the submission of this report. The preferred method for submitting the report is via e-mail. The Port Office shall be made an info addressee on that email (portoffice@whoi.edu). If any other submission method is necessary, the port office is to be advised of that method in an email sent to that same address.

When entering the State of California, a copy of this form shall also be sent to the State Lands Commission before the vessel departs from the first port of call in California. A copy shall be kept on board in the Ballast Water Log and retained for three years. The address for the California State Lands Commission is as follows:

California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202

The Master is responsible for signing the Ballast Water Reporting Form. In his absence, a person in charge of the vessel designated by the Port Office shall sign the form.

7. Definitions

The following definitions apply when filling out the ballast reporting form.

Vessel Name: Print the name clearly.

IMO Number: Fill in identification number of the vessel used by the International Maritime Organization.

Type: List specific vessel type. Spell out Oceanographic Research Vessel.

GT: Domestic Gross Tons of the vessel.

Arrival Port: Write in the name of your first port of call after entering the U.S. EEZ or St. Lawrence Seaway. No abbreviations please.

Arrival Date: Use the European date format (DDMMYY)

Agent: List agent used for current port.

Last Port: Fill in the last port at which the vessel called immediately before entering the U.S. EEZ. No abbreviations please.

Country of Last Port: Fill in the last country at which the vessel called immediately before entering the U.S EEZ. No abbreviations please.

Next Port: Fill in the port at which the vessel will call immediately after departing the current port. No abbreviations please.

Volume on board: What was the total volume of ballast water on board upon arrival into the waters of U.S. EEZ. Do not count potable water.

Units: Please include volume units (m3, MT, LT, ST)

Number of tanks in Ballast: Count the number of ballast tanks with ballast as vessel enters inside the United States EEZ.