1. **Introduction**

The European Maritime Safety Agency (EMSA) was established under Regulation 1406/2002/EC for the purpose of ensuring a high, uniform and effective level of maritime safety. Among its tasks, the Agency “shall assist the Commission, where appropriate, in the preparatory works for updating and developing Community legislation in the field of maritime safety and prevention of pollution by ships, in particular in line with the development of international legislation in that field. That task shall include the analysis of research projects carried out in the field of maritime safety and prevention of pollution by ships (Article 2(a) of Regulation 1406/2002/EC).

This research is being undertaken as part of the Agency’s Ballast Water Action Programme and was identified as a discrete research topic during recent discussions with the EU Member States on sampling for enforcement at EMSA’s “Workshop on Ballast Water Sampling and the development of a Joint European Ballast Water Sampling Strategy” held on the 23rd and 24th February 2010.

Many EU Member States are having difficulty in developing enforcement measures for the IMO’s Ballast Water Management (BWM) Convention and this is proving to be a bottleneck in the ratification process. In order to develop an appropriate sampling protocol for enforcement, the EU Member States identified two issues that need to be addressed. Firstly the issue of how to ensure that any sampling protocol takes account of the many variables that may occur over the discharge and is therefore representative of the entire discharge, and secondly the issue of whether, and how, indicative analysis and/or indicative sampling can provide the “clear grounds” needed for practical or legislative action.

In order to overcome these issues research is needed on whether the treated ballast water meets the BWM Convention’s D-2 criteria throughout the discharge, so that the Administration’s enforcement concerns can be overcome and an appropriate sampling protocol (ie the number of samples and when to take a sample) can be developed. Additionally in order to simplify the expensive and time consuming process needed for full scale testing of a ballast water discharge, novel research is needed to identify basic analysis and sampling methods which can be used to provide “clear grounds”, potentially eliminating the need for, or embarking on, full scale sampling. Both these elements need shipboard testing which is being undertaken by only a handful of contractors. Shipboard time is expensive and hard to arrange as not many ships have a Ballast Water Treatment System (BWTS) on board, so these two elements have been put together to make the most of the opportunities that are available.
2. Objective, scope and description of the contract

Objective:

The Objective of this project is to find methods to overcome one of the biggest hurdles in sampling for enforcement that a Maritime Administration: the issue of how to make sampling representative of the entire discharge.

Aim:

• Part 1: To develop a sampling protocol that obtains a representative sample from a BWTS; and
• Part 2: To develop methods for indicative analysis/sampling that provide “clear grounds” for stopping a discharge and/or enforcement action.

Part One – To develop a sampling protocol that obtains a representative sample from a Ballast Water Treatment System (BWTS) that directly discharges into the sea.

Project Overview:

There has been a lot of debate at IMO as to whether any samples taken for compliance testing will be representative of the entire discharge. This is because of two things:

• Firstly, it has been observed that plankton migrate in a ballast tank, in a similar manner as they do in the natural environment. For example, in the sea, some plankton migrate up and down the water column as a reaction to light – phytoplankton move towards the light in low illumination to ensure that they can photosynthesize efficiently, yet move away if it is too bright as UV light will denature the DNA in their cells and the pigments they use for photosynthesis. Zooplankton also follow this daily migration, which is especially beneficial if they are predators of the phytoplankton. Although there is no light in a ballast water tank this migration is mimicked, with some planktonic species migrating to a specific depth in the ballast water tank where they are “comfortable” with the ambient conditions. This forms horizontal variation and a non-homogenous discharge from the ballast water tank. Because of this, some Maritime Administrations have raised concerns that BWTS may not be able to deal with a sudden large increase in the number of organisms entering the BWTS, that this migration can produce. Additionally there is some concern about a similar large increase due to the organisms living on or in the sediment layer created in a tank; and,
• Secondly, there is uncertainty as to whether a BWTS will meet the D-2 standard at all times, as systems may need a period of time to “warm up” and reach their most efficient working level. Additionally, the fact that part of the Type Approval testing process is based on a regime that relies on a procedure that averages individual results, has been used as an argument to justify that taking one sample may not be indicative of the whole discharge. This is because if a system is not tested in type approval to meet the D-2 Standard at all times then a small number of samples will not provide an adequate analysis of the discharge.

Despite evidence to the contrary – systems are proving to be at least ten times more effective than the D-2 Standard – and are made to meet the D-2 Standard, there is still a widely held belief that BWTS may not meet the D-2 standard at all times.

As these issues provide uncertainty in compliance testing then it has been proposed that research be undertaken to prove that a BWTS can deal with the “spikes” in organism numbers passing through it, and can meet the D-2 Standard at all times.
There is also a debate on whether a discharge of treated ballast water directly after treatment can be described as homogenous, as it being treated to the D-2 Standard. Recent tests on organism levels in discharges of non treated ballast water have proven that the discharge is non-homogenous, and there have been suggestions that this research be replicated on treated water.

Most systems work on the following principle:

![Diagram showing the process of ballast water treatment and discharge]

Key:

i. It is possible that discharge from a ballast water tank can take place directly after treatment, however most systems need some form of residence time for the treatment to work.

ii. Some BWTS need a second treatment or a neutralisation step to meet the D-2 Standard.

In situations where a BWTS works on the discharge of an untreated ballast water tank, before discharging it immediately to sea, then the concerns of whether the BWTS will meet the D-2 Standard at all times (due to the need for warming up periods or the possibility that the system will not deal with sudden large levels in the organism numbers in the discharge) are valid, and could be monitored. However, as the majority of BWTS rely on a residence time in the ballast water tanks where the BWTS discharge is mixed, then the opportunity to:

- monitor the effectiveness of the BWTS to deal with sudden large levels in organism numbers; or,
- test whether the system is working to full capacity throughout its operation,

.... cannot be monitored, unless the discharge is segregated over time. With large volumes of water involved this is impracticable.

Therefore, in order to develop a sample protocol that is representative of the entire ballast water discharge, then the levels of organisms in the treated ballast water be tested and evaluated throughout a discharge. This is also impracticable at the present time. Therefore, different sample protocols need to be tested in order to identify the most appropriate protocol which represents the entire treated discharge. Identifying how this should be achieved is the major objective of this project.

Comparison Analysing organism numbers from the original numbers of organisms in the ballast and comparing them with the treated ballast water discharge will only enable conclusions to be drawn about the average performance of the BWTS throughout the process of filling the ballast water tank. Testing both the intake before filtering and the discharge will, however, enable conclusions to be drawn on the homogeneity of the discharge (and therefore enable a representative sampling protocol to be developed) and provide data on the organism levels that the BWTS, and therefore the ship, is dealing with.

**Methodology**

At the end of this project, the successful tenderer should be able to develop recommendations for a ballast water sampling protocol that is representative of the
entire discharge. Following the issues raised in the Project Overview Section above, the following methodology should be used as the basis for recommending any tender.

1). The tenderer should develop various protocols to sample organism numbers in treated ballast water being discharged from a ship. The range and variation of these protocols should be sufficient for the tenderer, after analysis and assessment of the results, to recommend a ballast water sampling protocol that is representative of the entire discharge. Replicate sampling should be included where necessary;

2). The tenderer should also develop a protocol to sample organism numbers in the ballast water uptake, prior to any treatment (including filtration), in a manner that will provide baseline information to supplement the results and analysis of the treated ballast water discharge. Again, replicate sampling should be included where necessary;

3). These sampling protocols should be developed and justified, and be submitted to EMSA in an Interim Report for approval prior to ship-board testing;

4). Following the agreement of EMSA, ship-board testing and the analysis of the ballast water samples should then be undertaken;

5). Following ship-board testing and the analysis of the samples, the tenderer should then identify recommendations for a sampling protocol that is representative of the entire discharge, taking into account:
   • the homogeneity, or lack of, of organism levels in the discharge;
   • the results observed during the entire discharge of treated ballast water; and,
   • whether using an “instantaneous” or “average” testing sampling protocol, will have a bearing on the procedure used to obtain a representative sample.

There are two major categories that BWTS fall into – those that use UV and those that use active substances. As the technologies are so different it could be argued that the tests from a UV BWTS cannot be extrapolated to a BWTS that use active substances. Therefore, testing will have been performed on a ship that uses a UV System and one that uses a system using active substances.

**Part Two: To develop methods for indicative analysis/sampling that provide “clear grounds” for stopping a discharge and/or enforcement action.**

**Project Overview:**

The logistics of undertaking full sampling event to test for total compliance with the D-2 Standard on a ship is very complex. Trained professionals will have to be mobilised, brought to often remote ports and then have to set up a complex sampling procedure on the vessel. This could lead to an undue delay claim from the vessel, especially if the ship is found to be compliant. Therefore, some form of indicative analysis and sampling is needed that can either provide the “clear grounds” that pSc needs quickly, or will indicate the need to undertake further sampling.

However no such methodology exists, and questions have been raised whether such analysis or sampling can be used to provide clear grounds, and as to whether full scale sampling is always necessary after indicative analysis/sampling.

The main objective of this project is to identify methods for indicative analysis/sampling and then test them on board a vessel in order to evaluate how the results can be used, and whether they provide the “clear grounds” that pSc needs for preventative action and/or enforcement.
Again such analysis/sampling needs to be undertaken on UV BWTS and BWTS that use active substances. As this entire project is proposing that tests be undertaken on 2 BWTS and therefore two vessels, then this part of the project can be done in parallel with the representativeness sampling in Part One.

**Methodology**

At the end of this project, the successful tenderer should be able to develop recommendations for how indicative analysis/sampling should be undertaken on a ship by pSc or a nominated officer, to either provide “clear grounds” for use by a pSc Officer to either stop a ballast water discharge and inform the vessel that they are in breach of the Convention, or stop a ballast water discharge and request that further sampling should be undertaken. The following methodology should be used to identify and test these methods:

1). The tenderer should undertake a desk based review to identify and develop potential indicative analysis/sampling methods, that can either provide “clear grounds” that a vessel is not meeting the D-2 Standards of the BWM Convention to a pSc Officer, or, be used as a basis to stop the discharge and order further testing. The development of methods should include an analysis of how they relate to representativeness and how the results can be utilised in sampling for enforcement;

2). The tenderer should then analyse these options to identify realistic and cost effective methods that can be used by pSc officers on ships,

3). The tenderer should then develop a procedure for each method;

4). The justification and a detailed description of these methods should then be submitted to EMSA in an Interim Report for approval prior to ship-board testing;

5). Following the agreement of EMSA, the methods should be tested on ships using a UV BWTS and an Active Substance BWTS, in conjunction with Part One of this project;

6). Results should then be analysed; and,

7). Recommendations developed on how pSc, or the port State, can undertake indicative analysis and sampling.

3. **Contract management responsible body.**

The European Maritime Safety Agency – Unit B 3.1, in charge of Environmental Protection – will be responsible for managing the contract.

4. **Project Planning: Reports to be submitted**

This Research Project will include:

1). Project Inception meeting – probably by conference call;
2). Interim Report outlining the shipboard testing regime for both parts of the project and the initial analysis and proposals/methodologies for indicative analysis;
3). Regular contact during each ship testing phase of the project;
4) One written Update Report indicating the success of the shipboard testing at the end of the ship testing phase of the project;
5). Submission of a Draft Final Technical Report;
6). Meeting/presentation at the Draft Project Report Stage at EMSA in Lisbon; and

5. Timetable

The estimated timetable for this project should not exceed 150 days and is set out below. It is estimated that the EMSA will be able to sign the contract in spans over approximately for the contract in Mid to late May.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Approximate Date</th>
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<tbody>
<tr>
<td>1 Project Inception meeting</td>
<td>End of May, beginning of June</td>
</tr>
<tr>
<td>2 Interim Report Testing protocol and the indicative analysis</td>
<td>As appropriate</td>
</tr>
<tr>
<td>3 Shipboard Testing</td>
<td>Summer 2010</td>
</tr>
<tr>
<td>4 Regular contact during each ship testing phase and a written Update Report at the end of shipboard testing</td>
<td>As appropriate</td>
</tr>
<tr>
<td>5 Draft Report</td>
<td>Mid October</td>
</tr>
<tr>
<td>6 End of contract Meeting/presentation to discuss the draft report.</td>
<td>Week of the 18/10/2010</td>
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<tr>
<td>7 Final Report Due</td>
<td>End October</td>
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Deliverables:

There will be three deliverables during this contract:

1). An interim report prior to shipboard testing including:
   - The proposed test programme for Part One of the project;
   - The analysis of potential indicative analysis methods; and
   - Recommendations on which indicative analysis methods should be tested through this project.

2). An Update Report at the end of the shipboard testing period, identifying what was achieved during the three testing regimes (UV, Active Substances and Indicative Analysis), the status of the results, any problems encountered and the impact of any problems on the completion of the contract.

3). A final report

On receipt and acceptance of each of these reports the following stage payments will be made:

- Interim report prior to shipboard testing – 30%
- Update Report after shipboard testing – 30%
- Final Report – 40%

6. Estimated Value of the Contract

The maximum budget available for this contract is 60,000 Euro excluding VAT over the 150 days of the project.

7. Terms of payment
Payments shall be issued in accordance with the provisions of the draft service contract available on the Procurement Section under the call to tender EMSA/NEG/09/2010 on the EMSA website at the following address: www.emsa.europa.eu

8. Terms of contract

In drawing up a bid, the tenderer should bear in mind the terms of the draft service contract. EMSA may, before the contract is signed, either abandon the procurement or cancel the award procedure without the tenderers being entitled to claim any compensation.

9. Financial guarantees

Financial Guarantees are not applicable to this research project.

10. Sub contracting

If the tenderer intends to either sub contract part of the work or realise the work in co-operation with other partners he shall indicate in his offer which part will be subcontracted, as well as the name and qualifications of the subcontractor or partner. (NB: overall responsibility for the work remains with the tenderer).

Each subcontractor must provide the required evidence for the exclusion and selection criteria. The exclusion criteria, and the selection criteria for “economic and financial capacity” will be assessed in relation to each economic operator individually. Concerning the selection criteria for “technical and professional capacity”, the evidence provided will be checked to ensure that the tenderer and its subcontractors as a whole fulfils the criteria.

11. Requirements as to the tender

Bids can be submitted in any of the official languages of the EU. The working language of the Agency is English. Bids must include an English version of the documents requested under point 14.5 & 15.1 of the present tender specifications.

The tender must be presented as follows and must include:

Signed cover letter indicating the name and position of the person authorised to sign the contract and the bank account on which payments are to be made.

Financial Form completed, signed and stamped; available on the Procurement Section (Financial Form) on the EMSA Website at the following address: www.emsa.europa.eu

Legal Entity Form completed, signed and stamped and requested accompanying documentation, available on the Procurement Section (Legal Entity Form) on the EMSA Website at the following address: www.emsa.europa.eu

Tenderers are exempt from submitting the Legal Entity Form and Financial Form requested if such a form has already been completed and sent either to EMSA or any EU Institution previously. In this case the tenderer should simply indicate on the cover letter the bank account number to be used for any payment in case of award.

Part A: all the information and documents required by the contracting authority for the appraisal of tenders on the basis of the points 13, 14.2-14.3 of these specifications (part of the Exclusion criteria)

Part B: all the information and documents required by the contracting authority for the appraisal of tenders on the basis of the Economic and Financial capacity (part of the Selection criteria) set out under point 14.4 of these specifications;
**Part C**: all the information and documents required by the contracting authority for the appraisal of tenders on the basis of the **Technical and professional capacity** (part of the Selection Criteria) set out under point 14.5 of these specifications.

**Part D**: all the information and documents required by the contracting authority for the appraisal of tenders on the basis of the **Award Criteria** set out under point 15.1 of these specifications;

**Part E**: setting out **prices** in accordance with point 12 of these specifications.

### 12. Price

- Price for EMSA/NEG/09/2010 shall include all elements of the project including travel, shipboard research and analysis of samples. In order to reduce costs tenderers should make all efforts to undertake any ship-board testing in Europe (or local to the base of the contractor), however EMSA recognise that this may not be either practical or possible due to the limited number of ships with BWTS onboard.
- Prices must be quoted in Euro using (with the exception of the countries within the EURO zone) the conversion rates published in the C series of the Official Journal of the European Union on the day when the contract notice was published.
- Price must be fixed amounts, non revisable and remain valid for the duration of the contract. Estimated travel and daily subsistence allowance expenses must be indicated separately. This estimate should be based on Articles I.3 and II.7 of the draft contract. This estimate will comprise all foreseen travels and will constitute the maximum amount of travel and daily subsistence allowance expenses to be paid for all tasks.
- Under Article 3 and 4 of the Protocol on the privileges and immunities of the European Union, EMSA is exempt from all duties, taxes and other charges, including VAT. This applies to EMSA pursuant to the Regulation 1406/2002/EC. These duties, taxes and other charges can therefore not enter into the calculation included in the bid. The amount of VAT must be shown separately.

### 13. Grouping of service providers

Groupings, irrespective of their legal form, may submit bids. Tenderers may, after forming a grouping, submit a joint bid on condition that it complies with the rules of competition. Such groupings (or consortia) must specify the company or person heading the project and must also submit a copy of the document authorising this company or person to submit a bid.

Each member of the consortium must provide the required evidence for the exclusion and selection criteria. The exclusion criteria and the selection criteria for “economic and financial capacity” will be assessed in relation to each economic operator individually. Concerning the selection criteria for “technical and professional capacity”, the evidence provided by each member of the consortium will be checked to ensure that the consortium as a whole fulfils the criteria.

If awarded, the contract will be signed by the company of the person heading the project, who will be, vis à vis EMSA, the only contracting party responsible for the performance of this contract. Tenders from consortiums of firms or groups of service providers, contractors or suppliers must specify the role, qualifications and experience of each member or group.

### 14. Information concerning the personal situation of the service provider and information and formalities necessary for the evaluation of the minimum economic, financial and technical capacity required

#### 14.1 Legal position – means of proof required

When submitting their bid, tenderers are requested to complete and enclose the **Legal Entity Form** and requested accompanying documentation, available on the
14.2 Grounds for exclusion - Exclusion criteria

To be eligible for participating in this contract award procedure, tenderers must not be in any of the following exclusion grounds:

a) they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

b) they have been convicted of an offence concerning their professional conduct by a judgement which has the force of res judicata;

c) they have been guilty of grave professional misconduct proven by any means which the contracting authority can justify;

d) they have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established or with those of the country of the contracting authority or those of the country where the contract is to be performed;

e) they have been the subject of a judgement which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Union financial interests;

f) is not a subject of the administrative penalty for being guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the procurement procedure or failing to supply an information, or being declared to be in serious breach of his obligation under contract covered by the budget.

14.3 Evidence to be provided by the tenderers

For this purpose the Declaration on Honour available on the Procurement Section on the EMSA Website (www.emsa.europa.eu) shall be completed and signed.

Bids that do not contain such a Declaration on Honour will not be taken into consideration for the evaluation.

14.4 Economic and financial capacity – Selection criteria

To prove their financial and economic capacity, tenderers should provide with their offer:

a) the balance sheets or extracts from balance sheets and profit and loss accounts for the last three financial years for which accounts have been closed, where publication of the balance sheet is required under the company law of the country in which the tenderer is established;
b) statement of overall turnover and turnover relating to the relevant services for the last three financial years.

14.5 Technical and professional capacity – Selection criteria

The successful tenderer should have the following technical capacities:

- Experience in sampling and analysing ballast water to D-2 Standard of the BWM Convention;
- Knowledge of pSc and its role in enforcement of the BWM Convention;
- Knowledge of the role of pSc officers in testing for enforcement and the problems they face;
- Links with the shipping industry and access to shipboard testing of BWTS that use ultra-violet and an active substance – written confirmation from the ship owners will be required before the contract is awarded;
- Proven experience of successfully running shipboard tests on a ballast water discharge from a BWTS installed on ships;
- Knowledge of the issues concerning the problems encountered when proving that a sample is representative of the entire discharge and the legal problems faced by the pSc officer and the port State in developing a case to prove a ship is not in compliance with the BWM Convention;
- Technical knowledge and experience of the methods used to treat ballast water and the methods of taking a sample from these systems; and,
- Experience of working with contracts awarded by the European Union and its Agencies.

15. Award criteria

Only the tenders meeting the requirements of the exclusion and selection criteria will be evaluated in terms of quality and price.

15.1 The contract will be awarded to the tenderer who submits the most economically advantageous bid (the one with the best price-quality ratio) in terms of:

a) Understanding of the issue (20%);
b) Composition of the Project Team (10%);
c) Methodology proposed (25%);
d) Resources for shipboard testing and analysis of samples (10%); and,
e) Total price (35%).

Only bids that have reached a total score of a minimum of 70% and a minimum score of 60% for each criterion in a) will be taken into consideration for awarding the contract.

Scoring system used:

The Best Price is the lowest price of all the bids submitted, which passed the filter for quality (in case the quality filter has been set).

Score for Quality = \( \Sigma (\text{Weight} \times \text{Average of Marks}/10) \)
Score for Price = \( \Sigma (\text{Weight} \times \text{Best Price}/\text{Price of Bid}) \)
Score for Quality and Price = Score for Quality + Score for Price

Evaluators will give marks between 0-10 (half points are possible)

16. Contracts will not be awarded to tenderers who, during the procurement procedure:

a) are subject to a conflict of interest
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b) are guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the contract procedure or fail to supply this information.

17. Without prejudice to the application of penalties laid down in the contract, tenderers and contractors who have been guilty of making false declarations concerning situations referred to in points 14 and 15 above or have been found to have seriously failed to meet their contractual obligations in an earlier procurement or grant shall be subject to administrative and financial penalties set out in Article 134b of Commission Regulation 2342/2002 of 23/12/2002. (OJ L 357 of 31/12/2002)