



## **REGIONAL WORKSHOP**

**on the**

**INTERNATIONAL CONVENTION ON THE CONTROL OF HARMFUL ANTI-FOULING  
SYSTEMS ON SHIPS, 2001 (AFS CONVENTION)**

**and the**

**2011 GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BIOFOULING TO  
MINIMIZE THE TRANSFER OF INVASIVE AQUATIC SPECIES (BIOFOULING GUIDELINES)**

**Valletta, Malta, 12 to 14 November 2019**

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## SUMMARY SHEET

<b>Title of the workshop:</b>	Regional workshop on the <i>International Convention on the Control of Harmful Anti-Fouling Systems on Ships</i> , 2001 (AFS Convention) and the 2011 <i>Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species</i> (Biofouling Guidelines)
<b>Host:</b>	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)
<b>Venue and date:</b>	REMPEC, Valletta, Malta, 12 to 14 November 2019
<b>Type:</b>	Regional
<b>Organized by:</b>	International Maritime Organization (IMO) and Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)
<b>Number of participants:</b>	15 participants from 8 countries, of whom 5 were participants from Malta
<b>Participant Countries</b>	Albania, Bosnia and Herzegovina, Malta, Monaco, Montenegro, Morocco, Spain and Tunisia

### Summary

The Regional Workshop on the *International Convention on the Control of Harmful Anti-Fouling Systems on Ships*, 2001 (AFS Convention) and the 2011 *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (Biofouling Guidelines, resolution MEPC.207(62)) was held from 12 to 14 November 2019.

This Workshop was aimed at familiarizing participants with the AFS Convention and the Biofouling Guidelines and related guidance in a complementary manner. It was intended to provide the necessary knowledge and information to support further steps by the Governments of the region towards implementation of the Biofouling Guidelines and ratification, implementation and enforcement of the AFS Convention.

The workshop achieved its objectives of familiarizing the participants with the key aspects of the AFS Convention and the Biofouling Guidelines, in particular, on the national responsibilities and steps towards implementation and ratification, through presentations on the relevant technical and administrative provisions.

The lectures at this workshop were delivered by Dr Theofanis Karayannis, Head, Marine Biosafety, and Dr Megan Jensen, Technical Officer, both from the Marine Environment Division, International Maritime Organization (IMO), as indicated in the final programme. Simultaneous interpretation to/from French was provided by REMPEC to facilitate the participation of French-speaking participants.

The workshop also devoted some time to review the guidelines for the implementation of the AFS Convention and the best management practices for removal of anti-fouling coatings from ships, including paints containing TBT, as well as guidance associated with the Biofouling Guidelines, such as on pleasure craft and the evaluation of the Guidelines. Finally, this activity was part of IMO's ITCP co-financing commitment to the GEF-UNDP-IMO GloFouling Partnerships Project, and an overview of the project was provided to the participating countries.

The workshop was deemed a success with favourable feedback received from all participants.

## **1 Introduction**

The IMO Regional Workshop on the *International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention)* and the 2011 *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (Biofouling Guidelines, resolution MEPC.207(62)) was aimed at familiarizing participants with the AFS Convention and the Biofouling Guidelines and related guidance and providing the necessary knowledge and information to encourage ratification and effective implementation by the Governments of the countries in the region.

The workshop was designed for senior Government administrators from the national authorities responsible for the prevention and control of pollution from ships. The participants included representatives from the Governments of Albania, Bosnia and Herzegovina, Malta, Monaco, Montenegro, Morocco, Spain and Tunisia. Five participants were from Malta, representing both the Environment Resource Authority and the Authority for Transport in Malta (see annex 1 for a complete list of participants).

## **2 Objectives of the event**

The objectives of the workshop were as follows:

- .1 to familiarize participants with the AFS Convention and related legislation;
- .2 to raise awareness on the impact of biofouling arising from ship movements;
- .3 to provide the necessary knowledge and information to encourage the competent authorities of the countries of the region which are not Parties to the AFS Convention (of those participating: Albania, Bosnia and Herzegovina, and Monaco), to take further steps towards ratification of the Convention;
- .4 to provide the necessary knowledge and information to support the competent authorities of the countries of the region which are Parties to the AFS Convention (of those participating: Malta, Montenegro, Morocco, Spain and Tunisia), in effectively implementing and enforcing the Convention;
- .5 to introduce the Biofouling Guidelines, which provides a globally consistent approach to the management of biofouling to reduce the risk of transfer of invasive aquatic species (IAS);
- .6 to present and discuss the procedures and guidelines for inspecting, surveying and certifying ships, and securing the safe removal and final disposal of anti-fouling wastes in the framework of the AFS Convention; and
- .7 to disseminate the necessary knowledge and information to encourage the countries in the region to implement the Biofouling Guidelines.

The main purpose of the AFS Convention is to prohibit the use of harmful substances in anti-fouling systems, currently including organotin compounds, and to establish a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.

Under the terms of the Convention, the Parties are required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships not entitled to fly their flag but which operate under their authority, and all ships that enter their ports, shipyards or offshore terminals.

Anti-fouling systems to be prohibited or controlled are listed in Annex 1 to the Convention, which will be updated as and when necessary. To date, Annex 1 includes organotin-based systems only

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and provides that, from 1 January 2003, all ships shall not apply or re-apply organotin compounds which act as biocides in anti-fouling systems and, from 1 January 2008, ships either shall not bear such compounds on their hulls or external parts or surfaces or shall bear a coating that forms a barrier to such compounds leaching from the underlying non-compliant anti-fouling systems. Following the approval by MEPC of a relevant proposal, the PPR Sub-Committee has been considering a proposal to amend Annex 1 to the AFS Convention to also include controls on cybutryne. In accordance with the provisions of the Convention, PPR 5 and 6 considered the initial and comprehensive proposals, respectively, and prepared draft amendments to the AFS Convention. MEPC 74 referred the draft amendments to PPR 7 for further consideration, which will be reported to MEPC 75.

The AFS Convention applies to all ships, including fixed and floating platforms, floating storage units (FSUs), and floating production storage and off-take units (FPSOs).

The Convention has been in force since 17 September 2008. As of 27 January 2020, the Convention has 89 Parties, representing 96.09% of the world's gross tonnage. The IMO has realized that further work is needed to encourage more States to ratify the AFS Convention and to support the uniform implementation of the Convention.

The main purpose of the Biofouling Guidelines is to provide practical guidance to States, ship masters, operators, owners, shipbuilders, ship repair, dry-docking and recycling facilities, ship cleaning and maintenance operators, ship designers, classification societies, anti-fouling paint manufacturers and suppliers and any other interested parties, on measures to minimize the risk of transferring invasive aquatic species from ships' biofouling.

To minimize the transfer of invasive aquatic species, a ship should implement biofouling management practices, including the use of anti-fouling systems and other operational management practices to reduce the development of biofouling. The intent of such practices is to keep the ship's submerged surfaces, including niche areas, as free of biofouling as practical. A ship following the Biofouling Guidelines and minimizing macrofouling would have a reduced potential for transferring invasive aquatic species via biofouling.

The Marine Environment Protection Committee, at its sixty-fifth session, approved the *Guidance for evaluating the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*. Although no formal evaluations in accordance with this guidance have been reported to the Organization, the IMO has realized that further work is needed to sensitize more States to implement the Biofouling Guidelines in order to minimize the risk of transferring invasive aquatic species from ships' biofouling. Following the approval by MEPC of a relevant proposal, the PPR Sub-Committee will be reviewing the Biofouling Guidelines, starting from PPR 7.

### **3 Venue, dates, roles and participants**

The workshop was held at the premises of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), Valletta, Malta, from 12 to 14 November 2019.

The workshop was organized by IMO and REMPEC. IMO provided the lectures and all the reference materials. REMPEC carried out all the logistics for the workshop, including the opening and closing ceremonies, arrangements of facilities for use of both the participants and the IMO representatives, reproduction of materials, operation of sound/video equipment and organization of the site visit to a shipyard.

The workshop was attended by key Government agencies with a total of 15 participants from eight (8) countries of the Arab States/Mediterranean and Western Asia/Eastern Europe regions. A full list of participants is included as annex 1. The workshop was conducted in English with simultaneous interpretation to/from French.

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Some materials were provided to the participants in their USB hand-outs (including the text of the AFS Convention and the Biofouling Guidelines, see annex 6) and the standard evaluation questionnaires were used (see section 9 and annex 7).

## **ACTIVITIES AND PROCEEDINGS**

### **4 Pre-workshop assignments**

While no pre-workshop assignments were given to this workshop, key materials were made available to the host before the workshop, for distribution and perusal.

### **5 Opening ceremony**

The opening ceremony started at 9:00 am on Tuesday, 12 November 2019, at the premises of REMPEC (see annex 4, Workshop Programme). Dr Karayannis welcomed all participants and resource persons to the workshop. He also thanked REMPEC for providing the support in organizing this workshop.

The opening speech from REMPEC was given by Mr Malek Smaoui, Programme Officer (OPRC), on behalf of Mr Gabino Gonzalez, Head of Office.

The opening statements by Dr Karayannis and Mr Smaoui are summarized and reproduced, respectively, in annex 5.

Before proceeding with the main programme of the workshop, Dr Karayannis provided an overview of the workshop objectives and an introduction to the programme and the facilitators. In addition, the participants had the opportunity to introduce themselves, their relation to the topics to be covered and their main reasons for attending the workshop. This session also provided the opportunity to discuss the current status regarding the AFS Convention and the Biofouling Guidelines in each of the participating countries; it was noted that only five countries out of those participating (Malta, Montenegro, Morocco, Spain and Tunisia) have ratified the AFS Convention while the three other countries are in varying circumstances with regard to ratification.

### **6 Description of lectures**

Throughout the workshop, Dr Karayannis and Dr Jensen also provided comments and elaborated on the lectures presented by each other.

#### **Lectures presented by Dr Theofanis Karayannis**

##### **.1 Introduction to the IMO**

This lecture described IMO in general and how it works, and provided a brief overview of the Conventions that come under the purview of IMO. It was emphasized that IMO's mandate, as a United Nations specialized agency, is to promote safe, secure, environmentally sound, efficient and sustainable shipping. This is accomplished by adopting the highest practicable standards of maritime safety and security and prevention and control of pollution from ships, as well as through consideration of the related legal matters and effective implementation of IMO's instruments with a view to their universal and uniform application. This presentation was combined with an introduction to IMO's technical cooperation programme, which provided information on the capacity building process, funding and the implementation of the Integrated Technical Cooperation Programme (ITCP). Furthermore, the value of the country maritime profiles and IMO's higher education institutions was highlighted.

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## **.2 The international regulatory framework**

In this session, the structure of the AFS Convention was explained, including the articles, which contain the main principles of the Convention, and the annexes, which contain the regulations with the specific technical content. Moreover, the details of the obligations under the most important articles of the Convention were presented, along with the relevant annexes that contain the detailed aspects for the implementation of the articles. The benefits from the implementation of the Convention were described along with an overview of the rationale for developing the Convention.

## **.3 Survey and certification under the AFS Convention**

In this presentation, Dr Karayannis introduced the survey and certification requirements and practices in accordance with the *Guidelines for survey and certification of anti-fouling systems on ships* adopted by resolution MEPC.195(61). The roles and duties of flag States were explained, as well as those of recognized organizations (ROs) acting on behalf of flag States, including the training of personnel to conduct inspections under the Convention and the issuance of International Anti-fouling System Certificates to ships flying the flag of their country and to ships flying the flag of another country. Information on type approval and sampling of anti-fouling systems was also provided.

## **.4 Inspection and sampling under the AFS Convention**

In this presentation, the procedure for inspection of anti-fouling systems on ships was examined in accordance with resolution MEPC.208(62). In addition, the issue of what can be done with foreign ships that do not comply with the Convention entering ports was discussed. All aspects of port State control were covered and the roles and duties of port and coastal States were explained. It was noted that sampling of anti-fouling systems should only be conducted after clear grounds that the ship may not be in compliance with the Convention's requirements have been identified during the initial inspection. The presentation continued with a brief introduction on sampling and analysis best practices in accordance with the *Guidelines for brief sampling of anti-fouling systems on ships* (resolution MEPC.104(49)).

## **.5 Ratifying and implementing the AFS Convention**

In this presentation, each of the key steps towards effective implementation and enforcement was discussed, including the technical, legal and economic implications of implementing the AFS Convention. Examples of regulations and model instruments were provided and an introduction to model legislation was offered. Dr Karayannis outlined the economic and technical requirements for implementation, including the implications and benefits to various stakeholder groups such as shipowners, shipyards, ports and other related industries and the general public.

## **.6 Shipping-related IAS transfer mechanisms**

This presentation outlined the importance of biofouling and ballast water as the two main shipping-related vectors for species transfer, and introduced the role of ballast water. A brief description of the *International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* (BWM Convention) was provided. The relationship between the objectives of

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this convention, the AFS Convention and the 2011 Biofouling Guidelines was explained.

## **.7 Additional biofouling regulatory aspects**

The presentation introduced the *Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft* (MEPC.1/Circ.792) and the *Guidance for evaluating the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* (MEPC.1/Circ.811). This concluding session of the workshop also included a discussion on the possible implementation of the Biofouling Guidelines in the countries of the region, as well as a discussion on evaluating the effectiveness of the Guidelines (with reference to the forthcoming review in the PPR Sub-Committee) and the need for more awareness raising on the issue.

## **Lectures presented by Dr Megan Jensen**

### **.1 Anti-fouling systems – technical aspects**

This presentation explained the need to prevent fouling on immersed surfaces on ships and the impact it has on hull roughness, including increased fuel consumption and harmful emissions. A fouled hull also provides a risk of translocation of invasive species into sensitive ecosystems. Prevention of ship fouling is therefore critical for both economic and environmental reasons. Dr Jensen explained the issues arising from the use of anti-fouling paints, including both biocidal anti-fouling products and those relying on a non-biocidal (non-stick) effect. The presentation then addressed the history of biocidal anti-fouling paints and described the reasons for the widespread use of anti-fouling systems containing tributyltin (TBT) biocide from the 1970s to the 1990s. The presentation then outlined the detrimental effects of TBT on marine life, which led to the related deliberations in the IMO that resulted in the adoption of the AFS Convention.

### **.2 Current and future anti-fouling systems**

In this presentation, technologies used in past and present anti-fouling paints were outlined, including an explanation of why anti-fouling paints containing TBT were so successful in preventing fouling on ships' hulls. The concept of self-polishing paints was also introduced and its contribution to reducing hull roughness (thus reducing drag) explained. Technologies used in TBT-free anti-fouling paints were described that are used in modern anti-fouling paints in the market today. The presentation then introduced the concept of environmental risk assessment and explained how it can be used to assess the environmental impact of modern biocidal anti-fouling paints. The presentation concluded by introducing non-stick foul release coatings that prevent fouling by a non-biocidal mechanism.

### **.3 Additional AFS regulatory aspects**

This session focused on the best management practices for removal of anti-fouling coatings from ships, including TBT hull paints, and the safe handling and disposal of anti-fouling wastes. The presentation addressed the issues for shipyards in dealing with waste generated as a result of removal of TBT paint. It further outlined the options for cleaning the hulls of ships and addressed the basic systems that can be utilized to collect the wastes that are generated.

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#### **.4 Introduction to invasive aquatic species (IAS)**

The presentation introduced what IAS are, the characteristics that make them good invaders and the impacts their invasions can have. Some local examples from the region were provided (highlighting also that the Mediterranean is believed to be the sea most heavily affected by IAS in the world), as well as some well-established international case studies. The long-term, irreversible nature of invasions was compared to the catastrophic but comparably short-lived impacts of other types of pollution, such as oil spills, to illustrate the magnitude of the problem. The presentation also clarified the dispersal of species globally by natural processes compared to anthropogenic vectors, of which ballast water and biofouling pose the greatest risk of successful translocation via shipping.

#### **.5 Introduction to biofouling**

The purpose of this presentation was to provide participants with a general overview of what biofouling is, types of biofouling, the biofouling process and the factors that influence the accumulation and success of biofouling and/or translocation of invasive aquatic species. The presentation also introduced different types of anti-fouling systems and marine growth prevention systems, and explained the mechanisms by which they work to inhibit fouling.

#### **.6 IMO's Biofouling Guidelines**

This presentation introduced the 2011 Biofouling Guidelines explaining their development, layout and the emphasis and importance of each section. The main emphasis of the presentation was to demonstrate how and why the Biofouling Guidelines focus on providing guidance on proactive measures such as adopting effective anti-fouling coatings, particularly in niche areas, adopting marine growth prevention systems within internal seawater systems, and how in-water inspections and in-water cleaning can be used to verify and/or maintain ships relatively free of biofouling. The presentation concluded by explaining the possibilities during ship design and construction to minimize biofouling as well as the provisions on sharing of information, training and education in the Biofouling Guidelines.

### **7 Site visit**

On the morning of 14 November 2019, a site visit was arranged to the Melita Marine Group shipyard. The workshop participants were transported to the shipyard at 9:00 am, where a guided tour of the facilities was arranged by the company responsible for the management of the shipyard. This provided a practical demonstration of aspects of biofouling management, as well as the application and removal of anti-fouling systems. The bare hull of a superyacht in the yard for maintenance was visible, and participants also had the opportunity to view examples of niche areas around the hull, including a bow thruster tunnel, sea chests, bilge keels, anodes, as well as the propellers, rudders and associated appendages. The site visit gave the participants an opportunity to see in person many of the discussion points from the classroom presentations related to facilities, technologies and procedures, associated with both the AFS Convention and the Biofouling Guidelines, and ask questions about fouling coatings, maintenance, and waste handling. There was lively discussion between the participants and the experts and operators, and very positive feedback was received regarding the usefulness of the site visit.

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## **OTHER ASPECTS OF THE WORKSHOP**

### **8 Assessment and anticipated outcome**

The summary discussion of the workshop indicated that all of the participants were pleased with the content of the workshop. The participants indicated that they were better informed now on the AFS Convention and the Biofouling Guidelines and related guidance and all participants who answered the questionnaire stated that they are likely to use the information gained during the course when they return to their work.

### **9 Questionnaire**

The IMO-ITCP standard evaluation questionnaire was used in the workshop to assess the performance of the lecturers and the uptake of information by the participants.

14 participants submitted completed evaluation questionnaires. A summary of the answers to the questionnaires has been prepared and is shown in annex 7.

### **10 Goal of the workshop**

The goal of the workshop was to familiarize the participants with the AFS Convention and the Biofouling Guidelines and related guidance and provide the necessary knowledge and information to encourage implementation by the governments of the countries of the region, and ratification by those countries that are still not Parties to the AFS Convention. All participants were of the view that this objective was met.

The participants included representatives from the Governments of Albania, Bosnia and Herzegovina, Malta, Monaco, Montenegro, Morocco, Spain and Tunisia. All participants who responded to the questionnaire indicated that they benefitted from the information provided during the workshop.

### **11 Closing ceremony**

Dr Karayannis summarized the events of the workshop and expressed his gratitude to REMPEC for their excellent support and hospitality in the organization of the event. He also thanked the interpreters for their valued services and flexibility during the workshop. Finally, he thanked the participants for attending the workshop and contributing to the constructive discussions.

Mr Smaoui made the closing statement on behalf of REMPEC, thanking IMO and the participants for the efforts made in achieving a successful training workshop. Workshop certificates were presented to all participants.

### **12 Achievements and conclusions**

The workshop provided a good overview of the AFS Convention and the Biofouling Guidelines, related guidance and the steps towards implementation as well as the economic, legal and technical considerations involved. It also provided the participants with the information on the problems and issues related to invasive aquatic species in general. The participants are more aware now and can better inform relevant stakeholders on the issues related to the implementation of the AFS Convention and the Biofouling Guidelines and the actions needed in this regard.

### **13 Recommendations**

No specific recommendations were made during the workshop; however, it was discussed that the countries of the region could consider working together, through REMPEC, to address issues related to biofouling and the AFS Convention.

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## **14 Follow-up action**

The delegate from Albania requested a national workshop on the AFS Convention, as they intend to ratify the Convention in 2020. This workshop is being planned as part of the ITCP for 2020.

There seemed to be interest among workshop participants for the GloFouling Partnerships Project and countries were encouraged to contact the Project Coordination Unit for potential engagement as a 'second-speed' country or otherwise. Tunisia informed about communication already having taken place with the PCU about potential collaboration and this has already been followed up by the PCU through REMPEC following the workshop.

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**ANNEX 1****LIST OF PARTICIPANTS**

**Regional Workshop on  
the International Convention on the Control of Harmful Anti-Fouling Systems on Ships  
and  
the Guidelines for the Control and Management of Ships' Biofouling to Minimize the  
Transfer of Invasive Aquatic Species  
Malta, 12-14 November 2019**

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## **ANNEX 2**

### **LIST OF LECTURERS AND SUBJECTS COVERED BY EACH**

#### **Dr Theofanis Karayannis, Marine Environment Division, IMO**

1. Introduction to IMO
2. The international regulatory framework
3. Survey and certification under the AFS Convention
4. Inspection and sampling under the AFS Convention
5. Ratifying and implementing the AFS Convention
6. Shipping-related IAS transfer mechanisms
7. Additional biofouling regulatory aspects

#### **Dr Megan Jensen, Marine Environment Division, IMO**

1. Anti-fouling systems – technical aspects
2. Current and future anti-fouling systems
3. Additional AFS regulatory aspects
4. Introduction to invasive aquatic species (IAS)
5. Introduction to biofouling
6. IMO's Biofouling Guidelines

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## **ANNEX 3**

### **LIST OF ACRONYMS USED IN THE REPORT**

<b>AFS Convention</b>	–	International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001
<b>IAS</b>	–	Invasive aquatic species
<b>IMO</b>	–	International Maritime Organization
<b>ITCP</b>	–	Integrated Technical Cooperation Programme
<b>REMPEC</b>	–	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
<b>TBT</b>	–	tributyltin (an organotin compound)

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## ANNEX 4

## WORKSHOP PROGRAMME

Day 1	12 November 2019	Speaker/Lecturer
08:30-09:00	<b>Arrival and registration of participants</b>	
09:00-10:00	<b>Opening session</b> <ul style="list-style-type: none"> <li>Opening remarks and overview of Workshop objectives</li> <li>Introduction to programme and facilitators</li> <li>Current status regarding the AFS Convention and the Biofouling Guidelines in the region</li> <li>Photo session</li> </ul>	IMO and REMPEC representatives All participants and facilitators
10:00-10:30	<b>Coffee break</b>	
10:30-11:00	<b>Introduction to IMO</b> <ul style="list-style-type: none"> <li>Introduction to IMO, working practices and principles</li> <li>Overview of international conventions relating to the prevention of and response to pollution from ships</li> <li>Aims, objectives and implementation of IMO's Integrated Technical Cooperation Programme (ITCP)</li> </ul>	Dr T. Karayannis (IMO)
11:00-12:00	<b>Introduction to hull fouling and anti-fouling systems (AFS)</b> <ul style="list-style-type: none"> <li>Fouling and the need for control</li> <li>Introduction to biofouling management</li> <li>Introduction to AFS and the case against TBT</li> </ul>	Dr M. Jensen (IMO)
12:00-13:30	<b>Lunch break</b>	
13:30-14:15	<b>Current and future anti-fouling systems</b> <ul style="list-style-type: none"> <li>Current and future anti-fouling systems not based on organotin biocides</li> <li>Risk assessments</li> <li>Biocide-free anti-fouling systems</li> </ul>	Dr M. Jensen (IMO)
14:15-15:00	<b>The international regulatory framework</b> <ul style="list-style-type: none"> <li>Overview of the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 (AFS Convention)</li> </ul>	Dr T. Karayannis (IMO)
15:00-15:30	<b>Coffee break</b>	
15:30-16:15	<b>Survey and certification under the AFS Convention</b> <ul style="list-style-type: none"> <li>Survey and certification requirements</li> <li>Role and duties of flag States and recognized organizations (ROs)</li> </ul>	Dr T. Karayannis (IMO)
16:15-17:00	<b>Inspection and sampling under the AFS Convention</b> <ul style="list-style-type: none"> <li>Port State control</li> <li>Role and duties of port and coastal States</li> <li>Provisions for sampling of anti-fouling systems</li> <li>Overview of sampling techniques</li> </ul>	Dr T. Karayannis (IMO)
17:00	<b>End of day one</b>	

<b>Day 2</b>	<b>13 November 2019</b>	<b>Speaker/Lecturer</b>
09:00-09:15	<b>Recap of Day 1</b>	Dr T. Karayannis (IMO)
09:15-09:45	<b>Additional AFS regulatory aspects</b> <ul style="list-style-type: none"> <li>• Best management practices for the removal of anti-fouling coatings</li> <li>• Safe handling and disposal of anti-fouling wastes</li> </ul>	Dr M. Jensen (IMO)
09:45-10:30	<b>Ratifying and implementing the AFS Convention</b> <ul style="list-style-type: none"> <li>• Technical, legal and economic implications of ratifying and implementing the AFS Convention</li> <li>• Introduction of model legislation</li> </ul>	Dr T. Karayannis (IMO)
10:30-11:00	<b>Coffee break</b>	
11:00-11:30	<b>Group discussion and summary</b> <ul style="list-style-type: none"> <li>• Identification of any pending issues with regard to anti-fouling systems and the AFS Convention</li> </ul>	All participants and facilitators
11:30-12:30	<b>Introduction to invasive aquatic species (IAS)</b> <ul style="list-style-type: none"> <li>• What are IAS and why they are a problem?</li> <li>• How IAS are dispersed, mechanisms responsible for IAS introductions?</li> <li>• Why IAS introductions are increasing and where they are occurring?</li> <li>• Examples of known IAS</li> </ul>	Dr M. Jensen (IMO)
12:30-14:00	<b>Lunch break</b>	
14:00-14:30	<b>Shipping-related IAS transfer mechanisms</b> <ul style="list-style-type: none"> <li>• Biofouling and ballast water</li> <li>• The Ballast Water Management Convention</li> </ul>	Dr T. Karayannis (IMO)
14:30-15:15	<b>Introduction to biofouling (part 1)</b> <ul style="list-style-type: none"> <li>• What is biofouling?</li> <li>• Types of biofouling and the biofouling process</li> </ul>	Dr M. Jensen (IMO)
15:15-15:45	<b>Coffee break</b>	
15:45-17:00	<b>Introduction to biofouling (part 2)</b> <ul style="list-style-type: none"> <li>• How the selection of anti-fouling system affects biofouling?</li> <li>• Factors influencing the accumulation and translocation of IAS</li> </ul>	Dr M. Jensen (IMO)
17:00	<b>End of day two</b>	

<b>Day 3</b>	<b>14 November 2019</b>	<b>Speaker/Lecturer</b>
08:30-08:45	<b>Arrival of participants</b>	
09:00-09:15	<b><i>Transfer to Shipyard</i></b>	
09:15-10:45	<b>Site visit (Shipyard in Malta   Melita Marine Group)</b> <ul style="list-style-type: none"> <li>• Practical demonstration (as available/possible) of aspects of biofouling management, application and removal of anti-fouling systems, etc.</li> </ul>	
10:45-11:30	<b><i>Transfer to REMPEC and coffee break</i></b>	
11:30-12:00	<b>Group discussion and summary</b> <ul style="list-style-type: none"> <li>• Recap of Day 2</li> <li>• Discussion of issues identified following the site visit</li> </ul>	All participants and facilitators
12:00-12:30	<b>IMO's Biofouling Guidelines (part 1)</b> <ul style="list-style-type: none"> <li>• Biofouling management plan and record book</li> <li>• Introduction to AFS installation and maintenance</li> </ul>	Dr M. Jensen (IMO)
12:30-14:00	<b><i>Lunch break</i></b>	
14:00-15:00	<b>IMO's Biofouling Guidelines (part 2)</b> <ul style="list-style-type: none"> <li>• AFS installation and maintenance detailed aspects</li> <li>• In-water inspection, cleaning and maintenance</li> <li>• Design and construction</li> <li>• Dissemination of information, training, education and research</li> </ul>	Dr M. Jensen (IMO)
15:00-15:30	<b>Additional biofouling topics and developments</b> <ul style="list-style-type: none"> <li>• Guidelines for recreational craft</li> <li>• Evaluation of the Biofouling Guidelines</li> <li>• The GloFouling Partnerships project</li> </ul>	Dr T. Karayannis (IMO)
15:30-16:00	<b><i>Coffee break</i></b>	
16:00-16:30	<b>Group discussion and summary</b> <ul style="list-style-type: none"> <li>• Identification of any pending issues with regard to biofouling and the Guidelines</li> </ul>	All participants and facilitators
16:30-17:00	<b>Course close-out session</b> <ul style="list-style-type: none"> <li>• Closing remarks</li> <li>• Presentation of certificates</li> </ul>	IMO and REMPEC representatives
17:00	<b><i>End of Workshop</i></b>	

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## **ANNEX 5**

### **OPENING STATEMENTS**

#### **Regional workshop on the AFS Convention and Biofouling Guidelines**

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Valletta, Malta, 12 to 14 November 2019

#### **Summary of informal opening remarks by Dr Theofanis Karayannis**

Head, Marine Biosafety

Marine Environment Division

International Maritime Organization (IMO)

Dr Karayannis welcomed everyone to the workshop, and thanked REMPEC for the excellent organization and hospitality. He also thanked all of the participants for their attendance. Dr Karayannis briefly described both the AFS Convention and the Biofouling Guidelines, and discussed their importance for the protection of the marine environment. He also stressed the importance of utilizing these instruments at the regional level to take full advantage of their protections.

## **Regional workshop on the AFS Convention and Biofouling Guidelines**

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Valletta, Malta, 12 to 14 November 2019

### **Welcome remarks by Mr Malek Smaoui**

Good morning ladies and gentlemen,

It gives me great pleasure and, indeed, it is a great honour for me to welcome you today, in my capacity of Officer-in-Charge, on behalf of Mr Gabino Gonzalez, Head of Office of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), to the IMO Regional Workshop on the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) and the 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines).

The Workshop is being organised in close co-operation with the International Maritime Organization (IMO), pursuant to the Programme of Work and Budget for 2018-2019 of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), adopted by the Twentieth Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") and its Protocols (Tirana, Albania, 17-20 December 2017). The Workshop is financed by the IMO's Integrated Technical Cooperation Programme (ITCP) as co-financing commitment to the Global Environment Facility (GEF) - United Nations Development Programme (UNDP) - IMO GloFouling Partnerships Project and will in particular contribute to the project's goal to establish regional partnerships and cooperation agreements to address marine biofouling issues.

The IMO has been at the forefront of the international effort by taking the lead in addressing the transfer of invasive aquatic species by ships.

In this respect, the principal objectives of the Workshop are:

- a) to raise awareness among the participants on the AFS Convention and the Biofouling Guidelines;
- b) to strengthen regional capacity for an effective implementation and enforcement of the AFS Convention as well as implementation of the Biofouling Guidelines;
- c) to assist countries in the region, where applicable, to ratify the AFS Convention; and
- d) to familiarise the participants with the best practices with respect to anti-fouling systems and the management of biofouling.

Ladies and gentlemen, before concluding, I would like to take this opportunity to extend my appreciation to the IMO for co-funding and facilitating this workshop. In particular, I would like to thank both Dr Theofanis Karayannis, Head, Marine Biosafety as well as Dr Megan Jensen, Technical Officer, from the Subdivision for Protective Measures at the Marine Environment Division of IMO, who will be our lecturers and facilitators during these three days.

Whilst thanking you all for joining this event, I once again warmly welcome you at REMPEC and wish you a very productive workshop.

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## ANNEX 6

### REFERENCES

#### **Publications and documents provided by IMO**

All workshop participants received copies of the books containing the full texts of the *International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001*, including Guidelines (2005 English edition, IA680E) and the *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species* (2012 English edition, I662E).

Participants also received a USB memory card containing all the workshop presentations and a comprehensive set of numerous relevant IMO documents and other supporting materials. This included, inter alia, the full texts (in French for the French-speaking participants) of the AFS Convention and the Biofouling Guidelines and of related guidelines such as those listed below.

Guidelines for brief sampling of anti-fouling systems on ships (resolution MEPC.104(49))

2010 Guidelines for survey and certification of anti-fouling systems on ships (resolution MEPC.195(61))

2011 Guidelines for inspection of anti-fouling systems on ships (resolution MEPC.208(62))

Revised guidance on best management practices for removal of anti-fouling coatings from ships, including TBT hull paints (LC-LP.1/Circ.31/Rev.1)

Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft (MEPC.1/Circ.792)

Guidance for evaluating the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (MEPC.1/Circ.811)

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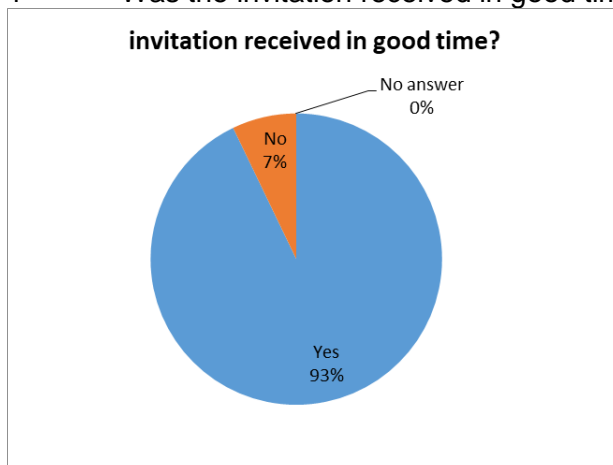


## ANNEX 7

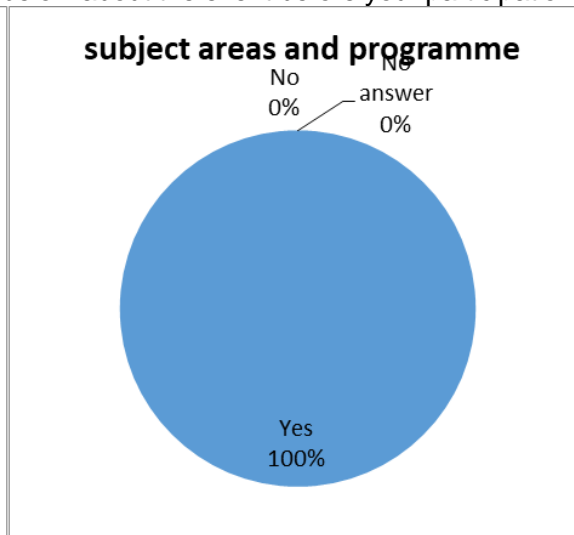
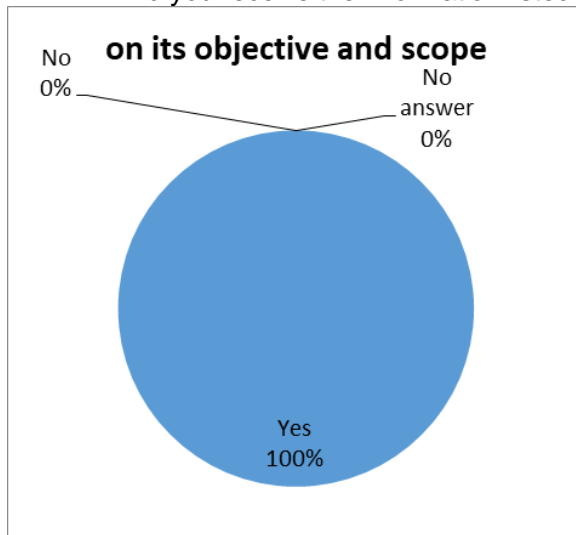
## EVALUATION SUMMARY

Quantitative analysis of the evaluation questionnaire  
(Based on 14 replies)

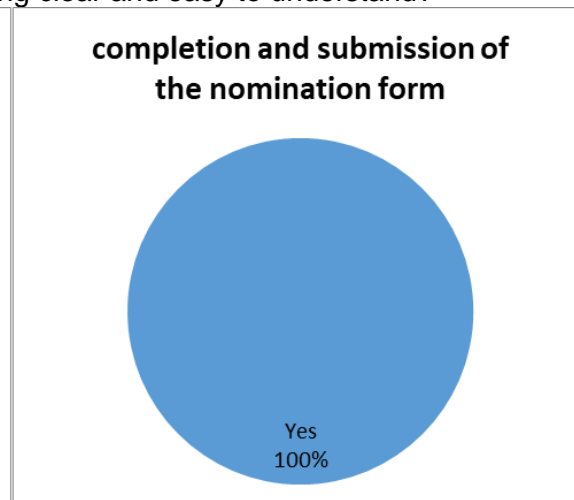
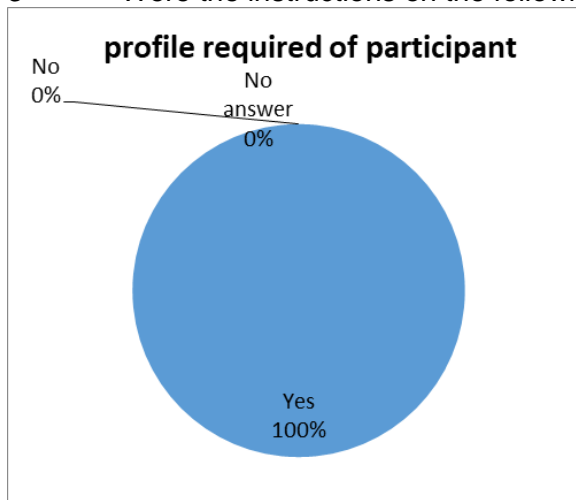
1 Was the invitation received in good time?



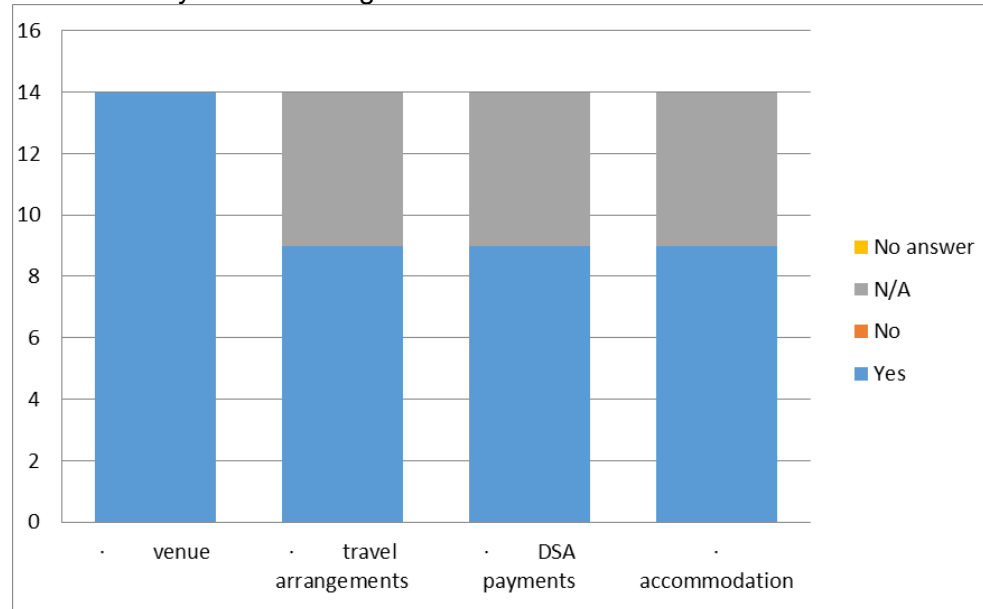
2 Did you receive the information listed below about the event before your participation?



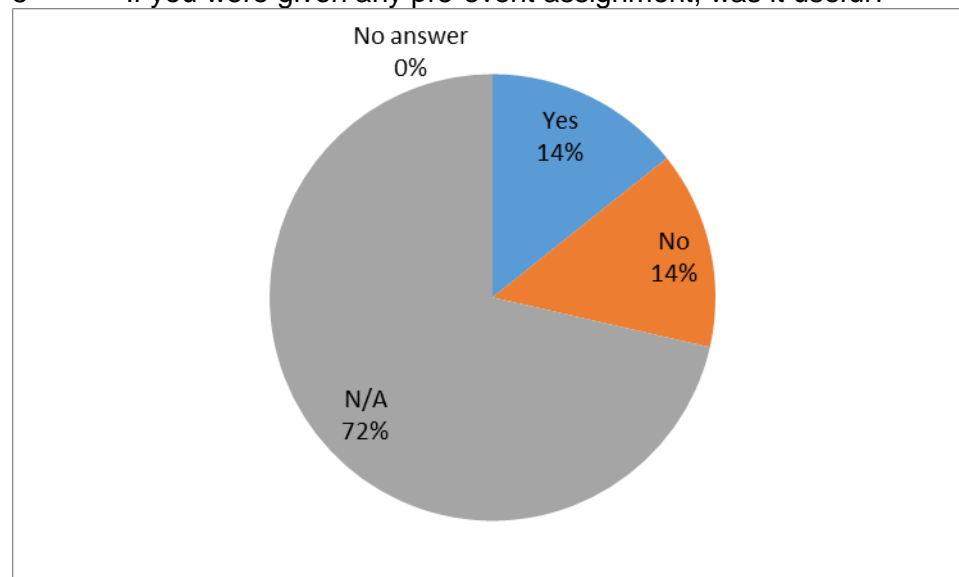
3 Were the instructions on the following clear and easy to understand?



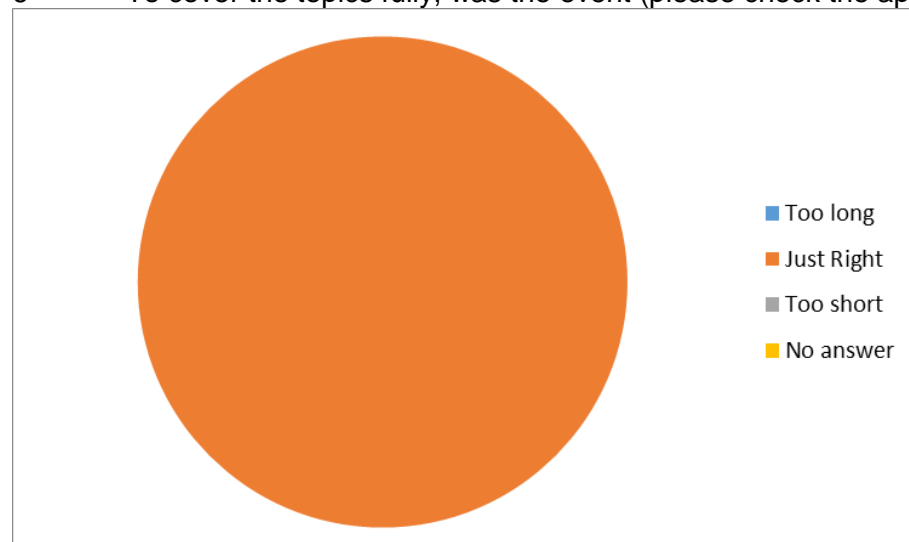
4 Did you receive logistical information on:



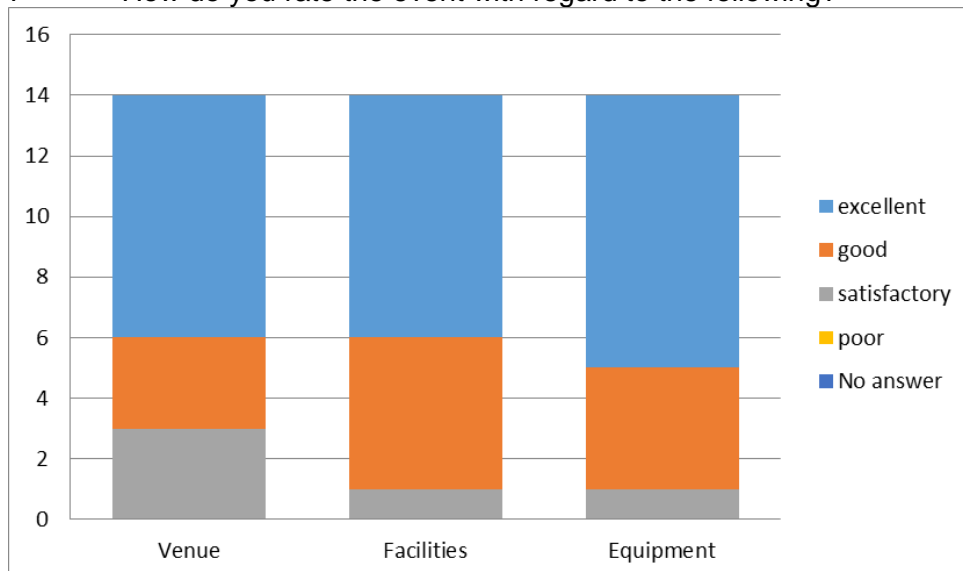
5 If you were given any pre-event assignment, was it useful?



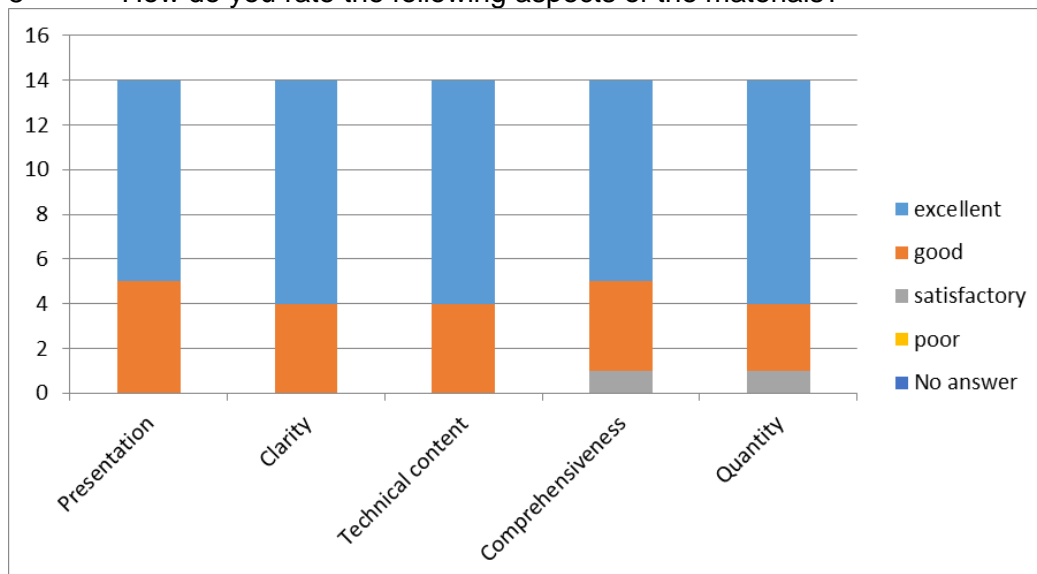
6 To cover the topics fully, was the event (please check the appropriate box)



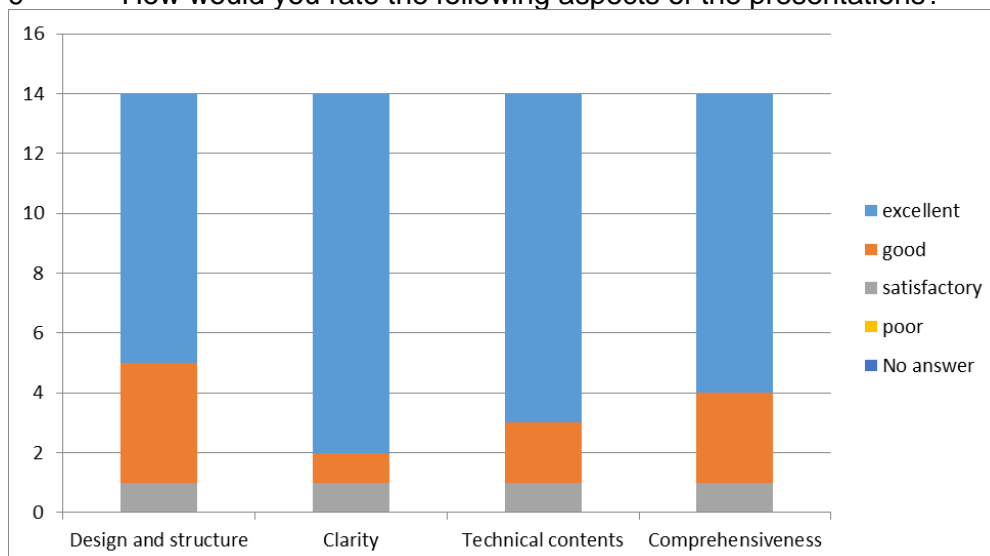
7 How do you rate the event with regard to the following?



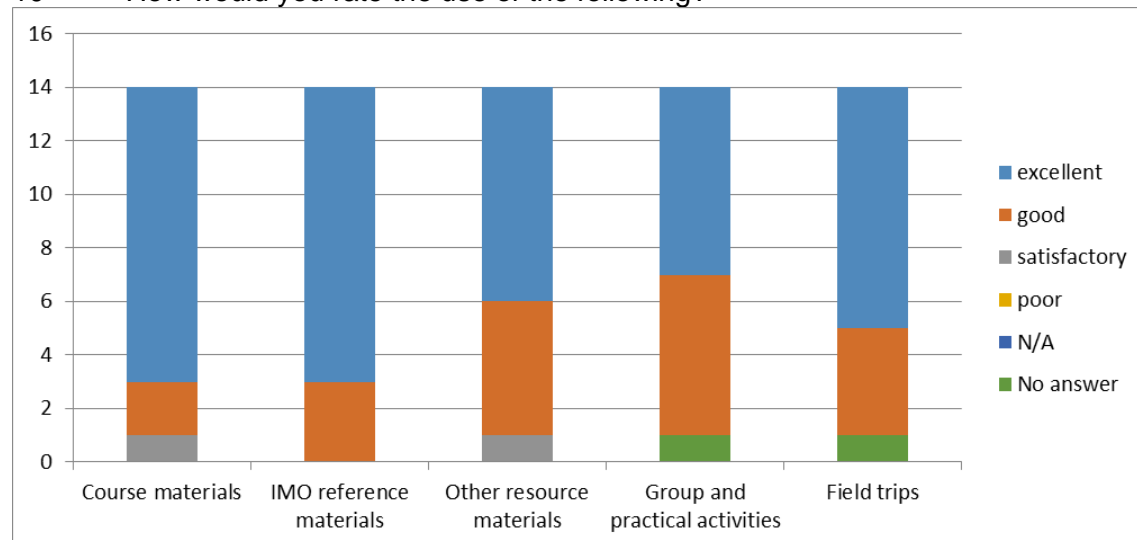
8 How do you rate the following aspects of the materials?



9 How would you rate the following aspects of the presentations?

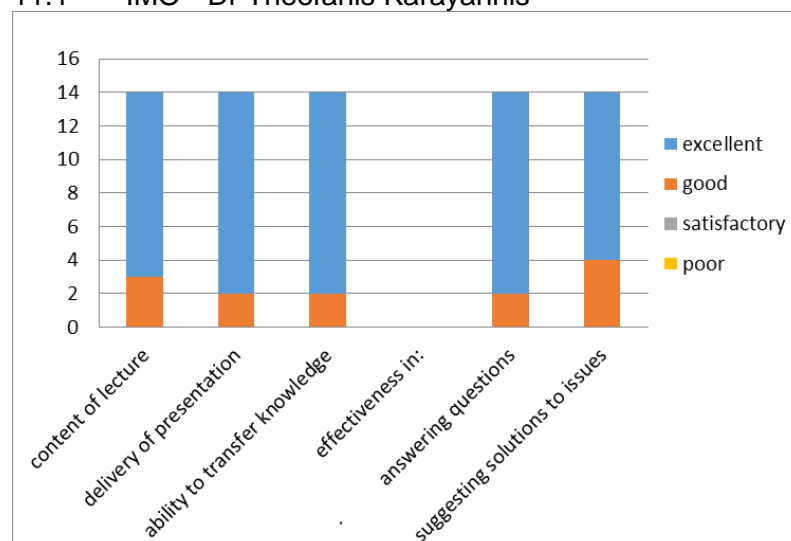


10 How would you rate the use of the following?

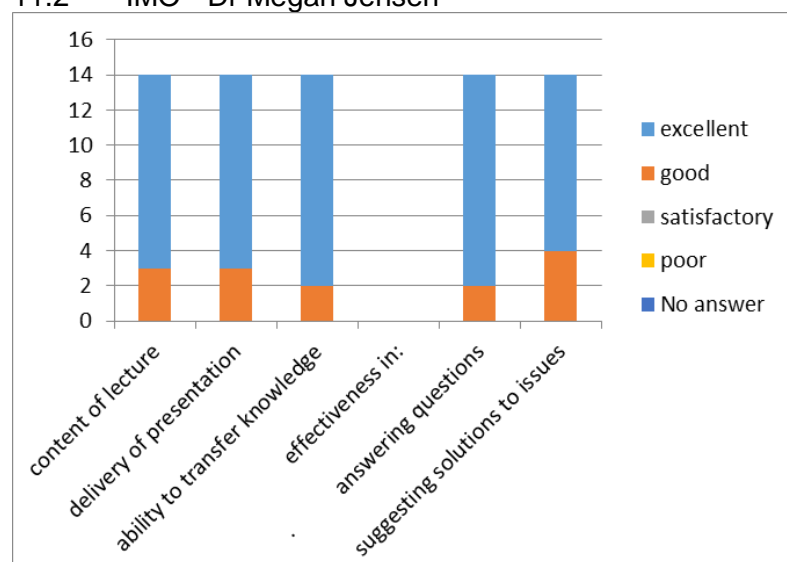


11 Please rate each lecturer with regard to the following.

11.1 IMO - Dr Theofanis Karayannis



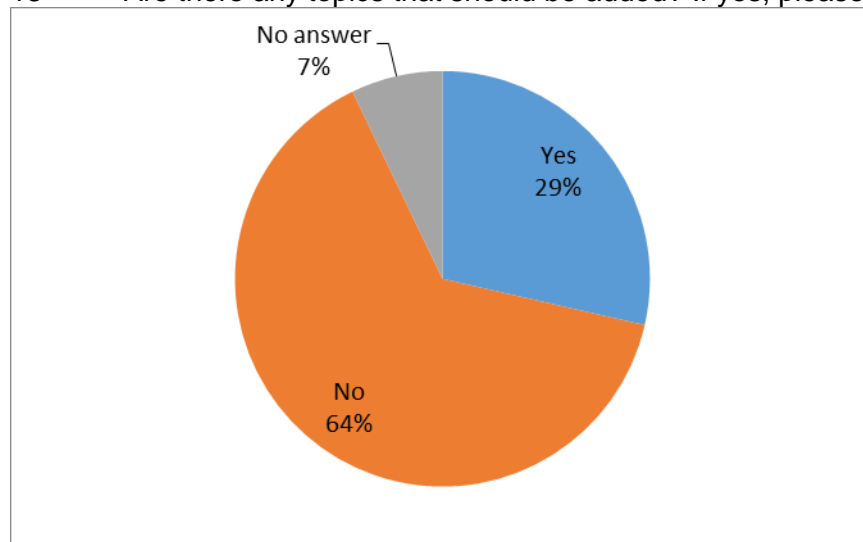
11.2 IMO - Dr Megan Jensen



12 What topics were of most interest and relevance to you?

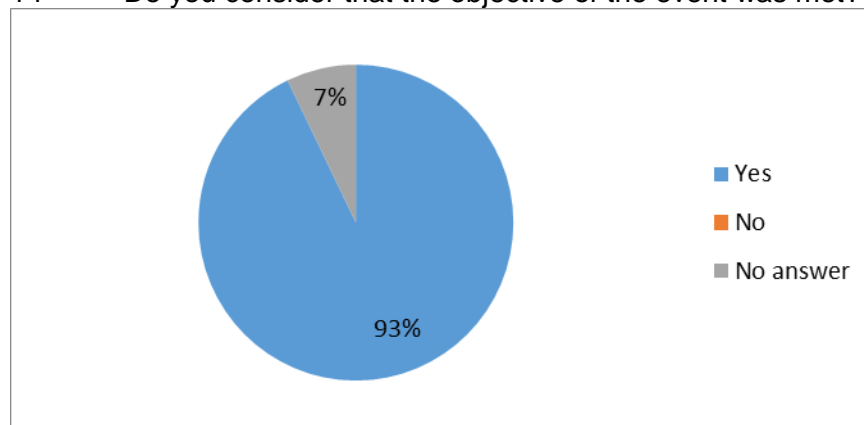
- a) All topics (4 responses)
- b) Ratification of AFS Convention (3 responses)
- c) Other issues related to AFS Convention (e.g. obligations of Parties, case against TBT, hull cleaning, alternative AFS, waste treatment, etc.) (3 responses)
- d) Biofouling Guidelines (2 responses)
- e) AFS survey and certification, inspection (2 responses)

13 Are there any topics that should be added? If yes, please list them

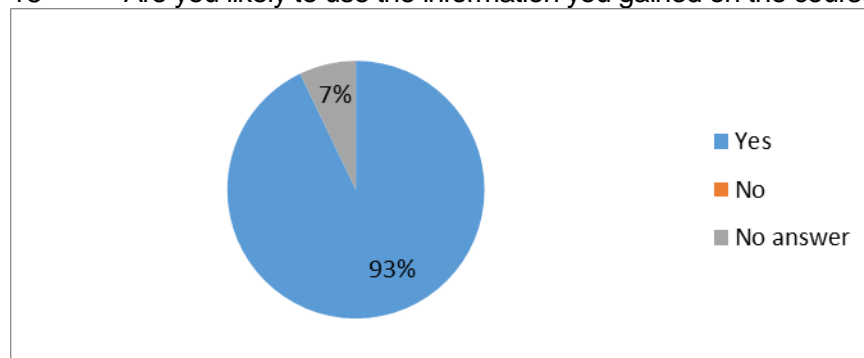


- a) Ballast water (1 response)
- b) Inspections of ships (1 response)
- c) "More info on BAT" (1 response)

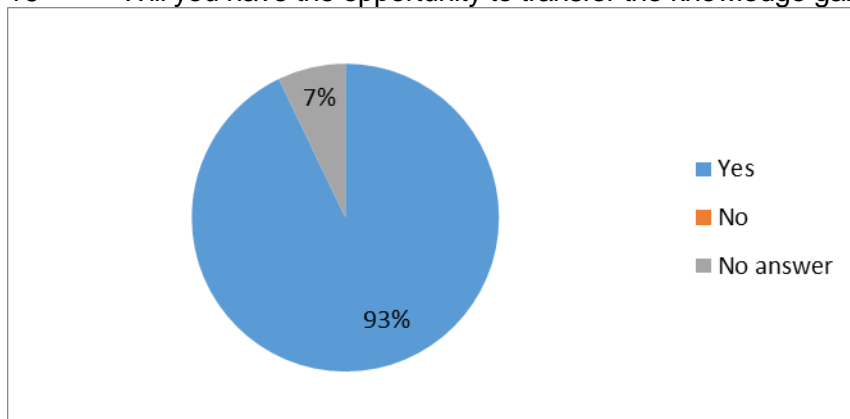
14 Do you consider that the objective of the event was met?



15 Are you likely to use the information you gained on the course when you return to your work?



16 Will you have the opportunity to transfer the knowledge gained to your colleagues at work?



**Comments:**

- a) "IMO Regional Workshop on the AFS Convention and the Biofouling Guidelines is very good for me and my Agency. I will give all the information and materials my colleagues in my Country. I hope quick implementation Convention in law."
- b) "The workshop was very well structured. Both the scope of the Convention and the Guidelines were clearly defined and the relevant distinction between the two explained. The lecturers were concise and open to questions. One of the most interesting workshops I have attended at REMPEC. The site visit was particularly useful to fully understand the problems of anti-fouling."
- c) "Very interesting and informative. Found the structure and flow to be very good. There is a lot of information to digest! Lecturers were very knowledgeable. Provision of all presentations and documents on USB was appreciated."
- d) "Excellent delivery and excellent lectures. Very knowledgeable and have very good delivery. Good pacing and very positive with questions. Very tolerant even with some awkward questions and lecturers have a very professional approach. Congrats to lecturers and to the coordinators who coordinated this training. Thank you very much for this opportunity."
- e) "Extremely useful information. Will definitely use the lessons learnt. Good work lecturers. You know your subject inside out."
- f) "Very well organised and professionally organised workshop. I suggest that recreational craft are discussed in more details."
- g) "Very informative, useful, comprehensive"
- h) "Very useful to exchange views best practices and best experiences within protection pollution on marine environment"
- i) "We wish that future workshops by IMO would focus on other countries experiences with Conventions, including best practices, through REMPEC or MAP" (roughly translated from French)
- j) "It is a pity that the books on the Convention and the Biofouling Guidelines are not available in French. Visit to the shipyard was very interesting, though water treatment was not visible. Interpretation into French could be improved." (roughly translated from French)

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## ANNEX 8

### WORKSHOP PHOTOS

#### Classroom photos



Top: Opening ceremony  
Bottom: Group photo



**Site visit photos**



**Niche areas**

**Clockwise from top left: stabilizer fin, sea chest, propeller and bow thruster tunnel**

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**Top: niche area: rudder and propeller/shaft**

**Bottom left: Dr Karayannis discussing the bow thruster niche area**

**Bottom right: Dr Jensen discussing niche areas (propeller and shaft in background)**





**Top: Group photo under propeller shaft**

**Bottom: Group discussion regarding sea chests and sacrificial anodes**