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## INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

List of ballast water management systems that make use of Active Substances which received Basic and Final Approval

- The Ballast Water Management Convention (BWM Convention) provides in its regulation D-3.2 that ballast water management systems that make use of Active Substances to comply with the Convention shall be approved by IMO based on a procedure developed by the Organization. According to regulation A-1.7 of the same Convention, an Active Substance is a substance or organism, including a virus or a fungus that has a general or specific action on or against harmful aquatic organisms and pathogens.
- The Marine Environment Protection Committee (MEPC), at its fifty-third session (July 2005), adopted the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)* by resolution MEPC.126(53). At the same session, MEPC agreed with the establishment of a Technical Group (GESAMP-Ballast Water Working Group) under the auspices of GESAMP\*, to evaluate such systems and advise the MEPC accordingly.
- 3 MEPC 57 (April 2008) adopted resolution MEPC.169(57), which revokes resolution MEPC.126(53) and contains the revised *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*.
- 4 Section 8 of Procedure (G9) sets out the methodology to be followed for the two-tier approval of ballast water management systems that make use of Active Substances and requests IMO to record the Basic and Final Approvals and to circulate the list once a year.
- Following the consideration of the relevant reports of the GESAMP-BWWG, MEPC, at its sixty-eighth session (May 2015), granted five Basic Approvals and one Final Approval to ballast water management systems that make use of Active Substances. The annexes to this circular contain relevant information on the ballast water management systems that received Basic and Final Approval from March 2006 until May 2015.
- Information regarding the systems that received Type Approval Certification can be found on the IMO website at http://www.imo.org/home.html.

GESAMP stands for IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNDP/UNEP/UNIDO Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection.



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- 7 Member Governments are invited to bring this circular to the attention of all the parties concerned.
- 8 This circular supersedes circular BWM.2/Circ.34/Rev.3.

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ANNEX 1

LIST OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES WHICH RECEIVED BASIC APPROVAL IN ACCORDANCE WITH PROCEDURE (G9)

|    | Name of the system and MEPC document related to the proposal for Basic Approval   | Name of<br>manufacturer   | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval    | Specifications   |
|----|---|---|---|------------------------------|--|
| 1. | Peraclean® Ocean (subsequently changed to SEDNA® Ballast Water Management System (using Peraclean® Ocean)) MEPC 53/2/12 (Germany) | Degussa GmbH,<br>Germany  | MEPC 54/2/12,<br>annex 5                                    | 24 March 2006<br>(MEPC 54)   | Flag State Administration was invited to authorize onboard testing only when the concerns identified in annex 5 of the report of the first meeting of the GESAMP-Ballast Water Working Group (MEPC 54/2/12) had been addressed to its complete satisfaction. |
| 2. | Electro-Clean (electrolytic disinfection) system (subsequently changed to Electro-Cleen™)  MEPC 54/2/3 (Republic of Korea)        | Techcross Ltd. and<br>Korea Ocean<br>Research and<br>Development<br>Institute (KORDI) | MEPC 54/2/12,<br>annex 6                                    | 24 March 2006<br>(MEPC 54)   | Flag State Administration was invited to authorize onboard testing only when the concerns identified in annex 6 of the report of the first meeting of the GESAMP–Ballast Water Working Group (MEPC 54/2/12) had been addressed to its complete satisfaction. |
| 3. | Special Pipe Ballast Water<br>Management System (combined<br>with Ozone treatment)<br>MEPC 55/2 (Japan)                           | Japan Association<br>of Marine Safety<br>(JAMS)                                       | MEPC 55/2/16,<br>annex 5                                    | 13 October 2006<br>(MEPC 55) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the second meeting of the GESAMP-Ballast Water Working Group (MEPC 55/2/16) during further development of the system.               |
| 4. | EctoSys™ electrochemical<br>system<br>MEPC 55/2/4 (Sweden)  | Permascand AB,<br>Sweden,<br>subsequently<br>acquired by RWO<br>GmbH, Germany         | MEPC 55/2/16,<br>annex 7                                    | 13 October 2006<br>(MEPC 55) | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the second meeting of the GESAMP-Ballast Water Working Group (MEPC 55/2/16) during further development of the system.               |

|    | Name of the system and MEPC document related to the proposal for Basic Approval  | Name of manufacturer                                  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval | Specifications  |
|----|--|---|---|---------------------------|---|
| 5. | PureBallast System  MEPC 55/2/5 (Sweden)   | Alfa<br>Laval/Wallenius<br>Water AB                   | MEPC 56/2/2,<br>annex 5                                     | 13 July 2007<br>(MEPC 56) | Not applicable.   |
| 6. | NK Ballast Water Treatment System (subsequently changed to NK-O3 BlueBallast System (Ozone))  MEPC 55/2/3 and MEPC 55/2/27 (Republic of Korea) | NK Company Ltd.,<br>Republic of Korea                 | MEPC 56/2/2,<br>annex 6                                     | 13 July 2007<br>(MEPC 56) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the third meeting of the GESAMP-Ballast Water Working Group (MEPC 56/2/2) during further development of the system.  |
| 7. | Hitachi Ballast Water Purification System (ClearBallast)  MEPC 57/2/2 (Japan)  | Hitachi, Ltd.<br>/Hitachi Plant<br>Technologies, Ltd. | MEPC 57/2,<br>annex 5                                       | 4 April 2008<br>(MEPC 57) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the fourth meeting of the GESAMP-Ballast Water Working Group (MEPC 57/2) during further development of the system.   |
| 8. | Resource Ballast<br>Technologies System<br>MEPC 56/2/3 (South Africa)  | Resource Ballast<br>Technologies (Pty)<br>Ltd.        | MEPC 57/2/10,<br>annex 5                                    | 4 April 2008<br>(MEPC 57) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 57/2/10) during further development of the system. |
| 9. | GloEn-Patrol™ Ballast Water<br>Management System<br>MEPC 57/2/4<br>(Republic of Korea)   | Panasia Co., Ltd.                                     | MEPC 57/2/10,<br>annex 6                                    | 4 April 2008<br>(MEPC 57) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 57/2/10) during further development of the system. |

| Name of the system and MEPC document related to the proposal for Basic Approval                   | Name of manufacturer   | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval    | Specifications   |
|---|--|---|------------------------------|--|
| <ol> <li>OceanSaver® Ballast Water<br/>Management System</li> <li>MEPC 57/2/6 (Norway)</li> </ol> | MetaFil AS<br>(subsequently<br>changed to<br>OceanSaver AS)                      | MEPC 57/2/10,<br>annex 8                                    | 4 April 2008<br>(MEPC 57)    | Flag State Administration was invited to take into account all the recommendations indicated in annex 8 of the report of the fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 57/2/10) during further development of the system.  |
| 11. TG Ballastcleaner and TG Environmentalguard System  MEPC 57/2/8 (Japan)                       | The Toagosei Group (TG Corporation, Toagosei Co. Ltd. and Tsurumi Soda Co. Ltd.) | MEPC 58/2/7,<br>annex 5                                     | 10 October 2008<br>(MEPC 58) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the sixth meeting of the GESAMP-Ballast Water Working Group (MEPC 58/2/7) during further development of the system.   |
| 12. Greenship Sedinox Ballast<br>Water Management System<br>MEPC 57/2/7 (Netherlands)             | Greenship Ltd.   | MEPC 58/2/7,<br>annex 6                                     | 10 October 2008<br>(MEPC 58) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the sixth meeting of the GESAMP-Ballast Water Working Group (MEPC 58/2/7) during further development of the system.   |
| 13. Ecochlor® Ballast Water<br>Treatment System<br>MEPC 58/2/2 (Germany)                          | Ecochlor, INC,<br>Acton<br>(USA)   | MEPC 58/2/8,<br>annex 5                                     | 10 October 2008<br>(MEPC 58) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the seventh meeting of the GESAMP-Ballast Water Working Group (MEPC 58/2/8) during further development of the system. |
| 14. Blue Ocean Shield Ballast<br>Water Management System<br>MEPC 59/2/2 (China)                   | China Ocean<br>Shipping (Group)<br>Company<br>(COSCO)                            | MEPC 59/2/16,<br>annex 7                                    | 17 July 2009<br>(MEPC 59)    | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the eighth meeting of the GESAMP-Ballast Water Working Group (MEPC 59/2/16) during further development of the system. |

| Name of the system and<br>MEPC document related<br>to the proposal for<br>Basic Approval   | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval  | Specifications   |
|--|---|---|----------------------------|--|
| 15. Hyundai Heavy Industries Co.,<br>Ltd. (HHI) Ballast Water<br>Management System<br>(EcoBallast)  MEPC 59/2/4<br>(Republic of Korea) | Hyundai Heavy<br>Industries Co., Ltd.,<br>Republic of Korea   | MEPC 59/2/16,<br>annex 8                                    | 17 July 2009<br>(MEPC 59)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 8 of the report of the eighth meeting of the GESAMP-Ballast Water Working Group (MEPC 59/2/16) during further development of the system.   |
| 16. AquaTriComb™ Ballast Water<br>Treatment System<br>MEPC 59/2/8<br>(Germany)   | Aquaworx ATC<br>GmbH  | MEPC 59/2/19,<br>annex 6                                    | 17 July 2009<br>(MEPC 59)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the ninth meeting of the GESAMP-Ballast Water Working Group (MEPC 59/2/19) during further development of the system.    |
| <ul><li>17. SiCURE™ Ballast Water Management System</li><li>MEPC 59/2/11 (Germany)</li></ul>   | Siemens Water<br>Technologies                                 | MEPC 60/2/11,<br>annex 6                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the tenth meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/11) during further development of the system.    |
| 18. Sunrui Ballast Water Management System (subsequently changed to BalClor Ballast Water Management System)  MEPC 60/2/3 (China)      | Qingdao Sunrui<br>Corrosion and<br>Fouling Control<br>Company | MEPC 60/2/12,<br>annex 6                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the eleventh meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/12) during further development of the system. |

|     | Name of the system and MEPC document related to the proposal for Basic Approval  | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval  | Specifications   |
|-----|--|---|---|----------------------------|--|
| 19. | DESMI Ocean Guard Ballast<br>Water Management System<br>MEPC 60/2/4 (Denmark)  | DESMI Ocean<br>Guard A/S                                    | MEPC 60/2/12,<br>annex 7                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the eleventh meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/12) during further development of the system. |
| 20. | Blue Ocean Guardian Ballast Water Management System (subsequently changed to "ARA Ballast" Ballast Water Management System)  MEPC 60/2/5 (Republic of Korea) | 21st Century<br>Shipbuilding Co.,<br>Ltd.                   | MEPC 60/2/12,<br>annex 8                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 8 of the report of the eleventh meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/12) during further development of the system. |
| 21. | Hyundai Heavy Industries Co.,<br>Ltd. (HHI) Ballast Water<br>Management System<br>(HiBallast)<br>MEPC 60/2/6<br>(Republic of Korea)                          | Hyundai Heavy<br>Industries Co., Ltd.,<br>Republic of Korea | MEPC 60/2/16,<br>annex 4                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twelfth meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/16) during further development of the system.  |
|     | Kwang San Co., Ltd. (KS) Ballast Water Management System "En-Ballast"  MEPC 60/2/7 (Republic of Korea)   | Kwang San Co.,<br>Ltd.                                      | MEPC 60/2/16,<br>annex 5                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the twelfth meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/16) during further development of the system.  |
| 23. | OceanGuard™ Ballast Water<br>Management System<br>MEPC 60/2/8 (Norway)   | Qingdao Headway<br>Technology Co.,<br>Ltd.                  | MEPC 60/2/16,<br>annex 6                                    | 26 March 2010<br>(MEPC 60) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the twelfth meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/16) during further development of the system.  |

| Name of the system and MEPC document related to the proposal for Basic Approval  | Name of manufacturer                   | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval   | Specifications   |
|--|--|---|-----------------------------|--|
| 24. Severn Trent De Nora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500)  MEPC 60/2/9 (Germany)   | Severn Trent<br>De Nora (STDN),<br>LLC | MEPC 60/2/16,<br>annex 7                                    | 26 March 2010<br>(MEPC 60)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the twelfth meeting of the GESAMP-Ballast Water Working Group (MEPC 60/2/16) during further development of the system.    |
| 25. Techwin Eco Co., Ltd. (TWECO) Ballast Water Management System (Purimar) (subsequently changed to Purimar Ballast Water Management System)  MEPC 61/2 (Republic of Korea) | Techwin Eco Co.,<br>Ltd.               | MEPC 61/2/15,<br>annex 4                                    | 1 October 2010<br>(MEPC 61) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the thirteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 61/2/15) during further development of the system. |
| 26. AquaStar Ballast Water Management System (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM)   | AQUA Eng. Co.,<br>Ltd.                 | MEPC 61/2/15,<br>annex 5                                    | 1 October 2010<br>(MEPC 61) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the thirteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 61/2/15) during further development of the system. |
| MEPC 61/2/1<br>(Republic of Korea)   |  |   |                             |  |

|     | Name of the system and MEPC document related to the proposal for Basic Approval   | Name of manufacturer                            | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval   | Specifications   |
|-----|---|---|---|-----------------------------|--|
| 27. | Kuraray Ballast Water Management System (subsequently changed to MICROFADE™ Ballast Water Management System)  MEPC 61/2/6 (Japan) | Kuraray Co., Ltd.                               | MEPC 61/2/21,<br>annex 4                                    | 1 October 2010<br>(MEPC 61) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the fourteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 61/2/21) during further development of the system. |
| 28. | ERMA FIRST Ballast Water Management System (subsequently changed to ERMA FIRST BWTS)  MEPC 61/2/11 (Greece)                       | ERMA FIRST ESK<br>ENGINEERING<br>SOLUTIONS S.A. | MEPC 62/2/11,<br>annex 5                                    | 15 July 2011<br>(MEPC 62)   | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the fifteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/11) during further development of the system.  |
| 29. | BlueSeas Ballast Water<br>Management System<br>MEPC 61/2/12 (Singapore)   | Envirotech and<br>Consultancy Pte.<br>Ltd.      | MEPC 62/2/11,<br>annex 6                                    | 15 July 2011<br>(MEPC 62)   | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the fifteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/11) during further development of the system.  |
| 30. | SKY-SYSTEM® with<br>Peraclean® Ocean Ballast<br>Water Management System<br>MEPC 62/2 (Japan)                                      | Katayama<br>Chemical, Inc.                      | MEPC 62/2/12,<br>annex 4                                    | 15 July 2011<br>(MEPC 62)   | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the sixteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/12) during further development of the system.  |

|     | Name of the system and MEPC document related to the proposal for Basic Approval                                 | Name of manufacturer                        | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval | Specifications   |
|-----|---|---|---|---------------------------|--|
| 31. | JFE BallastAce that makes<br>use of NeoChlor Marine®<br>Ballast Water Management<br>System  MEPC 62/2/1 (Japan) | JFE Engineering<br>Corporation              | MEPC 62/2/12,<br>annex 5                                    | 15 July 2011<br>(MEPC 62) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the sixteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/12) during further development of the system.  |
| 32. | BallastMaster Ballast Water<br>Management System<br>MEPC 62/2/2 (Germany)                                       | GEA Westfalia<br>Separator Systems<br>GmbH  | MEPC 62/2/12,<br>annex 6                                    | 15 July 2011<br>(MEPC 62) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the sixteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/12) during further development of the system.  |
| 33. | BlueWorld Ballast Water<br>Management System<br>MEPC 62/2/3 (Singapore)   | Envirotech and<br>Consultancy Pte.<br>Ltd.  | MEPC 62/2/12,<br>annex 7                                    | 15 July 2011<br>(MEPC 62) | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the sixteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/12) during further development of the system.  |
| 34. | Neo-Purimar <sup>TM</sup> Ballast Water<br>Management System<br>MEPC 62/2/7<br>(Republic of Korea)              | SAMSUNG<br>HEAVY<br>INDUSTRIES Co.,<br>Ltd. | MEPC 62/2/18,<br>annex 7                                    | 15 July 2011<br>(MEPC 62) | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the sixteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 62/2/18) during further development of the system.  |
| 35. | "Smart Ballast" Ballast Water<br>Management System<br>MEPC 62/2/8<br>(Republic of Korea)                        | STX Metal Co.,<br>Ltd.                      | MEPC 63/2/10,<br>annex 4                                    | 2 March 2012<br>(MEPC 63) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the eighteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 63/2/10) during further development of the system. |

|     | Name of the system and MEPC document related to the proposal for Basic Approval                   | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval   | Specifications   |
|-----|---|---|---|-----------------------------|--|
| 36. | DMU ·OH Ballast Water<br>Management System<br>MEPC 63/2 (China)                                   | Dalian Maritime<br>University                                       | MEPC 63/2/11,<br>annex 4                                    | 2 March 2012<br>(MEPC 63)   | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the nineteenth meeting of the GESAMP-Ballast Water Working Group (MEPC 63/2/11) during further development of the system.   |
| 37. | EcoGuardian <sup>™</sup> Ballast Water<br>Management System<br>MEPC 63/2/4<br>(Republic of Korea) | Hanla IMS Co.,<br>Ltd.  | MEPC 63/2/21,<br>annex 4                                    | 2 March 2012<br>(MEPC 63)   | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twentieth meeting of the GESAMP-Ballast Water Working Group (MEPC 63/2/21) during further development of the system.    |
| 38. | KTM-Ballast Water<br>Management System<br>MEPC 63/2/8<br>(Republic of Korea)                      | Korea Top Marine<br>(KT Marine) Co.,<br>Ltd.                        | MEPC 64/2/6,<br>annex 5                                     | 5 October 2012<br>(MEPC 64) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the twenty-first meeting of the GESAMP-Ballast Water Working Group (MEPC 64/2/6) during further development of the system.  |
| 39. | Hamworthy Aquarius <sup>™</sup> -EC<br>BWMS<br>MEPC 63/2/9<br>(Netherlands)                       | Hamworthy Water<br>Systems Ltd.                                     | MEPC 64/2/6,<br>annex 6                                     | 5 October 2012<br>(MEPC 64) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the twenty-first meeting of the GESAMP-Ballast Water Working Group (MEPC 64/2/6) during further development of the system.  |
| 40. | OceanDoctor Ballast Water<br>Management System<br>MEPC 64/2 (China)                               | Jiujiang Precision<br>Measuring<br>Technology<br>Research Institute | MEPC 64/2/7,<br>annex 4                                     | 5 October 2012<br>(MEPC 64) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twenty-second meeting of the GESAMP-Ballast Water Working Group (MEPC 64/2/7) during further development of the system. |

|     | Name of the system and<br>MEPC document related<br>to the proposal for<br>Basic Approval | Name of manufacturer              | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval   | Specifications   |
|-----|--|-----------------------------------|---|-----------------------------|--|
| 41. | HS-BALLAST Ballast Water<br>Management System<br>MEPC 64/2/3<br>(Republic of Korea)      | HWASEUNG R&A<br>Co. Ltd.          | MEPC 64/2/19,<br>annex 4                                    | 5 October 2012<br>(MEPC 64) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twenty-third meeting of the GESAMP-Ballast Water Working Group (MEPC 64/2/19) during further development of the system. |
| 42. | GloEn-Saver™ Ballast Water<br>Management System<br>MEPC 64/2/4<br>(Republic of Korea)    | PANASIA Co. Ltd.                  | MEPC 64/2/19,<br>annex 5                                    | 5 October 2012<br>(MEPC 64) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the twenty-third meeting of the GESAMP-Ballast Water Working Group (MEPC 64/2/19) during further development of the system. |
| 43. | Van Oord Ballast Water<br>Management System<br>MEPC 65/2/2<br>(Netherlands)              | Van Oord B.V.                     | MEPC 65/2/9,<br>annex 6                                     | 17 May 2013<br>(MEPC 65)    | Flag State Administration was invited to take into account all the limitations indicated in annex 6 of the report of the twenty-fourth meeting of the GESAMP-Ballast Water Working Group (MEPC 65/2/9) during further development of the system.     |
| 44. | REDOX AS Ballast Water<br>Management System<br>MEPC 65/2/3 (Norway)                      | REDOX Maritime<br>Technologies AS | MEPC 65/2/19,<br>annex 4                                    | 17 May 2013<br>(MEPC 65)    | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twenty-fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 65/2/19) during further development of the system. |

|          | ame of the system and<br>EPC document related<br>to the proposal for<br>Basic Approval | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval | Specifications   |
|----------|--|---|---|---------------------------|--|
| Ma<br>ME | ue Zone™ Ballast Water<br>anagement System<br>EPC 65/2/5<br>epublic of Korea)          | SUNBO INDUSTRIES Co. Ltd., DSEC Co. Ltd., and the Korean Institute of Machinery & Material (KIMM) | MEPC 65/2/19,<br>annex 6                                    | 17 May 2013<br>(MEPC 65)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the twenty-fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 65/2/19) during further development of the system. |
| Ma       | COLCELL BTs Ballast Water<br>anagement System<br>EPC 66/2/1 (Italy)                    | Azienda Chimica<br>Genovese   | MEPC 66/2/7,<br>annex 5                                     | 4 April 2014<br>(MEPC 66) | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the twenty-sixth meeting of the GESAMP-Ballast Water Working Group (MEPC 66/2/7) during further development of the system.  |
| Ma       | TPS-BLUE <sub>sys</sub> Ballast Water<br>anagement System<br>EPC 66/2/2 (Japan)        | Panasonic<br>Environmental<br>Systems &<br>Engineering Co. Ltd.                                   | MEPC 66/2/7,<br>annex 6                                     | 4 April 2014<br>(MEPC 66) | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the twenty-sixth meeting of the GESAMP-Ballast Water Working Group (MEPC 66/2/7) during further development of the system.  |
| Ma       | comarine-EC Ballast Water<br>anagement System<br>EPC 66/2/3 (Japan)                    | Ecomarine<br>Technology<br>Research<br>Association  | MEPC 66/2/7,<br>annex 7                                     | 4 April 2014<br>(MEPC 66) | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the twenty-sixth meeting of the GESAMP-Ballast Water Working Group (MEPC 66/2/7) during further development of the system.  |

|          | ame of the system and<br>IEPC document related<br>to the proposal for<br>Basic Approval | Name of manufacturer            | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval    | Specifications  |
|----------|---|---------------------------------|---|------------------------------|---|
| Ma       | URITA™ Ballast Water<br>lanagement System<br>EPC 66/2/4 (Japan)                         | Kurita Water<br>Industries Ltd. | MEPC 66/2/10,<br>annex 4                                    | 4 April 2014<br>(MEPC 66)    | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twenty-seventh meeting of the GESAMP-Ballast Water Working Group (MEPC 66/2/10) during further development of the system |
| ma       | lysisGuard ballast water anagement system EPC 67/2/3 (Singapore)                        | KALF Engineering<br>Pte. Ltd.   | MEPC 67/2/9,<br>annex 4                                     | 17 October 2014<br>(MEPC 67) | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the twenty-ninth meeting of the GESAMP-Ballast Water Working Group (MEPC 67/2/9) during further development of the system    |
| MI       | K-Cl BlueBallast System EPC 68/2 Republic of Korea)                                     | NK Company Ltd.                 | MEPC 68/2/10,<br>annex 4                                    | 15 May 2015<br>(MEPC 68)     | Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the thirtieth meeting of the GESAMP-Ballast Water Working Group (MEPC 68/2/10) during further development of the system      |
| MI<br>(R | CS-HYCHLOR™ System EPC 68/2/1 Republic of Korea)  | TECHCROSS Inc.                  | MEPC 68/2/10,<br>annex 5                                    | 15 May 2015<br>(MEPC 68)     | Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the thirtieth meeting of the GESAMP-Ballast Water Working Group (MEPC 68/2/10) during further development of the system      |
| MI       | CS-HYCHEM™ System<br>EPC 68/2/2<br>Republic of Korea)                                   | TECHCROSS Inc.                  | MEPC 68/2/10,<br>annex 6                                    | 15 May 2015<br>(MEPC 68)     | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the thirtieth meeting of the GESAMP-Ballast Water Working Group (MEPC 68/2/10) during further development of the system      |

| Name of the system and MEPC document related to the proposal for Basic Approval | Name of manufacturer                    | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Basic Approval | Specifications  |
|---|---|---|---------------------------|---|
| 54. ECS-HYBRID™ System  MEPC 68/2/3  (Republic of Korea)                        | TECHCROSS Inc.                          | MEPC 68/2/10,<br>annex 7                                    | 15 May 2015<br>(MEPC 68)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 7 of the report of the thirtieth meeting of the GESAMP-Ballast Water Working Group (MEPC 68/2/10) during further development of the system    |
| 55. VARUNA Ballast Water<br>Treatment System<br>MEPC 68/2/6 (Singapore)         | Kadalneer<br>Tecchnologies Pte.<br>Ltd. | MEPC 68/2/21,<br>annex 6                                    | 15 May 2015<br>(MEPC 68)  | Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the thirty-first meeting of the GESAMP-Ballast Water Working Group (MEPC 68/2/21) during further development of the system |

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ANNEX 2

LIST OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES WHICH RECEIVED FINAL APPROVAL IN ACCORDANCE WITH PROCEDURE (G9)

| an | ame of the system d MEPC document related to the proposal or Final Approval            | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval    | Specifications   | Remarks   |
|----|--|---|---|---------------------------------|--|---|
| 1. | PureBallast<br>System<br>MEPC 56/2/1<br>(Norway)                                       | Alfa Laval/<br>Wallenius<br>Water AB  | MEPC 56/2/2,<br>annex 5                                     | 13 July 2007<br>(MEPC 56)       | Flag State Administration was invited to verify that the concerns raised in annex 5 of the report of the third meeting of the GESAMP-Ballast Water Working Group (MEPC 56/2/2) with regard to ship and crew safety have been fully addressed prior to the issuance of Type Approval certificate. | Type Approved<br>by Norway<br>June 2008                       |
| 2. | SEDNA® Ballast Water Management System (Using Peraclean® Ocean)  MEPC 57/2/5 (Germany) | Degussa<br>GmbH,<br>Germany   | MEPC 57/2/10,<br>annex 7                                    | 4 April 2008<br>(MEPC 57)       | Flag State Administration was invited to take into account all the recommendations contained in annex 7 of the report of the fifth meeting of the GESAMP-Ballast Water Working Group (MEPC 57/2/10) prior to the issuance of Type Approval Certificate.  | Type Approved<br>by Germany<br>10 June 2008                   |
| 3. | Electro-Cleen™ System  MEPC 58/2 (Republic of Korea)                                   | Techcross Ltd.<br>and Korea<br>Ocean<br>Research and<br>Development<br>Institute<br>(KORDI) | MEPC 58/2/7,<br>annex 7                                     | 10 October<br>2008<br>(MEPC 58) | Not applicable.  | Type Approved<br>by the<br>Republic of Korea<br>December 2008 |

| an | ame of the system d MEPC document related to the proposal or Final Approval  | Name of manufacturer                                     | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval    | Specifications  | Remarks   |
|----|--|--|---|---------------------------------|---|---|
| 4. | OceanSaver® Ballast Water Management System  MEPC 58/2/1 (Norway)            | OceanSaver<br>AS   | MEPC 58/2/8,<br>annex 4                                     | 10 October<br>2008<br>(MEPC 58) | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the seventh meeting of the GESAMP-BWWG (MEPC 58/2/8) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved by<br>Norway<br>17 April 2009 and<br>22 December 2011 |
| 5. | RWO Ballast Water Management System (CleanBallast) MEPC 59/2 (Germany)       | RWO GmbH<br>Marine Water<br>Technology,<br>Germany       | MEPC 59/2/16,<br>annex 5                                    | 17 July 2009<br>(MEPC 59)       | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the eighth meeting of the GESAMP-BWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate. |   |
| 6. | NK-O3 BlueBallast<br>System<br>(Ozone)<br>MEPC 59/2/3<br>(Republic of Korea) | NK Company<br>Ltd.,<br>Republic of<br>Korea              | MEPC 59/2/16,<br>annex 6                                    | 17 July 2009<br>(MEPC 59)       | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the eighth meeting of the GESAMP-BWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by the Republic of<br>Korea<br>24 November 2009    |
| 7. | Hitachi Ballast Water Purification System (ClearBallast) MEPC 59/2/5 (Japan) | Hitachi, Ltd.<br>/Hitachi Plant<br>Technologies,<br>Ltd. | MEPC 59/2/19,<br>annex 4                                    | 17 July 2009<br>(MEPC 59)       | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the ninth meeting of the GESAMP-BWWG (MEPC 59/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate.  | Type Approved<br>by Japan<br>5 March 2010                           |

| an  | ame of the system<br>d MEPC document<br>related to the<br>proposal<br>or Final Approval    | Name of manufacturer                              | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval | Specifications  | Remarks  |
|-----|--|---|---|------------------------------|---|--|
| 8.  | Greenship Sedinox<br>Ballast Water<br>Management<br>System<br>MEPC 59/2/6<br>(Netherlands) | Greenship Ltd                                     | MEPC 59/2/19,<br>annex 5                                    | 17 July 2009<br>(MEPC 59)    | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the ninth meeting of the GESAMP-BWWG (MEPC 59/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate.    |  |
| 9.  | GloEn-Patrol™ Ballast Water Management System  MEPC 59/2/7 (Republic of Korea)             | Panasia Co.,<br>Ltd.                              | MEPC 60/2/11,<br>annex 4                                    | 26 March 2010<br>(MEPC 60)   | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the tenth meeting of the GESAMP-BWWG (MEPC 60/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate.    | Type Approved<br>by the<br>Republic of Korea<br>4 December 2009  |
| 10. | Resource Ballast<br>Technologies<br>System<br>MEPC 59/2/10<br>(South Africa)               | Resource<br>Ballast<br>Technologies<br>(Pty) Ltd. | MEPC 60/2/11,<br>annex 7                                    | 26 March 2010<br>(MEPC 60)   | Flag State Administration was invited to verify that all the recommendations contained in annex 7 of the report of the tenth meeting of the GESAMP-BWWG (MEPC 60/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate.    | Type Approved<br>by South Africa<br>19 April 2011                |
| 11. | JFE BallastAce® Ballast Water Management System MEPC 60/2/2 (Japan)                        | JFE<br>Engineering<br>Corporation                 | MEPC 60/2/12,<br>annex 5                                    | 26 March 2010<br>(MEPC 60    | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the eleventh meeting of the GESAMP-BWWG (MEPC 60/2/12) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Japan<br>26 May 2010<br>and<br>25 March 2011 |

| and M                                | ne of the system MEPC document elated to the proposal Final Approval   | Name of manufacturer                                | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval   | Specifications  | Remarks   |
|--------------------------------------|--|---|---|--------------------------------|---|---|
| In<br>(F<br>M<br>S)<br>(E<br>M       | lyundai Heavy<br>ndustries Co., Ltd.<br>HHI) Ballast Water<br>lanagement<br>ystem<br>EcoBallast)<br>IEPC 60/2/1<br>Republic of Korea)  | Hyundai<br>Heavy<br>Industries Co.<br>Ltd.          | MEPC 59/2/16,<br>annex 8                                    | 26 March 2010<br>(MEPC 60      | Flag State Administration was invited to verify that all the recommendations contained in annex 8 of the report of the eighth meeting of the GESAMP-BWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate.     | Type Approved<br>by the Republic of<br>Korea<br>16 March 2011 |
| Bi<br>M<br>Si<br>w<br>tro<br>(S<br>C | pecial Pipe Hybrid allast Water fanagement ystem combined with Ozone eatment version SP-Hybrid BWMS Ozone version)  MEPC 61/2/2 Japan) | Mitsui<br>Engineering &<br>Shipbuilding<br>Co. Ltd. | MEPC 61/2/15,<br>annex 6                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the thirteenth meeting of the GESAMP-BWWG (MEPC 61/2/15) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Japan<br>6 June 2011                      |
| Ba<br>M<br>S                         | ARA Ballast" allast Water lanagement ystem IEPC 61/2/5 Republic of Korea)  | 21st Century<br>Shipbuilding<br>Co. Ltd.            | MEPC 61/2/15,<br>annex 8                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 8 of the report of the thirteenth meeting of the GESAMP-BWWG (MEPC 61/2/15) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by the Republic<br>of Korea 12 July<br>2012  |

| and | me of the system I MEPC document related to the proposal r Final Approval       | Name of manufacturer  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval   | Specifications  | Remarks  |
|-----|---|---|---|--------------------------------|---|--|
| 3   | BalClor Ballast<br>Water Management<br>System<br>MEPC 61/2/4<br>(China)         | Qingdao<br>Sunrui<br>Corrosion and<br>Fouling<br>Control<br>Company | MEPC 61/2/15,<br>annex 9                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 9 of the report of the thirteenth meeting of the GESAMP-BWWG (MEPC 61/2/15) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by China<br>28 January 2011   |
|     | OceanGuard™<br>Ballast Water<br>Management<br>System<br>MEPC 61/2/7<br>(Norway) | Qingdao<br>Headway<br>Technology<br>Co. Ltd.                        | MEPC 61/2/21,<br>annex 5                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the fourteenth meeting of the GESAMP-BWWG (MEPC 61/2/21) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved by Norway 7 November 2011        |
| 17. | Ecochlor® Ballast Water Management System MEPC 61/2/8 (Germany)                 | Ecochlor, Inc,<br>Acton,<br>United States                           | MEPC 61/2/21,<br>annex 6                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the fourteenth meeting of the GESAMP-BWWG (MEPC 61/2/21) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Germany<br>4 November 2011 |

| Name of the system<br>and MEPC document<br>related to the<br>proposal<br>for Final Approval  | Name of manufacturer                             | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval   | Specifications   | Remarks   |
|--|--|---|--------------------------------|--|---|
| 18. Severn Trent De Nora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500)  MEPC 61/2/9 (Germany) | Severn Trent<br>De Nora<br>(STDN), LLC           | MEPC 61/2/21,<br>annex 7                                    | 1 October<br>2010<br>(MEPC 61) | Flag State Administration was invited to verify that all the recommendations contained in annex 7 of the report of the fourteenth meeting of the GESAMP-BWWG (MEPC 61/2/21) have been fully addressed prior to the issuance of a Type Approval Certificate.  | Type Approved<br>by Germany<br>27 July 2011                         |
| 19. HiBallast Ballast Water Management System  MEPC 62/2/5 (Republic of Korea)   | HYUNDAI<br>HEAVY<br>INDUSTRIES<br>Co. Ltd.       | MEPC 62/2/18,<br>annex 5                                    | 15 July 2011<br>(MEPC 62)      | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the seventeenth meeting of the GESAMP-BWWG (MEPC 62/2/18) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by the Republic of<br>Korea<br>11 November<br>2011 |
| 20. Purimar Ballast Water Management System MEPC 62/2/6 (Republic of Korea)  | Samsung<br>Heavy<br>Industries Co.<br>Ltd. (SHI) | MEPC 62/2/18,<br>annex 6                                    | 15 July 2011<br>(MEPC 62)      | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the seventeenth meeting of the GESAMP-BWWG (MEPC 62/2/18) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by the Republic of<br>Korea<br>31 October 2011     |

| an  | ame of the system d MEPC document related to the proposal or Final Approval                                | Name of manufacturer                                  | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval | Specifications  | Remarks   |
|-----|--|---|---|------------------------------|---|---|
| 21. | SiCURE™ Ballast<br>Water<br>Management<br>System  MEPC 62/2/10<br>(Germany)                                | Siemens<br>Water<br>Technologies                      | MEPC 63/2/10,<br>annex 6                                    | 2 March 2012<br>(MEPC 63)    | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the eighteenth meeting of the GESAMP-BWWG (MEPC 63/2/10) have been fully addressed prior to the issuance of a Type Approval Certificate. |   |
| 22. | ERMA FIRST Ballast Water Management System (subsequently changed to ERMA FIRST BWTS)  MEPC 63/2/1 (Greece) | ERMA FIRST<br>E.S.K.<br>Engineering<br>Solutions S.A. | MEPC 63/2/11,<br>annex 5                                    | 2 March 2012<br>(MEPC 63)    | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the nineteenth meeting of the GESAMP-BWWG (MEPC 63/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Greece<br>10 May 2012<br>Type Approval<br>amended by<br>Greece<br>15 January 2015 |
| 23. | MICROFADE™ Ballast Water Management System MEPC 63/2/2 (Japan)   | Kuraray Co.<br>Ltd.                                   | MEPC 63/2/11,<br>annex 6                                    | 2 March 2012<br>(MEPC 63)    | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the nineteenth meeting of the GESAMP-BWWG (MEPC 63/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Japan<br>30 May 2012  |

| and | ame of the system d MEPC document related to the proposal or Final Approval  | Name of manufacturer                              | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval   | Specifications   | Remarks  |
|-----|--|---|---|--------------------------------|--|--|
| 24. | AquaStar <sup>™</sup> Ballast Water Management (subsequently changed to AquaStar <sup>™</sup> BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM) MEPC 63/2/3 (Republic of Korea) | AQUA Eng.<br>Co.                                  | MEPC 63/2/11,<br>annex 7                                    | 2 March 2012<br>(MEPC 63)      | Flag State Administration was invited to verify that all the recommendations contained in annex 7 of the report of the nineteenth meeting of the GESAMP-BWWG (MEPC 63/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate.  | Type Approved<br>by the<br>Republic of Korea<br>15 June 2012 |
| 25. | Neo-Purimar <sup>TM</sup> Ballast Water Management System  MEPC 63/2/6 (Republic of Korea)   | Samsung<br>Heavy<br>Industries Co.,<br>Ltd. (SHI) | MEPC 63/2/21,<br>annex 6                                    | 2 March 2012<br>(MEPC 63)      | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the twentieth meeting of the GESAMP-BWWG (MEPC 63/2/21) have been fully addressed prior to the issuance of a Type Approval Certificate.   |  |
| 26. | DESMI Ocean<br>Guard BWMS<br>MEPC 63/2/7<br>(Denmark)  | DESMI Ocean<br>Guard A/S                          | MEPC 64/2/6,<br>annex 4                                     | 5 October<br>2012<br>(MEPC 64) | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the twenty-first meeting of the GESAMP-BWWG (MEPC 64/2/6) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Denmark<br>7 November 2012               |

| and | me of the system d MEPC document related to the proposal or Final Approval                | Name of manufacturer                 | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval   | Specifications  | Remarks                                   |
|-----|---|--------------------------------------|---|--------------------------------|---|---|
|     | JFE BallastAce that makes use of NEO-CHLOR MARINE™ MEPC 64/2/1 (Japan)                    | JFE<br>Engineering<br>Corporation    | MEPC 64/2/7,<br>annex 5                                     | 5 October<br>2012<br>(MEPC 64) | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the twenty-second meeting of the GESAMP-BWWG (MEPC 64/2/7) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved<br>by Japan<br>26 June 2013 |
|     | Smart Ballast<br>BWMS<br>MEPC 64/2/2<br>(Republic of Korea)                               | STX Metal<br>Co., Ltd.               | MEPC 64/2/7,<br>annex 6                                     | 5 October<br>2012<br>(MEPC 64) | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the twenty-second meeting of the GESAMP-BWWG (MEPC 64/2/7) have been fully addressed prior to the issuance of a Type Approval Certificate. |   |
|     | AQUARIUS® EC<br>Ballast Water<br>Management<br>System<br>MEPC 65/2/1<br>(Netherlands)     | Wärtsilä Water<br>Systems<br>Limited | MEPC 65/2/9,<br>annex 5                                     | 17 May 2013<br>(MEPC 65)       | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the twenty-fourth meeting of the GESAMP BWWG (MEPC 65/2/9) have been fully addressed prior to the issuance of a Type Approval Certificate. |   |
|     | EcoGuardian <sup>™</sup> Ballast Water Management System  MEPC 65/2/4 (Republic of Korea) | Hanla IMS Co.<br>Ltd.                | MEPC 65/2/19,<br>annex 5                                    | 17 May 2013<br>(MEPC 65)       | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the twenty-fifth meeting of the GESAMP BWWG (MEPC 65/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate. |   |

| Name of the system and MEPC document related to the proposal for Final Approval            | Name of manufacturer   | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval | Specifications  | Remarks                                       |
|--|--|---|------------------------------|---|---|
| 31. OceanDoctor Ballast Water Management System  MEPC 65/2/6 (China)                       | Jiujiang Precision Measuring Technology Research Institute and Institute of Marine Materials Science and Engineering of Shanghai Maritime University | MEPC 65/2/19,<br>annex 7                                    | 17 May 2013<br>(MEPC 65)     | Flag State Administration was invited to verify that all the recommendations contained in annex 7 of the report of the twenty-fifth meeting of the GESAMP BWWG (MEPC 65/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate. | Type Approved by<br>China<br>17 November 2014 |
| 32. Ballast Water Management System with PERACLEAN® Ocean (SKY-SYSTEM®)  MEPC 66/2 (Japan) | Nippon Yuka<br>Kogyo co. Ltd<br>(Yuka) and<br>Katayama<br>Chemical, Inc.   | MEPC66/2/7,<br>annex 4                                      | 4 April 2014<br>(MEPC 66)    | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the twenty-sixth meeting of the GESAMP BWWG (MEPC 66/2/7) have been fully addressed prior to the issuance of a Type Approval Certificate.  | Type Approved<br>by Japan<br>21 October 2014  |

| Name of the system<br>and MEPC documen<br>related to the<br>proposal<br>for Final Approval |                                 | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval    | Specifications  | Remarks |
|--|---------------------------------|---|---------------------------------|---|---------|
| 33. Evonik Ballast Water Treatment System with PERACLEAN® Ocean MEPC 66/2/5 (Germany)      | Evonik<br>Industries AG         | MEPC 66/2/10,<br>annex 5                                    | 4 April 2014<br>(MEPC 66)       | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the twenty-seventh meeting of the GESAMP BWWG (MEPC 66/2/10) have been fully addressed prior to the issuance of a Type Approval Certificate. |         |
| 34. MARINOMATE™ Ballast Water Management System  MEPC 67/2 (Republic of Korea              | KT Marine Co.<br>Ltd.           | MEPC 67/2/4,<br>annex 4                                     | 17 October<br>2014<br>(MEPC 67) | Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the twenty-eighth meeting of the GESAMP BWWG (MEPC 67/2/4) have been fully addressed prior to the issuance of a Type Approval Certificate.   |         |
| 35. BlueZone™ Balla<br>Water<br>Management<br>System<br>MEPC 67/2/1<br>(Republic of Korea  | Industries Co.<br>Ltd.          | MEPC 67/2/4,<br>annex 5                                     | 17 October<br>2014<br>(MEPC 67) | Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the twenty-eighth meeting of the GESAMP BWWG (MEPC 67/2/4) have been fully addressed prior to the issuance of a Type Approval Certificate.   |         |
| 36. KURITA™ Ballast<br>Water<br>Management<br>System<br>MEPC 67/2/2<br>(Japan)             | Kurita Water<br>Industries Ltd. | MEPC 67/2/4,<br>annex 6                                     | 17 October<br>2014<br>(MEPC 67) | Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the twenty-eighth meeting of the GESAMP BWWG (MEPC 67/2/4) have been fully addressed prior to the issuance of a Type Approval Certificate.   |         |

| Name of the system and MEPC document related to the proposal for Final Approval | Name of manufacturer   | Relevant<br>GESAMP-Ballast<br>Water Working<br>Group report | Date of<br>Final<br>Approval | Specifications   | Remarks |
|---|------------------------|---|------------------------------|--|---------|
| 37. Ecomarine-EC  | Ecomarine              | MEPC 68/2/21,   | 15 May 2015                  | Flag State Administration was invited to verify  |         |
| MEPC 68/2/5   | Technology<br>Research | annex 5   | (MEPC 68)                    | that all the recommendations contained in annex 5 of the report of the thirty-first meeting of |         |
| (Japan)   | Association            |   |                              | the GESAMP BWWG (MEPC 68/2/21) have  |         |
|   |                        |   |                              | been fully addressed prior   |         |

\_\_\_\_