

Iranian Classification Society Circulars

List of ballast water management systems that make use of Active Substances which received Basic and Final Approval, Based on the BWM.2/Circ.34/Rev.10

Relevant for ship owner and managers

CI-21-15

Dec. 2021

Refer to the latest outcome of the MEPC, at its seventy-seventh session (22 to 26 November 2021), the revised information tables of the approved BWTs (which make use of Active Substances), collected, for reference. Technically, in addition to the previous approved systems, one Basic Approval and two Final Approvals to ballast water management systems granted by the committee.

This circular contains relevant information on the ballast water management systems that received Basic and Final Approval from March 2006 until November 2021.

Information regarding the systems that received type approval certification can be found on the IMO website at <https://www.imo.org/en/OurWork/Environment/Pages/BWMTechnologies.aspx>.



Table I - 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 manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
01 Peraclean® Ocean (subsequently changed to SEDNA® Ballast Water Management System (using Peraclean® Ocean)) MEPC 53/2/12 (Germany)	Degussa GmbH, Germany	MEPC 54/2/12, annex 5	24 March 2006 (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-BWWG (MEPC 54/2/12) had been addressed to its complete satisfaction.
02 Electro-Clean (electrolytic disinfection) system (subsequently changed to Electro-Clean™) MEPC 54/2/3 (Republic of Korea)	Techcross Ltd. and Korea Ocean Research and Development Institute (KORDI)	MEPC 54/2/12, annex 6	24 March 2006 (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-BWWG (MEPC 54/2/12) had been addressed to its complete satisfaction.
03 Special Pipe Ballast Water Management System (combined with Ozone treatment) MEPC 55/2 (Japan)	Japan Association of Marine Safety (JAMS)	MEPC 55/2/16, annex 5	13 October 2006 (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-BWWG (MEPC 55/2/16) during further development of the system.
04 EctoSys™ electrochemical system MEPC 55/2/4 (Sweden)	Permascand AB, Sweden, subsequently acquired by RWO GmbH, Germany	MEPC 55/2/16, annex 7	13 October 2006 (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-BWWG (MEPC 55/2/16) during further development of the system.
05 PureBallast System MEPC 55/2/5 (Sweden)	Alfa Laval/Wallenius Water AB	MEPC 56/2/2, annex 5	13 July 2007 (MEPC 56)	Not applicable.

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
06 NK Ballast Water Treatment System (subsequently changed to NK-O3 BlueBallast System (Ozone), subsequently changed to NK-O3 BlueBallast II Plus) MEPC 55/2/3 and MEPC 55/2/27 (Republic of Korea)	NK Company Ltd., Republic of Korea	MEPC 56/2/2, annex 6	13 July 2007 (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-BWWG (MEPC 56/2/2) during further development of the system.
07 Hitachi Ballast Water Purification System (ClearBallast) MEPC 57/2/2 (Japan)	Hitachi, Ltd./Hitachi Plant Technologies, Ltd.	MEPC 57/2, annex 5	4 April 2008 (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-BWWG (MEPC 57/2) during further development of the system.
08 Resource Ballast Technologies System MEPC 56/2/3 (South Africa)	Resource Ballast Technologies (Pty) Ltd.	MEPC 57/2/10, annex 5	4 April 2008 (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-BWWG Group (MEPC 57/2/10) during further development of the system.
09 GloEn-Patrol™ Ballast Water Management System MEPC 57/2/4 (Republic of Korea)	Panasia Co., Ltd.	MEPC 57/2/10, annex 6	4 April 2008 (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-BWWG (MEPC 57/2/10) during further development of the system.
10 OceanSaver® Ballast Water Management System MEPC 57/2/6 (Norway)	MetaFil AS (subsequently changed to OceanSaver AS)	MEPC 57/2/10, annex 8	4 April 2008 (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-BWWG (MEPC 57/2/10) during further development of the system.
11 TG Ballastcleaner and TG Environmentalguard System (subsequently changed to JFE BallastAce® Ballast Water Management System) MEPC 57/2/8 (Japan)	The Toagosei Group (TG Corporation, Toagosei Co. Ltd. and Tsurumi Soda Co., Ltd.)	MEPC 58/2/7, annex 5	10 October 2008 (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-BWWG (MEPC 58/2/7) during further development of the system.
12 Greenship Sedinox Ballast Water Management System MEPC 57/2/7 (Netherlands)	Greenship Ltd.	MEPC 58/2/7, annex 6	10 October 2008 (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-BWWG (MEPC 58/2/7) during further development of the system.

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
13 Ecochlor® Ballast Water Treatment System MEPC 58/2/2 (Germany)	Ecochlor, INC, Acton (USA)	MEPC 58/2/8, annex 5	10 October 2008 (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-BWWG (MEPC 58/2/8) during further development of the system.
14 Blue Ocean Shield Ballast Water Management System MEPC 59/2/2 (China)	China Ocean Shipping (Group) Company (COSCO)	MEPC 59/2/16, annex 7	17 July 2009 (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-BWWG (MEPC 59/2/16) during further development of the system.
15 Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (EcoBallast) MEPC 59/2/4 (Republic of Korea)	Hyundai Heavy Industries Co., Ltd., Republic of Korea	MEPC 59/2/16, annex 8	17 July 2009 (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-BWWG (MEPC 59/2/16) during further development of the system.
16 AquaTriComb™ Ballast Water Treatment System MEPC 59/2/8 (Germany)	Aquaworx ATC GmbH	MEPC 59/2/19, annex 6	17 July 2009 (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-BWWG (MEPC 59/2/19) during further development of the system.
17 SiCURE™ Ballast Water Management System (subsequently changed to SeaCURE® BWMS) MEPC 59/2/11 (Germany)	Siemens Water Technologies (subsequently changed to Evoqua Water Technologies Ltd)	MEPC 60/2/11, annex 6	26 March 2010 (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-BWWG (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 Corrosion and Fouling Control Company	MEPC 60/2/12, annex 6	26 March 2010 (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-BWWG (MEPC 60/2/12) during further development of the system.
19 DESMI Ocean Guard Ballast Water Management System MEPC 60/2/4 (Denmark)	DESMI Ocean Guard A/S	MEPC 60/2/12, annex 7	26 March 2010 (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-BWWG (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 GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
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 Shipbuilding Co., Ltd	MEPC 60/2/12, annex 8	26 March 2010 (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-BWWG (MEPC 60/2/12) during further development of the system.
21 HiBallast™ (Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (HiBallast)) MEPC 60/2/6 (Republic of Korea)	Hyundai Heavy Industries Co., Ltd., Republic of Korea	MEPC 60/2/16, annex 4	26 March 2010 (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-BWWG (MEPC 60/2/16) during further development of the system
22 Kwang San Co., Ltd. (KS) Ballast Water Management System "En-Ballast" MEPC 60/2/7 (Republic of Korea)	Kwang San Co., Ltd	MEPC 60/2/16, annex 5	26 March 2010 (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-BWWG (MEPC 60/2/16) during further development of the system
23 OceanGuard™ Ballast Water Management System MEPC 60/2/8 (Norway)	Qingdao Headway Technology Co., Ltd.	MEPC 60/2/16, annex 6	26 March 2010 (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-BWWG (MEPC 60/2/16) during further development of the system.
24 Severn Trent De Nora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500, subsequently changed to BALPURE®) MEPC 60/2/9 (Germany)	Severn Trent De Nora (STDN), LLC subsequently changed to De Nora Water Technologies (DNWT))	MEPC 60/2/16, annex 7	26 March 2010 (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-BWWG (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™) MEPC 61/2 (Republic of Korea)	Techwin Eco Co., Ltd	MEPC 61/2/15, annex 4	1 October 2010 (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-BWWG (MEPC 61/2/15) during further development of the system.

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
26 AquaStar Ballast Water Management System (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM) MEPC 61/2/1 (Republic of Korea)	AQUA Eng. Co., Ltd	MEPC 61/2/15, annex 5	1 October 2010 (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-BWWG (MEPC 61/2/15) during further development of the system.
27 Kuraray Ballast Water Management System (subsequently changed to MICROFADETM Ballast Water Management System) MEPC 61/2/6 (Japan)	Kuraray Co., Ltd	MEPC 61/2/21, annex 4	1 October 2010 (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-BWWG (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 ENGINEERING SOLUTIONS S.A.	MEPC 62/2/11, annex 5	15 July 2011 (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-BWWG (MEPC 62/2/11) during further development of the system.
29 BlueSeas Ballast Water Management System MEPC 61/2/12 (Singapore)	Envirotech and Consultancy Pte. Ltd	MEPC 62/2/11, annex 6	15 July 2011 (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-BWWG (MEPC 62/2/11) during further development of the system.
30 SKY-SYSTEM® with Peraclean® Ocean Ballast Water Management System MEPC 62/2 (Japan)	Katayama Chemical, Inc.	MEPC 62/2/12, annex 4	15 July 2011 (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-BWWG (MEPC 62/2/12) during further development of the system.
31 JFE BallastAce® that makes use of NEO-CHLOR MARINE® MEPC 62/2/1 (Japan)	JFE Engineering Corporation	MEPC 62/2/12, annex 5	15 July 2011 (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-BWWG (MEPC 62/2/12) during further development of the system.
32 BallastMaster Ballast Water Management System MEPC 62/2/2 (Germany)	GEA Westfalia Separator Systems GmbH	MEPC 62/2/12, annex 6	15 July 2011 (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-BWWG (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 GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
33 BlueWorld Ballast Water Management System MEPC 62/2/3 (Singapore)	Envirotech and Consultancy Pte. Ltd.	MEPC 62/2/12, annex 7	15 July 2011 (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-BWWG (MEPC 62/2/12) during further development of the system
34 Neo-Purimar™ Ballast Water Management System MEPC 62/2/7 (Republic of Korea)	SAMSUNG HEAVY INDUSTRIES Co., Ltd.	MEPC 62/2/18, annex 7	15 July 2011 (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-BWWG (MEPC 62/2/18) during further development of the system.
35 "Smart Ballast" Ballast Water Management System MEPC 62/2/8 (Republic of Korea)	STX Metal Co., Ltd.	MEPC 63/2/10, annex 4	2 March 2012 (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-BWWG (MEPC 63/2/10) during further development of the system.
36 DMU -OH Ballast Water Management System MEPC 63/2 (China)	Dalian Maritime University	MEPC 63/2/11, annex 4	2 March 2012 (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-BWWG (MEPC 63/2/11) during further development of the system.
37 EcoGuardian™ Ballast Water Management System MEPC 63/2/4 (Republic of Korea)	Hanla IMS Co., Ltd	MEPC 63/2/21, annex 4	2 March 2012 (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-BWWG (MEPC 63/2/21) during further development of the system.
38 KTM-Ballast Water Management System MEPC 63/2/8 (Republic of Korea)	Korea Top Marine (KT Marine) Co., Ltd.	MEPC 64/2/6, annex 5	5 October 2012 (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-BWWG (MEPC 64/2/6) during further development of the system.
39 Hamworthy Aquarius™-EC BWMS MEPC 63/2/9 (Netherlands)	Hamworthy Water Systems Ltd.	MEPC 64/2/6, annex 6	5 October 2012 (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-BWWG (MEPC 64/2/6) during further development of the system

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
40 OceanDoctor Ballast Water Management System MEPC 64/2 (China)	Jiujiang Precision Measuring Technology Research Institute	MEPC 64/2/7, annex 4	5 October 2012 (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-BWWG (MEPC 64/2/7) during further development of the system.
41 HS-BALLAST Ballast Water Management System MEPC 64/2/3 (Republic of Korea)	HWASEUNG R&A Co., Ltd	MEPC 64/2/19, annex 4	5 October 2012 (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-BWWG (MEPC 64/2/19) during further development of the system.
42 GloEn-Saver™ Ballast Water Management System MEPC 64/2/4 (Republic of Korea)	PANASIA Co., Ltd.	MEPC 64/2/19, annex 5	5 October 2012 (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-BWWG (MEPC 64/2/19) during further development of the system
43 Van Oord Ballast Water Management System MEPC 65/2/2 (Netherlands)	Van Oord B.V.	MEPC 65/2/9, annex 6	17 May 2013 (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-BWWG (MEPC 65/2/9) during further development of the system
44 REDOX AS Ballast Water Management System MEPC 65/2/3 (Norway)	REDOX Maritime Technologies AS	MEPC 65/2/19, annex 4	17 May 2013 (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-BWWG (MEPC 65/2/19) during further development of the system.
45 Blue Zone™ Ballast Water Management System MEPC 65/2/5 (the Republic of Korea)	SUNBO INDUSTRIES Co., Ltd., DSEC Co., Ltd., and the Korean Institute of Machinery & Material (KIMM)	MEPC 65/2/19, annex 6	17 May 2013 (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-BWWG (MEPC 65/2/19) during further development of the system.
46 ECOLCELL BTs Ballast Water Management System MEPC 66/2/1 (Italy)	Azienda Chimica Genovese	MEPC 66/2/7, annex 5	4 April 2014 (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-BWWG (MEPC 66/2/7) during further development of the system

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
47 ATPS-BLUEsys Ballast Water Management System MEPC 66/2/2 (Japan)	Panasonic Environmental Systems & Engineering Co., Ltd	MEPC 66/2/7, annex 6	4 April 2014 (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-BWWG (MEPC 66/2/7) during further development of the system
48 Ecomarine-EC Ballast Water Management System MEPC 66/2/3 (Japan)	Ecomarine Technology Research Association	MEPC 66/2/7, annex 7	4 April 2014 (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-BWWG (MEPC 66/2/7) during further development of the system
49 KURITA™ Ballast Water Management System MEPC 66/2/4 (Japan)	Kurita Water Industries Ltd	MEPC 66/2/10, annex 4	4 April 2014 (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-BWWG (MEPC 66/2/10) during further development of the system.
50 ElysisGuard Ballast Water Management System MEPC 67/2/3 (Singapore)	KALF Engineering Pte. Ltd	MEPC 67/2/9, annex 4	17 October 2014 (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-BWWG (MEPC 67/2/9) during further development of the system
51 NK-CI BlueBallast System MEPC 68/2 (Republic of Korea)	NK Company Ltd.	MEPC 68/2/10, annex 4	15 May 2015 (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-BWWG (MEPC 68/2/10) during further development of the system.
52 ECS HYCHLOR™ System MEPC 68/2/1 (Republic of Korea)	TECHCROSS Inc.	MEPC 68/2/10, annex 5	15 May 2015 (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-BWWG (MEPC 68/2/10) during further development of the system.
53 ECS HYCHEM™ System MEPC 68/2/2 (Republic of Korea)	TECHCROSS Inc	MEPC 68/2/10, annex 6	15 May 2015 (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-BWWG (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 GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
54 ECS HYBRID™ System MEPC 68/2/3 (Republic of Korea)	TECHCROSS Inc.	MEPC 68/2/10, annex 7	15 May 2015 (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-BWWG (MEPC 68/2/10) during further development of the system
55 VARUNA Ballast Water Treatment System MEPC 68/2/6 (Singapore)	Kadalneer Technologies Pte. Ltd	MEPC 68/2/21, annex 6	15 May 2015 (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-BWWG (MEPC 68/2/21) during further development of the system.
56 ClearBal BWMS MEPC 70/4 (Denmark)	University of Strathclyde	MEPC 70/4/6, annex 4	28 October 2016 (MEPC 70)	Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the thirty-third meeting of the GESAMP-BWWG (MEPC 70/4/6) during further development of the system.
57 MICROFADE II Ballast Water Management System MEPC 71/4 (Netherlands)	Kashiwa Co., Ltd. and Kuraray Co., Ltd	MEPC 71/4/3, annex 4	7 July 2017 (MEPC 71)	Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the thirty-fourth meeting of the GESAMP-BWWG (MEPC 71/4/3) during further development of the system.
58 Envirocleanse inTank™ BWTS (subsequently changed to inTank BWTS) MEPC 71/4/2 (Norway)	Envirocleanse, LLC (ownership subsequently transferred to Scienco/FAST)	MEPC 71/4/3, annex 6	7 July 2017 (MEPC 71)	Flag State Administration was invited to take into account all the recommendations indicated in annex 6 of the report of the thirty-fourth meeting of the GESAMP-BWWG (MEPC 71/4/3) during further development of the system.
59 BIOBALLAST 1000 MEPC 73/4 (Germany)	Biomarine S.r.l.	MEPC 73/4/2, annex 4	26 October 2018 (MEPC 73)	Flag State Administration was invited to take into account all the recommendations indicated in annex 4 of the report of the thirty-sixth meeting of the GESAMP-BWWG (MEPC 73/4/2) during further development of the system.
60 CleanBallast® - Ocean Barrier System MEPC 74/4/1 (Norway)	Veolia Water Technologies Deutschland GmbH	MEPC 74/4/6, annex 5	17 May 2019 (MEPC 74)	Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the thirty-seventh meeting of the GESAMP-BWWG (MEPC 74/4/6) during further development of the system.

Name of the system and MEPC document related to the proposal for Basic Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Basic Approval	Specifications
61 FlowSafe MEPC 74/4/5 (Cyprus)	Flowater Technologies Ltd.	MEPC 74/4/9, annex 5	17 May 2019 (MEPC 74)	Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the thirty-eighth meeting of the GESAMP-BWWG (MEPC 74/4/9) during further development of the system.
62 RADClean® BWMS MEPC 77/4 (Islamic Republic of Iran)	Rahavaran Ayandeh Darya Company, RAD Co.	MEPC 77/4/4, annex 5	26 November 2021 (MEPC 77)	Flag State Administration was invited to take into account all the recommendations indicated in annex 5 of the report of the forty-first meeting of the GESAMP-BWWG (MEPC 77/4/4) during further development of the system

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

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
01 PureBallast System MEPC 56/2/1 (Norway)	Alfa Laval/ Wallenius Water AB	MEPC 56/2/2, annex 5	13 July 2007 (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-BWWG (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 by Norway June 2008
02 SEDNA® Ballast Water Management System (Using Peraclean® Ocean) MEPC 57/2/5 (Germany)	Degussa GmbH, Germany	MEPC 57/2/10, annex 7	4 April 2008 (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-BWWG (MEPC 57/2/10) prior to the issuance of Type Approval Certificate	Type Approved by Germany 10 June 2008
03 Electro-Clean™ System MEPC 58/2 Republic of Korea) MEPC 75/4/2 (Republic of Korea)	Techcross Ltd. and Korea Ocean Research and Development Institute (KORDI)	MEPC 58/2/7, annex 7 MEPC 75/4/6, annex 8	10 October 2008 (MEPC 58) 20 November 2020 (MEPC 75)	Not applicable. Final Approval extended for use in fresh water	Type Approved by the Republic of Korea 31 December 2008 Type Approval Amended 7 September 2020
04 OceanSaver® Ballast Water Management System MEPC 58/2/1 (Norway)	OceanSaver AS	MEPC 58/2/8, annex 4	10 October 2008 (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 GESAMPBWWG (MEPC 58/2/8) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by Norway 17 April 2009 and 22 December 2011 Type Approval amended 15 January 2020
05 RWO Ballast Water Management System (CleanBallast) MEPC 59/2 (Germany)	RWO GmbH Marine Water Technology, Germany	MEPC 59/2/16, annex 5	17 July 2009 (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 GESAMPBWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by Germany 1 September 2010
06 NK-O3 BlueBallast System (Ozone) (subsequently changed to: NK-O3 BlueBallast II Plus) MEPC 59/2/3 (Republic of Korea) MEPC 75/4/10 (Liberia)	NK Company Ltd.,	MEPC 59/2/16, annex 6 MEPC 75/4/12, annex 6	17 July 2009 (MEPC 59) 20 November 2020 (MEPC 75)	Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the eighth meeting of the GESAMPBWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate. Final Approval extended for use in fresh water.	Type Approved by the Republic of Korea 24 November 2009

Name of the system and MEPC document related to the proposal for Final Approval		Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
07	Hitachi Ballast Water Purification System (ClearBallast) MEPC 59/2/5 (Japan)	Hitachi, Ltd. /Hitachi Plant Technologies, Ltd	MEPC 59/2/19, annex 4	17 July 2009 (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 GESAMPBWWG (MEPC 59/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by Japan 5 March 2010
08	Greenship Sedinox Ballast Water Management System MEPC 59/2/6 (Netherlands)	Greenship Ltd	MEPC 59/2/19, annex 5	17 July 2009 (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 GESAMPBWWG (MEPC 59/2/19) have been fully addressed prior to the issuance of a Type Approval Certificate.	
09	GloEn-Patrol™ Ballast Water Management System MEPC 59/2/7 (Republic of Korea)	Panasia Co., Ltd.	MEPC 60/2/11, annex 4	26 March 2010 (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 GESAMPBWWG (MEPC 60/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by the Republic of Korea 4 December 2009
10	Resource Ballast Technologies System MEPC 59/2/10 (South Africa)	Resource Ballast Technologies (Pty) Ltd.	MEPC 60/2/11, annex 7	26 March 2010 (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 GESAMPBWWG (MEPC 60/2/11) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by South Africa 19 April 2011
11	JFE BallastAce® Ballast Water Management System MEPC 60/2/2 (Japan)	JFE Engineering Corporation	MEPC 60/2/12, annex 5	26 March 2010 (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 by Japan 26 May 2010 Type Approval amended 25 March 2011 Type Approval Amended 15 December 2020
12	Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (EcoBallast) MEPC 60/2/1 (Republic of Korea)	Hyundai Heavy Industries Co., Ltd.	MEPC 59/2/16, annex 8	26 March 2010 (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 GESAMPBWWG (MEPC 59/2/16) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by the Republic of Korea 16 March 2011

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
13 Special Pipe Hybrid Ballast Water Management System combined with Ozone treatment version (SP-Hybrid BWMS Ozone version) MEPC 61/2/2 (Japan)	Mitsui Engineering & Shipbuilding Co., Ltd.	MEPC 61/2/15, annex 6	1 October 2010 (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 by Japan 6 June 2011
14 "ARA Ballast" Ballast Water Management System MEPC 61/2/5 (Republic of Korea)	21st Century Shipbuilding Co., Ltd.	MEPC 61/2/15, annex 8	1 October 2010 (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 by the Republic of Korea 12 July 2012
15 BalClor Ballast Water Management System MEPC 61/2/4 (China)	Qingdao Sunrui Corrosion and Fouling Control Company	MEPC 61/2/15, annex 9	1 October 2010 (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 by China 28 January 2011 Type Approved by Norway 6 April 2018 and revised 20 December 2018.
16 OceanGuard™ Ballast Water Management System MEPC 61/2/7 (Norway)	Qingdao Headway Technology Co., Ltd.	MEPC 61/2/21, annex 5	1 October 2010 (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 Type Approval Amended 14 December 2018
17 Ecochlor® Ballast Water Management System MEPC 61/2/8 (Germany)	Ecochlor, Inc, Acton, United States	MEPC 61/2/21, annex 6	1 October 2010 (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 by Germany 4 November 2011 Type Approved by Norway 3 August 2020
18 Severn Trent De Nora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500, subsequently changed to BALPURE®) MEPC 61/2/9 (Germany) MEPC 75/4/4 (United Kingdom)	Severn Trent De Nora (STDN), LLC (subsequently changed to De Nora Water Technologies (DNWT))	MEPC 61/2/21, annex 7 MEPC 75/4/6, annex 9	1 October 2010 (MEPC 61) 20 November 2020 (MEPC 75)	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 Final Approval extended for use in fresh water	Type Approved by Germany 27 July 2011

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
<p>19</p> <p>HiBallast™ MEPC 62/2/5 (Republic of Korea) MEPC 75/4/1 (Republic of Korea)</p> <p>MEPC 75/4/1 (Republic of Korea)</p>	Hyundai Heavy Industries Co., Ltd	<p>MEPC 62/2/18, annex 5</p> <p>MEPC 75/4/6, annex 7</p>	<p>15 July 2011 (MEPC 62)</p> <p>20 November 2020 (MEPC 75)</p>	<p>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.</p> <p>Final Approval extended for use in fresh water</p>	<p>Type Approved by the Republic of Korea 11 November 2011</p> <p>Type Approved by Norway 19 December 2018</p>
<p>20</p> <p>Purimar™ Ballast Water Management</p> <p>System MEPC 62/2/6 (Republic of Korea)</p> <p>MEPC 74/4/3 (Republic of Korea)</p>	Samsung Heavy Industries Co., Ltd. (SHI)	<p>MEPC 62/2/18, annex 6</p> <p>MEPC 74/4/9, annex 6</p>	<p>15 July 2011 (MEPC 62)</p> <p>17 May 2019 (MEPC 74)</p>	<p>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. Final Approval extended for use in fresh water</p>	<p>Type Approved by the Republic of Korea 31 October 2011</p> <p>Type Approval Amended 7 September 2020</p>
<p>21</p> <p>SiCURE™ Ballast Water Management System (subsequently changed to SeaCURE® BWMS)</p> <p>MEPC 62/2/10 (Germany)</p> <p>MEPC 75/4/9 (Liberia)</p>	Siemens Water Technologies (subsequently changed to Evoqua Water Technologies Ltd)	<p>MEPC 63/2/10, annex 6</p> <p>MEPC 75/4/12, annex 4</p>	<p>2 March 2012 (MEPC 63)</p> <p>20 November 2020 (MEPC 75)</p>	<p>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. Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the fortieth meeting of the GESAMP-BWWG (MEPC 75/4/12) have been fully addressed prior to the issuance of a Type Approval Certificate.</p>	<p>Type Approved by Germany 24 February 2014</p> <p>Type Approved by Liberia 20 April 2021</p>
<p>22</p> <p>ERMA FIRST Ballast Water Management System (subsequently changed to ERMA FIRST BWTS)</p> <p>MEPC 63/2/1 (Greece)</p>	ERMA FIRST E.S.K. Engineering Solutions S.A	MEPC 63/2/11, annex 5	2 March 2012 (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	<p>Type Approved by Greece 10 May 2012</p> <p>Type Approval amended 18 October 2018</p> <p>Type Approval Amended 27 June 2019</p>
<p>23</p> <p>MICROFADETM Ballast Water Management System</p> <p>MEPC 63/2/2 (Japan)</p>	Kuraray Co., Ltd	MEPC 63/2/11, annex 6	2 March 2012 (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 by Japan 30 May 2012

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
24 AquaStar™ Ballast Water Management (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM) MEPC 63/2/3 (Republic of Korea)	AQUA Eng. Co.	MEPC 63/2/11, annex 7	2 March 2012 (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 by The Republic of Korea 15 June 2012
25 Neo-Purimar™ Ballast Water Management System MEPC 63/2/6 (Republic of Korea)	Samsung Heavy Industries Co., Ltd. (SHI)	MEPC 63/2/21, annex 6	2 March 2012 (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 Guard BWMS MEPC 63/2/7 (Denmark)	DESMI Ocean Guard A/S	MEPC 64/2/6, annex 4	5 October 2012 (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 by Denmark 7 November 2012
27 JFE BallastAce that makes use of NEOCHLOR MARINE® MEPC 64/2/1 (Japan) (Revised in MEPC 77/4/1, Japan)	JFE Engineering Corporation	MEPC 64/2/7, annex 5	5 October 2012 (MEPC 64) 26 November 2021 (MEPC 77)	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. Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the forty-first meeting of the GESAMPBWWG (MEPC 77/4/4) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by Japan 26 June 2013
28 Smart Ballast BWMS MEPC 64/2/2 (Republic of Korea)	STX Metal Co., Ltd	MEPC 64/2/7, annex 6	5 October 2012 (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.	

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
29 AQUARIUS® EC Ballast Water Management System (subsequently changed to Wärtsilä Aquarius EC BWMS) MEPC 65/2/1 (Netherlands)	Wärtsilä Water Systems Limited	MEPC 65/2/9, annex 5	17 May 2013 (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 GESAMPBWWG (MEPC 65/2/9) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by Norway 12 June 2020
30 EcoGuardian™ Ballast Water Management System MEPC 65/2/4 (Republic of Korea) MEPC 75/4 (Republic of Korea)	Hanla IMS Co. Ltd	MEPC 65/2/19, annex 5 MEPC 75/4/6, annex 6	17 May 2013 (MEPC 65) 20 November 2020 (MEPC 75)	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. Final Approval extended for use in fresh water.	Type Approved by The Republic of Korea 8 May 2015 Type Approval amended 7 September 2020
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, annex 7	17 May 2013 (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 China 17 November 2014
32 Ballast Water Management System with PERACLEAN® Ocean (SKY-SYSTEM®) MEPC 66/2 (Japan)	Nippon Yuka Kogyo co. Ltd (Yuka) and Katayama Chemical, Inc	MEPC 66/2/7, annex 4	4 April 2014 (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 by Japan 21 October 2014
33 Evonik Ballast Water Treatment System with PERACLEAN® Ocean MEPC 66/2/5 (Germany)	Evonik Industries AG	MEPC 66/2/10, annex 5	4 April 2014 (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 GESAMPBWWG (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. Ltd.			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.	

Name of the system and MEPC document related to the proposal for Final Approval		Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
35	BlueZone™ Ballast Water Management System MEPC 67/2/1 (Republic of Korea)	Sunbo Industries Co. Ltd	MEPC 67/2/4, annex 5	17 October 2014 (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	Type Approved by The Republic of Korea 8 September 2015
36	KURITA™ Ballast Water Management System MEPC 67/2/2 (Japan)	Kurita Water Industries Ltd.	MEPC 67/2/4, annex 6	17 October 2014 (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.	Type Approved by Japan 13 January 2017 Type Approved by Norway 19 January 2021
37	Ecomarine-EC MEPC 68/2/5 (Japan)	Ecomarine Technology Research Association	MEPC 68/2/21, annex 5	15 May 2015 (MEPC 68)	Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the thirty-first meeting of the GESAMP-BWWG (MEPC 68/2/21) have been fully addressed prior to the issuance of a Type Approval Certificate	
38	ECS-HYCHLORTM System MEPC 69/4 (Republic of Korea)	TECHCROSS Inc	MEPC 69/4/5, annex 4	22 April 2016 (MEPC 69)	Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the thirty-second meeting of the GESAMP-BWWG (MEPC 69/4/5) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by Norway 10 February 2020
39	NK-CI BlueBallast System MEPC 69/4/1 (Republic of Korea)	NK Company Ltd.	MEPC 69/4/5, annex 5	22 April 2016 (MEPC 69)	Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the thirty-second meeting of the GESAMP-BWWG (MEPC 69/4/5) have been fully addressed prior to the issuance of a Type Approval Certificate	
40	ATPS-BLUEsys ballast water management system MEPC 69/4/2 (Japan)	Panasonic Environmental Systems & Engineering Co., Ltd.	MEPC 69/4/5, annex 6	22 April 2016 (MEPC 69)	Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the thirty-second meeting of the GESAMP-BWWG (MEPC 69/4/5) have been fully addressed prior to the issuance of a Type Approval Certificate.	Type Approved by Japan 30 March 2017 Type Approved by Norway 10 November 2020

Name of the system and MEPC document related to the proposal for Final Approval	Name of manufacturer	Relevant GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
41 ECS-HYCHEM™ System MEPC 70/4/1 (Republic of Korea)	TECHCROSS Inc	MEPC 70/4/6, annex 5	28 October 2016 (MEPC 70)	Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the thirty-third meeting of the GESAMP-BWWG (MEPC 70/4/6) have been fully addressed prior to the issuance of a Type Approval Certificate	
42 ECS-HYBRID™ System MEPC 71/4/1 (Republic of Korea)	TECHCROSS Inc.	MEPC 71/4/3, annex 5	7 July 2017 (MEPC 71)	Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the thirty-fourth meeting of the GESAMP-BWWG (MEPC 71/4/3) have been fully addressed prior to the issuance of a Type Approval Certificate	
43 Envirocleanse inTank™ BWTS (Electrochlorination Variation) (subsequently changed to inTank BWTS Electrochlorination (EC) variation) MEPC 73/4/1 (Norway)	Envirocleanse, LLC. (ownership subsequently transferred to Scienco/FAST)	MEPC 73/4/2, annex 5	26 October 2018 (MEPC 73)	Flag State Administration was invited to verify that all the recommendations contained in annex 5 of the report of the thirty-sixth meeting of the GESAMP-BWWG (MEPC 73/4/2) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by Norway 20 December 2018
44 Envirocleanse inTank™ BWTS (Bulk Chemical Variation) (subsequently changed to inTank BWTS Bulk Chemical (BC) variation) MEPC 74/4 (Norway)	Envirocleanse, LLC (ownership subsequently transferred to Scienco/FAST)	MEPC 74/4/6, annex 4	17 May 2019 (MEPC 74)	Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the thirty-seventh meeting of the GESAMP-BWWG (MEPC 74/4/6) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by Norway 4 July 2019
45 MICROFADE II Ballast Water Management System MEPC 74/4/2 (Netherlands)	by Kuraray CO., LTD.	MEPC 74/4/6, annex 6	17 May 2019 (MEPC 74)	Flag State Administration was invited to verify that all the recommendations contained in annex 6 of the report of the thirty-seventh meeting of the GESAMP BWWG (MEPC 74/4/6) have been fully addressed prior to the issuance of a Type Approval Certificate	Type Approved by the Netherlands 6 April 2020
46 CleanBallast® -Ocean Barrier System MEPC 75/4/3 (Norway)	Veolia Water Technologies Deutschland GmbH	MEPC 75/4/6, annex 4	20 November 2020 (MEPC 75)	Flag State Administration was invited to verify that all the recommendations contained in annex 4 of the report of the thirty-ninth meeting of the GESAMP-BWWG (MEPC 75/4/12) 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 GESAMP-Ballast Water Working Group report	Date of Final Approval	Specifications	Remarks
47 HiBallast NF™ Ballast Water Management System MEPC 77/4/2 (Republic of Korea)	Hyundai Heavy Industries Co., Ltd. (HHI)	MEPC 77/4/4, annex 7	26 November 2021 (MEPC 77)	Flag State Administration was invited to verify that all the recommendations contained in annex 7 of the report of the forty-first meeting of the GESAMPBWWG (MEPC 77/4/4) have been fully addressed prior to the issuance of a Type Approval Certificate	

For any questions about this Technical Information, please contact:
 Iranian Classification Society (ICS)
 Convention & Legislation Departmentⁱ
 Phone: +98-21-42186210
 Fax: +98-21-88837744
 E-Mail: clld@ics.org.ir

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