Alternate Management System Review Checklist

A Guideline (G8) Specification (G8 section noted in brackets)	B Cross Reference (Applicant to identify page, paragraph and/or table where this information is located)	C Adequacy (USCG to note Y/N/NA)	D Comments (Applicant – black; USCG – red)
1. BWMS documentation [5]			
1.1 BWMS description, including diagrammatic drawing(s) showing typical pumping and piping arrangements (including a Bill of Materials and the specifications and standard/s which it meets), sampling facilities for control and monitoring systems, operational outlets for treated water and waste streams [5.1]	System manual Ch.2 Sec.2 Ch.6 Sec.7		
1.1.1 Control equipment automatically monitors and adjusts necessary treatment dosages, intensities or other aspects of the BWMS necessary for proper administration of necessary treatment [4.10]	System manual: Ch.2 Sec.2.4/2.7/2.8		
1.1.2 Control equipment incorporates a continuous self-monitoring function when BWMS is in operation [4.11]	System manual Ch.3 Sec.4.2.16-20		
1.1.3 Monitoring equipment records the proper functioning or failure of the BWMS. [4.12]	System manual Ch.5 Sec 1.2.1		
1.1.4 Control equipment stores data on monitored functions and conditions for at least 24 months; stored data can be displayed or printed for inspection. [4.13]	System manual Ch.3, Pt.3.10		
1.2 Protections against interference [4.5]			
1.2.1 Every access beyond requirements of 4.4 requires breaking a seal [4.5.1]	System manual: Ch.3 Sec.3.1		
1.2.2 Visual alarm is activated whenever the BWMS is in operation for purpose of cleaning, calibration, or repair; such events recorded by control equipment [4.5.2]	System manual: Ch.5 Sec 2.1 Ch.7 Sec 1		
1.2.3 Suitable emergency over-rides/by-passes to protect ship and crew [4.5.3]	System manual: Ch2. Sec.2.7		
1.2.4 By-passes activate an alarm and the event is recorded by the control equipment [4.5.4]	System manual: Ch5,Sec.2.1 Alarm 1.17/1.18		
1.3 Audible and visual alarm signals in stations from which ballast water operations and ballast water management are	System manual: Ch5.Pt.1.1		

controlled [4.3]			
1.4 Manufacturer's equipment manuals containing details of major components of the BWMS and their operation and maintenance [5.1.2]	System manual Ch.2, Ch.3 and Ch.7		
1.5 Operation and technical manual for complete BWMS covering arrangements, operation, and maintenance of the BWMS as a whole, and specifically describing any parts not covered by manufacturers equipment manuals [5.1.3]	System manual PureBallast 1.2		
1.5.1 Operations section of the manual includes normal operational procedures [5.1.4]	System manual Ch.3, Sec.3		
1.5.2 Documentation of simple and effective means for operation and control [4.8]	System manual Ch.3, Sec.3		
1.5.3 Operations manual includes procedures in the event of a malfunction of the BWMS, including emergency actions necessary for securing the ship [5.1.4]	System manual: Ch.2 Sec.2.7 N.B. bypass valve not operated from BWMS		
1.5.4 Operations manual contains maintenance procedures [5.1.3]	System manual: Ch.7		
1.6 All working parts of the BWMS liable to wear or damage easily accessible for maintenance [4.4]	System manual: Ch.7 Sec.3.2/4.1-3 /5.1		
1.6.1 Means provided to check on drift of, repeatability by, measuring devices that are part of control equipment, and for re-zeroing control equipment meters. [4.14]	System manual: Ch.7 Sec.6.4		
1.6.2 Facilities incorporated for checking the performance/calibration of components of BWMS that take measurements [4.6]	System manual: Ch.4		
1.7 Operations manual describes methods for conditioning of treated water prior to discharge to control residual treatment chemicals, disinfection by products, and the general suitability of the treated water for discharge. [5.1.5]	Not Applicable		
1.8 Technical section of the manual includes adequate information (including description and diagrammatic drawings of monitoring and electrical/electronic wiring) to enable faultfinding. [5.1.7]	System manual: Ch.3 Sec.5 Ch.5 Ch.6 Sec.7.3		
1.9 Technical section of the manual includes specifications defining, inter alia, requirements for location and mounting of components, arrangements for sampling by control and monitoring equipment, and arrangements for ensuring safe operation. [5.1.8]	System manual: Ch.6 Sec.4		

1.9.1 BWMS components, if intended for fitting in locations where flammable atmospheres may be present, comply with relevant safety regulations; certified by Administration as safe for use in a hazardous area [4.9]	The equipment is not permitted to be installed in a hazardous area		
1.10 Operations and technical manual contains a recommended test and checkout procedure, specifying all the checks to be carried out in a functional test following installation and a test by a surveyor when carrying out an onboard survey to confirm the installation meets the manufacturer's specific installation criteria. [5.1.9]	587748 "On-board survey"		
1.11 BWMS is robust and suitable for working in the shipboard environment , with design, construction and materials, including electronic and electrical components (including a Bill of Materials and the specifications and standard/s which it meets), adequate for intended service [4.7.1]	System manual: Ch.2 Sec. 1.4 Ch.6 Sec. 7.2/7.3		
2. Type approval certificate			
2.1 Type approval certificate issued by, or on behalf of, the Administration [6.1]	TAC P-12397		
2.1.1 Specification of any limiting conditions on the usage of the BWMS, including but not limited to ballast water volumes, flow rates, salinity, temperature, etc. [6.1. and 6.2]	TAC P-12397 Page 2"Application /Limitation"		
2.1.2 Specification of the type and model of the BWMS, including identification of duly dated equipment assembly drawings bearing model specification numbers or equivalent identification details [6.5]	TAC P-12397: Page 2 "Type approval documentation"		
3. Environmental and public health impacts assessment documentation.			
3.1 Protections reduce to minimum danger to persons (i.e., hot surfaces, moving parts, exposure to chemicals, UV, etc) [4.7]			
3.2 Complete application dossiers for IMO active substance basic and final approvals [Annex Part 1, 1.6.4]	Proposal for basic & final approval		
3.3 Adequate arrangements for storage, application, mitigation, and safe handling of any substances of a dangerous nature [4.2]	PureBallast does not use any additives.		

4 Quality Assurance (QA) and Quality Control (QC) [Annex Part 1, 2.1]			
4.1 Quality Management Plan (QMP) addressing the quality control management structure and policies of the testing body, including all subcontractors and outside laboratories) [Annex Part 2, 2.1.2.2]	QAPP Oct. 5 2006: Sec.1.4.2		
4.2 Quality Assurance Project Plan (QAPP) describing the specifics of the BWMS, the test facility, and other conditions affecting the design and implementation of the test procedures [Annex Part 2, 2.1.2.3]	QAPP Oct. 2006: Sec.1.3		
4.3 Shipboard Test Plan and Report [Annex Part 2, 2.2.2.1]	QAPP June 2008 5617-2008		
4.3.1 Documentation that treatment rated capacity of BWMS was appropriate for ship [Annex Part 2, 2.2.2.2]	5617-2008: Sec.2.1		
4.3.2 Documentation that the volume and pumping rate of ballast water during test was consistent with normal ballast operations of ship [Annex Part 2, 2.2.2.3]	5617-2008: Sec. 5.2		
4.3.3 Documentation of all test cycles, demonstrating three valid consecutive test cycles showing discharge of treated ballast water meeting regulation D-2 standard [Annex Part 2, 2.2.2.4 and 2.2.2.8]	5617-2008: Sec. 5.4/5.5/5.6		
4.3.4 Tests meet minimum organism concentrations during uptake of more than 10 times the maximum permitted values in regulation D-2.1 [Annex Part 2, 2.2.2.5]	5617-2008: Sec. 5.4/5.5/5.6		
4.3.5 Documentation that sampling regime was appropriate, either by meeting G8 recommendations for control and treated ballast water including: 1) Control tank replicates; 2) Treatment tank replicates 3) Sample sizes; or 4) By documenting appropriate validation of sample volumes and numbers, per EPA ETV. [Annex Part 2, 2.2.2.6]	5617-2008: Sec. 2.1.1/2.2/2.3 and 3.2 table 5		
4.3.6 Documentation that test cycles completed over at least six months [Annex Part 2, 2.2.2.7]	5617-2008: Sec. 5.2 table 11		
4.3.7 Documentation of source water characterization for salinity, temperature, POC, and TSS [Annex Part 2, 2.2.2.9]	5617-2008: Sec. 5.3 table 12		

4.3.8 Documentation of system operations, including: 1) Volume and locations of uptake & discharge volume; 2) Possible reasons for unsuccessful test cycle or failure of a cycle to meet D-2 standard; 3) Scheduled maintenance; 4) Unscheduled maintenance and repair; 5) Appropriate engineering parameters; and 6) Proper functioning of control & monitoring equipment. [Annex Part 2, 2.2.2.10]	AW08-003: 1) Sec.1.2 2) Sec.2 3) Sec.3 4) Sec.4 5) Sec.5 6) Sec.6		
4.4 Land-based Test Plan and Report [Annex Part 2, 2.4]			
4.4.1 Description of test set-up, including: 1) Arrangement of BWMS (Annex part 2, 2.3.9); 2) Piping and pumping arrangements (Annex part 2, 2.3.9); 3) Tank specifications (treatment and control) (Annex Part 2 2.3.10); 4) Facilities for representative sampling (Annex Part 2, 2.3.12; 5) Augmentation facilities for DOC, POC, TSS and standard test organisms if used (Annex part 2, 2.3.12; and 6) Monitoring facilities for environmental parameters including pH, temperature, salinity, dissolved oxygen, TSS, DOC, POC, and turbidity. [Annex Part 2, 2.3.12]	QAPP Oct.5 2006 QAPP-for the full scale testing of the PureBallast treatment system of Alfa Laval/ Wallenius Water AB		
4.4.2 Documentation system was operated at treatment rated capacity, or scaled as follows: 1) 200 M3/hr<TRC<1,000 M3/hr - downscaled no more than 1:5; 2) TRC>1,000 M3/hr - downscaled no more than 1:100; and 3) Documentation of mathematical modeling and/or calculations demonstrating downscaling used would not affect functioning and effectiveness onboard ship at full scale for which certification is intended. [Annex Part 2, 2.3.13]	System operated at TRC=250m3/h. 5484-2007: Sec.3.2 table 8		
4.4.3 Description of cleaning procedures for test set-up before starting testing, and between test cycles [Annex Part 2, 2.3.11]	5484-2007: Sec.2.4.2		
4.4.4 Description of sampling and analysis procedures for organisms and environmental/water quality			

	parameters, including: 1) Identification of standard methods [Annex Part 2, 4.2]; 2) Validation of non-standard methods [Annex Part 2, 4.3]; 3) Validation of appropriateness of sample processing times (Annex Part 2, 2.3.34); and 4) Description and validation of facilities and procedures for collecting representative samples [Annex Part 2, 2.3.31; 2.3.32; 2.3.33; 2.3.28]	5484-2007: Sec. 2.5/2.6		
4.4.5	Results of all analyses for organisms, challenge conditions, and BWMS performance indicators [Annex Part 2, 2.3.23; 2.3.25]	5484-2007: Sec. 3.3/3.4		
4.4.6	Documentation the BWMS was operated, and performed as designed, within its specified parameters, including power consumption, flow rate, etc. [Annex Part 2, 2.3.4; 2.3.24]	5484-2007: Pt.3.2		
4.4.7	Documentation of all test cycles, demonstrating 5 valid tests with treated water meeting the D-2 discharge standard for each salinity regime for which testing was conducted [Annex Part 2, 2.3.1; 2.3.17; 2.3.18; 2.3.19; 2.3.20; 2.3.36]	5484-2007: Sec.3.5/3.6/3.7		
4.5	Environmental Testing [Annex Part 3]			
4.5.1	Documentation of vibration tests [Annex Part 3, 3.4 – 3.7]	REC-E701510: Sec. 4.5		
4.5.2	Documentation of temperature tests [Annex Part 3, 3.8 – 3.10]	REC-E701510: Sec. 4.1/4.2		
4.5.3	Documentation of humidity tests [Annex Part 3, 3.11]	REC-E701510: Sec.4.3		
4.5.4	Documentation of heavy seas protection tests [Annex Part 3, 3.12]	NA		
4.4.5	Documentation of power supply fluctuation tests [Annex Part 3, 3.13]	REC-E701510: Sec. 4.6		
4.5.6	Documentation of inclination tests [Annex Part 3, 3.14]	Were not required- no moving parts, ref IACS E10 test spec		