CERTIFICATE OF ACCREDITATION

This is to attest that

GOLDEN BEAR RESEARCH CENTER

200 MARITIME ACADEMY DRIVE
VALLEJO, CALIFORNIA 94590 U.S.A.

Testing Laboratory TL-954

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date September 5, 2022

IAS ACCREDITED

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

GOLDEN BEAR RESEARCH CENTER

www.csum.edu/gbf/index.html

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Accredited to ISO/IEC 17025:2017 *Effective Date September 5, 2022*

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
Environmental – Maritime Chemistry	Ballast Water	Specific UV-Absorbance (SUVA)	**SOP-GBF-BC-1** Based on Welschmeyer, N.A. 1994. Fluorometric analysis of chlorophyll a in the presence of chlorophyll b and phaeopigments. Limnol. Oceanogr. 39(8): 1985-1992
		pH and Salinity	**SOP-GBF-BC-3**
		Extracted Chlorophyll a	**SOP-GBF-BC-5** Based on Welschmeyer, N.A. 1994. Fluorometric analysis of chlorophyll a in the presence of chlorophyll b and phaeopigments. Limnol. Oceanogr. 39(8): 1985-1992.
		Total Suspended Solids (TSS)	**SOP-GBF-BC-6** Based on USEPA 160.2. Gravimetric determination of Total Suspended Solids (TSS), Mineral Matter (MM) and Ash Free Dry Weight (AFDW) in ballast water
		Mineral Matter (MM)	
		Ash Free Dry Weight (AFDW)	
Environmental – Maritime Biology/Microbiology	Ballast Water	Microscope Viability determination: *Zooplankton Organisms ≥50 µm*	**SOP-GBF-BC-7** Based on EPA/ETV Generic Protocol for the Verification of Ballast Water Treatment Technologies, v4.2 (2010).
		Viable Organisms ≥10 and <50 µm- *FDA/CMFDA Epifluorescence Analysis*	**SOP-GBF-BC-9** Based on EPA/ETV Generic Protocol for the Verification of Ballast Water Treatment Technologies, v4.2 (2010).
		Heterotrophic Bacteria *Pour Plate Counts for Organisms <10 µm*	**SOP-GBF-BC-11** Based on APHA Standard Method for the Examination of Water and Wastewater SMEWW 9215, 2004.

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
Environmental – Maritime Biology/Microbiology (cont'd.)	Ballast Water (cont'd.)	Indicator Microbes: *E. coli, Enterococcus sp., and V. cholerae Serotypes O1 and O139*	**SOP-GBF-BC-13** Based on IDEXX Colilert® and Enterolert® Kits
		Indicator Microbe: *Vibrio cholerae Serotypes 01 and 0139 for Organisms <10 µm*	**SOP-GBF-BC-14** Based on New Horizon Diagnostics Corporation Cholera Smart II kit for V. Cholera 01