

**STAFF REPORT
C78**

A	Statewide	10/18/18 W 9777.234 W 9777.291 W 9777.295 L. Ceballos
S	Statewide	D. Cook

REQUEST AUTHORITY FOR THE EXECUTIVE OFFICER TO ENTER INTO AN AGREEMENT WITH THE CALIFORNIA STATE UNIVERSITY MARITIME ACADEMY TO SUPPORT THE DESIGN, FABRICATION, AND TESTING OF A SAMPLING TOOL TO ASSESS VESSEL COMPLIANCE WITH CALIFORNIA'S BALLAST WATER DISCHARGE PERFORMANCE STANDARDS

PARTIES:

California State Lands Commission

California State University Maritime Academy

BACKGROUND:

In coastal and estuarine environments, the ballast water of commercial ships has long been recognized as one of the most important mechanisms, or vectors, through which nonindigenous species (NIS) are moved to new locations throughout the world (Ruiz et al. 2011). Ballast water is used as a balancing and weight distribution tool necessary for the navigation, stability, and propulsion of large seagoing ships.

Currently, vessels utilize ballast water exchange as the primary management method for reducing the potential that NIS will be introduced to coastal areas at destination ports. However, ballast water exchange is considered an interim management tool because it suffers from widely varying efficacy and poses operational issues for ships. Scientific research indicates that ballast water exchange generally eliminates between 66 percent and 99 percent of organisms originally taken into the ballast water (Molina and Drake 2017).

Because of these limitations, state, federal, and international regulatory agencies have adopted, or are in the process of adopting, performance standards for the discharge of ballast water. These standards set limits for the concentration of living organisms in discharged ballast water.

In 2006, the California Legislature adopted ballast water discharge performance standards (California Performance Standards) to help reduce the risk of species

STAFF REPORT NO. C78 (CONT'D)

introductions from ballast water discharge in California. The majority of vessels that will discharge ballast water in California will need to use a ballast water treatment technology to treat ballast water to levels in compliance with the California standards. However, the installation of treatment technologies on vessels is only one-half of the equation necessary to implement California's performance standards. Staff must also have monitoring tools and protocols in place to assess vessel discharge compliance with those standards.

Worldwide, no government entity has yet developed tools or standardized methods to collect representative ballast water samples that allow for an accurate assessment of ballast water discharge compliance with standards. Ideally, the assessment of vessel compliance should utilize tools and methods that are relatively rapid, portable, work with a variety of evaluation metrics to account for the many designs of ballast water treatment technologies, be cost-effective, and practical for use by scientists and non-scientists alike.

The Marine Invasive Species Act mandates that the Commission:

. . . . identify and conduct any other research determined necessary to carry out the requirements of this division. The research may relate to the transport and release of nonindigenous species by vessels, the methods of sampling and monitoring of the nonindigenous species transported or released by vessels, the rate or risk of release or establishment of nonindigenous species in the waters of the state and resulting impacts, and the means by which to reduce or eliminate a release or establishment (Pub. Resources Code, § 71213.)

Accordingly, the Commission has supported several pilot projects over the past 15 years that encouraged the installation of experimental ballast water treatment technologies and evaluated their effectiveness on vessels operating in California waters. In 2011, the Commission provided funds to the Glosten Associates to support the development of a ballast water sampling tool and ballast water testing protocols on the California State University Maritime Academy's (Cal Maritime) Training Ship *Golden Bear*. However, the first prototype was large and was not explosion-proof (necessary for operation on tankers). In 2016, the Commission funded Cal Maritime to work in collaboration with Glosten (contract # C20116053) to improve the original design. This improved design still needs to be fabricated and tested.

PROPOSED ACTIVITY:

Staff has determined that continuing with the development of an explosion-proof, easy to use, portable, rapid, and accurate mechanism for assessment of organism concentrations in ballast water is necessary. Utilizing funds from the

STAFF REPORT NO. C78 (CONT'D)

Marine Invasive Species Control Fund, staff proposes entering into an agreement with the Cal Maritime Golden Bear Research Center to continue with the development of a monitoring tool that will enable the Commission to assess vessel compliance with the California Performance Standards. Specifically, Cal Maritime has proposed to develop and test a successful prototype that meets the specifications required to be used as a monitoring tool. The proposal (Exhibit A) includes: 1) detailed design, 2) fabrication, 3) and testing.

Staff believes funding Cal Maritime to develop and test the sampling tool prototype will help fulfill Commission mandates to fund pilot research necessary to develop and evaluate alternative methods of ballast water management and to identify and conduct any research necessary to carry out the requirements of the statutory division.

Staff proposes that the Commission grant authority to staff to enter into a contract with Cal Maritime for up to \$380,000 utilizing funds from the Marine Invasive Species Control Fund that are budgeted for conducting necessary research. In exchange, staff will be provided with documents, test results, and a sampling tool to be used by the Commission's marine safety personnel to inspect vessels for compliance with the California Performance Standards.

REFERENCES CITED:

- Molina V. and Drake L. 2016. Efficacy of open-ocean ballast water exchange: a review. *Management of Biological Invasions*. Volume 7.
- Ruiz, G.M., Fofonoff, P.W., Steves, B., Foss, S.F., Shiba, S.N. 2011. Marine invasion history and vector analysis of California: a hotspot for western North America. *Diversity and Distributions* 17:362-373.

STAFF ANALYSIS AND RECOMMENDATION:

Authority:

Public Resources Code sections 6005, 6106 and 71213; Public Contract Code section 10340, subdivision (b)(3); State Administrative Manual section 1200; State Contracting Manual (rev. 01/14).

Public Trust and the State's Best Interests Analysis:

The proposed project will further the interests of the Public Trust by providing the Commission with a tool that will enhance California's protection against the introduction of nonindigenous species. Currently, the introduction of nonindigenous species to California's waters threatens Public Trust resources and values, including ecosystem preservation and the promotion and protection of fishing, water-related recreation, maritime commerce, and water-dependent tourism. The development of this

STAFF REPORT NO. **C78** (CONT'D)

monitoring tool is critical for the implementation and monitoring of California's Performance Standards for the discharge of ballast water, and to satisfy the purpose of the Marine Invasive Species Act: ". . .to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state. . . ." (Pub. Resources Code, § 71201, subd. (d).)

Thus, staff believes that granting authority to the Executive Officer to enter into an agreement with Cal Maritime to develop this tool, as proposed, would further enhance and protect Public Trust resources and is in the State's best interests.

OTHER PERTINENT INFORMATION:

1. This action is consistent with Strategy 1.1 of the Commission's Strategic Plan to deliver the highest levels of public health and safety in the protection, preservation, and responsible economic use of the lands and resources under the Commission's jurisdiction.
2. Staff recommends that the Commission find that this activity is exempt from the requirements of the California Environmental Quality Act (CEQA) as a categorically exempt project. The project is exempt under Class 6, Information Collection; California Code of Regulations, title 14, section 15306.

Authority: Public Resources Code section 21084 and California Code of Regulations, title 14, section 15300.

EXHIBIT:

- A. Proposal for Explosion-proof and Rapid Sampling Tool–Detail Design, Fabrication and Testing

RECOMMENDED ACTION:

It is recommended that the Commission:

CEQA FINDING:

Find that the activity is exempt from the requirements of CEQA pursuant to California Code of Regulations, title 14, section 15061 as a categorically exempt project, Class 6, Information Collection; California Code of Regulations, title 14, section 15306.

PUBLIC TRUST AND STATE'S BEST INTERESTS:

Find that granting authority for the Executive Officer to enter into an agreement with the California State University Maritime Academy for the

STAFF REPORT NO. **C78** (CONT'D)

proposed project will not substantially interfere with the public rights to navigation or fishing or the Public Trust needs and values at this time; is consistent with the common law Public Trust Doctrine; and is in the best interests of the State.

AUTHORIZATION:

1. Authorize the Executive Officer or her designee to award and execute an agreement with the California State University Maritime Academy in an amount not to exceed \$380,000 to support the development of a monitoring tool to assess vessel compliance with California's performance standards for the discharge of ballast water.

2. Authorize and direct the Executive Officer or her designee to take whatever action is necessary and appropriate to implement the provisions of the agreement with the California State University Maritime Academy.



30 August 2018
File No. 2-2018a CSLC

Ms. Lina Ceballos
Senior Environmental Scientist
California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202

Subject: Explosion-proof and Rapid Sampling – Detail Design, Fabrication, and Testing

References:

1. Explosion Proof Sampling Tool – Detail Design, Fabrication, and Testing, Glosten File No. P7088, 30 August 2018 (attached).
2. CSLC – Ballast Sampling Tool Concept, Mark II Concept Development and Technical Issues, Glosten File No. 16121.01 Rev -, February 2017.
3. CSLC – Ballast Sampling Tools Concept, Mark II Concept Cost Estimate, Glosten File No. 16121.01 Rev -, February 2017.

Dear Lina:

Cal Maritime and Golden Bear Research Center (GBRC) are pleased to continue our work on compliance monitoring and sampling technologies with California State Lands Commission (CSLC). We propose to engage and continue work with our previous partner on compliance tool development, Glosten, to develop a detail design and fabricate a new explosion-proof sampling kit, based on the Mark II Sampling Tool Concept. In the first phase of this three-phase project, GBRC will coordinate via a sub-award to Glosten to update the Mark II design from concept to a detailed design package. The second phase will consist of fabricating and building the sampling tool. Lastly, the third phase will consist of shipboard functional and biological testing of the sampling tool.

The test design, testing and planning team would include GBRC and sub-awardee Glosten.

Scope of Work

The proposed design and planning phase will determine the resources and schedule to design, build, and test a new, more portable and explosion-proof sampling system. The team will leverage its prior experience in developing and testing a successful prototype sampling kit (Reference 1) to perform this work.

The team will perform the following tasks:

1. **Detail Design.** The Mark II design will be updated from a concept drawing to a detailed design package that will include specifics needed for fabrication. Once approved and finalized, the detail design package will be used to develop a cost estimate from fabrication shops and software designers.

2. **Fabrication.** A fabrication team will be selected and the Mark II will be built and factory tested to ensure all components meet design specifications.
3. **Sampling Protocol and Shipboard Testing.** Shipboard functional and biological test procedures will be developed based on previous documents and Mark II design improvements. All shipboard and biological testing will be conducted onboard the USTS Golden Bear by GBRC staff. The testing will be done independent of any sub-awardees.

Deliverables

Deliverables include documents, test results, and fabricated equipment as shown in Reference 1, Table 1. In addition, a manuscript outlining this and previous compliance sampling tool work for CSLC will be developed and submitted for publication in a peer-reviewed journal.

Cost and Terms

We propose to complete the tasks here in, inclusive of sub-award efforts by Glosten and manufacturing contractors, for GBRC for a fixed fee cost of \$361,500. Below is a breakdown of our costs and a detailed breakdown of Glosten's costs are included in Reference 1, Table 2. This proposal is valid for 90 days.

Cost Estimate:

Personnel (Ship operations, biological testing, manuscript prep): \$50,000

Sub-award Glosten (Reference 1): \$259,000

Sub-award for fabrication (TBD): \$40,000

Indirect (25% on \$25K of ea. sub-award, 25% on remainder): \$25,000

Total Cost Estimate: \$374,000

Schedule

We are prepared to award this work on receipt of your contract or purchase order, or your signature below indicating your acceptance of the terms provided. We estimate this work to take seven (7) to twelve (12) month to complete.

I will be your main point of contact at Cal Maritime with Bill Davidson as alternate. Jake Parks will be your primary contact at Glosten.

Kind regards,



Christopher Brown
Scientific Program Manager, Golden Bear Research Center
California State University - Maritime Academy

cc: Bill Davidson
Richard Muller
Eric Hoppe

Reference 1



Glosten

30 August 2018
File No. P7088

Chris Brown
Golden Bear Facility – California Maritime Academy
200 Maritime Academy Drive
Vallejo, California 94590

Subject: Explosion-Proof Sampling Tool – Detail Design, Fabrication, and Testing

- References:**
1. CSLC – Ballast Sampling Tool Concept, Mark II Concept Development & Technical Issues, Glosten File No. 16121.01 Rev -, February 2017.
 2. CSLC – Ballast Sampling Tool Concept, Mark II Concept Cost Estimate, Glosten File No. 16121.01 Rev -, February 2017.
 3. Prototype Compliance Monitoring and Sampling System – Biology Testing Report, Glosten File No. 11139.02.08 Rev -, December 2013.

Dear Chris:

Glosten, working jointly with California State Lands Commission (CSLC), is pleased to continue our work on compliance monitoring and sampling technologies with California Maritime Academy Golden Bear Facility (GBF). We propose to develop a detail design and fabricate a new explosion-proof sampling kit, based on the Mark II Sampling Tool Concept.

The below three-phase effort will deliver to CSLC a complete sampling tool, ready for deployment in the field including in explosive gas (EX) environments as required for tank ships.

BACKGROUND

Glosten was tasked with inventing a Compliance Monitoring Tool for Ballast Water Management, a portable device that could be used to obtain representative samples from a ship's ballast pipe during deballasting operations. The goal of the Tool was to be portable and obtain defensible water samples without disrupting ship ballasting operations. With support from CSLC, Glosten built and tested prototype Mark I Tool in 2013. The sampling results of the prototype Mark I Tool were compared with the GBF sampling system and showed no statistical difference between the two sampling methods. Although the Mark I proved successful and was technically portable, it was clear that it needed to be simplified for practical use. These recommendations are outlined in Reference 3.

Glosten came back to CSLC with a proposal to develop functional improvements, add rapid sampling, and make the system explosion proof for use in hazardous locations. With the new objectives, Glosten created a Concept Design for the Mark II Tool detailed in Reference 1. This concept lays the foundation for these next phases of work.

SCOPE OF WORK

Phase 1 – Detail Design

Glosten will update The Mark II design from a concept drawing to a detailed design package that will include fabrication drawings for each module, fabrication specifications, and fabrication

acceptance test procedures. We will host a web-based meeting to present the detail design to GBF and CSLC before finalizing the package.

Once finalized, the detail design package will be used to develop a rough-order cost estimate and solicit firm fixed prices from fabrication shops and software designers. The design package will also be used to gain shipping classification review.

Phase 2 – Fabrication

Glosten will select a fabrication team and request final Phase 2 fixed-fee fabrication funding from GBF and CSLC. We will work with the selected contractor(s) to build the Mark II Sampling Tool and perform factory testing to ensure all components meet design specifications.

Phase 3 – Sampling Protocol & Shipboard Testing

GBF will develop a shipboard functional and biological test procedure based on previous documents and Mark II design improvements. The test procedure will be implemented in shipboard testing by Glosten and laboratory field staff at the Golden Bear Facility.

DELIVERABLES

Glosten will deliver design documents, equipment, and test results as shown in Table 1.

Table 1 –Phase deliverables

Phase	Deliverable	Description
Phase 1	Detail Design Drawing	Drawing package detailing all components and systems for fabrication and assembly.
	Specifications	Document that outlines the scope of work and factory testing requirements for Mark II fabrication.
	Cost Estimate	Estimated rough-order costs and schedule for Phase 2 fabrication.
Phase 2	Fixed-Fee Fabrication Quote	Request for final fabrication funding.
	Mark II Sampling Tool	Completed Mark II Sampling Tool. (Glosten will retain tool for testing then provide to CSLC upon completion)
	As-built Drawing Factory Test Report	Drawing that documents changes after fabrication. Documentation of the accepted factory testing.
Phase 3	Shipboard Test Procedure	Document that describes testing that will take place on <i>Golden Bear</i> .
	Shipboard Test Report	Manuscript documentation of shipboard functional and biological testing focused on operation of equipment.
	Sampling Protocol	Document for the end users that describes how to use the Mark II Sampling Tool.

COST AND TERMS

As shown in the table below, our fee for performing the first phase of work is **\$145,000**. We will perform our work on a fixed fee basis, billing you monthly for the percent completed during the period. At the end of each phase, Glosten will submit a revised cost estimate prior to requesting authorization to proceed to the next phase of work.

Table 2 – Cost breakdown per phase

Phase	Cost	Notes
Phase 1	\$145,000	
Phase 2	\$53,000	*Estimate, pending final fixed-fee fabrication quotes
Phase 3	\$61,000	*Estimate, pending final quotes from labs
Total	\$259,000	

*These are our best current estimates. Costs will be updated when we receive fabrication and testing firm quotations following Phase 1 design.

GBF will separately contract for an estimated **\$40,000** in fabrication costs and facilitate the use of the Golden Bear Facility for a week of shipboard testing. We recommend a **\$20,000** contingency for Phases 2 and 3, which are estimates that will be informed by Phase 1 efforts.

This proposal is valid for 90 days.

SCHEDULE

We are prepared to start Phase 1 work as soon as possible, upon receipt of your contract or purchase order, or your signature below indicating your acceptance of the terms provided. We estimate this phase will take seven to twelve months to complete.

I will be your main point of contact. Thank you for the opportunity to submit our proposal for this work. We look forward to building on our relationship with GBF and CSLC.

Yours very truly,

Jacob C. Parks
Engineer Technician

JCP:mem

Enclosures: 1. Standard Terms and Conditions of Service

PROPOSAL TITLE: Explosion-Proof and Rapid Sampling – Detail Design, Fabrication, and Testing

Glosten Proposal No. P7088

ACCEPTED BY: Golden Bear Facility

Signature and Date _____

Printed Name and Title _____

TERMS AND CONDITIONS OF SERVICE

1. PROFESSIONAL SERVICES – FIXED FEE. Where the scope of services, including reimbursable expenses, subcontracts, and outside services can be clearly defined, Glosten will customarily bill for services on a fixed fee basis. Invoices for fixed fee services will be issued monthly based on estimated percent of work scope complete unless other billing milestones and schedules are established.

2. PROFESSIONAL SERVICES – TIME & MATERIALS. When fixed fee services are not appropriate, Glosten will bill on a time & materials basis to a mutually agreed-upon budget. Invoices for time & materials services will be issued monthly for:

Hourly fees for services – at current published billing rates based on time, including travel time, expended on the project by professional, technical, and administrative personnel.

Expenses – billed at cost, including costs for travel as well as items such as non-routine communication, reproduction, and delivery charges.

Materials and equipment – billed at cost plus 10%

Subcontracts and outside services – billed at cost plus 10%.

3. INVOICING AND PAYMENT. Invoices will be submitted monthly for the prior month's services. Payment is due upon the invoice date and becomes delinquent thirty (30) days thereafter. A late charge will be added to delinquent amounts at the rate of 1½ percent for each thirty (30) days delinquency.

4. SCOPE OF PROFESSIONAL SERVICES. The entire basic scope of professional services to be provided by Glosten is described in the attached proposal. If mutually agreed to in writing by Client and Glosten, additional services may be added to the basic scope of service, understanding that payment and schedule will be adjusted accordingly.

5. PUBLIC LIABILITY & WORKERS' COMPENSATION. Glosten is protected by public liability insurance for bodily injury and property damage, and will furnish a certificate thereof upon request. Glosten is also protected by Washington State Industrial Insurance as required by state statute.

6. LIMITATIONS OF PROFESSIONAL LIABILITY. No warranty, express or implied, is made or intended by our proposal for consulting services, by our furnishing oral or written reports, or by our inspection of work. In recognition of the relative risks and benefits of the project to the Client and to Glosten, the Client agrees, to the fullest extent permitted by law, to limit the liability of Glosten and all Glosten subcontractors supporting the project for any and all claims, losses, damages, or incurred expenses from any cause, so that the total aggregate liability to Glosten and all subcontractors supporting the project is limited to \$50,000 or the total fee paid for the project, whichever is less. Such claims and losses include, but are not limited to negligence, professional errors or omissions, strict liability, and breach of contract.

7. OTHER PROVISIONS.

(i) One or more waivers by either or both parties of any provision, part of any provision, term, condition, or covenant of this agreement shall not be construed as a waiver by either party of any other provision, part of any other provision, term, condition, or covenant of this agreement.

(ii) Unless specifically stated in the attached proposal, Glosten and all Glosten subcontractors have no responsibility for discovery, presence, handling, removal, disposal, or exposure of personnel to hazardous or toxic materials in any form as part of the project scope.

(iii) Unless specifically stated in the attached proposal, it is understood

that Glosten will not provide design and construction review services relating to safety precautions of any contractor or subcontractor on the project and further, it is understood that Glosten will not provide any supervisory services relating to the construction of the project. Any opinions from Glosten relating to any such review or supervisory services shall be considered only as general information and shall not be the basis for any claim against Glosten.

(iv) Any opinion of project cost offered by Glosten represents the judgment of a design professional and is supplied only for general guidance, but Glosten does not warrant the accuracy of its opinion as compared to actual contractor bids or actual cost.

8. DELAYS. Glosten will prepare drawings and specifications in a timely manner, consistent with professional care and the orderly progress of work. It is understood that a time extension will be granted to Glosten for any and all delays beyond our control (including delays in work being done by subcontractors) and which could not reasonably have been foreseen at the time this agreement was executed.

9. TERMINATION. Either party may terminate this agreement with seven (7) days' written notice to the other in the event of a substantial failure of performance, including non-payment, by the other party through no fault of the terminating party. If this agreement is terminated, Glosten shall be paid for services performed up to the termination notice date, including reimbursable expenses and subcontract obligations.

10. OWNERSHIP OF DOCUMENTS. Drawings, specifications and other documents, including those in electronic form, prepared by Glosten and its subcontractors are instruments of service for use solely with respect to this project. Glosten is the owner of these instruments of service and retains all common law, statutory and other reserved rights, including copyrights. Glosten grants to Client a non-exclusive license to reproduce Glosten's instruments of service solely for purposes of constructing, and using and maintaining the project, provided the Client complies with all obligations, including payment of all sums when due, under this agreement. Any termination of this agreement prior to completion of the project shall terminate this license. Any subsequent use or changes to the instruments of service not made or specifically approved by Glosten shall be at Client's sole risk and without liability to Glosten or its subcontractors.

11. ELECTRONIC DOCUMENT TRANSMITTAL. Glosten accepts liability and responsibility only for instruments of service that can be verified as having been produced and released by Glosten or its subcontractors as indicated in hard copies by a hand-applied signature or in electronic copies by a verifiable digital signature. Drawings, specifications, and other documents supplied in electronic form as editable or native format files are provided solely for convenience of the Client as non-verifiable information and therefore will not be considered instruments of service. By accepting delivery of non-verifiable electronic files, the Client acknowledges that information in the electronic files may be incorrect and/or in conflict with the contracted instruments of service.

12. VENUE. This agreement shall be interpreted and enforced in accordance with the laws of the State of Washington. The venue of any action brought to interpret or enforce any of the terms of this agreement or otherwise adjudicate the rights or liabilities of the parties hereto shall be in King County, Washington.