BLA QUARTERLY DIGEST

Band, Lavis & Associates
A division of CDI
Government Services
900 Ritchie Highway
Severna Park, MD 21146

Volume 21 **September 2002**

FROM DAVE'S DESK

The last issue of our Digest focused on our capabilities in the design of fast surface combatants. This was to coincide with the then anticipated issue of a U.S. Navy solicitation for concept design studies related to the acquisition of a future fast Littoral Combat Ship (LCS). The focus of this present issue is on even smaller vessels; this time to coincide with the annual International Work Boat Show to be held in New Orleans in early December this year where we, again, shall be exhibiting at a booth (#2154, see back page).

Almost all of our commercial and military design projects result in hardware in one form or another, and we work very hard to make sure that our contributing naval architects and engineers are directly involved with the finished product. This "Hands-On" experience provides essential feedback to the design process and can take the form of construction oversight (see first article below by Drew Eisele) or test and trials support (see last article by Brian Forstell). We also work hard on educating our staff. This year, we had NSWCCD give advanced ASSET ship design training to five members of our staff, and in August we had ABYC here to train and certify our staff on the details of the ABYC design standards and practices (see article by Diane King, our Newsletter Editor). Also, many of our staff make use of the online CDI University.

Continued on Page 2

BLA SUPPORTS NATIONAL PARK SERVICE SUPPLY VESSEL ACQUISITION
By Drew Eisele, Naval Architect

BLA is currently under contract to the National Park Service (NPS) to provide construction oversight and acquisition support during the fabrication of the *M/V FORT JEFFERSON*, a 110-ft aluminum crew/supply vessel slated for delivery to NPS in December 2002. The vessel, under construction at Swiftships Shipbuilders in Morgan City, Louisiana, will be utilized to ferry passengers and supplies over a 70-mile route between Key West, Florida and Dry Tortugas National Park. The *FORT JEFFERSON* is a triple-diesel, triple-shaft design which will be capable of reaching a cruising speed of approximately 18-20 knots under normal loading conditions. BLA also supported NPS in the initial Assessment of Alternatives and Source Selection for this acquisition.

BLA's initial survey and inspection of the *M/V FORT JEFFERSON* took place on August 5th and 6th at the Swiftships facility in Morgan City. At the time of the survey, fabrication of the hull structure (including shell plate, bulkheads and internals) was just completed upside-down on fixed jigs, and the vessel had been rolled over and set on blocks in a covered building shed for the remainder of construction. During the visit, BLA personnel completed a comprehensive weld-by-weld inspection of the workmanship to date in cooperation with the shipyard's in-house Quality Assurance department. BLA will continue to support NPS with a series of four additional inspections in the coming months. The photographs below show the status of the hull structure and the main deck passenger cabin at the time of the survey.

***M/V FORT JEFFERSON* Hull Structure**

***M/V FORT JEFFERSON* Main Deck Passenger Cabin**

FROM DAVE'S DESK

Continued from Page 1

A growing number of new commercial work boats are now being driven by marine waterjet propulsion systems. We believe that our engineers at BLA, with help from others (University of New Orleans, University of Southern California-Long Beach and NSWCCD), are making very serious contributions to advancing the state-of-the-art in this area (see article by Alan Becnel). One might say that this is not exactly rocket science, but the technology we use stems directly from that used in the design of liquid rocket fuel pumps, which has lead us to much lighter weight and compact units that are better suited to very fast vessel applications.

We are also making significant contributions to Homeland Security in support of hardware development, as described by Dan Wilkins in this issue. For this program, we have produced over 500 developmental air sampling/detection units encompassing six innovative designs that have been progressively placed in service, without failure, for nearly a year.

In all cases, our engineers get immediate and valuable feedback on the success of their efforts, which leads to an ever growing body of corporate experience that we apply effectively to improve our performance on future projects.

HOMELAND SECURITY
By Dan Wilkins, Director of Engineering

In the wake of September 11, an urgent need emerged for biological agent detection systems to be employed across a broad spectrum of military, Government and commercial venues. While a number of sophisticated air sampling/ detection systems were under development by the Government for military use, these systems did not embody all of the characteristics precipitated by the new threat. An air sampling/biologics collection unit was required which was exceptionally affordable, portable and reliable.

The JPO for Biological Defense tasked their contractor support team of ACS Defense, Inc. and Band, Lavis & Associates to adapt the proven technologies from ongoing bio-sensor programs into the required system, and to rely heavily on commercial off-the-shelf components in order to meet the requirements for affordability and rapid development and deployment. ACS Defense has been supporting JPOBD for many years and has an extensive knowledge of ongoing programs and of the technical infrastructure supporting the development of biological detection. BLA, while principally a naval architecture and marine engineering firm, has significant experience in innovative development and rapid prototyping of field hardware for the U.S. Navy and Army. Of particular value to the task at hand is BLA's position as the worldwide expert on air cushion vehicle technology and their principal support for the Navy's Landing Craft Air Cushion Program. This ACV expertise provides an extensive knowledge of fan and air movement technology and of the severe operational environments experienced by the collectors.

The resulting and ongoing development and production program utilized promising technologies from other systems, combined with commercial technology, with a focus on affordability, robust packaging, and reliable and efficient collection operations. The first units were produced by early October 2001. Subsequently, new designs were developed, tested and prototyped at a rate of about one every three weeks. The evolution of the systems was driven by emerging user requirements, improved performance, improved operator interface, and reducing cost/size/weight. Testing was conducted at Government and contractor facilities not only on the prototype units, but also on the principal commercial components and on the supporting accessories such as filters, particle pre-separators, 24 VDC Converter power supplies, 240 VAC power options, etc.

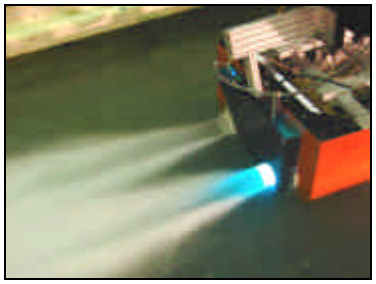
All system prototypes and low rate production units produced to date have entered immediate and continuous service. Over 500 developmental units, representing six unique designs, have been progressively operating since November and have accumulated hundreds of thousands of hours of operation without any equipment failures. The units resulting from the initial nine-month development are now being produced in volume, tapping into the industrial commercial production capacity for key components. These units have been designed to meet both military and civilian requirements and specifications.

While the current units represent a high-level of development, much engineering and testing remains to be accomplished on the units and their supporting systems. A full understanding of the systems' performances in all possible scenarios and environments will enable further refinements and improvements to be incorporated.

Dry Filter Unit, 1000 LPM (DFU 1000)

UNIVERSITY OF NEW ORLEANS WATERJET RESEARCH PROGRAM
By Alan Becnel, Sr. Engineer

BLA concluded a three-year, $1M, effort at the end of June to develop performance prediction methods for marine waterjet propulsion systems that will account for interactions between the inlet and hull, and between the hull and jet flow. This project was funded by the Gulf Coast Region Maritime Technology Center (GCRMTC) at the University of New Orleans. The project included both computational and experimental investigations of waterjet-hull interactions. In the first year, a waterjet performance prediction model was developed and used to design a waterjet for the *RV ATHENA*. Two sets of tests were conducted to validate the computational predictions. The first was a 7.5-inch diameter model waterjet pump tested at the David Taylor Model Basin (DTMB) in the 24-inch cavitation tunnel, and the second was a waterjet self-propulsion test of an 18-foot model of the *RV ATHENA* conducted at the DTMB. These models will also be tested by ITTC members, throughout the world, as part of a standardization procedure for waterjet-propelled vessels.



18-foot Waterjet-Propelled Model of the *RV ATHENA* Underway at DTMB

Waterjet Installation on the 18-foot *RV ATHENA* Model

SEVEN BLA STAFF MEMBERS EARN ABYC CERTIFICATION
By Diane King, Editor

We are very pleased to announce that seven members of our technical staff recently completed the Standards Accreditation course offered by the American Boat & Yacht Council (ABYC). ABYC, headquartered near Annapolis, Maryland, has been developing, writing and updating the voluntary safety standards for boat design, building and repair in the United States for nearly 50 years and is actively involved with the development of international standards as well as certification programs for the marine industry.

Having completed the 3-day course here at BLA and having passed the exam, seven members of our staff are now part of a growing group of specialists in the country whose commitment to excellence means better customer service for safe design within the marine industry.

At BLA, we believe that enrolling our staff in ABYC's training programs means that our customers will enjoy an even higher degree of satisfaction, but what it really takes is the commitment of our employees to be able to advance their own knowledge by attending an ABYC program. We're proud of our team's effort and what this means for BLA.

TRIALS OF THE FINNISH NAVY'S FAST SURFACE COMBATANT T-2000
By Brian Forstell, Director of R&D

The T-2000 Combat Craft Air Cushion Vehicle (ACV) was formally delivered to the Finnish Navy, by Aker Finnyards, the builder, on June 10, 2002. This represents a significant milestone in this exciting program for which BLA designed all the unique ACV systems. Prior to delivery, the craft was put through a demanding series of builder's trials and acceptance tests in Finland, supported by BLA engineers. The testing included speed/power performance tests in calm water and in waves, acceleration tests in deep and shallow water, maneuvering tests, and simulated weapons launching.

T-2000 ACV

Results of these tests demonstrated that the craft can exceed all of its performance requirements.

The craft first started the required over-land testing late last October; however, the formal builder's trials did not start in earnest until last February. To date, more than 80 over-water operational hours have been logged on the craft without major incident. The Finnish Navy is now conducting a series of tests to assess the operational performance and military utility of the T-2000. Additional performance tests are planned for later this year to expand the craft speed/sea-state operating envelope to the full capability of the craft.

Future testing, supported by BLA, will include an extended series of over-ice trials this coming winter.

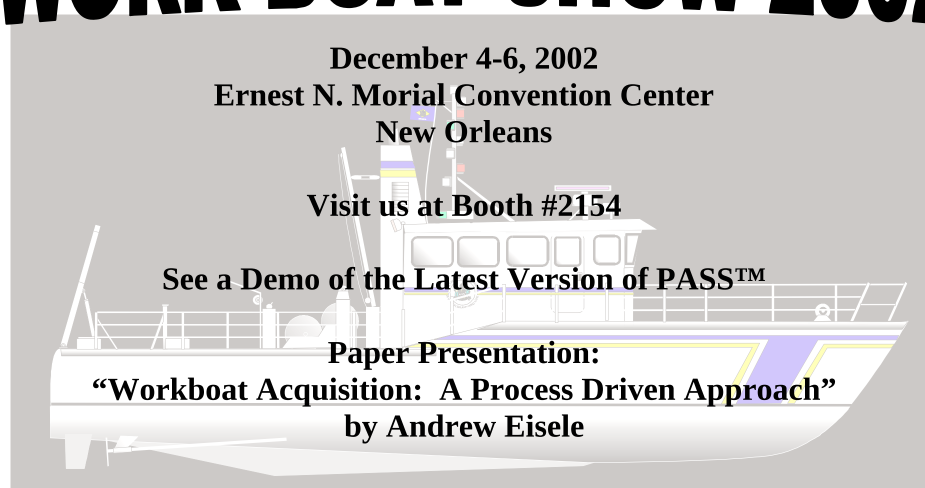
ADDRESS CORRECTION REQUESTED

Band, Lavis & Associates
900 Ritchie Highway
Severna Park, MD 21146

BLA QUARTERLY DIGEST

Band, Lavis & Associates
A division of CDI
Government Services

WORK BOAT SHOW 2002



December 4-6, 2002
Ernest N. Morial Convention Center
New Orleans

Visit us at Booth #2154

See a Demo of the Latest Version of PASS™

Paper Presentation:
"Workboat Acquisition: A Process Driven Approach"
by Andrew Eisele

Voice: 410-544-2800-Severna Park, MD
301-261-1030-Washington, DC
Fax: 410-647-3411

e-mail: bla@cdicorp.com
web site: www.cdicorp.com