

FROM DAVE'S DESK

Band, Lavis & Associates Re-Organizes:

I am pleased to announce that recently we re-organized BLA as a move toward a more functionally-oriented organization to better serve our clients. Brian Forstell is now Director of Research & Development; Dan Wilkins is Director of Engineering; Dan Bagnell is Director of Naval Architecture; and Shirley Wilson is Director of Operations, each reporting directly to me.

Brian Forstell, Dan Wilkins and Dan Bagnell each have a core group of senior engineers reporting to them and working as project managers. In addition, there is still the core group of highly skilled engineers and naval architects that all three technical directors utilize as required. This new organization will aid in responding even faster to client needs and requests and provide more quality assurance.

Other key members of the full-time staff include Valeree Combs, Manager of Contracts, and Jon Buck, Manager of Business Development, who also report directly to me.

(continued on page 2)

AEGIS CRUISER CONVERSION – HULL GIRDER STRENGTH, FATIGUE AND BUCKLING ANALYSES OF THE USS TICONDEROGA AND USS VINCENNES

By Manish Gupta, Project Manager

The combat capabilities of CG-47 Class Aegis Cruisers will be upgraded starting in the year 2005. BLA is currently working under contract to Northrop Grumman Full Service Center to provide a comprehensive assessment of the structural integrity of the Post-Conversion USS Ticonderoga (CG-47) and USS Vincennes (CG-49) ships. NAVSEA Carderock has been subcontracted by BLA to

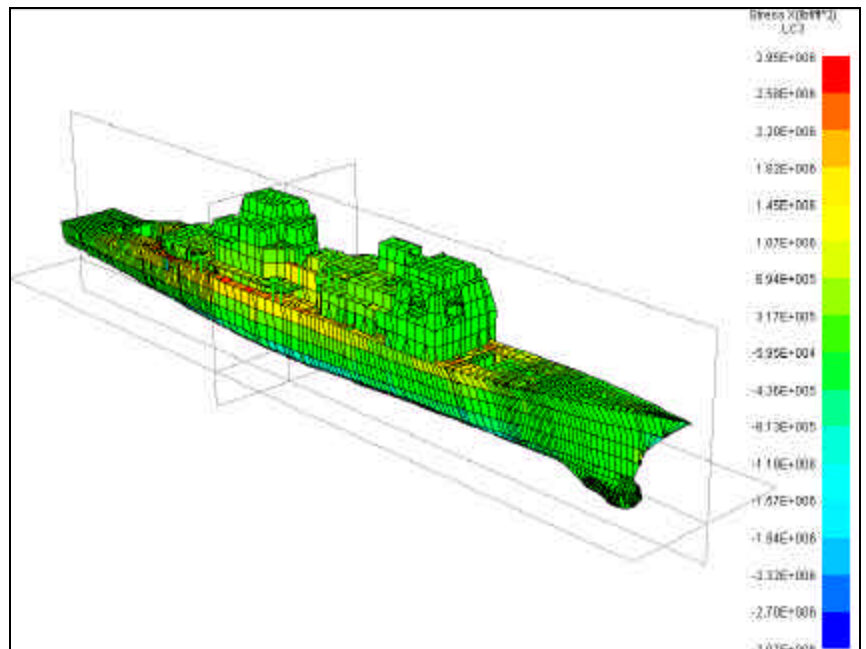
support the characterization of structural loads for this effort. The analysis is being conducted at the ship's limiting displacement with a complement of new VLS missiles and combat systems upgrades. The analysis also includes detailed development of necessary structural modifications to ensure structural adequacy over the planned 40-year service life.

Superstructure fatigue cracks have been identified as a recurring problem in the Aegis Cruisers. Under the scope of this present project, BLA is reviewing the NAVSEA fatigue crack database and performing a global finite element analysis (FEA) of the entire structure of both ships using the commercial FEA software, MAESTRO, which was developed specifically for large ship structures.

The global analysis will predict the fatigue lives of the most highly stressed regions of the ship. These high-stress regions will then be modeled locally in fine-mesh and analyzed using another popular commercial FEA software program, ALGOR. A buckling analysis will also be conducted for the areas in the superstructure and foredeck that might be considered likely to buckle under the lifetime maximum environmental loads. Structural modifications, if deemed required, will be developed, modeled and analyzed in ALGOR and modification drawings provided as deliverables. These modifications will evolve into structural Ship Alteration Records in the Cruiser Conversion Program.



**A Salute to
American Resolve**



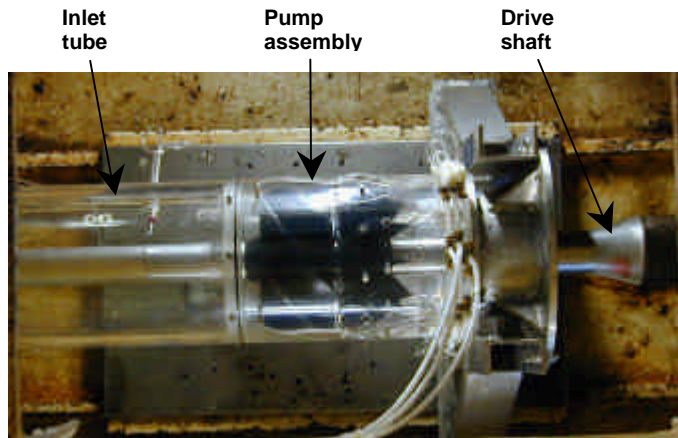
Global FEA of the USS Vincennes under Design Hogging

(FROM DAVE'S DESK, continued from page 1)

The very talented core group of senior engineers currently include Manish Gupta for Ship Structures; Alan Becnel for Ship Propulsion; Dr. Sathish Balasubramanian for Modeling and Simulation; Andy Ulak for Ship Design Development; Ajit Anand for System Engineering; John Schech for CADD Operations; and Tom Walsh for Program Management. As the company grows in size, we intend that each of these individuals will assume the position of Department Head and other positions will be added as necessary to meet ongoing needs.

***UNIVERSITY OF NEW ORLEANS
WATERJET RESEARCH PROGRAM UPDATE
By Alan Becnel, Senior Engineer***

The Gulf Coast Region Maritime Technology Center (GCRMTC), at the University of New Orleans, has awarded Band, Lavis & Associates (BLA) the final year of the proposed three-year, \$1M, effort to develop performance prediction methods for marine waterjet propulsion systems that will account for interactions between the inlet and hull flows, and between the hull and jet flow. NAVSEA-Carderock Division, Marine Propulsors Company, and North American Marine Jet are subcontractors, and Ingalls Shipbuilding, of Northrop Grumman Ship Systems, and Rolls Royce Naval Marine are industry collaborators on the project.



7.5-inch Model Waterjet Pump Installed in Cavitation Tunnel

Currently, a 7.5-inch model waterjet pump is undergoing testing in the 24-inch cavitation tunnel of the David Taylor Model Basin at NAVSEA Carderock. The model tests will be used to validate the waterjet performance prediction model developed using a suite of software compiled in Years 1 and 2 of the initiative. The model pump consists of a clear acrylic shroud, and anodized aluminum rotor and stator. After completion of testing at David Taylor, the model pump will undergo additional testing by members of the International Towing Tank Conference (ITTC).

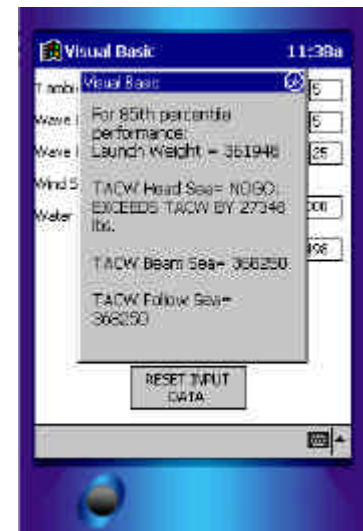
***LCAC TACW CALCULATOR FOR THE
POCKET PC***

By Brian Forstell, Director of R&D

BLA has been actively involved with the LCAC SEAOPS Program and LCAC Mission Planning for over 10 years. Recently, BLA ported the manual calculation of Craft Total Allowable Craft Weight (TACW), which is outlined in LCAC SEAOPS Volume I, to a Pocket PC platform and provided a Beta Test version of the program to the LCAC Assault Craft Unit (ACU-5) Five for evaluation. This program performs the calculations found in the LCAC SEAOPS Manual, Volume 5, Appendix C, to calculate TACW, automatically applying multiple linear interpolations in the process, and provides the same answer as the U.S. Navy's current MPAS software. This program also incorporates both the current and prior versions of the SEAOPS manual.



Pocket PC Input Screen



Pocket PC Results Screen

Accurate calculation of TACW shows the maximum craft weight allowable to provide proper performance and safety based upon structural and environmental restrictions. Use of this software should provide LCAC Crews with a rapid, onboard means of assessing Mission viability during ship-to-shore operations where rapidly evolving craft loads do not always agree with preplanned craft loads.

This is an unsponsored effort that was provided by BLA. Future plans for Pocket PC support of LCAC operations include a Crew Day Calculator to determine the maximum safe working time to prevent crew fatigue.

PORT ENGINEERING SERVICES

By Dan Bagnell, Director of Naval Architecture

One of the many different areas in which Band, Lavis & Associates (BLA) has been involved in recent years has been offering Port Engineering Services to ship operating companies.

These services include deadweight surveys, inclinings, scanning and converting drawings, equipment installation and construction drawings, updating of Trim and Stability Booklets, developing Fire Control Plans and Emergency Response Plans and Procedures. Utilizing our in-house Professional Engineer, BLA can also provide an interface with ABS and the USCG for clients, which can expedite the approval process in many instances.

In addition to basic engineering services, BLA also provides on-site supervision for projects, both locally and at remote/foreign locations. BLA is also currently offering 24/7 emergency response service to some customers who have critical time schedules for their ships to meet.

BILL MISH CREATES NEW SNAME SD-5 WEB SITE

By Diane King



As part of his involvement in the SNAME SD-5 Panel, Advanced Surface Ships and Craft, Bill Mish of Band, Lavis & Associates has created a new web site for the panel. The site contains a listing of members and their contact information, a schedule of meetings, status reports, archives of previous meetings, pictures and links. It also contains a large archive of Advanced Surface Ships and Craft pictures, as well as many links to web sites of other companies specializing in advanced craft. This is a great resource for everyone interested in Advanced Surface Craft. Just added to the site are working group home pages with downloadable documentation and panel member contacts, as well as the status of each panel. Currently, there are three panels: The

Red-Line team for the ABS High-Speed Naval Craft Guide, the team for writing the SNAME Ship Design and Construction Chapter on advanced vehicles, and the Sea Plane working group. Bill is heading up the Red-Line team for updating of the ABS High-Speed Naval Craft Guide and is using the web site to distribute the guide as well as receive comments. The web address is <http://www.sname.org/committees/design/SD-5/index.htm> for those of you interested in finding out more information about SD-5.

RECENT BLA CONFERENCE PAPERS

By Diane King

“The Research and Development of Biofouling Netting” by Tim McClenahan – During the week of July 16, 2001, Tim traveled to Louisville, Kentucky to present this paper at the RUST 2001 Corrosion Technology Information Exchange. The paper identified and evaluated new non-toxic coatings for application to aquatic containment systems for the aquaculture community. The goals of the program were to assess innovative non-toxic coatings that could be applied to aquatic containment systems that would reduce biofouling accumulation and reduce the labor required to clean the containment systems. The ability of these coatings to inhibit biofouling accumulation was determined using in-field testing at locations around the United States and overseas. The results presented at the conference highlighted both the performance of the coating materials in inhibiting biofouling accumulation as well as the cost benefit of using these coating materials.



Uncoated Net



Coated Net

“GCRMTC Project Status as it relates to the ITTC Waterjet Standardization Tests”, by Alan Becnel – Alan attended the International Towing Tank Conference’s (ITTC) “Specialist Committee on Validation of Waterjet Test Procedures” meeting in London in July. Alan, along with John Hoyt of NAVSEA-Carderock Division, updated the waterjet committee on the progress of the University of New Orleans (UNO) waterjet research program. The UNO waterjet project has established a collaboration with the ITTC to develop standardized test procedures for waterjet-propelled craft.

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

BLA QUARTERLY DIGEST

Band, Lavis & Associates
A CDI Marine Group Company

AAAV TESTING AND WATERJET PUMP DESIGN

By Alan Becnel, Senior Engineer

BLA has been tasked by Honeywell Inc. to perform a hydrodynamic design for a higher power waterjet for the Marine Corps' Advanced Assault Amphibious Vehicle (AAAV). Honeywell Inc. is the marine waterjet subcontractor to General Dynamics Amphibious Systems (GDAS) for the AAAV program. The AAAV is the Marine Corps next generation amphibious vehicle, with waterborne speeds in excess of 20 knots. With improvements in engine delivered power and increased marine drive train efficiencies, the present waterjet developed by BLA



AAAV Testing on the Patuxent River, Maryland

personnel in the early 1990's is no longer capable of absorbing the maximum delivered power. The new higher power design will incorporate features such as lighter weight, smaller volume, higher hydraulic efficiency, and stronger blade leading edges.

Also, BLA has been funded by GDAS through Honeywell Inc. to review the performance of the present waterjet system currently undergoing testing in the first AAAV prototype out of the Patuxent River Naval Air Station in Maryland.

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

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