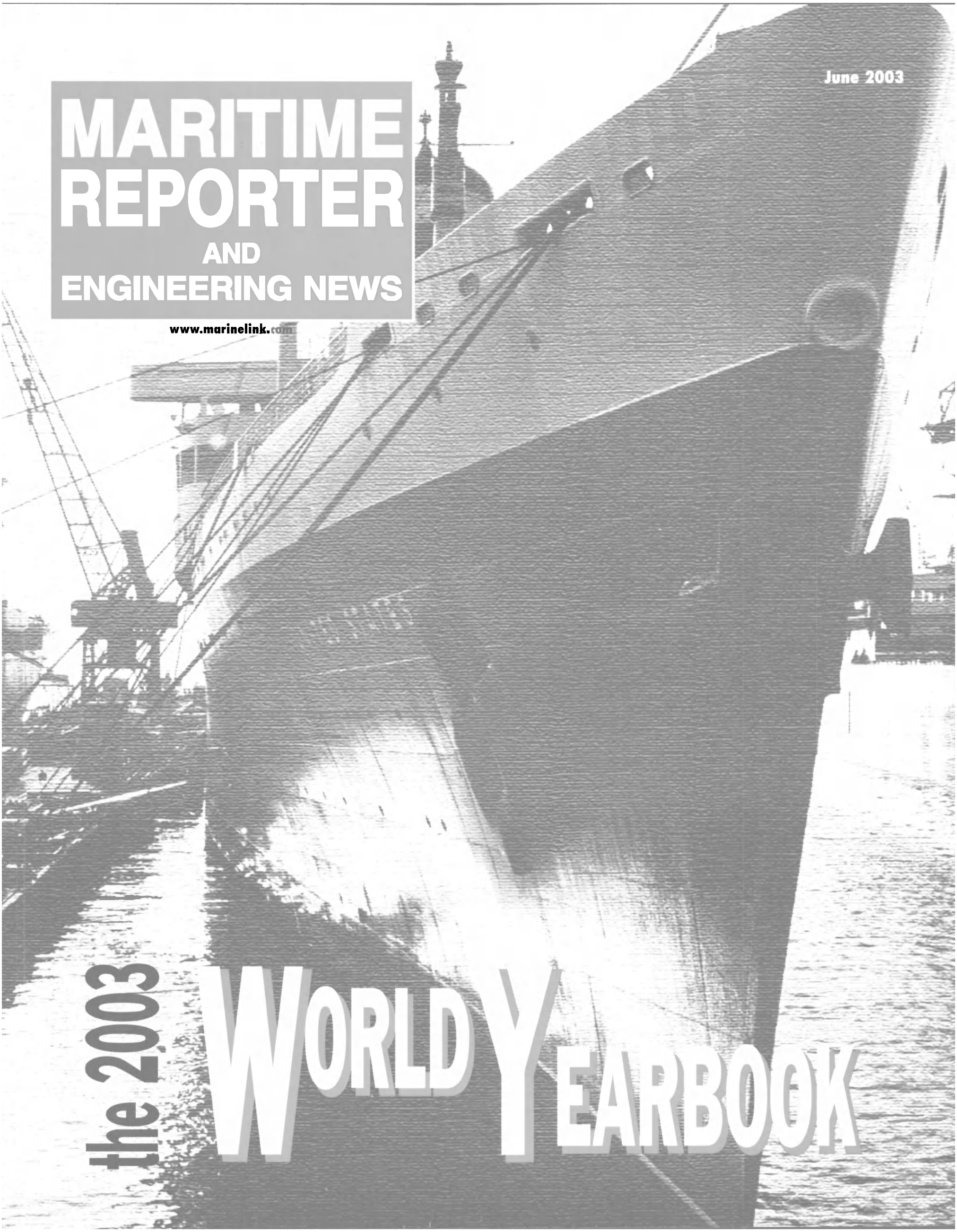
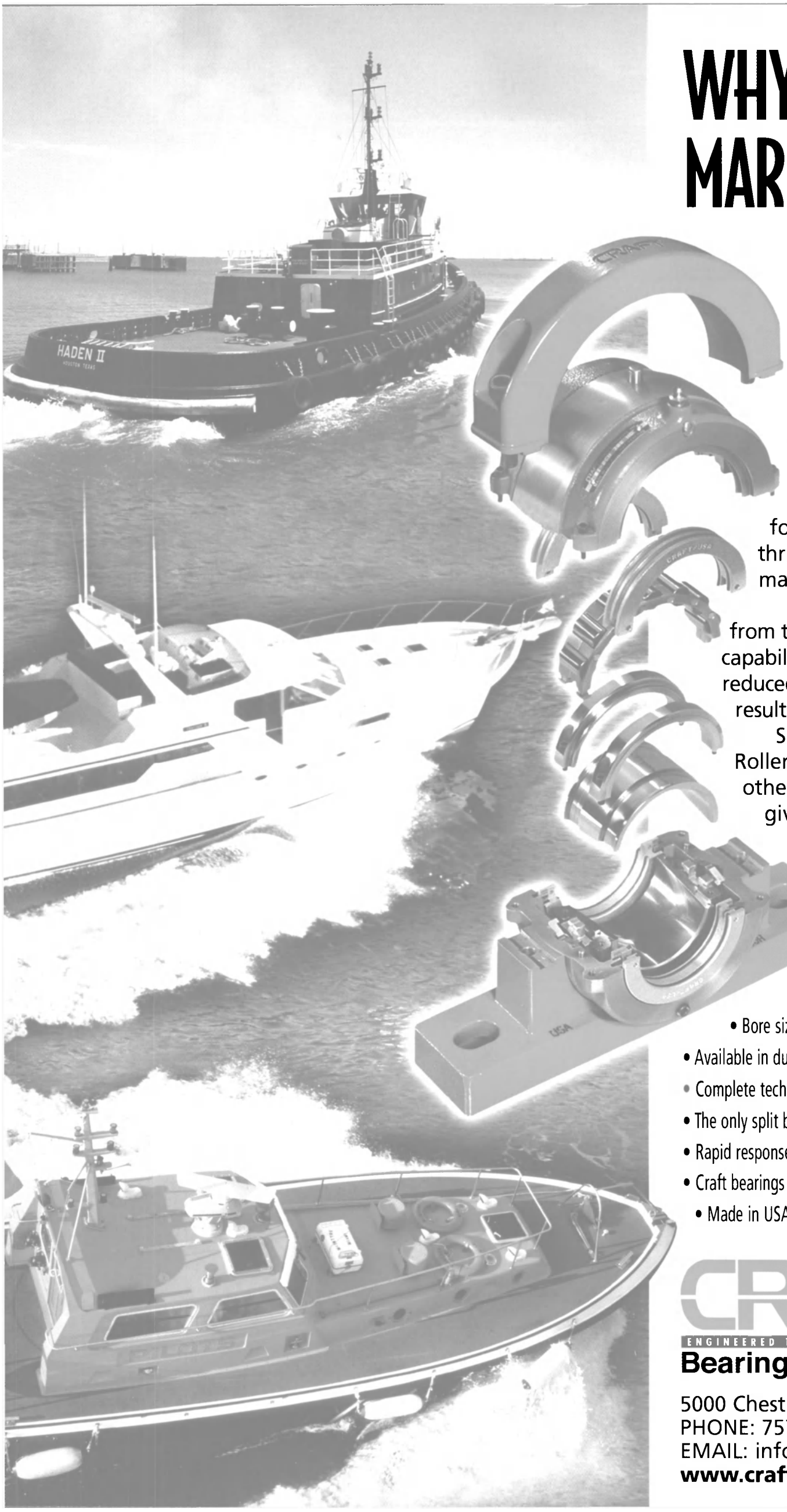
June 2003

MARITIME REPORTER
AND ENGINEERING NEWS

www.marinelink.com



the 2003 WORLD YEARBOOK



WHY THE MARINE INDUSTRY IS STEERING TO CRAFT.

The word is out on the waterfront. Yachts, tugs, ferries and work boats, they're all saying the same thing – Craft Bearings are the most reliable bearings for marine propulsion shafting, as well as thrusters, conveyors, fans and deck machinery.

Engineers and maintenance hands benefi from the ease of installation and at-sea repair capability. Captains and owners enjoy the reduced downtime between repairs and the resulting improvements to the bottom line.

Simply put, our American-made Split Roller Bearings are built to last longer than other bearings. Craft Split Roller Bearings give you reliability and accessibility backed by exceptional customer service and technical support!

Count on Craft to supply your next bearing order.

- Standard base-to-center height
- Metric, special applications and custom bearings available
- Bore sizes from 1-7/16" to 32", same day shipment up to 12"
- Available in ductile iron and **NEW** stainless steel series
- Complete technical support
- The only split bearing Lloyds Register Type Approved
- Rapid response to larger sizes and special orders
- Craft bearings are directly interchangeable with foreign split bearings
- Made in USA

Circle 234 on Reader Service Card

CRAFT
ENGINEERED TO MAKE YOUR JOB EASIER
Bearing Company, Inc.

MADE IN USA

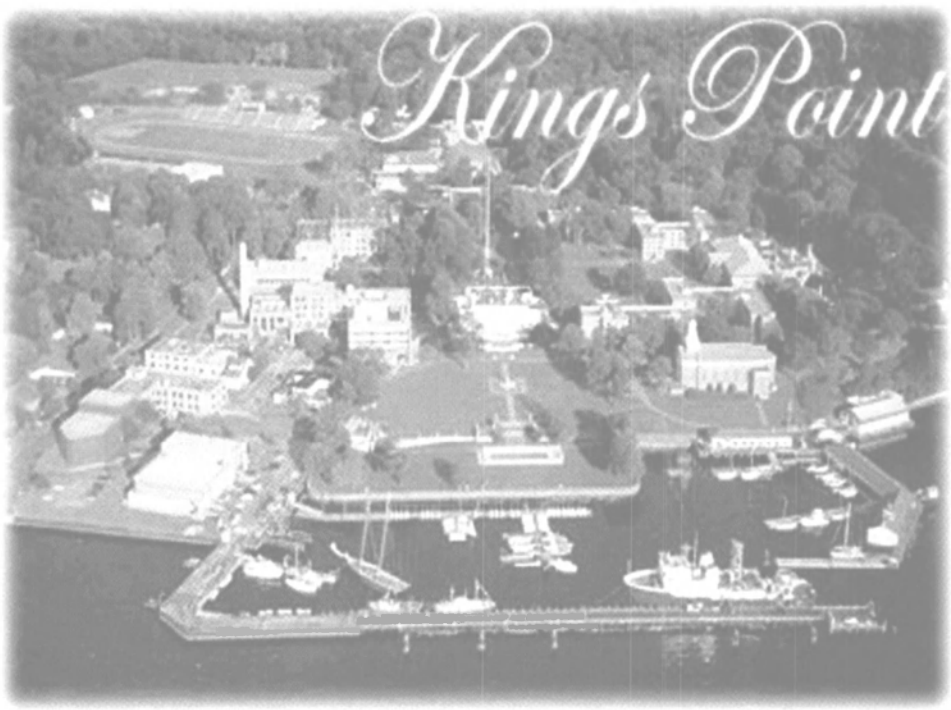
Lloyds Register TA TYPE APPROVED

5000 Chestnut Avenue, Newport News, VA 23605
PHONE: 757-247-6000 FAX: 757-247-6300
EMAIL: info@craftbearing.com
www.craftbearing.com

Marine Engineering Training

The United States Merchant Marine Academy (USMMA) at Kings Point, New York is one of the five federal service academies and America's premier maritime institution. Along with the undergraduate program, USMMA offers the most extensive maritime and transportation professional development program in the United States.

USMMA GMATS teaches over 35 marine engineering courses and over 140 other courses in Nautical Science, Maritime Business, International Transportation and Maritime Security. Our instructor staff includes outstanding USMMA faculty, guest lecturers, and industry experts. The majority of our classes are hands on training using the Academy's 22 magnificent engineering laboratories and waterfront vessels. In addition to our regularly scheduled classes, almost anything can be customized to meet your company's needs.



Diesel Crossover Course (USCG & STCW Approved)	**QMED FOWT Course (USCG & STCW Approved)**
Medium Speed Diesels	**AutoCadd**
Slow Speed Diesels	**Pumps**
Basic & Advanced Welding	**Auxiliary Systems**
Basic & Advanced Machine Shop	**Fundamentals of Diesels**
Refrigeration (Universal Certification)	**Ship Activation of the RRF**
	Programmable Logic Controllers

For More Information, Please Contact:

USMMA Global Maritime and Transportation School
300 Steamboat Rd, Samuels Hall
Kings Point, NY 11024-1699

PH: 516-773-5149 **FX: 516-773-5353**

www.usmma.edu/gmats

email: frangoss@usmma.edu

United States Merchant Marine Academy
Global Maritime & Transportation School

Circle 332 on Reader Service Card

Contents

The 2003 World Yearbook

*** In the Background:** Enjoying the fruits of his labor. **William Francis Gibbs** (left) and his brother **Frederic H. Gibbs**, sit by the S.S. United States on May 14, 1952.
(From the collection of the American Merchant Marine Museum, Kings Point, N.Y.)

Circle 268 on Reader Service Card

MARITIME REPORTER AND ENGINEERING NEWS

NEW YORK
118 E. 25th St., New York, NY 10010
Tel: (212) 477-6700; Fax: (212) 254-6271
e-mail: mren@marinelink.com • Web: Internet: www.marinelink.com
FLORIDA • 215 NW 3rd St., Boynton Beach, FL 33435

Associate Publisher
Gregory R. Trauthwein • *trauthwein@marinelink.com*

EDITORIAL
Managing Editor • Regina P. Ciardiello • *ciardiello@marinelink.com*
Associate Editor • Jennifer Rabulan • *rabulan@marinelink.com*
Technical Editor • David Tinsley
Contributing Editor • Dennis L. Bryant, Senior Maritime Counsel, Holland & Knight
Editorial Consultant • James R. McCaul, president, International Maritime Associates

PRODUCTION
Production Manager
Michael Lowe • *lowe@marinelink.com*
Asst. Production Manager
Irina Tabakina • *tabakina@marinelink.com*

CIRCULATION
Circulation Manager
Dale L. Barnett • *barnett@marinelink.com*

ADVERTISING SALES
Vice President of Sales
Lucia M. Annunziata • *annunziata@marinelink.com*
National Sales Manager
Rob Howard • *howard@marinelink.com*
Tel: (561) 732-4368; Fax: (561) 732-6984
North American Sales Manager
Brett W. Keil • *bkeil@marinelink.com*
Tel: (561) 732-1185; Fax: (561) 732-8414
Director, New Business Development
Jean Vertucci • *vertucci@marinelink.com*
Marketing Manager
Richard Groble • *groble@marinelink.com*
Tel: (561) 732-1659; Fax: (561) 732-6984
Manager, Information Services
Tina Angelino • *angelino@marinelink.com*
Manager, Accounting Services
Esther Rothenberger • *rothenberger@marinelink.com*
Manager, Advertising Services
Kristen O'Malley • *omalley@marinelink.com*
Sales Assistant
Elizabeth Singh • *singh@marinelink.com*
Classified Sales • *Tel: (212) 477-6700*
Manager, Web Services
Rostislav Sakhnovskiy • *sakhnovskiy@marinelink.com*
Manager, Information Technology Services
Vladimir Bibik • *bibik@marinelink.com*

PUBLISHERS
John E. O'Malley
John C. O'Malley • *jomalley@marinelink.com*

International Sales Operations
Managing Director, International Sales
TONY STEIN
12, Braehead, Ba'ness, West Lothian EH51 0BZ, Scotland, U.K.
Tel: +44 (0) 1506 822240; Fax: +44 (0) 1506 828085

CHARLES E. KEIL, Vice President, International Operations
215 NW Third Street, Boynton Beach, FL 33435
Tel: +561-732-0312; Fax: +561-732-8063
24-hr Tel/Fax: +561-998-0313; Mobile Tel: +561-716-0338
e-mail: ckeil@marinelink.com

Germany/Switzerland
TONY STEIN
Tel: +44 (0) 1506 822240; Fax: +44 (0) 1506 828085

Japan
KATSUHIRO ISHII
Ace Media Service Inc., 12-6, 4-chome, Nishiike, Adachi-ku, Tokyo 121, Japan, Tel: +81 3 5691 3335; Fax: + 81 3 5691 3336

Korea
JO, YOUNG SANG
Business Communications, Inc., Kwangwhamun P.O. Box 1916, Seoul, Korea
Tel: +82 2 739 7840, Fax: +82 2 732 3662

Scandinavia
STEPHAN R.G. ORN/LEON SCHULZ
AB Stephan R.G. Orn, Box 184, S-271 24 Ystad, Sweden
Tel: +46 411-184 00; Fax: +46 411 105 31

Spain
JOSE LUIS SEVA
Via Exclusivas S.L., C/ Viriato, 69 SC , 28010, Madrid, Spain
Tel: +34 91 448 9136; Fax: +34 91 446 0214

SS Norway Boiler Room Explosion Claims Seven Lives

Tragedy at dawn: A steam leak from one of the boilers onboard S/S Norway reportedly caused the deaths of seven crewmembers. Twenty-two crew were also injured in the accident.

On the morning of Sunday, May 25, 2003, passengers onboard the Norwegian Cruise Lines' (NCL) vessel, S/S Norway awoke to a loud boom, as the vessel returned from seven-day Caribbean cruise to its homeport in Miami, Fla. The noise, which came from the vessel's engine room, is believed to be caused by a steam leak from one of the 41-year-old ship's boilers. The explosion, has, at press time, claimed the lives of seven crewmembers, the most recent being **Ramon Villarais,** 39, who was employed as an engine room stoker. According to a statement issued by NCL on May 28, 2003, the following six additional crewmembers perished in the tragedy: **Ramil Bernal,** 28, engine room stoker; **Ricardo Rosal,** 49, third engineer; **Candido Valenzuela,** 50, engine room stoker; **Rene Villanueva,** 28, oiler, engine department; **Mari John Bautista,** 29, First Asst. Refrigeration Engineer; and **Winston Lewis,** 53, second steward, Hotel Department.

According to Miami-Dade Fire Rescue, 22 crewmembers were injured, but passengers were disembarked safely following security measures.

The vessel, which was formerly known as the SS France, was constructed in 1961, and has built its own following. NCL purchased the venerable ship in 1977 for $18M and refurbished it for $120M. The vessel underwent routine maintenance and a refit at Lloyd Werft Shipyard in Bremerhaven, Germany. The job, which was completed in 1999 included work on the affected boiler.

While, according to a statement, NCL has expressed its concern and sympathy for both the deceased and injured victims and their next of kin, the line, which is owned by Malaysian-based Star Cruises, will undoubtedly find that it will remain in the headlines — not for its recent establishment of its new Homeland Cruising brand — but for a succession of law suits that are expected to be filed by the victims and their families.

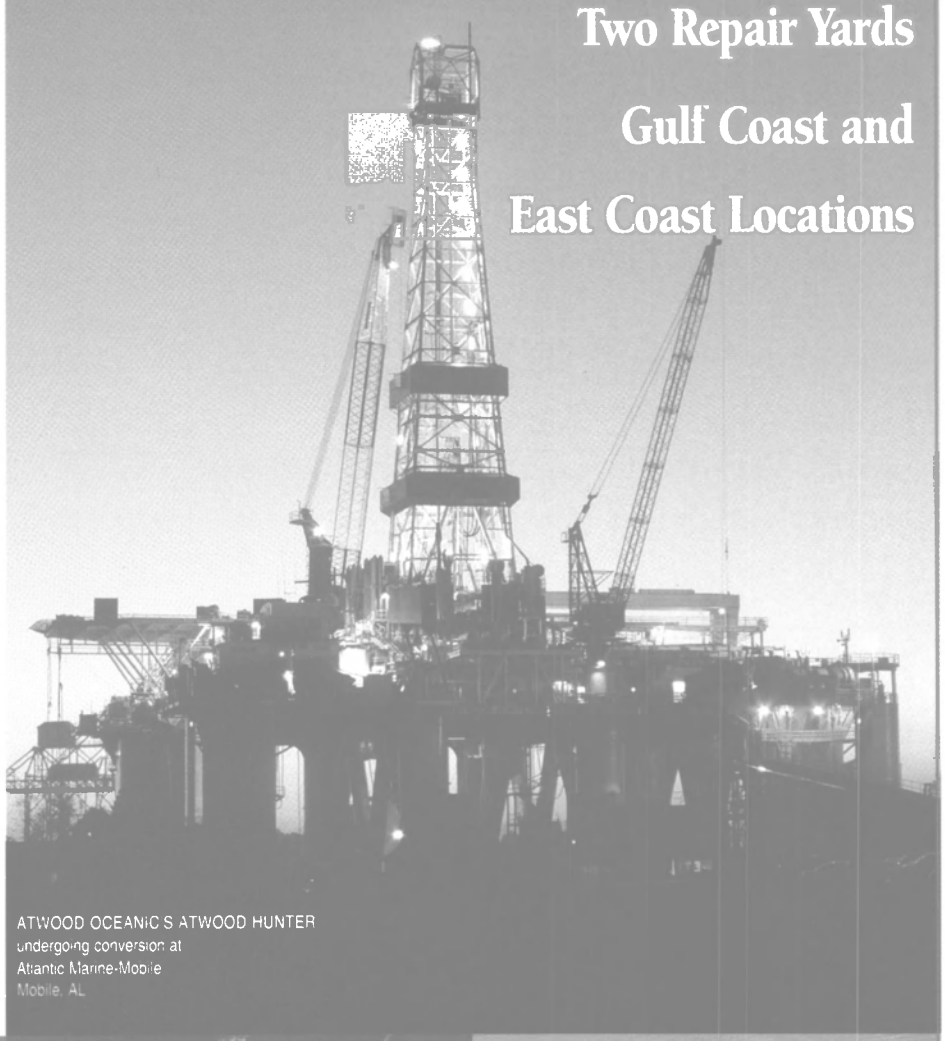
According to a statement issued by the line, the first suit was filed on May 28 by Miami attorney **William Huggett** on behalf of one of the injured crewmembers, **Abdi Comedia,** for a reported $1B. In response, NCL issued a follow-up press statement deeming the suit as "an opportunistic lawsuit,...a self-serving ploy in furtherance of Huggett's own personal interests.

The line furthered that it, "denies the allegation of the lawsuit and regrets that Huggett is more concerned with his lawsuit than with allowing (our) crewmembers the optimal conditions to fight for

(Continued on page 10)

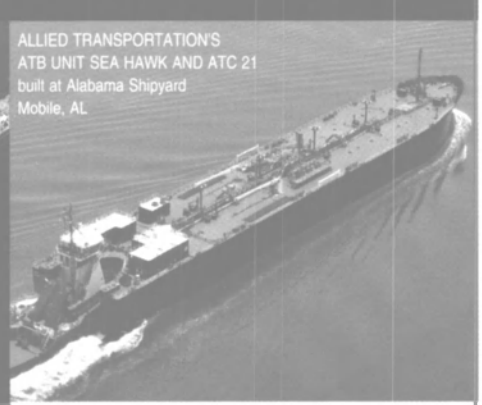
Build.
Repair.
Convert.

Two New Construction Yards
Two Repair Yards
Gulf Coast and
East Coast Locations

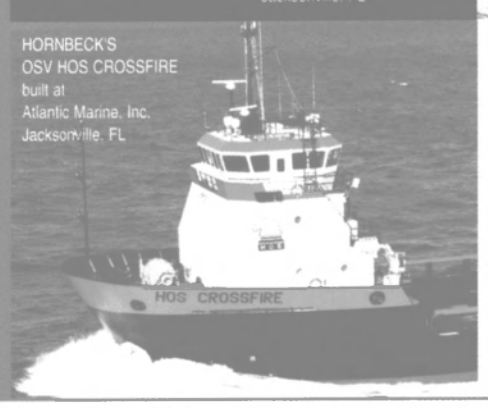


ATWOOD OCEANIC S ATWOOD HUNTER
undergoing conversion at
Atlantic Marine-Mobile
Mobile, AL

CROWLEY BARGE 450-10
converted at
Atlantic Dry Dock Corp.
Jacksonville, FL



ALLIED TRANSPORTATION'S
ATB UNIT SEA HAWK AND ATC 21
built at Alabama Shipyard
Mobile, AL



HORNBECK'S
OSV HOS CROSSFIRE
built at
Atlantic Marine, Inc.
Jacksonville, FL

Atlantic

Full Service Shipyards
New Construction
Repair and Conversions

Atlantic Marine, Inc.
Atlantic Dry Dock Corp.
8500 Heckscher Drive
Jacksonville, FL 32226
(904) 251-1545

Atlantic Marine - Mobile
Alabama Shipyard
Pinto Island, Box 3202
Mobile, AL 36601
(251) 690-7100

www.atlanticmarine.com

From our beginnings as builders of small commercial ships to our major expansion into multi-port shipbuilding, ship repair and ship conversion facilities, Atlantic Marine has evolved as one of the worlds most highly regarded names in marine construction. The reason behind our success is performance – the Atlantic Marine tradition of delivering quality work, competitive pricing and on time delivery. **Call us when it absolutely, positively must be done right and delivered on time.**

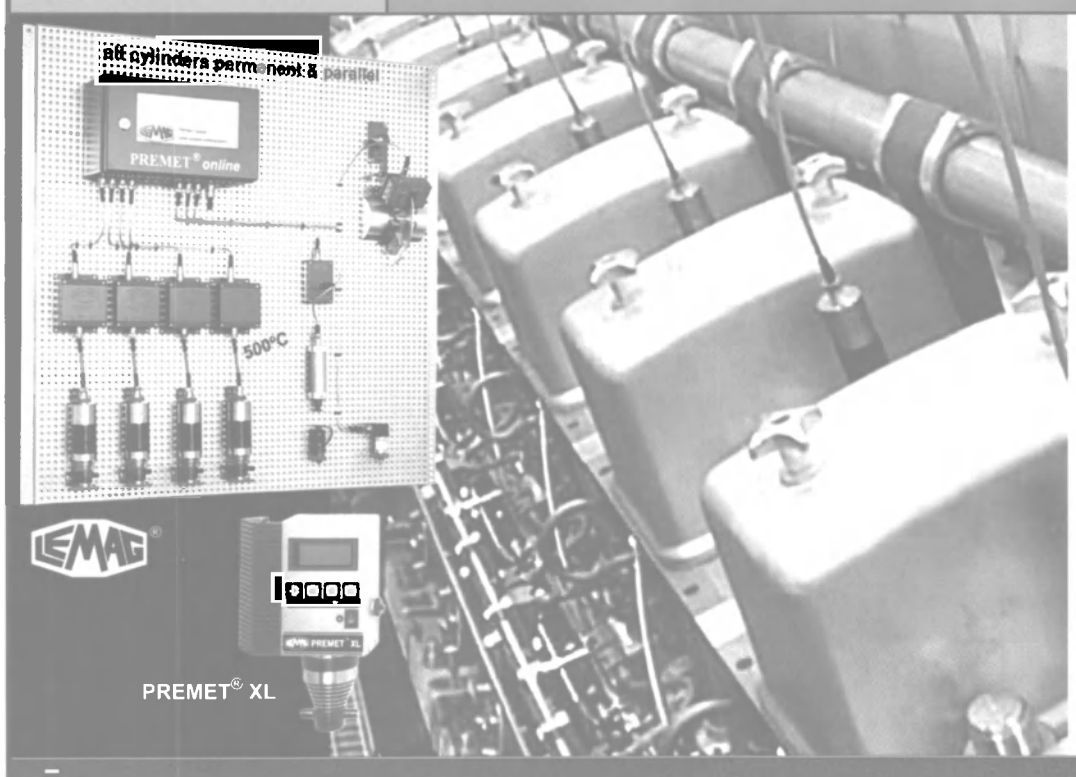
Circle 21 on Reader Service Card

The Index

Directory of companies given editorial coverage in this edition of *Maritime Reporter & Engineering News.*

EQUIPMENT THAT WORKS UNDER PRESSURE

PREMET® *Online* A PERMANENTLY INSTALLED SYSTEM TO CONTROL ENGINE PERFORMANCE



When engine performance counts, you can rely on

Motor-Services Hugo Stamp

to stock the diagnostic tools necessary to optimize your engine's performance, fuel efficiency and to recognize problems before they cause costly repairs.

MSHS carries the full line of **Lehmann & Michels'** PREMET® Electronic Indicators. The **PREMET® *Online*** measures multiple cylinder pressures all at the same time for diesel and gas engines. **PREMET® *Online*** software then gives you accurate diagrams for complete engine analysis, saving you time and money.

MSHS also offers product training and specializes in turnkey solutions for turbochargers, diesel engines and filtration equipment. We are available 24-hours a day, seven days a week worldwide.

For more information, call toll free **1-800-622-6747** or visit **www.mshscompanies.com**

MSHS COMPANIES
ISO 9002 Certified

MOTOR-SERVICES HUGO STAMP, INC.
AUTHORIZED DISTRIBUTORS & SERVICE CENTER

MAN B&W • S.E.M.T. PIELSTICK • SULZER • NAPIER • KBB • ABB • LASER ALIGNMENT • BOLL FILTRATION • DEUTZ ENGINE SALES AND SERVICE

Circle 297 on Reader Service Card

The approved AIS eXpert.

Available worldwide.

Class A – SOLAS Transponder:
XS in size and XL in functions

- One lightweight, compact single unit (5,5 lbs.)
- Integrated VHF transmitter and receiver
- Inbuilt alphanumeric keyboard and display
- Plug and Play installation
- Designed to IMO Standard

ineXpensive and available worldwide
eXclusively manufactured for Nauticast
by Siemens according to ISO Standards

www.nauticast.com info@nauticast.com

Wheelmark Approved

NAUTICAST
The AIS Company.

X-Pack DS

Distribution- and Service-Partner
in the U.S.:

Mackay MARINE
A Division of Mackay Communications
www.mackaycomm.com

Editor's Note

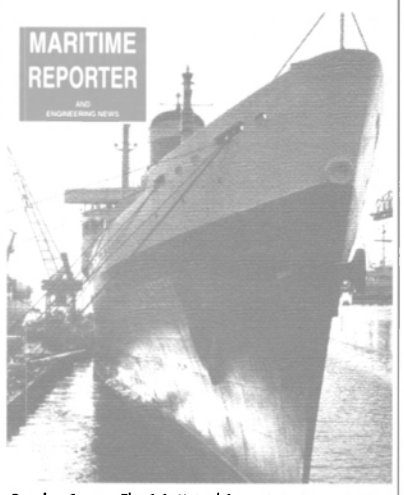
Compiling the mountain of articles, data and information that constitute *MR's* Annual Yearbook Edition has got to be the most harrowing, yet fulfilling, part of my job. Every year the editorial staff seeks to discover and deliver a melange of articles and information that best reflects happenings of the previous year, and provides insights to emerging trends.

The lead-in article to this year's Yearbook section actually stretches a tad beyond the previous year ... back to 1952 to be exact. Norwegian Cruise Lines announced plans in April to refurbish the fabled S.S. United States, which despite a relatively short operational life of 17 years has left an indelible mark. The article, starting on page 34, explores the vessel's life, from conception by William **Francis Gibbs** to its long demise. Though details of the project are scant, it will be interesting to see if and how the explosion aboard another NCL ship — the 42-year-old S.S. Norway — an explosion in port that killed six and wounded more than a dozen, impacts the line's plan for the S.S. United States project.

One of the most powerful editorials in this edition comes from Captain **Noel G. Hart**, manager, BP Shipping (USA). Mr. Hart addressed INTERTANKO's Tanker Event in Washington in April, delivering a straightforward assessment of the Prestige disaster and its ramifications to the marine industry as a whole. BP Shipping is aggressively adding tonnage to its fleet, as it has found its own ships to be the most reliable. Yet this article stretches far beyond the context of a single company or a single ship, as it covers a broad cross section of issues that will shape and affect the marine business for many years to come. In essence, it extends the message that owners that operate shoddily maintained ships increasingly have no place in the marine market, a trend towards the employment of quality, well-maintained vessels, which is a situation that would bode well for all concerned.

www.marinelink.com **trauthwein@marinelink.com**

On the Cover



On the Cover: The S.S. United States is a signature vessel which inspires passion across maritime circles. NCL recently announced plans to buy and refurbish the ship. MR takes a retrospective look at the vessel, the people and the companies that made it a reality, starting on page 34.

Subscriptions: One full year (12 issues) $24.00 in U.S.; outside of U.S. $96.00 including postage and handling. For subscription information, contact: Dale Barnett, fax: (212) 254-6271; e-mail: bornett@marinelink.com

MARITIME REPORTER
AND
ENGINEERING NEWS

www.marinelink.com

ISSN-0025-3448
USPS-016-750

No. 6 *Vol. 65*

118 East 25th Street, New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271

Founder: John J. O'Malley 1905 - 1980
Charles P. O'Malley 1928 - 2000

Maritime Reporter/Engineering News is published monthly by Maritime Activity Reports, Inc. Mailed at Periodicals Postage Rates at Waterbury, CT 06701 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 0970700. Printed in U.S.A.

Publishers are not responsible for the safekeeping or return of editorial material. ©2003 Maritime Activity Reports, Inc.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means mechanical, photocopying, recording or otherwise without the prior written permission of the publishers.

Member
BPA INTERNATIONAL
Business Publications
Audit of Circulation, Inc.

Other Printed & Electronic Products

MarineNews
Published 18 times per year, *MarineNews* is covers the North American inland/offshore shallow draft market.

Marine Security Sourcebook
Published four times per year, the definitive guide to marine security systems, products and services.

The Repair Report
Weekly electronic newsletter dedicated to delivering the world of Ship Repair News, Contracts and Data.
Sample for FREE at www.shiprepairer.com

2003 Global Marine Directory CD
More than 110,000 records ... log onto www.marinelink.com and download a **FREE SAMPLE**.

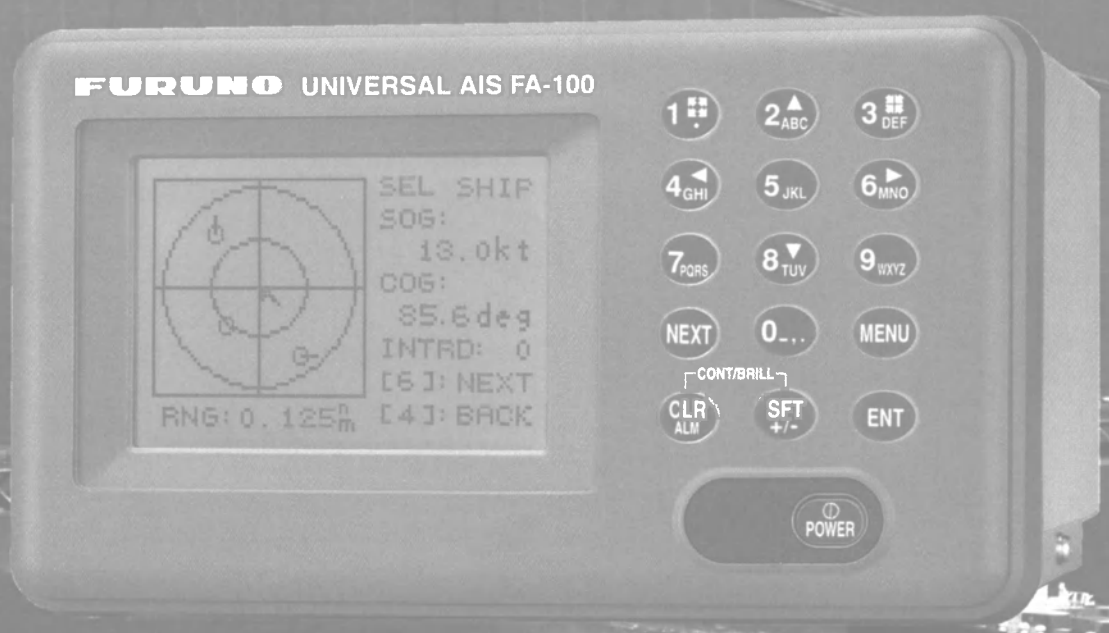
www.maritimetoday.com • Customized e-mail news service twice a day.
www.maritimejobs.com • The marine industry's recruiting & employment resource.
www.marinelink.com • The Internet's largest marine website, with over 270,000 "hits"

Looking for *service* reliability, we deliver it.
ABB Turbochargers
ABB
New York/NJ, Miami, Houston, Seattle/Tacoma, Los Angeles – email: turbochargers@us.abb.com

Circle 202 on Reader Service Card

Available Now!

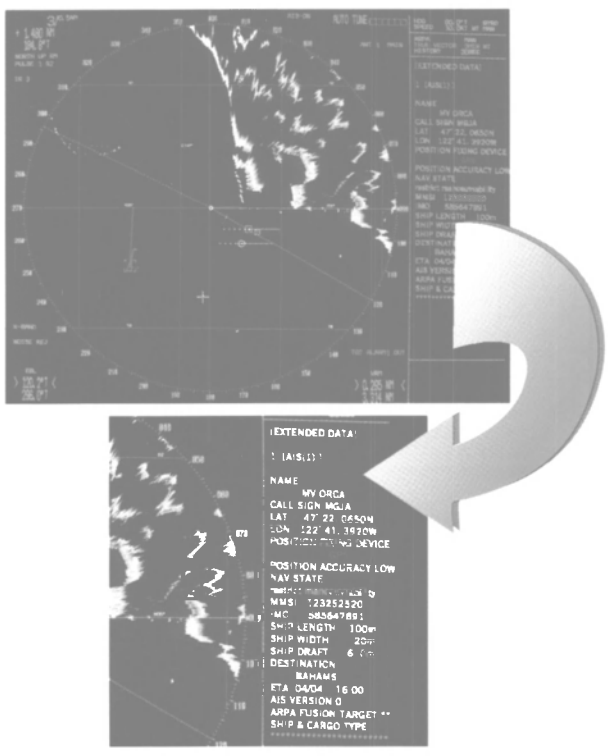
Simple Operation, Simple Installation, Simple Decision...



Furuno's FA100 AIS.

Furuno, the largest U.S. supplier of GMDSS equipment, is proud to introduce the new FA100 AIS (Automatic Identification System).

- ➤ FCC, USCG & BSH type accepted
- ➤ Satisfies all international and U.S. requirements at a very competitive price
- ➤ Backed by the largest global service network
- ➤ Simple installation utilizing standard 1-inch antenna mounts
- ➤ Low cost, single unit display design with built-in transponder provides high reliability and easy component access
- ➤ Pilot Plug port with optional Pilot Plug/Cable
- ➤ 12VDC or 24VDC direct power connection
- ➤ High contrast, scrollable LCD display and keyboard satisfies all IMO requirements without need for external control or connections
- ➤ Interfaces for AIS compatible radar, ECDIS or PC. Future expansion capabilities for Long Range AIS operation & TCP/IP LAN connections
- ➤ Standard FA100 transponder display shows CPA/TCPA, COG/SOG and Ship names graphically or in text form
- ➤ Multiple data inputs/outputs for external equipment and AIS control or short messaging
- ➤ 12 Channel built-in GPS receiver, DGPS ready



AIS target symbols and detailed information can be overlaid on your Furuno FAR-28x5, FR-21x5 or FR-15x5 series radar with an optional radar plotting module.

www.Furuno.com

FURUNO®

Everything else is a compromise!

Circle 258 on Reader Service Card

50 Years Ago

Trophy Honors Fastest Atlantic Crossing

Fifty years ago in these pages we reported on the trophy presentation ceremony for the S.S. United States, which was honored for the fastest crossing of the Atlantic Ocean. At a dinner aboard the United States Line's superliner United States on November 12, the **Duke of Sutherland** (center) presented to General **John M. Franklin**, president of the lines (left), the Hales Trophy for the Blue Riband of the Atlantic, which is awarded to the Atlantic's speediest crossing. Commodore **Harry Manning** (right) commanded the ship on her record-breaking voyage. Read an update on the S.S. United States, which will soon be refurbished and re-activated by Norwegian Cruise Lines. The story starts on page 34.

It's A Small World After All

Last month, 71 Miss Universe delegates gathered at the Miraflores Locks along the Panama Canal. Hosted by the Panama Canal Authority and its Administrator, **Alberto Aleman Zubieta**, the event welcomed the Miss Universe delegates to Panama, who were there for the June 3, 2003 competition. The delegates toured the locks, learning firsthand the Canal's engineering genius and how it unites the world through global trade. During the tour, the Panama-flagged vessel Crown Topaz, a refrigerated cargo ship, and the Cyprus-flagged vessel P&O Nedlloyd Inca, a containership, were being guided through the Canal. ***(www.pancanal.com)***

95th Anniversary of the Burning of General Slocum

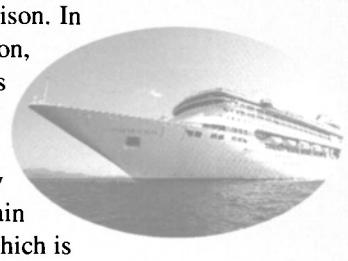
The annual ceremony will be held on Friday, June 15, 2003, at 11 a.m., in the playground at Tompkins Square Park, East 9th street and Avenue B. Manhattan, by the Slocum Memorial Fountain. The burning of the excursion steamer GENERAL SLOCUM, is the worst peace - time inland water's maritime disaster in the nation's history and the largest fire fatality in New York City history. The wooden steamer caught fire in the infamous Hell Gate passage in the East River between the Bronx and Astoria, Queens. Some 1,200 people were drowned or burned to death, including 61 never identified The Slocum Memorial Fountain is located in the neighborhood of the city that was once known as "Little Germany," where most of the Slocum victims lived.

Mrs. **Adella L. Wotherspoon**, 97, one of two living survivors of the General Slocum disaster will place a wreath in front of the fountain.

The annual event is co-sponsored by the Maritime Industry Museum on the campus of the SUNY — Maritime College in the Bronx and the New York City Parks and Recreation Department. Park's commissioner **Henry Stern** will be one of the speakers.

Say What?

In early May the Associated Press reported that a federal grand jury indicted a woman for leaving threatening notes aboard a cruise ship in hopes she could cut a family trip short and return home to her boyfriend. **Kelley Marie Ferguson**, 20, of Laguna Hills, Calif., was reportedly charged with two counts of threatening acts of terrorism, each carrying a maximum sentence of up to 10 years in prison. In another twist, Ferguson, who is seven months pregnant, was reportedly released back to her parents' custody where she will remain until her sentencing, which is scheduled to occur in Hawaii, following the baby's birth. Authorities say Ferguson, who was vacationing with her family aboard the Legend of the Seas, admitted writing the notes. The notes prompted an intense FBI search for biological, chemical, radiological and explosive weapons aboard the Royal Caribbean ship, and interrogation of crew members and passengers. Federal prosecutors said the hoax cost the U.S. Coast Guard alone $336,000. Ferguson had been detained without bail since her April 25 arrest.



afraid of COMMITMENT

We're not. All of us at Elliott Bay Design Group are focused on long-term relationships with our clients. Our goal is our client's success.

Elliott Bay Design Group
Architectural & Engineering Services for the Marine Industry

5301 Shilshole Avenue NW, Suite 200 · Seattle, WA 98107-4021
206.782.3082 · f 206.782.3449 · info@ebdg.com · www.ebdg.com

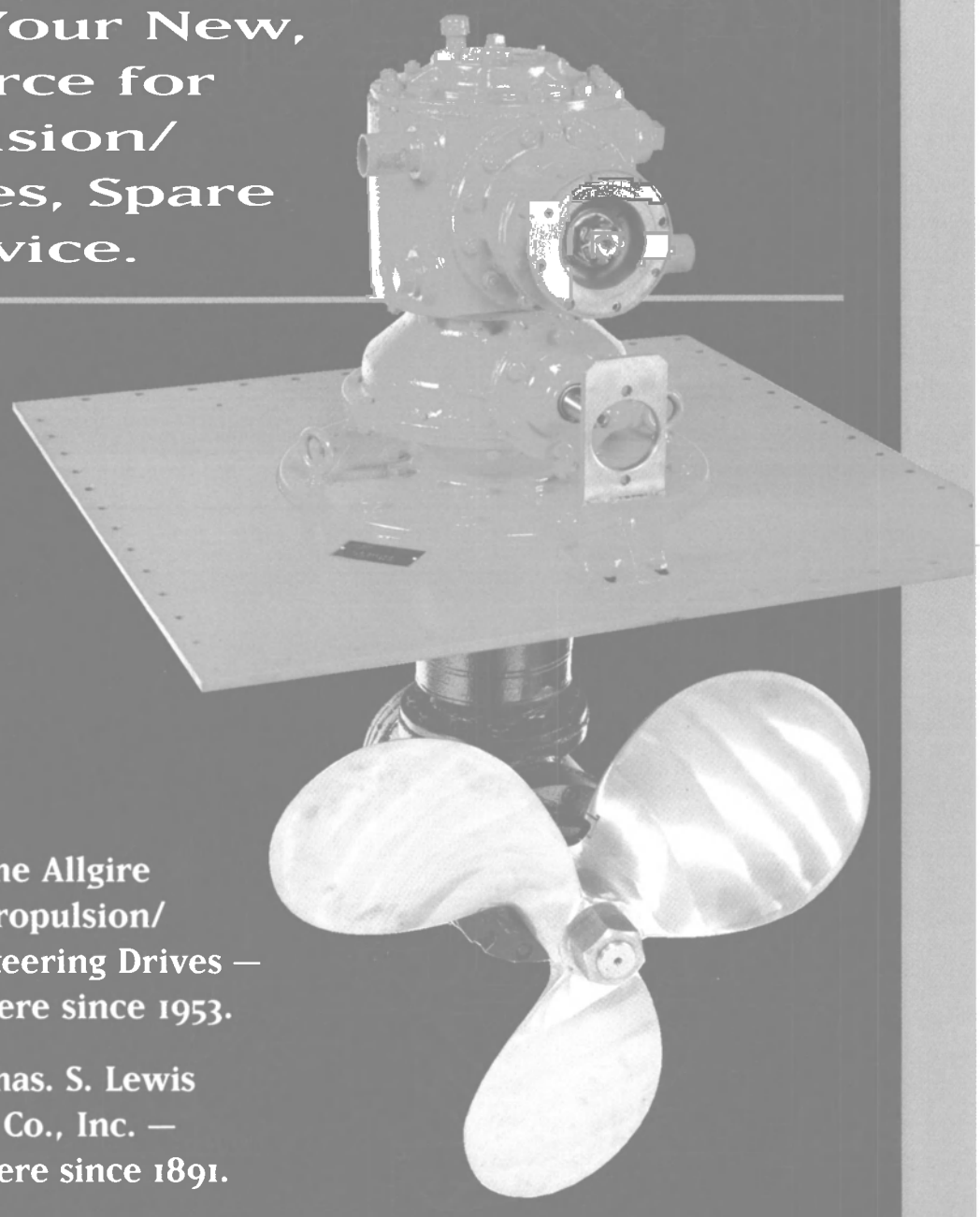
Circle 251 on Reader Service Card

ANCHORS
ANCHOR MARINE CHAINS
LARGEST INVENTORY OF NEW & USED IN THE U.S.A.
ALL TYPE ANCHORS & CHAIN ABS, LLOYDS GRADE 2, 3, K-4 CHAIN & FITTINGS
FAX: 713/644-1185
WATTS: 800/233-8014
PHONE: 713/644-1183
P.O. BOX 58645
HOUSTON, TX 77258
sales@anchormarinehouston.com
www.anchormarinehouston.com

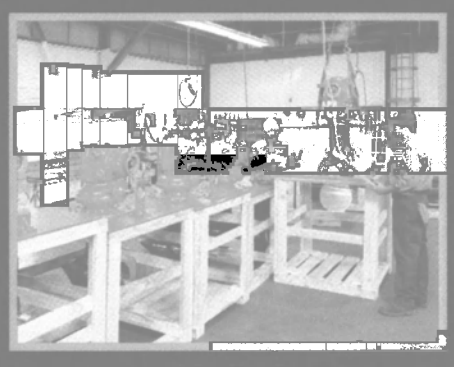
Circle 209 on Reader Service Card

HERE YESTERDAY
HERE TODAY
HERE TOMORROW

Announcing Your New, Exclusive Source for Allgire Propulsion/ Steering Drives, Spare Parts and Service.



- New Units
- Spare Parts Inventory
- Exchange Unit Program for Expedited Delivery
- Modern, Well-Staffed Machine Shop
- Redesigned & Improved Propeller Shaft Seal



The Allgire Propulsion/ Steering Drives — Here since 1953.

Chas. S. Lewis & Co., Inc. — Here since 1891.

Both here tomorrow to serve your workboat needs.

Chas. S. Lewis & Co., Inc.
8625 Grant Road • St. Louis, Missouri 63123 U.S.A.
Telephone: (314) 843-4437 • Telefax: (314) 843-7964
E-mail: sales@lewispumps.com

LEWIS PUMPS

FOR SUPERIOR PERFORMANCE, SAVINGS AND SERVICE

Circle 226 on Reader Service Card

their lives and to recover from very serious injuries."

The statement also questioned Huggett's industry knowledge of ships. "It is also extraordinary that Huggett, whose lawsuit displays a spectacular ignorance of the technology of ships."

When contacted by *MR/EN*, regarding NCL's reaction to Comedia's lawsuit, Huggett argued that the ship's age was undoubtedly a factor in the cause of the accident. "It's foolish to still be using that type of technology in ship that is so old," Huggett said. "I don't need to be an expert in boiler technology to know that."

Huggett is seeking both punitive and compensatory damages on behalf of Comedia.

In response to Huggett's suit, NCL's director of communications, **Susan Robison,** stands by the statement issued by the line regarding Huggett's technological expertise: "He (Huggett) doesn't understand the technology of how to run a ship and how a boiler works."

SENESCO Names Schuler as New CEO

The Southeastern New England Shipbuilding Company (SENESCO) has appointed **Gary C. Schuler,** the former president of Stanley-Bostitch, as the company's CEO.

In addition to his new post as CEO, Schuler becomes one of two private investors in SENESCO having made a personal investment in the fast growing company. **Robert Jarvis,** who has served as President of SENESCO for the past two years, will continue in this position and also serve as the COO.

Schuler served as President of Bostitch for 10 years between 1980 and 1990, during which time the company's sales grew from $100 million to $500 million.

Digital Gyro Repeater

Now also compatible with AIS

- Large super-bright Digital Heading Display.
- Analog Turning Indicator - allows instant estimation of the ship's turning rate.
- Will work from most types of gyro compasses.
- Repeaters can be "daisy chained" and synchronized to first repeater (Master Repeater).
- Digital Data output. NMEA and various other protocols are available for integration with survey and navigation computers.

SCAN Repeater™
DIGITAL HEADING REPEATERS

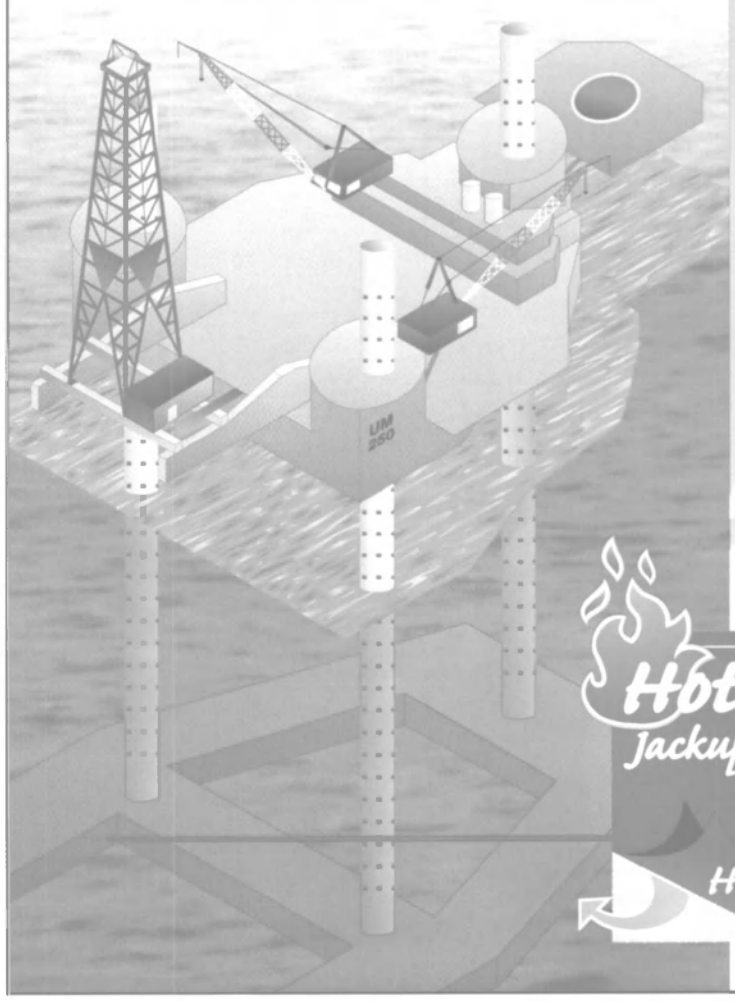
scandinavian micro systems

P.O. Box 155,
N-1411 Kolbotn, Norway,
Phone: +47 6681.2740
Fax: +47 6680.8095
E-mail: sales@scansys.no

1001 South Andrews Avenue, Suite 120,
Fort Lauderdale, Florida 33316, USA
Phone: +1.954.523.8878
Fax: +1.954.523.7157
E-mail: sales@scansys.no

Circle 352 on Reader Service Card

A New Generation Approach



OUR NEW UM 250 DESIGN combines cost effective features with operational efficiency.

- Larger Deck Area & Tank Capacity
- Super Drilling Capacity

ACCEPTING THE CHALLENGE

UNITED MARINE SHIPYARD

Hot New Jackup Design
You asked for it... Here it is!

- SHIP & DRILL RIG REPAIR - NEW CONSTRUCTION
- MARINE ENGINEERING & DESIGN

800-824-SHIP

OFFICE: P.O. Box 22077 Beaumont, TX 77720 (409) 833-7070 Fax (409) 833-0744
SHIPYARD: Texaco Island, Port Arthur, TX
www.unitedmarineshipyard.com ■ mail@unitedmarineshipyard.com

Circle 329 on Reader Service Card

"From technical expertise to budget and schedule consciousness, Crowley met or exceeded our expectations."

~ Fred H. Van Etten • Project Manager • Chevron Overseas Petroleum

To install five massive energy platforms at Lake Maracaibo, Venezuela, Crowley put its knowledge of complex marine engineering strategies to work. As lead logistics provider for Chevron, we professionally handled all aspects of transportation and installation, adapted new lift technologies and conducted engineering, safety, environmental and budget analyses to meet Chevron's goals.

People who know Crowley know many industries value our logistical know-how. Whether we're solving major installation challenges for energy suppliers, helping to manage supply chains for automotive manufacturers or swiftly moving goods for apparel companies between countries, Crowley has the same goal for every project: exceed customer expectations. For more information, call 1-800-CROWLEY or visit us on the Web at **www.crowley.com.**

- **Liner Shipping**
- **Worldwide Logistics**
- **Energy Support**
- **Project Management**
- **Ocean Towing & Transportation**
- **Petroleum & Chemical Transportation**
- **Alaska Fuel Sales & Distribution**
- **Ship Assist & Escort**
- **Salvage & Emergency Response**

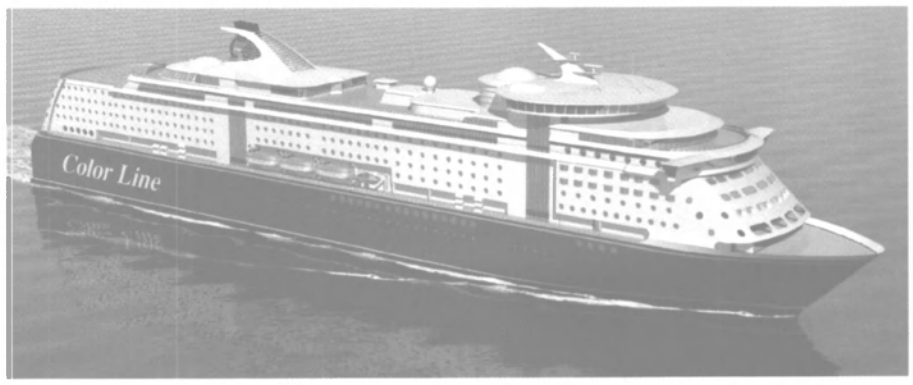
CROWLEY®
People Who Know™

© Crowley Maritime Corporation, 2002 CROWLEY is a registered trademark of Crowley Maritime Corporation

Circle 236 on Reader Service Card

Color Line Builds IT Environment With SIS

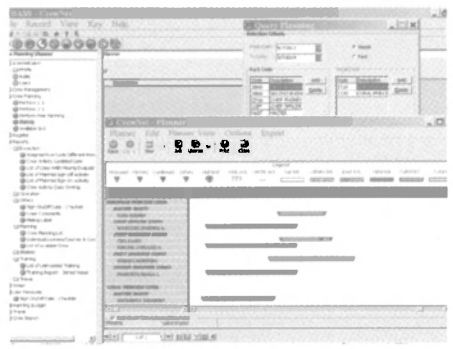
Star Information Systems (SIS) has signed a major retrofit and newbuild software contract with Color Line AS. The Color Line contract covers the installation of new-generation shipboard software for improved fleet management on nine existing ships. Application and database server software are installed at Color Line's computer center in Oslo with on line direct access from the vessels through a terminal server and VSAT satellite communication. The contract also includes what is reported to be the world's largest cruise ferry that is set to replace Prinsesse Ragnhild on the Oslo-Kiel service as of December 2004. Color Line holds an option for a second ship built to the same standard.



Color Line and SIS are currently working on the data structure and conversion process for the first Star IPS system retrofit onboard the "Petter Wessel." Re-structuring data is a key operation in the implementation process for this vessel. Application and database server software are installed at Color Line's computer center in Oslo with on line direct access from the vessels through a terminal server and VSAT satellite communication.

Circle 44 on Reader Service Card

BASS Provides New CrewNet Version

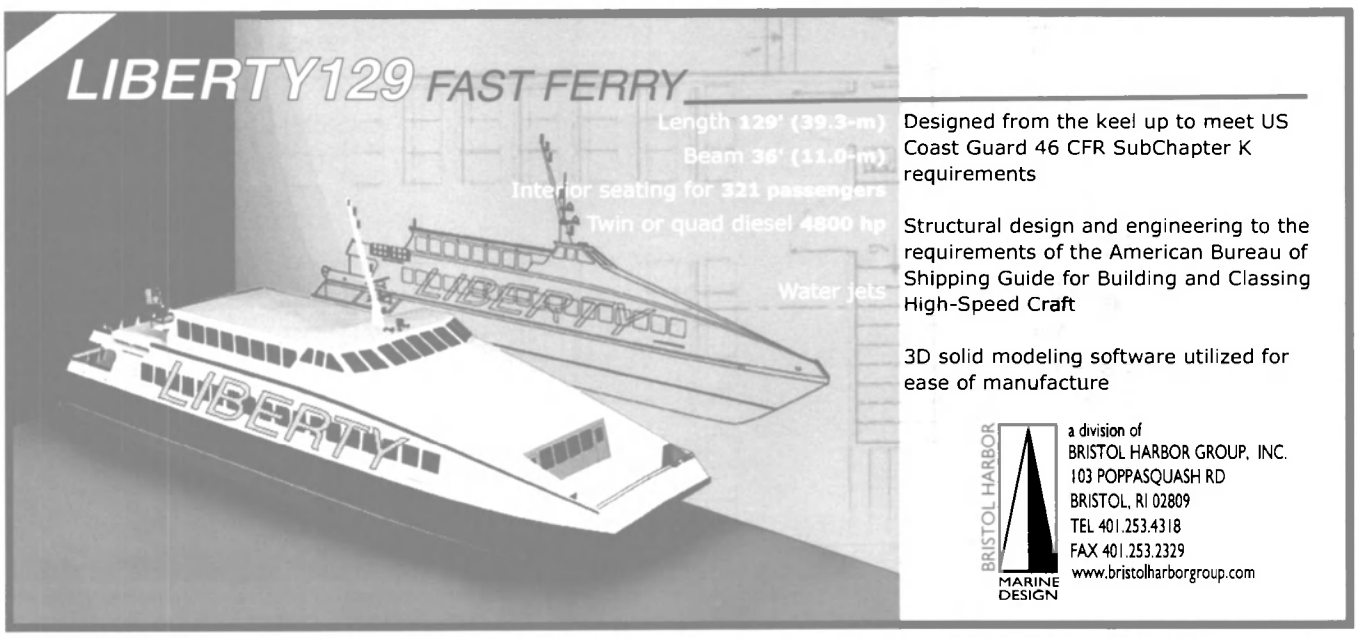


BASS released its re-engineered BASS CrewNet Version 2.3-Crew/Human Resource Management System. BASS CrewNet Version 2.3 provides users with an open system that can communicate with other business applications through an integration engine called BASS Integrator.

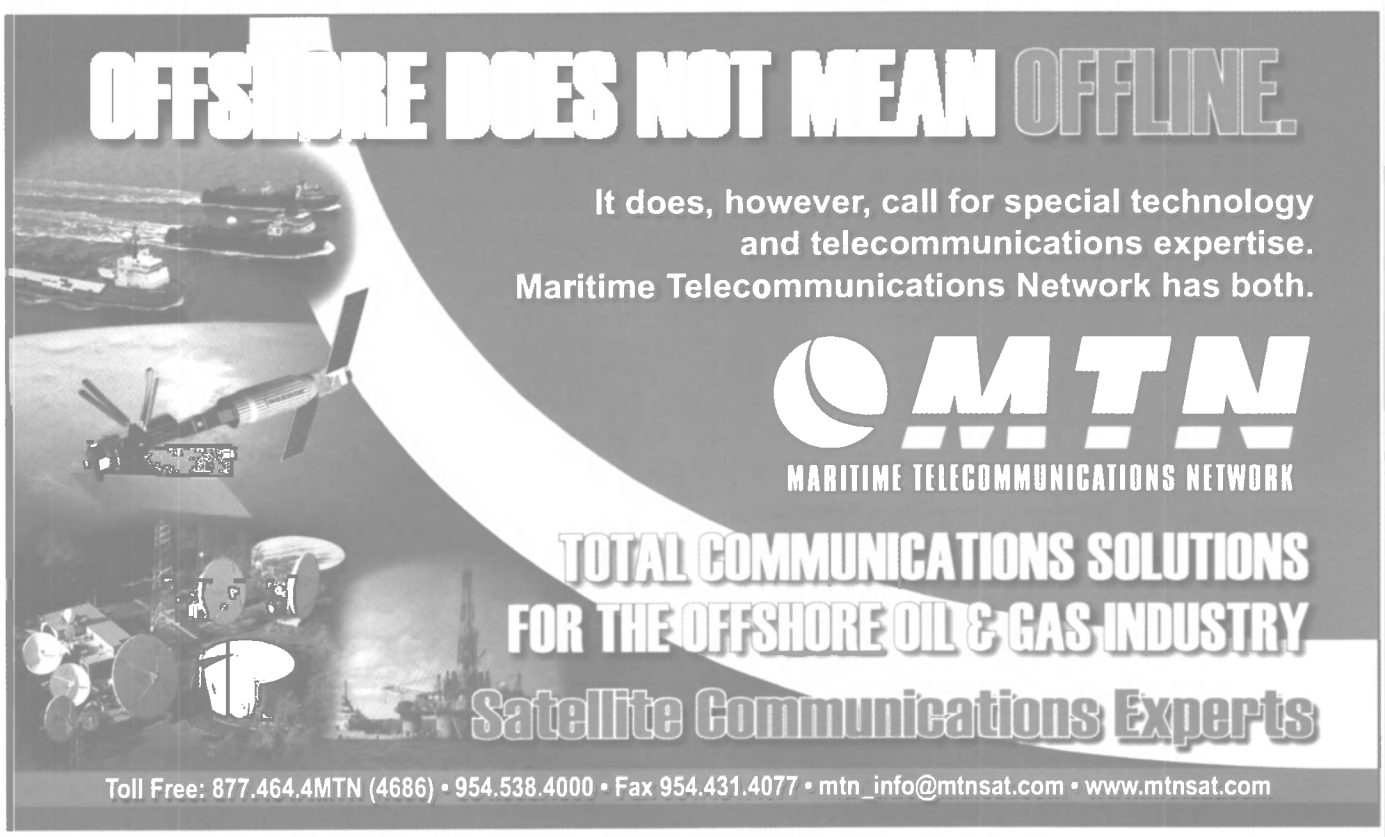
With this release of v2.3, the integration engine, allows clients to develop their own useful modules, which can be "plugged" into BASS' application engine thus permitting the sharing, retrieval and updating of the data from other applications.

The extensive changes have been implemented using Visual Studio .Net technology. The server portion of CrewNet will now be able to run on more than one operating system using either a Win32 or Unix environment.

With the company performing this change in phases, only five sub modules such as crew license, crew activity, vessel general, vessel sail plan and crew profile have been revitalized to use this new engine with its architecture and programming language. In short, BASS is scaling down the dependency of Microsoft Transaction Server as a host for database transaction and replacing it with a Web Server-like application called BASS Integrator. The new architecture has facilitated a significant performance improvement in the said modules targeted for the release of version 2.3. Additionally, some new planning scenarios using system-generated suggestions are available to optimize planning operations by focusing on



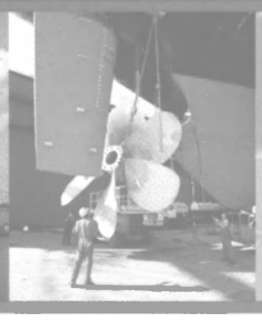
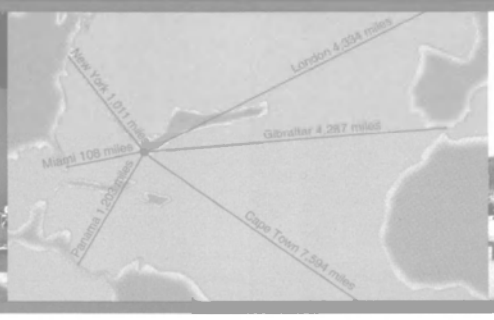
Circle 222 on Reader Service Card



Circle 292 on Reader Service Card

Grand Bahama Shipyard Ltd.

YOUR SHIP REPAIR SOLUTION


Location, location, location.

Welcome to the new Grand Bahama Shipyard Ltd, situated within the Freeport Maritime Centre, on the island of Grand Bahama. Our ideal location not only provides all year-round ideal weather for ship repair, but it is also centered on the world's major shipping routes.

The Grand Bahama Shipyard offers a comprehensive range of docking and wet-berth services. The yard now features 2 floating docks, including one of the largest in the northern hemisphere. These are supported by brand new shoreside facilities including workshops, a waste water treatment plant, and a range of specially designed subcontractor site units.

Two Wet-berths

- Fully serviced for vessels up to 304m (1000ft) in length

Workshops

- 34,000 sq ft
- 30ft shaft lathe
- 20 tonne overhead crane
- Wide range of machinery

Services

- Steel repairs
- Pipework repairs
- Hull treatments
- Engineering repairs
- Electrical overhauls
- Survey & Inspection

Grand Bahama Shipyard...*Location and reliability is everything.*

DRYDOCK 1

Length	268m	(880ft)
Breadth	33.5m	(110ft)
Vessel draft	9.1m	(30ft)
Lifting capacity	30,000	tonnes

DRYDOCK 2

Length	300m	(985ft)
Breadth between fenders	56.5m	(228ft)
Vessel draft	9.1m	(30ft)
Lifting capacity	82,500	tonnes

Grand Bahama Shipyard

P.O. Box F-42498-411 • Fishing Hole Road, Freeport, Grand Bahama
Phone: 242-350-4000 • Fax: 242-350-4010 • E.mail: gbship@batelnet.bs • website: www.gbshipyard.com
Circle 261 on Reader Service Card

competencies available. Incorporated herewith are the functions to automate multiple images and document attachments catering largely for pictures, licenses, certificates, travel documentations, contracts, and medical records or even P&I Claims/Cases. Such enhancements shall enable our customers to archieve and maintain important correspondences and documentation coherently within our crewing solution thus avoiding a paper mess and manipulation of various systems.

Circle 36 on Reader Service Card

Consultas Adds Muscle to Fleet Management

Consultas has strengthened its fleet management computer systems and international presence through a series of software improvements and the appointment of two new European representatives. The company also confirmed the launch of a new corporate identity, A Solid Connection. Consultas managing director, **Morten Kjoerum** — who was previously Head of Customer Service, Europe, Wallenius Wilhelmsen, took the helm of the company just 10 months ago. Since then, the company has made a significant investment in its technologically advanced software systems to further strengthen and confirm its continuous commitment to an increasing number of global shipping clients. Software improvements recently undertaken by Consultas are focused on improved functionality and tighter integration of all PMS applications, including spare parts and maintenance, software improvements and also exhibit improved layout and design of software facilities.

Circle 187 on Reader Service Card

OPM Utilizes Tideworks Software

According to Tideworks Software, Operadora Portuaria de Manzanillo (OPM) will deploy Tideworks' Mainsail and Spinnaker products. The new systems will be implemented at the terminal, which currently handles more than 250,000 container moves a year. Tideworks' will offer the terminal its full-service approach with local onsite support, a data conversion, EDI services and system monitoring.

Circle 10 on Reader Service Card

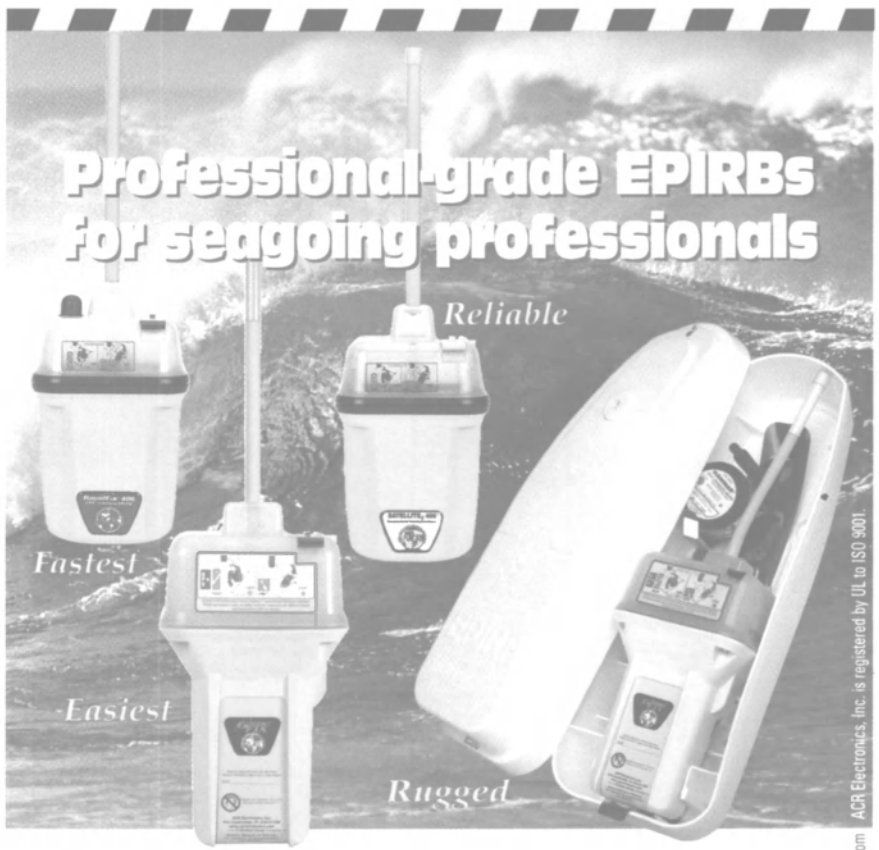
BIMCO Launches Innovative Database

BIMCO has officially launched its Solid Cargo Database as an additional feature on its website. The BIMCO Cargo Database provides general guidance and information and is intended for use by shore-based staff and vessel crews. Included in the Cargo Database are easy-to-use BIMCO Reporting Forms which significantly assist BIMCO's efforts to improve the situation for vessels in ports around the world. The reporting forms collect data on new or unusual cargo properties and the appropriate cargo handling procedures required such as cleaning, undue delays, inspection, loading, carriage instructions, unloading and cleaning, etc. as experienced by the ship and its crew.

Circle 14 on Reader Service Card

Lloyd Triestino Enhances its Web Site

The Italian container shipping line Lloyd Triestino has upgraded its web site with a new homepage featuring advanced e-commerce facilities so as to



Commercial fishing. Petro operations. Salvage. Shipping. However you earn your living at sea, EPIRBs* by ACR give you the most for the money. That goes for the feature-loaded GlobalFix™ 406 with integral GPS data, the always-ready RapidFix™ 406 and the value-oriented SATELLITE 406™. Add a fully-enclosed, high density bracket with hydrostatic release and you'll be stowing the most durable, automatically-deploying EPIRB available. For convenience, ACR has more than 140 Authorized Battery Replacement Centers worldwide. What's more, ACR has been building and improving the finest EPIRBs since 1956. So choose the one with the right features for your vessel's needs. After all, your crew's survival could be at stake.

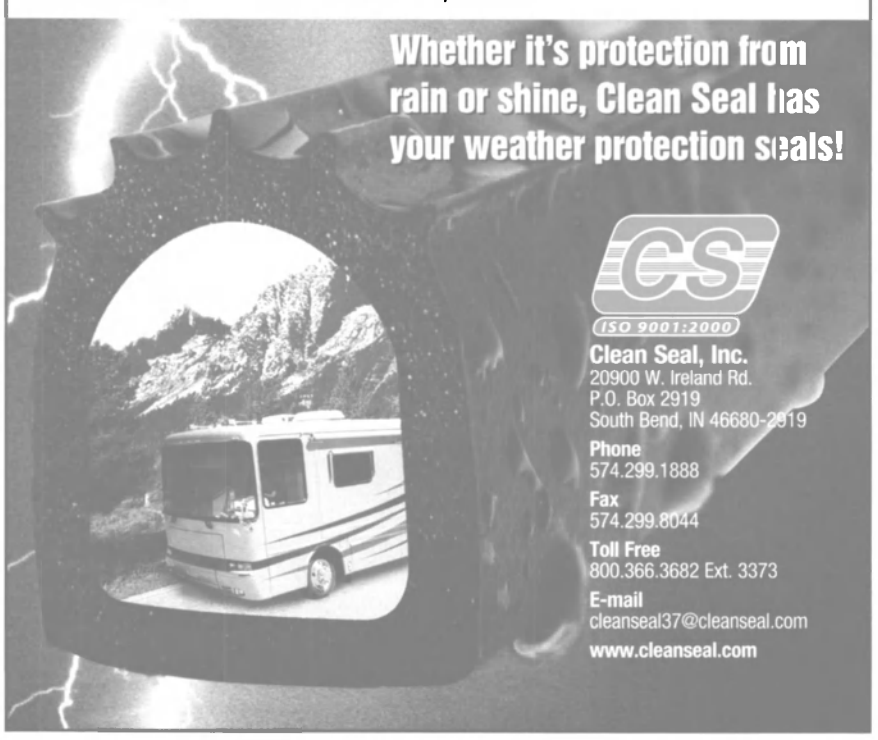
YOUR ULTIMATE WAY OUT

ACR Electronics, Inc., 5757 Ravenswood Road, Fort Lauderdale, FL 33312, U.S.A.
For information call (954) 981-3333 • e-mail: info9@acrelectronics.com

*Emergency Position Indicating Radio Beacon www.acrelectronics.com

A Chelton Group Company

Circle 203 on Reader Service Card



Circle 228 on Reader Service Card

Because Our National Security and Safety Is Not An Option.

L-3's AIS. ADVANCED, PROVEN, TRUSTED.

Don't just install AIS when you can instill absolute confidence with the leading AIS technology.

To meet the new IMO and MTSA mandates for AIS, remember this: only the L-3 AIS combines proven VHF and AIS performance with L-3's trusted leadership. Available with an optional Electronic Charting System display, the L-3 AIS offers full regulatory compliance, system expandability and is the only AIS manufactured in the USA.

L-3. Technology Without Boundaries.

L-3's AIS is also available with the L-3 Electronic Charting System (ECS).

L3 communications

For more information, call **941-371-0811**. Or visit www.L-3com.com IMO Compliant, Meets ITU 1371-2 ~ Made in the U.S.A.

Circle 28[illegible] on Reader Service Card

meet customers' needs 24 hours a day, 365 days a year.

Customers are provided with new added-value products and electronic transactions through user friendly links, such as new internet bills of lading processing, improved service schedules, increased cargo tracking functions, tariffs, owned vessels and equipment specifications, press release information and service maps. Registered members can also check on the location of their cargo directly from the same BL processing screen.

Circle 73 on Reader Service Card

Crane Load Measurement And Monitoring Systems

the highest quality load monitoring and measurement systems for all types of Cranes

wireless and cabled systems for standard & custom applications

imesLMS imesgroupbusiness www.imesinc.com

for further details:
usa toll free: 888-998-3787
tel: 909-626-8316 fax:909-626-8326

Circle 340 on Reader Service Card

Product Modeling - Structure - Outfitting - Piping - Automatic Nesting

ShipConstructor

3D Product Modeling in AutoCAD easy as 2D Drafting
Scales from a single user to a hundred users

Interference Checking - Smart Pipes - 3D Spool Drawings - Catalog Editor - 3D Assembly Drawings

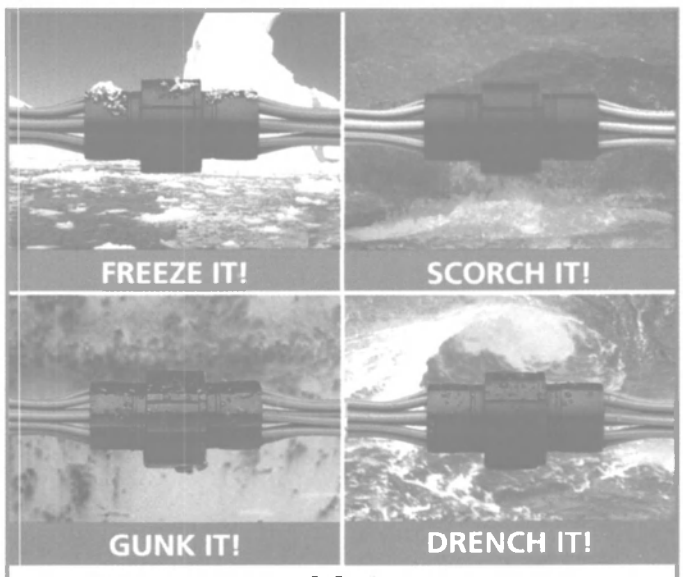
Revision Tracking - Build Strategy - Profile Reports - Profile Plots - Pin Jigs - Inverse

E-mail: info@ShipConstructor.com
Web: www.ShipConstructor.com
Tel: 1-250-479-3638
Toll free: 1-888-210-7420
Fax: 1-250-479-0868

ARL Albacore Research Ltd.

Fairing - Lofting - Plate Expansion - Shell Expansion - NC Processing

Circle 204 on Reader Service Card



It's sealed. It's inexpensive.

It's Sure-Seal®

Sure-Seal® is a unique line of inexpensive sealed connectors with a proven track record as a reliable solution in harsh environments. The connector has sealing elements molded into the rubberized body providing a low cost submersible seal resistant to water, fuels and chemicals. Sure-Seal offers a wide range of circuit configurations and accessories to meet most of your sealed connector needs.
Millions in stock - Call today!

SURE-SEAL CONNECTIONS

888-308-7873 East
877-372-1031 West
www.suresealconnections.com

Ask for our FREE guide

2180 Hornig Rd., Phila., PA 19116 • 215-673-6100 • Fax 215-552-8022

Circle 325 on Reader Service Card

We at Superior Energies Inc. extend our gratitude and appreciation for the opportunity to provide our insulation, acoustical, and fire proofing services for the past 25 years!

Let us take care of all your insulation blanket requirements
We accept MasterCard, Visa and Amex

WANT SUPERIOR QUALITY
WANT SUPERIOR SERVICE
CALL SUPERIOR ENERGIES INC.

1-800-BUY-SEI-1

P.O. Drawer 386, Groves TX 77619
Telephone: (409) 962-8549 Fax: (409) 962-4027
Website: www.insulationsei.com

Circle 323 on Reader Service Card

ARL Opens Hong Kong Branch

ARL Consulting B.V., the Rotterdam headquartered IT firm with Russian developers, has opened a branch in Hong Kong, Peoples Republic of China.

The new office will enable focus on the Chinese market; in particular providing IT development services to mainland China, Hong Kong and Taiwan companies in the transport and logistics sector.

Circle 28 on Reader Service Card

Inmarsat Launch New Fleet Services

Inmarsat has launched the commercial availability of the Fleet F55 and Fleet F33, incorporating global voice, and a range of fax and data services.

Inmarsat Fleet F55 and F33 are designed to bring the benefits of satellite communications to vessels, which were previously restricted by size and cost of terminal hardware. Maritime information, such as sea and weather charts, can now be accessed online and updated in real-time. The configuration of the products gives the option for two distinct data channels. Currently offering voice, data and email, it is planned to extend the Fleet F33 service in 2004 with the option of a mobile packet data service (MPDS), to enable crew to send immediate short burst data with an 'always on' capability at low cost.

LandSea Systems introduced a new maritime high-speed terminal — the TT-3086A Capsat Fleet55. The latest member of Thrane & Thrane's Fleet product family, the Capsat Fleet55 is a more compact version of the Capsat Fleet77 terminal. Available from stock, the Fleet55 provides mariners high-speed and cost effective voice and data communications based on either MPDS (Mobile Packet Data Service) protocol with constant online access, or on a 64K ISDN connection. The new standard MPDS feature allows the user the ability to be online, all of the time, paying only for the data sent and received rather than paying for the time online.

With its lightweight and compact transceiver and antenna, the Capsat Fleet55 is quick and easy to install. The tracking antenna is 27 in. high, has a diameter of just 22 in., and weighs 39 lbs.

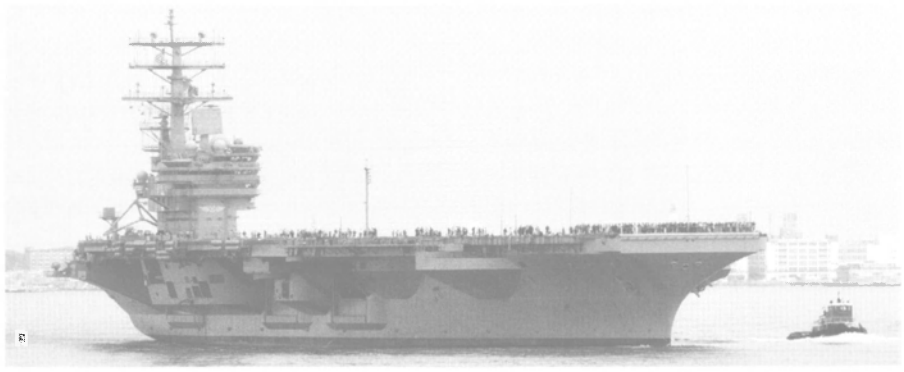
For Inmarsat,
Circle 22 on Reader Service Card
For LandSea Systems,
Circle 23 on Reader Service Card
For Thrane & Thrane,
Circle 24 on Reader Service Card

Northrop Grumman Completes Builder's Trials on USS Ronald Reagan

Northrop Grumman Corporation said that aircraft carrier, Ronald Reagan (CVN 76), returned to the Newport News sector following successful completion of initial sea trials — deeming that Reagan's two nuclear propulsion plants and their operators are fully mission capable.

Adm. **Frank L. "Skip" Bowman**, director of the U.S. Naval Nuclear Propulsion Program, conducted the initial sea trials. Bowman concluded that Reagan's propulsion plants and their operators met or exceeded expectations.

Also taking part in the sea trials were **Tom Schievelbein**, Northrop Grumman corporate vice president and president of the Newport News sector; Rear Adm. **Dennis Dwyer**, NAVSEA Program Executive Office, Carriers; and Capt. **Thomas F. Violette**, Navy Supervisor of Shipbuilding at Newport News.



The nuclear-powered aircraft carrier, Ronald Reagan (CVN 76), returns to Northrop Grumman Newport News, May 8, 2003, after successful builder's trials. During builder's trials, the ship undergoes extensive testing in a variety of areas. Ronald Reagan is the ninth Nimitz-class ship built by Northrop Grumman Newport News. It will be commissioned by the U.S. Navy on July 12, 2003, at the Norfolk Naval Base in Norfolk, Va. *(Photo by John Whalen, Northrop Grumman Newport News).*

Ronald Reagan sailors, Northrop Grumman Newport News shipbuilders and NAVSEA and Supervisor of Shipbuilding personnel worked side-by-side testing systems to ensure the warship can operate for the next 50 years. Reagan Commanding Officer Capt. **J. W. "Bill" Goodwin**, reiterated to the vessel's crew the importance of their role onboard this prolific vessel. "Be ready mentally and physically for the next event on the schedule. Keep the focus and level of professionalism in everything we do during sea trials. You are the plank owner crew of the newest nuclear-powered aircraft carrier in the greatest Navy in the world." Named after America's 40th president, Reagan is the ninth Nimitz-class aircraft carrier built by Newport News and the first carrier named for a living president. The keel of Reagan was laid Feb. 12, 1998, and the ship was christened at Newport News March 4, 2001. The vessel is scheduled for delivery to the Navy in June 2003.

Circle 74 on Reader Service Card

NEW!

BoatLIFE®

Teak Deck™ Sealant in Chubs

- Teak Deck™ Sealant is now packaged in Chubs for use in the boat building industry.
- Teak Deck™ Sealant is the innovative alternative to two-part products.
- Silicon based, cures in 24* hours, is sandable and non-corrosive.
- Meets or exceeds requirements ot Federal Specifications TT-S-0027, Type II, and Military Specifications C-18255E (Ships), Type II.

www.boatlife.com

Manufactured in America By Life Industries Corporation
2081 Bridgeview Dr., Charleston, SC 29405
Phone 800.382.9706 Fax 843.566.1275
When calling for information please mention code # MR03

©2003 Life Industries Corporation *Curing time subject to atmospheric conditions.

Circle 218 on Reader Service Card

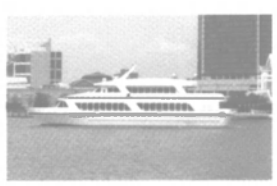
AUSTAL USA

BISCAYNE LADY
111FT CATAMARAN
BISCAYNE LADY CRUISES

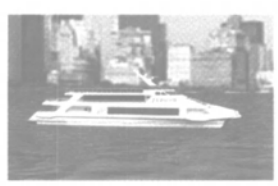
CHRISTOPHER M COLASANTI
86FT CATAMARAN
CURRENTLY AVAILABLE

Austal USA

Passenger ferries and dinner cruise yachts of choice



CLOUD NINE
135FT MONOHULL
CLOUD NINE



ZEPHYR
143FT CATAMARAN
CIRCLE LINE - STATUE OF LIBERTY FERRY CO

PLEASE CONTACT
CHRIS PEMBERTON OR CARL WEGENER IN MOBILE, AL
TELEPHONE: 251-434-8000 FACSIMILE: 251-434-8080
EMAIL: USASALES@AUSTAL.COM WWW.AUSTALUSA.COM

Circle 214 on Reader Service Card

AIS - Panacea or Pandora's Box

By Dennis Bryant, senior maritime counsel, Holland & Knight, Washington, D.C.

According to Greek legend, Zeus had the messenger god Mercury leave a mysterious box with Pandora. Mercury told Pandora to hold the box for safe-keeping, but under no circumstances was she to open it. Not long after Mercury departed, curiosity got the better of Pandora and she opened the box to examine its contents. Unfortunately, the box contained all the ills and misfortunes of the world. They promptly escaped and have been loose in the world since that time.

The word 'panacea' is derived from the Greek terms "pan" (meaning all) and "akos" (meaning remedy). According to the Merriam-Webster Dictionary, the word means "a remedy for all ills or difficulties."

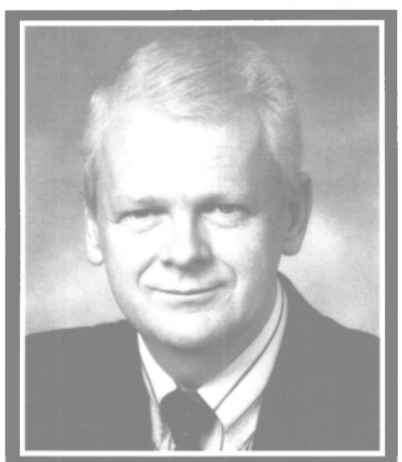
The question is which term applies to AIS?

What is AIS?

AIS is an electronic transceiver unit intended to be integrated with a ship's radar, gyrocompass, global positioning system (GPS), and other operational and navigational systems. When fully operational and when functioning properly, it will provide the officer in charge of the navigational watch with a radar display that includes a mark for every significant ship within radio range, each with a velocity vector indicating speed and heading. Each ship 'mark' could reflect the actual size of the ship and its position with GPS or differential GPS accuracy. By clicking on a ship mark, the officer could learn the ship name, course, speed, classification, call sign, registration number and other information. Maneuvering information, closest point of approach (CPA), time to closest point of approach (TCPA), and other navigation information could also be available.

AIS operates in the VHF maritime radio band. It is capable of handling more than 4,500 reports / min., and updates itself as often as every two seconds. It uses Self-Organizing Time Division Multiple Access (SOTDMA) technology.

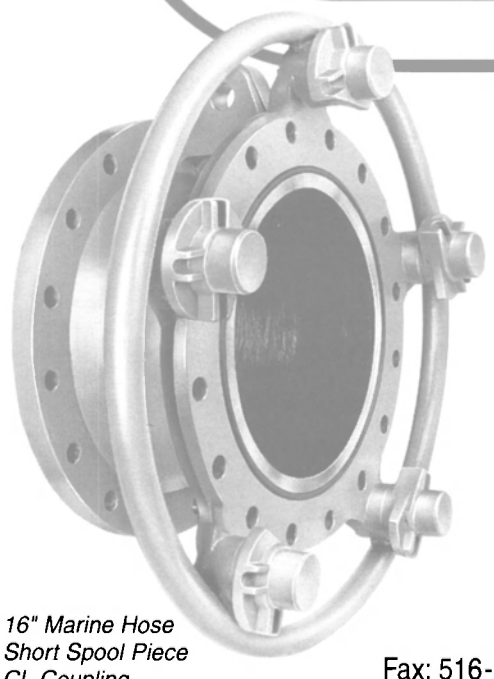
Each AIS system consists of one VHF transmitter, two VHF SOTDMA receivers, one VHF digital selective calling (DSC) receiver, and a standard marine electronic communications link to the shipboard display and sensor systems. Position and timing information is normally derived from a GPS receiver and generally includes a medium frequency differential GPS receiver. Other information broadcast by the AIS is obtained electronically from shipboard equipment through standard marine data connections. Heading information and course, and speed over ground would be provided by all AIS-equipped ships. Other information, such as rate of turn, angle of heel, pitch and roll, destination, and ETA, could also be provided.



Dennis L. Bryant, Senior Maritime Counsel at the law firm of Holland & Knight, Washington, D.C., is a contributing editor of *MR/EN*.

The AIS transponder works in an autonomous and continuous mode, regardless of whether the ship is on the high seas or in pilotage waters. System coverage range is similar to other VHF applications. Propagation is slightly

MMC™



16" Marine Hose
Short Spool Piece
CL Coupling

Real Time-Saver.

MMC C-L couplings promise you high-speed hook up: the fastest, safest possible flanged connections for a wide array of applications such as hoses, manifolds and loading arms, etc. Result: vibration-proof, leak-proof, twist-proof connections every time.

MMC International Corp.
Inwood, New York USA • 1-800-645-7339
Fax: 516-371-3134 • Web: www.mmcintl.com • E-mail: mmcinwd@aol.com
MMC (Europe) Ltd. • Fax: (01670) 738789 • E-mail: mmceurope@email.msn.com

Circle 296 on Reader Service Card

better than that of radar due to the longer wavelength of AIS. Thus, it is possible to obtain an AIS report before the true radar image appears on the radar screen. The usual range of AIS is 20 n.m.

The shipboard AIS unit broadcasts the following information every two to 10 seconds while underway and every three minutes while at anchor:

- The unit's maritime mobile identity (MMSI), a unique identifier for each ship radio unit, assigned by the International Telecommunications Union (ITU).
- The navigation status of the ship (e.g., underway using engine, at anchor, not under command).
- Rate of turn.
- Speed over ground.
- Position accuracy.
- Longitude and latitude.
- Course over ground.
- True heading.
- Time stamp.

In addition, the AIS unit broadcasts the following information every six minutes:

- MMSI number.
- Ship's IMO number.
- Ship's radio call sign.
- Name of ship (up to 20 characters).
- Type of ship and cargo.
- Dimensions of ship (in meters).
- Location on ship where the reference point for position reports is located.
- Type of position fixing device utilized by ship.
- Draft of ship (in meters).
- Destination of ship (at master's discretion).
- Estimated time of arrival (ETA) at destination (at master's discretion).

The U.S. Federal Communications Commission (FCC) has developed informal guidance regarding approval of AIS installations on U.S.-flag ships, but it has not yet promulgated its regulations. Likewise, the U.S. Coast Guard has issued informal guidance describing the certification process for AIS and other navigation equipment mandated by the SOLAS Convention. Until those two agencies promulgate their regulations, AIS approval for U.S. ships will remain an ad hoc process. Type approvals have recently been issued, though, by the FCC and the Coast Guard for two commercial AIS systems.

Deadlines

There are at least four separate sets of deadlines for use of AIS.

- For ships entering the St. Lawrence Seaway in North America, use of AIS was required as of the commencement of the 2003 navigation season, March 31, 2003. Portable AIS units are available for rent by ships not having AIS permanently installed.
- For ships transiting the Panama Canal, use of AIS will be required as of July 1, 2003. As with the St. Lawrence Seaway, portable AIS units will be available for rent by ships not having AIS permanently installed.
- For ships operating in U.S. waters, installation and use of AIS will be required in accordance with the following schedule:

SILICON BRONZE

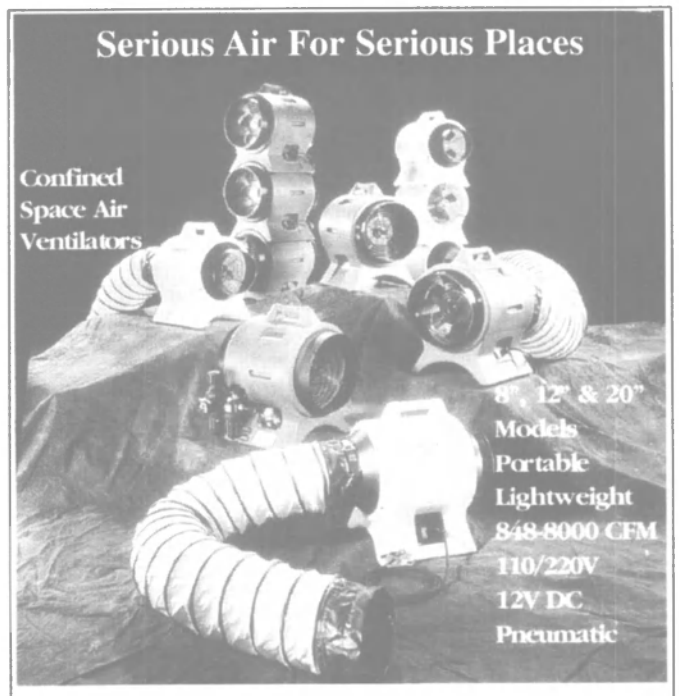
C.D.A. Alloy 655

- SHEET & PLATE
- ROUND ROD
- SQUARE ROD
- ROUND TUBING
- WELDING ROD
- FLAT BAR
- CASTING ALLOYS: 95-4-1 & 92-4-4, 1/2" cubes to 20 lb. ingots
- SQUARE TUBING: 1"X1"X.120 wall (alloy 220)

Fabrication Properties	Rating
Corrosion Resistance	Excellent
Capacity for being cold worked	Excellent
Capacity for being hot formed	Excellent
Suitability for being joined by:	
Brazing	Excellent
Oxyacetylene welding	Good
Gas shielded arc welding	Excellent
Resistance welding	Excellent
Hot forgeability rating	40

ATLAS METAL SALES
1401 Umatilla St. • Denver, Colorado 80204
800-662-0143 • 303-623-0143
Fax: 1-303-623-3034
E-Mail: jsimms@atlasmetal.com
Website: www.atlasmetal.com
CALL FOR QUOTATION OR FREE BROCHURE

Circle 212 on Reader Service Card



Americ Corporation
1910 E. Devon Ave.
Elk Grove Village, IL 60007
For more information, call 800-364-4642
or Fax 847-364-4695
www.americ.com

Circle 207 on Reader Service Card

The Port of Los Angeles is now a safer Port with three Kvichak fast-response fire boats patrolling its waters. From coast-to-coast Kvichak fire and patrol boats help to ensure the safety of businesses and communities along the waterfront. Make your Port and coastlines a safer place, contact Kvichak today for a new vessel.

Kvichak Marine
469 NW Bowdoin Place ● Seattle, WA 98107 ● Phone: 206-545-8485
Fax: 206-545-3504 ● E-mail: sales@kvichak.com ● www.kvichak.com

Circle 279 on Reader Service Card

Where performance is built

Since the 1960s, Manly Marine Closures Ltd. has set the standard for quality, performance and reliability. Today our products can be found on vessels across the oceans of the world, furthering our reputation as an industry leader in marine closure construction.

Marine architects and owners routinely specify Manly Marine doors, windows and hatches.

Call for further information.

MANLY MARINE

20 Brooksbank Avenue
PO Box 86788
North Vancouver, BC
Canada V7L 4L3

tel (604) 984-4635
fax (604) 983-2713
email: info@manly.com
www.manly.com

Circle 287 on Reader Service Card

1. On and after January 1, 2003 for any vessel built on or after that date:

2. On and after July 1, 2003 for any vessel built before January 1, 2003 that is a passenger vessel required to carry a SOLAS certificate, a tanker, or a towing vessel engaged in moving a tank vessel; and

3. On and after December 31, 2004 for all other vessels built before January 1, 2003.

For ships subject to the SOLAS Convention of 300 gt and upwards engaged on international voyages, and cargo ships of 500 gt and upwards not engaged on international voyages and passenger ships irrespective of size, installation and use of AIS is required in accordance with the following schedule:

1. Ships constructed on or after July 1, 2002;

2. Ships engaged on international voyages constructed before July 1, 2002:

a. In the case of passenger ships, not later than 1 July 2003;

b. In the case of tankers, not later than the first survey for safety equipment on or after July 1, 2003;

c. In the case of ships, other than passenger ships and tankers, of 50,000 gross tonnage and upwards, not later than July 1, 2004;

d. In the case of ships, other than passenger ships and tankers, of 300 gt and upwards but less than 50,000 gt, not later than the first safety equipment survey after July 1, 2004 or by December 31, 2004, whichever occurs earlier;

3. Ships not engaged on international voyages constructed before July 1, 2002, not later than July 1, 2008.

Concerns Regarding AIS

Problems have been observed with regard to AIS installations to date. Ship's static data sometimes is loaded incorrectly or not present at all. For instance, ships have reported dimensions via AIS that are obviously incorrect. Some ships are not transmitting heading information via AIS, possibly because the connection of the ship's gyro compass has not been properly made. On some ships, although the AIS system seems to be connected to the gyro compass, the heading information being reported by AIS is different than the actual heading. Some shipborne AIS equipment does not respond to shore station commands. The cause is probably outdated firmware. These early implementation problems highlight the fact that AIS is a complex piece of equipment that only works properly when it is fully integrated into a sophisticated navigational system.

A note of caution is in order. Implementation of AIS has been advanced because of the inherent maritime security aspects of the system. After all, if the authorities ashore can automatically identify ships as they arrive offshore, it makes the job of evaluating risks and allocating scare resources that much easier. On the other hand, as noted above, incorrect (or false) data can be accidentally (or intentionally) programmed into the AIS as currently configured. This would defeat the security purpose of AIS, leading to potentially catastrophic consequences.

When so much relies on your steering, don't compromise.
Choose Jastram!

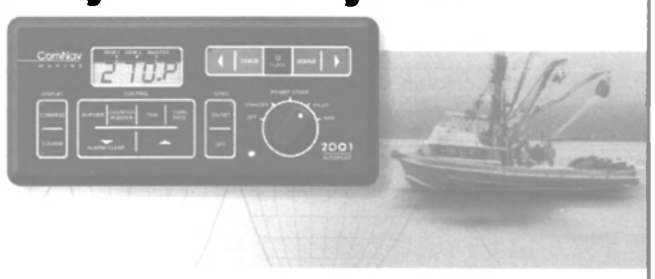
Setting the standard in marine steering excellence

Jastram ENGINEERING LTD.
467 Mountain Highway
North Vancouver, B.C.
Canada V7J 2L3
Tel: (604) 986-0714
Fax: (604) 986-0334
e-mail: marketing@jastram.com
www.jastram.com

Complete marine steering systems for all types of boats and ships

Circle 273 on Reader Service Card

The crewmember you always wanted



Since their introduction in 1982, ComNav Autopilots have gained a reputation for top performance and reliability in any sea and weather conditions. ComNav Marine has a broad line of autopilots suitable for all types of vessels.

2001 Autopilot
- Water resistant Control Head
- Three "Turn" functions
- Automatic trim
- Two remote ports built-in
- Two navigation ports for dual input of NMEA information
- Two heading outputs
- Selectable steering parameters
- Optional rudder angle indicator, up to 4 stations
- 3 year Extended Warrantee

ComNav ComNav Marine Ltd.
#15-13511 Crestwood Place, Richmond, BC, Canada V6V 2G1
(604) 207-1600 www.comnavmarine.com

Circle 230 on Reader Service Card

MARINE GLASS— FOR SAFETY AND SECURITY ON THE SEAS

MARINE GLASS offers exceptional safety and security in passenger vessels, work boats, and military applications. Bonded with tough high performance interlayers, Marine Glass laminates can be designed to provide effective ballistics, bomb and blast protection, as well as security and storm protection. This toughened, high performance glass is available in flat or bent configurations and resists moisture, water vapor, chemical attack, and UV. Clear or tinted glass is available.

BENT GLASS DESIGN, INC
3535 Davisville Road
Hatboro, PA 19040 U.S.A.
215-441-9101 Fax 215-441-9190
e-mail:bentglass@nni.com http://www.bentglassdesign.com

Circle 217 on Reader Service Card

Portacover Insulation Blankets By Lit Industries

- Quality
- Competitive pricing
- Timely deliveries
- Standard parts available for turbines, diesel engines and piping systems
- Custom design for special applications
- Product meets MIL standards, ASTM specs and UL fire-retardant standards

LIT INDUSTRIES
516 Costner School Rd.
Bessemer City, N.C. 28016-9801
Phone: 704-922-9851
Fax: 704-922-0161

Circle 283 on Reader Service Card

Further, terrorists, pirates, and others of malicious intent can monitor AIS signals to identify target vessels.

Returning to the original purpose of AIS, maritime safety, all parties should remember the consequences of over-reliance on machines that seem to provide all the answers. One need only look back to the grounding of the cruise ship Royal Majesty on June 10, 1995. The ship was completing a voyage from Bermuda to Boston when it ran aground on the Rose and Crown Shoal about 10 miles east of Nantucket Island, Mass. The ship was 17 miles off course when the incident occurred. Damage to the ship and lost revenue were estimated at $7 million. Subsequent investigation revealed that the ship's automated navigation system had been programmed to rely on its GPS receiver. However, less than one hour after departing Bermuda, the GPS antenna came loose, disabling the GPS. The integrated navigation system automatically defaulted to its dead reckoning navigation system, which does not compensate for the effects of wind, current, or sea conditions. The audible warning system had been disabled and the warning light was displayed only in the chart room. No one on the bridge during the 34 hours between the loss of the GPS signal and the grounding noticed that the ship was off course. None of the other available navigational tools were utilized. The incident provides a valuable lesson in what can happen when reliance is placed in any one system to the exclusion of other systems, including common sense.

Summary

The answer to our original question is that AIS is neither a panacea nor a Pandora's box. It is just another tool in a large and growing tool box made available to masters, deck officers, and others to enhance maritime safety and security. It is only as good as its maintenance and the training provided to its users.

AMDETECH Provides K-9 Protection for CCL

American Detection Technologies, Inc. (AMDETECH), a homeland security company and provider of contraband detection services using highly-trained canine teams, has signed a contract with Carnival Cruise Lines (CCL) to provide canine screening for all Carnival vessels. Under the terms of the contract, AMDETECH is providing canine teams to search all deliveries before they are loaded onto Carnival vessels at the 16 Carnival locations where provisioning is done, while maintaining the standards as per the U.S. Department of the Treasury "Odor Recognition Proficiency Standard" and the Department of Defence.

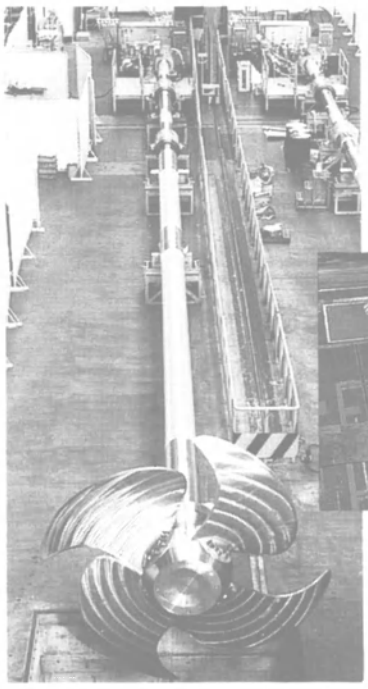
Heading up AMDETECH's network of trained and certified canines that will be providing the services for Carnival are: **Ron Allen,** CEO; **Edward Griffin**, vice president working out of AMDETECH's Palm Beach Gardens, Fla. office; and **Ronald Gray**, operations manager out of Worcester, Mass. AMDETECH also is providing to Carnival its proprietary, client-accessible "DogTrack" Internet database, including wireless capabilities, to track handler and dog records, incident reports, and positive wireless identification of dogs at job sites.

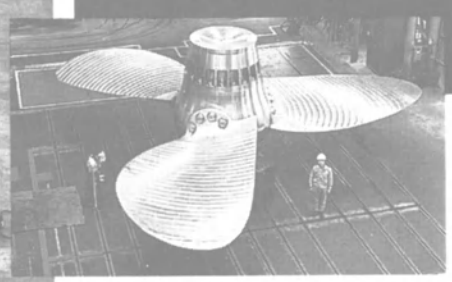
Circle 12 on Reader Service Card

Kawasaki

IN PURSUIT OF MANOEUVERABILITY

Aspiring to provide excellent systems, Kawasaki, with a century-long experience, is continually researching and developing new propulsion systems.

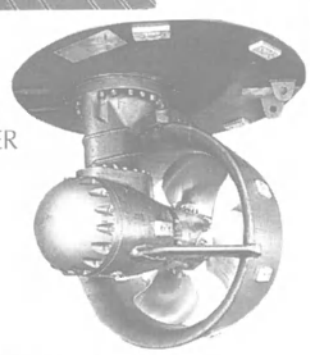




C.P.PROPELLER

INTEGRATED CONTROL SYSTEM

REXPELLER



SIDE THRUSTER

KAWASAKI HEAVY INDUSTRIES, LTD.

World Trade Center Bldg., 4-1 Hamamatsu-cho, 2-chome, Minato-ku, Tokyo 105-6116, Japan
•Marine Machinery Sales Dept. Machinery Division:Phone:81-3-3435-2374 Fax:81-3-3435-2022
Kawasaki Heavy Industries (UK) Ltd. Phone:44-20-7588-5222 Fax:44-20-7588-5333
Kawasaki Heavy Industries (Europe) B.V. Phone:31-20-644-6869~70 Fax:31-20-642-5725
Kawasaki Heavy Industries (USA) Inc. Phone:1-212-759-4950 Fax:1-212-759-6421

Circle 276 on Reader Service Card

Seabulk Contracts for PSV in Brazil

Seabulk Offshore do Brasil, Ltda., finalized an agreement with Promar Brazil (Estaleiro Promara I) to build a UT-755L platform supply vessel (PSV) for delivery in the fall of 2004, with an option for a second ship. To be named Seabulk Brasil, the 5,460-hp, 236-ft. (71.9-m) newbuild has a purchase price of $16.7 million, and upon delivery, will enter the Brazilian offshore market, where the company currently has one 200-ft. PSV operating.

The company has also agreed to purchase a Brazilian-flag line-handling vessel for approximately $2.5 million. The purchase of the vessel, to be named the Seabulk Ipanema, is expected to close in July 2003. Similar in design to Seabulk Offshore's new PSV flagship, Seabulk Africa, which joined the West Africa fleet earlier this year, Seabulk Brasil will be equipped with Fire Fighting Class 1 and DPS Class 1 certification and high-tech communications and navigation equipment, including GMDSS up to A3 regions.

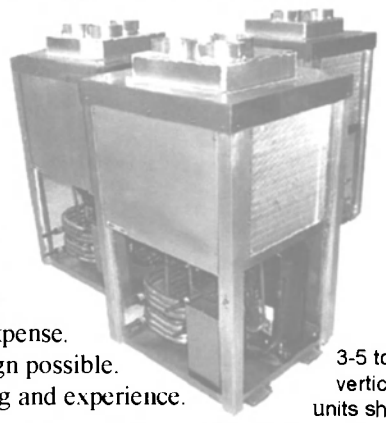
Rolls Royce Marine is providing the UT 755L design and a substantial amount of equipment for the vessel.

Circle 2 on Reader Service Card

Marine A/C by Flagship Marine

Chosen over all others by the US & Canadian Coast Guard *since 1996*

1-20 Tons
Water, Air & Keel cooled



3-5 ton vertical units shown

Lowest long-term maintainence expense.
The most durable and simple design possible.
Evolved over many years of testing and experience.

Rooftop air cooled **Marine** a/c by the legendary RVP - Coleman® Mach®

Ideal for; Cranes, Pilothouse, Flybridge, Workboats, Containers, Liveaboards: 13,500 BTUs with heat & Install kit
Only $899.95!

www.flagshipmarine.com sales@flagshipmarine.com

Flagship Marine (Commercial Quality / Factory Direct Prices)

Phone: 772-283-1609 Fax: 772-283-4611
Watts: 800-316-6426 Stuart, FL USA

Manufactured with pride in the USA

Circle 257 on Reader Service Card

JAZZ UP SUMMER.

RATES AS LOW AS
$89*
SUNDAY-THURSDAY

- Rooftop pool • Children under 17 stay FREE
- 24-hour valet parking • Kids menus in dining facilities
- French Quarter location • Exercise facility

*$99 rate applies to Friday and Saturday. Offer valid May 15 through September 15, 2003. Based on double occupancy and availability.

Hotel Monteleone

214 Rue Royale, New Orleans, LA 70130 • 504-523-3341 • 800-535-9595
FAX: 504-528-1019 • www.hotelmonteleone.com • reservations@hotelmonteleone.com

Circle 267 on Reader Service Card

ALL AMERICAN MARINE

BOAT JOBS

Paid Upgrades & Training

CAPTAINS & MATES (any tonnage)
ENGINEERS (licensed & unlicensed)
A/B's, O/S's, DECKHANDS
Casios, Inland & I.C.W. Pushboats, Ships
Ocean-going tugs, Offshore oil industry, Overseas & coastal
www.all-american-marine.com
americancrewing@es.com

Phone: 1-800-576-8562

Fax: (251) 443-8494

Circle 70[illegible] on Reader Service Card

ISLAND BOATS. INC.

ALUMINUM CATAMARANS & UTILITY CRAFT

66' x 20' ALUMINUM LANDING CRAFT SHIP TENDER-ABS RULES

FEATURES

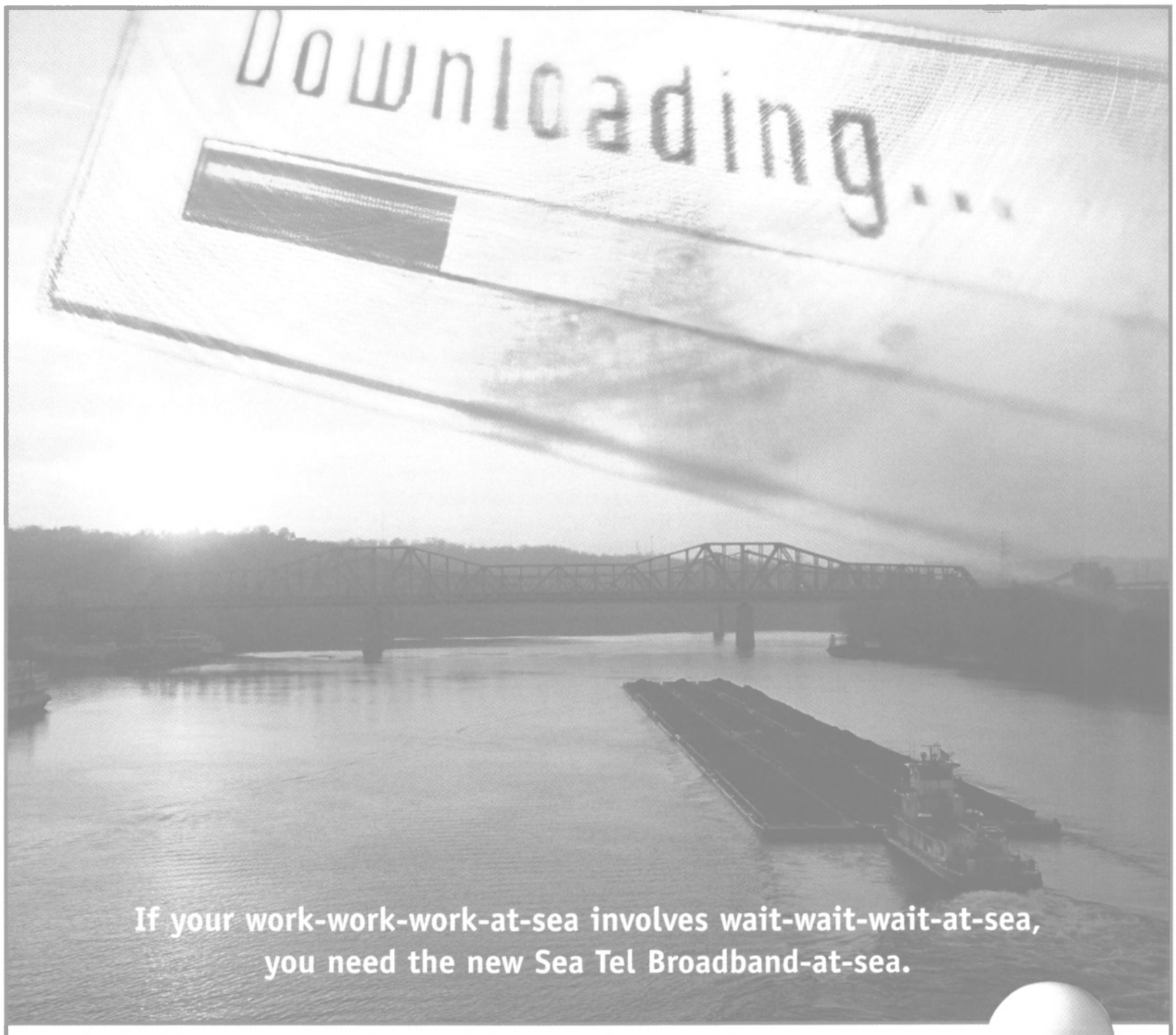
- USCG/ABS CERTIFICATION • HULLS TO 100'
- RUGGED ALUMINUM HULLS • CAD/CAM METHODS • NC PLASMA CUTTING
- SEVERAL STOCK HULLS • PLANING & DISPLACEMENT HULL
- ◆COMPETITIVE PRICING TO EAST/WEST COAST BUILDERS
- ◆BOATS UNDER CONSTRUCTION (2) 65' UTILITY LANDING CRAFT

PASSENGER FERRIES • SHIP TENDERS •
EXCURSION VESSEL • PILOT BOATS • CREW BOATS

ISLAND BOATS, INC.

6806 HWY 90 EAST NEW IBERIA, LA 70560 PH: 337-560-4483 FAX: 337-560-4473
EMAIL: islandboats@eatel.net

Circle 271 on Reader Service Card



If your work-work-work-at-sea involves wait-wait-wait-at-sea, you need the new Sea Tel Broadband-at-sea.

Introducing the WaveCall 4003. Business level connectivity wherever you cruise.

Tired of waiting for dial up or downloads at sea? Imagine Internet connectivity offshore the same as you get on shore - always on, lightning fast and multiple users. ✦ Just one meter in size, the WaveCall 4003 gives you blazingly fast inbound and outbound speeds for downloading large files, streaming video, voice, video teleconferencing or simply surfing the web at will. ✦ With coverage from North to South America, Northern Europe to the Med, and soon in the Far East, the 4003 also is the most cost efficient. Perfect for business. Perfect for family and crew. Perfect. ✦ The WaveCall 4003 from the name you trust, Sea Tel. Affordable broadband Internet-at-Sea™ in a compact dome. Work without the wait.

Compact and rugged, the 4003 stands up to all conditions.

Airtime Cost Comparison

	WaveCall 4003	Inmarsat 77[1]	Inmarsat B[2]
Download speed	**512 kbps**	64 kbps	64 kbps
1 GB file download	**256 min**	2,080 min	2,080 min
Cost/MB	**$1**	$16.53 ISDN $36.00 MPDS	$18.60 ($9.00/min)
Cost/GB	**$1,000**	$16,640 ISDN $36,000 MPDS	$18,720

4.15.03. [1] Source: KVH website [2] Source: Delta Communications website

Sea Tel®

Look to the leader. Look to Sea Tel.

© 2003 Sea Tel, Inc.

Sea Tel, Inc. 925.798.7979 ✦ www.seatel.com ✦ Sea Tel Europe 44 (0) 2380 671155

Circle 314 on Reader Service Card

A.K. Suda Designed Crew/Supply Boat Carries More for Less

A. K. Suda, Inc. was approached by LaForce Shipyard of Bayou LaBatre, Ala. to design a crew/supply boat that would be faster, carry more deck load and more passengers and still be delivered at an economical price. The result is the 160 x 32-ft. (48.7 x 9.7-m) high-speed crew/supply boat that was recently delivered by LaForce at their Alabama yard.

The 160-ft. vessel, powered by four CAT 3512 DITA engines at 1,575 hp each, reached speeds of 29 knots with light load and 28 knots with 100 LT of liquid cargo in recent sea trials. At 100 x 28 ft., the cargo deck offers 40 percent more deck space than other vessels this size and can carry 290 ST of cargo. Cargo weight is 540 lbs./sq. ft. Passenger seating totals 81 passengers and there is still comfortable berthing for 10 crewmen. The vessel design provides what we believe is unprecedented flexibility in loading. The entire dwt of 290 ST can be carried on the deck. The vessel design is based on the philosophy of its designer, A. K. Suda, Inc., in Metairie, La. — to build the lightest and strongest vessels. In maintaining the USCG Subchapter T designation, Suda designed the vessel without the use of deep tonnage frames or tonnage openings throughout the vessel, thus saving in the use of aluminum. Part of the saved aluminum weight was used to beef up areas of high stress. The savings in weight and the improvement in hull form have resulted in the high speed and heavy deck load.

Circle 45 on Reader Service Card

VT Halter Marine Signs To Build $47M Pasha PCTC

VT Halter Marine Inc., a subsidiary of Vision Technologies Systems Inc., has signed a $47 million contract with Pasha Hawaii Transport Lines to complete the construction of its car carrier, Jean Anne. VT Halter Marine expects to complete and deliver the vessel in the fourth quarter of 2004. The vessel, which is the first Pure Car Truck Carrier (PCTC) to be built in the U.S., will be constructed for the Jones Act trade, and will operate between U.S. Coast ports and Hawaii. Measuring 579 ft. (176.4 m) overall, with a beam of 102 ft. (31 m) and a design draft of 25 ft. (7.6 m), the 13,000 dwt PCTC has the capacity to transport more than 4,000 automobiles. Propulsion will be provided by a single propeller driven by a slow-speed diesel engine.

Circle 94 on Reader Service Card

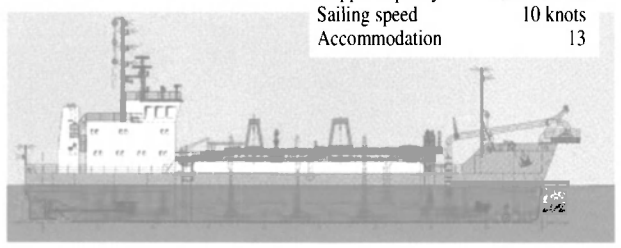
VOSTA LMG, Damen To Build Suction Hopper Dredge

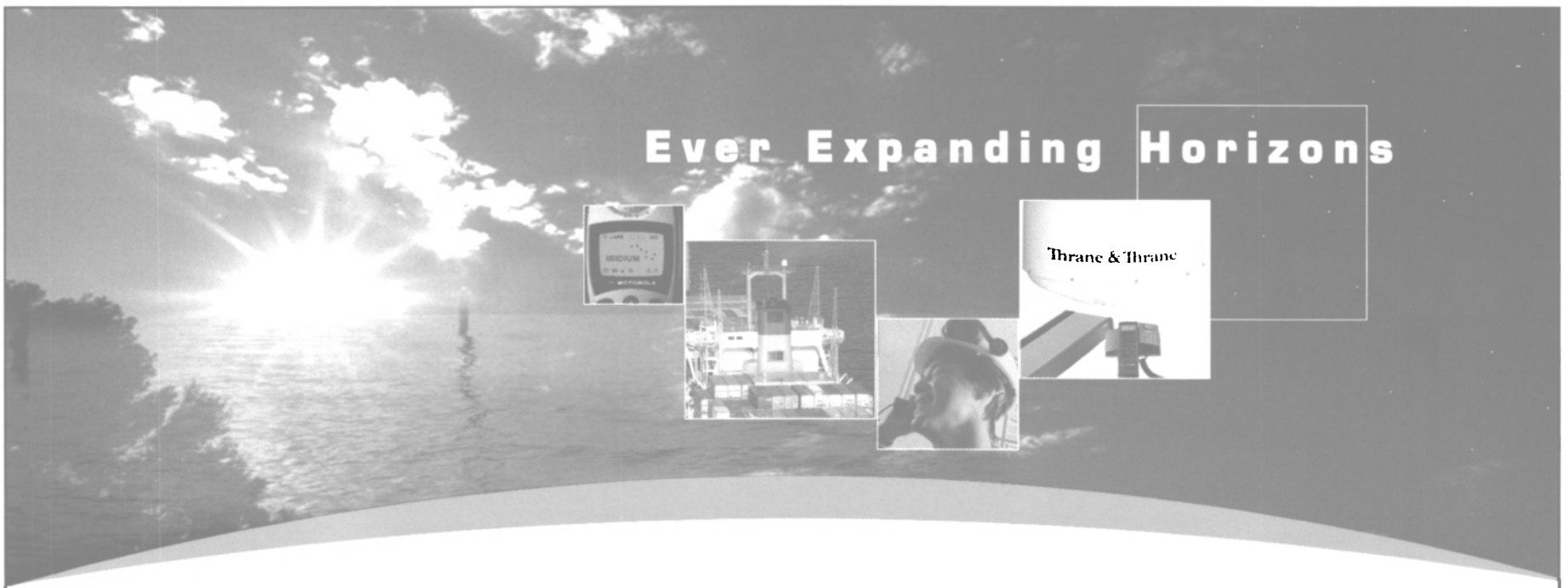
In June 2002 The Waterway Dredging and Construction Co. No.1 in Vietnam ordered a 1,500 cu. m. trailing suction hopper dredge with LMG. With VOSTA LMG acting as main contractor, the company will also supply the engineering and dredge component package. Damen Shipyards Cargo Vessels in Hoogezand is building the dredge, which has a delivery date in the 1Q '04. The Hopper Dredge will be mainly used for maintenance dredging. This will contribute and secure a safe navigation to main import and export harbours, especially for Hai Phong and Hon Gai, however has most modern capabilities for capital dredging as well. The dredge features a state of the art dredge control and monitoring system. One drag head in combination with latest designed suction pipe ensure best dredging performances.

Circle 37 for Vosta LMG
Circle 38 for Damen

Main Particulars

Owner	Waterway Dredging and Construction
Shipyard	Damen Shipyards
Class	Germanischer Lloyd
Length, (o.a.)	210 ft. (64 m)
Length, (b.p.)	197 ft. (60 m)
Breadth, (molded)	43 ft. (13 m)
Depth	21 ft. (6.3 m)
Draft	15 ft. (4.6 m)
DWT	1,916 tons
Hopper load	1,760 tons
Hopper capacity	1,500 cu. m.
Sailing speed	10 knots
Accommodation	13





Shipping communication keeps getting better.

Use the latest technology
- Inmarsat Fleet 55 & 77 - stay online all the time at no extra cost
- Iridium data - send emails fast, at low cost
- Software upgrades - reduce your sat comms costs with *StratosOne* and *StratosNet*

To hear more about these and other exciting services, contact Stratos today!

Weston:	1 800 566 9600	saleseast@stratosglobal.com
Seattle:	1 800 250 8962	saleswest@stratosglobal.com
Worldwide:	+1 709 748 4233	info@stratosglobal.com

STRATOS®

www.stratosglobal.com

Beyond the Horizon™

Circle 32 on Reader Service Card

Whether it's routine maintenance, extensive repairs or emergency service, we can handle all your ship repair needs. Virtually, every needed ship repair capability is available in-house, supported by skilled craftsmen who are motivated to minimize your out-of-service time. Northrop Grumman Newport News is ready to support your repair—anytime, anywhere.

www.northropgrumman.com

© 2002 Northrop Grumman Corporation

NORTHROP GRUMMAN
Newport News

Circle 302 on Reader Service Card

Seminar Series Aims to Ensure Compliance

A new series of seminars, starting in July and ending in September, aims to educate the maritime community on fast developing new rules and regulations, and more importantly, on how these changes will affect individual companies.

Starting in July and ending in September, The Havnen Group — in conjunction with The Maritime Group, publishers of *Maritime Reporter & Engineering News, MarineNews* and the *Marine Security Sourcebook* — will host a nine-seminar series, starting in the Gulf of Mexico and ending in New York.

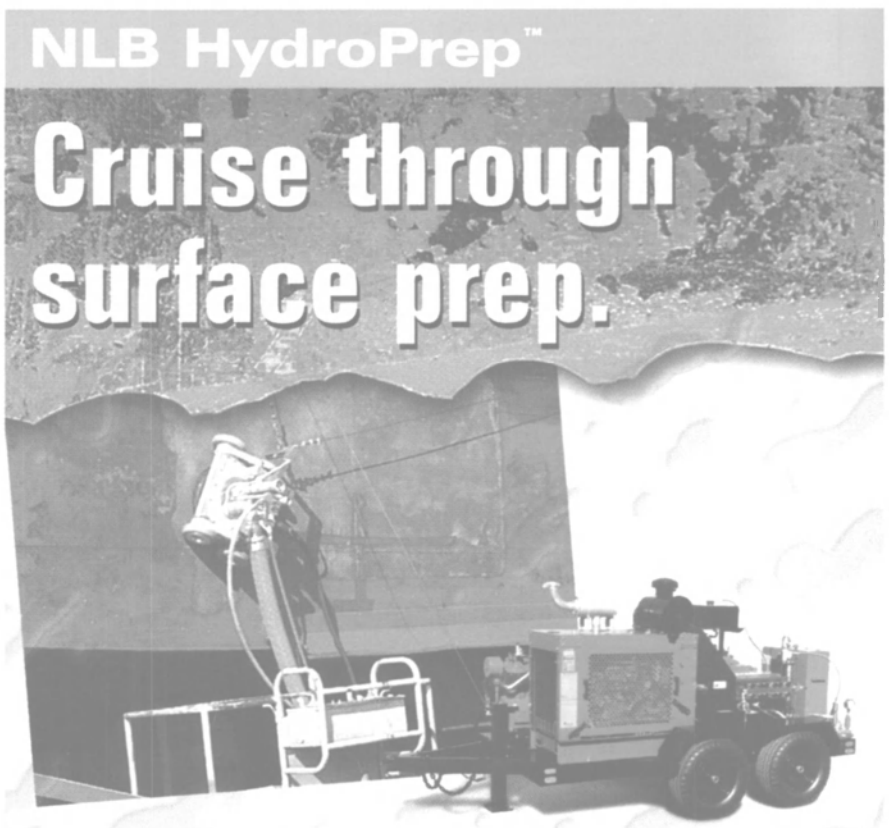
Since 9/11, the U.S. has been exerting increased security upon all means of transportation. The international maritime community perceives increased security as a necessity to continuing commerce. The International Maritime Organization (IMO) has adapted the International Ship and Port Facility Security (ISPS) Code applying to all passenger and cargo vessels in international trade and the port facilities that they call upon. Vessels and port facilities must be in full compliance with the Code by July 1 2004. Following is a recent conversation *MR/EN* had with The Havnen Group principle, **Charley Havnen**.

For a full roster of dates and locations, and prices, please turn to page 82 of this edition, or call The Havnen Group at (800) 493-3883, or e-mail chavnen@havnengroup.com.

MR/EN: Why are you putting on these seminars?

Havnen: The USCG is responding to the international community and the Marine Transportation Security Act (MTSA) of 2002. New regulations incorporating the ISPS Code and provisions of the Act will be published on about July 1, 2003. This is very impor-

Charley Havnen is a Commander USCG Ret. His organization can help you with your vessel construction project, regulatory problems, vessel manning issues, procedure manuals, accident analysis or serve as an expert witness.



Big surface prep jobs are easy with NLB's HydroPrep™ system. It outperforms grit blasting and other UHP water jet equipment, minimizing hazards and giving you:

- unsurpassed reliability;
- lower operating costs;
- greater maneuverability; and
- simpler operation and maintenance.

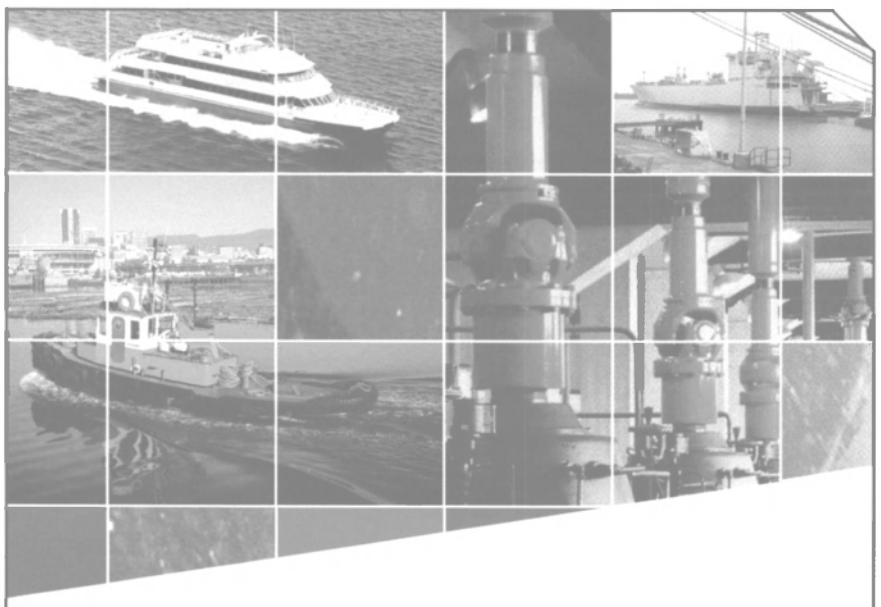
The HydroPrep™ system includes an SRT-10 Crawler, UHP pump, vacuum recovery, console, and rigging. Call today for a free demo... in North America, call toll-free: **1-877-NLB-7990**.

NLB Corp.

NLB North America
29830 Beck Road
Wixom, MI 48393, USA
Phone: 01-248-624-5555
Fax: 01-248-624-0908
e-mail: nlbmktg@nlbusa.com
www.nlbcorp.com

NLB Europe
Gentianenlaan 17
3233 VC Oostvoorne, Netherlands
Phone: 31-(0) 181-482811
Fax: 31-(0) 181-485238
e-mail: watercle@publishnet.nl

Circle 303 on Reader Service Card



Well Traveled.

The Cline Company has supplied **universal joint driveshafts** and **floating shaft coupling assemblies** for Marine Propulsion for more than 20 years.

Cline driveshaft applications include:

> Main Propulsion
> Z-drives
> Bow/Stern Thrusters
> Auxiliary Drives
> Pumps

Greenville SC
theclineco.com · 800.235.6371

Cline SOLUTIONS DRIVEN

Circle 327 on Reader Service Card

tant to the entire maritime community, as the regulations will have far reaching impact upon most of the maritime industry in the U.S. The entire maritime community needs to be educated on how to comply with the new security issues.

MR/EN: What do you expect that an attendee will gain from attending one of the seminars?
Havnen: In our seminars we are concentrating on providing the tools to comply with these new requirements. We are of the opinion that with a little bit of training and nurturing, company personnel alone can perform most of the tasks that will be required by the ISPS Code and the regulations to bring a company into full compliance. And we will do this all in one day.

In other words, we are going to teach them the nuts and bolts of how to comply with the regulations and satisfy the regulators that their company complies with the rules. We are not going to teach attendees about anti-terrorism. We will provide all of the resources for them to become reasonable expert in the subject with some outside study. We will provide the necessary guidance to access available study areas (web sites, etc.). We will provide attendees with adequate resources to survive in their job and keep their company out of trouble with the government.

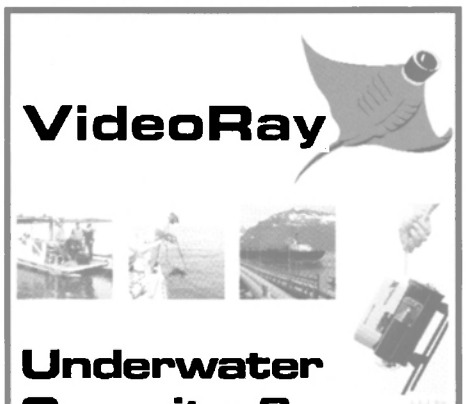
MR/EN: What are the specific requirements that are causing so much concern within the maritime industry?
Havnen: There are several parts to this answer, but it all starts with the International Maritime Organization's ISPS Code. The Code must be complied with by basically all vessels and port facilities in international trade. In the past, port facilities have rarely been required to comply with international conventions. Port facilities that handle vessels on international voyages must comply if they handle foreign flag vessels, dangerous cargo or passengers. Port facilities are going to have to get up to speed on this very rapidly to comply with requirements in a timely manner. Remember, both vessels and port facilities must be in full compliance with the ISPS Code by July 1, 2004. U.S. flag vessels and port facilities must have risk assessments, planning, and plant modification must be completed by about February 1, 2004, and everything must be Coast Guard approved by July 1, 2004.

The ISPS Code includes Part A and Part B. Part A is mandatory for foreign and U.S. flag international vessels. Part B is intended to be optional on a country-by-country basis. The USCG has indicated that Part B is mandatory for all U.S. flag vessels in international trade and foreign vessels calling on U.S. ports. This is a really big deal for the foreign vessels, as they will necessarily have to comply with the USCG interpretation of Part B. This will be contained in the regulations being published about July 1, 2003.

MR/EN: Yes, but the requirements of the ISPS Code, even Part B are only for vessel in international trade and the port facilities that handle them. Is there a broader context here that I am missing?
Havnen: It is curious that you should mention that. The Coast Guard has affirmatively indicated that they will be applying the ISPS Code to domestic vessels and port facilities. This is authorized within the ISPS Code itself as well as the MTSA. There is no question that the USCG will apply the ISPS Code to elements of domestic shipping as they believe to be appropriate. We do not yet know all of the details, but much if not all of the ISPS Code with Parts A and B will be incorporated in some form directly into USCG regulations.

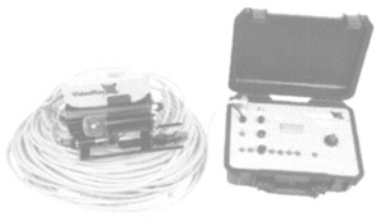
It must be remembered that we do not know how the U.S. will interpret the ISPS Code until these regulation are published. Their interpretations will affect all U.S. vessels and port facilities in international trade as well as domestic vessels and port facilities. Domestic vessels and port facilities must be in full compliance with the regulations by the July 1, 2004 date. Like the U.S. flag deep draft vessels and port facilities, they must have all assessments, plant modifications, planning

VideoRay



Underwater Security & No Danger to Divers

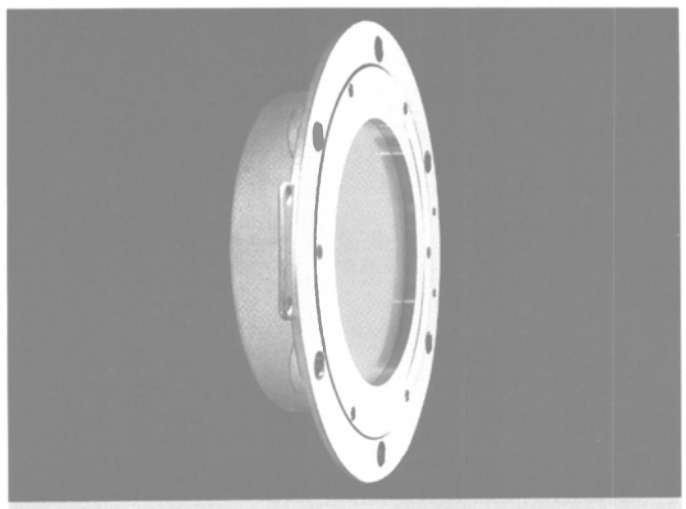
Send the 8-pound VideoRay® ROV (remotely operated vehicle) underwater to inspect hulls, docks, mooring buoys, bridges, dams, nuclear power plants and other submerged structures. The hi-res camera onboard the submersible captures and displays crisp video on a ship's TV system or a monitor on land. Check for explosives before ships dock and retrieve items in excess of 100 lbs./50kgs with the VideoRay manipulator. Running from an inverter or generator, VideoRay goes wherever it is needed. A proven performer in agencies of the Federal, State, and Local governments, put VideoRay to work for your peace of mind.



VideoRay
VideoRay LLC 400 Eaglevew Boulevard Exton, PA 19341 USA
Ph +1 610 458-3000 Fax +1 610 458-3010
www.videoray.com

Circle 333 on Reader Service Card

"Now with leak detection" THE RADAR



Smart Radar Level Sensor with Generic RS485 Output

The first flat array antenna for liquid tank gauging. This software driven array allows for each sensor to remotely configure itself for the type of product as well as the structural characteristics within each tank. It is completely self-diagnostic and is factory calibrated using a laser interferometer to .1mm. It is designed for the harshest environments and can be provided in a high temperature version to 385°F. It is intrinsically safe with Class 1, Div. 1, Group D & C approvals. As a smart sensor, all processing calculations and software are resident in the device itself, only a high level generic data output, i.e., RS485 (or others on request) is sent to the cargo control area.

Options:
- Multiple alarm set-points
- Temperature • PV Pressure • I.G. Pressure
- Tank Management Software
- Automated draft and trim

Call today for more information!

EMS
ELECTRONIC MARINE SYSTEMS, INC.
800 Ferndale Place
Rahway, NJ 07065

732.382.4344
732.388.5111 *fax*
emsmarcon@aol.com *e-mail*
http://www.emsmarcon.com

Circle 247 on Reader Service Card

February 1, 2004. Remember, we do not yet know exactly what the requirements will be and will not know until the regulations are published.

MR/EN: What domestic vessels and port facilities will be significantly impacted by the new rules?

Havnen: Domestic towing vessels will require security plans, small passenger vessels that carry over 149 passengers and other inspected vessels that carry dangerous cargoes. Dangerous cargoes can be dry bulk, oils or chemicals. The port facilities that handle these vessels must also be fully compliant with provisions of the regulations.

The Coast Guard's primary focus seems to be on something they now call Certain Dangerous Cargoes (CDCs). Port facilities and vessels that handle explosives, poisonous gases, radioactive and poisonous materials or certain flammable/toxic compressed gases and liquids, ammonium nitrate and several particularly noxious liquids are included. These CDCs clearly generate the most concern by the USCG for having a potential to become a part of a national security incident.

MR/EN: How is your organization particularly well qualified to put on seminars on these subjects?

Havnen: Pat Touchard and I are the lead presenters.

Pat Touchard is extraordinarily qualified to speak on the subject. After service in the U.S. Marine Corps, he worked for over 20 years with the Louisiana State Police. Touchard is a former SWAT Team Leader and retired as the Commander of the HAZMAT Response Team. He now has his own company and is a recognized expert in HAZMAT incident response and security matters.

He is also a member of the Louisiana Chemical Incident Advisory Committee and is active in the chemical and maritime communities.

I spent 20 years in the Coast Guard after graduating from the federal maritime academy at Kings Point, New York, 18 years of which was in marine inspection with two years aboard a Coast Guard cutter as Engineering Officer. After the Coast Guard, I spent four years as a Vice President of the Offshore Marine Service Association (OMSA), a trade association representing the interests of the offshore oil support vessel industry. Much of my time was spent dealing with the Coast Guard. This background gives me a good foundation to understand the Coast Guard mind set and understand the basis of Coast Guard concerns. Remember, our seminars are to help certain people deal with this new set of regulations. Those persons who find themselves involved with the ISPS, MTSA, (and the rest of the new alphabet soup) should be sure to attend.

About the Author

Charley Havnen *is a Commander USCG Ret. His organization can help you with your vessel construction project, regulatory problems, vessel manning issues, procedure manuals, accident analysis or serve as an expert witness. His organization can do what you can't or don't want to do, and are online at http://www.havnengroup.com. He can also be reached by contacting the Havnen Group in New Orleans: (800) 493-3883 or (504) 394-8933, fax: (504) 394-8869.*

SENESCO Christens Double-Hulled Liquid Fuel Barge

The Southeastern New England Shipbuilding Corporation (SENESCO) has christened another 80,000-barrel, double-hulled liquid fuel barge.

After a ceremony at SENESCO's Quonset Point, R.I. headquarters, the Leo was ready to set sail for its Gulf Coast destination. The Leo was built for the Hawaiian Inter Island Towing company, which will lease the vessel to Sirrius Maritime of Seattle, Wash. Sirrius will then use the barge to carry fuel oil and other liquid cargo in the Gulf Coast.

NIGHTWATCH
Full Vessel Monitor and Alarm Systems
Fire Alarms
Tank Volume
Electrical
Engine Data
Misc Alarms
Full Color Waterproof Touch Screens - 24 volt Systems
New Builds and Refits - Agency Approvals
NightWatch Industries, Jupiter, Florida
561-745-8722 www.night-watch.com
Circle 317 on Reader Service Card

Worldwide Experience
INTERIOR OUTFITTER
Cruise Ship Specialists
Custom Ship Interiors, Inc.
P.O. Box 882 Solomons, MD 20688-0882
Fax: 410-326-9125
410-326-9122
www.customship.com
Circle 238 on Reader Service Card

Don't leave your operator unprotected
Proven Waterjet Safety up to 2800 bar
Only TurtleSkin WaterArmor offers superior protection in a flexible suit with all day comfort. It has saved numerous operators from serious injury during waterjet accidents, while it panels are replaceable keeping the suit safer longer. Visit www.waterarmor.com or call +1.603.878.1565 to order.
©2003 Warwick. TurtleSkin and WaterArmor are registered trademark of Warwick. All rights reserved.
TURTLESKIN WaterArmor
Circle 337 on Reader Service Card

SeaPost
Your Brand Choice
Proven Performance
Over 50 years of innovative seating design and customer satisfaction
Seating for All Shipboard Locations
www.hobostrom.com
sales@hobostrom.com
H.O. Bostrom
Waukesha, WI U.S.A.
1-800-332-5415
Fax: 262-542-3784
Full 5-Year Performance Warranty
SeaPost Torsion
Shock Isolating Suspension
SeaPost Console
SeaPost Helm
Circle 265 on Reader Service Card

NOAA Ship Whiting Decommissioned After 39 Years Of Service

After 39 years of service to NOAA and its predecessor agency, the U.S. Coast and Geodetic Survey, the NOAA ship Whiting was decommissioned in May 2003 at its home port in Norfolk, Va. The ship has been an essential part of the NOAA fleet, working in support of NOAA's mission to ensure safe navigation of the nation's coastal waterways.

Whiting boasted the most technologically advanced hydrographic survey platform in the world. Outfitted with modern multibeam echosounders and side-scan sonars, Whiting and its launches efficiently and rapidly completed surveys for the safe navigation of the nation's maritime commerce. The data storage for survey data was close to two terabytes — one terabyte equaling 1,000 gigabytes. Nine workstations allowed survey personnel to process the data with state-of-the-art software and create impressive 3D models of the ocean floor, side scan mosaics as well as imagery of historical wrecks like the USS Monitor. In addition to hydrographic surveys, it was used for oceanography, fisheries research and homeland security surveys.

marintec China

Incorporating Port China

Endorsed by the U.S. Department of Commerce

Visitor Online Registration
Available Now!

THE ALL CHINA MARITIME CONFERENCE & EXHIBITION

2-5 December 2003

SHANGHAI NEW INTERNATIONAL EXPO CENTRE
PUDONG • SHANGHAI • CHINA

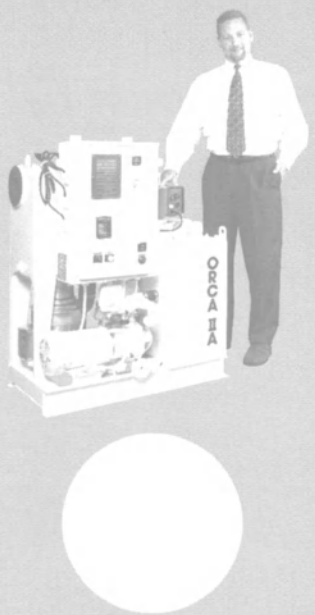
www.marintechina.com

Circle 350 on Reader Service Card

Are You In Compliance?

Evac Environmental Solutions offers a range of marine sewage treatment plants both physical chemical and biological designed to meet the IMO Marpol Annex IV criteria.

- *Compact and Lightweight, ORCA is easy to retrofit on existing vessels*
- *The Evac ORCA is USCGI IMO and EC Certified*

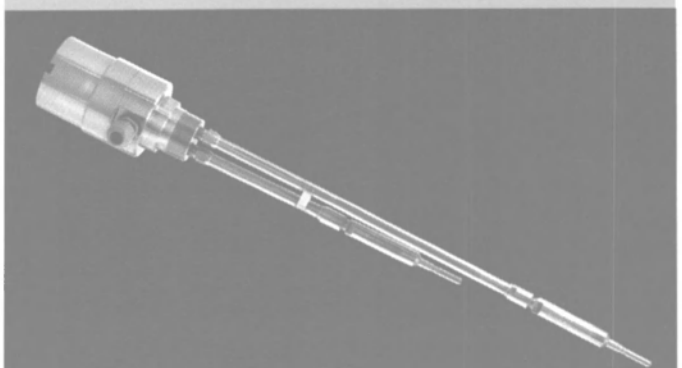


Environmental Solutions

+1-888-438-3822 (GET EVAC)
Marine@EVAC.com

Circle 255 on Reader Service Card

THE SEA SWITCH TWO



Smart Electronic Level Switch with No Moving Parts

The Sea Switch Two was designed and patented for all tank applications. The Sea Switch Two offers a reliable solution for liquid level detection and control for cargo, ballast, and storage tanks, without any moving parts.

The Sea Switch Two uses a fully static system that is based on the propagation of an acoustic wave into a metallic rod. A piezo-electric sensing element produces a wave along the rod. As the liquid reaches the sensing element the oscillation stops and the alarm is activated.

The Sea Switch Two sensor detects high, high-high, or low level in any liquid with an alarm output given by a dry contact or current loop change 6-18 mA.

- Easy installation • Self-test built-in
- Fully static system – no moving parts

Call today for more information!

ELECTRONIC MARINE SYSTEMS, INC.
800 Ferndale Place
Rahway, NJ 07065

732.382.4344
732.388.5111 *fax*
emsmarcon@aol.com *e-mail*
http://www.emsmarcon.com

Circle 248 on Reader Service Card

Enter the LNG-Fueled Supply Ship

By David Tinsley, technical editor

A landmark decision to use liquefied natural gas (LNG), instead of diesel oil, to fuel a new class of offshore support vessel has taken operational form on the Norwegian continental shelf after a three-year development process. The platform supply ship Viking Energy is the result of a concerted effort to provide a versatile, sophisticated vessel promising much reduced environmental impact. The project emphasizes the Norwegian coastal industrial community's propensity for innovation, and for working together to bring new ideas to fruition. Although bunkering on LNG has meant a higher capital outlay on the newbuild project, the vessel is expected to yield about 200-tons less in oxides of nitrogen (NOx) emissions every year compared to a ship burning oil. In addition, carbon dioxide release should be significantly reduced.

The Eidesvik-owned Viking Energy, and the sister newbuild contracted by Simon Mokster Shipping, are based on the VS4403 design developed by consultancy Vik-Sandvik.

Charterer Statoil, which has made a 10-year commitment to Viking Energy and to a second such newbuild from west Norwegian shipbuilder Kleven Verft, can use the savings in pollutant emissions as a quota to offset other operations. Under an agreement between the energy group and the Norwegian authorities, emission reductions achieved with the new vessels can be credited to Statoil-operated facilities on the Norwegian coast, where Nox curtailment measures cost much more. In addition, the development will help Norway realize goals set by the Kyoto agreement.

Although an earlier Norwegian initiative saw the entry into service of a 312-ft. (95-m) fjord ferry, Glutra, incorporating plant designed to burn LNG fuel, the arrangements adopted for the two new platform supply vessels have given an enormous fillip to the development of the natural gas supply infrastructure. Viking Energy is expected to use about 7,000-tons of natural gas every year. This allows for improved economics in establishing LNG bunkering facilities at locations along the Norwegian coast to provide fuel for an anticipated, growing fleet of gas-fuelled vessels.

The Eidesvik-owned Viking Energy, and the sister newbuild contracted by Simon Mokster Shipping, are based on the VS4403 design developed by consultancy Vik-Sandvik. The vessels will be deployed out of the Coast Center Base near Bergen, supplying consumables, materials and equipment to oil and gas installations in the North Sea. The ships have a deadweight of 6,013-tons at the summer draft of 26 ft. (7.9 m), and offer a large open, working deck plus a diverse underdeck storage capability within main dimensions of 308 ft. (94 m) in length with a 67 ft. (20.4-m) beam. Each is installed with four main generator sets, individually rated at 2,010-kW, supplying electrical power for propulsion and shipboard services.

ABB was entrusted with the electrical system, and the prime movers for the gensets are six-cylinder Wartsila 6L32DF dual-fuel engines, conceived to ingest gas or oil in any proportion. While employing the gaseous fuel at low pressure, reliable ignition will be ensured by injecting a minute quantity of diesel oil directly into the combustion

WWW.BIP-KOREA.COM
PUSAN, S. KOREA

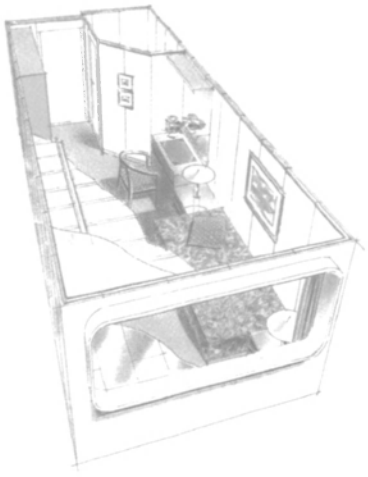
WWW.GINTG.COM
2426 DENNIS STREET
JACKSONVILLE, FL 32204

GLOBAL INTERIOR GROUP

YOUR GLOBAL SOURCE FOR ALL YOUR INTERIOR NEEDS

STAY ON THE SAFE SIDE WITH BIP ACCOMMODATION
IMO FTP USCG APPROVED SYSTEM

BULKHEAD
• B-D, B-15
CEILING
• B-0, B-15
BATHROOM MODULES
• CUSTOM FABRICATED
• KNOCK DOWN FORM
DOORS
• A, B AND C CLASS
• WEATHER TIGHT

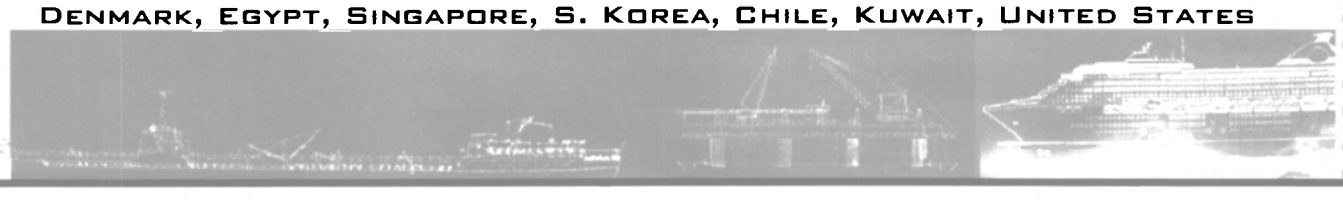


FURNITURE
• METAL
• FIRE RATED WOOD
ENGINEERING
• CAD/CAM
• FULL TECHNICAL SUPPORT
LIGHTING
• INTERIOR
• EXTERIOR

BIP ACCOMMODATION SYSTEM IS CERTIFIED BY ALL WORLDWIDE CERTIFYING AUTHORITIES SUCH AS DNV, BV, ABS, LLOYDS, & DOT UK

PH:904-519-0108 WWW.GINTG.COM FAX: 904-519-0171

DENMARK, EGYPT, SINGAPORE, S. KOREA, CHILE, KUWAIT, UNITED STATES



Circle 260 on Reader Service Card

chamber as pilot fuel. For minimum emissions, the vessels will run on LNG, but should the vessels move away from an area where gas can be bunkered, the engines can operate on diesel fuel.

LNG is contained in stainless steel, horizontal tank protectively located in the middle of the vessel. It comprises an inner and outer chamber, and employs a gap of 300-mm between the two, maintained under a high vacuum to insulate the LNG at minus 162-degrees Centigrade from the surroundings. The liquid gas is vaporized for delivery to the engines at about 20-degrees C and 5-bar pressure.

The endorsement of such a system through these bold investments can be expected to stimulate interest in the uptake of the technology across a broader front in the shipping industry.

Triple Delivery for FBM Babcock Marine

A trio of 88.5-ft. (27-m) patrol vessels being built by Southampton based FBM Babcock Marine Ltd. have arrived in the Port of Southampton on the back of a heavy lift mother ship. At press time, the trio was scheduled to undergo final testing prior to delivery. The vessels are part of a six-vessel fleet designed by FBM Babcock Marine and built in their shipyards in Scotland and the Philippines for SMIT International (Scotland) Ltd.

The vessels will be used by SMIT International (Scotland) for training military aircrew in marine survival techniques, helicopter winching drills and general marine support tasks, as part of a Public Private Partnership Program awarded by the U.K. MOD.

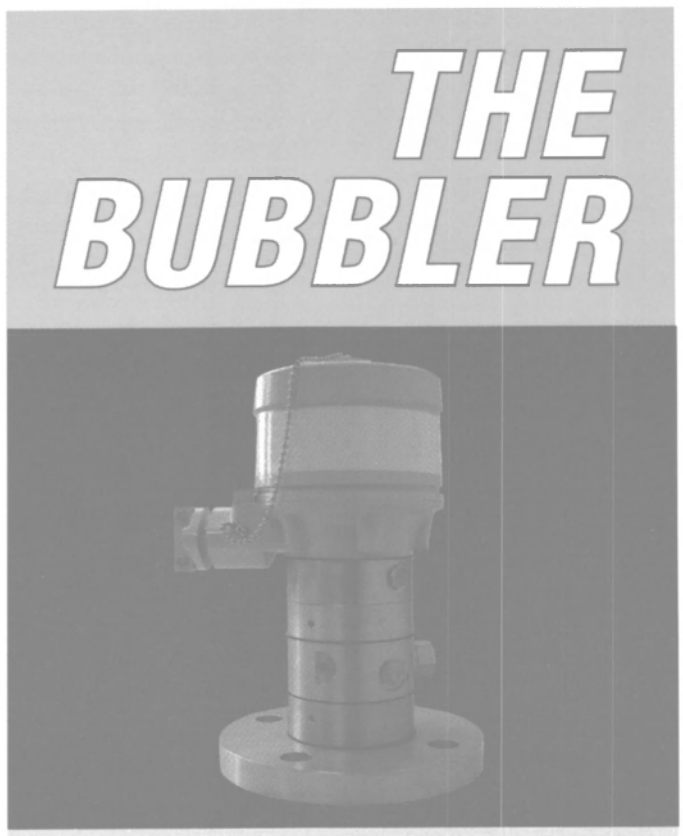
The vessels are an adaptation of FBM Babcock Marine's 27-m patrol vessel. Their design includes an aft docking well for a RIB or for torpedo recovery, a full width stern training platform and clear deck areas for helicopter winching drills. Comprised of aluminum, the vessels are powered by twin engines to propellers and an additional center-line engine to waterjet. The addition of the waterjet allows the vessels to operate economically at slow speed for long periods of time, while also providing outstanding maneuverability. Accommodation is provided for six crew.

Circle 190 on Reader Service Card

Main Particulars - Air Crew Training Vessels

Customer	SMIT International (Scotland)
Length, (o.a.)	91 ft. (27.8 m)
Length, (w.l.)	79 ft. (24 m)
Beam	22 ft. (6.7 m)
Draft	5.5 ft. (1.7 m)
Hull construction	Aluminum alloy
Superstructure	Aluminum alloy
Propulsion	2 * diesel engine to propeller
	1 * diesel engine to waterjet
Speed	Up to 22 knots
Range	650 n.m.

Circle 281 on Reader Service Card

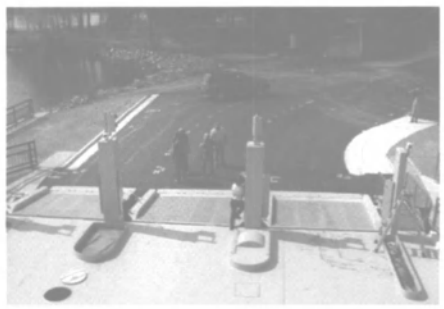


Circle 249 on Reader Service Card

Innovative Propulsion System for Ferry

The Merrimac Ferry, which crosses the Wisconsin River between Sauk and Columbia counties, is Wisconsin's only free ferry. It shuttles WIS 113 traffic between Okee on the east bank and Merrimac on the west. In the 150 plus years that a ferry has operated at this location it has been propelled by muscle, river current, gasoline engine and diesel. Most recently it has pulled itself along on a pair of cables crossing the river.

The ferry is so popular that it has not been replaced by a bridge and, in spite of nearby bridges, car loads of tourist line up regularly to ride it. The ferry's popularity is such that this past winter a larger 15-car vessel has been built to replace the existing 1960s era 12 car Colsac II. To be named the Colsac III,



105 x 44-ft. (32 x 13.4 m) boat was built by Basic Marine of Escanaba Michigan to a design by naval architect **Timothy Graul**. Power for the ferry will be provided by a single Cummins 6CT8.3-D(M). A single generator will be operated off the front of the engine and a pair of hydraulic pumps off the rear. One pump is for the ferry ramps while the other is for propulsion. The ferry, which has additional ice strengthening, will go into service this spring.

VT Halmatic Delivers Support Boats

VT Halmatic delivered four RTK Logistic Support Boats to the Mauritius Police for use as heavy duty general purpose workboats. The workboats are a new commercial derivative of the 29.5 ft. (9-m) Combat Support Boat proven in service with the UK Ministry of Defense and feature a raised aft-wheelhouse with a ramped well deck. The planing, asymmetrical catamaran hull form is manufactured from conventional GRP and features a high degree of reserve buoyancy to enable the craft to remain afloat when fully swamped. The self-draining well deck has a manually operated bow ramp and is capable of carrying a short wheelbase Land Rover, general cargo or personnel with the modular straddle seating in place. Power is provided by twin 200 hp outboard motors to give a service speed in excess of 35 knots, the outboards are protected and can be quickly raised to facilitate beach landings.

Circle 26 on Reader Service Card

PROBLEM. SOLUTION

Conventional oil and water don't mix, which is bad news if water should enter a stern tube. The lubrication provided to the shaft and bearings will be of a very poor standard.

THE RESULT? Interrupted schedules and expensive repairs and maintenance.

ENGINE OIL + 20% WATER

HYDROX + 20% WATER

Hydrox forms stable emulsions which continue to provide effective lubrication even when significant quantities of water are present in the stern tube.

THE RESULT? Protection of shaft and bearings from wear and corrosion. No interruption to sailing schedules. And no expensive unplanned maintenance.

SEND FOR DETAILS TODAY

INSURANCE IN A DRUM

Benjn R Vickers & Sons Ltd. Airedale Mills, 6 Clarence Road, Leeds LS10 1ND England
Tel: +44 (0) 113 386 7654
Fax: +44 (0) 113 386 7676
email: mktg11@vickers-oil.com
www.vickers-oil.com

HYDROX. You can rely on it. Insist on it.

Lloyd's Register ABS TYPE APPROVAL PROGRAM

HYDROX 550 BIO 68

VICKERS LEEDS

Circle 216 on Reader Service Card

Orkot® Marine Bearings are offered as custom-engineered components (to Ø 2.2m) and as semi-finished tubes and plates with stocks worldwide.

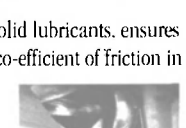
Available in three material grades to perfectly match application requirements.

Classification society approvals.
24 hour service (United States)

Orkot® Marine Bearings

A unique synthetic composition and the incorporation of solid lubricants, ensures Orkot® Marine Bearings operate with an exceptionally low co-efficient of friction in seawater, grease, oil and even in dry-running conditions.

- High load tolerance - for applications including crane mast bearings and cylinder rod-end bearings.
- Water lubricated - for rudder and propeller shaft bearings.
- Low friction - suited to hatch cover pads and stabilizer bearings.



TLM MARINE
TXM MARINE
SLM MARINE

Polymer sealing solutions

A part of Smiths Group plc

Visit our new website at
www.orkotmarine.us

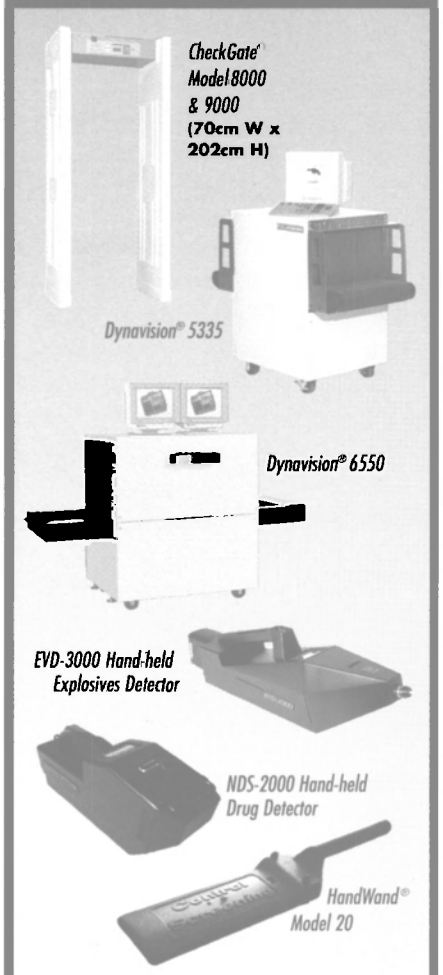
Orkot Marine Bearings

North/South America Tel: +1(541) 688-5529 Fax: +1(541) 688-2079
Europe/Middle & Far East Tel: +44(0)1709 376044 Fax: +44(0)1709 374819

24 hr service (United States): 1-800-546-7568

Circle 308 on Reader Service Card

UNCOMPROMISED SECURITY



We produce the most professional and complete line of conveyorized and cabinet X-ray screening systems, Scintrex Trace® explosives and narcotics detectors and metal detectors, including CheckGate® walkthrough metal detectors and HandWands. Whatever your security screening needs, we have the right equipment, training and support for the job.

HEADQUARTERS:
CONTROL SCREENING
2 Gardner Road, Fairfield, NJ 07004
e-mail: sales@controlscreening.com
www.controlscreening.com
Tel : (973) 276-6161
Fax: (973) 276-6162

Designed and Made in the USA for over 65 Years

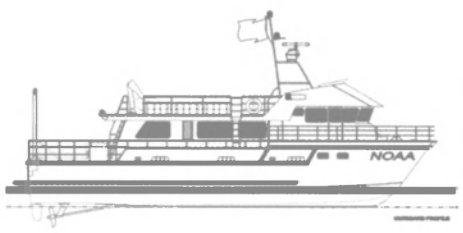
Control Screening

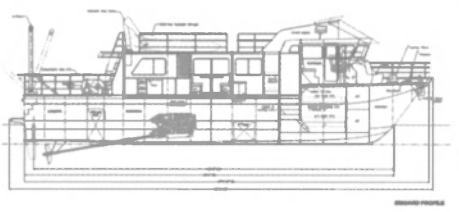
BOSTON, MA USA TEL: +1 617 627 9006 FAX: +1 617 627 9036
WASHINGTON, DC USA TEL: +1 202 466 9700 FAX:+1 202 466 9780
MIAMI, FL USA TEL: +1 305 593 5735 FAX: +1 305 593 9150
MISSION VIEJO, CA USA TEL: +1 949 859 6336 FAX: +1 949 859 6092
GLENVIEW, IL USA TEL: +1 847 729 3038 FAX: +1 847 832 9289
PITTSBURGH, PA USA TEL: +1 724 837 5411 FAX: +1 724 837 5425

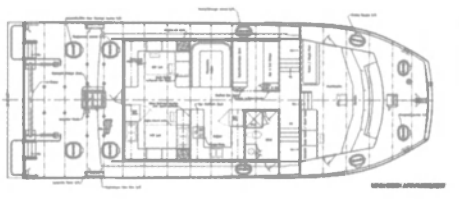
Circle 231 on Reader Service Card

NOAA Christens New Research Vessel For California Sanctuaries

NOAA's Channel Islands National Marine Sanctuary hosted, on May 12, 2003, the christening of R/V Shearwater, a high-speed Teknicraft aluminum-hull catamaran research vessel. Constructed by All American Marine of Bellingham, Wash., the 62-ft. (18.8-m) vessel is designed to step up the state-of-the-art research in Channel Islands, Monterey Bay, Gulf of the Farallones and Cordell Bank National Marine Sanctuaries. The R/V Shearwater is the first research vessel built specifically for sanctuary use. The vessel's onboard facilities and equipment can support extensive research and scuba dive operations such as marine mammal and seabird research, archeological/cultural research and collecting data for emerging management issues.







Main Particulars - R/V Shearwater

Length (o.a.) ..... 62 ft. (18.8 m)
Beam ..... 24 ft. (7.3 m)
Draft (inc props) ..... 6 ft. (1.8 m)
Engines ..... Detroit Diesel Series 60 (600 hp each)
Gears ..... Twin Disc
Controls ..... DDEC
Propellers and shafting ..... Stainless, fixed, 5 blade and Aqua met 3-in. shafts
Service Speed ..... 22 Knots
Hull type ..... Hydrofoil support catamaran
Material ..... All marine grade aluminum

Arrangements: Berthing for 9, wet lab with fresh and salt water sinks and sample refrigerator/freezer, dry lab with clean power and computer network, dive locker, galley, head and shower

Deck equipment
(driven by central engine driven hydraulic system)
* Markey COM 7H science winch with 2000 meters of .322" Electro-mechanical cable
* 2000# SWL A-Frame
* Morgan Model 300 knuckle boom crane for boat handling and cargo
* Kolstrand anchor windlass and capstan

Sounder ..... Simrad
Radar ..... Furuno
Autopilot ..... ComNav
Dive Air Compressor ..... Bauer
Steering ..... Jastram/Hamilton Jet
Lift rafts ..... HillerSafe
Fire Alarm and Detection System ..... Fireboy

PROTECTING MAN MACHINE ENVIRONMENT

Pump Room Gas Detection

IR SENSORS

GAS STATUS SX

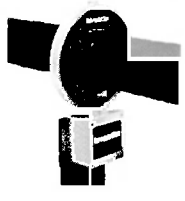
Ballast Tank Gas Detection

GAS STATUS LX

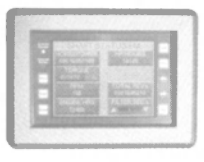
Ballast Tank Oil On Water Detection

Water Ingress Detection

Radar Based High / Overfill Level Detection



Shaft Horsepower And Performance Monitoring



Vigilant MARINE SYSTEMS

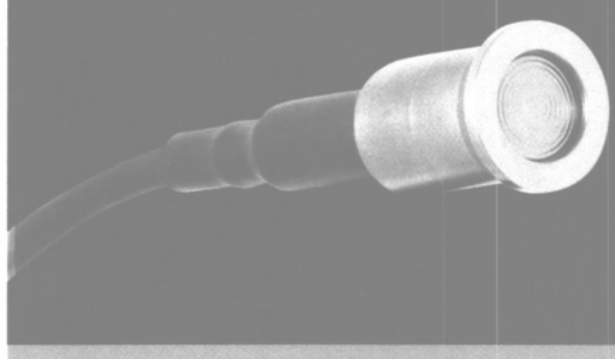
Call or E-mail today for more information!

Vigilant Marine Systems, LLC
2667 E. 28th Street
Building 521
Long Beach, CA 90755

Phone +1 562-981-0846
Fax +1 562-981-0856
E-mail info@vigilantmarine.com
http://www.vigilantmarine.com

Circle 347 on Reader Service Card

"Now with leak detection" THE BALLAST



Smart Strain Gauge Level Sensor with Generic 4-20mA Output

Use one sensor for all shipboard liquid levels

This technology has been designed specifically for surviving the rigors of ballast tank continuous monitoring. It weighs less than 2 oz. and is constructed from 100% pure titanium.

- It's the size of your thumb
- Accuracy .25% of full scale
- 100% Titanium
- Weighs less than 2 oz.
- ABS/USCG/Lloyds approved
- FM Class 1, Div. 1 Intrinsically Safe
- Removal without tank entry
- No mercury or other contaminants
- Interfaces to your existing monitoring system
- One sensor for all shipboard liquids: fuel oil, lube oil, fresh water, black water, etc.
- Generic 4-20 mA output
- Used in 15,000 tanks worldwide

Many Options

Call today for more information!

EMS

ELECTRONIC MARINE SYSTEMS, INC.
800 Ferndale Place
Rahway, NJ 07065

732.382.4344
732.388.5111 *fax*
emsmarcon@aol.com *e-mail*
http://www.emsmarcon.com

Circle 250 on Reader Service Card

S.S. United States

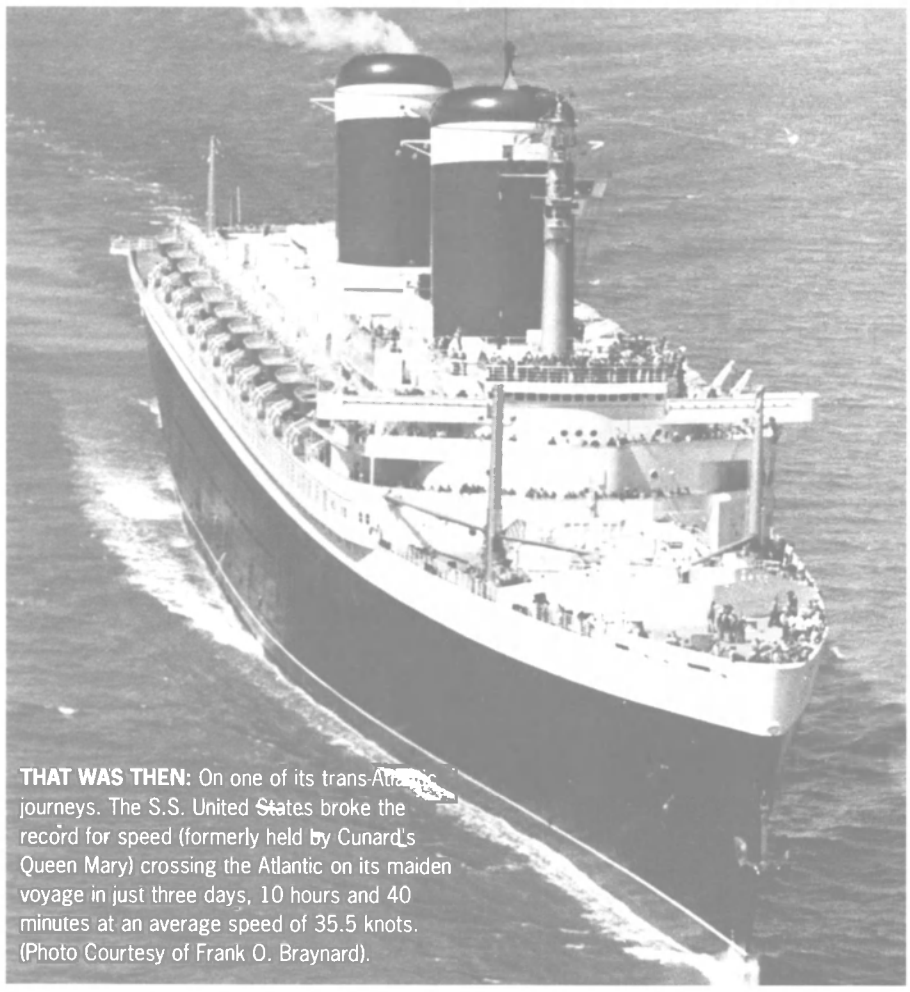
America's Super Liner to Set Sail Once Again?

"To him (William Francis Gibbs) it was the greatest ship ever built ... the greatest achievement of our greatest naval architect"

Robert Hudson Westover, *chairman of the S.S. United States Foundation*

As a child, I often noticed a framed postcard that hung in the living room of my parents' home in Long Island. It was a simple silver rimmed frame with blue matting that showed back and front of the postcard — the front depicting a large ship with red, white and blue smokestacks — the back holding an autograph of former President ***Dwight Eisenhower*** *(see photo below). For years, I passed this by as if it were of no significance. However, I would have never thought that one day I'd be writing about this framed postcard. The "large ship" to which I am referring is the United States Lines flagship, the S.S. United States, which my mother,* ***Evelyn (Sullivan) Ciardiello****, traveled on from New York to Europe in 1963 — 11 years after the vessel held its maiden voyage on July 3, 1952. On the trip she met — and received the autograph of — former* ***President Eisenhower****. With the growing popularity and economy of transAtlantic air travel, though, S.S. United States was decommissioned in 1969, after a relative short 17-year run. After several failed attempts to buy and sell the ship, Norwegian Cruise Lines (NCL) announced that it had purchased the vessel on April 14, 2003, from Cantor Companies at an undisclosed price. NCL, which in a separate announcement has commenced its new Homeland Cruising brand, will undoubtedly add the United States to its new group of "America's ships," which will also include the two former Project America ships and American Hawaii's S.S. Independence that the line purchased earlier this year.*

— By Regina P. Ciardiello, Managing Editor



THAT WAS THEN: On one of its trans-Atlantic journeys. The S.S. United States broke the record for speed (formerly held by Cunard's Queen Mary) crossing the Atlantic on its maiden voyage in just three days, 10 hours and 40 minutes at an average speed of 35.5 knots. (Photo Courtesy of Frank O. Braynard).

Constructed at Newport News Shipbuilding, (NNS), (now Northrop Grumman Newport News Shipbuilding), the "Big U," as it has come to be known, was literally a 'secret' for many years, because of its status as a prototype vessel for the navy. In fact, the vessel's tensile-steel hull design, and actual speed were considered classified information until the early 1980's. As the flagship vessel of the now-defunct United States Lines, this super liner surpassed speed records, and could be converted easily froma luxury liner to a troop ship. The 1,972-passenger vessel could then transport 14,000 troops anywhere in the world in 48 hours — an idea that was presented by the Pentagon and reflected the political environment after WWII. Definitely not a small undertaking. Therefore, it was decided that **William Francis Gibbs**, of New York-based Gibbs & Cox would be tapped to conceptualize this super ship. Gibbs immediately chose to build the vessel at NNS. According to **Robert Hudson Westover**, chairman of the S.S. United States Foundation, a not-for-profit organization whose mission was to preserve and save the vessel, the United States was a culmination of the many years of Gibbs' experience as a naval architect. "He (Gibbs) built our modern Navy, and this ship was a culmination of all his work," said Westover, who established the Foundation in 1997. "To him it was the greatest ship ever built...the greatest achievement of our greatest naval architect."

The postcard, which the author's mother, **Evelyn (Sullivan) Ciardiello**, had autographed by former President **Dwight Eisenhower** while she was onboard the S.S. United States in 1963.

William Francis Gibbs, (left) and his brother **Frederic H. Gibbs**, sit by the S.S. United States on May 14, 1952

(From the collection of the American Merchant Marine Museum, Kings Point, N.Y.)

Maritime historian **Frank O. Braynard** concurs. He was a great admirer of Gibbs — enough so to write a book about his life. Entitled "By their Works, Ye shall Know Them," the book chronicles Gibbs' career.

Braynard, who traveled on the vessel often with his wife, Doris, and their two children, often compares Gibbs to that

S.S. United States - Main Particulars

Owner	United States Lines
Shipyard	Northrop Grumman Newport News Shipbuilding
Cost of ship	$70 million
Naval architects	Gibbs & Cox, New York N.Y.
Interior architects	Eggers & Higgins, NY, N.Y.
Interior decorators	Smyth, Urquhart & Marckwald, New York, N.Y.
Length, (o.a.)	990 ft.
Beam, (molded)	101 ft.
Depth (keel to top of superstructure)	122 ft.
Keel to top of forward funnel	175 ft.
GT	51,500
Net tonnage	26,000
Number of decks	12
Total cargo capacity	148,000 cu. ft.
Refrigerated cargo capacity	48,000 cu. ft.
Propulsion	Geared stem turbine, quadruple screw
Steam conditions	950 PSIG/1,000 degrees F (later reduced to 965 degrees F)
Propeller diameter	18 ft.
Electric plant	6 1,500 kW steam, 2 250 kW emergency
Speed, cruising	30.5 knots
Speed, record crossing	35.5 knots
Speed, max	38.3 knots
Passenger accommodations	1,972
Crew	1,044

Source: Gibbs & Cox Naval Architects

HOPEMAN™

The Interior Outfitter of Choice

Hopeman Brothers Marine Interiors LLC has more than 85 years of expert marine outfitting services. Throughout the century and continuing into the millennium, Hopeman maintains a superior presence in commercial, naval and offshore marine outfitting and program management.

Cargo Carriers

Drill Rigs

LPD

LSV's

OSV's

Patrol Boats

Sealift Ships

Survey Ships

Tankers

T-AO Oilers

whatever your program needs, Hopeman has

Program Management

Engineering

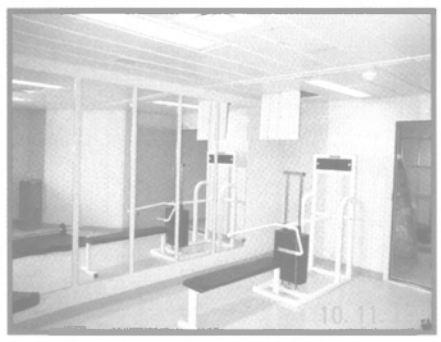
Materials

Installation

Service After The Sale

and the

Financial Stability to Ensure Performance



Bulkheads

Ceilings

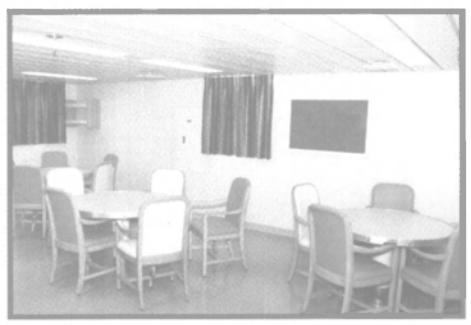
Doors

Food Service

Furniture

Furnishings

Wet Units



from start to finish...
we can do it all

Hopeman Brothers Marine Interiors LLC

435 Essex Avenue • Waynesboro, VA 22980 • USA

Phone: 540-949-9200 • Fax: 540-949-9259

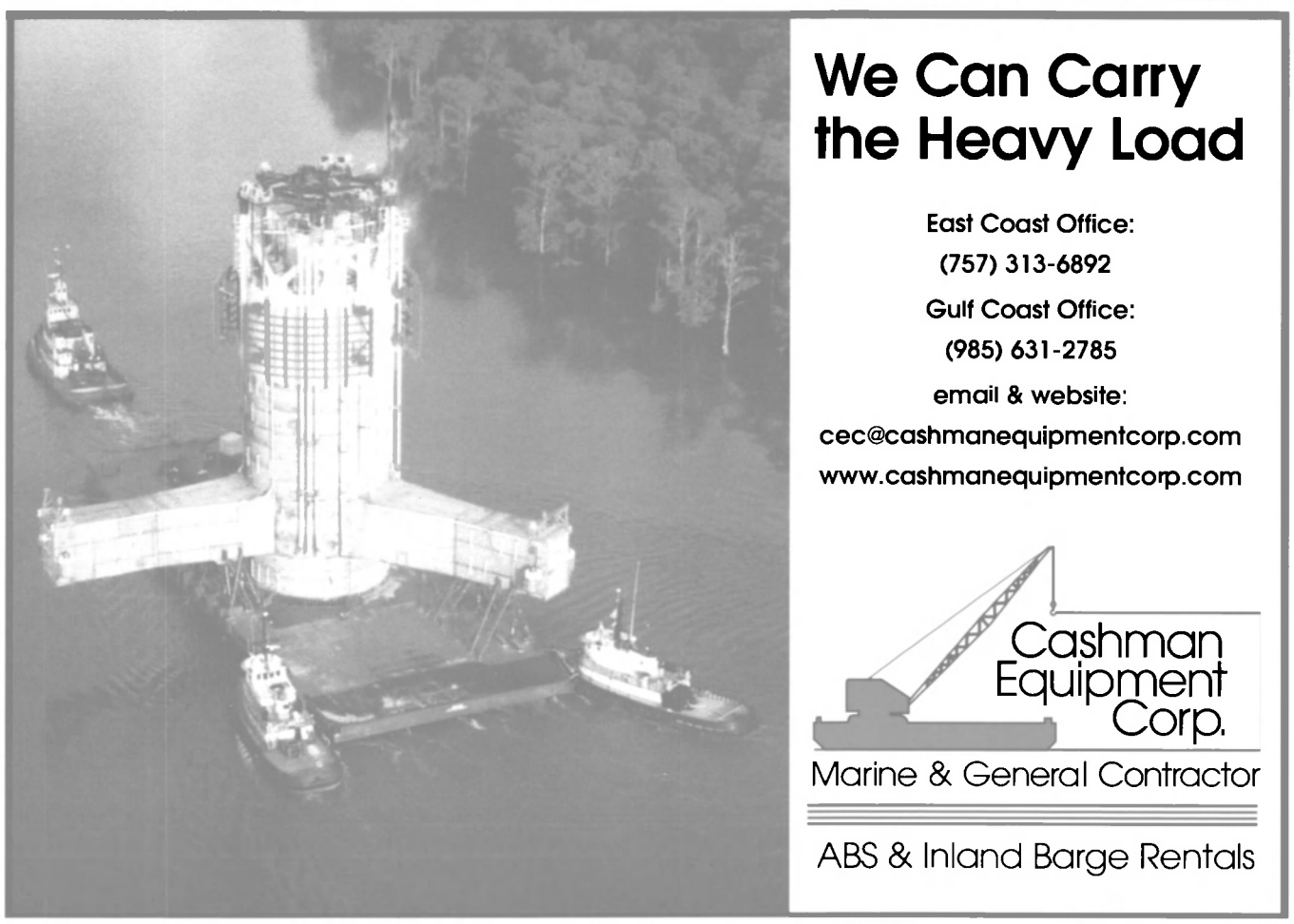
e-mail: hopeman@hopemanbrothers.com • www.hopemanbrothers.com

Circle 266 on Reader Service Card

of a biblical prophet. He said that Gibbs sailed on the United States only one time — its maiden voyage.

According to Braynard, Gibbs only went that one time because he had a fear of traveling aboard vessels he designed. Apparently, Gibbs was traumatized by a fire aboard, and ultimate sinking, of a vessel he designed — the Morro Castle, which went down off the coast of New Jersey. He designed the S.S. United States to be the safest ship afloat, liberally using aluminum and non-flammable materials.

Gibbs' granddaughter, **Susan Gibbs**, who serves as the United States Foundation's president, understood her grandfather's passion for his work, and the S.S. United States, even though she was just a child when the vessel was launched. "This ship was my grandfa-



Circle 225 on Reader Service Card

Circle 244 on Reader Service Card

What They're Saying

While NCL has not released refurbishment estimates for the S.S. United States, many agree the job could cost between 300-$400 million. Here's what a few leading interior designers had to say about the project.

Tomas Tillberg
Tillberg Design

With Tillberg's London office working as lead designers of what is to be the world's largest ocean liner — Queen Mary 2 — launching the end of this year, the company would be, as Tillberg said, happy to design the United States. In fact, according to Tillberg, the firm completed a design study on the vessel approximately 10 years ago, for the owners who had the vessel towed to Istanbul, Turkey for possible refurbishment. He said the price to perform the vessel's refurbishment would be approximately 300-$400 million. "I proposed to **Colin (Veitch)** that we have several eager architects in our U.S. office, who would love to take on the task," Tillberg said. "All but one in our U.S. office are American — therefore it would be wonderful to design an American ship."

He added: "The S.S. United States was the flagship of America, the same as the QE2 is in the U.K. and the Normandie was for France."

Joseph Farcus, President
Joseph Farcus Architects

Farcus simply stated that he's glad he's not involved. "As a ship enthusiast, I find it fascinating," Farcus said. "But, from a practical standpoint I think it would be an extremely difficult project." He added: "I'm not a businessman, but it just doesn't make any economic sense."

Julie Parmentier, Interior Designer
Maritime Services Corp.

Parmentier said that the planning stages of the job would encompass about one to two years, and that she would want to keep all the classic elements of the vessel in place. "It will be lots of work, but if they (designers) can keep the elegance of the vessel, then it would be just wonderful," she said. "The designs (on S.S. United States) were very mod for that time, and that's what is 'in' right now."

Scott Butler, Design Director, Wilson Butler Lodge Architects

"It would be a monumental task to take on," said Butler. "You would basically have to rebuild the ship from inside out." In terms of its cost, Butler compared the dollar amount to that of a modern day cruise vessel, such as Celebrity's Millennium ($350 million). w"The United States was heading into a mod period at the time the vessel was launched," Butler said. "I would push things back to that era with a retro, streamlined, art-deco feel."

— Regina P. Ciardiello

ther's 'baby,' Gibbs said. "It was the apple of his eye." she added that her grandfather had begun to formulate the idea for the vessel as far back as 1913. "He was in love with that ship," Gibbs said. "Every time it would come into the port in New York (where Gibbs & Cox was based at the time), he would rush over to see her."

Even though Gibbs sailed on the vessel just that one time, his wife, **Vera Kravath Gibbs**, often traveled on the ship by herself, or with friends. Her granddaughter holds a piece of the vessel's history: Vera Gibbs' diary that depicts the atmosphere onboard the vessel during her many trips. "She created (through her diary) this fabulous picture of life onboard the vessel as something that was so festive and exuberant," Susan Gibbs said. "It was a stark contrast to the vessel that I boarded."

Susan Gibbs experienced the ship for the first time when she became involved with the Foundation more than two years ago. What she saw was definitely not what her grandmother had experienced in the vessel's heyday. "At first my reaction was sadness," Gibbs said. "But I didn't feel the ship had died, even though it seemed so depleted and shut down, there was still a spark of light there."

Famous Firsts ... And Lasts

"This vessel was built in 500 days — that's an engineering feat of mankind," Westover said. As the July 3, 1952 edition of *Maritime Reporter* reported on the S.S. United States: "Steam turbines, and reduction gears of modern design furnish the power to drive the propellers. The boilers embody the latest ideas in development and construction and are designed to deliver high pressure, high temperature steam as required to the propulsion

Did You Know ...

- More than 2,000 tons of aluminum was used in the construction of S.S. United States.
- More than 2,200 sub-assemblies and assemblies were constructed for installation aboard S.S. United States, with the largest fabricated assemblies weighing more than 200,000 lbs. — the smallest a few lbs.
- The construction of just the vessel's hull involved the layout, fabrication and assembly of approximately 183,000 pieces.
- The ceilings used throughout the public passenger spaces were acoustic.
- With materials for the vessel supplied by more than 800 vendors from plants in 163 cities in 23 states, virtually every state in the Union contributed to the construction of the S.S. United States.
- The vessel's trademark - its red, white and blue smokestacks — were the largest in the world. Each measured 60 ft. long and 55 ft. high, and were aluminum rivets.
- The vessel was the first liner of its size to have a telephone in each stateroom - in all three cabin classes.
- The galley onboard the United States had a pair of "Radarange" electronic cooking devices. Eventually, these Radarange devices came to be known simply as microwave ovens.
- 92,000 gallons of paint comprising more than 100 colors were used.
- It was the first passenger vessel of its size to be completely air conditioned.
- Defense features on the vessel featured special structure design for safety, extra speed and the highest standards of fire resistance.
- More than half-a-million sq. ft. of Marinite fireproof panels were installed.
- The first fully fireproof lifeboats were built specifically for the United States.

Source: Gibbs & Cox Naval Architects



MICROPHOR MARINE PRODUCTS are used on pleasure yachts, passenger vessels and workboats world wide. Our waste handling systems are simple, efficient and reliable.

Quality Products For The Worldwide Marine Industry

MARINE SANITATION DEVICES have no moving parts, no power or sump/pump. Models available to handle up to 9,464 liters per day

MICROFLUSH MARINE HEADS in stainless steel or vitreous china use only 16 ounces - 2 quarts of water per flush

MICROSCRUB aids in waste digestion and odor control, approved for use on toilets connected to Microphor Biological Waste Treatment Systems

MICROCLEAN easy, safe and effective organic spray cleaner for all types of surfaces and applications, neutralizes orders in bathrooms, kitchens dining areas and offices

AUTOMATIC-SUMP/PUMPS designed for handling acidic and heavily chlorinated waste effluent and for applications where space is limited, available in light weight plastic, 12 gauge steel with coal tar epoxy and stainless steel

Microphor
A Wabtec company

452 East Hill Road
Willits, CA 95490
USA

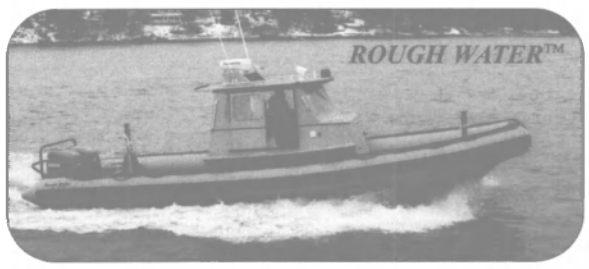
Phone:707.459.5563
Toll Free:800.358.8280
Fax:707.459.8617

Email:info@wabtec.com
www.microphor.com
www.wabtec.com

Circle 294 on Reader Service Card

Rosborough Boats

Length 25' · Beam 8' 6" · Draft 18"
Displacement 6000lb · Power O/B or I/O



New Rigid Hull Inflatable · Length 26' or 30' ·
Beam 8' 6" or 9' 10" · Draft 2' 6" · Power O/B or I/O

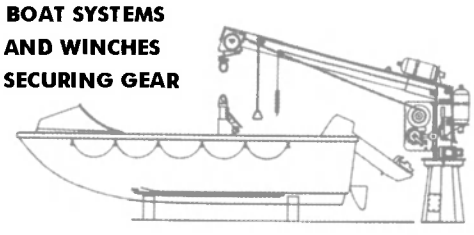
37 Crane Lake Dr. · Halifax NS Canada B3S 1B5
Phone (902) 450-3262 · Fax (902) 450-1123
E-mail: bobrsbro@rosboroughboats.com
www.rosboroughboats.com

Circle 311 on Reader Service Card

EDGEWATER
MACHINE & FABRICATORS Inc.

Specializing in Deck Equipment

- ORIGINAL POOL® ANCHORS
- CAPSTANS
- MOORING WINCHES
- ANCHOR WINCHES
- TUGGER WINCHES
- LIFEBOAT SYSTEMS
- RESCUE BOAT SYSTEMS
- DAVITS AND WINCHES
- CARGO SECURING GEAR

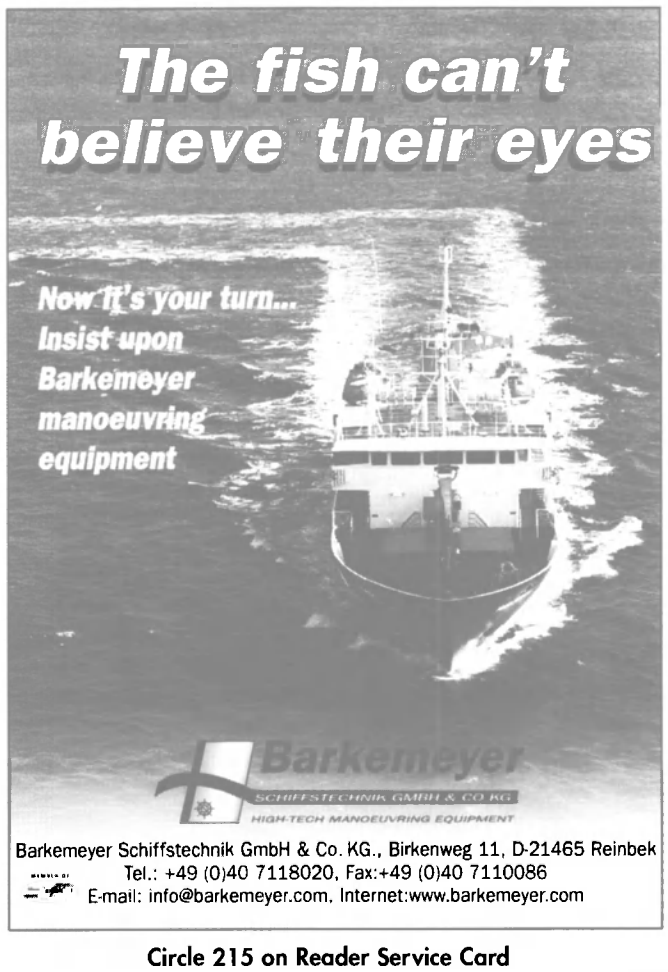


USCG / ABS / SOLAS APPROVED
Rescue Boats & Davits in stock for immediate delivery

PH (386) 428-3215 • FAX (386) 423-9480
400Megan Z. Ave • Edgewater, Florida 32132
E-mail: info@emfdavits.com

www.emfdavits.com

Circle 246 on Reader Service Card



Barkemeyer Schiffstechnik GmbH & Co. KG., Birkenweg 11, D-21465 Reinbek
Tel.: +49 (0)40 7118020, Fax:+49 (0)40 7110086
E-mail: info@barkemeyer.com, Internet:www.barkemeyer.com

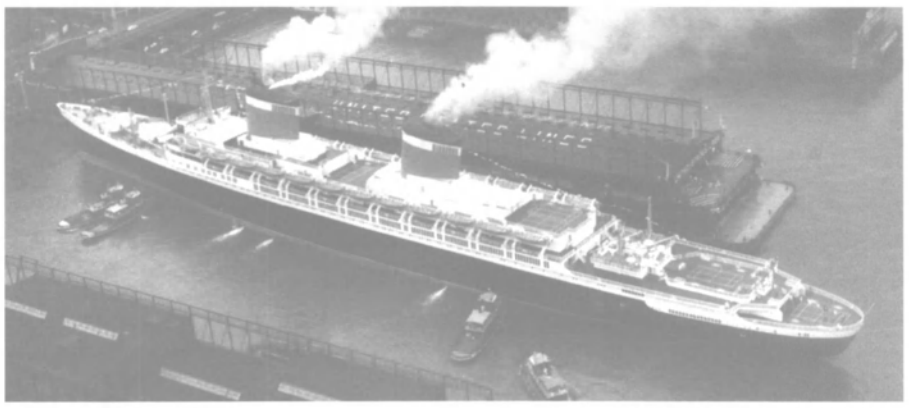
Circle 215 on Reader Service Card

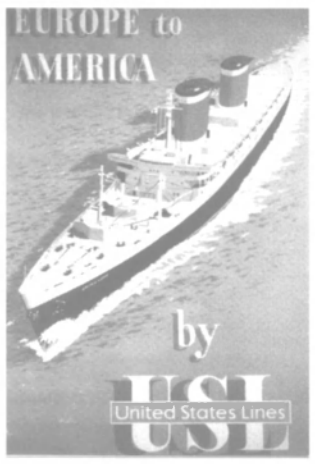
units, other steam driven auxiliaries and services dependent upon it." With its main steam propulsion equipment built by Westinghouse Electric Corp. and driving quadruple screws, the vessel's power plant was described as a "triumph of American engineering, meeting the requirements of the U.S. Navy, U.S. Coast Guard, MarAd, ABS and SOLAS."

There have been talks, according to Westover, to keep the vessel's original power plant. "I think NCL will be pleasantly surprised to realize that to get her up and going isn't going to be as expensive as they think," he said. "I know this because I have been onboard with various chief engineers that have been aboard the United States, who have experience with these ships."

The speed of the S.S. United States was nearly as legendary as the ship itself, reportedly hitting 44.7 knots during speed trials, according to Westover. "The engineers finally brought her down three knots, which they apparently held for two hours," Westover said. "Of course it's disputed by many people. I don't know I'm not a maritime expert, but this was just what I was told by several people, including the vessel's chief engineer."

Over the years, the vessel logged more than 2,772,840 million miles and carried more than 1,002,936 passengers during its 17 years of service. During those years, many celebrities frequented the vessel, but perhaps the most famous (and oldest) of these A-list "passengers" was the Mona Lisa. The famed painting was transported back from an exhibit at the Metropolitan Museum of Art in New York City, to her home in Paris, France





at the Louvre. The painting, which was on loan for a few months to the museum back in the 1950's, even had its own stateroom. According to Westover, the French felt that the United States was the only ship it could trust to bring the painting back to its homeland.

In addition to the vessel's transatlantic speed record, of three days, 10 hours and 40 minutes, it held a flawless repair record as well, never once delayed for mechanical reasons, and in its 17 years, never broke down, only making regular maintenance calls.

Sadly though, the vessel was decommissioned in 1969, as the glamour of the transatlantic crossing by ship gave way to the faster, more economical airplane. The ship was left tied to a dock at NNS following its decommissioning, where she was attended to by MarAd. According to Westover, since the vessel had been designed with such classified designed specifications, the Pentagon stipulated that it could never be sold to foreign interests.

Over the years, the vessel was treated like a sideshow, with interested parties occasionally inspecting it.

It was not until some years later, 1979 to be exact that it was bought by **Richard Hadley** a businessman from Seattle, who wanted to create a company called United States Cruises. With the idea in mind of restoring and refurbishing the super liner, Hadley's ownership, reportedly did more harm than good. He decided to sell off many of the vessel's artifacts and fixtures via a public auction in October 1984. The vessel's interior was literally stripped.

Photos Clockwise, starting from left
S.S. United States docks in at its homeport in New York City - the United States Lines Terminal.
(Photo courtesy of Frank O. Braynard).

A promotional postcard advertising the glory of crossing the Atlantic aboard the S.S. United States. *(Photo from Robert Hudson Westover)*

Maritime historian **Frank O. Braynard** flanked by the S.S. United States (in the background) on a summer day in 1963.
(Photo courtesy of Frank O. Braynard)

Following the auction the vessel sat unattended until 1992 when a group of individuals formed the SS United States Preservation Society. Led by **Bill DiBenedetto**, this consortium wanted to convert the historic liner into a modern day cruise ship, not in the U.S., but at a Turkish shipyard. Since the vessel's once designated classified design information had been reportedly revealed in the early 1980s, it was now available for purchase by foreign companies. Therefore it was towed by just one seagoing tug, to its resting place in Newport News, Va. to Istanbul, Turkey, where it again, sat unattended.

Edward Cantor, the only surviving member of the now-bankrupt consortium that was formed in 1992, purchased the vessel in 1996, for $7 million. Cantor, who was a New Jersey businessman, had always dreamt of owning the United States. He had it brought back to the U.S., this time to the Delaware River, where it remained tied to a pier along the Philadelphia waterfront until it was 'saved' by NCL. While NCL would not divulge its future plans for the S.S. United States, the line's president, **Colin Veitch**, did say that its itinerary will not focus on Hawaii as the recently purchased Project America ships, but rather

Flashback

Advertisements as seen in Maritime Reporter, celebrating the delivery of S.S. United States.

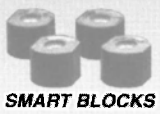
mainland coastal cruising for its new Homeland Cruising brand. Veitch also told *MR/EN* that the line would not have normally announced a project so early, but felt the need to do so to dispel any industry rumors. Since the process is still is still in its infancy stages, Veitch could not say which shipyards would be responsible for the vessel's total overhaul. He did however provide a break down of whom he would contract for specific projects. "In terms of experience, it's more practical to have a U.S. yard work on the vessel's hull and superstructure, and to have a European yard perform the outfitting." Would Veitch use the same tactics in choosing a design firm for the vessel's interiors? "It's too early to say," he said. "It doesn't make a difference (European or U.S.), but rather who has the ability to best capture the vessel's spirit." He also expressed the line's desire to connect with Westover and the United States Foundation. In fact, NCL's director of communications, **Susan Robison** was present at the Foundation's first chapter meeting that occurred just a few days after its initial purchase, and that both Robison and **Andy Stuart**, NCL's senior VP of sales and marketing, have plans to meet with Westover to discuss the vessel's future.

History

One Gas Detector Does It All!

Cl_2, H_2S, HCl, SO_2, HF, O_3, O_2, CO, CO_2, H_2, NO_2, NO, NH_3, AsH_3, SiH_4, ETO and broad range hydrocarbons

OMNI-4000



SMART BLOCKS

- Monitors 4 gases simultaneously
- 27 preprogrammed combustible gas/vapors
- 17 interchangeble toxic sensors

ENMET CORPORATION

P.O. Box 979, Ann Arbor, MI. 48106 Phone: 734-761-1270
FAX: 734-761-3220 info@enmet.com www.enmet.com

Circle 253 on Reader Service Card

CAPT. R. J. UNDERHILL & ASSOCIATES, INC.
SINCE 1953
Marine Surveyors, Consultants and Expert Witnesses
World Wide Service
Western Gulf Reps for ICGB
P.O. Box 1030
Groves, Texas 77619
Phone: (877) 985-9329
Fax: (409) 985-8320
www.underhill-surveyors.com

Circle 224 on Reader Service Card

Can it GET any HOTTER?
Only at INTEGRO!

The HOTTEST Line of Shipbuilding Products

Integro
Yes, we have it.

A Complete Welding Pre-Heat System

Permanently Molded & Fill Soldered Connections

290 Pratt Street
Meriden, CT 06450
Phone: 203-235-4424
Fax: 203-630-1093
Sales@Integro-USA.com
www.Integro-USA.com

Circle 270 on Reader Service Card

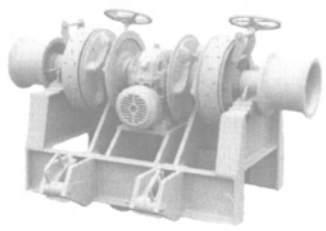
Shipbuilders
Architects
Marine Engineers

Build your next boat at the yard known for uncompromised quality and reliability

For more info, please contact:
Bruce Doughty, President
P.O. Box 296, Enterprise Street,
East Boothbay, Maine 04544
Phone: (207) 633-6517 Fax: (207) 633-7007
www.washburndoughty.com

Circle 338 on Reader Service Card

McELROY/CATCHOT
WINCH COMPANY, INC.
- SINCE 1915 -
P.O.BOX 4632, BILOXI, MS 39535-4632
Phone: 228-875-6327 Fax: 228-872-7880



MCDW-125-HS WINDLASS

MC-16-H CAPSTAN

McELROY / CATCHOT STANDS READY TO DESIGN, ENGINEER, AND DELIVER ANY TYPE OF DECK MACHINERY
WWW.MCELROYCATCHOTWINCH.COM

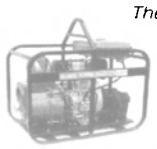
Circle 293 on Reader Service Card

POWER TO GO

YANMAR Diesel Power

2, 3 & 4 Inch
Portable Pumps.
Yanmar Powered.
Easy To Start. CARB Certified.
Trash, Centrifugal, Diaphragm, Pressure.

The Next Generation In Power & Pumps



GPP
A Division Of Mack Boring & Parts Company

800-622-5364 • www.gppmb.com • Log On For Your Dealer

Circle 284 on Reader Service Card

Ocean Technical Services Corp.

General Ship Repair
Steel Work
Piping and Valve Overhaul
Welding Of All Types, ABS Certified
Electrical
Mechanical Services
Voyage Repairs

Military Ocean Terminal Bayonne
Unit # 8 - Foot of 32nd Street
Bayonne, New Jersey 07002
Tel: 201.858.8552/3 Fax:201.858.8509

Circle 304 on Reader Service Card

www.marinesigns.com
Marine & Offshore Signage Experts

We have the technology and capabilities to supply ALL your signage needs, including complete shipboard conversion projects and sign upgrading services.

What can we do for you?

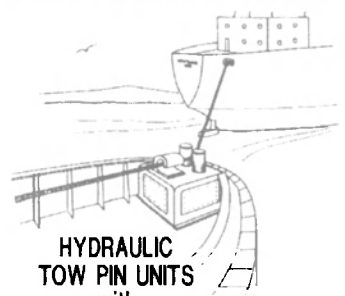
VISIT OUR NEW WEBSITE featuring our new product lines!

Order online or contact us for your FREE CD Product Guide

Maritime Associates
P.O. Box 1788 • Crystal Bay, NV 89402 USA
775-832-2422 • Fax: 775-832-2424
E-mail: maritimeas@charter.net

Circle 290 on Reader Service Card

TRACTOR PINS
FOR TODAY'S TUGS



HYDRAULIC TOW PIN UNITS with HOLD-DOWN HOOK

WESTERN MACHINE WORKS
1870 Harbour Road - North Vancouver, B. C. - Canada - V7H 1A1
Phone: (604) 929 -7901 Fax: (604) 929-7951 or (604) 929-5329

Circle 342 on Reader Service Card

Bulkers Shaped by Regulations?

By David Tinsley, technical editor

The possibility of a future regulatory regime in which newbuild bulk carriers over a certain size would need to be double-hulled has moved a step closer towards becoming a reality.

In March this year, the International Maritime Organization (IMO)'s subcommittee on ship design and equipment (DE46) started work drafting potential revisions to the SOLAS Convention. The DE initiative followed the agreement at the 76th session of IMO's Maritime Safety Committee (MSC76) that a regulation for double side skin construction should be considered for new bulkers of 492 ft. (150 m)-plus.

The task of drawing up the SOLAS revisions necessary for instituting double hulls, if this is indeed to become a mandatory requirement, is not scheduled to be concluded until the DE47 sub-committee meeting in 2004. Given the divergency of opinion within the industry on the safety arguments, practicalities and business implications of making double hulls obligatory, the industry therefore has more time in which to make its feelings known, and influence developments.

There is already a substantial fleet of double-hulled bulkers trading on the world's oceans, and new designs that promise long-term operational and maintenance benefits, and improved durability have been well received among shipowners and charterers. As recently demonstrated by a clutch of orders at Chinese shipyards, the case for investing in double side-skin configurations is all the stronger where construction can be obtained at a competitive cost. For sure, double side-skin designs eliminate exposed transverse framing and connections within the cargo spaces, protecting against mechanical damage and creating stiffer side structures.

However, a range of commercial and technical considerations still need to be addressed if the double-hull bulker is to be perceived in many areas of the bulk shipping and trading community as the favored way forward.

Class societies continue to bring major resources to bear in addressing the issue of bulk carrier safety. Through the body of the International Association of Classification Societies (IACS), the drive is on to find pragmatic, workable solutions behind which the industry can unite. It is to be hoped that the legislators pay very close heed to the sector's circumspect views on this matter and to its enormous technical know-how.

Bureau Veritas, for one, is set to publish a set of guidelines for bulker construction, aimed at helping shipowners decide on structural configuration, and assisting companies in newbuild negotiations with yards.

Bernard Anne, managing director of the society's Marine Division, struck a chord with many in the industry when he said recently "We are concerned that, in the rush towards demanding double hulls for everything, our political leaders may have lost sight of practicality."

"We all know that double hulls are not a panacea, and they have pros and cons," he observed, pointing out that "Single-hull bulkers can be just as robust, and there are many good, robust ships out there today with a useful life."

"I would much rather see a single-hull ship built to high standards and then well maintained by a quality owner, than have a double-hull ship built down to shipyard minimums, then maintained at minimum levels."

"We simply don't believe that you can design every problem out of a ship's structure, as maintenance will always be the key factor in how safe a ship is as it grows older," argued Bernard Anne, adding that "What makes the real differences between the strength of ships is much more often a matter of build quality and maintenance than a matter of design."

Bulker Water Ingress Alarms

Bulk carrier operators tasked with fitting water ingress detection systems on their vessels in compliance with SOLAS regulation XII/12, can start to progress their procurement plans after IMO recently defined a firm performance standard for this equipment. The recommendation for the fitting of such alarms was highlighted in the preliminary version of IACS unified requirement S24 first published in September 1998. This was then taken a step further during the meeting of the Working Group on Bulk Carrier Safety held during the MSC's 74th session in December 2001, following on from recommendations of the United Kingdom Report of the re-opened formal investigation into the loss of the MV Derbyshire.

SOLAS regulation XII/12, which was adopted during the 76th session of IMO's Maritime Safety Committee (MSC), which met in December 2002, requires the fitting of water ingress detection systems on all bulk carriers regardless of their date of construction, not later than the date of the first annual, intermediate or renewal survey of the ship to be carried out after July 1, 2004.

IMO DE Sub-Committee was instructed At MSC 76 to develop the performance standards after it was agreed there was a need for performance standards against which the operation and efficiency of the water ingress alarms could be measured. Following three months of discussion between committee members with the input of selected equipment manufacturers, a performance standard was approved at DE46, which finished on March 19, 2003. During the consultation process it is understood that representatives from Japan, IACS and MCA prepared three separate draft standards. These were evaluated and discussed in detail with the key points of each merged into a single document. The result is the final standard which defines a number of key additional functional requirements of water ingress detection systems, which can be summarized as follows:

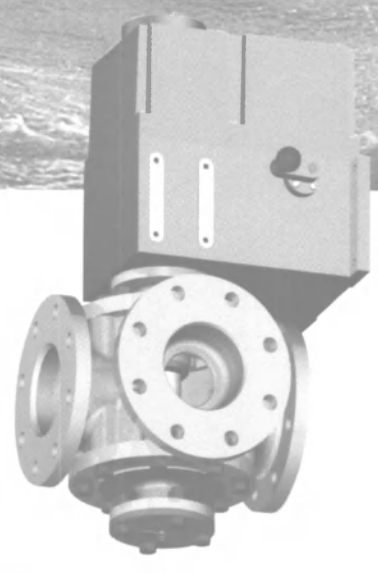
- A separate and distinguishable audible alarm to be provided at the control panel for cargo hold 0.5m pre-alarm and 2m main alarm levels
- Equipment must be corrosion resistant for all intended cargoes
- Time delays to be included in the control and alarm system to prevent spurious alarms due to sloshing effects
- Detectors are capable of being functionally tested in-situ
- Filter elements fitted to the detectors should be capable of being cleaned before loading

A major consideration for bulk carrier operators in deciding which manufacturer's equipment to fit is how the equipment is to be installed. The application of level detectors serving cargo holds on bulk carriers is almost as hostile an application as you can get. It is critical that detectors are located suitably and protected from damage by cargo and machinery operations.

With a number of detection system technologies available, it is likely that the systems offering the simplest installation solution will be preferred - it is estimated that the cost of equipment installation may well be the main determinant of the overall project cost.

Engine photo courtesy Volvo Penta

LESLIE
CONTROLS, INC.
A division of CIRCOR International, Inc.
12501 Telecom Drive
Tampa, FL 33637-0903
(800) 439-4485
sales@lesliecontrols.com
We service what we sell!



Our Electric Actuated 3-Way Rotary Valves provide the same rugged durability you've come to expect from us. We will customize control packages for Salt Water Coolers, Jacket Water and Turbo Intercoolers.

Leslie Controls...A tradition at sea.

Circle 282 on Reader Service Card

In consideration of the approach of the compliance schedule for SOLAS regulation XII/12 and the recent approval of the IMO performance standard, market interest for water ingress detection systems is growing rapidly. With literally thousands of vessels requiring the equipment, it is expected that manufacturers' delivery lead times will be extended as demand for equipment reaches its peak in the summer of 2004.

For operators who have vessels dry-docking prior to your latest fitting date of the first survey after July 1, 2004, then it may be greatly in their interests to consider installing the equipment during the scheduled dry-docking. Otherwise they may have to take the vessel out of service after the dry-docking to fit the equipment before/during the survey.

Arranging the installation of the equipment concurrently with general electrical/mechanical works during the dry-docking will undoubtedly deliver cost savings, and save a lot of time compared with arranging additional contractors during survey periods. It will also insure against the risk of costly delays to the sailing of the vessel, should the installation be delayed during the survey period.

Furthermore, for vessels that are offered for charter (if applicable), Charterers may favorably consider vessels equipped with water ingress alarm over those not similarly equipped.

Martek Marine's BulkSafe

In full compliance with all aspects of the new IMO performance standard, Martek Marine Ltd. offers its BULKSAFE water ingress detection system. Martek Marine Ltd. Managing Director **Paul B. Luen** said, "We were delighted to be afforded the opportunity of liasing with IMO DE sub-committee members over the development of the performance standard for water ingress level detection systems.

Three years in development, Luen says that BULKSAFE is "a unique offering and installation solution, which allows our MMS900 (patent pending) water level detectors to be installed so that they are totally isolated from the cargo and protected from dust and mechanical damage from cargo operations. Our BULKSAFETM system can be installed without any structural alterations or piping work within the cargo holds and can be commissioned by ship staff."

REGULATION 12

Hold, Ballast And Dry Space Water Ingress Alarms

1 Bulk carriers shall be fitted with water level detectors:

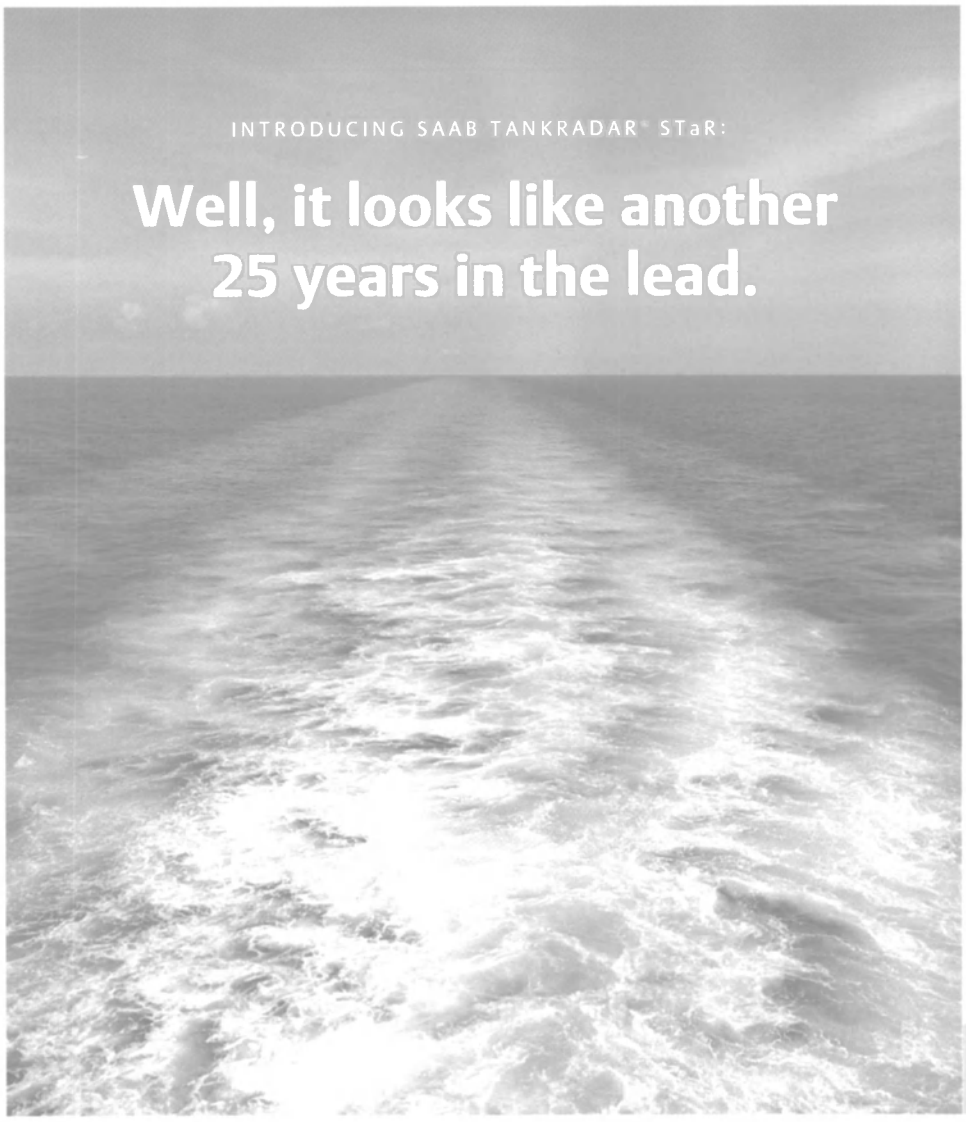
1.1 In each cargo hold, giving audible and visual alarms, one when the water level above the inner bottom in any hold reaches a height of 0.5 m and another at a height not less than 15% of the depth of the cargo hold but not more than 2.0 m. On bulk carriers to which regulation 9.2 applies, only the latter alarm need be installed. The water level detectors shall be fitted in the aft end of the cargo holds. For cargo holds which are used for water ballast, an alarm overriding device may be installed. The visual alarms shall clearly discriminate between the two different level detectors in each hold;

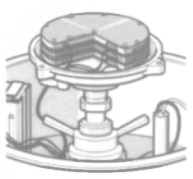
1.2 In any ballast tank forward of the collision bulkhead required by regulation II-1/11, giving an audible and visual alarm when the liquid in the tank reaches a level not exceeding 10% of the tank capacity. An alarm overriding device may be installed to be activated when the tank is in use; and

1.3 In any dry or void space other than a chain cable locker, any part of which extends forward of the foremost cargo hold, giving an audible and visual alarm at a water level of 0.1 m above the deck. Such alarms need not be provided in enclosed spaces the volume of which does not exceed 0.1% of the ship's maximum displacement volume.

2 The audible and visual alarms specified in paragraph 1 shall be located on the navigation bridge.

3 Bulk carriers constructed before 1 July 2004 shall comply with the requirements of this regulation not later than the date of the first annual, intermediate or renewal survey of the ship to be carried out after 1 July 2004.





Take a closer look inside our new tank gauging system, Saab TankRadar® STaR. It will bring intelligence and integration to your tank monitoring—offering a superior range of functions.

The new STaR system features a 3-in-1 solution that integrates Level Gauging, High Level and Overfill Alarm systems in a single unit—designed as independent, intrinsically safe, measuring channels. As a result, it's easy to install, maintain and operate.

STaR takes advantage of a new sensor technology for safer and more reliable loading and discharge. And it's future-proof—the integration capabilities of STaR ensure compatibility with new and emerging software.

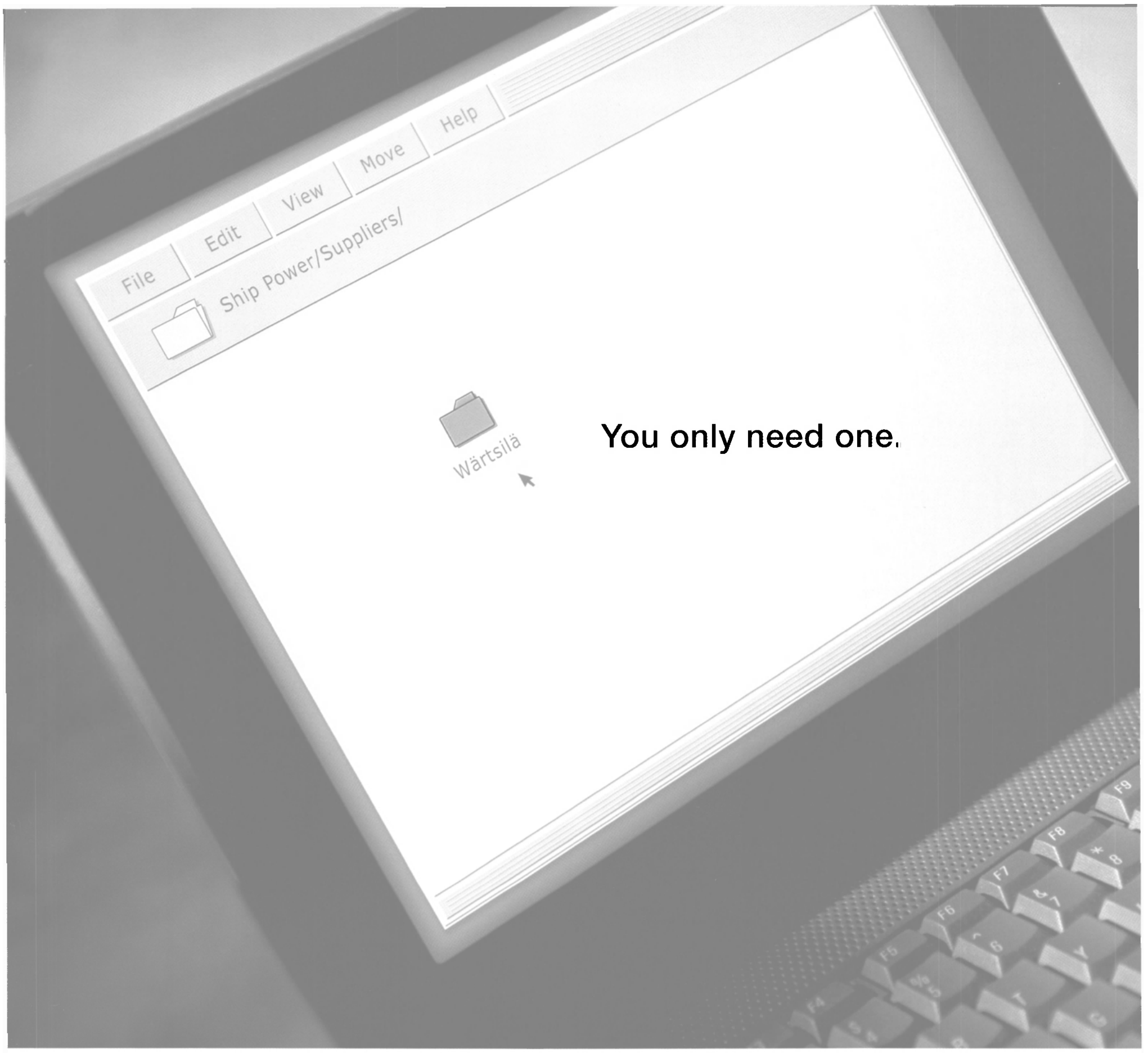
STaR is the latest proof of our technology leadership. No wonder that nearly 60% of all the new tank gauging installations in the marine market are designed and delivered by us.

SAAB ROSEMOUNT
Marine

Phone: +46 31 3370 000 · E-mail: sales.marine@marine.saab.se
Web: www.saabrosemount.com

SHAPING THE FUTURE IN TANK GAUGING

Circle 312 on Reader Service Card



Wartsila delivers solutions of all shapes and sizes – from single components to fully compatible ship machinery, propulsion and manoeuvring solutions tailored to suit your ship's specific design and its operational requirements. Lifetime support included and added value guaranteed. For all your needs, Wartsila is the one. For more information visit www.wartsila.com

• Main and auxiliary engines • Generating sets • Reduction gears • CP propellers • FP propellers • CIPS
• Steerable thrusters • Waterjets • Transverse thrusters • Control systems • Rudders • Seals • Bearings • Design
• Engineering • Project management • Commissioning • Financing • Technical support and maintenance

WÄRTSILÄ

Circle 336 on Reader Service Card

Prestige - A Charterer's Reaction

By Captain Noel G. Hart, Manager, BP Shipping (USA)

The following was excerpted from Mr. Hart's presentation at INTERTANKO's Washington Tanker Event.

Ships continue to sink and pollute, and crews continue to lose their lives or be imperiled. This is the 21st century — the shipping industry is one of the oldest in the world so one has to ask how this is possible that in this day and age? Why can't this industry guarantee that ships won't break up and sink? Why have we not learned the lessons of the past?

In using the term charterer in my paper for this conference, I am referring to responsible charterers. I can only speak for BP as a responsible charterer, and for companies like BP. There are obviously other companies and organizations that have different criteria for the way they conduct their business, different policies, if they have any, and different standards.

The title of the paper is regrettably not a new one. The only thing that seems to change is the name of the ship. If the Erika incident was not disturbing enough, within six months of its sinking, other ships names hit the headlines in Europe — do you remember the Krystal, the Ievoli Sun and the Castor? Is there any wonder there is such public and political outrage?

My previous role with BP Shipping in the U.K. was as head of our global marine assurance activities, which included Ship Vetting. As such, the Erika incident dominated my time, and that of many of my colleagues, for well over a year, and BP was not even involved in the incident. Today, my colleagues are likewise wrestling with the aftermath of the Prestige. We are all adversely affected by the outrage and the repercussions, by the reactionary legislation, and by the negative reputation and public perception. The Prestige sinking and pollution has reinforced many of these perceptions of our industry — an industry which should be a great one, but which continues to disappoint. None of us want more regulation, indeed many of us believe that there are already more than enough laws and regulations in place which ought to be sufficient to govern the safety of this industry, but the continued failure of this international framework, that should ensure ships go about their trade safely, makes additional regulation more likely with each incident.

"This is the 21st century Why can't this industry guarantee that ships won't break up and sink? Why have we not learned the lessons of the past?"

— Captain Noel G. Hart, Manager, BP Shipping (USA)

The interdependent safety framework I speak of falls down when:

- Flag States cannot fulfill their role due to lack of expertise and resources, and often a lack of commitment. I understand Mongolia is offering a Flag service now.
- Insurers fail to understand the risks they are insuring.
- Many Classification Societies fail to provide consistent industry wide standards and expertise, and transparency of information. Class have responded well to criticism after the Erika incident and we welcome these improvements. Our sense is that there is more that can be done, however.
- Failure of Port State Control to inspect ships entering their ports to enforce existing legislation. The Prestige should have been a high priority target - checking the Equasis database indicated it had not been looked at by any European Port State Control agency for three years. Even with the hindsight following the Erika, this ship was not identified as a target for inspection. Port State Control agencies also fail to utilize the SIRE inspection material made available to them at no cost by OCIMF. Accessing these reports would help them manage their limited resources far more effectively. They could focus on the ships exhibiting the poorer inspection results, and leave the well operated, well maintained, well crewed ships to go about their business — yes, despite what you may think - we do know there are some good ships out there.
- And of course, with due respect to this audience, and I know none of you fall into this camp and I am preaching to the converted, but the failure of many ship owners or managers to fulfill their role in maintaining a well operated, sound and seaworthy vessel — complying with SOLAS, STCW, MARPOL and basic industry good practice. Such shipowners demonstrate a complete disregard for the safety of their crews, the environment and the countries they trade to or pass by.

If the key elements for this safety framework functioned as they should — BP and our colleagues in other oil companies would have no need for our vetting departments. Instead, they grow larger and more sophisticated every year! BP inspects 2,200 tankers/year, utilizes about 1,000 SIRE reports, handles over 25,000 internal vetting enquiries/year and audits about 30 ship owners/year. There are over 12,000 tankers in our data base — we have a potential business interest to charter around 5,000 of those — the others are coasters, or committed into various closed trades not available for spot use and so on, yet we only approve of around 2,500 tankers. Half the fleet that we would want to charter is unacceptable to us. Even with the half that is acceptable, many will still fail an initial inspection.

We often have ship owners, many of whom are in this audience, asking us to relax our standards and to trust them. Against the background I have just described, I think you can see why this is just not possible for us. The issue is that that the oil companies are seen to be the bad guys. After the Prestige, the EU has continued to press for a voluntary billion euro compensation fund, to be funded by the Oil companies - they are now starting to realize that we are only responsible for about a third of all international hydrocarbon movements and there are many other independent trading houses and charterers who actually move large quantities of oil - many without the same self imposed standards as the oil majors. Regrettably, whenever there is an incident involving a tanker - it is always the oil companies that seem to be hauled into the limelight - or perhaps 'searchlight' may be a more accurate description

Some of you would be aware BP is currently in the midst of expanding its fleet — we have nearly a dozen ships delivering this year alone. Have you asked yourselves why we are doing this?

I will save you the question — we are doing it to be less dependent on a spot market that continues to disappoint — remember the figure I quoted before — only half the ships we could use, we can use. And so our assurance strategy — which was embryonic at the time of the Erika incident, and which matured in the 12 months following, has determined a path for us across a broad range of our marine activities, but one more visible feature was to increase our capacity to move our own cargoes. That is not to say we don't have a place for the spot market or indeed many of you here today. It does however help us be more flexible and better control our destiny in this vital area. We fully recognize the role and importance of independent tanker operators and the spot market. You are important players in one of the world's most important trades. It is crucial to our business and the global economy that this market be dynamic and reliable. But with that comes responsibility — we firmly believe the ship owner must be accountable for his ships. BP, and our other major oil company colleagues are very proud of our brands and our reputa-

tions and take safety and environmental concerns extremely seriously. We have a lot at stake globally and will not take the risk of exposing ourselves to the outrage and condemnation that rightly emerges from these incidents.

So, where does that leave us in terms of our response to the Prestige incident?

Our assurance strategy and vetting policies have again been reviewed to ensure they are fit for purpose, both now and in the future. After the Erika incident we did this, and some elements were strengthened, specifically structural controls and inspection frequencies on older ships. We found no need to adjust our vetting criteria after the Prestige sinking.

We have worked hard with our industry colleagues through the good offices of the Oil Companies International Marine Forum, OCIMF, to provide sound and robust comments and advice on the EU proposals. We have also met directly with EU decision makers. Most of the EU proposals were about fast tracking or advancing the plans that emerged after the Erika, including an immediate ban on single hull tankers transporting heavy grades of oil.

We believe that sub standard ships should be driven out of the industry. This means that more focus and accountability must be brought to bear on the ship owners who operate these vessels and the Flag States that condone

Tankers

Kahlenberg

Sound Signals

Kahlenberg Sound Signal Systems have set the standard for quality and reliability for over 100 years.

KPH-130 Electric Piston Horn

S-203CHT Air Horn

Our Complete USCG/IMO Certified Product Line covers all types of vessels from less than 20 Meters to Over 200 Meters in length.

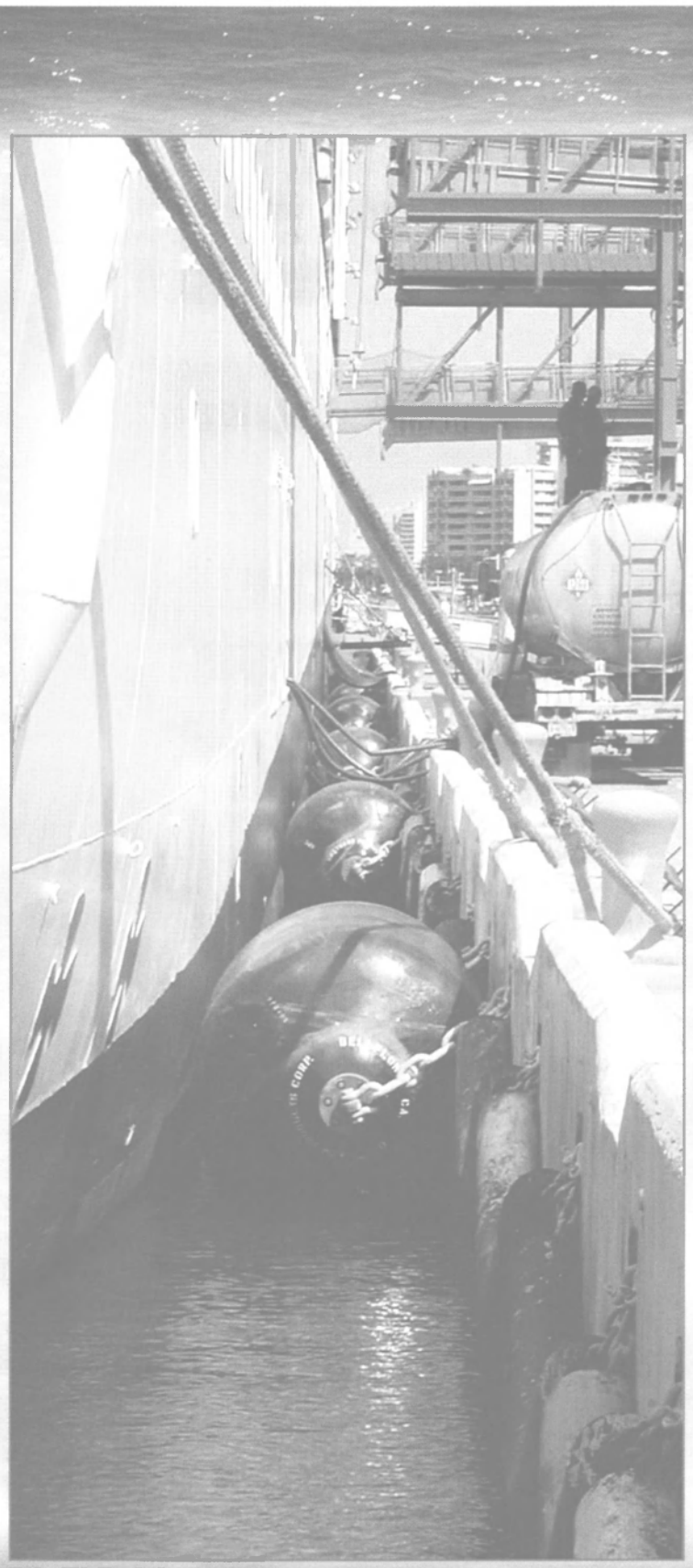
Air and Electric Horns
Air/Steam Whistles
Controls & Accessories
Marine Propellers
Propeller Shafts
Marine Machining

For complete technical information see us on the Internet at www.kahlenberg.com.

Kahlenberg Brothers Company
P.O. Box 358, 1700 12th St.
Two Rivers, WI 54241
Ph: 800-959-1307
Fx: 920-793-1346

www.kahlenberg.com

Circle 275 on Reader Service Card



Cruise Ship Terminal

Foam Filled Marine Fenders

Marine Guard™

The Ultimate Protector for Ships, Harbor Craft, Wharves & Piers.

- Construction complies with United States Navy and Coast Guard Specifications.
- Core consists of closed-cell, resilient, energy absorbing foam, covered with a protective, seamless polyurethane elastomer skin.
- Filament nylon tire cord reinforcement is continously wound in the skin for added strength and durability.
- Will not mark or scratch vessel hulls.
- Constructed with integral swivel end fittings, internally connected with a heavy duty chain.
- Easy to install with very little maintenance.
- Hull conforming design
- Light weight and extremely buoyant with a lower reaction force than either hard rubber or pneumatic fenders.
  (Almost 40% higher energy absorption than pneumatic fenders.)

URETHANE PRODUCTS CORPORATION
(800) 913-0062

Stocking Distributors:

Waterman Supply Company
910 Mahar, Wilmington, CA 90744, U.S.A.
1-800-322-3131
Tel (310) 522-9698 • Fax (310) 522-1043

Anchor Marine & Industrial Supply, Inc.
6545 Lindbergh, Houston, TX 77087, U.S.A.
1-800-233-8014
Tel (713) 644-1183 • Fax (713) 644-1185

URETHANE PRODUCTS CORPORATION • 9076 ROSECRANS AVENUE • BELLFLOWER • CALIFORNIA • 90706
1-800-913-0062 • 1-562-630-4982 • Fax 1-562-630-6974 • www.urethaneproducts.com

Circle 330 on Reader Service Card

them by allowing them on their registers.

We want to see more transparency from and accountability placed on Classification Societies, whose role and importance in the industry we do not dispute, but who must step up across the board to the expectations and the trust that is placed upon them by Flag States, shipowners and charterers alike.

BP is cautious about rapid and ill-considered bans on single hull tankers, especially in the smaller sizes where we feel it is actually not feasible. I understand that the latest proposal by the EU for phasing out small tankers has been pushed back to 2008 — this is far more practical than was previously proposed. We have expressed concern at the impact on the North Sea shuttle tanker business where many of these specialist vessels are single hull. This is an area that needs further consideration. We are particularly concerned that adoption of regional solutions does not simply export the problem ships to other areas of the world.

We support global solutions through the IMO — not regional and local reactions that eventually make it impossible to conduct international trade efficiently. You will have seen the reports of the French and Spanish navies escorting ships beyond their 200 mile economic zone, or even boarding them, and the Italians who have banned single hull tankers entering their ports. International shipping cannot work in a world filled with local restrictions. I know that Intertanko shares this view as well. It was reassuring to learn of the recent meeting between the IMO Secretary General and the European Commission vice president, in which they confirmed the importance of global standards for shipping. BP recognizes that age alone is not by itself a determining factor as to the quality of a vessel -- we have however realized that the legislators and the public identify quality ships with two main criteria — low age and double hulls. This perception has become an embedded reality and one that now needs to be embraced. To continue to debate this is to be out of step with community expectations.

We support efforts to improve the effectiveness of the port state control agencies, indeed BP is helping train port state control inspectors. As I have mentioned, there is enough legislation already, what is lacking is the implementation and enforcement of it. Port state control can be a powerful weapon in the war against sub standard ships, as demonstrated by the USCG, the UK's MCA, Australia's MSA and others. The lack of cohesion of the multitude of countries and agencies in Europe has been a barrier to effective port state control there in the past, and so we applaud the renewed efforts to unify and better coordinate this essential activity.

We are concerned that reactive legislation will only further burden the quality operators who already comply and do a good job - leaving the ones who are the root cause of the problems to continue to duck their responsibilities, ultimately leading to more incidents. We have to be able to influence the behaviors and the mind-sets of those that bring our industry into disrepute.

BP, and our colleagues in OCIMF support the International Compensation regimes, which have served the international community, particularly the victims of pollution, well over the years.

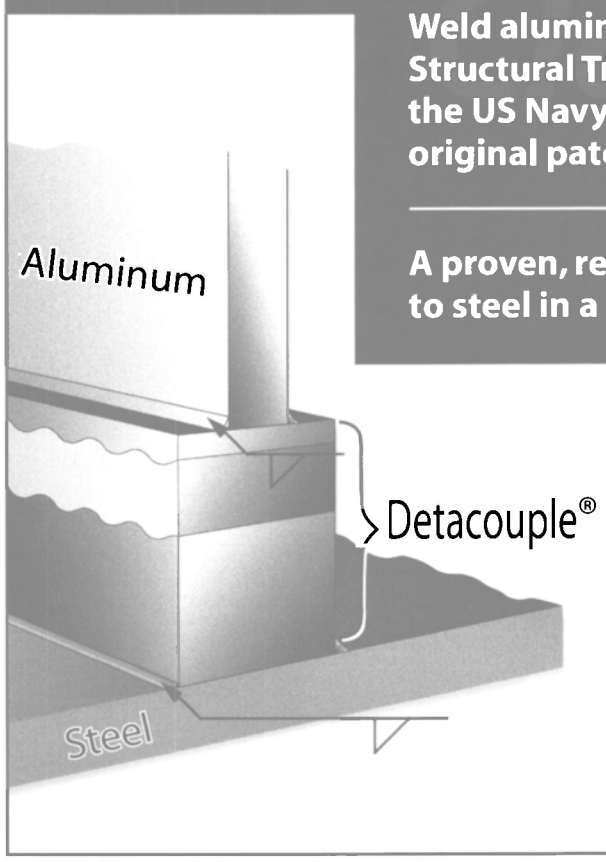
We have supported the introduction of the International Supplementary Fund, which will provide an additional layer of compensation to all States party to it The Supplementary Fund upper limit should be set to ensure that sufficient funds are available to cover the likely cost of the worst pollution damage. However, we feel the European Commission's proposed 1 billion Euros as an upper limit for the Supplementary Fund is excessive. It will be a deterrent to smaller States joining (or even remaining as Members) and, if called upon, will cause considerable financial hardship to Fund contributors.

To sum up, BP, as a major charterer in the industry and customer of yours will continue to work with all stakeholders to help illuminate the issues in an attempt to see practical and constructive improvements in the overall safety framework I highlighted earlier. We are not alone in this effort, many companies and organisations, whether they be oil companies, shipowners, Class, or government agencies, all share the same end goal — none of us want to see any more incidents like the Prestige. It is incumbent upon all of us to learn from the past and work together to make this a reality.

DETACOUPLE®
is structural weld transition joint

Weld aluminum to steel by using the Structural Transition Joint specified by the US Navy and manufactured by the original patent holder.

A proven, reliable system to weld aluminum to steel in a marine environment.



Detacouple®
Structural Transition Joint

DMC Clad Metal
GROUPE SNPE

USA
Phone 1.303.604.3902 • Fax 1.303.604.1893
cladsales@dynamicmaterials.com

Circle 349 on Reader Service Card

10 Largest Independent Owners

Owner	No. Tankers	Mil. DWT
Frontline	73	17.0
Mitsui OSK Lines	78	10.6
Teekay Shipping	90	9.2
WorldWide	29	7.1
Overseas Shipholding	40	6.4
Bergesen d.y. A/S	17	5.0
Tanker Pacific Mgmt.	42	5.0
AP Moller	28	4.9
NYK	25	4.7
Angelicoussis Shiphld	18	3.9
Totals	**440**	**73.8**
Independent Fleet	**2,846**	**246.3**

10 Largest Oil Co./State Oil Co./State Tanker Owners

Owner	No. Tankers	Mil. DWT
Vela	18	4.9
China	104	4.6
NITC	23	3.6
Exxon-Mobil Group	22	3.3
Petrobras	50	3.2
Shipping Corp. of India	43	3.1
KOTC	17	2.9
Sovcomflot	32	2.8
Nat. Shipping of Saudi Arabia	11	2.8
Shell	19	2.5
Totals	**339**	**33.7**
Independent Fleet	**716**	**59.5**

Source: INTERTANKO Annual Review & Report 2002

The Multi Effective
ME Engine

ELECTRONICALLY ME CONTROLLED ENGINE

The engine with fully integrated electronic control

With MAN B&W's ME engine series, a new world has opened up for large two-stroke diesels. Based on the well-proven and very successful MC engine series, the electronically controlled ME design offers even lower operating costs, improved emission characteristics and a very high degree of flexibility related to various operating modes and optimisation of particular part load characteristics.

MAN B&W

MAN B&W Diesel A/S • Teglholmsgade 41 • DK-2450 Copenhagen SV • Denmark
Tel: +45 33 85 11 00 • Fax: +45 33 85 10 30 • e-mail: manbw@manbw.dk • www.manbw.com

Circle 285 on Reader Service Card

U.S. Shipbuilding 2003: A Congested Attempt to Fund

By H. Clayton Cook, Jr.

Meeting national transportation needs during the current decade should involve a surfeit of new contracts for our domestic shipbuilders. The Oil Pollution Act of 1990 (OPA 90) mandates double hulls for all vessels engaged in U.S. petroleum carriage. In our non-contiguous trades, renewal programs are needed for the replacement aging container and RoRo fleets. Moving freight containers and trailers on RoRo barges and vessels, and moving people on passenger and passenger-vehicle high speed ferries, provide the obvious solutions to traffic congestion in the population corridors served by at least two of our Interstate highways.

Some of these vessel needs are now immediate because of private sector decisions to postpone projects. For others, the immediacy is the result of Washington policies which have rejected the maritime sector's importance in providing transportation to support our commerce in time of peace, and transportation to support our uniformed personnel in time of war.

Last year I stated that while the nation's vessel needs were clear, the means for financing these needs remained uncertain. I assigned as the primary cause, the current Administration's Office of Management and Budget (OMB) hostility to any form of maritime sector support. As I write this article today, this OMB hostility has in no respect lessened.

Over the past 12 months, OMB has blocked Congressional consideration of Maritime Administration (MarAd) plans to employ its Title VI capital construction fund (CCF) program in our Coastwise services.[1] And, OMB has continued its efforts to entirely terminate MarAd's Title XI financing guarantees program, zeroing out Title XI authorizations in the Administration's

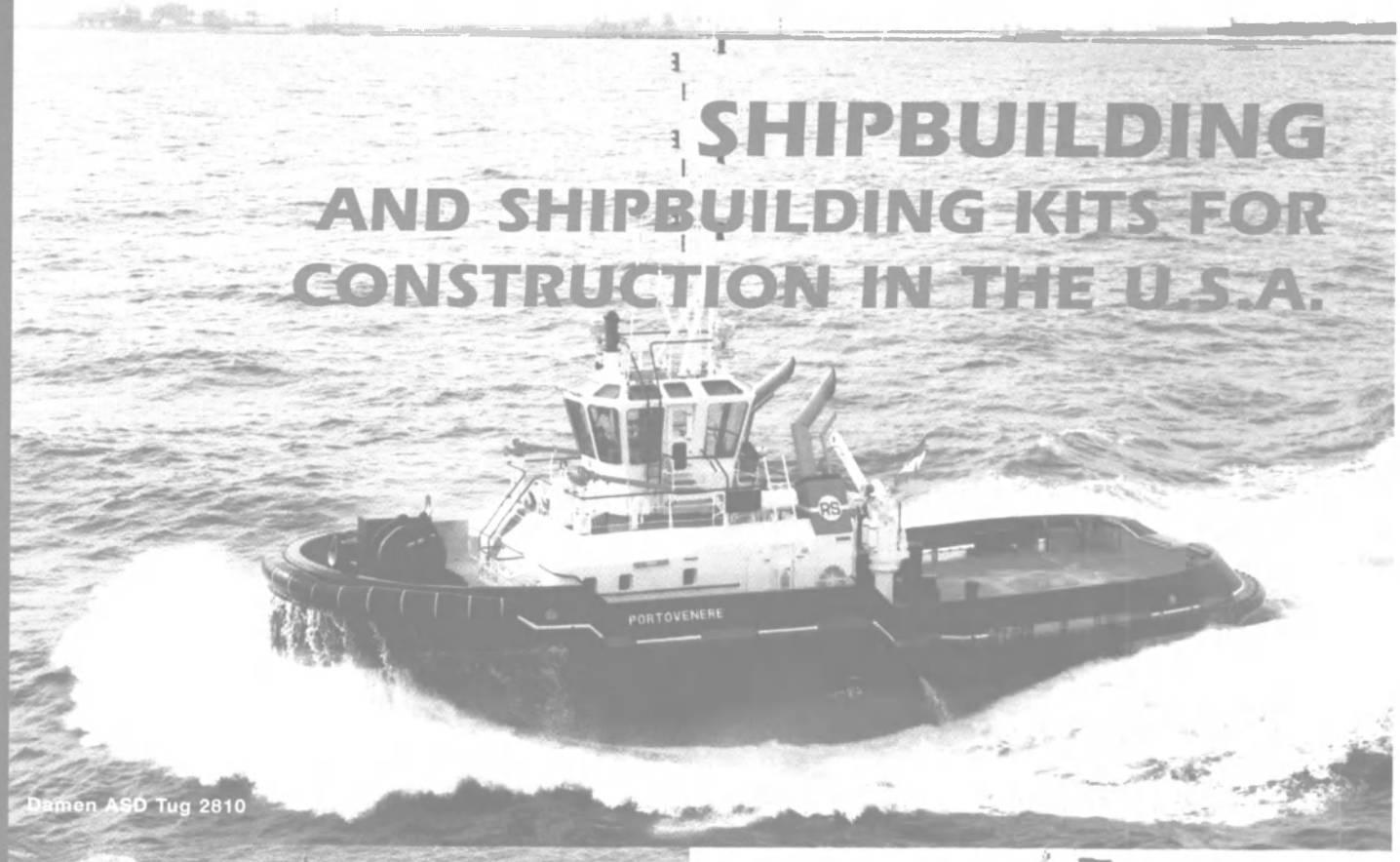
CSD sealing systems
North America
RISE®
MULTI-CABLE / PIPE TRANSIT SYSTEM
Approved By All Class Societies, USCG & US Navy
▪ Save Time
▪ Save Money
▪ Save Headaches!
Sucessfully Tested To IMO Res. A. 754 (18) with CLX® Cable*
CSD Sealing Systems-North America
880 Candia Road
Manchester, NH 03109-5205
Tel: 603-641-3914
Fax: 603-641-2682
E-mail: sales@csdsealingsystems.com
www.csdsealingsystems.com
CLX is a registered trademark of the Okonite Company.
Circle 237 on Reader Service Card

Ever wonder what's REALLY in those tanks?
The LevelCom TLI system is taking offshore tank level indication to a new plateau...

The LevelCom 100/101
Tank Level Indicating system that monitors **depth, volume, weight** AND the **specific gravity** of virtually any liquid. And it does it without special sensors.
No sensor in the tank!
No expensive or fragile pressure transmitter or sensor in the tank. No more need to empty and gas free a tank to repair or calibrate a tank level indicator!
Packed with features!
- Equipped to communicate to a remote display or computer
- Automatic sense line leak and plug detection
- No custom scales required
- Automatic self calibration
- Programmable alarm and **control** setpoints
- 10 point depth/volume/weight "Tank Table" accurately tracks the shape of the tank
- 4-20mA input and output options add to the versatility of the LevelCom 100

Simply the most complete Tank Level Indicating system available today.
Manufactured in the USA by:
TMS, Inc.
Phone: 1-503-285-8947
Fax: 1-503-285-1379
info@tms-usa.com
Circle 326 on Reader Service Card

SHIPBUILDING
AND SHIPBUILDING KITS FOR CONSTRUCTION IN THE U.S.A.



Damen ASD Tug 2810


Damen ASD Tug 3111


Damen Stan Tug 2608

Damen Shoalbuster 2509

Damen Stan Tug 2207

DAMEN

DAMEN SHIPYARDS GORINCHEM

Industrieterrein Avelingen West 20
4202 MS Gorinchem (The Netherlands)

P.O. Box 1
4200 AA Gorinchem (The Netherlands)

Phone: +31 183 63 92 67
Fax: +31 183 63 77 62

americas@damen.nl
www.damen-shipyards.com

Circle 241 on Reader Service Card

A wide horizon is a privilege, not a right

SAILOR SC4000 IRIDIUM

Innovating global communications

For more than 50 years Sailor has been a highly recognised supplier of maritime communications systems. The Sailor brand is well-known for quality, reliability and continuous innovation, and the SC4000 Iridium is no exception. Among the SC4000 features are:

- True global coverage
- 2.4 kbps data capability
- Access to Iridium's 10 kbps compressed data service
- Connector for PABX or standard telephones
- Designed for the harsh environment at sea
- Easy to use; works like a mobile phone

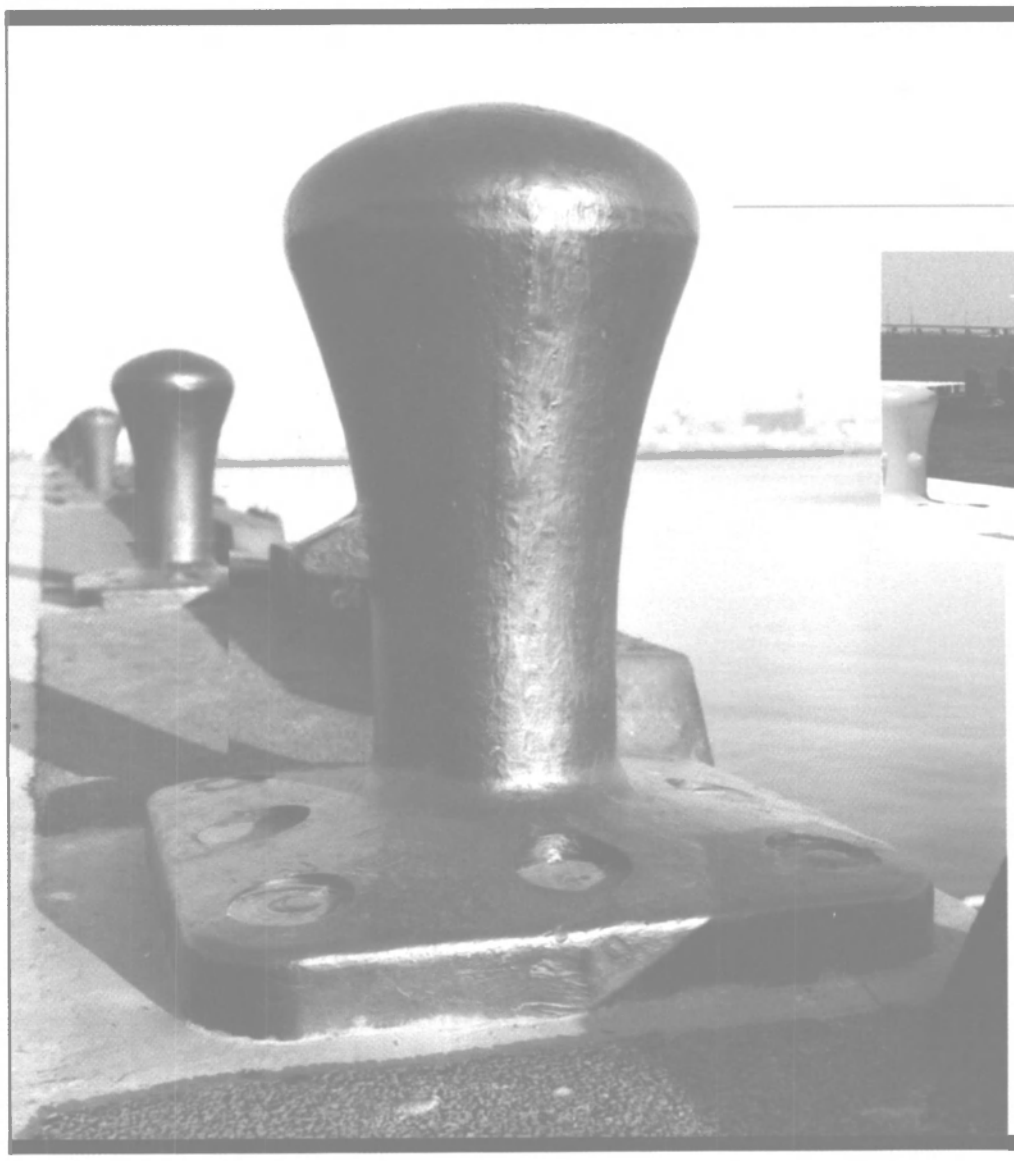
- and the list is long.

SAILOR

When safety counts

Porsvej 2 · DK-9200 Aalborg SV · Denmark · Phone. +45 9634 6100
Fax +45 9634 6101 · Telex 69 789 SPRAD DK
E-mail: sailor@sailor.dk · Web: www.sailor.dk

Circle 254 on Reader Service Card



Mooring Bollards

Maritime International designs and builds the toughest mooring bollards in the marine industry. Please visit our website to view all of our bollard models, download a sample specification or utilize our mooring bollard design guide.

RAPID DELIVERY • ALL SIZES AND TYPES • COMPETITIVE PRICES • MOUNTING HARDWARE

MARITIME
International Inc

www.marinebollards.com

1 866-BOLLARD (265-5273)
337 837 7160 fax 337 837 3610 Louisiana USA
e-mail: info@maritime-international.com

Circle 29[illegible] on Reader Service Card

budget requests for FY 2003 and 2004.

Most recently, and as further measure of this Administration's lack of appreciation for the maritime sector and its transportation potential, neither the SAFETEA Reauthorization drafted by the U.S. Department of Transportation (DOT) and approved by OMB, nor the DOT "Draft Strategic Plan for FY 2003-2008," address any role for DOT in providing assistance in financing private sector maritiem projects, or in examining maritime sector solutions for our increasingly intractable problems of highway traffic congestion.[2]

At mid-2003, rather than being able to describe Administration moves to embrace water transportation as a means of meeting national transportation needs, and to provide assistance in its financing, I must report that the maritime sector financing situation remains unchanged.

Commercial Vessel Needs

The once proud U.S. owned, U.S.- flag, foreign commerce fleet is no more, a victim of Administrations which have determined that maintaining such a U.S. flag fleet was no longer a matter of national interest. With its passage, the U.S. shipbuilders' principal market for commercial blue water tonnage was eliminated. Still, the Jones Act and the Passenger Vessel Services Act remain to reserve the carriage of cargo and passengers between U.S. ports to vessels built in the United States. While U.S. shipbuilding opportunities are limited to these U.S. domestic trades, there are existing and near-term transportation needs which should provide significant opportunities for our U.S. shipbuilders.

1. The OPA 1990: Crude Carriers & Product Tankers and Barges.

OPA 90 requires single-hull tank vessels to be phased out by January 1, 2015. Most large single hull vessels must be replaced by 2005. Today, the U.S. domestic product tanker fleet has only 21 out of a total of 48 tankers which are double hulled. Ten of these double hull tankers were built or rebuilt in the last seven years, and are OPA 90 compliant. Five of the remaining tankers are 17 years old, and the remaining six are 25 years old or older. These latter vessels will reach the end their useful lives before the 2015 deadline.[3] The replacement of Alaska crude carrier tonnage by the major energy companies involved in North Slope production is underway. The replacement of product carriers, the greater number of which are owned by independent operators, has hardly begun.

2. Alaska Crude Tankers.

General Dynamics, National Steel & Ship Building Company (NASSCO) now has orders for four double hull 185,000-dwt tankers for British Petroleum's Alaska crude oil service. Capacity will be approximately 1.3 million barrels at the design draft of 61.5 ft. Construction on the first ship has begun, with deliveries scheduled for 2004 through 2006. The BP holds options for two additional vessels. NASSCO has been selected by Exxon's Sea River Maritime to develop a new design for Exxon's Alaska crude oil service. Northrop Grumman, Avondale Shipyards (Avondale) is midway through a five-vessel series of Millennium Class, double hull 125,000-dwt tankers for use by Conoco Phillips. These vessels were originally contracted by Atlantic Richfield and have a capacity of approximately 1 million barrels at design draft. These vessels were the first crude carriers built for the Alaska trade in compliance with OPA 90 standards. Deliveries are scheduled to run through 2007.

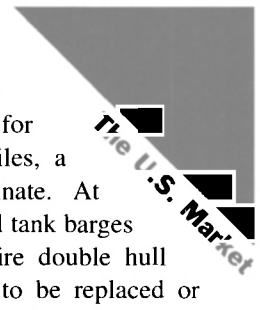
Taken together, these OPA 90 vessel contracts are likely to provide crude carrier tonnage sufficient to meet Alaska crude transportation needs for this decade, and thereafter for the balance of these vessels' useful lives.

3. Petroleum Product Tankers.

Apart from an initial four vessel group of OPA 90 product carrier rebuilds by AHL Shipping Company at Avondale, and a six-vessel series of vessels built by Newport News Shipbuilding & Dry Dock Company, no OPA 90 product vessel construction has been placed under contract. The Jones Act product carrier fleet is currently fully employed. OPA 90 requirements will remove four vessels from service in 2003, two vessels in 2004, two vessels in 2006, one vessel in 2009 and three vessels in 2008. By the end of 2005, OPA 90 will have reduced the carrying capacity of oceangoing U.S. product tankers by almost 25 percent.[4]

There are no OPA 90 product carriers under contract for construction, and no new orders have been placed since 1997. Product tanker construction is not proceeding at a pace which will be sufficient to meet OPA 90 replacement requirements.

Some of these transportation needs will be met by double hull tank barge units. Articulated tug barge units have increasingly become the medium of choice for movements of up to 500 miles, a market which they now dominate. At least 40 oceangoing single hull tank barges in operation today will require double hull additions, or they will have to be replaced or retired by 2005. Contracting for these barge vessels is also lagging.



Most current estimates arrive at figures of 12 to 14 new product tankers as necessary to meet OPA 90 needs by 2010. However, these tanker construction figures are based upon the assumption that U.S. products needs will be met with U.S. refinery products. These tanker needs will be reduced to the extent that these domestic product needs are met with imported products. This problem is addressed at a later section of this article under the heading "12. Import Substitution."

4. Oil Product Carriers for the U.S. Navy.

The U.S. Navy and its Military Sealift Command (MSC) need petroleum product tankers for use as fuel supply vessels, to both deliver products to foreign terminals and to provide at sea refueling. A 2002 paper authored by the Shipbuilders Council of America (SCA) states that the Military Sealift Committee of the

Circle 210 on Reader Service Card

Circle 256 on Reader Service Card

National Defense Transportation Association has determined that a minimum of 45 product tankers are needed to meet core commercial demands and military sealift requirements.[5] SCA figures show tanker availability falling below this minimum by the end of 2003, with the fleet five short by the end of 2005 and nine short by 2008. So, there is no capacity to meet unexpected Navy needs which might result from any of a number of causes as our international commitments expand. And, there is no plan for vessel replacement.

The existing fuel supply fleet was created under "build and charter" programs which involved private sector financing using the MarAd Title XI program. This exact financing structure is no longer possible because of congressionally imposed contracting restrictions, but it might be possible to make use of a similar financing structure. One commentator has suggested a joint MarAd/Department of Defense "National Defense Carrier" program to build a series of standard product carriers that can provide line service and vessel refueling.[6] These vessels would be sold to private sector owner-operators, with their employment assured through a law that would require U.S.- flag carriage of a portion of U.S. product imports. The vessels would be available to the government under employment agreements triggered by national emergencies.

In mid-May the House Armed Service Committee authorized the construction of up to five product tankers as a part of the Maritime Security Program (MSP) renewal. The MSP tanker plan provides for federal construction assistance of up to 75 percent of shipyard cost, subject to a $50 million per vessel cap. The tankers will be expected to trade in U.S. foreign commerce and will receive the yearly payment available to MSP participants.

This MSP five tanker program may or may not prove successful. However, MSC will need a much more robust tanker fleet than this to meet our nation's expanding overseas commitments quite apart from "war emergency" situations. Perhaps 16 to 20 military suitable product tankers are needed.

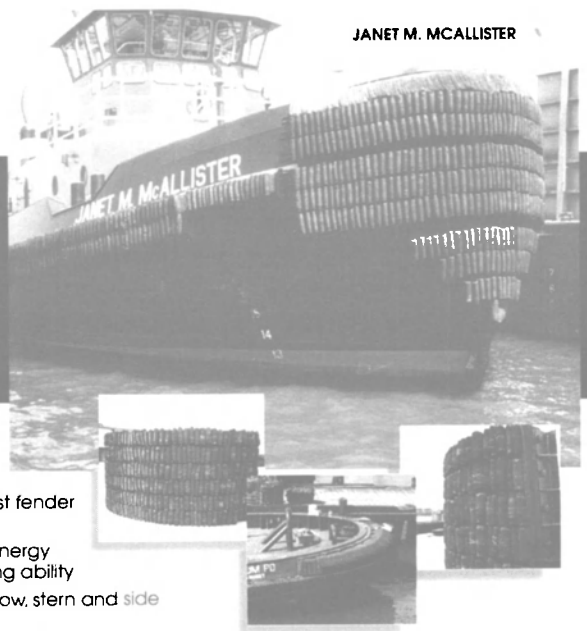
5. Shuttle Tankers & Oil Supply and Infrastructure Support Vessels.

Projected deep water drilling for oil and gas in the Gulf of Mexico is already supporting substantial new contracting. As exploration proceeds and production is achieved larger and faster support vessels will be needed. Where deep water petroleum production cannot be integrated into existing petroleum gathering pipelines, some number of floating petroleum production and storage vessels (MOPS) and shuttle tankers will be required.

The perceived need for the larger and faster service and supply vessels necessary to support these deep water drilling efforts has already resulted in record numbers of shipyard contracts.[7] There were more than 50 vessels contracted in 2002, and contracting appears to be continuing at least this rate during 2003. Some number of MOPS, and some number of associated shuttle tankers or articulated tug barge units (to transport the petroleum from the MOPS to shore-side

VIKING FENDER

Viking Enhanced Softloop Fender



When Push Comes To Shove, Have A Viking On Your Side!

- The softest, most forgiving ship assist fender on the market
- Designed for greater energy absorption and gripping ability
- Ideal for tractor tugs, bow, stern and side fenders
- Side hip fenders for tug and barge units
- Pier cell fenders

a division of Viking Marine Products, Inc.
1160 State Street • Perth Amboy, NJ 08861 USA
Tel: (732) 826-4552 fax: (732) 826-5533 www.vikingfender.com

Circle 334 on Reader Service Card

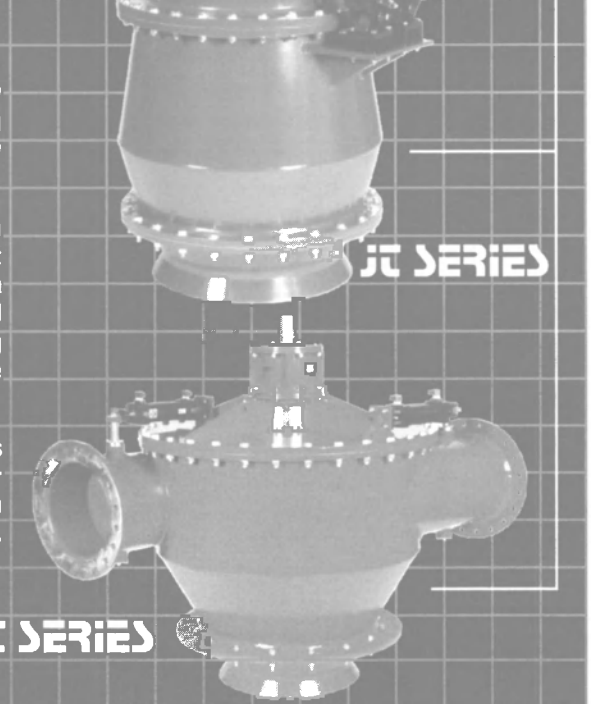
OmniTHRUSTER™ Marine Maneuvering and Propulsion Systems

TECHNICAL READOUT

PATENTED SYSTEM

- Kinetic Converter takes input shaft energy and produces usable hydraulic energy by the use of a mixed flow impeller.
- Steering Vanes continuously meter or proportion a percentage of the fluid flow to one or both sides of the vessel.
- Nozzles accelerate the mass of water creating a thrust force at the hull interface.
- Thrust Directors (optional) deflect the water flow forward or aft producing slow speed auxiliary propulsion.
- Electronic Control System controls the 360° thrust vector resultant from a fixed or variable speed prime mover rotating continuously in one direction.
- There are no rotating parts that have to be stopped or started as thrust direction and/or magnitude changes.

Mixed-Flow Impeller



30555 Solon Industrial Parkway • Cleveland, OH 44139
440 542-0200 www.omnithruster.com

Circle 307 on Reader Service Card

Market Opportunities in the U.S.
These two vessels illustrate some of the better vessel building opportunies in the U.S. right now. Above is M/V Grey Lady, a **fast ferry** to provide year-round service between Hyannis, Mass. and Nantucket Island. Built by Gladding-Hearn Shipbuilding for Hy-Line Cruises, the new all-aluminum ferry measures 144 ft. with a 35-ft. beam. To the right is the 127-ft. Ocean Reliance — the tug portion of an **ATB** — built by Manitowoc Company. It was the first of two tugs built at Manitowoc's Marinette Marine subsidiary. The tug is coupled with a 155,000-barrel double hull petroleum barge built at the company's Bay Shipbuilding facility.

refineries) will be required. While the MOPS may be of foreign construction, the shuttle tankers must be constructed in U.S. shipyards. There is talk of four or five MOPS, with perhaps two to four shuttle vessels for each MOPS. The timing for the environmental approvals and shipyard work necessary to put the MOPS and shuttle tankers in place remains partially uncertain. However, it seems clear that a substantial number of these shuttle tanker vessels will be built in U.S. shipyards during the current decade.

This could produce orders for as many as 16 to 20 shuttle vessels, perhaps more.

6. Tonnage for the Non-Contiguous Liner Trades.

The container and RoRo fleets of the established carriers serving Alaska, Hawaii and Puerto Rico are aged. While none of these trades is experiencing rapid growth, the involved vessels are expensive to operate and increasingly expensive to maintain. Replacement plans are well underway by one of the major carrier for Alaska. Saltchuck Resources (Saltchuck formerly TOTE) is replacing three Sun Shipbuilding & Dry Dock Company (SUN)-built RoRos vessels with two newly commissioned (600 trailers plus 220 auto) Orca-class RoRos designed and built at NASSCO. The vessels have a service speed in excess of 24 knots, and can be discharged and loaded in nine hours. The first of these vessels, the MV Midnight Sun, was the fist commercial dry cargo to be built in the U.S. in10 years. The vessel was delivered last month, in April 2003. The second vessel, the MV North Star, is to be christened on June 14, and will be delivered later this year.

Matson Navigation Company (Matson) is the predominant carrier in the Hawaiian trade. Some years ago it adopted a maintenance program designed to prolong the service lives of its vessels and so to postpone new construction. Five of the Matson container ships are now at least 30 years old. As the Hawaiian economy appeared to be returning to health in 2000, fleet replacements became a subject matter of discussion, only to be postponed by the damage to the Hawaiian tourism economy following September 11th. Matson is moving forward with Kvaerner Philadelphia Shipyard to take delivery on two new container vessels of a Kvaerner design. Kvaerner is obligated to build four vessels in the shipyard. One year ago there was talk that the Matson transaction would be a fleet replacement taking all four vessels (with two vessels firm and two under option). But this seems less certain now and might depend upon what Matson may expect from competing Hawaiian services.

The fleet serving Puerto Rico has been truly "antique." Two of the five Lancer class container vessels which were being used by Navieras de Puerto Rico (Navieras) were commissioned 1968, the others in 1969, 1970 and 1971. The two SUN-built RoRos used by Sea Star Line (Sea Star) first entered service in 1974. The "numbers" for new vessel tonnage have appeared substantial. But, overtonnaging in this trade (less than break-even rates and the resulting financial problems) have caused the operators to postpone replacements. The Navieras bankruptcy has been accompanied by a significant reduction in the overtonnaging. Once the Saltchuck and Matson vessels are placed in service, there might be three SUN-built RoRo vessels, and two SUN-built RoRo combination vessels, surplus to these carriers' needs. Might these be a satisfactory fit with the two SUN-built RoRos which Sea Star currently operates? Or perhaps they will find a home in a new U.S. East Coast "Short Sea" service designed to remove 53-ft. trailers from I-95 for transportation on a new "W-95"?

One year ago, the CSX Lines LLC rumored sale offered the most promising potential for vessel newbuildings open to speculation. What if an ambitious, well financed purchaser were to come forward? This might signal a program of replacements in all three of the noncontigious trades. Today the Carlyle Group acquisition has been completed. The Saltchuck replacement program will be complete later this year. One year ago it appeared that Matson would complete its fleet replacement program by purchasing two more container vessels, probably sister ships from Kvaerner. And, it appeared that competing U.S. carriers would be compelled to contract for new tonnage for the Alaska and Hawaii services. Today, the addition of at least some of this new tonnage appears much less certain.

The U.S. Market

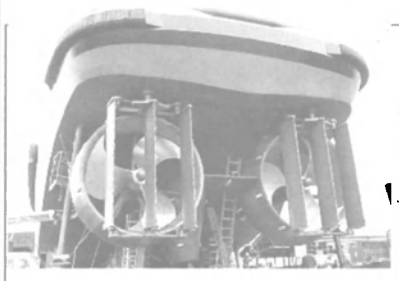
7. Coastwise "Short Sea" Trades.

Highway congestion on major sections of our Interstate Highway system, coupled with projections for the growth of U.S. commerce over the next decade and beyond seems finally to have brought some Washington attention to water alternatives for existing and projected highway and rail facilities.

Perhaps it is Interstate 95, which provides the critical highway infrastructure for the East Coast's megalopolis, and its population center "bypass" routes such as I-495, that present the most serious congestion problems. To date most of the attention to I-95 has focused on the sea containers coming into the U.S. at a location like Port Newark, and their movements up or down the Atlantic Coast by truck. However, the more important problem is with the purely domestic moves in 53-ft. trailers. It is the removal of these 53-ft. trailers which would do the most to alleviate congestion. These movements could initially be by RoRo barges or existing self propelled RoRo vessels on water routes roughly parallel to I - 95, a new "W-95." Either class of vessel should be able to make use of existing infrastructure and roadstead sites. New and more expensive RoRo designs would come later. But, moving these trailers by water is really the only financially viable solution.

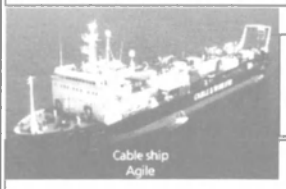
(Continued on page 58)

In Business Since 1972
MADE in CANADA
NautiCAN
Achieve **Top Performance** with
NautiCAN High Efficiency Nozzles with Pre-swirl Stators



Dunlap Towing new Tug Phyllis Dunlap, designed by Fisker-Andersen & Whalen, Inc., *recorded unprecedented ABS certified bollard pull of 167,600 lbs using NautiCAN Nozzles with Pre-Swirl Stators, NautiCAN Propellers and NautiCAN High Aspect ration Triple Rudders*

Western Titan—NautiCAN HE Nozzles with stators on Ulstein Z-drives for superior efficiency, towing speed and bollard pull, followed by pacific Titan and Gulf Titan



CIS Agile – shows remarkable 2.0 knots increase in Speed and Efficiency after installing NautiCAN High Efficiency Nozzles.

Since 1972, **NautiCAN** has been developing leading edge innovations in Hydrodynamics, Naval Architecture and Computing Today we have the highest efficiency technology to suit your needs, whether you need to save on fuel costs, increase speed or increase manoeuvrability

NautiCAN Research & Development Ltd.
Phone: 604-921-1920 Fax: 604-921-1925
email: josip@nautican.com www.nautican.com

Circle 300 on Reader Service Card

Littoral Combat Ship Leads the Charge

MR/EN had the opportunity to speak with Admiral ***Robert Natter****, Commander, Atlantic Fleet, Fleet Forces Command, who is not only responsible for one of the largest fleet of Navy ships in the world, but directs the effort to design the Navy of the future, including development of the Littoral Combat Ship (LCS).*

The U.S. Atlantic Fleet is a naval force comprised of approximately 183 ships, 1,200 aircraft and 112,000 sailors. Admiral **Robert Natter**, Commander, Atlantic Fleet, Fleet Forces Command, is the man at the top responsible for ensuring these forces are ready to successfully carry out the mission as dictated by the President. As if that is not enough, Adm. Natter is leading the effort to develop the weapons and systems that will serve to keep the Navy productive, efficient and safe well into this century.

Littoral Combat Ship (LCS)

The Navy plans to spend nearly $4 billion through fiscal year 2009 to purchase nine ships that will support a variety of missions, including anti-submarine and anti-surface warfare and mine warfare. Perhaps the most exciting new project under development now is the effort to design the new class LCS. The LCS is the culmination of years of study, and embodies many of the principles the military seeks to advance in the next-generation of assets: the network-centric approach which allows all units, from troops on the ground to aircraft in the air to vessels at sea to be "plugged in" to each other. The LCS, regardless of a final form, will be a smaller, faster, multi-operation capable vessel able to operate closer to shore. In fact, Admiral Natter points to the recent war in Iraq as validation of the LCS concept. (The war in Iraq) confirmed the very positive investment in long-range, time-sensitive weapon strike (tomahawk), and it also confirmed the value of high speed vessels able to operate in confined and shallow waters, supporting special operations, Adm. Natter said.

Fleet Size

The number of ships in the U.S. Navy is continually debated, an argument which is laced liberally with political rhetoric and differing estimates — from funding to fleet size — from the military and civilian sides. While this may make it difficult for outsiders to ascertain the true number of ships needed for the nation's defense, one thing that is indisputable, however, is that the U.S. Navy is in dire need of increasing its number of newbuilds now, with the cumulative fleet age and size shrinking appreciably every year.

Louisiana Sen. **Mary Landrieu** (D-La.), recently introduced legislation designed to increase the number of naval ships. The Landrieu bill makes it the policy of the United States to return to a Navy of a least 375 ships — the amount recommended by the Chief of Naval Operations. It is reasoned that the build up would increase port security and secure shipyard jobs throughout the country. "With a current force structure well below Department of Defense requirements, our current policy is unsustainable," said Sen. Landrieu, a member of the Senate Shipbuilding Caucus. "Our Naval forces play a vital role in securing our ports and contribute to our operations in Iraq and Afghanistan. These bases at sea project rapid and decisive power anywhere in the world." The Navy currently has 301 ships in the fleet, nearly half the number of ships in 1987. It is safe to say, however, that the time to rebuild naval forces is now, and with the current programs to build the DD(X) and LCS families, as well as the soon to be introduced carrier design, it appears this is the course being taken.

"From my perspective, the issue centers on investing in new tech and having sufficient force levels to take care of any scenario," Adm. Natter said. He added, though, that force structure should not be based on thought of a single scenario. Adm. Natter contends that it is much better to invest in a capability, and having the sufficient force size and structure. The change currently undertaken by the Navy should not be underestimated, and is historic in nature, as the core essence of the fleet changes to meet emerging and future demands. Adm. Natter, who counts Sail to Steam, Iron to Wood, Weapons with Revolving Turrets and Nuclear Power as a handful of major turning points for the U.S. Navy since its inception, said that new technologies, particularly the continued integration of electric drives in ships, will speed the evolution of the fleet in the coming decade. While the ships and military technologies rapidly evolve, Adm. Natter is secure in the role of the Navy as a preeminent force of the U.S. "The relevance of naval power today is more important than it has ever been in the history of war," he said. We have unimpeded maneuvering space, and the new weapons and technologies allow for much longer range and greater accuracy, allowing us to reach anywhere, anytime.

Navy Notes

Incat Ship Takes Award Honors

Incat won the award for the Most Significant Newbuild "Fast Ferry, at the Cruise & Ferry exhibition in London. What does a ferry award have to do with Navy ships? Plenty.

The award was presented to builders Incat and owners Bollinger/Incat USA for the 321-ft. (98-m) U.S. Army Theater Support Vessel TSV-1X Spearhead. In November 2002 Incat delivered Spearhead — which is considered surrogate technology for the new class of LCS. Leaving Hobart soon after delivery, Spearhead headed directly to the Persian Gulf to be part of the major military build-up in the region. "It is thanks to military visionaries such as the U.S. Army's Program Executive Office for Combat Support and Combat Service Support (PEO CS &CSS), **Col. Genaro Dellarocco**, Project Manager - Force Projection, that Spearhead has been put into the fight as seen throughout the world following recent events in the Persian Gulf" said Incat Chairman Robert Clifford.

USMR Joins Lockheed Martin LCS Team

The Lockheed Martin LCS Team welcomed United States Marine Repair (USMR) to its group of core teammates supporting the Sea Blade LCS solution. USMR provides ship repair and logistics services experience to the team. Potential long-term roles for the company within the Sea Blade solution include fleet maintenance, training, module fabrication, ship outfitting and porting. Other team members include: Donald L. Blount and Associates, FastShip, Fincantieri and NAVATEK; Blohm + Voss; Angle, Inc., ABS, BBN Technologies, Charters Technical Services, DRS Technologies, IZAR and MA&D.

Raytheon Leads LCS Team

Raytheon is leading a consortium in a bid for the preliminary design of the U.S. Navy's Littoral Combat Ship (LCS). "Team LCS", unveiled its concept for a fast, agile, focused mission ship "seaframe" enabled by an assortment of advanced unmanned vehicles and aviation assets to counter littoral asymmetric threats.

A partnership of Raytheon Integrated Defense Systems and John J. McMullen Associates Inc. (JJMA) together with other contributing companies as the Sea Specter team successfully participated in the Focused Mission Ship (FMS) Concept Study with JJMA as lead. The pre-planned transition to Raytheon as lead is now complete. The team's performance on the FMS analysis and concept design presents valuable intelligence, which will be leveraged as Team LCS performs the preliminary design phase.

Serving as the innovator of a fully integrated LCS solution, Raytheon Integrated Defense Systems will lead mission analysis, systems architecture, ship systems integration as well as leverage proven processes into the consortium.

Other team members include: Umoe Mandal's innovative, advanced SES hull design and manufacturing processes; Goodrich's composite design and fabrication; and Atlantic Marine's streamlined and agile benefits of a mid tier shipyard.

NASSCO
THE SHIPYARD OF CHOICE

Offering an Unsurpassed Portfolio of Commercial Ship Designs

For Today

TOTE Trailerships

NASSCO has constructed two high-speed, diesel-electric, roll-on/roll-off trailerships for Totem Ocean Trailer Express, Inc. These ships are specially designed for the rigors of Alaskan service and a quick turnaround, and incorporate the latest in environmental safety and ship control systems.

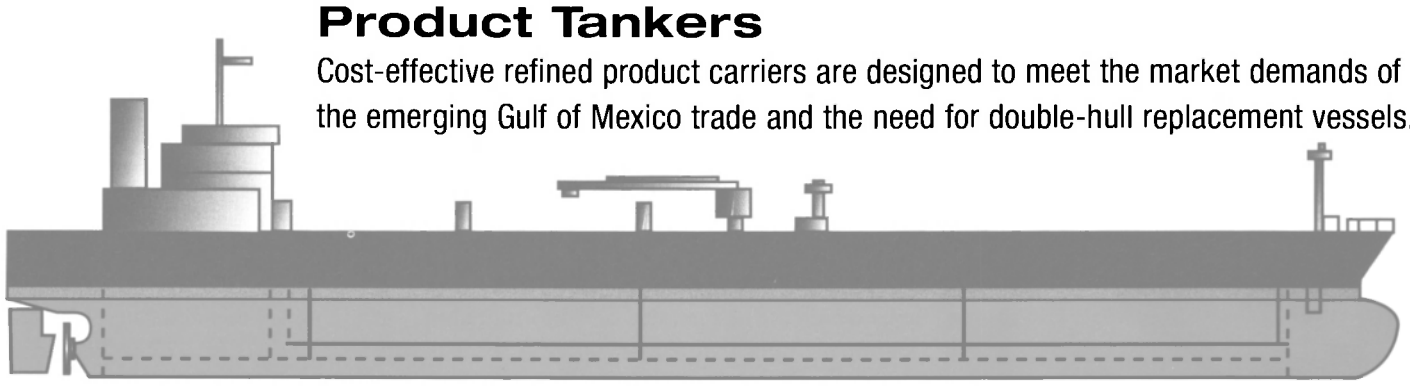
BP Tankers

NASSCO is building four BP tankers for the shipment of crude oil from Alaska to U.S. West Coast refineries. These environmentally safe, double-hull, diesel-electric tankers feature the latest navigation, machinery and cargo-control technologies.

For Tomorrow

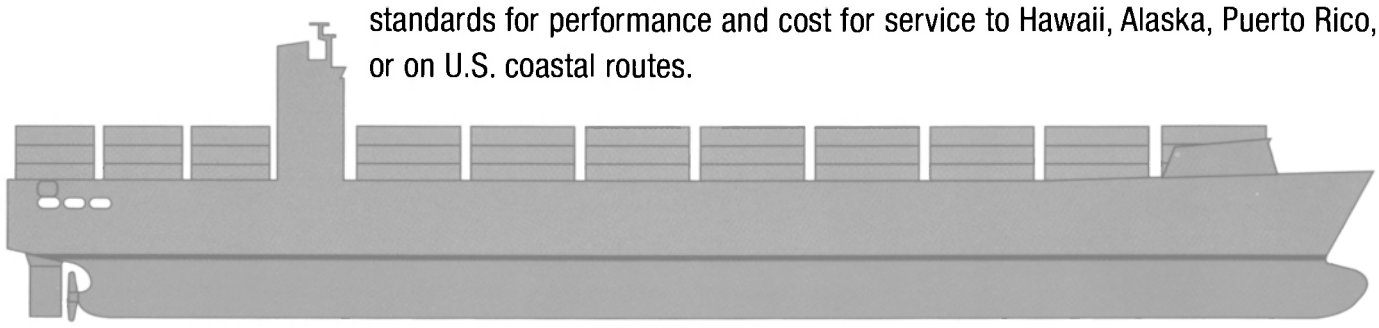
Product Tankers

Cost-effective refined product carriers are designed to meet the market demands of the emerging Gulf of Mexico trade and the need for double-hull replacement vessels.



Containerships

Producible, affordable, and flexible hatchcoverless containerships will set new standards for performance and cost for service to Hawaii, Alaska, Puerto Rico, or on U.S. coastal routes.



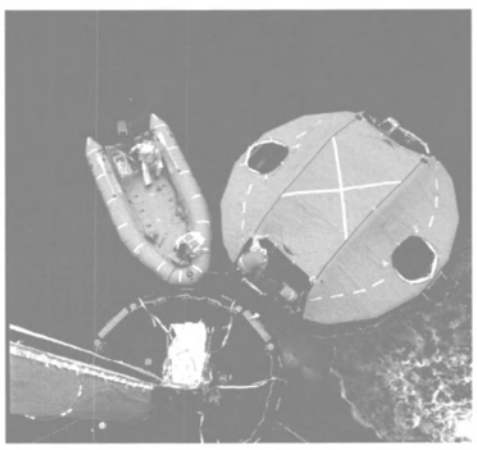
THE SHIPYARD OF CHOICE FOR LOW-COST SOLUTIONS IN THE NEW ERA OF COMMERCIAL SHIPPING

NATIONAL STEEL AND SHIPBUILDING COMPANY
A GENERAL DYNAMICS COMPANY
www.nassco.com

Circle 299 on Reader Service Card

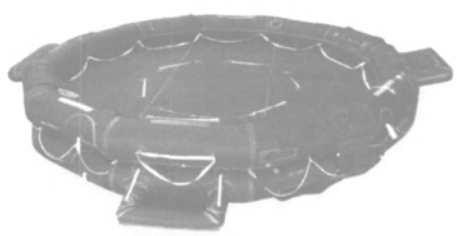
THE ONLY EVACUATION SYSTEMS THAT ARE US COAST GUARD APPROVED.

Evacuation Slide System.
Designed specifically for Low Freeboard Vessels, it is a combination slide and platform. It provides speedy evacuation for all passengers - young. old and physically challenged.
US Coast Guard Approved.



Evacuation Chute System.
The most efficient, easy-to-use, flexible, and cost-effective marine evacuation system available in the world. It evacuates passengers and crew in the shortest possible time.

Manufactured to meet or exceed all SOLAS requirements. US Coast Guard Approved



We manufacture the only single 100 person Reversible Inflatable Platform built in North America
These sturdy platforms are designed for passenger carrying vessels operating in protected waters. Fully reversible - it offers instant boarding, which ever way it inflates. Also available in 10, 25 and 50 person sizes.

ZODIAC
DBC
101-3760 Jacombs Road, Richmond
British Columbia, Canada V6V 1Y6
Ph. (604) 278-3221 Fx. (604) 278-7812
1-800-931-3221
sales@zodiac.com
www.dbcmarine.com

Circle 35 on Reader Service Card

Carnival Orders $500M Princess Ship

Since closing out the merger between P&O Princess Cruises and Carnival Corp. the parent company announced that its newest subsidiary has signed a contract for a new 116,000-ton cruise ship. The vessel, which will be a sister to Caribbean Princess, will be built at Fincantieri's Monfalcone yard. Built at an approximate all-in cost of $500 million, the new vessel is expected to be delivered in May 2006. The "new order" actually simply represents the switching of a contract from a sister company. Carnival has reduced the number of Holland America's "Vista-class" vessels from five to four. The company has also stretched out the delivery of three cruise ships being constructed at Italy's Fincantieri shipyard. The vessels with adjusted deliveries include: Carnival Cruise Lines' Carnival Valor - delivery adjusted from Sept. 2004 to Dec. 2004; Cunard Line's Queen Victoria — delivery adjusted from Jan. 2005 to March 2005; and Holland America Line's fourth "Vista-class" vessel — delivery adjusted from Oct. 2005 to Jan. 2006. This realigned newbuilding schedule further demonstrates Carnival's flexibility, allowing it to maximize its newbuilding program especially when it encompasses multiple companies building ships at the same yard.

Carnival Newbuild Schedule

Brand	Ship Name	Service	Capacity	Shipyard
Costa	Costa Mediterranea	June 2003	2,114	KMY
Princess	Island Princess	July 2003	1,970	Chantiers
Carnival	Carnival Glory	July 2003	2,974	Fincantieri
HAL	Oosterdam	Aug. 2003	1,848	Fincantieri
Costa	Costa Fortuna	Dec. 2003	2,720	Fincantieri
Cunard	Queen Mary 2	Jan. 2004	2,620	Chantiers
Carnival	Carnival Miracle	March 2004	2,124	KMY
Princess	Diamond Princess	March 2004	2,670	MHI
Princess	Caribbean Princess	April 2004	3,110	Fincantieri
HAL	Westerdam	May 2004	1,848	Fincantieri
Princess	Sapphire Princess	June 2004	2,670	MHI
Costa	Costa Magica	Nov. 2004	2,720	Fincantieri
Carnival	Carnival Valor	Dec. 2004	2,974	Fincantieri
Cunard	Queen Victoria	April 2005	1,968	Fincantieri
Carnival	Carnival Liberty	Aug. 2005	2,974	Fincantieri
HAL	Unnamed	Feb. 2006	1,848	Fincantieri
Princess	Unnamed	June 2006	3,110	Fincantieri

Total on order = 17 Vessels 42,262 Lower Berths

Rodriquez Is Ahead With TMV 84

Subsequent to extensive sea trials, the TMV 84 Ramon Llull was delivered to Spanish shipowner Balearia Eurolines Maritimes from Rodriquez Cantieri Navali's Messina yard in Sicily — two weeks ahead of schedule. It is fitting that the vessel, which will operate on the Barcelona to Menorca route, is named after 13th Century philosopher **Ramon Llull**, who was born in Palma de Mallorca, made the short trip to the Ballearic Island where the vessel will operate. The sea trials, which encompassed more than three weeks, concluded on May 5, 2003, with positive results; the vessel, which can carry up to 330 tons dwt, surpassed speeds of 40 knots. Ramon Llull can hold up to 462 passengers in both tourist and first class, and holds a garage that is equipped with hydraulically hoistable ramps for 56 cars. Alternatively, the vessel can hold 22 cars with 110 linear truck lane m. Comprised of aluminum, the vessel's power is provided by four MAN B&W 18VP185 diesels coupled to a dedicated Lips waterjet at 14,800 kW.

Circle 77 on Reader Service Card

Main Particulars - Aquastrada

Length, (o.a.)	273 ft. (83.3 m)
Beam	44 ft. (13.5 m)
Draft, (loaded)	5 ft. (1.7 m)
Engines	4 x MAN B&W @ 3,700 kW
Propulsion	2 x Lips
Gearboxes	4x Reintjes
Ride control system	Rodriquez Marine Systems
Speed, (max.)	39
Fuel consumption	3,084 kg/h

UV Disinfection to Treat Ballast Water on Coral Princess

UV disinfection specialist Aquionics Inc., partnered with Hyde Marine, to deliver its first joint ballast water treatment system in April. The new system, to be installed on Princess Cruise's ship, the Coral Princess, is designed to control the spread of non-indigenous invasive species in ballast water. This process reportedly should kill over 95 percent of the organisms that pass through the system.

Circle 53 on Reader Service Card

Regal Cruises Cease Operations

Following the placement of a lien by Motor Services Hugo Stamp for unpaid bills for services rendered, Regal Cruises ceased all operations on April 28, 2003, canceling cruises on its Regal Empress. The company is currently gathering information to allow it to file for an Assignment for the Benefit of Creditors in State Court shortly. This would seek to accomplish an equitable distribution of the assets of Regal Enterprises, Inc. to its creditors. Creditors who provided goods and services to the Regal Empress may participate in. The company held an auction on May 16 with a minimum bid of $2m, and garnered no offers for the 1953-built vessel. A second auction on May 23 reportedly result in a sale for $1.75m by Celebration World Cruises.

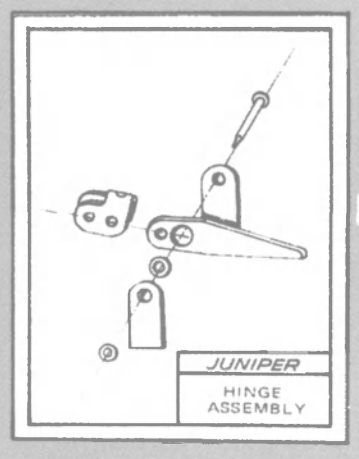
New Cat Headed For Tasmania

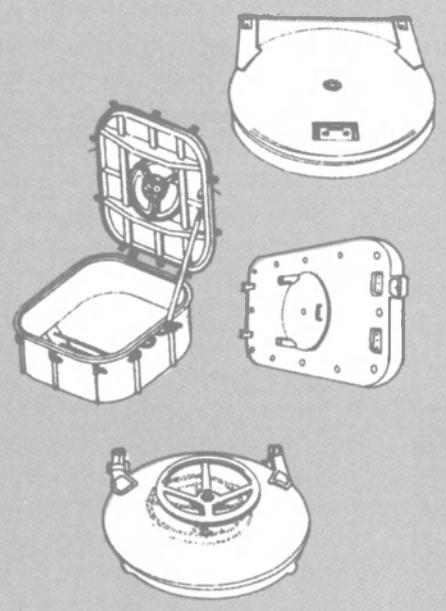
An eco-friendly tourist catamaran by Crowther Design and builder RDM is headed for Tasmania's Gordon River. Designed and built for the vessel's operator, Gordon River Cruises, it is their second vessel from Crowther and RDM. The new vessel is 32-m, with a 9-m beam and a passenger capacity of 220. The vessel's unique design features a curved bow, deck ends and transom, and a Portuguese bridge. The vessel is powered by two MTU 16V 2000 engines coupled to ZF 2250 gearboxes, which drive five-bladed propellers. With a range of 250 n.m. at 25 knots and a top speed of 30 knots, the vessel's (as with all Crowther vessels on the Gordon River) hull has been designed and tested so as to meet the stringent low wash National Parks and Wildlife requirement for this World Heritage listed river.

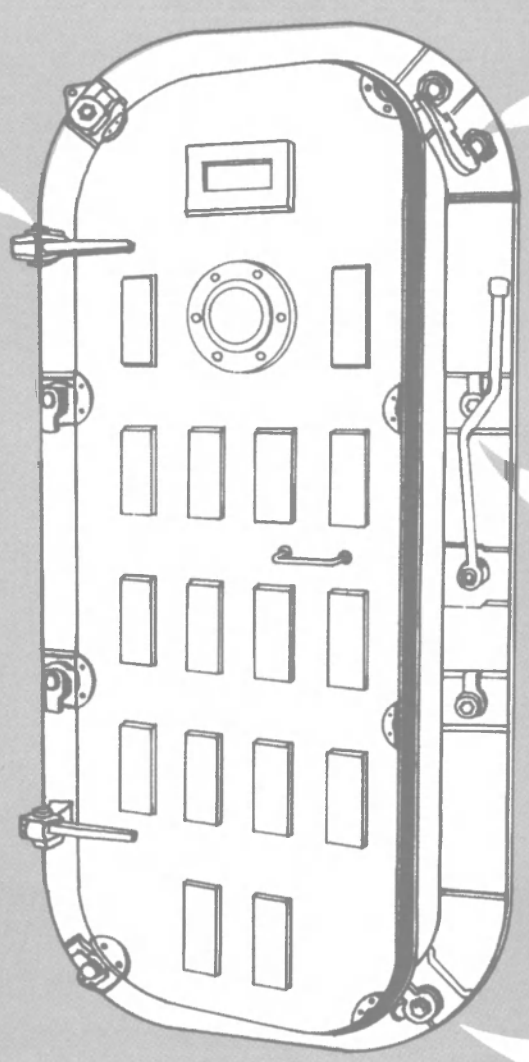
Circle 196 on Reader Service Card

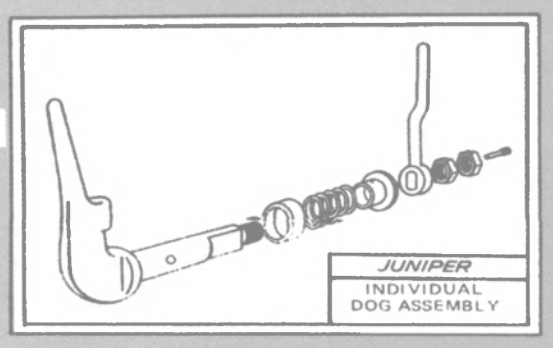
JUNIPER

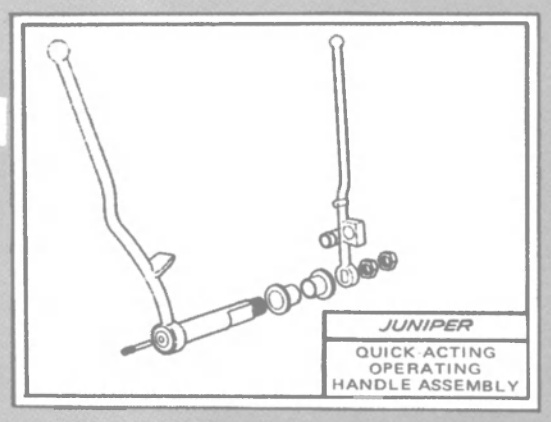
loves it when a plan comes together...

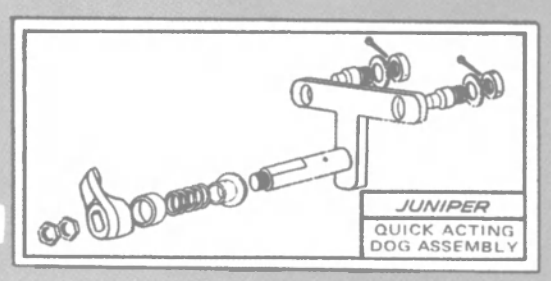












Largest inventory in the country –

From individual components to completely assembled Navy Standard doors, hatches and scuttles.

■ dogging assemblies ■ hinge assemblies ■ drop bolt assemblies ■ bushings
■ springs ■ packing plungers ■ studs ■ handwheels ■ spindles
■ ballistic parts ■ wedges ■ gaskets ■ con rods & collars

JUNIPER INDUSTRIES INC.

72-15 Metropolitan Ave., Middle Village, N.Y. 11379
Telephone: 800-221-4664 Fax: 718-326-3786
www.juniperind.com E-mail: marinesales@juniperind.com

Circle 274 on Reader Service Card

(Continued from page 53)

In November 2002, MarAd sponsored a "Short Sea Shipping Conference" in New York City. There were presentations on congestion, and on the needed services and equipment. But, and it surprised no one, MarAd financing issues were not addressed. Title XI was clearly "off limits" by OMB order, and Administrator Schubert's CCF proposals which were an intended source of capital for these Short Sea projects were barely mentioned.

But "How are these projects to be funded?" Where is the equity to be found, or how is it to be accumulated? Will debt financing matched to vessel useful lives be available? Or will the debt be subject to repayment over some shorter period such as one-half of a vessel's life? Significant developments will depend upon MarAd financing assistance, and MarAd financing assistance will require OMB and DOT approval and support. But, as I have already noted, OMB has continued to oppose the use of these MarAd programs, and Coastwise shipping is not even mentioned in the DOT Draft Strategic Plan for FY2003-2008.

This should be a source of significant shipbuilding opportunities by mid-decade and thereafter. However, it is difficult to assign any newbuildings figures for these Coastwise trades in the face of OMB opposition and DOT indifference.

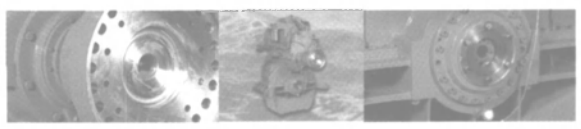
8. Passenger and RoRo/Passenger Ferries.

While ferry transport was largely abandoned after WWII, selected urban locations like New York and Boston have seen new ferry services successfully introduced. In New York City non-subsidized ferry operators are providing more than 60,000 passenger trips per day between multiple locations in northen New Jersey and Manhattan. And, New York City has announced plans for the development of a regional passenger ferry transportation plan and the construction of what The New York Times has described as a "fleet" of new ferry terminals.

Ferry services provide significant contributions to regional and local transportation networks across the entire country. The Washington State Ferry System, the largest volume passenger and vehicle system in the nation, meets essential transportation needs and provides complementary services which have themselves become a major tourist attraction. Ferries have been in operation on San Francisco Bay for more than 150 years, with more than 30 major ferry routes in service at one time or another. The past three decades have seen the expansion of various cross Bay services to provide commuting alternatives to the bridges and the Bay Area Rapid Transit (BART) system. A San Francisco Bay Area Water Transportation Authority has been established to plan and manage an ambitious expansion of high speed ferry service for the entire Bay Area.

New ventures are underway for Alaska, for the Seattle region, and for various Coastal and U.S. Great Lakes routes. U.S. shipyards are now proven builders of stable catamaran platforms with vessel speeds which range between 35 and 50 knots, and sizes appropriate to the services in which the vessels are to be employed. New, low wake designs are being proven effective. These and other developments open new opportunities for ferry transportation. From

Power, reliability and control



ZF offers heavy duty products, finely engineered to meet these demands.

The gearbox program covers powers from 10 to 10,000hp with many PTO options tailored to your needs. And with the security of worldwide support from the ZF Group, peace of mind is guaranteed.

Marine Propulsion Systems
ZF Industries Inc.
ZF Marine Gulf Coast Office
Tel: 504 443-0501 Fax: 504 443-0504
Email: info.zfmarineneworleans@zf.com
www.ZF-Marine.com

Driveline and Chassis Technology

Circle 346 on Reader Service Card

Need a Lift?

If you're suffering from those load-towing blues, we have just what you need. Allied Systems Company now manufactures **LANTEC Winches**. With three winch models and four drive models to choose from, chances are, you'll find the machine suited to your application. Fast, safe, reliable—**LANTEC Winches** are leaders in their field.

To find out more, write, call or email:

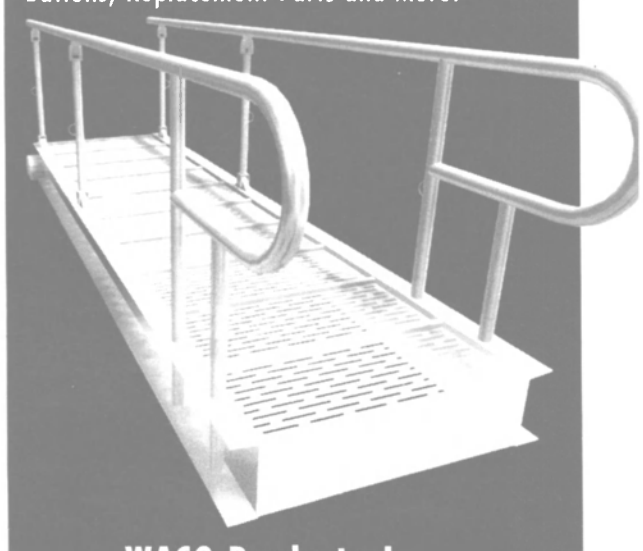
Allied Systems Company
2300 Oregon St.
Sherwood, OR 97140, USA
Phone: 503.625.2560
Fax: 503.625.7269
Email: marketing@alliedsystems.com
Website: http://www.alliedsystems.com

Manufactured under license from LANTEC, a division of IMAC Design Group Ltd.

Circle 206 on Reader Service Card

WACO Products, Inc.

Your Complete Marine Product Supplier For:
Gangways, Accommodation Ladders, Inclined, Vertical and Side Ladders, Treads, Grating, Battens, Replacement Parts and More.



WACO Products, Inc.
1330 Knecht Avenue - Baltimore, MD 21229
Phone: 410-242-1000 - Fax: 410-247-4890
Email: sales@wacoproducts.com - www.wacoproducts.com

Circle 339 on Reader Service Card

every standpoint, from out-of-pocket costs to the taxpayer, to protection of the environment, the logic favoring the addition of water transportation resources is compelling.

Two years ago, one West Coast commentator estimated that "USA annual fast ferry newbuild contracted production volume by 2004 should be around the $250 million level and . . . is likely to grow by $50 million or so annually thereafter." Current contracting falls very far short of this. Major questions remains as to capacity needs and as to how are these projects are to be funded.

For a number of shipyard transactions which are under contract or under discussion with private sector purchasers, the availability of MARAD Title XI financing guarantees appear to be an essential element.

9. Import Substitution.

In my discussion above in *3. Petroleum Product Tankers*, I noted that these newbuilding requirements might be reduced to the extent that U.S. product needs are met by imports of refined products on foreign built, non-U.S. flag vessels.

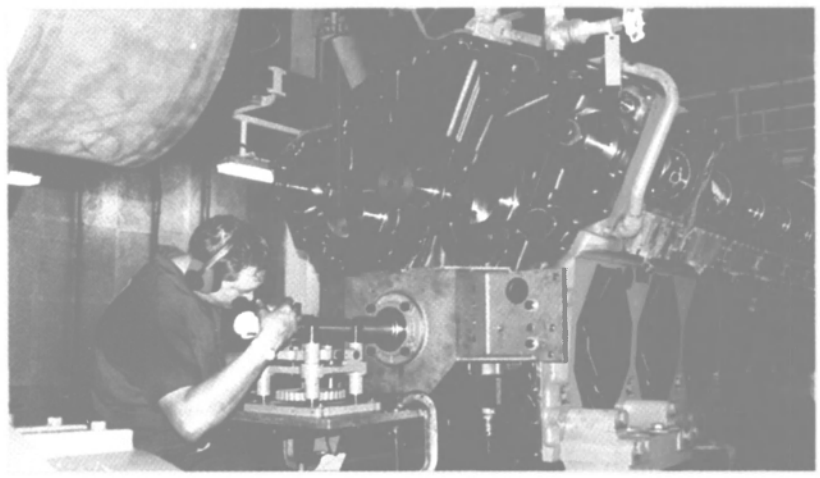
The risks of this "import substitution" are substantial. Current product tanker costs (shipyard prices plus the costs of financing) are sufficiently high that the cost of domestic petroleum products delivered to the New England states (cost of product plus cost of transportation) may exceed the cost of imported petroleum product. See, Interview with Maritime Administrator **William G. Schubert**, "U.S. Market: Foundation for the Future," *Maritime Reporter & Engineering News*, September 2002.

On this point, vessel financing costs can become of critical importance. During the early years of a tanker's employment, commercial financing will result in a tanker daily rate capital component more than twice that of the same tanker financed with MARAD guarantees and capital construction fund assistance. Currently quoted shipyard product tanker pricing is in the $80 million to $90 million range. Given these shipyard prices, there is the likelihood of significant import substitution unless the MARAD financing programs are available.

The substitution of foreign built for U.S. built vessels would result in lost profits and wages across significant sectors of the U.S. economy. On average, every $1 million paid for commercial ship construction in a U.S. yard, results in an additional $ 2.8 million of economic activity outside the yard. A $100 million tanker contract will generate a total of approximately $380 million in additional taxable domestic gross national product.[8] So this is more than just a shipbuilder problem.

CRANKSHAFT GRINDING

While Installed in Engine



- CRANKPIN AND MAIN JOURNAL REFURBISHING While crankshaft is in engine
- LINE BORING OF MAIN BEARING POCKETS Laser and Optical Alignment
- ALL TYPES OF ON-BOARD MACHINING Cylinder boring, engine top decks, horizontal joints, couplings, journals
- METALSTITCH® Repair of cracked or broken cast iron engine blocks

IN-PLACE MACHINING COMPANY

USA: 800-833-3575 International: 414-562-2000 FAX: 414-265-1000

24 HOUR EMERGENCY SERVICE . day or night, 365 days a year

email: help@inplace.com Website: www.inplace.com

Circle 269 on Reader Service Card

#1 in Marine Sewage Treatment

The Owens KLEEN TANK is self contained and delivered to site ready for operation. What makes th KLEEN TANK so versatile is its ability to fit in small, normally hard to reach areas, while still having the capability of handling large volumes of waste. Easy maintenance, long lasting reliability and optimum effluent compliance make the KLEEN TANK "The Educated Choice" for your marine sanitation.

- constructed of carbon or stainless steel
- corrosion protected
- coal tar epoxy inside
- 3-part polyurethane paint system
- stainless steel weir basket - self cleaning
- regenerative blower TEFC-quiet
- float controlled effluent pump
- patented floating skimmer
- easy access covers
- easy access/non corrosive valve controls
- low maintenance
- disinfection system
- alarm system
- nationwide single source supplier
- unlimited crew sizes
- USCG Certified

OWENS

KLEEN TANK™

Owens Mfg. & Specialty Co., Inc.

1.800.639.2744 • 337.856.1892 • Fax 337.856.6332

www.owenskleentank.com

Circle 309 on Reader Service Card

We provide our customers with...

- Timely & cost effective topside & offshore repairs
- Turnkey project solutions
- Precise machine shop services

...repairs & new installations made from the finest materials and components, produced with an unsurpassed dedication to craftsmanship.

OffshoreINLAND MARINE & OILFIELD SERVICES

www.offshoreinland.com

7611 Lake Road South. Building 500 • Mobile. AL 36605

Tel 251 443 5550 • Fax 251 443 5551 • Toll free 866 443 5550

Circle 306 on Reader Service Card

Part III. Financing Problems & Solutions.

Over the course of the entire 20th Century, our maritime sector has only infrequently been successful in attracting sufficient private sector financing to meet national needs without some form of federal program assistance. History confirms that standing alone, maritime transportation projects have generally not provided returns which have been adequate to attract these investments from private sector U.S. capital sources.

The Merchant Marine Acts of 1920, 1936 and 1970, all bear witness to this history.

The MarAd programs available under the Merchant Marine Act of 1970 and the Federal Ship Financing Act of 1972 were intended to address this problem. These programs enable qualified U.S. citizen operators: (i) to accumulate the equity for fleet replacement on a tax deferred basis over a period of up to 25 years, and (ii) to access private sector commercial vessel financing with terms of up to 25 years, matched to vessel service lives.

Commercial asset-based vessel financing, when available, will generally be limited to no more 80 percent of vessel cost, with a term of no more than 10 to12 years, or less than one-half the life of most of these vessel assets, with interest rates at best in the six percent to 6.5 percent range.

Title XI guarantees allow 87.5 percent of vessel cost to be financed over 25 years with current rates in the 4.5 percent range. Commercial financing can be expected to more than double annual debt service requirements in the early transaction years.

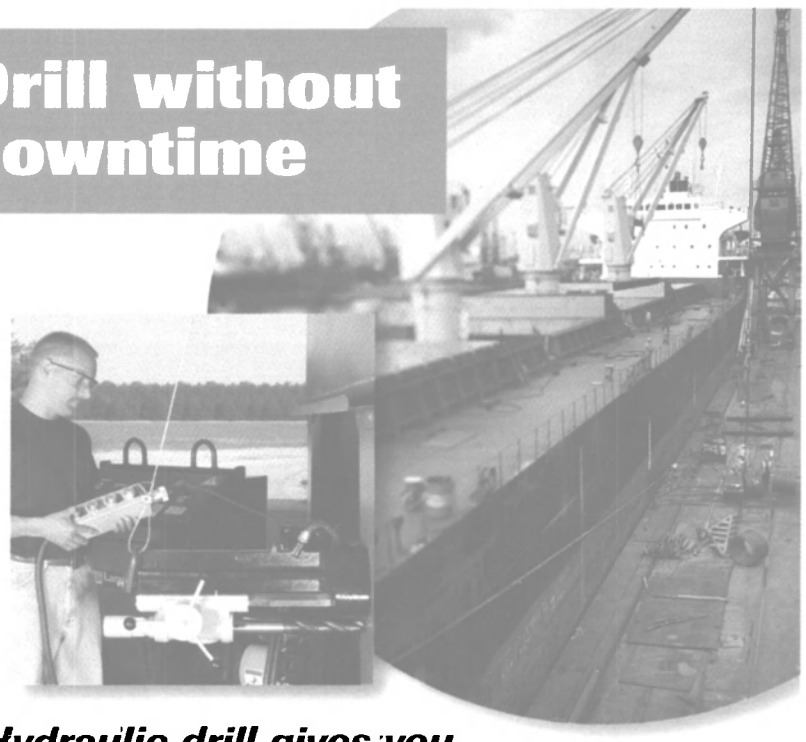
This will increase the cost for the transportation service being provided — be it a time charter rate to an energy company, or a ferry fare for a work-bound commuter — by the same multiple.

Access to these programs is currently being discouraged by an OMB that: (1) refuses to allow Congressional consideration of a change in the CCF program that would allow these U. S. operators to use the $1.4 billion of their own already set aside monies to contract for the OPA 90 tankers, passenger ferries and other vessels to be engaged in Coastwise services; and (2) is acting to discontinue the financing guarantee "public-private partnership" program for accessing long term private sector financing matched to vessel lives, because this will involve an alleged example of "corporate welfare."

Acting in the context of this rather grim background, and in the face of OMB's expressed opposition, the Shipbuilder's Council of America (SCA) has recently lead two successful Title XI industry efforts. First, it gained Congressional and Administration approval for a $25 million Title XI appropriation for FY 2003 as a part of the Iraq war supplemental appropriation.

Second, it obtained House Armed Services Committee approval for $30 million of Title XI authorization for FY 2004. One respected maritime commentator has described the first SCA success as a "miracle" for the shipbuilding industry. But, whether of not a "miracle," this was by any standard an impor-

Drill without downtime



Hydraulic drill gives you power and portability

Anywhere you need reliable, heavy-duty drilling, count on Lamina. Our powerful hydraulic drill makes a 2-inch hole in seconds, yet is compact and portable... use it in drydock, or even at sea.

Drill or tap in any direction – up, down, or sideways. It's rugged and easy to operate, needs far less maintenance than electric drill equipment, and even works underwater. Some have been in use for 30 years, and our latest model practically eliminates downtime.

Lamina drills meet all applicable standards, in North America and Europe. Five heads are available, with quick-change tools for a range of tasks. Call Anchor Lamina today... and ask about our convenient rent-to-own program.

Anchor Lamina Inc.
Lamina Hydraulics

Call toll-free: 1-800-6-LAMINA;
or visit our website: *www.anchorlamina.com*

Circle 208 on Reader Service Card

VIKING
LIFE-SAVING EQUIPMENT

VIKING Davit-Launched Liferaft

Available in 12, 16, 20, 25 & 35 person capacities
Automatically self-righting liferafts in 25 & 37/39 person capacities

VIKING Marine Evacuation Chute

- evacuation chute and 101 person automatically self-righting liferafts
- EC Type-Examination Certificate Available
- features automatic lowering of liferafts
- ensures controlled descent
- evacuates up to 353 person in less than 30 minutes
- USCG Approved

VIKING LIFE-SAVING EQUIPMENT (AMERICA) INC.
1625 N Miami Avenue · Miami FL 33136 · Tel (305) 374-5115 · Fax (305) 374-1535
http://www.viking-life.com • e-mail: usasales@viking-life.com

Circle 335 on Reader Service Card

tant Title XI program rescue, benefitting MARAD as well as the shipbuilding and ship operating communities.

These SCA lead successes demonstrate both the Congressional support for the Title XI program, and what a determined private sector effort can sometimes accomplish. However, we should not only be applauding these SCA lead successes. We should be working with SCA and with one another to pursue this and other maritime sector goals. Perhaps an SCA led effort can achieve a rescue for Maritime Administrator Schubert's now beleaguered CCF proposals for financing vessels in U.S. Coastwise trades?

Part IV. Concluding Thoughts

There are current domestic shipbuilding opportunities for fleet replacement and expanded needs for our OPA 90 and other coastwise and Gulf of Mexico energy related services; fleet replacements for the noncontagious services; and vessels for expanding ferry needs in passenger and passenger/vehicle services in coastwise, Great Lakes and inland trades. These opportunities will continue and expand as they become more clearly defined during the course of the decade. What does this mean for U.S. shipbuilding? In reviewing the domestic transportation scene we can probably agree upon the areas of need, and upon the vessel design and shipyard construction solutions. The problem that remains is that of attracting the equity capital and long term debt financing necessary to fund these projects on a basis which is sufficiently economical to allow project success. In the end, U. S. shipbuilding opportunities during the current decade will be constrained, not by transportation needs, or vessel design or shipyard capacity, but by the lack of reasonably priced capital which is likely to be dedicated to meeting national waterborne transportation needs.

Footnotes

1 These proposals were put forward by Maritime Administrator William G. Schubert in testimony before the House Armed Services Committee in March 2002, and would make over $1.4 billion already set aside for shipbuilding immediately available for Coastwise vessel construction, as well as providing a sound basis for future Coastwise vessel project funding.

2 The texts of the SAFETEA Reauthorization and the DOT Draft Plan can be accessed at the DOT home page at http://www.dot.gov by clicking on "SAFETEA Reauthorization" and "Comments Requested on FY 03-08 Strategic Plan." Maritime Reporter readers should respond to this invitation by providing email comments which will question and comment upon the absence of any reference in these documents to the maritime sector's potential role in resolving our national transportation problems.

3 See, "OPA 90 Phase Out of Environmentally Risky Vessels – Much to be Done," Shipbuilders Council of America (June 2002) (hereafter "SCA 90 Memo").

4 See, generally, SCA 90 Memo (which contains a detailed discussion and includes tables showing tank vessel and tank barge phase outs year-by-year from 2002 through 2015).

5 SCA 90 Memo.

6 Leback, "We need ships for commercial, military use," The Journal of Commerce (February 24 - March 2, 2003). Captain Warren Leback is a former Maritime Administrator. The product tanker plan which he proposes is similar to a MARAD tanker construction program which was implemented shortly prior to World War II.

7 Pearson, "Major Operators Adding OSVs at Record Pace," MarineNews (April 28, 2002).

8 "The Economic Contribution of the U.S. Commercial Shipbuilding Industry," LECG LLC (April 2002).

About the Author

H. Clayton Cook, Jr., B S Princeton University, LL B The University of Virginia. Mr. Cook served as General Counsel of the U. S. Maritime Administration from 1970 to 1973, where he was responsible for the implementation of the Merchant Marine Act of 1970, and the drafting of the Federal Ship Financing Act of 1972. Upon completing his government service, Mr. Cook joined Cadwalader, Wickersham & Taft as the partner responsible for the development of that firm's Washington Maritime practice. Mr. Cook continues his law practice today as Senior Counsel to Fulbright & Jaworski L.L.P. in that firm's Washington, D.C. offices. He is also a partner in Management & Transportation Associates, Inc., a management consulting firm based in Essex, Connecticut. Mr. Cook's email address is Ccook@Fulbright.com.

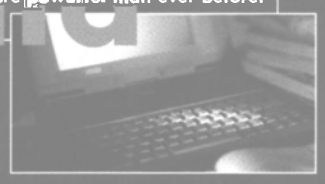
MARINE COMMUNICATIONS

Regardless of how you route your voice communications, SeaWave helps manage your costs more easily than ever before. SeaWave's Least Cost Routing automatically finds the best available rate for all calls placed on board your vessel. Furthermore, SeaWave virtually eliminates administration associated with your communications investment by preparing a comprehensive and understandable billing statement that may be viewed on board the vessel, sent to payroll or invoiced directly to each user – SeaWave saves you time and money.

Voice

SeaWave provides land-like data communications at a fraction of the cost of most services. SeaWave's proprietary Velocity throughput technology utilizes superior compression and a low overhead – light application to move data more efficiently over Satellite, HF & GSM. This means more data throughput in less time. If you are sending data now, let SeaWave simplify and streamline your communications – If you are not routinely using e-mail now, see how SeaWave can make it more affordable and more powerful than ever before.

Data



Value

SeaWave is more than just email and voice communications! SeaWave's suite of weather products, vessel tracking package, world-class support and relationships with premier marine companies combine to bring you affordable and reliable services at sea. While onshore, the mySeaWave Web portal provides you access to your email, news information, billing detail and other services. Whether at sea or onshore, SeaWave controls costs and adds value to every dollar you spend on communications.

Who's Controlling Your Escalating Communication Costs?

YOU can regain control of your communications costs by taking advantage of SeaWave's superior performance and value added features such as **Velocity** throughput technology, Least Cost Routing, consolidated billing, and SeaWave's premier partner relationships. SeaWave solutions are designed to work with your existing communications equipment, minimizing capital expenditures.

The **SeaWave Integrator**, available in a variety of configurations, may include Satellite, GSM, HF/SSB and GPS. Contact SeaWave for details.

Control is at your finger tips: Monitor usage while at sea or manage your account onshore via our secure web portal. **mySeaWave** is your land based entry point to e-mail and billing information such as payment method, passwords, contact information or vessel id. Other features of mySeaWave include a vessel tracking system, industry news and weather. mySeaWave is another way professional mariners can control costs and increase value with SeaWave.

Contact SeaWave today and let us show you how you can reduce costs and add value to your communications solution.

SeaWave™
DIGITAL@SEA
Reliable • Affordable • Worldwide

SeaWeather

Newport, Rhode Island • (800) 746-6251 • Fax: (401) 846-9012 • Email: sales@seawave.com • www.seawave.com

Circle 316 on Reader Service Card

The 2003 World Yearbook

Patent Pending

SSS: Separate Storage Shuttling

The advent of FPSO and Shuttle Tankers serving the deepwater fields of the Gulf of Mexico is drawing closer, as oil companies study the most economical means to move product from point A to B, particularly from remote and deepwater portions of the Gulf of Mexico.

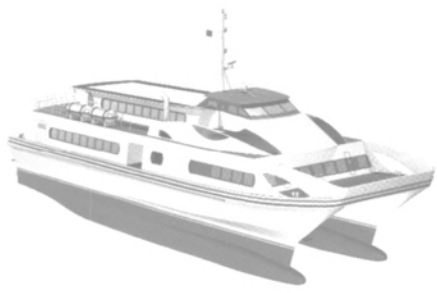
The GOM region, which has one of the more complex subsea piping systems in the world, is ripe for the shuttle tanker solution as the search for oil and gas pushes further from the shore. The question then does not center on "if," but rather "when." American Shuttle Tankers (AST) is touting its S-S-S, or Separate Storage Shuttling solution. The system is unique in that it works with any floating production system — a key point given the fact that there are zero FPSO projects currently underway — including semisubmersibles, spars and Tension Leg Platforms. The system uses the production platform, a DPS enabled shuttle tanker alongside, which acts as a storage facility, and a shuttle tanker that is used to transport the production to market. While AST would have to build the transporting shuttles in a U.S. yard to comply with Jones Act regulations, it would employ Navion shuttle tankers as the storage and transfer units, which would not have to comply with Jones Act rules.

Employing DPS enabled shuttle tankers from the North Sea as an FSO in the S-S-S concept is truly a hinge to the project, as it allows the system to be functional much more quickly. In addition, the DPS capability allows for the elimination of permanent mooring, an estimated $80 to $100 million cost in some GOM deepwater regions estimates **Peter M. Lovie**, V.P Business Development of AST.

A patent-pending concept from American Shuttle Tankers dubbed Separate Storage Shuttling (S-S-S) envisions a unique shuttle tanker system for the Gulf of Mexico — serving a variety of floating production systems — that is cost competitive with pipelines.

As with many other great innovations, the driver behind SSS is money, specifically economizing the process of moving oil from production site to refinery. According to Lovie, direct shuttle loading in the Gulf of Mexico, sans FPSOs and taking into account the average production rate of 50,000 bpd for most offshore facilities, is simply cost prohibitive, with an estimated 10-day load period for 565,000 barrel shuttle tanker directly connected to a production source. The SSS solution allows for faster turnaround times for shuttle tankers transporting oil back to port, a turnaround measured in hours instead of days.

New FSPV Vessel Unveiled



FBM Babcock Marine recently unveiled the FSPV, a vessel under development for three years that the manufacturer describes as "a revolutionary new high speed passenger ferry, which promises to deliver pioneering rough condition seakeeping capability, coupled with speeds of up to 40 knots."

FSPV incorporates the SWATH form with waterjets, and is designed to allow speeds of up to 40 knots to be maintained in sea conditions beyond a significant wave height of 3 m (relating to maximum wave heights beyond 5 m).

"This vessel is the answer for fast ferry operators who have problems maintaining their service schedules due to weather conditions, or have exposed routes where reliable high speed services have previously been unfeasible," said **John Warbey**, managing director, FBM Babcock Marine. "Development from FBM Babcock Marine's proven SWATH technology, with three previous slower vessels in service, the FSPV will provide reliability and continuity of service in high seas with passenger comfort being far superior to that offered by conventional multihulls or hydrofoils."

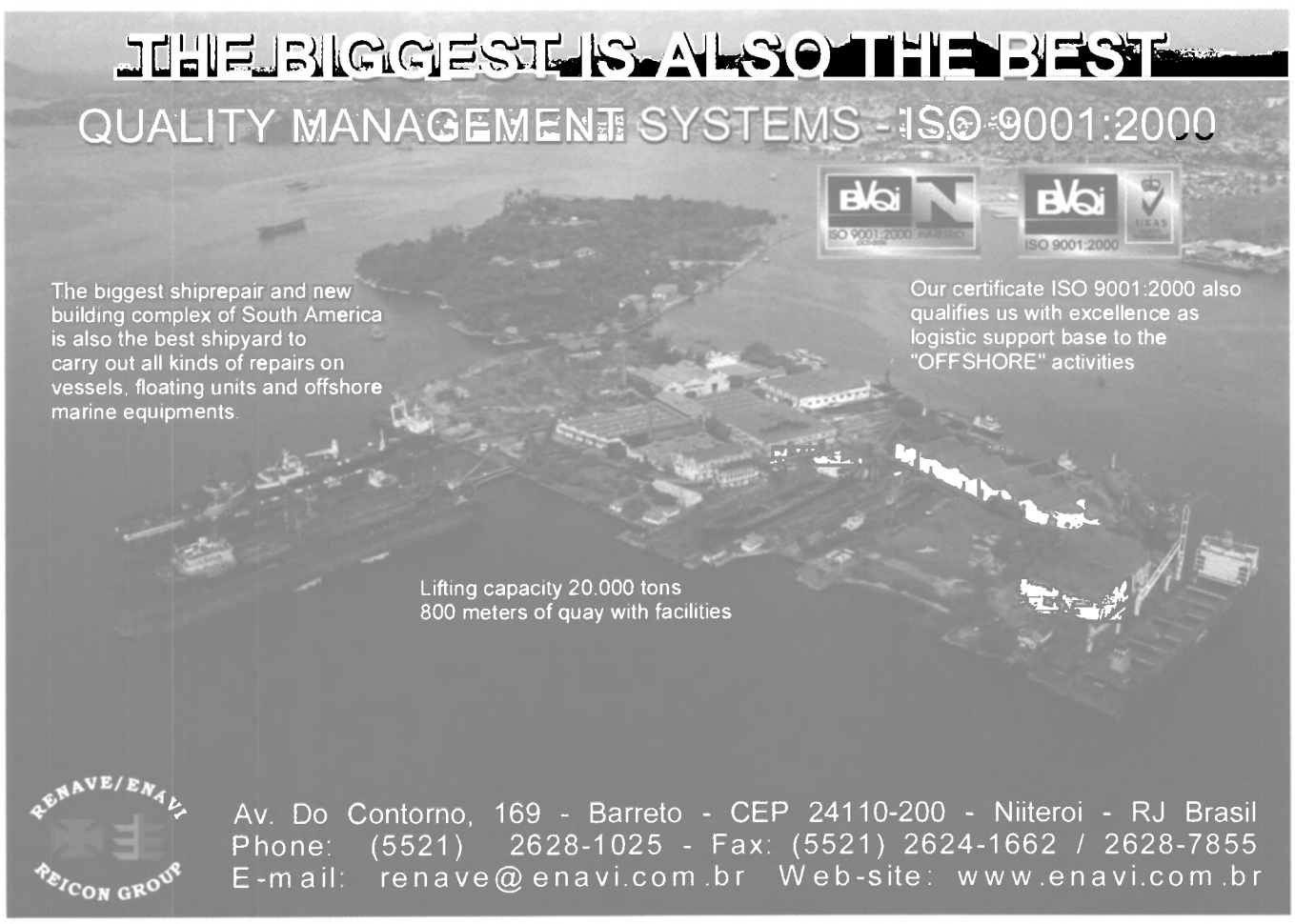
The FSPV offers large deck areas enabling flexible seating layouts for about 400 passengers.

Circle 80 on Reader Service Card

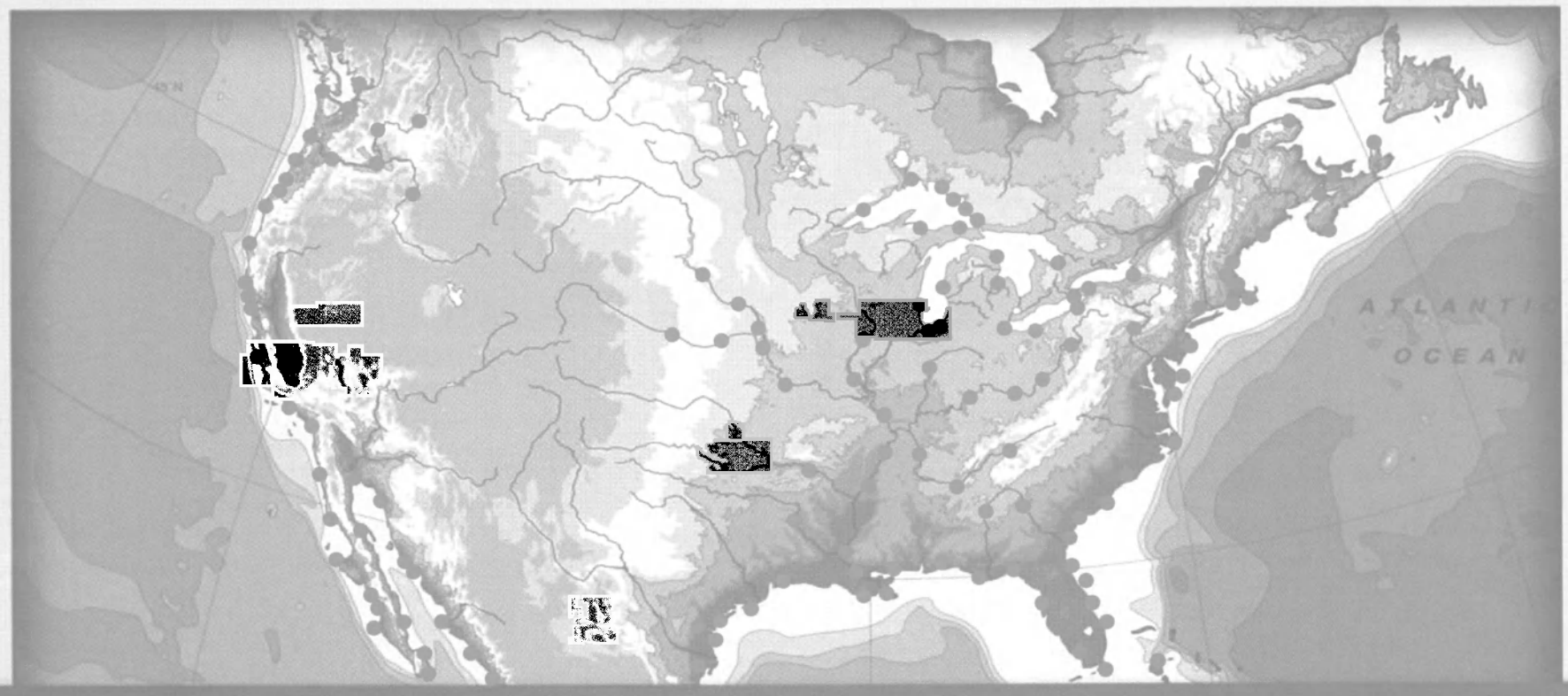
HZ Enters Wind Turbine Market at Gale Force

Japan's Hitachi Zosen launched full-scale efforts to develop a floating-type offshore wind turbine generation system in preparation for the arrival in the near future of a 10,000 MW offshore wind turbine generation era in Japan. The design, which literally has been on the drawing board for some time, will be bolstered with a series of experiments in 2003. The floating substructure consists of a main floating block and multiple sub-floating blocks, each with a shallow draft. The design facilitates in-dock construction, launching, towing and installation of the floating structure.

Circle 88 on Reader Service Card



Circle 252 on Reader Service Card

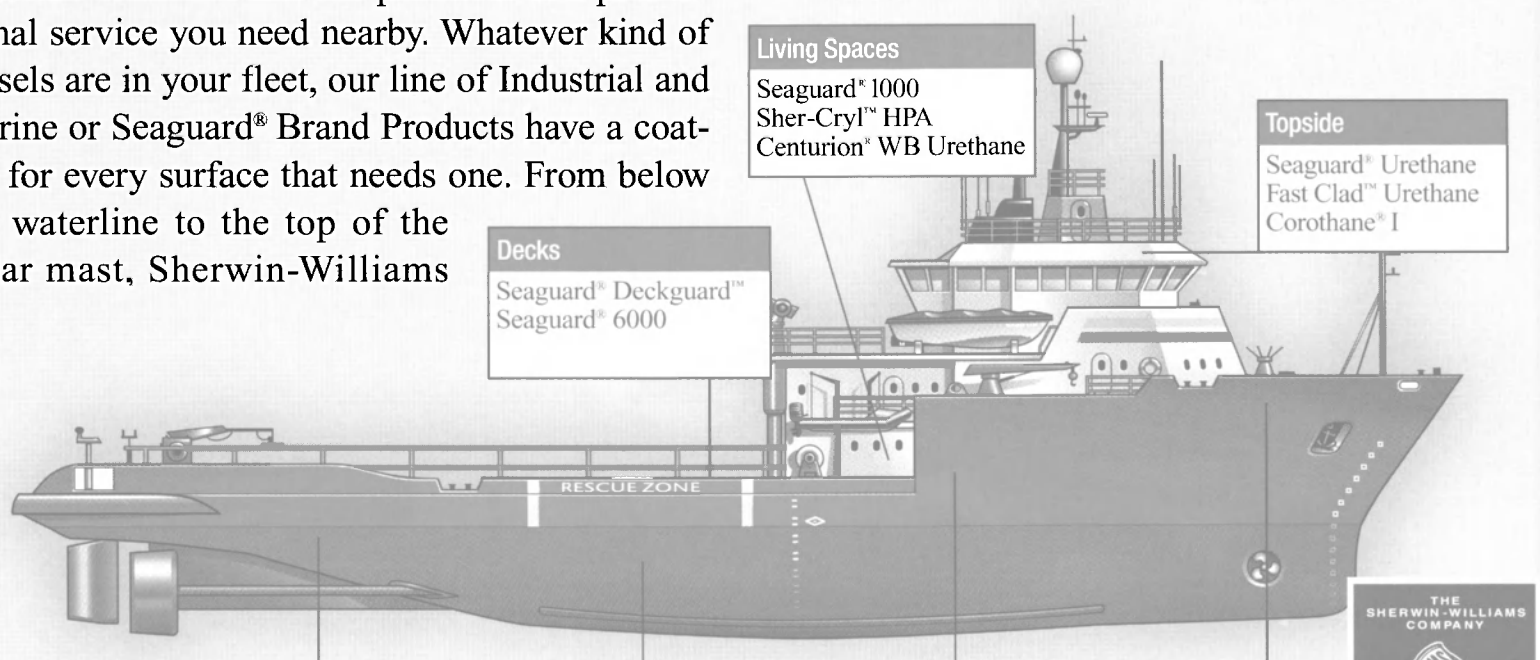


WE COVER EVERY INCH OF YOUR BOAT FROM COAST TO COAST.

Tugs in San Francisco Bay. Rig tenders in the Gulf. Towing ships off the East Coast. Ferries and barges from the Great Lakes to the mighty Mississippi. What do all these vessels have in common? Sherwin-Williams.

No matter which port you call home, Sherwin-Williams has the products and professional service you need nearby. Whatever kind of vessels are in your fleet, our line of Industrial and Marine or Seaguard® Brand Products have a coating for every surface that needs one. From below the waterline to the top of the radar mast, Sherwin-Williams has you covered. To learn more about our Industrial and Marine or Seaguard Brand Coatings and to see case histories and tests results, contact your Sherwin-Williams representative or call 800-524-5979 to have a representative contact you.

Seaguard MARINE PAINTS & COATINGS



Living Spaces
Seaguard® 1000
Sher-Cryl™ HPA
Centurion® WB Urethane

Topside
Seaguard® Urethane
Fast Clad™ Urethane
Corothane® I

Decks
Seaguard® Deckguard™
Seaguard® 6000

Underwater Hull
Seaguard® Vinyl
Seaguard® Copper Bottom
Seaguard® Ablative AF

Engine Room
Seaguard® 5000 HS
Fast Clad™ Urethane

Above Deep Load Line
Seaguard® 5000 HS
Fast Clad™ Urethane
Seaguard® 6000

Ballast Tanks
Seaguard® 5000 HS
Dura-Plate® UHS
Dura-Plate® 235

THE SHERWIN-WILLIAMS COMPANY
COVER THE EARTH
INDUSTRIAL & MARINE COATINGS

Circle 318 on Reader Service Card

www.sherwin-williams.com

The 2003 World Yearbook

Patent Pending

Tuna Farming Goes Offshore

Izar Fene Shipyard, in collaboration with Itsazi Aquaculturehas, has developed an Offshore unit for the breeding, fattening and transport of the bluefin tuna (Thunnus Thynuus). Sailing at eight knots, the unit is able to transport (e.g.) living tunas from the Mediterranean to Japan.

The proposed Tuna Offshore Unit combines a unique fish farming facility with a modern marine design to produce an offshore unit capable of purchasing young Tuna Fish in the selling centers, fattening of 1,200 tons of tuna fish in nine months in hot water areas improving the efficiency of the growing process. Upon completion, the fish are then presented to the fish markets at best prices. Other aquatic species such as salmon, bass, cod, se bream, hake, etc, could also be produced.

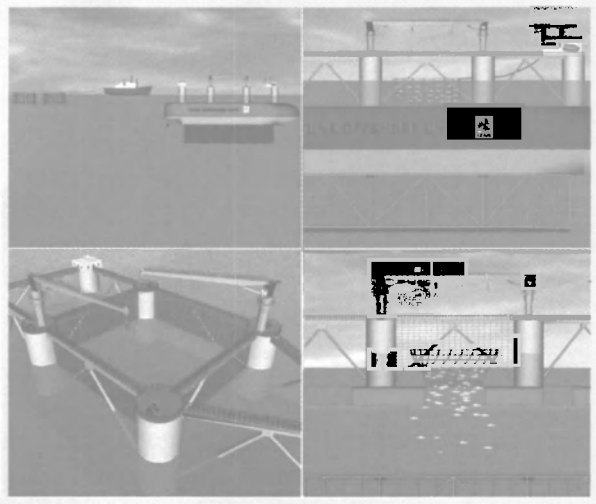
The 603 x 184 ft. (190 x 56 m) facility resembles an offshore semi-submersible unit with a catamaran hull and an internal arrangement of a 394 x 167 ft. (120 x 51 m) fish-pool of 95,000 cu. m. that can be expanded in operation up to 195,000 cu. m. capacity by deploying a rigid net for fish cultivation. A big effort was completed in the definition of the hull forms to achieve an optimum hydrodynamic behaviour capable of matching the target transit speed of eight knots. It was also necessary to take care of the transverse moment of inertia of the waterplane at the operation and transit draft by means of seven floatability columns, in order to provide adequate stability performance.

In the forward area, the forepeak and ballast tanks are located within a rounded hydrodynamic bow. Below the centerline floatability column, a forward machinery space is arranged containing a 900 kW retractable thruster. Tunnels are also arranged to accommodate two centerline anchors. Above the centerline floatability column, the accommodation block is placed with capacity for 30 people and a helideck.

Two large 5,000 kW thrusters have been arranged in the aft area, together with the power plant located in the aft machinery space. The exhaust system of almost 20 MW·power plant is guided to the outside through the aft stability columns, containing also ventilation funnels, escape routes and elevators. Storage and daily use diesel tanks, lube oil, fresh water, ballast water and settling tanks are also placed within the aft machinery space. Finally, the emergency generator set is confined within a deckhouse in the aft-starboard stability column, in accordance with marine regulations. The Tuna Offshore unit is equipped with two conventional offshore cranes located in the mid-body columns and adequate life saving appliances. The basic design of the Tuna Offshore Unit, including machinery and services, has been designed in agreement with typical Offshore Regulations (DNV, ABS, Lloyd's, BV, etc). IMO and Spanish regulations have also been taken into account (ILCC, SOLAS, COLREG, Tonnage, etc)

Main Particulars - Tuna Offshore Unit

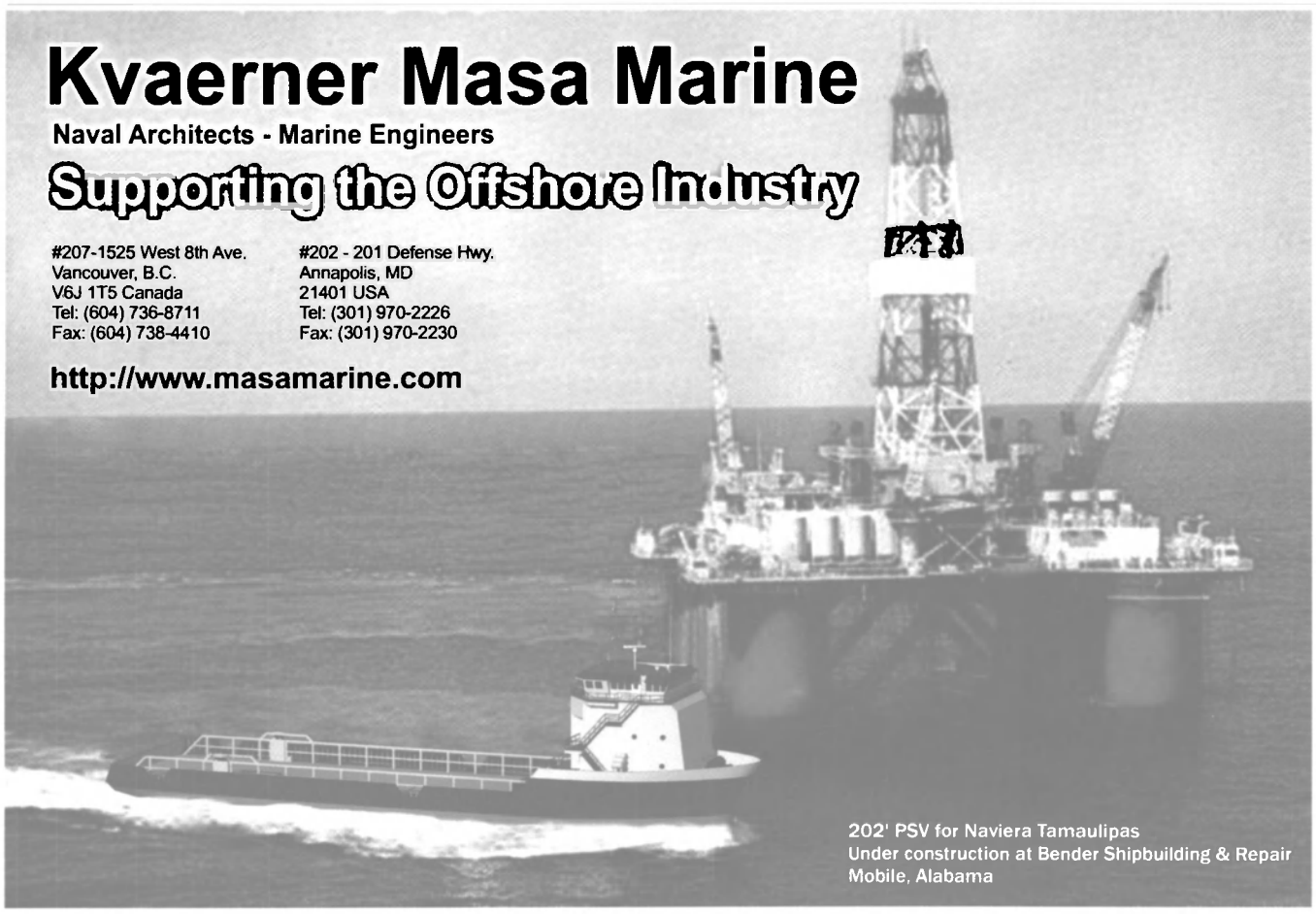
Length, o.a.	603.6 ft. (189.4 m)
Breadth	183.7 ft. (56 m)
Height to Floater Deck	88.6 ft. (27 m)
Height to Main Deck	154.2 ft. (47 m)
Draft (minimum)	32.8 ft. (10 m)
Draft (Transit/Mooring)	121.4 ft. (37 m)
Lightship weight	18 t
Ballast water	130,000 cu. m.
D O.	10,000 cu. m.
Fresh water	1,000 cu. m.
Fridge	10,000 cu. m.
Fish Pool Volume (net retracted)	95,000 cu. m.
Fish Pool Volume (net deployed)	195,000 cu. m.



Izar Fene and Itsazi Aquaculture has launched an innovative venture to build a system to raise and transport tuna offshore.

Power and Controls

The Main Power Generation is located in the Aft Machinery Space. The plant consists of 3 x 6,750 kW (50 Hz-750 rpm) main generator to be used during transit, and one 1,080 kW essential services generator to be used in operation when the unit is moored during the fattening period. An 810 kW emergency generator set and associated switchboard is arranged in a deckhouse above aft-starboard stability column within the accommodation block, within a separated fire-rated enclosed space complying with the applicable Rules and Regulations. The IAS will be distributed through the vessel by means of dual-redundant data-highway routed along the main deck between the aft engine control room. System application and logic will be resident in dedicated intelligent process stations located within the vessel in order to minimize the use or hard-wire cables. In critical systems, where higher reliability is required, consideration is given to having redundant central process units within the process station.



Circle 242 on Reader Service Card

MADCON Receives Patent For Retrofit System

MADCON Corporation, Slidell, La. has received official notice that their Structural Composite Retrofit System has been awarded U.S. Patent Number 6,536,991. Improved recovery and directional drilling techniques created the need to extend the original design life of many offshore facilities. Utilizing advanced composite materials, the system provides full structural restoration of damaged or corroded tubular members such as drive pipe casing, conductors, jacket legs and bracing, concrete or steel piling, and risers/pipelines. The system can also be used to upgrade the original design capacity of platform members.

The Structural Composite Retrofit System can restore and protect a severely corroded member without costly shut-ins due to hot work. MADCON employs highly specialized personnel, including divers, so the system can be installed both above and below water. Several major offshore owner operators recently installed the Structural Composite Retrofit System from the (-15) to (+60) elevation to rebuild extremely corroded drive pipe casing.

Circle 56 on Reader Service Card

ACCESS THE ENTIRE WORLD WITH ONE CD

18,000 +

With C-MAP/Commercial's CM-93 electronic chart database, you receive global coverage on one CD. Our 18,000+ electronic charts make navigating commercial vessels easier and safer than ever. CM-93 gives you the most up-to-date electronic charts you'll need on every port and every harbor in the world.

on-demand

CM-93 provides daily chart corrections instantly via the Internet or e-mail. Our dedication to providing you the latest information not only includes chart updates, but also worldwide weather services.

thousands

Current North American customers...

US Army • US Navy • Carnival Cruises • Celebrity Cruises • Holland American Line • Princess Cruises • Royal Caribbean Cruises • Alaska Tanker Company • Crowley Petroleum Transport • Polar Tanker • Teekay Shipping • APL • Matson Navigation • And Many Others

CM-93/3

...using CM-93 based systems by:

Raytheon Marine • Sperry Marine • Kelvin Hughes • Klein Navigation • STN Atlas • Furuno • JRC • And Others

Select a navigational system with C-MAP CM-93/3 compatibility, and you'll be navigating with confidence! Call for product information.

C-MAP COMMERCIAL

508.477.7537 • commercial@c-map.com
www.c-map.com • Cape Cod, MA

Circle 229 on Reader Service Card

Patent Pending

The number and size of the variable speed azimuthing thrusters installed (2 x 5,000 kW aft and 1 x 900 kW forward), are thought to be sufficient at this preliminary phase, and should be confirmed by resistance and propulsion test to be performed at a later stage in a Towing Basin in calm waters.

Marine Systems

The Tuna Offshore Unit is equipped with all the necessary systems to make the unit intrinsically safe and seaworthy.

The bilge system, in combination with the Ballast system, allows the drainage of liquids confined in any watertight compartment. Four 1,000 cu. m. /h are installed for this purpose, capable of deballasting the unit in 33 hours.

Two independent electrically driven fire pumps and one diesel driven fire pump are installed to satisfy the seawater fire fighting system requirements.

A 10,000 kg/h - 7 kg/sq.m. steam generator for recovery of the exhaust residual heat of one main generator during transit and the essential services generator in the mooring period, is installed within the aft starboard stability column. The boiler, is made of two sections to be used depending on the steam demand. One of the sections of the boiler is provided with a fuel oil burning system that is used during the heating process of the main generators. The steam is used onboard for the various diesel oil tanks heating, bilge separators, oil purifiers, sea chests heating, accommodation services water heating, etc.

HVAC systems comprise ventilation of the machinery spaces to satisfy both health and comfort requirements. Ventilation air is conducted into the aft machinery space through the port stability column. The main and essential services generators take the air necessary for their operation directly from the machinery space, being necessary an important ventilation flow to satisfy the oxygen demand during transit. Twelve propellers providing 500,000 cu.m. /h of fresh air and 10 extractors, are situated in deck houses in the aft starboard and port stability columns to ensure 15 renovations of the machinery spaces and escape routes through the aft stability columns. A 30,000 Kcal/h high speed-double way air conditioning system is available within the accommodation block. Conventional power plant auxiliaries (lubricating, DO transfer, separator, refrigeration, etc) are arranged within the aft machinery as appropriated.

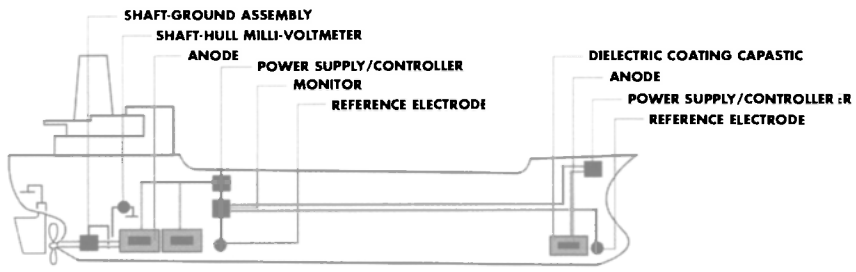
A corrosion protection life up to 20 years could be implemented following offshore standard practices to be achieved through a combination of painting and Aluminium based cathodic anode systems. Thirty kg anodes are installed in the submerged area and ballast tanks, while five kg anodes are used in the splash zone. The unit is outfitted with the following mooring systems.

- Three 15,400 kg high resistance forward anchors, being one spare.
- Three Two 900 m chains, allowing the mooring to be performed in water depths of 150 m during the fattening process.
- Three One 300 m - 150 t towing cable.
- Three Eight 200 - 44 t wire mooring ropes.
- Three Mooring and Towing Brackets as appropriated.

Circle 83 on Reader Service Card

The preceding was excerpted from an article by ***Abel Mendez Díaz****, Industrial Plants Manager, and* ***Francisco de Bartolomé Guijosa****, Engineering Director of Izar Fene Shipyard.*

CAPAC® CORROSION PROTECTION GOES A LONG WAY



USFilter

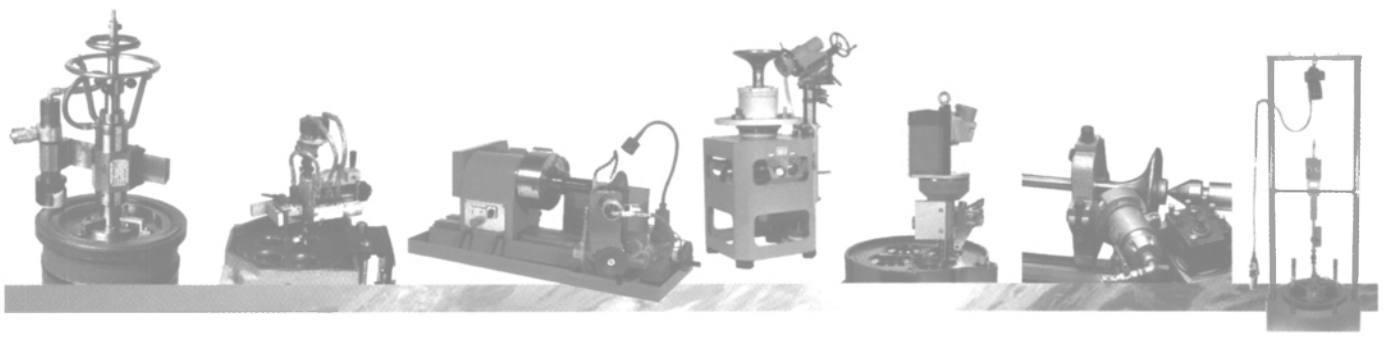
CAPAC corrosion protection systems are designed for higher quality and longer life than competing systems. At a lower installed cost. Retrofit your ocean-going vessel or offshore platform with CAPAC systems today, and realize the full benefits of long-term protection tomorrow.

Contact USFilter's Electrocatalytic Products at 2 Milltown Court, Union, NJ 07083 Phone: 908-851-2277, Fax: 908-851-6906. www.usfilter.com

a VIVENDI water company

EC-CA-0041-AD-201

Circle 331 on Reader Service Card



MAINTENANCE MACHINES FOR DIESEL ENGINES
CHRIS-MARINE – THE ORIGINAL!

The best investment for your vessel
We also carry out the work, in-situ or in our workshops
World-wide sales and service network!

For 2-stroke & 4-stroke engines
Valve seat grinding/machining
Valve spindle grinding
Cylinder liner honing
Sealing surfaces grinding/machining
Portable lathes for various purposes
Special machines for workshops

CHRIS-MARINE
the optimum solution

www.chris-marine.com

Chris-Marine Head Office and Subsidiaries

Sweden
Chris-Marine AB
Tel: +46 - 40 671 2600
Fax: +46 - 40 671 2699
info@chris-marine.com

Norway
Chris-Marine Norge A/S
Tel: +47 -3279 8590
Fax: +47 - 3279 8509
steinar.olsgard@chris-marine.com

Croatia
Chris-Marine Adriatic d.o.o.
Tel: +385 - 51 217 818
Fax: +385 -51 217 560
chris-marine.adriatic@ri.hinet.hr

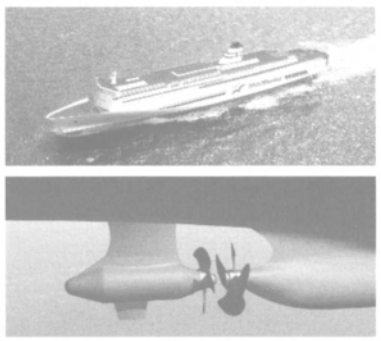
Singapore
Chris-Marine (S) Pte. Ltd.
Tel: +65 - 6268 8611
Fax: +65 - 6264 3932
chrism@chris-marine.com.sg

USA
Chris-Marine East Coast Inc.
Tel: +1 - 904 354 6566
Fax: +1 - 904 358 7862
us.eastcoast@chris-marine.com

Circle 227 on Reader Service Card

Innovative Hybrid Propulsion Plan for Japanese Ferry

Mitsubishi Heavy Industries (MHI) won a contract by Shin-Nihonkai Ferry to build a pair of high-speed RoPax ferries, both to be built at MHI's Nagasaki Shipyard and delivered in June 2004. The ferries are interesting as they will feature an innovative concept of CRP pod drive units. The 17,000-gt, 738 x 85 ft. (224.5 x 26 m) will be the biggest RoPax in Japan, and will capable of speeds to 31.5 knots. Instead of a twin propeller solution, single skeg vessels will each be equipped with a steerable Azipod unit from ABB. It will be installed in a contra-rotating mode aft of the mechanically driven main propeller, designed to reduce hull resistance of shaft brackets and designed to improve propeller efficiency. In addition to the efficiency over a twin screw ship, the maker is touting the increased maneuverability via the Azipod. A pair of Wartsila 12V46 engines will power the main shaft line, and another two 12V46 engines in the generator room will power the 17.6 MW Azipod.



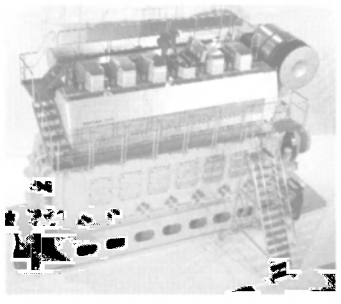
Circle 199 on Reader Service Card

RoPax Ferry Main Particulars

Length	738 ft. (224.5 m)
Breadth	85 ft. (26 m)
GT	17,000
Speed, max.	31.5 knots
Passengers	820
Main engine power	25,200 kW
Generator power	17,160 kW
Main engines	(2) Wartsila 12V46
Generator engines	(2) Wartsila 12V46
Cargo carrying capacity	158 Trailers, 66 Vehicles

Repeat Orders for Four Wärtsilä 64 Propulsion Systems

Wartsila Corporation has received repeat orders for the Wartsila 64, the company's powerful medium-speed diesel engine. Four Wärtsilä 6L64 engines were ordered at the beginning of this year by the Polish shipbuilder Stocznia Szczecinska Nowa Sp.z o.o. as main engines for four 18,900 tdw multi-purpose vessels recently contracted by the Dutch shipowner Spliethoff Bevrachtningskantoor B.V. These vessels, which are repeats of the 10 S-class vessels delivered in 1999-2000 to the same owner, four of which were built by Stocznia Szczecinska in Poland, three by Mitsubishi Heavy Industries Ltd., and three by Tsuneishi Shipbuilding Co. Ltd in Japan. The latest four newbuildings are expected to be delivered between April 2004 and April 2005.The Wartsila 6L64 engines will each develop a maximum continuous power of 12,060 kW at 333 rpm. The engines will be built at Wartsila's Trieste factory in Italy.



Circle 195 on Reader Service Card

Alstom Wins Major Contract

Alstom won its first contract to supply marine automation equipment to India's shipping industry, as it was selected by ABG Shipyard to supply the power and propulsion package for a new generation diesel electric diving support vessel in a contract worth $6.2 million.

The vessel is a 265.7 ft. (81 m) dynamically positioned ship being built for Consolidated Contractors Intl. SAL of Abu Dhabi. The ship is designed for operations in water depths to 3,500 m.

The ship will feature an ADP22 integrated duplex dynamic positioning system, with an independent back-up joystick, from Alstom's A Series.

Patent Pending

Circle 99 on Reader Service Card

MARINE EXHAUST SYSTEMS OF ALABAMA INC.

P.O.Box 698
757 Nichols Ave
Fairhope, AL 36533
1-251-928-1234
Phone/Fax

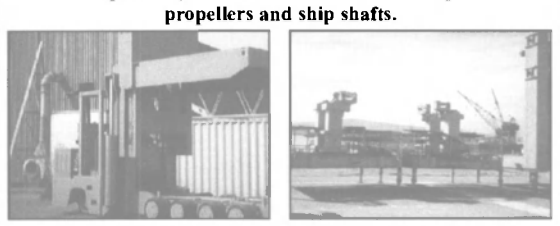
Mesamarine@Earthlink.net http://www.mesamarine.com

Water Cooled Manifolds, Heat Exchangers, Collector Risers, Mufflers, and Custom Fabrication for Caterpillar, Cummins, Onan, Detroit, Perkins, Waukesha, Westerbeke, Hercules, Mack, Isuzu, John Deere, Kubota, Daewoo, Isotta Fraschini, Ford, Palmer, International, Fairbanks Morse, Lister, Wisconsin, and more. Marinization, Repair, and Duplication of Obsolete Parts available upon request.

Please Contact us for all of your exhaust needs.

Circle 288 on Reader Service Card

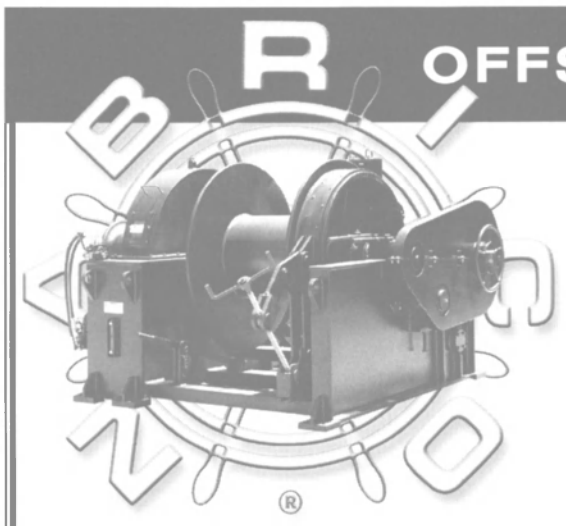
(2) ELWELL PARKER PROPELLER AND SHAFT HANDLING LIFTS
Designed to be lowered into Dry Dock to facilitate removal/installation of large propellers and ship shafts
Model: E22T822-120
Capacity 120,000 lbs at 150"ht.
Machine wt. 105,000lbs.
Both units:1989yr. models w/ approx. 650hrs.use since new
Special hydraulic fixtures to handle large propellers and ship shafts.



Sierra Equipment Co. Inc.
San Francisco, CA
Phone (415)467-3822 Fax (415)467-2401
email: jweiss8888@aol.com

Circle 319 on Reader Service Card

OFFSHORE WINCHES



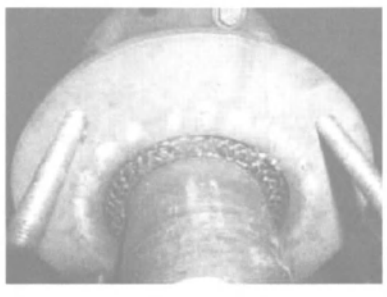
Nabrico offshore winches and windlasses have a lot of pull. After all, we've been building marine equipment for over 100 years.

Contact Nabrico for your anchor handling, towing and mooring winch requirements, and all your offshore needs. Offshore or inland, specify Nabrico.

NABRICO
P.O. Box 239 Nashville, TN 37202
(615) 244-2050

www.nabrico-marine.com

Circle 298 on Reader Service Card



Slade Fluid Sealing

No Flush - No Leak Service

Simply the best!!

- UP TO 10 YRS SERVICE IN TAILSHAFTS
- VIRTUALLY LEAK FREE
- DRY BILGES MEAN FEWER HAZMAT or DISCHARGE WORRIES
- NO WEAR ON SHAFTS OR SLEEVES - SEALS WORN EQUIPMENT
- LIFETIME GUARANTEE IN VALVES
- NUCLEAR SERVICE APPROVED - ABS Type Approval Pending
- OUR GASKETS PERFORM ON STEAM CUTS & IRREGULAR FACES

Contact **DELAMAR** - EXCLUSIVE Distributor of Slade Products to the Marine Industry
434-983-6104 (Phone) www.delamar.net (Internet) info@delamar.net (E-mail)

Circle 328 on Reader Service Card

NOx Emissions from Merchant Ships

By Horst W. Koehler,
MAN B&W Diesel, Germany

Pollutant emissions produced by the global merchant fleet has always been suggested to represent a considerable contribution to anthropogenic emissions, with nitrogen and sulfur compounds being currently in the focus of public's interest. Emissions such as nitrogen oxides, NOx (the sum of NO and NO2) lead to enhanced tropospheric ozone formation over their natural background level and thus affect the greenhouse warming. A considerable portion of ship emissions is released far off the continents — in clean areas of the atmosphere. This particularly effects the southern hemisphere with its natural low emission level.

So far, all earlier known studies result in an annual NOx emission release by the merchant fleet in the order of 10 million tons of NOx based on a total global marine fuel consumption of about 140 - 150 million tons per year. However, when these figures are cross-checked against the necessary international bunker demand as estimated by the installed main engine power onboard of approximately 90,000 ships of 100 gt and over as well as by adopting realistic average engine loads and engine running hours in one year across the existing fleet, it seems bunker consumption is much higher, resulting in a corresponding increase in NOx and all other pollutant emissions such as SOx, carbon monoxide, hydrocarbons and particulate matter including soot. Quite obviously, the effects on atmosphere and climate are much stronger than suggested in the past.

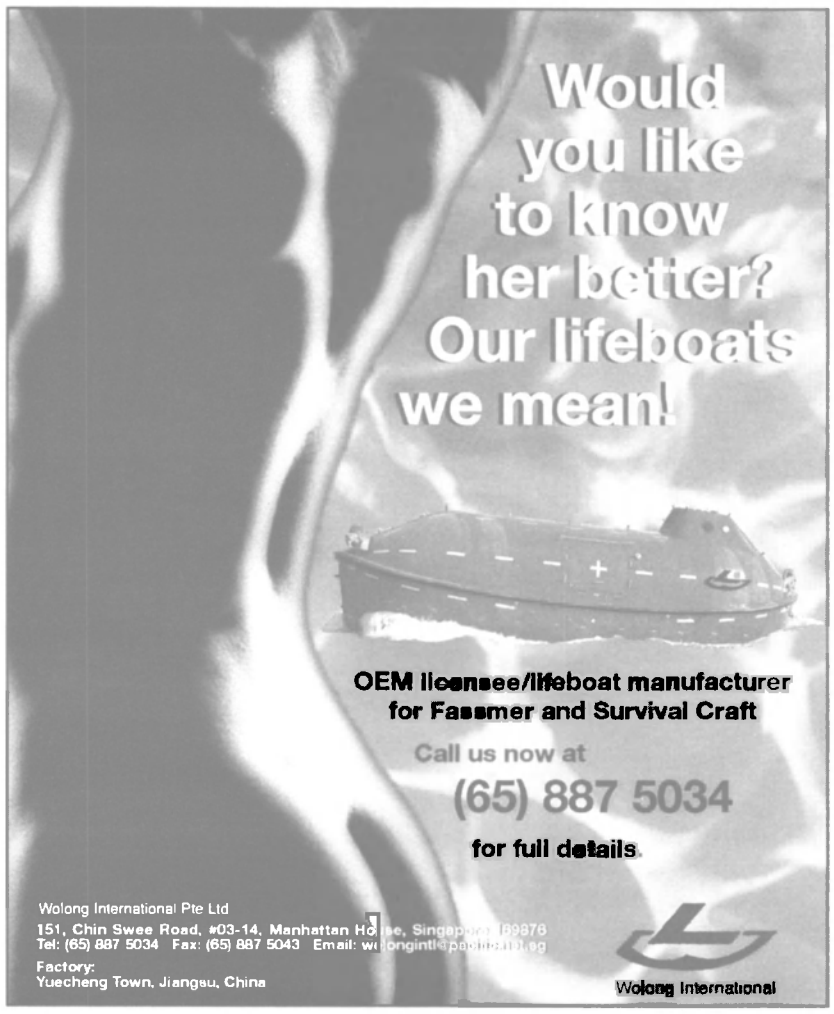
This is reason enough to calculate ships' annual bunker fuel consumptions and NOx (and other) exhaust gas emissions more accurately. This was performed by MAN B&W for the year of 2001, taking into account approximately 90,000 ocean-going ships with an accumulated total installed main engine output of 286,000 MW. Emission produced by the auxiliary

Specific Fuel Consumption Rates and NO_x Emissions From Cargo Transporting Ships and Aircraft

	Fuel Type	Fuel. Consum Mt/Yr.	NOx Mt/Yr.	Transportation Billion ton-km	NOx by fuel kg/ton	NOx by ton-km g/ton-km
Ships*	HFO, MDO, MGO	217.5	18.65	42,485	68.7	0.44
Aircraft	Kerosene	200 **	3.0 **	350	15.0	8.57

* Only cargo carrying ships above 100 gt
** Includes military aircraft

Circle 213 on Reader Service Card



Circle 345 on Reader Service Card

engine equipment was calculated too, by assuming, across the whole fleet, a total installed genset output of 13 percent of the installed main engine output.

Besides, the calculation took into account NOx emissions from port and coastal traffic. The exact methodology for estimating pollutants from ships has been described elsewhere [1](Koehler, 2002); [2](Koehler, 2003). Interestingly, the results of the study seem to be widely independent of the adopted calculation approach: two different calculation approaches showed surprisingly low deviations in bunker consumptions (less than one percent) and emissions (less than seven percent).

In order to start the calculation, the 90,000 vessels were grouped into 11 main ship classes. For each of these main classes, the number of ships, the number of their prime movers and the corresponding total installed engine power were defined, with sub-divisions of these ships made according to their size and installed engine output, respectively. Allowance was made so as to give separate considerations to various prime mover types: low-speed two-stroke diesel engines, medium-speed diesel engines, high-speed diesel engines, steam turbines, gas turbines and other or unknown propulsive power plants. The next step was to define typical annual engine running hours and average engine loads across the year for each ship type and size in the main and the sub-classes. Sales engineers, consultants, shipyards and operators provided these figures upon request, which according to our definition included low-load operation and even idling periods, i.e. ships' operation in ports and maneuvering is fully taken into account. Typical annual running hours used for the MAN B&W study range from 3,500 hours for gensets up to 7,200 hours for large crude oil tankers. The average annual engine load (in relation to the maximum installed engine power, MCR) varies between 50 percent for typical gensets and 75 percent for the main engines of ships such as bulk carriers or container vessels.

With these data, the fuel consumption in each ship class and sub-class was calculated for 2001, including the auxiliary engines. The consumed bunker fuel totaled 281 million tons, of which 191 million tons is heavy fuel oil (HFO), and 90 million tons is diesel oil (MDO) and/or gas oil (MGO).

This total is double the amount of bunker fuel most major international oil companies are willing to accept. There are several possible explanations for this wide gap, one being that part of the cargo carrying ships are in domestic trade and are therefore not part of the "official" international bunker fuel inventory. It is also not quite clear if the fuel consumption by the huge shipping fleet is considered as international bunkers or not.

The calculated fuel consumptions for the various ship classes in the study must be multiplied by the so-called NOx emission factors. These factors are derived from measured fuel consumption and measured NOx emissioins via engine load for as many engine types, sizes and makes as possible. These emission indices depend mainly on engine size/speed and load, and range from a minimum of about 40 kg NOx per ton of fuel (typical high-speed diesel engine, burning clean gas oil) up to 140 kg/ton plus for a large-bore, low-speed two-stroke diesel engine running on poor-quality heavy fuel oil. Quite a few of correction factors had to be introduced into the calculation procedure. A very important one took into account that, in terms of installed engine output, 86 percent of all ships are driven by old and unregulated engines and only 14 percent by NOx-optimized state-of-the-art prime movers. Of course NOx emissions depend on the quality of the fuel used, with HFO producing more

Ship Design
Naval Architecture
Marine Engineering
Program Management Services
Systems Engineering
Environment Services
Combat Systems Engineering

JJMA
An Employee Owned Company

Since 1957- ***Commercial and Naval Ship Design, Detail Design and Construction Program Support, Marine Consulting, Pollution Prevention Programs***

Alexandria, VA • Arlington, VA • New York, NY • Newport News, VA • Pascagoula, MS • Pittsburgh, PA
Bath, ME • Port Hueneme, CA • Bremerton, WA • Philadelphia, PA • San Diego, CA • Tacoma, WA

John J. McMullen Associates, Inc.

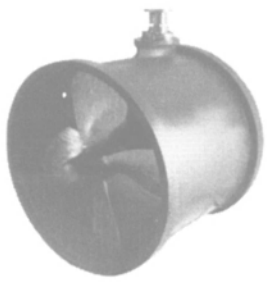
Corporate Headquarters
4300 King Street, Suite 400
Alexandria, VA 22302
(703) 418-0100

Business Development Office
Phone: (703) 933-6690
Fax: (703) 933-6777

Web Site: **www.JJMA.com**
Email: **Marketing@JJMA.com**

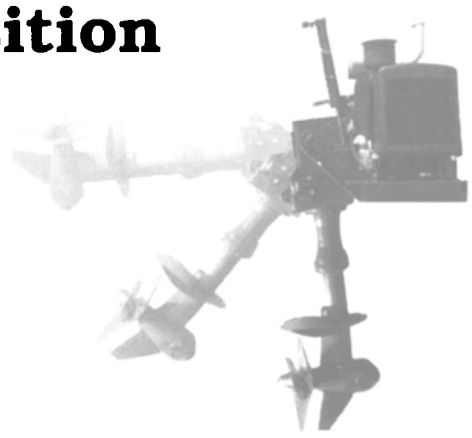
Circle 272 on Reader Service Card

Maneuver...Propel...Position



Harbormaster thrusters and outdrives are found around the world in ships, boats and barges where economical performance is required. For unassisted maneuvering in tight quarters. For easily-moved, deck-mounted propulsion. For critical dynamic positioning. For precision vessel control.

Harbormaster Marine products are designed to customer specification and built with utmost care and highest quality. They provide years of durable service and are backed by a reliable support system.



Tunnel Thrusters
100 to 2000 HP

Outboard and through-the-hull azimuthing drives
50 to 1500 HP

Fast world-wide support!
If you operate a Harbormaster or Murray & Tregurtha product anywhere in the world, we can provide spare parts and on-site field service. Call us first!

Harbormaster
Harbormaster Marine, Inc.
31777 Industrial Road
Livonia, MI 48150 USA
(734) 425-1080 Fax (734) 425-1850
Website: http://www.harbormastermarine.com

Circle 262 on Reader Service Card

BRADFORD GRAND BAHAMA

QUEENS HIGHWAY, FREEPORT HARBOUR • P.O. BOX F-44867
FREEPORT, GRAND BAHAMA • BAHAMAS • 242-352-7711 • FAX: 242-352-7695
WEB: www.bradford-grand-bahama.com • EMAIL: info@bradford-grand-bahama.com

Circle 221 on Reader Service Card

NOx than MGO or MDO. Total NOx emissions in 2001, again including the emissions produced by the auxiliary engines onboard, was estimated to be 22 million tons, again more than twice of the NOx emission level reported in the literature so far.

This result shows that the introduction of more and more ships with modern low-emission engines is mandatory. Since every year more vessels with NOx-optimized engines enter the fleet and older ships with unregulated engines are being-laid off, annual NOx emissions from shipping will decrease, however in a slow process especially in times when the newbuilding business is down.

All diesel engines for new ships with keel-laying since January 2000 comply with the IMO NOx limit. For a typical four-stroke engine in the 5 MW power range with a speed of some 400 rpm, the allowable upper NOx emission is 13.5 g/kWh (cycle value). But the engine industry already has developed NOx reduction technologies, for instance by introduction of water into the combustion space, to reach emissions of as low as 6-8 g/kWh. Even lower emissions than that, i.e. 4 g/kWh, is achievable today by humidifying the compressed intake air. The lowest possible NOx emissions, approx. 2 g/kWh, are possible by selective reduction technologies (SCR).

Needless to say that such equipment will increase the price tag of a marine engine and also operation and maintenance costs as well as the necessary machine room volume.

For more information from the Author
Circle 84 on Reader Service Card

Sources

1.) Koehler, Horst W., "How much NOx do ships actually emit? The Martime Environment." Luebeck, Germany: (June 2002).

2.) Koehler, Horst W., "NOx emissions from oceangoing ships: calculation and evaluation." Spring 2003 Technical Conference of the ASME International Combustion Engine Division. Salzburg, Austria: (May 2003).

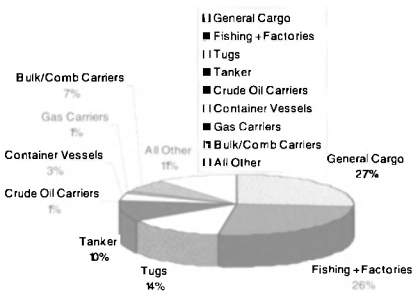
**Corbett, James J., and Koehler, Horst W., "Improving the Accuracy of Ship Emissions Inventories." Marine Environmental Engineering Technical Symposium, MEETS 2003. (August 2003): Arlington, Va.*

**(in preparation).*

World Merchant Fleet by Vessel Type

(end 2001)

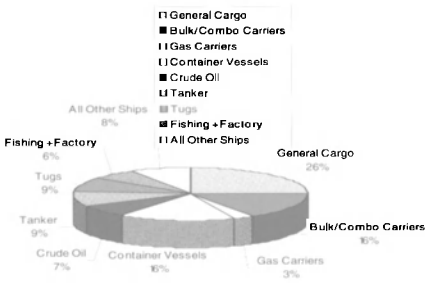
89,100 ships > 100 gt



Total Installed Main Engine Power

(by ship type)

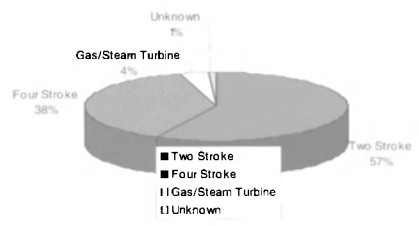
286,000 MW for all ships > 100 gt



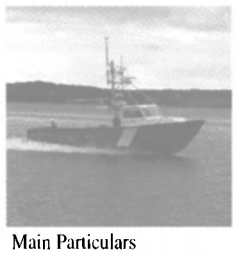
Total Installed Main Power

(by engine cycle/type)

286,000 MW for all ships > 100 gt



Volvo Penta Delivers Engines to Canadian Coast Guard



Main Particulars
Shipyard . . .ABCO Marine
Length . . . .48 ft. (14.6 m)
Beam . . . . . .16 ft. (5 m)
Draft . . . . . .2 ft. (0.7 m)
Crew 3
Range . . . . . .500 n.m.
Propulsion . . .Volvo Penta
Gears ZF325
Waterjets . . . . . .UltraJet

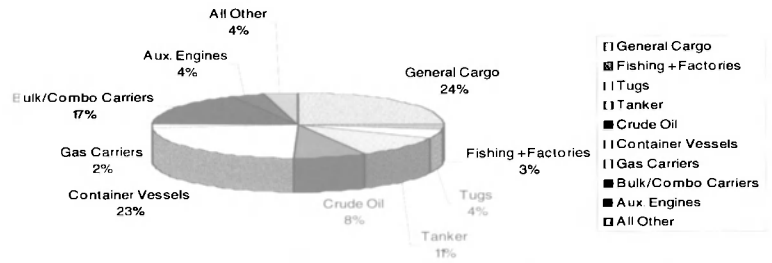
The Coast Guard in Canada is replacing its patrol boats for fisheries inspection to a new and faster model. The Geliget (a Mi'kmaq word that means "to protect, guard and watch over") patrol boat, recently placed in service, is the second in a series of five boats. It is a 48 ft. (14.6-m) aluminum boat equipped with twin Volvo Penta D12 engines each producing 650 hp and connected to UltraJet water-jet drive units. The Canadian Coast Guard, which has been operating the TAMD 122 EDC predecessor in a patrol boat, has now selected the D12 for the rest of the boats in its new series of patrol boats. The new patrol boats represent a new approach to fisheries inspection operations. The new boats are built by ABCO Marine Group of Lunenburg, Nova Scotia. Twin UltraJet 376 jet drives via ZF325 transmissions propel the boat. The water-jet drives ensure excellent maneuverability and high performance, while at the same time reducing the risk of damaging fishing equipment during patrolling.

Circle 58 on Reader Service Card

Nox Emission World Total Fleet

21.88 Mt for all Ships > 100 gt

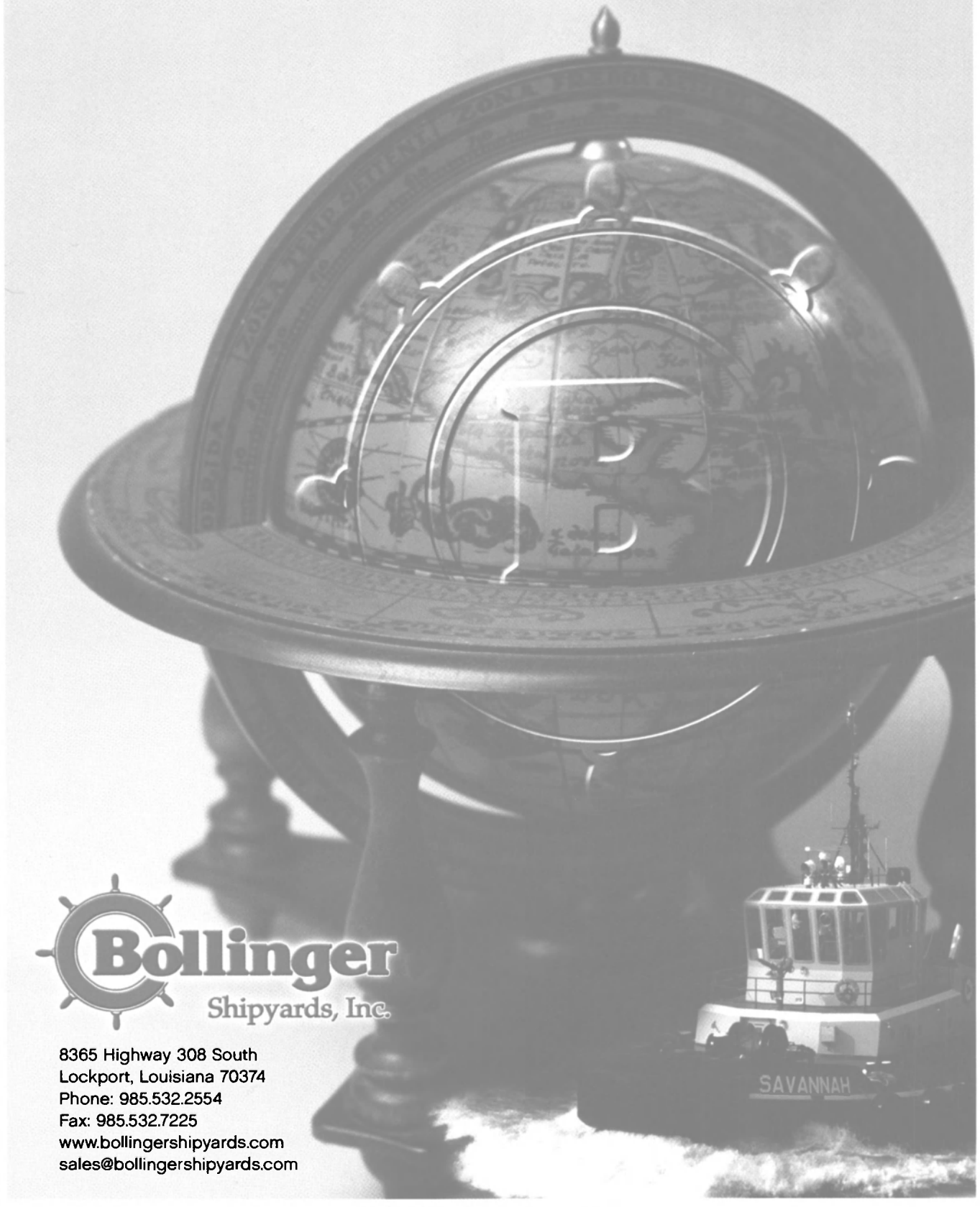
NOx emission of the global merchant fleet (cargo ships and non-transporting ships) in 2001 is 21.88 million tons. This diagram shows how this emission is divided among the most frequent ship types.



Environment

A Global Leader

new construction | repair | conversion | engineering | support services



Bollinger Shipyards, Inc.

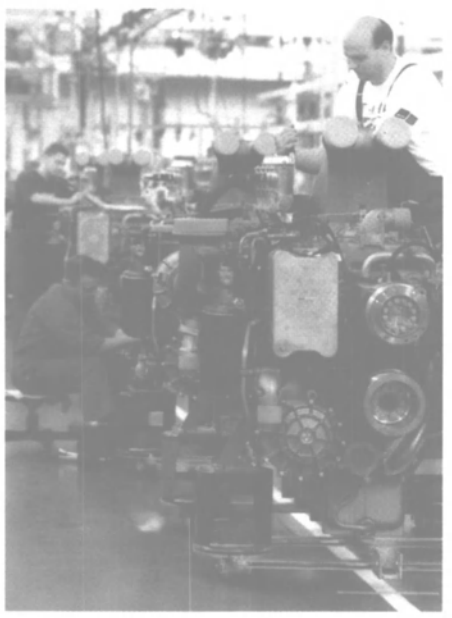
8365 Highway 308 South
Lockport, Louisiana 70374
Phone: 985.532.2554
Fax: 985.532.7225
www.bollingershipyards.com
sales@bollingershipyards.com

Circle 220 on Reader Service Card

MTU: 2002 was a Good Year

MTU Friedrichshafen reported continued successful corporate development in 2002 revenues rising nearly 13 percent to nearly $1.3 billion. The company's top performer and internal growth driver is the ship segment, which accounted for more than $600 million, or 47 percent of MTU revenues overall. The number of engines produced and sold by MTU increased, as it sold 5,500 units from its Friedrichshafen location, a 10 percent increase over last year.

The company, long noted for its adherence to a generously funded R&D initiative, did not disappoint last year, with an approximate $81 million last year — the sum total of in-house and third-party financed development expenses — earmarked to this end. The main focus was

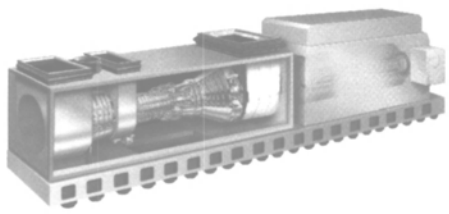


the building of series 2000 and 4000 engines, and a new, high-capacity engine to be launched as part of the series 890.

Circle 98 on Reader Service Card

GE's LM6000 Designed to Be Versatile

GE's LM6000 is now available in a gas turbine-generator set for a variety of marine propulsion system configurations. The LM6000 was introduced in 1990, and is an efficient simple cycle gas turbine with an efficiency of 41.9 percent at the ISO rating point. The industrial LM6000 fleet has grown to more than 600 units — all of which drive electric generators — accumulating more than seven million operating



hours. The LM6000s in industrial applications boast a fleet wide reliability of 99 percent. The LM6000 is the high power member of the GE LM aeroderivative gas turbine offerings. It generates 36.6 MW of power on a Navy standard day (100°F), depending upon the operating profile for ship applications.

The powerful LM6000 marine gas turbine can be coupled with an electric generator making an LM6000 marine gas turbine-generator set. GE furnishes the complete marinized LM6000 gas turbine-generator set using a generator from a manufacturer acceptable to the customer.

Currently there are 14 LM6000 gas turbines operating in marine installations such as on FPSOs in the harsh North Sea environment. These engines have accumulated over 260,000 fired hours in service.

Circle 67 on Reader Service Card

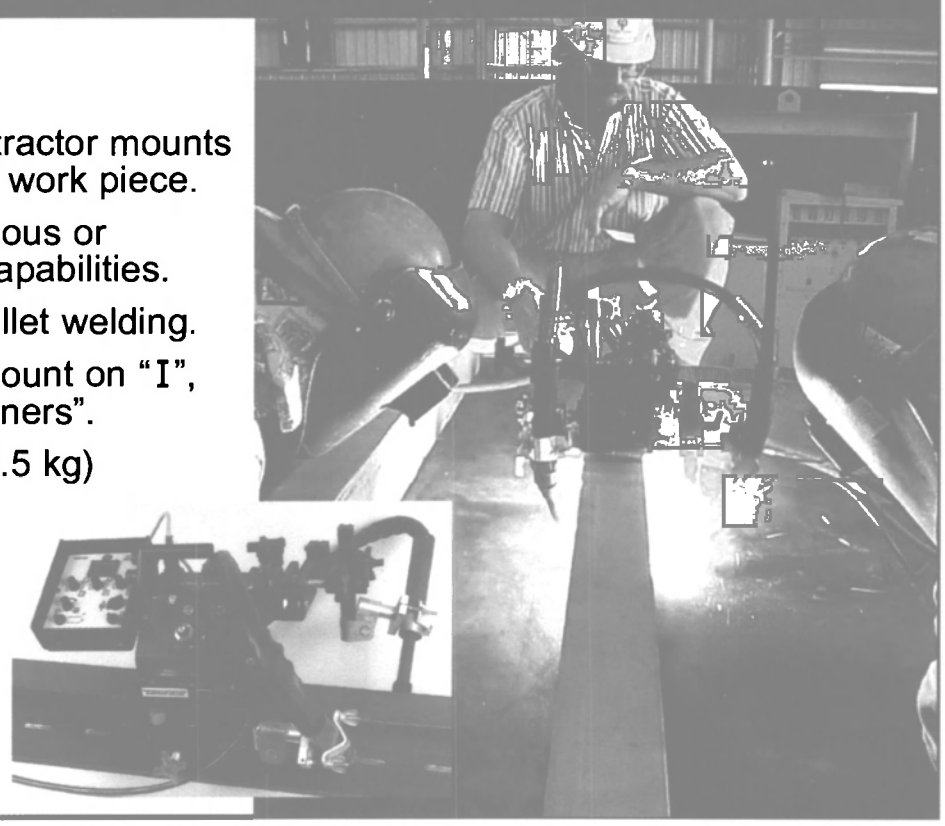
Produce Uniform Quality Welds!

UNI-BUG

- Mechanized welding tractor mounts and drives directly on work piece.
- Available with continuous or intermittent welding capabilities.
- Single or dual sided fillet welding.
- Carriage options to mount on "I", "Angle" or "Bulb Stiffeners".
- Weighs only 14lbs. (6.5 kg)

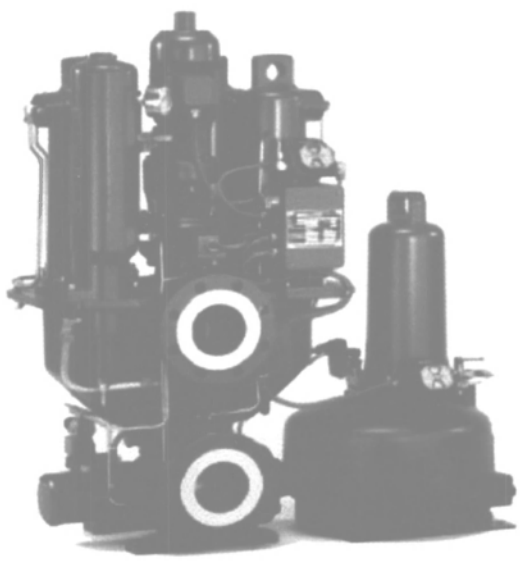
For more information call:
1-800-245-3186 x23 or visit our website at: www.bugo.com

Bug-O Systems
Innovative welding and cutting solutions since 1948.



Circle 223 on Reader Service Card

The Blue Ribbon Filters



For over 50 years, BOLLFILTERs have improved the efficiency and prolonged the life of ships' vital equipment throughout the world.

BOLLFILTER
Protection Systems

Boll Filter Corporation
www.bollfilter.com

East Granby, CT 800-910-2655
boll@bollfilterusa.com

Circle 219 on Reader Service Card

Salvage Posture Changing With The Times

By J. Arnold Witte, President and CEO, Donjon Marine, Co., Inc., President, American Salvage Association

Salvage response in the United States, and to a considerable degree throughout the world, has evolved to become essentially a new industry as measured by historical precedent.

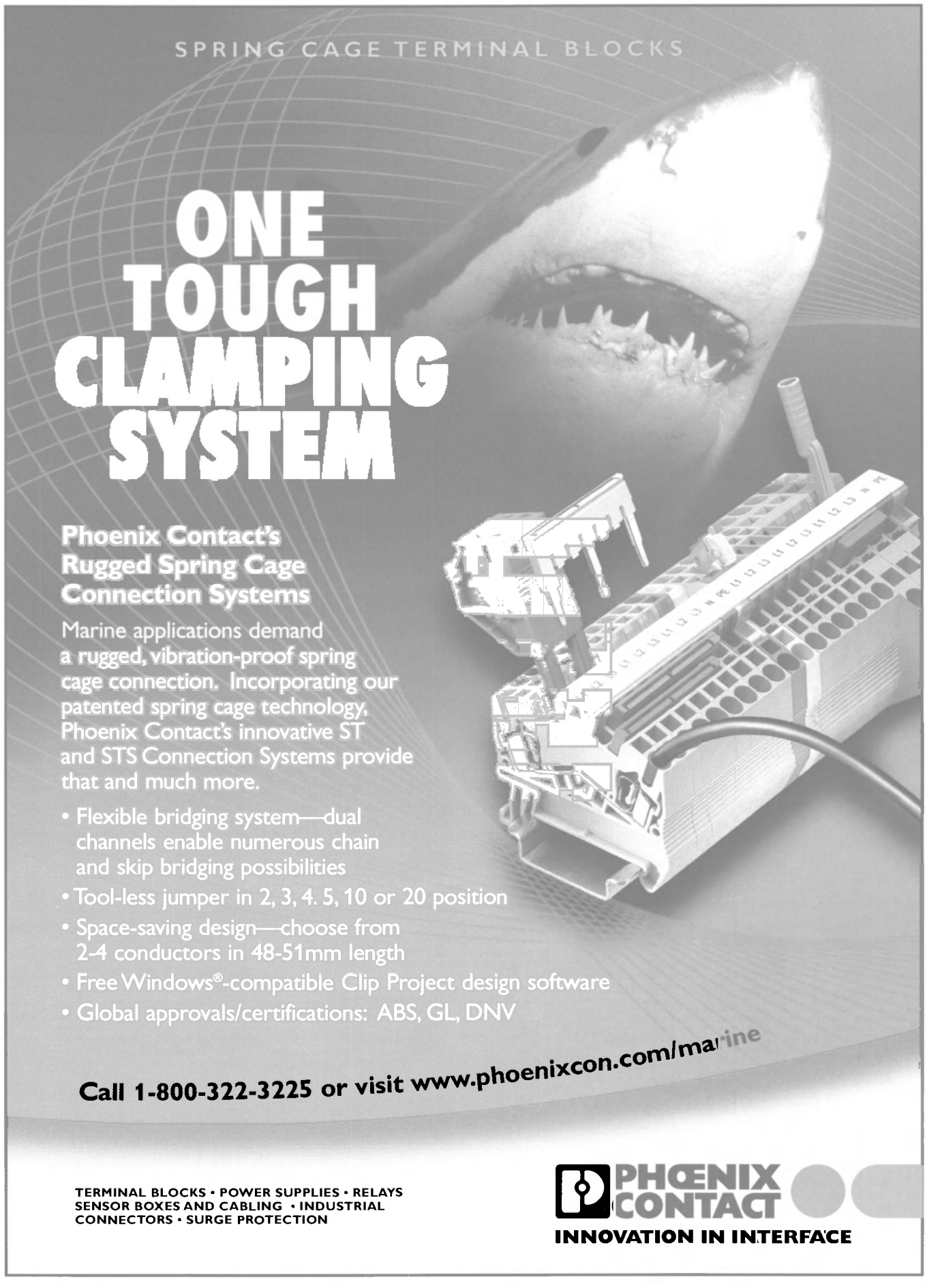
There are five principal factors, which have forever changed maritime casualty response to the point where it will never again rely on risk and compensation based solely on the value of property saved. These five factors, which have effected this change in marine casualty events in the United States, are: Environment, Regulation, Security, Technology and Salvage Cooperation and Communication

1. Environment

Little needs to be said about the impact of the environment. We have all been aware of the increasing, persuasive impact of environmental factors for years. Simply put, it permeates and drives every emergency solution. In its infancy, and even today, environmental considerations can stall and complicate an effective, prompt salvage by extending the beginning of performance beyond a reasonable timetable. We must evolve prompt solutions within the context of environmental needs. This simply requires a combination of experience, logic and adaptability applied with reason to the total solution. While we all recognize the necessity to conduct all operations with a view toward maximum environmental protection, all too often the priorities of all of the interested parties who contribute to our ICS (Incident Command System) become argumentative, combative and confusing to the point of creating almost unsolvable obstacles to a prompt salvage. We must continue, in the U.S., to evolve a system which provides that maximum environmental protection is a primary focal point, yet recognizes the need to adjust priorities to the totality of an effective solution.

2. Regulation

The impact of regulatory authorities in the United States continues to grow. Beginning at the federal level, with ultimate power of the on-scene federal commander in the person of the local district Coast Guard Commander, through the power of the involved state, the local county or district and ending with the local municipality; there are numerous, (often conflicting, and at times, competitive) issues to be resolved. Although there is no structured, identifiable component of the response system called politics, there is not a significant incident where local, state and federally elected representatives do not attempt to influence the result, often from a media or public relations platform. The implementation of, and control of,



Circle 310 on Reader Service Card

the solution to a marine casualty in the United States is the Incident Command System. Having evolved out of forest fire fighting response, its intent was originally to bring together a small group of experienced firefighters under an existing organizational structure to assure a rapid professional and effective response. Since the fighting of fires has been the province of a small group of dedicated firefighters, trained and professional, it is often the same individuals and equipment who participate in the fire fighting process. It is also almost exclusively conducted in remote areas, highly dangerous and a continuously moving event. Although similar in that both are emergencies, the marine ICS has grown to a huge number of participants that can complicate the solution. ICS in any major casualty has moved from a compact group of experience to a large group with multiple and competing interests.

In an effort to better identify and integrate the position of the salvor in his response to an emergency in the United States, the U.S. Coast Guard has evolved a series of new regulations. These new regulations are a welcome change from the past where the captain's brother-in-law could serve as salvage master in the interest of economy. These regulations have been published for comment and the public hearings have been closed. The latest information expects final publication by late spring of this year.

The regulations represent a very comprehensive approach to salvage utilization in the United States in the future. The burden has been placed on the shipowner to essentially name and contract with a professional salvor operating in the United States in order to do business there. Professional standards and timeliness of response are critical components of the Regulations. Because these salvage regulations have emanated from the Oil Pollution Act of 1990 (OPA 90), the new regulations apply to vessels carrying oil only. There are some that say they are too complicated, restrictive, expensive and unnecessary. It is interesting to note that the same objections were made to the initial passage of OPA 90. Looking back over the last 12 years, there are few, if any, who would argue that in terms of reducing marine pollution in the U.S., OPA 90 has been very successful. U.S. salvors and the American Salvage Association (ASA), have endorsed the regulations, and in addition, have suggested they be extended to all significant commercial vessels, which trade to the United States and within its harbors and rivers.

There has been one legal impact in the United States, which is counterproductive. That is the move toward the imposition of criminal liability in instances where, at best, there exists negligence, which should impose a civil liability only. There is the real threat and reality that criminal sanctions are to be imposed. This cannot be insured against, and poses a significant threat to the salvage community. The only answer is responder immunity. One who responds to a casualty to solve a problem and has no hand in creating it, should not be subject to the specter of criminal liability, no matter how remote.

3. Security

Since September 11, 2001, emergency response capability throughout the United States has had to plan for the unforeseen terrorist threat. The threat from the maritime sector has been iden-

RELIABLE
CAPABLE
SOLID
GHS The Standard
General HydroStatics
Ship Stability and Strength Software:
GHS.....Full-featured naval architect's system
GHS LOAD MONITOR.....Onboard system
GHS/SALVAGE.....Salvor's system
BHS.....Economy system
BHS/YACHT.....Yacht designer's system
CREATIVE SYSTEMS, INC.
CREATORS OF GHS
P.O. Box 1910 Port Townsend, WA 98368 USA
TEL (360) 385-6212 Fax (360) 385-6213
E-MAIL: sales@GHSport.com - Website: www.GHSport.com
Producing Advanced Hydrostatics Software since 1972
Circle 235 on Reader Service Card

GIVE US THREE INCHES.
And We Will Replace Your Old Marine Refrigerator.
Three inches clearance from the front. That's all we need to replace your old marine refrigerator with a Cospolich modular refrigerator.
Do it yourself. No bulkhead or hatch cuts. No special skills or tools required. Kits come with easy, step-by-step instructions. Polarized wiring is pre-installed so it can't be plugged in wrong.
With models from 20 cu. ft. to 200 cu. ft., all built to U.S. Navy standards, it's like having a refrigerator built to your specifications.
COSPOLICH
REFRIGERATOR CO.
P.O. Box 1206 Destrehan, LA 70047
Tel: 985-725-0222 • Fax: 985-725-1564
Toll Free: 800-423-7761
www.cospolich.com
Circle 233 on Reader Service Card

HEADHUNTER
INTEGRATED MARINE SYSTEMS
ROYAL FLUSH
•Powerful Jet Macerator
•1 1/2" Discharge Piping
•5 Year Warranty
•Weight And Space Saving Vacuum Alternative
•Labor-Saving Installation
TIDAL Wave
TYPE II MSD
•USCG/IMO Certified
•No Harsh Chemicals
•Custom Designs Available
•Lightweight
•Steel, Plastic, or Aluminum Construction
tel 954•581•6996 fax 954•587•0403 www.headhunterinc.com
4100 RAVENSWOOD RD. FT.LAUDERDALE, FL 33312
Circle 263 on Reader Service Card

Demanding Conditions Require.....
Superior Systems & Equipment
SUPERIOR - LIDGERWOOD - MUNDY CORPORATION
www.lidgerwood.com Tel: 715-394-4444
♦ Tow Haulage Systems ♦ Deck Winches
♦ System Evaluations ♦ Capstans
♦ Refurbishment and Repair
Circle 324 on Reader Service Card

tified by the U.S. government to be one of the most probable alternatives. Containerized shipping, bulk carriers and tankers have all been identified by our government as primary possibilities to possess terrorist event capability. Add to this threat, bridges, terminals and other reachable structures in any U.S. port and one can easily see that the consequences may be catastrophic. The U.S. salvage community must assess its value as a contributor to a solution of both prevention and response. This entails time, training, capital and further communication and cooperation with federal, state and local forces to first identify and quantify the need and then promote a best case response within a practical planning and response framework. The ASA is working together with the Coast Guard and local ports with contingency planning and the identification of salvage response assets.

4. Technology

Technology has been accelerating at a tremendous rate over the last two decades. Computerization, communication, on water and under water navigation, positioning and salvage tools have an ever increasing capability limited only by the economic restraint of return on investment. While technology, as well as environmental necessity, expanded the operational areas of what is now salvageable, deep water recovery, new oil extraction and pumping capacity, increased heavy lift capability, dynamic location and positioning to name a few, there is still the need for the salvor to tool-up and train for these new capabilities at his expense not being able to assess a return on investment based on unknown future casualty response. To a limited degree, the promotion of fair and reasonable retainer to the salvor through the implementation of the new salvage regulations may be a partial answer.

5. Salvage Cooperation And Communication

The ever-increasing complications of salvage in the United States have unintentionally driven salvors to seek opportunities to exchange information and cooperate. The proposed new salvage regulations provide for an owner/operator to list multiple salvors in order to assure complete geographic coverage as well as cover the multiple tasks required of the salvor. As an example, it is extremely difficult for a single salvor to provide six-hour, on-site response to all 47 Coast Guard districts. It is also difficult for some salvors to provide all the listed activities in the time frame required, especially in the unusual event that they may have multiple engagements at the same time.

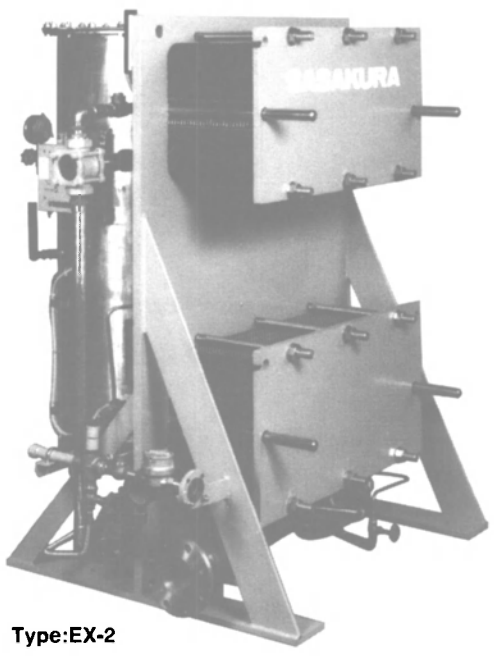
One of the answers has been the American Salvage Association (ASA). With a total active membership of 12 companies, including one Canadian company, the intent is to increase the professional nature of response, educating the public to the importance of salvage, review regulatory and governmental influence to assure continued successful response, provide training of a new salvage generation and foster the abovementioned communication and cooperation among salvors which is critical to promote effective solutions. A growing associate membership, composed of those who have an interest in and recognize the importance of salvage response, has also given additional support, advice and an outside perspective to the ASA.

Currently, the prospect of the U.S. Coast Guard's regulations, coming to pass after many years of study, public awareness and the concern over marine casualties and the efforts of the entire U.S. salvage community to

Circle 245 on Reader Service Card

impose their response both as individual companies and through the efforts of the ASA clearly demonstrates that the road finally appears up.

The market, while the number of casualties fortunately continues to decline, is expanding in other areas. Modest retainer for salvage companies, supported by shipping, will become a reality if the U.S. Coast Guard's regulations are implemented without substantial change. Casualties, when they occur, are far more expensive than in the past, driven by environmental factors. The salvor, as an emergency responder, must expand his activities and participate in pollution control and response, at least in the immediate area of the casualty. Fewer wrecks are left to remain than was possible in the past, increasing the market. Deeper recoveries, and environmentally sensitive removal of oil, much of it from historic casualties, are an expanding market. The demand for salvage response posed by security threats in our ports is real and has been identified. In short, the need for the salvor is still an ever important and continuing requirement in the United States.



Sasakura developed new generation of Plate Type Fresh Water Generator.

AQUARIO

Capacity range: 3-40t/day

No Front Cover!!

The deletion of front cover provides:-

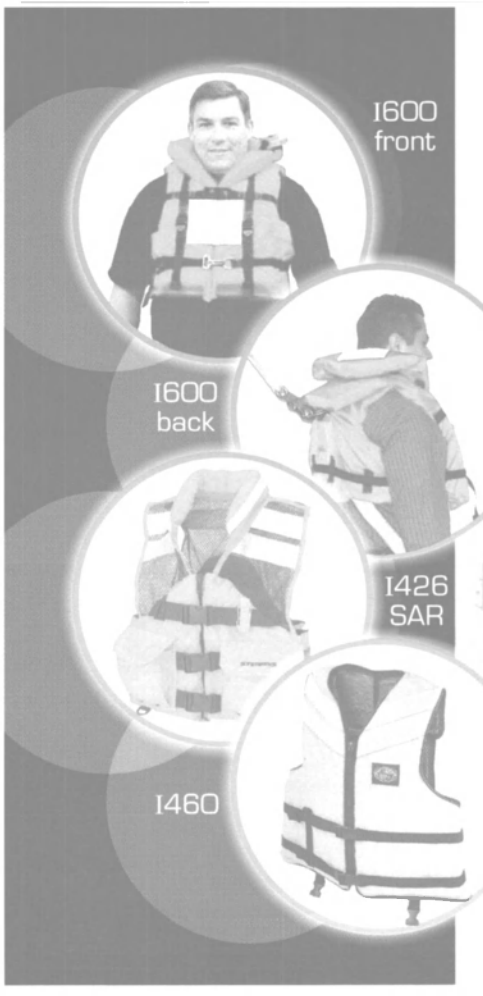
* Easier disassembly and reassembly of Plate Heat Exchanger.
* No corrosion of Frame, Guide bar, End cover and Bolts & Nuts because they do not contact with seawater.
* Minimal installation and maintenance.

Type:EX-2

Sasakura provides Water Makers of the Submerged Tube Type, Multiple Effect Type, Two Stage & Multi Stage FlashType, Reverse Osmosis Type and Vacuum Vapor Compression Type for various applications.

SASAKURA ENGINEERING CO.,LTD.
7-32, Takejima 4-chome, Nishiyodogawa-ku,Osaka 555-0011, Japan Tel:+81-6-6473-2134 Fax:+81-6-6473-5540
E-mail : webmaster@sasakura.co.jp website : http://www.sasakura.co.jp
HONG KONG : Sasakura International (H.K.) Co.,Ltd. Tel:+852-2850-6139 Fax:+852-2850-5259

Circle 313 on Reader Service Card



Since 1948
Stearns Quality PFD's
It's about Technology, it's about Quality, it's about Life.

You can trust Stearns® to provide the finest flotation gear. Our technology is constantly improving and your safety is our top priority.

The 1600 Deluxe Merchant Mate II™ has an attached ring to provide further safety to it's users along with a foam filled collar for additional head support.

For more Stearns® U.S. Coast Guard Approved PFD's, please visit our website at www.stearnsinc.com.

STEARNS® Inc., • P.O. Box 1498 • St. Cloud, MN 56302
800.697.5801 • fax 320.252.4425
e-mail safety@stearnsnet.com • website www.stearnsinc.com

Circle 348 on Reader Service Card

Salvage Show & Directory

Scheduled for September 9-11, 2003, the 2003 National Maritime Salvage Conference, sponsored by the American Salvage Association (ASA), will convene at the Hyatt Regency Crystal City Hotel in Arlington, Va. The following is a listing of all member firms of the American Salvage Association (ASA). For further information, visit the ASA web site at: www.americansalvage.org.

Mr. Neil Williams
American Marine Corporation
Honolulu, HI USA
Tel: (808) 545-5190 (24 Hours) Fax: (808) 538-1703
www.amsghq.com

Mr. W.A. "Cappy" Bisso
Bisso Marine Company, Inc.
New Orleans, LA USA
Tel: (504) 866-6341 (24 Hours) Fax: (504) 865-8132
www.bissomarine.com

Mr. Chris Peterson
Crowley Marine Services, Inc.
Seattle, WA USA
Tel: (206) 332-8000 (24 Hours) Fax: (206) 332-8300
www.crowley.com

Mr. J. Arnold Witte
Donjon Marine Co., Inc.
Hillside, NJ USA
Tel: (908) 964-8812 (24 Hours) Fax: (908) 964-7426
www.donjon.com

Mr. David Usher
Marine Pollution Control
Detroit, MI USA
Tel: (313) 849-2333 (24 Hours) Fax: (313) 849-1623
www.marinepollutioncontrol.com

Mr. Gordon Bain
Ocean Group Inc.
Quebec, CANADA
Tel: (418) 694-1414 (24 Hours) Fax: (414) 692-4572
www.groupocean.com

Mr. William Parker
Parker Diving Service
Forest Knolls, CA USA
Tel: (415) 331-0329 (24 Hours) Fax: (415) 331-0354
www.parkerdiving.com

Mr. Joe Farrell
Resolve Marine Group
Port Everglades, FL USA
Tel: (954) 764-8700 (24 Hours) Fax: (954) 764-8724
www.resolvemarine.com

Capt. Roger Elliott
SMIT Salvage Americas Inc.
Houston, TX USA
Tel: (281) 774-5000 (24 Hours) Fax: (281) 774-5050
www.smit.com

Mr. Rudy Teichman
T&T Marine Salvage Inc.
Galveston, TX USA
Tel: (409) 744-1222 (24 Hours) Fax: (409) 744-5218
www.tandtmarine.com

Mr. Richard Fairbanks
Titan Maritime LLC
Fort Lauderdale, FL USA
Tel: (954) 929-5200 (24 Hours) Fax: (954) 929-0102
www.titansalvage.com

Mr. George Wittich
Weeks Marine, Inc.
Cranford, NJ USA
Tel: (908) 272-4010 (24 Hours) Fax: (908) 272-4740
www.weeksmarine.com

LASOX Cutting Technology

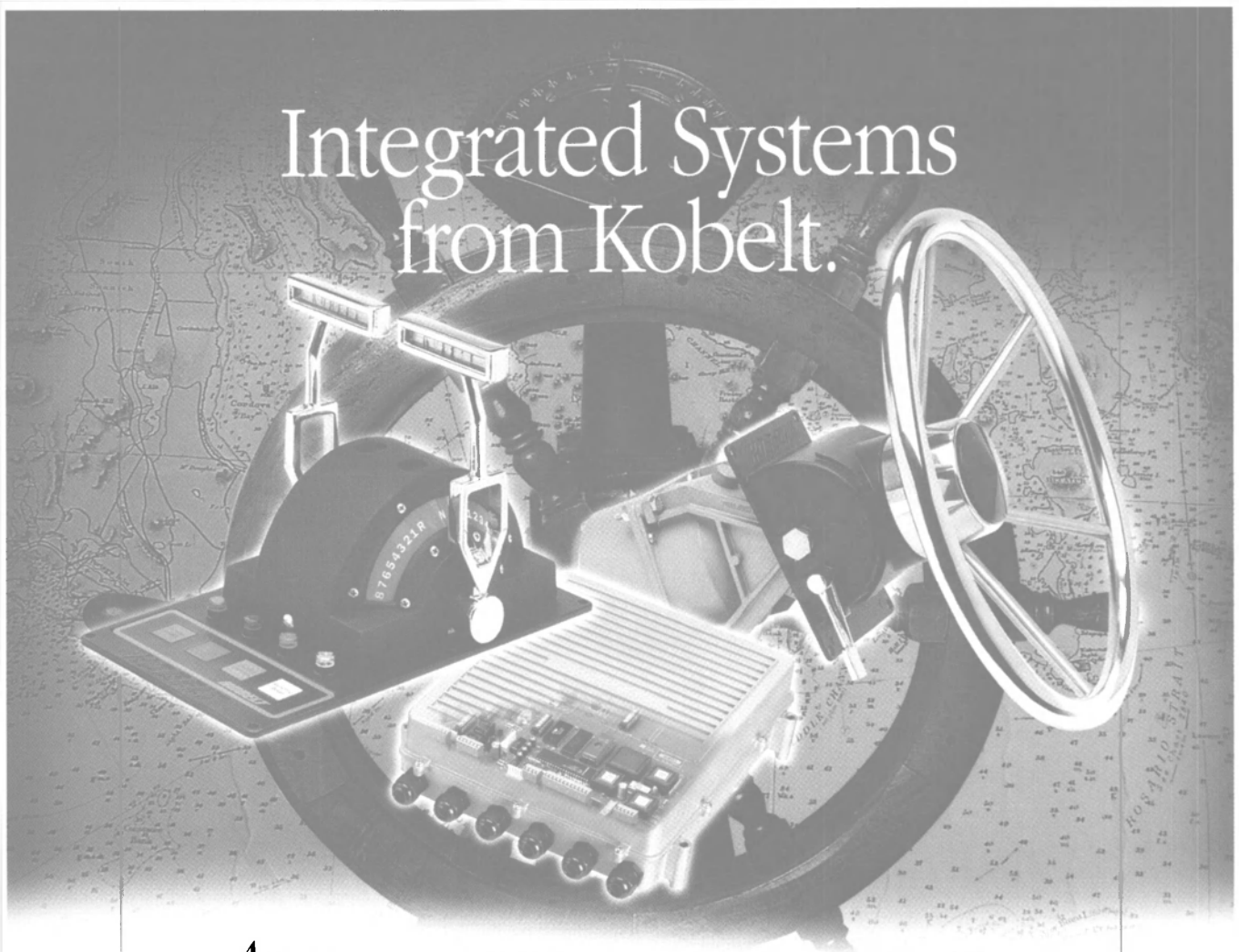
A Step Forward For Thick Section Plate Cutting

By Dr. Bill O'Neill, Institute for Manufacturing, University of Cambridge, U.K.

For years, general manufacturing companies have enjoyed the benefit of laser cutting systems for producing complex or simple parts in batch volumes as low as one, and as high as tens of thousands. The laser is an incredibly powerful tool that remains unsurpassed in manufacturing activities across the world. As flexible and reconfigurable production tool that provides welding, cutting and machining capabilities in a single device, lasers are readily automated and have demonstrated that they can easily operate in "lights-out" mode for even greater productivity. With all this said, why aren't there any laser shipyards? Why hasn't one of the worlds largest and most important transportation industries rushed to implement laser cutting and welding technology? The answer is that the development of the state-of-the-art laser manufacturing technology has been a long and grueling process. Early lasers were just not powerful or reliable enough to attract an industry that had the capability to process heavy section metals using low cost and reliable technologies such as oxy-fuel and plasma cutting, with MIG and TIG and submerged arc techniques being the process of choice for welding. Even the Lloyds approval for laser welding of ship plates has yet to see lasers become commonplace in shipyards. The situation today is rather different. Lasers are now being employed commercially in thick plate cutting and welding and the industry has witnessed a quiet and rather successful processing revolution.

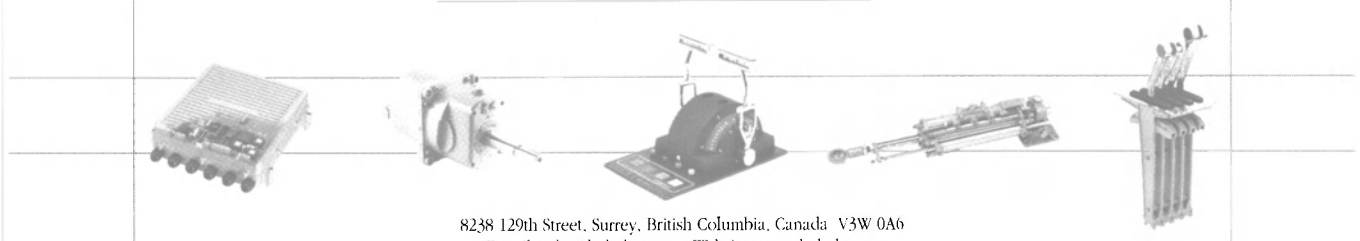
A new, and unexpected, breakthrough in the laser industry occurred in November 2002 at Bender Shipbuilding & Repair in Mobile, Ala. It was there that the first commercial use of the LASOX process cut through two in. of steel using a new cutting principle industrialized by Wayne Penn and his team from Alabama Laser. Co-developed by BOC Gases Ltd. and Dr. Bill O'Neill while working at the University of Liverpool, the LASOX process requires approximately 1 kW of laser power and uses oxygen to provide the cutting energy while the laser is used to maintain and stabilize a pre-heat - similar to the gas flame in oxy-fuel cutting. With O'Neill and his team working on the thick section problem for more than a decade, commercial laser cutting has pushed the section limit from around 15 mm in 1990, to around 30 mm in 2003, with a subsequent increase in laser power from 2kW to 6kW. The process remains the same except the size of the process window is inversely proportional to the plate thickness. Prior to the invention of LASOX, it was a daunting process to cut pieces of high thickness. As a result, there is always the temptation of turning up the power and the gas and just "letting it rip. While the LASOX process, however, will reportedly have the ability to produce the fastest scrap metal production system in the world, it will not, however, solve the problem of producing laser cuts up from 50-75 mm. "A year ago, cutting steel thicker than two inches would have been unheard of with a 2kW laser - one in. being the maximum cutting depth undertaken commercially," said **Pat Cahill**, research and development manager for Bender Shipbuilding. "This process has the potential to cut steel plates as thick as four in. Currently high-powered plasma cutting is limited to three in. This development opens up the possibility of a new generation of steel ships that are stronger and cheaper to build."

With BOC Gases and the University of Liverpool providing the basic technology and process license for LASOX, Alabama Laser Systems carried out pre-production development of the lab based process and the integration into the existing laser cutting system at Bender Shipbuilding. The installation has been so successful that full installations at Caterpillar, for their heavy duty mining



A firm grip, a gentle nudge, and a state-of-the-art computer keeping everything under control. Our steering and propulsion systems are made from long-lasting bronze and stainless steel. Add our microprocessor, and you've got a flexible, integrated system that will take you anywhere you want to go. Kobelt Manufacturing has been producing high quality marine controls and steering for over 35 years. We back every one of our products with a 5 year warranty, along with worldwide sales and support. Contact us today!

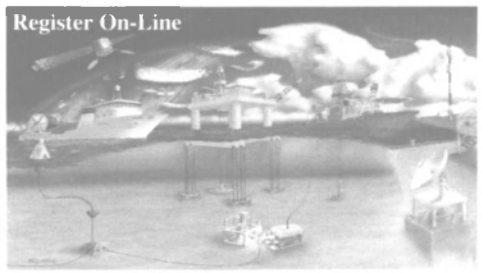
KOBELT *Quality Control*



8238 129th Street, Surrey, British Columbia, Canada V3W 0A6
E-mail: sales@kobelt.com Website: www.kobelt.com
Sales: 604.590.7313 Fax: 604.590.8313

Circle 278 on Reader Service Card

www.offshorecoms.com
3nd ANNUAL
Offshore Communications 2003
August 26-29
Houston, Texas
Inter-Continental Hotel
& Conference Center
Keynote Speaker

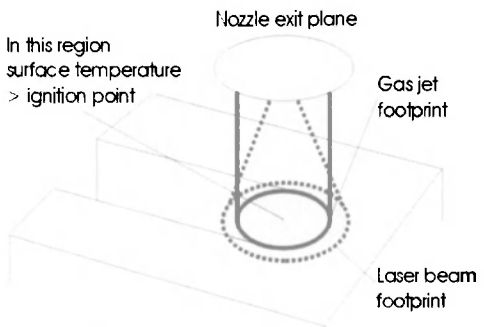
David Work
Chairman
Energy Virtual Partners
"The Virtual Oil Company"


Schlumberger
CapRock
PETROCOM
HARRIS
RigNet
NSW
IT SOLUTIONS & OFFSHORE SECURITY
SUBMARINE TELECOMMUNICATIONS
SATELLITE
WIRELESS
ACOUSTIC COMMUNICATIONS
BUOYS & HYBRID NETWORKS
LEGISLATION & REGULATION
CABLE INSTALLATION & MAINTENANCE
UPSTREAM
Ocean News
MarineNews
Offshore Source
Technology Systems Corporation
PO Box 1096, Palm City, FL 34991
Tel: (772) 221 7720, Fax: (772) 221 7715
www.offshorecoms.com
Contact Inger Peterson
ipeterson@offshoresource.com
Circle 305 on Reader Service Card

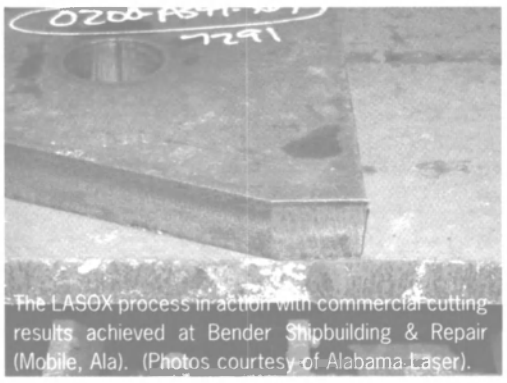
equipment; and General Dynamics - Electric Boat, for use in the building of submarines will be completed three months ahead of schedule.

In The Beginning

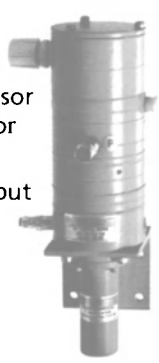
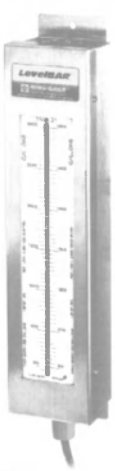
LASOX cutting is the result of 13 years research by Dr. Jack Gabzdyl, BOC's market development manager at the U.K.-based Fabrication Technology Center in Wolverhampton and Dr. Bill O'Neill formerly of the University of Liverpool, and now working at the Institute of Manufacturing at the University of Cambridge, UK. BOC Gases awarded O'Neill a Royal Society Industrial Research Fellowship to conduct a four-year study on laser cutting in 1990 - the outcome of his work being the LASOX process. O'Neill had been working on the thick section cutting



A schematic of the process configuration.

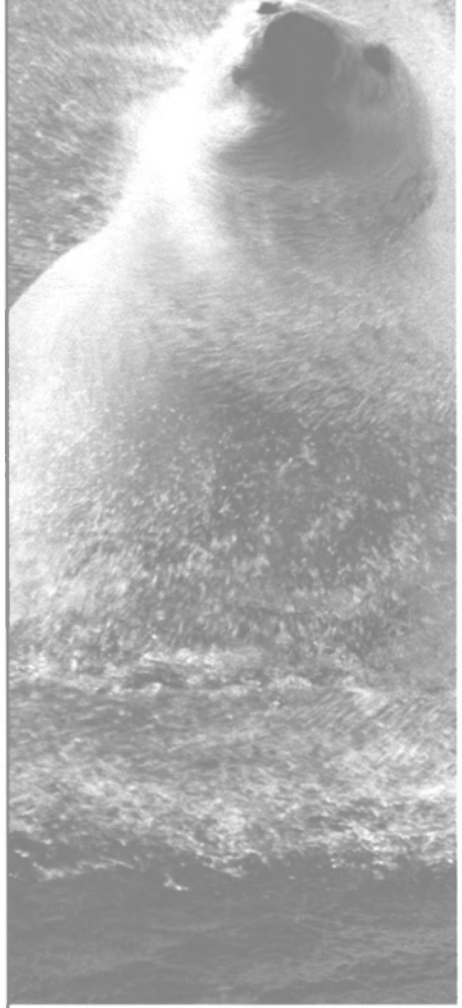

The LASOX process in action with commercial cutting results achieved at Bender Shipbuilding & Repair (Mobile, Ala). (Photos courtesy of Alabama Laser).

KING-GAGE Marine Systems

Tank Level Indication for the Marine and Offshore Oil/Gas Industries
KING-GAGE® LevelPRO
Multiple Tank Level Processors
Continuous measurement of multiple ballast and shipboard service tanks.
- Total volume and/or tank depth
- Durable corrosion proof housing
- Digital communications output
KING-GAGE® LiquiSeal
Liquid Level Transmitter
Rugged marine liquid level sensor for ballast/cargo/service tanks or draft measurement.
- Electronic or pneumatic output
- Proven air purge principle
- Externally mounted


KING-GAGE LevelBAR
Tank Level Indicator
Analog LED column graphically displays tank level as total volume and/or depth.
- Replaces fluid-filled gages
- Stainless steel housing
- Greater reliability

• Tank Gauges
• Draft Measurement
• Air Control Stations
• Compressed Air Filters
• USN Service

KE KING-GAGE
Since 1937 KING ENGINEERING CORPORATION
800-242-8871 • 714-662-5691 • FAX 734-662-6652 www.king-gage.com
Circle 277 on Reader Service Card

Centrifugal Force at Its Best

Introducing A Better Way to Treat Bilge Water...
Westfalia Separator Bilge Water Treatment Systems are successfully operated on vessels in the Cruise Ship and Merchant Marine fleet.
The systems are tested and certified in accordance with IMO (MEPC, 60 [33]). Westfalia bilge water treatment systems provide the following advantages:
- Continuous, unsupervised operation
- Automatic adjustment to fluctuation in oil and sediment content
- Highest separation efficiency (to less than 5 ppm)
- No chemicals required
- Low maintenance
If our ready-to-connect systems sound better to you than high maintenance static separators, filters and chemicals, give us a call at (201) 784-4391.
GEA Westfalia Separator, Inc.
A company of mg technologies group.
Westfalia Separator, Inc
100 Fairway Court • Northvale, NJ 07647
Tel: (800) 722-6622 • Fax: (201) 784-4399
Email: lohmeyer.klaus@wsus.com


Circle 343 on Reader Service Card

problem by examining the dynamic effects of melt and gas flow through deep section kerfs and became convinced that the problem could be solved by forgetting the conventional laser cutting approach. "In 1990 the Holy Grail at that time was the ability to cut thick plate steel. In the early 1990s, laser cutting was very much limited to about 12 o 15 mm (0.48 to 0.6 in.). That's when we started looking at ways in which we could assist the thickness capability of laser cutting materials. We were quite convinced that the gas played a significant role," said Gabzdyl. So we turned the basic principles of laser cutting on its head, and looked to our expertise in oxy-fuel cutting where we realised hat the oxygen is really the process workhorse," he said.

He continued: "In traditional laser beam cutting, the laser is the workhorse while the oxygen assists in the process. The oxygen just helps. We inverted that philosophy in laser cutting and made the oxygen jet the workhorse and the laser beam the assist."

The LASOX cutting process is an exothermic burning reaction in which the heat of the laser beam is only used to bring the steel to ignition temperature at approximately 1,832°F (1,000° C). A specially designed nozzle is used to deliver a supersonic stream of oxygen to the heated spot, resulting in ignition and then sustained burning. LASOX combines the benefits of lasers and oxyfuel cutting by using a very modest amount of laser energy by conventional standards, about 1kW, so the process can be operated with relatively small low cost lasers. This laser beam in effect replaces the fuel gas in oxy-fuel cutting. The laser beam is then combined with a high pressure supersonic oxygen gas jet, which provides the cutting energy. Thicker material has traditionally been cut with oxyfuel and more recently with plasma torches but both processes suffer from quality issues. "When we started in the early 1990s, we would have been happy to cut one-in. steel plate. But as it happens, we've been able to cut increasingly thicker plate. By careful manipulation of the nozzle geometry and the beam characteristics, we can cut very thick material - up to about four in. plate," said Gabzdyl. Another advantage of LASOX is that it is instantaneous. "There is no preheating element required to start the piercing

Bender Pioneers LASOX Cutting in Production

At the end of 2002, following 10 months' worth of research and development via a National Shipbuilding Research Program (NSRP)-funded project, the team of Bender Shipbuilding (including Cutting Edge Metal Processing), Alabama Laser Systems and BOC Gases, successfully installed and tested the only production LASOX system. Test cuts, which were performed on November 12, 2003 using 1.5-in. mild steel demonstrated excellent results.

According to **Pat Cahill**, R&D manager at Bender Shipbuilding & Repair Co., the company's existing equipment can "achieve laser quality cuts through at least 2-in. steel." Cahill added that further R&D work has a goal of 4-in. steel. Additional team members on the project include General Dynamics Electric Boat and Caterpillar, Inc., both of which will receive the next installment of the LASOX system. All have already implemented new laser technologies currently in production with other NSRP projects. This new technology was developed to meet the needs of cutting thick steel (from 50 mm min. up to 100 mm), using a relatively low laser power of less than 2 kW. LASOX is an exothermic burning reaction where the heat of the laser beam is utilized to bring the steel to ignition temperature. A specially-designed nozzle is then used to deliver a stream of oxygen to the heated spot - resulting in ignition and sustained burning.

Bob Lewis, general manager of Bender's metal processing facility, Cutting Edge Metal Processing, was equally impressed by the process, which allowed the piercing of 50 mm plate steel in less than two seconds.

Circle 97 on Reader Service Card

At Catalina Express, we're considered part of the family.

With their busy ferry service between The Mainland and Catalina Island in California, USA, Catalina Express demand the best in reliability and performance from their vessels. That's why they chose Hamilton waterjets for the largest fast passenger ferry in their family, 'Jet Cat Express'.

No other waterjet propulsion system is as widely used and supported around the world. So, if you want a new family member you can trust, trust Hamilton Jet to deliver.

Head Office C.W.F. Hamilton & Co. Ltd. PO Box 709, Christchurch, New Zealand. Phone: +64 3 348 4179, Fax: +64 3 348 6969, Email: marketing@hamjet.co.nz

U.K. Office HamiltonJet (U.K.) Ltd. Unit 4a, The Birches Industrial Estate, East Grinstead, West Sussex RH19 1XZ, United Kingdom. Phone: +44 1342 313 437, Fax: +44 1342 313 438, Email: sales@hamjetuk.com

U.S.A. Office HamiltonJet Inc. 1111 N.W. Ballard Way, Seattle WA 98107, United States of America. Phone: +1 206 784 8400, Fax: +1 206 783 7323, Email: marketing@hamiltonjet.com, Website: www.hamiltonjet.com

HamiltonJet
www.hamjet.co.nz

Circle 240 on Reader Service Card

process. In cutting two-in. steel with oxy-fuel, you would need to put the flame on the surface for about 30 seconds before hitting the cutting oxygen jet to make the pierce. Whereas with the LASOX process, because the laser heats the surface instantaneously to the ignition temperature, as soon as you turn the laser on, you can turn on the gas stream and start piercing," explained Gabzdyl.

In January 2001, Gabzdyl and O'Neill were invited to present their findings on LASOX at a meeting at Caterpillar in Peoria, Ill. "We turned everything on its head. We explained that the laser is not the important thing, it's actually the gas that does the trick. This astonished the laser community there, because they tend to be very laser-centric people who feel that the laser is always the most important thing," recalled Gabzdyl. "It definitely caught my eye," said Cahill, referring to the presentation. Later that evening, Gabzdyl, O'Neill, Cahill of Bender Shipbuilding and Penn of Alabama Lasers had discussions with the view to establishing this process in the shipbuilding industry.

In February 2001, Cahill pulled together the team of Bender Shipbuilding, Alabama Laser and BOC Gases, and wrote a proposal to the National Shipbuilding Research Program, (NSRP). "The proposal got selected and we moved forward. Less than a year after we started real work on it, we were using LASOX in production. We went from the laboratory to production at almost lightning speed," said Cahill.

Penn, who serves as president of Alabama Laser agreed. "What we brought to the equation was taking LASOX out of the lab and making it work on the industrial floor. There's a big difference in doing something once in a lab and doing it a thousand times on the industrial floor," he said. "I've been working with lasers for 30 years and every now and then I see a quantum leap and LASOX fits into that category."

Penn continued: "An important aspect of LASOX that isn't often mentioned is its ability to do intricate detail even on thick plate. We've been able to cut webs that just can't be achieved with other methods. The LASOX process supplies just enough heat to drive the reaction and a lot of that heat energy is removed through the kerf. Plasma cannot do the square cuts that allows you to do common line cutting with feature detail and a minimum heat for the part with a minimum amount of distortion, those features alone solve certain categories of problems. This is a tool to give you more capability, not a tool to displace other technologies. It gives someone that is going to invest a million dollars in a laser system with a new tool. It allows him to cut thicker plate without having to go out and buy a plasma or oxyfuel system and making a lot of redundancy and using up a lot more floor space."

According to **Pat Cahill** of Bender, "LASOX is going to completely change the way people look at lasers as a cutting tool," said Cahill. "We're saving hours and hours of machine shop time because we're able to cut holes that are of machine quality. In the past we would cut the blanks out with an oxy-burner and take them to the machine shop and drill them." "LASOX has an almost zero kerf angle, an inch and a half material with less than one degree of a kerf angle. So you have a straight edge. It has almost no top edge melting at all."

Turn to page 89 for updates on the latest Welding and Cutting Technologies

Differential Pressure Gauge For Seawater Applications

Made in the USA

Mid-West Instrument's Model 120 Series "FilterMinder" piston type differential gauge is specially designed for seawater applications. For protection, the 120 gauge materials include aluminum bronze or monel.

Benefits Include:
- Range: 0-5 PSID thru 0-100 PSID (0.3 bar to 7.0 bar)
- Accuracy + 5% full scale ascending
- Weather resistant construction standard
- Working pressure 5000 P.S.I.G. (340 bar)
- Over-range protection to rated working pressure
- Dial size: 2-1/2", 3-1/2", or 4-1/2" round
- Shatter resistant lens

For more information contact:
Mid-West Instrument
"Best Value in ▲P Instrumentation"
6500 Dobry Drive • Sterling Heights, MI 48314
Tel: (586) 254-6500 • Fax: (586) 254-6509
Web Site: www.midwestinstrument.com
E-Mail:sales@midwestinstrument.com

5 YEAR WARRANTY (Best in the Industry)

Circle 295 on Reader Service Card

Marine Deck Hardware and Equipment

♦ ANCHORS: ♦
50 to 60,000 Lbs. - New and Used
Stockless - Danforth - L.W.T. - Halls - Snug Stowing
♦ CHAIN ♦
3/4" to 5 1/8" - New and Used
Stud Link - Cast Steel - Grades 2 and 3 - Oil Rig Quality for Moorings, Towing, Barge Handling, Ship's Replacement
♦ WINCHES - WINDLASSES - CAPSTANS ♦
Vertical or Horizontal Hand, Electric, Diesel, Hydraulic or Repowered to your specs
♦ HATCHES - WATERTIGHT DOORS MANHOLE COVERS - SCUTLES - PORTHOLES ♦
All Sizes - New or Reconditioned
♦ PANAMA CHOCKS - DOUBLE BITTS SINGLE BITTS - CAST STEEL CLEATS AND KEVELS ♦
All Sizes Available. New & Used
♦ FENDERS PNEUMATIC ♦
For Rent or Sale
All Sizes
New & Used

GIGANTIC INVENTORY NEW & USED
IN STOCK NOW in the West Coast, East Coast and The Gulf
Call Toll-Free (800) 322-3131

SERVING THE MARINE & OIL INDUSTRIES FOR OVER 35 YEARS
WE ARE DIRECT FACTORY DISTRIBUTORS & IMPORTERS

WATERMAN SUPPLY CO., INC.
P.O. BOX 596
WILMINGTON, CA 90748
PH. (310) 522-9698
FAX. (310) 522-1043

Circle 341 on Reader Service Card

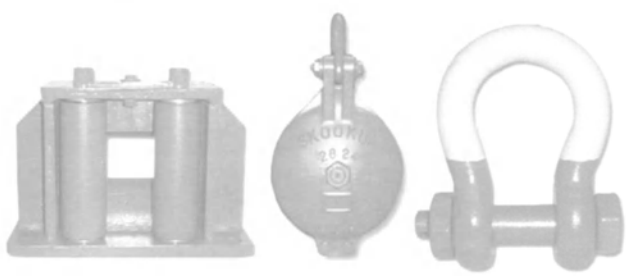
PERFORMANCE DESIGNED WIPER SYSTEMS

B. Hepworth and Co. Ltd.
incorporating
Hepworth Marine INTERNATIONAL
subsidiary
Window Wiper Technologies Inc.

Hepworth House, Brook Street, Redditch, Worcestershire B98 8NF
Tel: +44 (0)1527 61243 Fax: +44 (0)1527 66836
Email: bhepworth@b-hepworth.com Website: www.b-hepworth.com

Circle 264 on Reader Service Card

Now more than ever, Skookum signifies value in today's cost-conscious world.



You've known us for quality rigging products since 1890. Our comprehensive block, fairlead, sheave and alloy forging lines have met the challenges of the most demanding applications around the world. And in the process, we've proudly taken part in the shaping of American history; from salvage operations at Pearl Harbor and construction of the Grand Coulee Dam to San Francisco's BART and the space shuttle.

Whatever your applications, we're committed to serving you with the finest in standard and custom engineered products. For further information contact your nearest dealer or call us at:
503/651-3175
Skookum
PO Box 280, Hubbard, OR 97032
FAX 503/651-3409

SKOOKUM®
Blocks & Rigging
AN ULVEN COMPANY
1-800-547-8211 • www.skookumco.com

Circle 320 on Reader Service Card

Wallem Attains OHSAS 18001
In the wake of the SARS virus outbreak in Asia, Wallem Shipmanagement Ltd., Hong Kong has taken initiative and commitment in implementing international standards to manage safety & quality assurance risks, by completing the implementation of OHSAS 18001 — the comprehensive Occupational Health and Safety (OH&S) management system specification.

Shipway Appointed BIW President
General Dynamics announced the appointment of **John F. "Dugan" Shipway**, as president of Bath Iron Works, reporting to **Michael W. Toner**, executive vice president of General Dynamics Marine Systems group. Shipway succeeds **Allan C. Cameron**, who announced that he is retiring from his presidential post, which he has held since 1996. Shipway, who retired from the U.S. Navy as a rear admiral after 35 years of service, joined General Dynamics Electric Boat in July 2000 as special assistant to the president.

CP Ships Posts 1Q Loss
CP Ships Ltd. reported an unaudited 1Q 2003 operating loss of $2 million before exceptional items, a $4 million improvement on the $6 million operating loss in first quarter 2002 and compared with $34 million operating income before exceptional items in fourth quarter 2002. Volume at 514,000 teu was a record for the seasonally weak first quarter, up 18% from first quarter 2002. Average freight rates were up 1 percent on the same period last year but down 2 percent on fourth quarter 2002.

Joint Venture Wins FPSO Contract
Stolt Offshore S.A. has been awarded, by TotalFinaElf E&P Angola, a contract, as part of a Joint Venture with Technip-Coflexip and Saipem-SA, for the FPSO topsides on the Dalia field development in Block 17 offshore Angola. The contract, valued in excess of $550 million, is for the topsides modules and their integration to the hull and will be carried out in consortium with Samsung Heavy Industries and the Daewoo Shipbuilding and Marine Engineering Company in South Korea.

Arkell Named Ops Director at Graig
Graig Ship Management Limited (GSM) has appointed **John Arkell** as operations director. Arkell recently stepped down from his position as joint managing director of Bibby-Harrison Management Services Ltd.

Ribcraft Awarded GSA Contract
Ribcraft USA's line of rigid inflatable boats has been approved for the U.S. Government's General Services Administration (GSA) Awards Schedule, a government approved listing of suppliers and manufacturers for all government agencies.

Circle 183 on Reader Service Card

Atlantec Enterprise Wins Navy Deal
Atlantec Enterprise Solutions has received an SBIR Phase II contract from the Office of Naval Research.

The project, entitled Connector Architecture for CAD and CAM Systems is a 24-month project totaling $850,000.

Circle 20 on Reader Service Card

Heidenreich and Fender Care Form Alliance
Heidenreich Lightering Services Inc. and Fender Care Marine Ltd. have formed a strategic alliance to jointly provide a full service suite of lightering and ship-to-ship transfer solutions to their customers worldwide.

Circle 179 on Reader Service Card

Manitowoc
Marine Group

We deliver OPA '90 Articulated Tug/Barge (AT/B) Units to your Specification, Competitively and on Schedule

The Industry Leader in Construction, Conversion, and Shiprepair for over 100 years.

Manitowoc Marine Group
1600 Ely Street, Marinette, WI 54143
Phone: 715-735-9143 Ext.528
Fax: 715-735-3516
www.manitowocmarine.com

A Manitowoc Company

Circle 286 on Reader Service Card

PORT & MARITIME SECURITY
COMPLIANCE SEMINAR

Will your company be prepared when the Port Security Rules go into effect?

US Coast Guard Security Regulations will be published by July 2003, with compliance submissions required by January 2004 and full compliance by July 2004.

Will your company be affected?

Security is everyone's concern, but currently the government has four primary areas of focus:

- **Vessels** in international service
- **Vessels** & **Facilities** that handle materials classified as Certain Dangerous Cargoes (CDCs) - explosives, poisonous gases, radioactive & poisonous materials, liquidfied chlorine or flammable/toxic liquids, ammonium nitrate, and a handful of specific, nasty chemicals
- **Vessels** certified to carry 150+ passengers, and the **facilities** that handle them
- **Facilities** that handle international **vessel** traffic, regardless of cargo or passenger load

Be prepared with series of seminars presented by:

Havnen Group

Marine Security Source Book

MarineNews

MARITIME REPORTER AND ENGINEERING NEWS

How can you ensure your company is prepared?

Knowledge is power, and the Port & Maritime Security Compliance Seminar is designed to provide this knowledge. Featured presenters Charley Havnen, Commander USCG (Ret) is Maritime Regulatory Authority & Compliance Specialist. Pat Touchard is a Chemical Emergency and Security Specialist, a retired Commander of the Louisiana State Police HAZMAT Response Team and a former SWAT Team Leader. Together, they offer more than 70 years of hands-on regulatory experience.

Port Security Compliance Seminar Schedule:

New Orleans - 7/22 **Airport Hilton**	**Tampa - 8/4** **Airport Hotel**	**Mobile - 8/6** **CBD Hotel**	**Corpus - 8/19** **Beach Hotel**	**Houston - 8/21** **By Hobby Airport**
Morgan City - 8/25 **Downtown**	**Port Arthur - 8/28** **Near MSO**	**St. Louis - 9/9** **TBD**	**New York - 9/17** **Midtown**	

Register by fax at: 504-394-8869 or phone: 504-394-8933 or e-mail: security@havnengroup.com
www.havnengroup.com

☐ **Early Registration: $325** ☐ **Late Registration: $350**
☐ **NY: $425** ☐ **NY: $495**

Early Registration Deadline: 30 Days Before Session

Name: _____
Company: _____
Billing Address: _____
City: _____ State: _____
Postal Code: _____ Country: _____
Phone: _____
Fax: _____
E-mail: _____

Payment:
Please charge my credit card
☐ VISA ☐ MasterCard
Account #: _____
Exp. Date: _____

Circle 200 on Reader Service Card

U.S.-Flag Cargo Carrying Fleet by Area of Operation

(Carrying Capacity Expressed In Thousands of Metric Tons) As of July 1, 2002

Vessels of 1,000 Gross Tons and Over

	Total		Liquid Carriers		Dry Bulk Carriers		Containerships		Other Freighters*	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
Grand Total	**3,869**	**30,495**	**2,196**	**15,714**	**759**	**5,889**	**123**	**3,108**	**791**	**5,784**
Foreign Trade	268	5,319	53	946	116	1,115	61	2,510	38	748
Oceanborne	263	5,214	51	927	113	1,029	61	2,510	38	748
Great Lakes	5	105	2	19	3	86	0	0	0	0
Domestic Trade	**3,430**	**21,921**	**2,116**	**13,887**	**643**	**4,774**	**57**	**512**	**614**	**2,748**
Coastal	1,344	13,299	567	8,770	355	2,146	57	512	365	1,871
Inland Waterway	2,000	6,454	1,542	5,075	227	576	0	0	231	803
Great Lakes	86	2,168	7	42	61	2,052	0	0	18	74
Government	**171**	**3,255**	**27**	**881**	**0**	**0**	**5**	**86**	**139**	**2,288**
Total Self-Propelled	**462**	**14,914**	**114**	**6,230**	**69**	**2,600**	**90**	**2,898**	**189**	**3,186**
Foreign Trade	127	4,588	17	771	12	579	61	2,510	37	728
Oceanborne	127	4,588	17	771	12	579	61	2,510	37	728
Great Lakes	0	0	0	0	0	0	0	0	0	0
Domestic Trade	**164**	**7,071**	**70**	**4,578**	**57**	**2,021**	**24**	**302**	**13**	**170**
Coastal	105	5,063	68	4,559	2	71	24	302	11	131
Inland Waterway	0	0	0	0	0	0	0	0	0	0
Great Lakes	59	2,008	2	19	55	1,950	0	0	2	39
Government* **	**171**	**3,255**	**27**	**881**	**0**	**0**	**5**	**86**	**139**	**2,288**
Total Non-Self-Propelled**	**3,407**	**15,581**	**2,082**	**9,484**	**690**	**3,289**	**33**	**210**	**602**	**2,598**
Foreign Trade	**141**	**731**	**36**	**175**	**104**	**536**	**0**	**0**	**1**	**20**
Oceanborne	136	626	34	156	101	450	0	0	1	20
Great Lakes	5	105	2	19	3	86	0	0	0	0
Domestic Trade	**3,266**	**14,850**	**2,046**	**9,309**	**586**	**2,753**	**33**	**210**	**601**	**2,578**
Coastal	1,239	8,236	499	4,211	353	2,075	33	210	354	1,740
Inland Waterway	2,000	6,454	1,542	5,075	227	576	0	0	231	803
Great Lakes	27	160	5	23	6	102	0	0	16	35

Vessels Less Than 1,000 Gross Tons

	Total		Liquid Carriers		Dry Bulk Carriers		Containerships		Other Freighters	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
Grand Total	**32,229**	**46,381**	**2,214**	**3,965**	**23,010**	**36,438**	**4**	**2**	**7,001**	**5,976**
Foreign Trade	109	50	3	1	106	49	0	0	0	0
Oceanborne	109	50	3	1	106	49	0	0	0	0
Great Lakes	0	0	0	0	0	0	0	0	0	0
Domestic Trade	**32,120**	**46,331**	**2,211**	**3,964**	**22,904**	**36,389**	**4**	**2**	**7,001**	**5,976**
Coastal	3,930	3,562	241	982	573	741	1	1	3,115	1,838
Inland Waterway	27,890	42,394	1,961	2,975	22,211	35,478	3	1	3,715	3,940
Great Lakes	300	375	9	7	120	170	0	0	171	198
Total Self-Propelled	**384**	**948**	**77**	**797**	**4**	**2**	**0**	**0**	**303**	**149**
Domestic Trade	**384**	**948**	**77**	**797**	**4**	**2**	**0**	**0**	**303**	**149**
Coastal	256	902	71	795	0	0	0	0	185	107
Inland Waterway	109	27	2	0	0	0	0	0	107	27
Great Lakes	19	19	4	2	4	2	0	0	11	15
Total Non-Self-Propelled	**31,845**	**45,433**	**2,137**	**3,168**	**23,006**	**36,436**	**4**	**2**	**6,698**	**5,827**
Foreign Trade	**109**	**50**	**3**	1	**106**	**49**	**0**	**0**	**0**	**0**
Oceanborne	109	50	3	1	106	49	0	0	0	0
Great Lakes	0	0	0	0	0	0	0	0	0	0
Domestic Trade	**31,736**	**45,383**	**2,134**	**3,167**	**22,900**	**36,387**	**4**	**2**	**6,698**	**5,827**
Coastal	3,674	2,660	170	187	573	741	1	1	2,930	1,731
Inland Waterway	27,781	42,367	1,959	2,975	22,211	35,478	3	1	3,608	3,913
Great Lakes	281	356	5	5	116	168	0	0	160	183

* Includes General Cargo, RoRo, Multi-purpose, LASH vessels, and Deck Barges; Excludes Offshore Supply Vessels.

** Integrated Tug Barges of 1,000 grt & greater are contained in non-self-propelled categories as follows: Foreign Trade - 1 dry bulk (36,686 tons), 1 other freighter (20,000 tons); Domestic Coastal - 11 liquid (449,370 tons), 3 dry bulk (111,000 tons); U.S./Translakes - Great Lakes 2 liquid (18,955 tons) and 3 dry bulk (85,514 tons).

*** Self Propelled Vessels => 1,000 Gross Tons; excludes one Domestic Coastal Passenger vessels of 3,988 Dwt and eleven other Passenger vessels of 96,474 Dwt.

Sources: U.S. Maritime Administration - www.marad.dot.com - Adapted from Corps of Engineers, Lloyds Maritime Information Service, U.S. Coast Guard and Customs Service Data

Top 20 World Merchant Fleets by Country of Owner

Self-Propelled Oceangoing Vessels 1,000 Gross Tons and Greater
As of January 1, 2003
(Tonnage in Thousands)

Country	Tanker No.	Tanker Dwt	Dry Bulk No.	Dry Bulk Dwt	Full Container No.	Full Container Dwt	Other* No.	Other* Dwt	Total No.	Total Dwt
Greece	807	64,967	1,301	72,285	146	4,709	661	6,913	2,915	148,873
Japan	767	37,110	868	51,891	219	7,132	868	8,236	2,722	104,368
China	314	7,200	578	24,398	210	4,401	931	7,630	2,033	43,629
Norway	425	24,956	168	10,552	19	623	463	6,570	1,075	42,701
Germany	179	6,488	156	6,097	793	21,382	896	6,285	2,024	40,252
United States	337	27,378	115	5,563	84	2,893	354	4,412	890	40,247
Hong Kong	142	14,546	260	17,794	37	1,416	112	1,617	551	35,372
Korea	215	7,638	178	13,422	97	2,486	265	1,521	755	25,067
Taiwan	43	3,532	167	10,279	201	7,016	105	818	516	21,645
Singapore	287	10,268	64	2,518	135	2,993	125	1,009	611	16,788
Denmark	155	7,480	23	1,449	130	6,239	243	1,351	551	16,518
United Kingdom	136	7,198	45	4,018	83	3,227	244	1,949	508	16,392
Russia	389	>7,637	115	1,855	33	793	1,124	4,466	1,661	14,751
Italy	232	5,160	66	4,509	13	322	155	2,209	466	12,200
Saudi Arabia	74	10,588	1	2	1	68	17	305	93	10,963
India	106	5,471	111	4,461	3	87	57	348	277	10,366
Turkey	95	1,464	138	5,357	34	383	257	1,654	524	8,858
Iran	32	4,428	43	1,915	7	179	43	725	125	7,247
Sweden	123	5,345	8	67	-	-	160	1,490	291	6,901
Belgium	61	4,736	16	1,859	2	13	37	255	116	6,863
All Other	2,372	72,601	1,363	58,767	687	18,222	5,635	33,686	10,057	183,276
Grand Total	7,261	336,189	5,784	299,059	2,934	84,583	12,752	93,448	28,761	813,279

1 Based on parent company nationality.
(Dwt) = Deadweight Tons
* Roll-on/Roll-off, Passenger, breakbulk ships, partial containerships, refrigerated cargo ships, barge carriers, and specialized cargo ships

Source: U.S. Maritime Administration - www.marad.dot.com

Top 20 Maritime Shipping Nations

There are an estimated 28,296 oceangoing ships in the world. The following provides a snapshot of their "distribution" by Flag State, No. Ships (% world fleet) and DWT.

Flag	No. Ships	DWT
Panama	4727 (16.7%)	180,170,000
Liberia	1509(5.3%)	78,490,000
Greece	707(2.4%)	47,168,000
Bahamas	990(3.6%)	44,928,000
Malta	1319(4.7%)	44,198,000
Cyprus	1222(4.4%)	35,686,000
Singapore	852(3.0%)	32,365,000
Norway (NIS)	651(2.3%)	28,480,000
China	1453(5.1%)	22,480,000
Hong Kong	419(1.5%)	22,387,000
Marshall Islands	258(0.9%)	18,787,000
U.S.A.	443(1.6%)	14,960,000
Japan	603(2.2%)	14,095,000
India	298(1.0%)	10,271,000
St. Vincent & The Grenadines	740(2.6%)	9,815,000
Italy	420(1.5%)	9,783,000
Isle of Man	205(0.7%)	9,288,000
South Korea	485(1.7%)	8,907,000
Turkey	541(1.9%)	8,856,000
Bermuda	97(0.1%)	8,405,000

Source: U.S. Maritime Administration - www.marad.dot.com

World Order Book

Merchant Vessels 10,000 DWT and Over Tankers, Bulk Carriers and Full Containerships — As of January 1, 2003

Vessel Type	World Order Book Number of Vessels	World Order Book Total DWT (Millions)	World Merchant Fleet Number of Vessels	World Merchant Fleet Total DWT (Millions)	Order Book Percent of World Total
Tankers					
Total Dwt	746	63.1	3,871	320.8	19.7
10,000 - 69,999	414	16.8	2,446	83.4	20.1
70,000 and over	332	46.3	1,425	237.4	19.5
Bulk Carriers	390	28.6	5,294	296.4	9.6
		Total TEU (Thousands)		Total TEU (Thousands)	by TEU
Full Containerships					
Total TEU's	261	978.8	2,322	5,698.90	17.2
under 2.000	55	72.1	1,163	1,461.20	4.9
2.000 - 3.999	85	234.6	745	2,095.30	11.2
4.000 and over	121	672.1	414	2,142.40	31.4

Source: U.S. Maritime Administration - www.marad.dot.com

Age Profile of World Merchant Fleet

Greater than 10,000 DWT — (Million DWT)

	< 1972	1972 - 1981	1982 - 1991	> 1991
Containerships1	0.7	5.8	16.9	57.3
Other General Cargo2	3.6	18.7	14.7	13.5
Dry Bulk3	3.7	44.7	100.9	147.1
Tanker4	3.1	63.3	73.8	180.7
< 70,000 DWT	2.6	22.4	27.1	31.4
>= 70,000 DWT	0.6	40.8	46.8	149.3

1 Includes fully cellular containerships
2 Includes general cargo ships, partial containerships, reefer ships, RoRo ships, barge carriers, heacy-lift ships and vehicle carriers.
3 Includes dry bulk carriers, ore carriers and combination carriers.
4 Includes petroleum tankers, chemical tankers, LNG and LPG carriers.

As of January 1, 2003, approximately 27 percent (DWT) of the world merchant fleet greater than 10,000 was built before 1981. In contrast, only 11 percent of the containership fleet was built before 1981. The other general cargo fleet was the oldest segment with 48 percent built before 1981.

Source: U.S. Maritime Administration - www.marad.dot.com

Ferlship is a strategic consultancy highly specialized in market researchs guided to the shipping industry. For additional information, please contact Ferlship @: Pza. Sta. Mª Soledad Torres Acosta, 2. 2º C, 28004 Madrid, Spain, Tel. : +34 91 531 01 78 , 689 01 45 66; Fax: +34 91 531 01 78' **e-mail: ferlship@iies.es**

(Prices are in U.S. Dollars) **(NOTE: Contracts are February, March and April 2003)**

OWNER OPERATOR	SHIPYARD	TYPE	No	DWT	DELIV	PRICE M $
ASTROMARITIMA	EISA SHIPYARD	AHTS	1		06	40.0
CHINA OFFSHORE OIL NORTHERN	WUCHANG SHIPYARD	AHTS	1		03	-
LABROY MARINE	NANINDAH MUTIARA	AHTS	1		03	-
MAERSK SUPPLY SERVICE	VOLKSWERFT STRALSUND	AHTS	1		03	-
SOLSTAD SHIPPING	KLEVEN SHIPYARD	AHTS	1		03	-
ANGLO SWISS MARITIME	TSUNEISHI	BULK CARRIER	1	83,000	05	22
ARKLOW SHIPPING	KYOKUYO ZOSEN	BULK CARRIER	2	13,000	03/04	-
ARTIC SHIPPING	HAVYARD LEIRVIK	BULK CARRIER	1	1,500	04	10.0
BOCIMAR	HUDONG SHIPYARD	BULK CARRIER	1	74,000	04	22
BOCIMAR	SHANGHAI WAIGAOQIAO	BULK CARRIER	2	176,000	05	71
CHINA SHIPPING GROUP (CSG)	BOHAI SHIPYARD	BULK CARRIER	2	57,300	04	36.0
CHINA SHIPPING GROUP (CSG)	SHANGHAI SHIPYARD	BULK CARRIER	2	57,300	04/05	34.6
CIDO SHIPPING	OSHIMA SHIPBUILDING	BULK CARRIER	2	55,500	05	36.0
CIDO SHIPPING	SHIN KURUSHIMA	BULK CARRIER	1	32,500	05	15.5
CIDO SHIPPING	SANOYAS CORP	BULK CARRIER	3	76,000	04	66
CIDO SHIPPING	SASEBO	BULK CARRIER	3	76,000	04	64.5
COSCO	NANTONG COSCO KHI	BULK CARRIER	2	55,500	05	36.4
EFNAV	STX (DAEDONG)	BULK CARRIER	1	75,000	06	22
EGON OLDENDORFF	XIAMEN	BULK CARRIER	2	32,000	04/05	30.0
FOREMOST MARITIME	SHANGHAI WAIGAOQIAO	BULK CARRIER	1	175,000	05	36.0
FRED CHENG	OSHIMA SHIPBUILDING	BULK CARRIER	2	55,000	05/06	38.6
FUKUJIN KISEN	TSUNEISHI CEBU	BULK CARRIER	1	52,800	04	-
GENEL DENIZCILIK GROUP (GEDEN LINE)	NANTONG COSCO KHI	BULK CARRIER	2	55,500	04	37.0
GLEAMRAY MARITIME	HUDONG SHIPYARD	BULK CARRIER	1	74,000	05	21
GRAIG SHIP MAN'T	NEW CENTURY	BULK CARRIER	4	53,000	04	-
GREEK INTERESTS	SUMITOMO	BULK CARRIER	1	76,500	04	22.0
JAPANESE INTERESTS	HAKATA ZOSEN	BULK CARRIER	1	18,000	03	-
JAPANESE INTERESTS	TSUNEISHI	BULK CARRIER	11	76,300	05	-
JAPANESE INTERESTS	IMABARI SHIPBUILDING	BULK CARRIER	1	88,000	04	-
JAPANESE INTERESTS	IMABARI SHIPBUILDING	BULK CARRIER	1	53,500	04	-
JAPANESE INTERESTS	IMABARI SHIPBUILDING	BULK CARRIER	1	53,500	04	-
JAPANESE INTERESTS	KAWASAKI H.I.	BULK CARRIER	1	50,326	04	-
KOREA LINE	UNIVERSAL	BULK CARRIER	1	176,000	05	-
LAUTERJUNG,MANFRED	GUANGZHOU	BULK CARRIER	4	27,000	04/05	60.0
LAUTERJUNG,MANFRED	WENCHONG SHIPYARD	BULK CARRIER	2	27,000	04	-
MITSUBISHI CORP.	TSUNEISHI	BULK CARRIER	1	82,000	05	22.0
MITSUI WAREHOUSE	SHIKOKU DOCKYARD	BULK CARRIER	2	28,900	04	-
MIYAWA KAIUN	SASEBO	BULK CARRIER	1	76,500	04	-
NISHIN KISEN	TSUNEISHI	BULK CARRIER	1	82,500	05	-
NORDEN AS	MITSUI	BULK CARRIER	1	56,000	04	-
OSAKA ASAHI KAIUN	TSUNEISHI CEBU	BULK CARRIER	1	52,800	03	-
PACIFIC BASIN BULK SHIPPING	XIAMEN	BULK CARRIER	3	53,000	04/05	-
PACIFIC CARRIERS	ISHIKAWAJIMA HARIMA H.I. (IHI)	BULK CARRIER	1	86,000	05	25.0
PACIFIC CARRIERS	ISHIKAWAJIMA HARIMA H.I. (IHI)	BULK CARRIER	1	82,000	05	-
PARAKOU SHIPPING	TIANJIN XINGANG SHIPYARD	BULK CARRIER	2	35,000	04/05	33.0
PETER DOHLE SCHIFFAHRTS	JING JIANG	BULK CARRIER	4	7,600	05	28
POLISH STEAMSHIP COMPANY (PZM)	XINGANG SHIPYARD	BULK CARRIER	4	38,000	05	-
REDROSE NAVIGATION	SHIN KURUSHIMA	BULK CARRIER	1	32,200	05	-
REEDEREI KARL SCHLUTER	GUANGZHOU	BULK CARRIER	1	27,000	05	-
RESTIS	XIAMEN	BULK CARRIER	4	50,000	04/05	76.0
SAMOS STEAMSHIP	SUMITOMO	BULK CARRIER	1	76,500	05	22
SCANDINAVIAN INTERESTS	NEW CENTURY	BULK CARRIER	3	53,300	05	0.0
SHINYO INTERNATIONAL	ONOMICHI	BULK CARRIER	2	75,000	05	-
SINCERE NAVIGATION	CHINA SHIPBUILDING CORP.	BULK CARRIER	1	175,000	05	34.9
SPAR SHIPPING	CHENGXI SHIPYARD	BULK CARRIER	3	53,000	05	55.5
SUNSHIP	GUANGZHOU	BULK CARRIER	2	29,000	04	-
TAIWAN NAVIGATION	CHINA SHIPBUILDING CORP.	BULK CARRIER	1	77,500	04	21.0
THENAMARIS MARITIME INC.	NEW CENTURY	BULK CARRIER	2	53,300	05	0.0
TRASMED	SHANGHAI WAIGAOQIAO	BULK CARRIER	1	175,000	05	36.0
UNIVAN SHIP MANAGEMENT	OSHIMA SHIPBUILDING	BULK CARRIER	1	76,500	05	-
UNKNOWN	TSUNEISHI	BULK CARRIER	1	82,500	05	-
UNKNOWN	IMABARI SHIPBUILDING	BULK CARRIER	3	75,600	03/04	-
UNKNOWN	TSUNEISHI	BULK CARRIER	1	82,000	06	-
VAN OMMEREN	OSHIMA SHIPBUILDING	BULK CARRIER	1	55,000	05	-
YASA SHIPPING	TSUNEISHI	BULK CARRIER	3	82,500	05/06	66.0
INTEROCEAN SHIPPING	OSHIMA SHIPBUILDING	BULK CARRIER / ORE CARRIER	2	52,300	05	-
JAPANESE INTERESTS	SANOYAS CORP.	BULK CARRIER / ORE CARRIER	4	75,500	04	-
MITSUBISHI ORE TRANSPORT	OSHIMA SHIPBUILDING	BULK CARRIER / ORE CARRIER	2	76,500	06	-
PARAKOU SHIPPING	XINGANG SHIPYARD	BULK CARRIER / ORE CARRIER	2	35,000	04	-
UNKNOWN	TSUNEISHI	BULK CARRIER / ORE CARRIER	7	82,000	05	-
DOUN KISEN	MITSUI	BULK CARRIERORE STRENGTHENED	1	56,000	04	-
JAPANESE INTERESTS	TSUNEISHI	BULK CARRIERORE STRENGTHENED	4	52,200	05/06	-
JAPANESE INTERESTS	TSUNEISHI	BULK CARRIERORE STRENGTHENED	1	52,200	06	-
KIFUNE	MITSUI	BULK CARRIER ORE STRENGTHENED	1	56,000	04	-
MIZUHO SANGYO	MITSUI	BULK CARRIER ORE STRENGTHENED	1	177,000	04	-
MIZUHO SANGYO	MITSUI	BULK CARRIER ORE STRENGTHENED	1	56,000	04	-
NIPPON YUSEN KAISA (NYK)	OSHIMA SHIPBUILDING	BULK CARRIER ORE STRENGTHENED	1	89,999	03	-
OSKAR WEHR	MITSUI	BULK CARRIER ORE STRENGTHENED	2	56,000	04	-
PACIFIC BASIN BULK SHIPPING	HAKODATE DOCK	BULK CARRIER ORE STRENGTHENED	1	32,000	04	-
Z&G HALCOUSSIS	NEW CENTURY	BULK CARRIER ORE STRENGTHENED	2	43,780	04	-
INDONESIAN GOVERNMENT	NIIGATA ENG	BUOY TENDER	1		03	-
WILHELMSEN LINES	MITSUBISHI H.I.	CAR CARRIER	2		04/05	100
ALEYNA DENIZCILIK TURIZM	AYKIN DENIXCILIK	CHEMICAL TANKER	1	2,332	03	-
ANCORA INVESTIMENT TRUST	SHIN-A SHIPBUILDING	CHEMICAL TANKER	1	37,000	05	25
ARCO IN SRL	CANTIERI NAVALE DE POLI	CHEMICAL TANKER	1	16,000	04	37.4
ATHENIAN SEA CARRIERS	HYUNDAI MIPO	CHEMICAL TANKER	4	46,000	05	-
BESIKTAS SHIPPING	CELIKTEKNE SANAYII	CHEMICAL TANKER	2	7,100	05	-
BROSTROM TANKERS	JINLING	CHEMICAL TANKER	1	37,300	05	28.0
BUENA FORTUNA MARITIME	SHIN KURUSHIMA	CHEMICAL TANKER	1	8,600	05	-
GERHARD WESSEL	FUKUOKA SHIPBUILDING	CHEMICAL TANKER	2	19,500	04	50.0
UNO KAIUN	KITANIHON	CHEMICAL TANKER	2	19,500	04	-
INTERORIENT NAVIGATION CO.	HYUNDAI MIPO	CHEMICAL TANKER	3	37,000	05	75
RIGEL	JINLING	CHEMICAL TANKER	1	37,000	05	28.0
SEYCHELLES PETROLEUM	LINDENAU	CHEMICAL TANKER	2	34,200	04/05	-
SINGAPORE INTERESTS	FUKUOKA SHIPBUILDING	CHEMICAL TANKER	1	15,200	03	-
WONDERLAND MARITIME	SHIN KURUSHIMA	CHEMICAL TANKER	1	19,200	05	-
APL	KOYO DOCK	CONTAINER	3	66,500	03/04	-
BERNHARD SCHULTE	GUANGZHOU	CONTAINER	1		05	-
BERNHARD SCHULTE	GUANGZHOU	CONTAINER	2		04	-
BLUE STAR / MITSUBISHI	ISHIKAWAJIMA HARIMA H.I. (IHI)	CONTAINER	4		04/05	-
CHINA SHIPPING CONTAINER LINES	SAMSUNG	CONTAINER	4		05	-
CHINA SHIPPING GROUP (CSG)	SAMSUNG	CONTAINER	1		04	90.0
CLAUS-PETER OFFEN	HANJIN	CONTAINER	5		05	348
CLAUS-PETER OFFEN	SAMSUNG	CONTAINER	4		05	-
CLAUS-PETER OFFEN	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	3		05	-
CONTI REEDEREI	SAMSUNG	CONTAINER	2		05	-
D OLTMANN SEESCHIFFAHRT	SAMHO NEW SHIPYARD	CONTAINER	1		04	-
DAULSBERG	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	1		05	-
ER SCHIFFAHRT	SAMHO NEW SHIPYARD	CONTAINER	3		04	-
ER SCHIFFAHRT	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	3		05	-
GERMAN INTERESTS	J.J. SIETAS	CONTAINER	3		03	-
HANSA TREUHAND	HANJIN	CONTAINER	2		04	94.0
HANSA TREUHAND	HANJIN	CONTAINER	2		04	-
JAN PETTER ROED	GUANGZHOU	CONTAINER	2		05	43
JORG KOPPING	DAMEN GALATZ	CONTAINER	2		04/05	16.5
K LINE	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	5		04/05	225
MEDITERRANEAN SHIPPING CO.	HANJIN	CONTAINER	3		05	228.0
MSC MEDITERRANEAN SHIPPING CO	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	4		05	-
OLTMANN VERWALTUNG	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	1		05	-
P&O NEDLLOYD	ISHIKAWAJIMA HARIMA H.I. (IHI)	CONTAINER	4		05	-
PACIFIC INTERNATIONAL LINES	SHIN KURUSHIMA	CONTAINER	2		05/06	29.0
PETER DOHLE SCHIFFAHRTS	CHINA SHIPBUILDING CORP.	CONTAINER	3		05	157.5
PETER DOHLE SCHIFFAHRTS	CHINA SHIPBUILDING CORP.	CONTAINER	2		05	84.0
RICKMERS BERTRAM	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	1		05	45.0
RICKMERS BERTRAM	HANJIN	CONTAINER	6		04/05	261
SAFMARINE	VOLKSWERFT STRALSUND	CONTAINER	3		04	85.5
SEASPAN INTER.	SAMSUNG	CONTAINER	2		05	-
SHANDONG YANTAI MARINE SHIPPING	WEIHAI	CONTAINER	2		05	-
TOM WORDEN	JING JIANG	CONTAINER	3		05	44
TURKISH INTERESTS	TORGEM GEMI	CONTAINER	1	12,500	03	-
UNKNOWN	PEENE-WERFT	CONTAINER	2		04	48
WAN HAI LINES	CHINA SHIPBUILDING CORP.	CONTAINER	3		06	132.0
YANG MING MARINE CORP	CHINA SHIPBUILDING CORP.	CONTAINER	1		04	51.0
ZIM ISRAEL (OFER GROUP)	HYUNDAI HEAVY INDUSTRIES (HHI)	CONTAINER	3		05	-
SPANISH INTERESTS	IZAR	CRUISE SHIP	1		04	-
SRI LANKA PORTS AUTHORITY	IHC HOLLAND	DREDGER	1	545	03	-
IRAN GOVERNMENT	IRAN MARINE INDUSTRIAL	DREDGER / CUTTER	1	0	03	-
DREDGING INTERN. & DECLOEDT	IHC HOLLAND	DREDGER SUCTION HOPPER	1	7,400	04	-
NETHERLANDS INTERESTS	DAMEN SHIPYARDS	DREDGER SUCTION HOPPER	1	5,000	04	-
AREMITI CRUISE	AUSTAL SHIPS	FERRY	1		04	14.2
VISAKHAPATNAM	COCHIN SHIPYARD	FIRE FIGHTING VESSEL	1	108	03	-
JAPANESE INTERESTS	NIIGATA ENG	FISHERIES RESEARCH	1		04	-
SILRASIL FISKEBATREDERI	ESTALEIRO SAO JACINTO	FISHING	1	1,119	03	-
ARKLOW SHIPPING	BARKMEIJER STROOBOS	GENERAL CARGO	4	4,400	04	-
CHINESE INTERESTS	FUJIAN SOUTHEAST	GENERAL CARGO	1	3,000	03	-
HONG KONG INTERESTS	JIANGMEN	GENERAL CARGO	1	1,027	03	-
JAPANESE INTERESTS	NISHI	GENERAL CARGO	1	7,500	03	-
JAPANESE INTERESTS	NISHI	GENERAL CARGO	1	6,850	03	-
SINGAPORE INTERESTS	TIANJIN SHIPYARD	GENERAL CARGO	1	6,800	03	-
BRIESE SCHIFFAHRT GMBH.	XINGANG SHIPYARD	HEAVY-LIFT CARGO	1		03	-
MALAYSIAN INT.SHPG. CORP. (MISC)	SAMSUNG	LNG	1		05	-
MOL/NYK/K LINE/EXMAR/QATAR	SAMSUNG	LNG	1		05	-
NATIONAL IRANIAN TANKER CO (NITC)	FARA-SAHEL	LNG	5			900
RAS LAFFAN	SAMSUNG	LNG	1		05	-
BERGESEN	DAEWOO	LPG	2		05/06	83.0
EXMAR	DAEWOO	LPG	2		05/06	83.0
GEOGAS TRADING	DAEWOO	LPG	1		05	59.0
NORSK HYDRO	DAEWOO	LPG	2		05	97.0
NORSK HYDRO	HYUNDAI HEAVY INDUSTRIES (HHI)	LPG	2		04	96.0
SONATRANCH	KAWASAKI H.I.	LPG	1		05	50
YUYO STEAMSHIP	MITSUBISHI H.I.	LPG	1		05	57.0
YUYO STEAMSHIP	VOLKSWERFT STRALSUND	LPG	1		05	57.0
YUYO STEAMSHIP	HYUNDAI HEAVY INDUSTRIES (HHI)	LPG	1		05	60.0
UNKNOWN	BARKMEIJER STROOBOS	MULTI-FUNCTION SERVICE	1	4,400	03	-
BERTLING	KOUAN	MULTI-PURPOSE	2	32,000	04/05	34.0
GERMAN INTERESTS	J.J. SIETAS	MULTI-PURPOSE	2		04	-
REEDEREI KLAUS HESSE	ROUSSE SHIPYARD	MULTI-PURPOSE	1		04	-
SPLIETHOFF'S	SZCZECIN SHIPYARD	MULTI PURPOSE	4	21,250	04/05	148.0
US INTERESTS	AUSTAL SHIPS	PASSENGER	1		03	-
BUILDER'S ACCOUNT	CANTIERI NAVALE VISENTINI	PASSENGER / VEHICLE/FERRY	1		04	-
KANGAROO ISLAND SEALINK	AUSTAL SHIPS	PASSENGER / VEHICLE/FERRY	1		04	8.5
SHIN NIHON-KAI FERRY	MITSUBISHI H.I.	PASSENGER / VEHICLE/FERRY	2		05	-
WESTERN FERRIES	CENTROMOST PLOCKA	PASSENGER / VEHICLE/FERRY	1		03	-
MARINE & COASTAL MANAGEMENT	SCHELDE MARINE	PATROL VESSEL	1	560	04	-
GRIMALDI	ULJANIK	PCTC	1		05	40.0
GRIMALDI	ULJANIK	PCTC	1		05	35.0
ZODIAC MARITIME (OFER GROUP.)	XIAMEN	PCTC	2			70.0
LABROY MARINE	NANINDAH MUTIARA	PLATFORM SUPPLY VESSEL	1		03	-
NORWEGIAN INTERESTS	AKER BRATTVAAG	PLATFORM SUPPLY VESSEL	1		03	-
SURF	AKER BRATTVAAG	PLATFORM SUPPLY VESSEL	2		04	-
A. P. MOLLER	GUANGZHOU	PRODUCTS TANKER	2	45,000	05	70.0
ANCORA	SHIN-A SHIPBUILDING	PRODUCTS TANKER	2	37,000	05	51.0
ANDROMEDA SHIPPING	HYUNDAI MIPO	PRODUCTS TANKER	2	37,000	05	26.0
ASAHI LINE	IMABARI SHIPBUILDING	PRODUCTS TANKER	3	47,000	05/06	84
ASAHI LINE	MINAMI NIPPON	PRODUCTS TANKER	1	47,000	05	28.0
ASAHI LINE	SHIN KURUSHIMA	PRODUCTS TANKER	1	47,000	05	28.0
AUGUSTA DUE	HYUNDAI MIPO	PRODUCTS TANKER	2	35,000	05	52
BOTTIGLIERI NAV.	HYUNDAI MIPO	PRODUCTS TANKER	2	37,000	05	52.0
BP SHIPPING	HYUNDAI MIPO	PRODUCTS TANKER	6	46,000	05/06	165.0
BP SHIPPING	DAMEN SHIPYARDS	PRODUCTS TANKER	2	4,500	04	-
BP SHIPPING	DAMEN SHIPYARDS	PRODUCTS TANKER	2	3,100	04	-
BYZANTINE	STX (DAEDON)	PRODUCTS TANKER	1	72,300	05	31.0
CHANDRIS	DAEWOO	PRODUCTS TANKER	2	105,000	05/06	76
CHEMIKALIEN SEATRANSPORT	SHIN-A SHIPBUILDING	PRODUCTS TANKER	1	37,000	05	27
COLUMBIA SHIPMANAGEMENT	HYUNDAI MIPO	PRODUCTS TANKER	2	35,000	05	-
CRIO MARINE	SHIN KURUSHIMA	PRODUCTS TANKER	2	46,000	05	-
D'AMICO	NAIKAI	PRODUCTS TANKER	2	45,900	04	-
D'AMICO	STX (DAEDONG)	PRODUCTS TANKER	2	45,600	05	54.0
EAGLE MARITIME	ONOMICHI	PRODUCTS TANKER	1	47,000	04	28.0
EUROCEANICA	HYUNDAI MIPO	PRODUCTS TANKER	3	53,000	05	96
EUROPEAN NAVIGATION	SPLIT	PRODUCTS TANKER	1	95,000	05	36.5
GOLDEN ENERGY (RESTIS)	STX (DAEDON)	PRODUCTS TANKER	2	74,000	05	65.0
GREAT EASTERN SHIPPING CO. GESCO	HANJIN	PRODUCTS TANKER	1	45,500	04	28.0
HONG LAM MARINE	MIURA	PRODUCTS TANKER	1	7,500	03	-
IMC GROUP	DALIAN NEW	PRODUCTS TANKER	1	44,800	05	30
JAPANESE INTERESTS	ONOMICHI	PRODUCTS TANKER	1	47,000	04	28.5
JOHN KOO	GUANGZHOU	PRODUCTS TANKER	1	35,000	04	-
LUKOIL ARCTIC TANKERS	HYUNDAI MIPO	PRODUCTS TANKER	3	53,000	05	96
MAERSK TANKERS	DALIAN NEW	PRODUCTS TANKER	1	110,000	05	38.0
MARINE SERVICES GROUP	SHIN-A SHIPBUILDING	PRODUCTS TANKER	1	37,000	05	25.0
MITSUI & CO.	SHIN KURUSHIMA	PRODUCTS TANKER	1	46,000	05	28.0
MITSUI O.S.K. LINES (MOL)	IWAGI	PRODUCTS TANKER	2	48,000	05	56

OWNER OPERATOR	SHIPYARD	TYPE	No	DWT	DELIV	PRICE M $
MONTANARI GROUP	HYUNDAI MIPO	PRODUCTS TANKER	2	35,000	05	52
NATIONAL IRANIAN TANKER CO (NITC)	ISOICO	PRODUCTS TANKER	2	35,000	06	-
NISSHO SNIPPING	NAIKAI	PRODUCTS TANKER	2	45,900	04	-
NITC	FARA-SAHEL	PRODUCTS TANKER	2	35,000	06	50.0
NORDEN AS / DENHOLM	GUANGZHOU	PRODUCTS TANKER	2	38,500	05	50
ORIENT STEAMSHIP (JOHN KOO)	GUANGZHOU	PRODUCTS TANKER	1	45,000	04	35.0
PACIFIC CARRIERS	SAMSUNG	PRODUCTS TANKER	2	72,700	04	60.0
PACIFIC CARRIERS	SAMSUNG	PRODUCTS TANKER	2	70,000	05	64
RAVENNAVI	NEW CENTURY	PRODUCTS TANKER	2	73,000	06	58.0
SCHOELLER HOLDINGS	HYUNDAI MIPO	PRODUCTS TANKER	2	35,000	05	50.0
SEATRANS SHIPPING	STX (DAEDONG)	PRODUCTS TANKER	1	46,000	05	28.5
STENA BULK	SPLIT	PRODUCTS TANKER	4	49,000	05	140
SUN ENTERPRISES (S LIVANOS)	STX (DAEDONG)	PRODUCTS TANKER	2	46,000	05	58
SWISS INTERESTS	HYUNDAI MIPO	PRODUCTS TANKER	3	53,000	05	96
TAIHEIYO KAIUN	IWAGI	PRODUCTS TANKER	1	48,000	05	28.0
TEEKAY SHIPPING	DAEWOO	PRODUCTS TANKER	2	115,000	05	76
TRANSPETROL	STX (DAEDONG)	PRODUCTS TANKER	4	74,000	05/06	130.0
TRANSPETROL	STX (DAEDONG)	PRODUCTS TANKER	2	45,800	05	54.0
TSAKOS GROUP	HYUNDAI MIPO	PRODUCTS TANKER	2	37,000	04/05	49
TURKISH INTERESTS	TURKTER-TERSANE	PRODUCTS TANKER	1	4,900	04	-
UNKNOWN	CELIKTRANS	PRODUCTS TANKER	1	2,650	04	-
WAH KWONG SHIPPING	ONOMICHI	PRODUCTS TANKER	1	47,000	05	28.5
WESTERN PETROLEUM	HYUNDAI MIPO	PRODUCTS TANKER	3	52,800	05	95
YAMAMOTO KAIUN	ONOMICHI	PRODUCTS TANKER	1	47,000	04	28
YUYO KAIUN	MITSUBISHI H.I.	PRODUCTS TANKER	1	50,000	05	-
OCEANEX	JIANGSU YANGZIJIANG	RO-LO	1	11,300	05	30
CANADIAN INTERESTS	YANGZIJIANG SHIPYARD	RO RO	1	11,000	05	-
CHILEAN INTERESTS	DETROT CHILE	RO RO	1		03	-
CHINA SHIPPING PASSENGER LINER	JIANGNAN	RO RO	2	16,000	04	-
KYUSHU KYUKO FERRY	SHIN KURUSHIMA	RO RO	1	4,800	03	-
OGASAWARA SHIPPING	MITSUI	RO-RO	1	2,000	05	-
UNKNOWN	ULJANIK	RO RO	4	5,400	05/06	80
A. P MOLLER	CASPIAN SHIPYARD	SSMOD	1		03	-
CHINA OFFSHORE OIL NORTHERN	WUCHANG SHIPYARD	SUPPORT VESSEL	1		03	-
AEOLOS MANAGEMENT	DAEWOO	TANKER	1	300,000	05	65.5
AMERICAN EAGLE TANKER	SAMSUNG	TANKER	1	300,000	05	65
AMERICAN EAGLE TANKERS	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	3	300,000	04/05	196.5
ANDRIAKI SHIPPING	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	2	300,000	05	130.0
ARCADIA SHIPMANAGEMENT	SAMHO NEW SHIPYARD	TANKER	2	165,000	05	88.0
BESIKTAS SHIPPING	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	152,500	05	46.0
CHINA INTERESTS	ZHEJIANG	TANKER	1	9,800	03	-
CHINA SHIPPING GROUP (CSG)	DALIAN NEW	TANKER	2	300,000	05	-
COSCO	DAEWOO	TANKER	1	300,000	05	-
COSCO	DALIAN NEW	TANKER	2	74,000	05	60
DENSAN SHIPPING	XIAMEN	TANKER	4	35,000	04/05	68.0
DORIAN	SAMHO NEW SHIPYARD	TANKER	1	318,000	05	-
DORIAN	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	300,000	05	65.5
DUNYA DENIZCILIK	SAMSUNG	TANKER	1	115,000	05	36.5
DYNACOM	UNIVERSAL	TANKER	1	153,000	05	46.5
DYNACOM	SUMITOMO	TANKER	1	105,000	03	41.5
EASTERN MED MAR	SAMSUNG	TANKER	1	308,500	06	65
EUROCEANICA	SAMSUNG	TANKER	1	160,000	05	46.0
EUROCEANICA	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	105,000	05	36.5
GOULANORIS	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	300,000	05	65.0
GREAT EASTERN SHIPPING CO. GESCO	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	159,000	05	45.0
GUNGEN DENIZCILIK	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	152,500	05	-
HADJIPATERAS & SONS	SAMHO NEW SHIPYARD	TANKER	2	300,000	05	130.0
INDIAN GOVERNMENT	CENTRAL INLAND WATER TRAN	TANKER	1	1,200	04	-
IRAN MARINE SERVICES	IRAN MARINE CO.	TANKER	1	4,000	03	-
JAPANESE INTERESTS	SHIN KURUSHIMA	TANKER	1	1,840	03	-
JAPANESE INTERESTS	USUKI	TANKER	1	19,500	04	-
JAPANESE INTERESTS	USUKI	TANKER	1	8,700	03	-
K LINE	IMABARI SHIPBUILDING	TANKER	2	105,000	04/05	70.0
KRISTEN NAVIGATION	DAEWOO	TANKER	1	300,000	05	65.0
KRISTEN NAVIGATION	DAEWOO	TANKER	1	306,000	05	65.5
KUMIAI SENPAKU	UNIVERSAL	TANKER	1	105,000	05	-
LOLLI-GHETTI	SAMSUNG	TANKER	2	115,000	05	72.0
MALAYSIAN INT.SHPG. CORP (MISC)	SAMSUNG	TANKER	2	105,000	05	-
MALAYSIAN INT.SHPG. CORP (MISC)	UNIVERSAL	TANKER	1	300,000	05	65
MARMARAS NAVIGATION	SAMHO NEW SHIPYARD	TANKER	4	115,000	04/05	146.0
MING WAH	UNIVERSAL	TANKER	2	300,000	05/06	128.0
MITSUI O.S.K. LINES (MOL)	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	4	105,400	04/05	144.0
MITSUI O.S.K. LINES (MOL)	MITSUBISHI H.I.	TANKER	1	300,000	04	50
MIYAGAWA KAIUN	HAKATA ZOSEN	TANKER	1	2,394	03	-
MONTANARI GROUP	DAEWOO	TANKER	1	160,000	05	-
MONTANARI GROUP	DAEWOO	TANKER	1	105,000	05	35
NAVIERA F TAPIAS	DAEWOO	TANKER	2	159,000	05	93.0
NIPPON YUSEN KAISA (NYK)	IMABARI SHIPBUILDING	TANKER	1	300,000	04	-
NIPPON YUSEN KAISA (NYK)	MITSUBISHI H.I.	TANKER	1	300,000	04	-
NIPPON YUSEN KAISA (NYK)	UNIVERSAL	TANKER	1	300,000	04	-
NS LEMOS	SAMHO NEW SHIPYARD	TANKER	1	319,000	05	64.8
OAK MARITIME	DAEWOO	TANKER	1	306,000	04	66
PARADISE NAVIGATION	HUDONG SHIPYARD	TANKER	1	73,000	05	29.0
PERTAMINA	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	2	300,000	05	-
PETER DOHLE SCHIFFAHRTS	JIANGNAN	TANKER	2	74,000	05	-
PETROLMAR	MADENCI GEMI	TANKER	1	5,400	04	-
PLEIADES SHIPPING	SUMITOMO	TANKER	2	71,000	04	58
SHIPPING CORP. OF INDIA (SCI)	COCHIN SHIPYARD	TANKER	1	110,000	05	35
SINGAPORE INTERESTS	SAMHO NEW SHIPYARD	TANKER	1	318,000	04	-
SOVCOMFLOT	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	4	154,000	05	180.0
"STEALTHSTEALTH"	SHANGHAI WAIGAOQIAO	TANKER	2	105,000	05	70
STENA BULK	DALIAN SHIPYARD	TANKER	2	72,000	05	65
TAI CHONG CHEANG STEAMSHIP (TCC)	DAEWOO	TANKER	1	105,000	05	34.8
TAI CHONG CHEANG STEAMSHIP (TCC)	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	105,000	05	35.0
TAI CHONG CHEANG STEAMSHIP (TCC)	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	105,000	05	36
TARGET MARINE	STX (DAEDON)	TANKER	1	45,000	05	27.8
TEEKAY SHIPPING	SAMSUNG	TANKER	2	115,000	05	76
THENAMARIS MARITIME INC.	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	2	105,000	05	74.0
THENAMARIS MARITIME INC.	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	318,000	05	65.0
THENAMARIS MARITIME INC.	SAMHO NEW SHIPYARD	TANKER	2	88,000	05	71
VALLES STEAMSHIP CO	DALIAN NEW	TANKER	1	110,000	05	36.6
VALLES STEAMSHIP CO	HUOONG SHIPYARD	TANKER	1	110,000	05	36.6
VALLES STEAMSHIP CO	IMABARI SHIPBUILDING	TANKER	1	107,000	03	38.0
WAH KWONG SHIPPING	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	317,000	04	65.0
WORLD-WIDE SHIPPING	DAEWOO	TANKER	1	300,000	05	-
SARGEANT MARINE	KRALJEVICA B	TANKER / ASPHALT CARRIER	2	10,000	04	31
WW MARPETROL	SELAH MAK SANAYII	TANKER/ASPHALT CARRIER	2	5,850	03/04	-
BUKSER OG BJERGNING	MOEN SLIP AS	TUG	1		03	-
PKL	CHERNOMORSKY	TUG	1		03	-
PSA MARINE	ANG SIN LIU (ASL)	TUG	4	200	03	-
SEASPEC MARINE SERVICE	NANINDAH MUTIARA	TUG	1		03	-
ZIM ISRAEL NAVIGATION	XIAMEN	VEHICLE CARRIER	2	12,000	05/06	-
UNKNOWN	IMABARI SHIPBUILDING	WOOD CHIP CARRIER	1	55,100	04	-

Recent Ship Sales

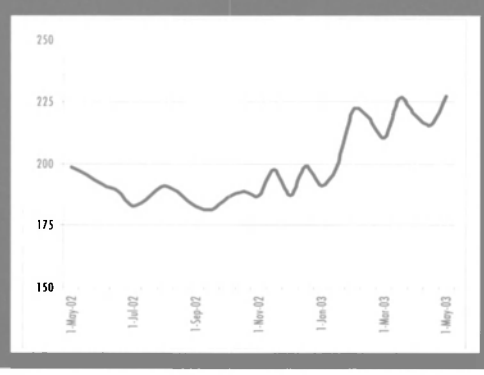
Name	Type	DWT	YB	Price (M$)
Cynthia	Bulker	4,827	1985	$1.10
Wilma	Bulker	6,317	1985	$1.50
Asian Splendor	Bulker	10,053	1991	$3.40
Lara Bay	Bulker	12,768	1984	$2.30
Ariston	Bulker	17,000	1981	$2.10
Rubin Eagle	Bulker	18,315	1995	$6.50
Ocean Queen	Bulker	21,317	1982	$2.00
Teo	Bulker	21,344	1984	$3.90
Easy Rider	Bulker	22,271	1989	$5.90
Bright Nextage	Bulker	23,000	1993	$8.50
Dooyang Glory	Bulker	25,525	1985	$4.70
Orchid Bay	Bulker	28, 000	2003	$15.50
Guardian Angel	Bulker	28,458	1995	$10.40
Red Stag	Bulker	28,500	1993	$9.10
Dimi P	Bulker	29,00	1984	$4.50
Heng Shan	Bulker	31,501	1980	$2.75
Dooyang Winner	Bulker	40,016	1986	$6.20
Elena Heart	Bulker	41,385	1983	$4.25
Multi-purpose 3	Bulker	41,455	1995	$12.00
Multi-purpose 4	Bulker	41,455	1995	$12.00
Star Libra	Bulker	42,000	1985	$6.50
Multi-purpose 5	Bulker	42,004	1990	$10.00
Med Carrara	Bulker	43,300	1981	$3.50
Bright Haio	Bulker	45,320	1995	$12.90
Senatosa Hawk	Bulker	46,600	1995	$13.50
Glorious Marine	Bulker	47, 200	1997	$14.90
Ling Xian	Bulker	52,540	1990	$6.35
Mermaid Star	Bulker	68,000	1994	$13.25
Four Coal	Bulker	74,000	1999	$20.00
Dione	Bulker	75,000	2001	$22.30
Hyunda: Giant	Bulker	259,587	1985	$14.00
Siti Norjas	Bulker	6,519	1983	$1.20
Oriente Hope	Bulker	26,842	1986	$5.50
Ageli	Bulker	26,855	1977	$1.45
Diana Z	Bulker	28,973	1978	$1.95
Nst Challenge	Bulker	29,192	1984	$4.50
Azalea	Bulker	30,255	1976	$1.50
Alberni Dawn	Bulker	31,000	1980	$4.10
Pan Express	Bulker	36,486	1977	$1.80
Anangel Faith	Bulker	37,611	1984	$5.20
Prabhu Jivesh	Bulker	37,571	1983	$4.50
Sanmar Pageant	Bulker	41,808	1986	$6.50
Fikret Manoglu	Bulker	42,842	1985	$6.20
Oreintal Hope	Bulker	43 000	1995	$12.75
United Ocean	Bulker	45,600	1997	$14.75
Lepta Mercury	Bulker	46,670	1997	$15.25
Ocean Gold	Bulker	46 745	1982	$4.30
Capt Alex	Bulker	52,420	1985	$3.80
Captain John L	Bulker	64,000	1982	$4.50
Captain George L.	Bulker	64,584	1982	$4.50
Montauk	Bulker	64 974	1982	$4.50
Angelic Faith	Bulker	65,767	1984	$6.70
Silverstone	Bulker	71,800	2000	$20.50
Bulktiger	Bulker	134,806	1982	$5.90
Donau Ore	Bulker	149,000	1992	$20.10
World Nord	Bulker	150,903	1995	$25.00
Bavang	Bulker	161,051	1996	$27.50
La Pamoa	Bulker	165,289	1994	$23.30
Twodika	Bulker	6,974	1981	$0.60
Sea Pioneer	Bulker	16,588	1976	$0.90
Alea	Bulker	18,791	1977	$1.50
Magna Power	Bulker	23,878	1980	$2.10
Alethini	Bulker	23,978	1981	$3.30
Samsun Galaxy	Bulker	25,402	1983	$3.80
Pasteur	Bulker	26,732	1977	$1.80
Lina	Bulker	26,927	1978	$1.80
Desert Falcon	Bulker	27,490	1980	$2.80
Atlantic Bulker	Bulker	27,860	1995	$10.10
Diamond Bulker	Bulker	28,460	1994	$9.80
Ocean Queen	Bulker	28,460	1995	$10.80
Hoegh Mistral	Bulker	30,402	1986	$6.50
Yellow Rose	Bulker	33,347	1985	$5.80
Radiant Vega	Bulker	37,497	1983	$2.80
Diana	Bulker	37,500	1983	$2.80
Frangiskos Ck	Bulker	37,611	1984	$5.20
Catherine V	Bulker	37,612	1984	$5.30

Name	Type	DWT	YB	Price (M$)
Eastern Victory	Bulker	38,888	1986	$6.60
Costis	Bulker	39,670	1985	$6.30
Med Unity	Bulker	40,683	1980	$2.30
Idee Fixe	Bulker	41,377	1985	$6.50
Skaustrand	Bulker	41,824	1986	$6.80
Nand Neeti	Bulker	42,129	1985	$6.00
Matru Kripa	Bulker	42,842	1985	$6.20
Sigana	Bulker	42,842	1985	$6.40
Zenovia	Bulker	43,595	1992	$11.00
Jag Raksha	Bulker	45,345	1985	$6.50
Stellar Light	Bulker	46,747	1998	$16.00
Bateen	Bulker	50,900	2001	$20.00
Icl Parthiban	Bulker	58,822	1979	$2.50
Kamsar Voyager	Bulker	63,261	1984	$4.90
Fanari	Bulker	65,164	1982	$5.00
Iolcos Sapphire	Bulker	68,200	1988	$9.30
Apostolos Andreas	Bulker	70,000	1995	$15.00
Wiltrader	Bulker	73,726	1997	$17.50
Wilrider	Bulker	74,044	1995	$15.75
Danae	Bulker	75,000	2001	$22.60
Belmaj	Bulker	149,516	1990	$16.50
Kinko Maru No 21	Tanker	1,431	1995	$1.70
Capbreton	Tanker	6,710	1983	$1.30
Rebecco	Tanker	10,079	1981	$1.40
Vanessa	Tanker	23,745	1983	$2.20
Victoria	Tanker	23,745	1983	$2.20
Hawaiian Express	Tanker	29,998	1990	$9.45
Nordscot	Tanker	35,770	2001	$27.00
Shoritusu Maru	Tanker	81,278	1979	$3.50
Afrapearl	Tanker	86,417	1981	$4.50
North Sea	Tanker	89,992	1980	$4.00
Navion Viking	Tanker	130,700	1983	$6.90
Kimolos	Tanker	150,812	1998	$44.00
Atlantis	Tanker	150,841	1998	$44.00
Pacific Power	Tanker	245,000	1988	$15.00
Nichioh	Tanker	248,976	1989	$22.50
World Prince	Tanker	265,322	1988	$18.80
Southern Lion	Tanker	10,600	1997	$12.50
Rita Maersk	Tanker	29,999	1999	$27.00
Quiri	Tanker	32,135	1978	$1.85
Aruba	Tanker	69,118	1980	$3.20
Gelibocu	Tanker	89,960	1987	$13.80
Orchid	Tanker	96,530	1976	$3.25
Morning Glory	Tanker	100,486	1991	$13.30
British Strength	Tanker	127,575	1983	$5.50
Polar	Tanker	153,471	1987	$11.00
Otowasan	Tanker	239,783	1986	$13.50
Nichiwa	Tanker	249,107	1992	$22.50
Tamba	Tanker	264,158	1994	$27.30
Picardie	Tanker	299,164	1999	$63.00
Zeeland	Tanker	305,704	2001	$67.50
Victoria Liiy	Tanker	3,785	1992	$3.50
Promor	Tanker	39,989	1988	$8.40
Hambisa	Tanker	44,549	1997	$25.00
Minerva Concert	Tanker	96,828	1992	$26.00
Besiktas	Tanker	164,626	2001	$47.00
Navix Adventure	Tanker	259,993	1993	$25.50
Olympic Breeze	Tanker	273,856	1976	$8.75
Berge Bragd	Tanker	310,991	1977	$10.20
Koo Yong	Tanker	35,758	1996	$21.00

Index Fleet Value

The Index Fleet Valuation is representative of the resale market for Bulk Carriers and Tankers as a whole. The Index Fleet consists of 15 vessels, nine Bulk Carriers and six Tankers, of various size and ages. Fluctuations in the value of the world fleet are mirrored in the Index Fleet.

Current Market Value:	**$220.1**
One Month Ago:	**$210.9**
Six Months Ago:	**$186**
One Year Ago:	**$206.1**



Crowley Expands Presence
Crowley Maritime Corporation expanded its international presence with the formation of Crowley Far East Services. This new company, formed and incorporated in Sakhalin State, Russia, on April 9, 2003, offers marine and shoreside logistics and transportation services to the energy and construction industries in the region.

McElroy/Catchot to Work on PSVs
McElroy/Catchot Winch Company will design and supply the deck machinery for the 10 new Rigdon Marine 210-ft. (64-m) PSV's currently are being built at the Bender Shipbuilding & Repair facility in Mobile, Ala.

Oceaneering Utilizes VitalLink 1200
Oceaneering International recently purchased VitalLink 1200, a new innovation in medical technology from TeleMedic Systems for use in remote medical emergencies. VitalLink has been installed on board FPSO Ocean Producer providing the crew with access to 24 hour a day medical advice from International SOS, the world's largest medical and security assistance company.

Circle 21 on Reader Service Card

UMC Appoints New Manager

UMC has recently appointed **Alan Trevarthen** to the newly created position of business development Manager — Defense, thus spearheading UMC's efforts to capture the worldwide Naval market for reducing dock dependency through the application of waterborne maintenance.

SeaWave Introduces Integrator 3.0i

SeaWave LLC added the Integrator 3.0i, which features a built-in Iridium voice and data modem that allows any vessel to combine Integrator's Least Cost Routing and SeaWave's signature Throughput Technology with the service fees of the Iridium constellation creating a low cost, highly available communications system.

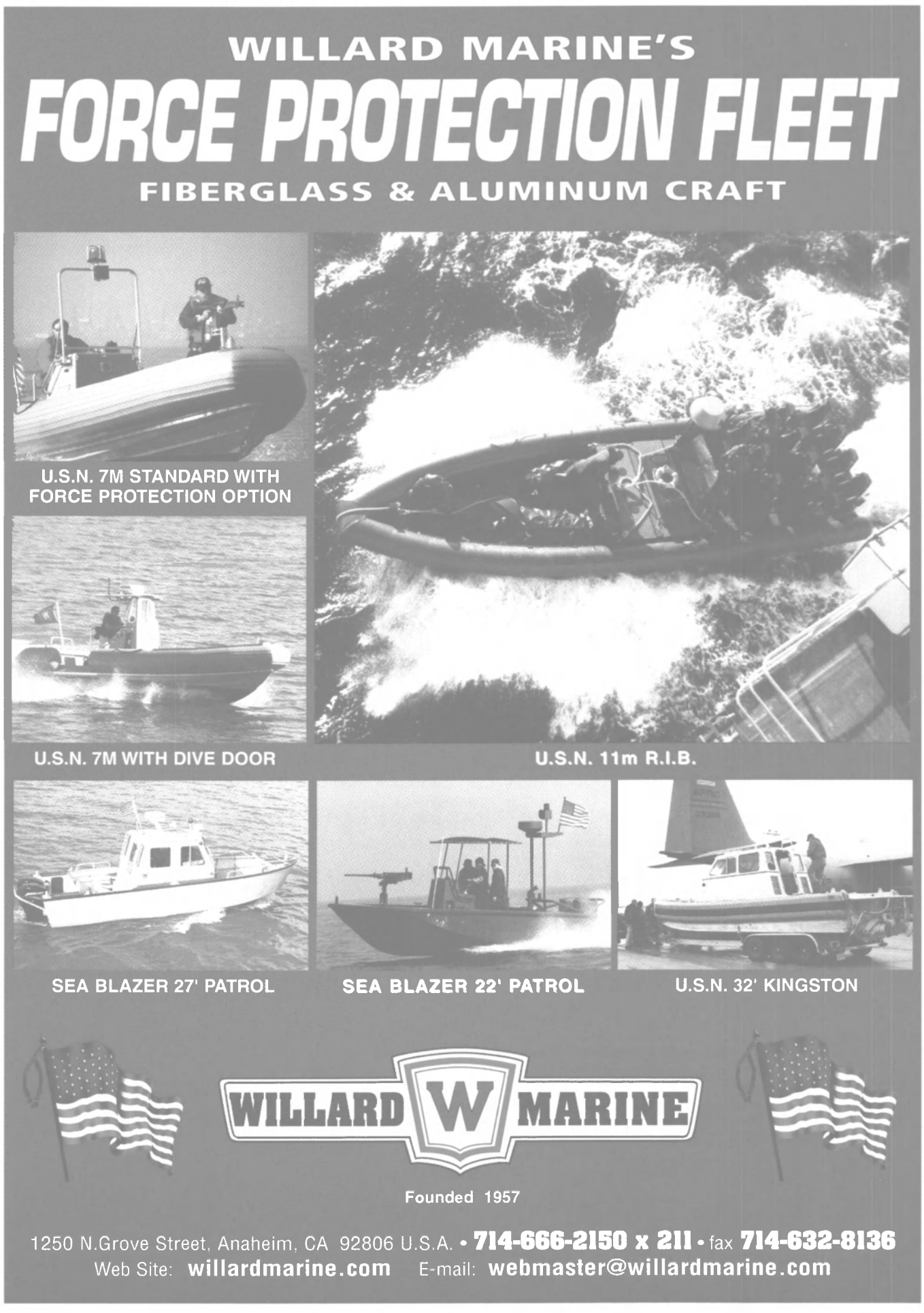
Circle 178 on Reader Service Card

Dr. Clifford Whitcomb Joins UNO
Northrop Grumman Corporation and the University of New Orleans announced jointly that Dr. **Clifford Whitcomb** has accepted the Northrop Grumman Ship Systems Endowed Chair in Engineering and Shipbuilding at the University of New Orleans. Dr. Whitcomb fills the second of two UNO Endowed Chairs that the company committed $2 million to sponsor.

CAE To Supply Destroyer Systems
CAE has been selected to supply shipboard control systems for the fourth in a series of KDX-II class destroyers destined for the Republic of Korea Navy (ROKN). The CAE IPMS is a digital control system for naval ships.

Circle 11 on Reader Service Card

Seabulk Reports 1Q Results
Seabulk International, Inc. reported net income of $1.6 million for the quarter ended March 31, 2003. In the year-earlier period, the company had a net loss of $2.3 million. Revenues totaled $77.2 million compared with $83.2 million one year ago. Operating income was $10 million in the current quarter compared with $12 million in the prior year. Revenues from Seabulk Offshore, the



Circle 344 on Reader Service Card

company's largest business with a fleet of 125 offshore energy support vessels, fell to $37.8 million from $43.3 million in the year-earlier period and accounted for 49 percent of total company revenues.

AMSC Appoints New CFO
American Superconductor Corporation (AMSC), has appointed **Kevin Bisson** as senior vice president and CFO.

ACM, Medfin Form Joint Venture
A new ship sale and purchase joint venture has been established between Medfin Ltd., the Turkish affiliate of London-based ship finance consultant Eurofin, and shipbroker ACM S&P Projects, a division of ACM Shipping Services London. The joint venture, which began operations on May 1, 2003, will conduct business from Medfin's offices in Istanbul in conjunction with ACM. **Cemil Gucuyener**, who has been recruited by Medfin to spearhead the operation, will manage the new venture.

Salvage Assoc. Opens in Houston
The Salvage Association (a trading style of BMT Salvage Ltd.) has established an office in Houston to provide full marine and offshore consultancy services with **Robert Hoppell** and **Allan Schultz** as resident surveyors.

Circle 315 on Reader Service Card

LaBarge Awarded $1.3M Contract
LaBarge, Inc. has been awarded a $1.3 million contract from Lockheed Martin, Syracuse, N.Y., to manufacture Integrated Electronics Mast (IEM) cable assemblies and interconnect devices for the U.S. Navy's next-generation attack submarine, the Virginia class.

Circle 7 on Reader Service Card

NI Validates Singapore DP
Dynamic Positioning Center (in conjunction with Singapore Maritime Academy) announced the validation of its new dynamic positioning (DP) training school in Singapore by the Nautical Institute (NI).

Circle 8 on Reader Service Card

Sperry to Supply for RoRo
Northrop Grumman's Sperry Marine business unit received an order from Jinling Shipyard, Nanjing, to supply navigation and communication systems for a new RoRo vessel being built for a joint venture of French shipowner Louis-Dreyfus Armateurs and Norwegian shipowner Leif Hoegh.

Circle 9 on Reader Service Card

GENMAR Announces 1Q Results
General Maritime Corporation reports it had net income of $34.4 million for the first quarter 2003 compared to net income of $575,000 for the prior year period. Total vessel operating expenses, which are vessel operating expenses and general and administrative expenses, increased 8 percent to $17.8 million for the first quarter 2003 from $16.6 million for the prior year period. Total daily vessel operating expenses increased to $6,851 per vessel day during the first quarter of 2003 from $6,345 per vessel day during the prior year period.

MEP Expands and Relocates Facility
Marine Environmental Partners, Inc. (MEP), a Dania Beach, Fla.-based developer of ballast water and wastewater treatment systems, relocated and expanded its operational facilities to a 12,000 sq. ft facility at 3874 Fiscal Court, West Palm Beach, effective May 1, 2003.

Circle 182 on Reader Service Card

Nera Gets Type Approval for F33
The Nera F33 maritime communications terminal has received fully type approval from Inmarsat. The approval was given on May 9, 2003, and Nera F33 is the first and only terminal to be approved for the Inmarsat Fleet F33 service concept.
The F33 system is mainly targeted at yachts, fishing and vessels operating within the Inmarsat spot beam areas.

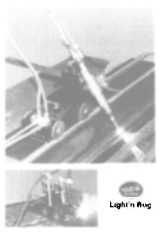
Circle 92 on Reader Service Card

Arcon Welding
http://www.arconwelds.com
Email sales@arconweld.com

When usability, reliability and durability are important for ship repair and maintenance applications, Arcon's Workhorse Stick/TIG welding machine is a strong solution. Designed for shipyard use, the machine employs electrical and mechanical technology proven reliable in over 100,000 machines sold and used worldwide. The Seahorse option protects against corrosive salt-water residue and proved effective in extensive use on oil rigs in the North Sea. Components are dipped and even encapsulated to resist harmful elements.

Circle 69 on Reader Service Card

Bug-O Systems
www.bugo.com



From Bug-O Systems comes the Light'n Bug multipurpose burning and welding travel carriage that runs at precise speeds from four to 85 (IPM). This lightweight machine can produce high quality cuts and bevels, and uniform welds. It is a compact friction drive that will ride on any standard 6-in. v-groove track, – designating it an ideal replacement for older, obsolete cutting machines. Light'n Bug can also be used without track for fillet welds.

Circle 60 on Reader Service Card

Cutting Edge Metal Processing
www.cuttingedgemetal.com
e-mail: info@cuttingedgemetal.com
Cutting Edge supplies blasted and primed, cut and formed mild steel parts to shipbuilding and manufacturing companies throughout the Southeastern and Central U.S. Employing a Tanaka 6 kW CO2 laser cutting, machine, Cutting Edge, which has been instrumental in the research and development of LASOX technology (see article on page 77) in U.S. shipyards, also cuts aluminum up to 3/8" (10 mm) and stainless steel up to 5/8" (16 mm). In order to stay in touch with this technologically-driven industry, Cutting Edge has also upgraded its software applications to AutoCad 2000 and SigmaNest 5.0. The AutoCad 2000 upgrade allows the company to receive Parts drawings from customers in several formats including .dxf and .dwg formats.

Circle 181 on Reader Service Card

Clad Metal Div. of Dynamic Materials
www.dynamicmaterials.com
e-mail: Jknoll@dynamicmaterials.com
DMC, Clad Metal Division is the manufacturer of genuine Detacouple transition joint material allowing a welded joint between aluminum and carbon steel sections in marine applications. DMC produces many other welded bimetallic systems for a variety of industrial applications including chemical and refinery process equipment requiring corrosion resistant solutions in rigorous service.

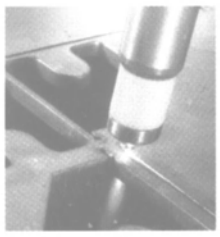
Circle 180 on Reader Service Card

Gardner Denver Water Jetting Systems
www.waterjetting.com
E-mail: mktg.wjs@gardnerdenver.com

Now known as a brand name under Gardner Denver Water Jetting Systems, Inc., Jetting Systems and Accessories provides a variety of industries, specifically maritime, with its expanding line of water jetting accessories. Designed to fit with the Partek line of pumps and the Liqua blaster line of waterjetting units, the Jetting Systems line of wet abrasive cutting systems, solves a variety of industrial tank and pipe cutting issues that could arise. The Jetting System's wet abrasive provides a solution that is both cooling and safe due to the minimal amount of sparks and heat that it generates.

Circle 93 on Reader Service Card

Hypertherm, Inc.
www.hypertherm.com
e-mail: peter.officerf@hypertherm.com



Hypertherm has released its HySpeed HT2000 200-amp oxygen plasma cutting system. Modeled on the successful of its original HT2000, this newly reconfigured mechanized system instills Hypertherm's patented coaxial-assist jet technology to boost cutting speeds on mild steel by as much as 50 percent. Featuring proven LongLife oxygen technology and SilverPlus electrode technology, HySpeed HT2000 delivers precise control of cutting parameters and reduce overall operating costs.

Circle 59 on Reader Service Card

Jet Edge
sales@jetedge.com
www.jetedge.com
In a revolutionary approach to proactive coating maintenance, Jet Edge and Aquablast Corp. U.K. have joined together to pioneer a new approach using the Jet Edge 55,000 psi (3,800 bar) electric pumps as a permanent onboard maintenance system on large ocean vessels. In fact, Hellespont Steamship of Piraeus, Greece, played a formidable role in the development of the concept and has since retrofitted two state-of-the art 442,000 dwt super tankers with Jet Edge 55-100 pumps.
The pumps were installed directly aft of the main superstructure, within a small steel storage structure. Subsequently, the entire ship was fitted with 60,000 psi hard tubing and high pressure hose connection outlets were installed throughout the ship. Installed to combat corrosion, the Jet Edge system employs its Gyra Jet LP II rotary lance to one of the connection outlets and then waterblasts the area to white metal before repainting.

Circle 197 on Reader Service Card

Circle 259 on Reader Service Card

ANCHORS
CHAINS
WORTELBOER
Tel.: +31 (0)10 429 2222
Fax: +31 (0)10 429 6459
info@wortelboer.nl
www.wortelboer.nl

"YOUR SERVICE PARTNER...
Marine Turbo & Diesel, Inc.
Service For Marine & Industrial Power Stations
...FOR DIESEL TECHNOLOGY"
1090 7th Street
Richmond, CA 94801 U.S.A.
Phone: 510-236-3525
Fax: 510-236-3576

Looking For an IMO A-60 Window ??
Deansteel Manufacturing now has USCG and Lloyd's Registry certified IMO Marine windows!
- A-0 through A-60 available.
- Custom made, up to 40" X 60".
- Certified for both interior and exterior use.
- Available in mild and stainless steel.

Deansteel manufacturing is proud to announce our new line of IMO marine fire resistant windows. Deansteel has long been known in the offshore industry for top quality construction, durability, and dependable delivery; all at competitive pricing. Deansteel will continue in our tradition of excellence with this line of windows so you can be assured when you buy Deansteel windows you are getting the very best.
DEANSTEEL
www.deansteelmarine.com
800-825-8271
111 Merchants St.
San Antonio, Texas
78204
210-226-8271
210-226-0913 fax

Circle 289 on Reader Service Card
Circle 243 on Reader Service Card

Products

Agfa
Agfa NDT, Inc. introduced the new model USN 5 8L. It is a portable ultrasonic flaw detector with color transreflective LCD display, fast 60 Hz update rate, and optimum viewing in direct sunlight. The USN 58L replaces the popular USN 50L and 52L instruments.
Circle No. 101

AMI
AMI Exchangers manufacture replacement marine charge air coolers. They also manufacture other types of heat exchangers for marine applications. A personal service together with excellent product quality is of paramount importance. Whether you operate a large tanker, container ship, cruise ship or land based power plant, AMI Exchangers have the heat exchanger solutions for you.
Circle No. 102

Ancor
Ancor Marine Grade Products has released its 2003-2004 product catalog, as well as the publication of a newly improved web site located at www.ancorpproducts.com. The catalog features their newest products including an upgraded selection of Heat Source Tools, originally designed Stainless Steel and Velcro Cable Ties, and a number of inventive Electrical Meters/Testers.
Circle No. 103

Ansul
Ansul has a long history of protecting commercial marine and naval vessels. They provide type - approved INERGEN Clean-Agent and Carbon Dioxide Systems to satisfy the fire suppression requirements for tug and tow boats.
Circle No. 104

Cantieri
Cantieri del Mediterraneo was founded in 1911, is located in the Port of Naples. The Shipyard facilities include workshops, service buildings, drydocks and repair quay. The Shipyard owns all infrastructures and equipment for the ship repair purpose including slop collections facilities. A total of four drydocks are available to dock ship up to 80,000 DWT.
Circle No. 105

Dolphin
In 1991 the Dolphin-1 started with repair contracts with Messrs Navigation Maritime Bulgare (the Bulgarian state-owned merchant fleet) and since then more than150 such contracts on their vessels were completed in our facilities. The M/V Bella was designed for servicing passenger flow from cargo and passenger ferryboat complex, as well as for charter within the country territorial waters.
Circle No. 106

Draeger
Draeger Safety has introduced a series of X-plore masks and filter respirators offering comfort and protection from hazardous compounds. The lightweight masks use new materials and the new design provides for a uniquely comfortable face-seal. A two-point bayonet connection allows both filters to be attached to the mask so the filters will always be placed correctly and quickly onto the mask
Circle No. 107

MMC
M M C International manufactures restricted and closed portable gauging tapes designed for speed, simplicity and accuracy. The Flexi-Dip Trimode measures ullage, interface and temperature in a single dip through an MMC vapor control valve. Ideal for both marine and land based applications.
Circle No. 108

Fleet55
LandSea Systems introduces the latest technology in maritime satellite communications, the Capsat Fleet55. The new high-speed terminal provides cost effective voice and data communications based on either MPDS or a 64K ISDN connection. The smaller dimensions of the random antenna makes the Fleet55 particularly well suited for yachts, patrol boats and fishing vessels.
Circle No. 109

NLB
NLB has released a new catalog highlighting the company's expanded line of high-pressure and ultra-high pressure water jet accessories. New additions include lances and foot control valves with a quick-change cartridge seal, a 20,000-psi 3-D tank cleaning head and automated systems for tube lancing and stripe removal.
Circle No. 110

FSL
FSL is a joint venture between BAE SYSTEMS and Vosper Thornycroft, two suppliers of ships and system to the UK Royal Navy. While improving the efficiency of shiprepair and support activities for the Royal Navy, FSL has increased the throughput by marketing the extensive facilities and skills of its workforce for commercial shiprepair and general engineering.
Circle No. 111

GMMOS
GMMOS Dubai is a general engineering and fabrication company, established to provide maintenance and support services in the oil and gas industries in the Middle East and Gulf region. The GMMOS yard has 700 ft. waterfront, 425 ft. bulkhead and a 25,000 sq. ft. workshop equipped the cold rolling machines, a plate shear press, an iron worker and two 10 ton overhead cranes.
Circle No. 112

GMMOTECH
GMMOSTECH provides services in the field of tanker, gas carrier and dry cargo repair and maintenance from its base in Dubai. The company was formed in 1988 to provide a complete range of repair and maintenance services to international ship owners for afloat repairs at Port Rashi and Jebel Ali Port.
Circle No. 113

Goltens
Goltens has completed of a new range of Crankshaft Repair Tools capable of slashing large crankshaft repair time by 50 percent and fully undertaking insitu repairs on new slow speed stroke engines. Produced by the Goltens R&D center in Rotterdam, the Crankshaft Repair Tools will be featured at Nor-Shipping this June to a group of selected clients, only.
Circle No. 114

Lantec
Lantec has introduced its newest product, the LH Series Hoist. Specifically designed for Offshore Cranes, this new hoist series includes more than 10 models to suit nearly any crane. Features include long-life gearing, improved high-capacity sprag clutch, stable and reliable brake valve, and footprints identical to competitive models for easy field replacement.
Circle No. 115

HBM
HBM, Inc. is a supplier of complete systems solutions for industrial and laboratory measurement applications, including force, torque, weight, strain, displacement and pressure. Founded in 1950, HBM is a wholly owned subsidiary of Spectris plc. With North American Headquarters in Marlborough, Mass., HBM has branches and representatives throughout the world.
Circle No. 116

Hilti
Hilti offers construction professionals almost everything necessary for measuring, positioning, chiseling, drilling, fastening, installation, cutting, sanding and insulation. Their range comprises positioning systems, drilling and demolition technology, diamond coring systems, direct fastening systems, screw technology, anchors, installation systems, cutting and sanding systems as well as firestop and foam systems.
Circle No. 117

Infrafone
Infrafone has developed a range of sonic cleaners and an engineering technique which has made it possible to replace soot blowers for keeping exhaust gas uptakes clean. The Infrafone sonic cleaners are designed to generate a low frequency sound, which prevents the accumulation of soot flakes. The sonic cleaners minimize the risk of soot flakes falling on deck.
Circle No. 118

Keppel
Keppel Shipyard has capabilities and expertise in the whole spectrum of repairs, conversions and specialized construction of marine and offshore vessels. With the complete integration of its three yards in Singapore-Tuas, Benoi and Gul, Keppel Shipyard is able to fully optimize its resources and yard facilities.
Circle No. 119

Kistler
Kistler Information 63 is the current issue of Kistler's customer magazine which introduces their latest products and illustrates how their measuring systems are applied in practice by major companies.
Circle No. 120

Laserpoint
Pinpoint Laser Systems introduced the new Microgage 2000 Flatness and Leveling Kit. Designed for aligning production machinery and industrial equipment. The flatness and leveling kit can operate over a 30-ft radius and is well-suited to many demanding aligning situations.
Circle No. 121

MacGregor
The MacGregor RoRo ship division is a straightforward organization that works solely with RoRo solutions. They offer the engineering skills, know-how, experience and innovative thinking to secure the right solution to any given RoRo cargo handling requirement.
Circle No. 122

MSE
Malaysia Shipyard and Engineering started operations in 1973. A major heavy industry in the domestic and international marine sector, their core business activities are shiprepair, shipbuilding, ship conversion, onshore/offshore oil and gas projects.
Circle No. 123

Midwest
The new CSA Certified Model 220 from Mid-West Instrument is a breakthrough design for explosion-proof applications. The entire gauge/switch is available with pressure containing elements in aluminum of 316 stainless steel.
Circle No. 124

Nichol and Andrew
Founded in 1952, Nichol & Andrew was the first company of its kind to carry out on site machining and repairs on marine propulsion units such as diesel engines. Their on site marine technicians have traveled around the world carrying out emergency repairs to damaged main engines, tailshafts, propeller shafts and associated marine equipment.
Circle No. 125

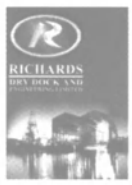
NLB
NLB has released a new catalog highlighting the company's expanded line of high-pressure and ultra-high pressure water jet accessories. New additions include lances and foot control valves with a quick-change cartridge seal, a 20,000-psi 3-D tank cleaning head and automated systems for tube lancing and stripe removal.

Northwestern
Northwestern Shiprepairers Limited has over 20 years experience of service to the marine industry. They operate out of four sites with additional engineering workshops; they are fully equipped, both in terms of the wide range of facilities at their disposal, and the broad scope of skills of workforce.
Circle No. 127

Odessos
Odessos Shiprepair Yard S.A. - Varna is a specialized Bulgarian yard that is capable of dry-docking vessels up to 35,000 DWT and afloat repair of vessels up to 150,000 DWT. The yard is located to the south of Varna on the island between the new and the old channel connecting the Black Sea and the Varna Lake about a mile from the Port Varna entrance.
Circle No. 128

Ansul
Ansul has a long history of protecting commercial marine and naval vessels. They provide type-approved INERGEN Clean-Agent and Carbon Dioxide Systems to satisfy the fire suppression requirements for tug and tow boats.
Circle No. 129

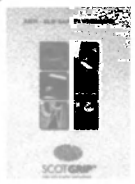
Premet
Premet's new software, designed in close cooperation with several fleet managers and engine engineers, meets market demands for exact, high resolution display measurements and rapid identification of engine malfunctions. Lehmann & Michels will feature Premet software in association with Goltens at Nor-Shipping.
Circle No. 130



Richards
Richards Dry Dock and Engineering Ltd. offers diverse operations into all types of ship repairs, conversions and maintenance. Along with the fabrication of steel structures and general engineering, mainly allied to the offshore oil gas and civil engineering industries.
Circle No. 131

Roxtec
Roxtec's products are used to seal all types of cables on vessels and offshore units. Common applications are A or H (fire) classed and watertight bulkheads or decks. The products are suitable for small signal cables as well as large power cables. Typical marine & offshore installations are welded frames in various combinations. Roxtec's products are also highly suitable to seal pipes.
Circle No. 132

R&R
R&R's Marine Fabrication and Drydock takes great pride in its ship and barge hull-module fabricating, assembly and full service barge repair. They boast a 14,000 sq. ft. full service machine shop and an addition of a heavy lift drydock allows them to take on medium to large-scale custom fabricating on-site.
Circle No. 133



Scotgrip
SCOTGRIP manufactures solid finished products which are secured to existing surfaces using mechanical fixings or adhesives, providing a hard wearing, high traction overlay that resists infilling and moisture to a much greater degree than conventional paints and coatings.
Circle No. 134

SIFCO
The SIFCO process of selective electroplating is a versatile method of repair for many different demanding applications in the marine industry. This portable process can be used in the shop to repair worn bearing journals and housings on small generators, pumps and fans. It can be taken aboard a ship for in-place repairs of large, hard-to-move components such as turbine casings.
Circle No. 135

Speedblade
Speedblade is a hand held power blade that can remove all forms of marine fouling including barnacles and zebra mussels from boat hulls and propeller shafts. An advantage of its technology is that you are able to remove the crustacean from the boat hull without chipping the paint. The lightweght tool comes with 45 ft. of special Speedblade cable.
Circle No. 136

Superior Energies
Temp-Set removable insulation covers meet Coast Guard approval and are proven to reduce engine room temperature, noise levels and fire hazard. Conventional insulation systems lack the flexibility to withstand the vibration associated with engine room equipment.
Circle No. 137

Trelawny
Trelawny is a supplier of surface preparation equipment with major operating divisions in the U.K. and the U.S., a joint venture in Germany and a worldwide network of distributors. Its products are used to clean by mechanical means a wide range of substrates in an efficient and environmentally acceptable manner.
Circle No. 138

Turner
Turner Diesel has the capabilities within their applications Engineering Services to upgrade or retro-fit existing control systems with the latest Woodward controls. Their Aberdeen warehouse facility has a comprehensive parts stockholding of genuine Woodward components.
Circle No. 139

Wesmar
Vortex Thrust is Wesmar's newest high performance bow and stern thrusters for advanced boat handling. It is available in 28 models, from 5 to 30 hp and featuring Wesmar's legendary counter-rotating dual prop thruster design, which provides up to 40 percent additional thrust without increasing tunnel diameter.
Circle No. 140

WSF
Hydrostatic test systems that make ocean depth pressures readily accessible for oceanographic research projects, materials evaluation, instrument performance checks, undersea hardware pressure-testing, and many other applications are now being offered by WSF Industries, Inc
Circle No. 141

Vesconite
The world's widest range of bushings for shaft diameters up to 26", approved since 1974 for marine applications. No swell, long life and low friction give Vesconite many advantages in rudder, strut and stern tube bearings compared to elastomeric and laminated phenolic bearings, as well as phosphor bronze and lignum vitae.
Circle No. 142

Integro
Integro is offering permanently molded Welding Extensions, Holder Assemblies, and Ground Clamp Assemblies designed to be more rugged and durable than assembled equipment. The connector bodies are integrally molded to the cable jacket for more strength and weatherproof operation in any environment. The brass connectors are fill-soldered to the cable strands for positive contact, all of the time.
Circle No. 143

Muhlhan Group
The Muhlhan Group has acquired Meaux Sandblasting, a $13M offshore surface preparation and coating contractor. Meaux Sandblasting was established in 1984 under the ownership of Tim Meaux. Stephen Domingue joined Meaux in 1996. Meaux Sandblasting provides surface preparation and coatings on offshore platforms, drilling rigs and semi-submersibles.
Circle No. 144

ARL
Albacore Research develops ShipConstructor, an AutoCAD based product-modeling tool for ships and offshore structures of all sizes. ShipConstructor integrates functions for External Curved Plate Production, Internal Structure, Piping, HVAC, Nesting and NC Processing with a central database that can be tied to purchasing and planning.
Circle No. 145

Circle No. 146

Klein
Klein Associates has made changes to their Model 3000 Side Scan Sonar System. The System 3000 is now available with XTF data format. This no-cost upgrade to Klein's SonarPro software has recently completed extensive field testing and is now available to all Klein System 3000 customers. The XTF format is in addition to Klein's current SDF format.
Circle No. 147

ASRYMAR
ASRYMAR was established in 1974 to provide specialist marine services to owners and agents around the world. The company currently represents eleven ship repair and conversion yards and is able to undertake work on all types of vessels ranging from VLCCs through to offshore jack-up and production platforms.
Circle No. 148

Refman
Refman is a computer-based refit/repair management system. Refman consists of three software modules; specification generator, cost control for recording, analyzing and reporting on the cost of jobs and shipboard defect recording for recording defects.
Circle No. 149

Damen Shipyards Group
Damen Shipbuilding Group's shiprepair services ranges from ocean-going fleet owners to small tug operators. Maritime services including technical co-operation, designs, parts- and component deliveries, field services, training, chartering and second-hand trading.
Circle No. 150

WORLD MARITIME TECHNOLOGY CONFERENCE

17-20 October, 2003 • The Moscone Center
San Francisco, California • USA

WHO SHOULD ATTEND:

- Maritime Executives
- Managers/Directors of Engineering & Technology
- Naval Architects
- Marine Engineers
- Industry Regulators

HIGHLIGHTS:

- Over 70 technical sessions addressing the challenges the marine industry faces in the new global environment.
- Session tracks include:
  - Ship Operations
  - Design & Technology
  - Ship Production
  - The Role of Marine Technical Organizations in the New Global Environment
- Keynote presentations and panel discussions by industry leaders.
- Exposition Hall - over 150 premier vendors and service providers.
- Professional Development.
- Networking and benchmarking opportunities with peers and industry leaders.

CONFERENCE ORGANIZER:

The Society of Naval Architects and Marine Engineers

PARTICIPATING ORGANIZATIONS:

- The Society of Naval Architects and Marine Engineers
- The American Society of Naval Engineers
- The Chinese Society of Naval Architects and Marine Engineers
- The Danish Society for Naval Architecture and Marine Engineering
- The Institute of Marine Engineering, Science and Technology
- The Royal Institution of Naval Architects
- The Society of Naval Architects of Japan
- The Society of Naval Architects of Korea
- Asociacion de Ingenieros Navales y Oceanicos de Espana
- Sociedade Brasileira de Engenharia Naval
- Schiffbautechnische Gesellschaft e.V.
- The Society of Naval Architects and Marine Engineers (Singapore)

FOR MORE INFORMATION:

www.worldmaritimetechnology.org

Booth Sales - Contact Rob Howard at
www.maritimeexpo.com

Circle 321 on Reader Service Card

WANTED

Port Engineers

Join the top notch marine engineering team that oversees the maintenance, repair and design of more than 70 government owned ships operated by the U.S. Navy. Discover the engineering shoreside opportunities we offer at our San Diego, California office. Salary range from $49,000 – $76,000

Excellent government benefits provided.

BACKGROUND NEEDED:

- Knowledge of commercial ship operations, standards & regulations.
- Marine related experience in mechanical and marine engineering concepts, principles, and practices.
- B.S. degree required. Prefer B.S. degree in Marine Engineering.
- U.S. Citizenship required.
- Copies of college transcript required. Applications submitted without transcripts will be returned.

Resumes will be accepted 6/16/03 thru 7/15/03, send to:

Human Resources Service Center, Southwest
Attn: CODE 521 (DEU-233-03-NR)
525 B STREET
SAN DIEGO, CA 92101

U.S. NAVY'S MILITARY SEALIFT COMMAND

MSC

For more information, consult Office of Personnel Management Web Site @ www.usajobs.opm.gov • Mr. Paul D. Jurkowski, Military Sealift Command: (619) 524-9611 or Ms. Cook Human Resource Office (619) 532-2841

BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mike Lowe at (212) 477-6700.

AIR CONDITIONING AND REFRIGERATION
Adrick Marine, 81 Mahan St., W. Babylon NY 11758
Bailey Refrigeration, 4986-1 Euclid Road, Virginia Beach, VA 23462
Cospolich Refrigeration, 14695 Highway 61, Norco LA 70079
Flagship Marine 2427 SE Dixie Highway, Stuart, FL 34996
Port-A-Cool, P.O. Box 2108, Center, TX 75935
Stork Bronswerk Inc., 3755 C boul.Matte. Brossard, Quebec Canada J4Y2P4
Taylor Made Environmental PO Box 15299 Richmond, VA 23227

AIRHORNS/SIGNALING EQUIPMENT
Airchime Mfg. Co. Ltd., 5478 267th Street, Gloucester Industrial Estate. Langley. B.C. Canada V4W 3S8
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers. WI 54241

ALARMS, FACTORY MUTUAL-APPROVED
NREC 1701 Engineers Rd Belle Chase, LA 70037
SELCO 353 A Asbury Commons Dr., Atlanta, GA 30338

ALUMINUM BOATS
Island Boats 6806 Highway 90 East New Iberia LA 70560
Sea Ark Marine PO Box 210 Monticello AR 71655-0210
William E Munson Co., 18130 Sunset Way, Edmonds WA 98026

ANCHORS AND CHAINS
Crandall Dry Dock Engineers Inc., P.O. B. 505804. MA 02150
Edgewater Machine and Fabricators, 400 Megan Z Ave. Edgewater, FL 32132
GJ Wortelboer Jr. B.V. PO Box 5003, 3008 AA Rotterdam, Netherlands
Washington Chain Inc., Box 3645, Seattle, WA 98124

AUTOPILOT SYSTEMS
Beier Radio1990 Industrial Ave Harvey, LA 70058
ComNav Marine Ltd., #15-13511 Crestwood Place, Richmond,BC V6V 2G1
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851

BALLAST
Ballast Technologies .,4620 S. Coach Dr., 85714 , Tucson, AZ
Redland Genstar Inc., Executive Plaza IV, Hunt Valley, MD 10912-1031

BEARING—Rubber, Metallic, Non-Metallic
Craft Bearing 5000 Chestnut Ave., Newport News, VA 23605
Duramax Marine LLC 17990 Great Lakes Parkway, Hiram,OH 44234
Orkot Composites., 2535 Prairie Rd., Unit D, Eugene, OR 97402
Thordon Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6

BILGE SYSTEMS
Fast Systems 14040 Santa Fe Trail Dr. Lenexa, Kansas 66215-1284
Westfalia Separator Inc.,100 Fairway Court, Northvale, NJ 07647

BLOCKS & RIGGING
Skookum, P.O. Box 280, Hubbard, OR 97032

BOATBUILDER
Sea Ark Marine PO Box 210 Monticello AR 71655-0210
Washburn Doughty, P.O. Box 296. E Boothbay ME 04544

BOLLARDS
Maritime International, 100 E. Vermilion Street #212, Lafayette, LA 70501

BRIDGE SUNSCREENS
Martek Marine Blinds, Unit 46, Century Business Centre, Maversway, Rotherham, South Yorkshire, S63 5DA

BROKERS
Marcon International, Inc., P.O. Box 1170, Coupeville, WA 8239-1170

BULKHEAD SEALS/PANELS
CSD North America, 880 Candia Rd., Unit 10, Manchester, NH 03109
Thermax 3115 Range Rd Temple, TX 76501

BUOYS
Datrex, P.O. Box 1150, Kinder, LA 70648

CABLE AND PIPE TRANSIT SYSTEMS
Roxtec International AB, PO Box 540, S-371 33 Karlskrona Sweden, www.roxtec.com

CAD/CAM SYSTEMS
Albacore Research, 4196 Kashtan Place, Victoria, B.C. Canada V8X4L7
Autoship Systems Corp., #403, 611 Alexander St., Vancouver, BC, Canada V6A1E
Creative Systems, Inc., P.O. B. 1910, Port Townsend,WA 98368

CAPSTANS
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

CARGO MONITORING & CONTROL SYSTEM
Hermatic Inc., 4522 Center St., Deerpark, TX 77536

CAST IRON REPAIR
In-Place Machining 1929 N. Buffum St, Milwaukee, WI 53212

CHAINS
Crandall Drydock Engineers PO Box 505804 Chelsea, MA 02150
Washington Chain, P.O. Box 3645, Seattle, Wa. 98124

CHEMICALS/CHEMICAL CLEANERS
Uniservice Americas 57174 Hardin Rd, Slidell, LA 70461

CLASSIFICATION SOCIETY
Lloyds Register 71 Fenchurch St London EC3M 4B5

CNC PLATE CUTTING
Advanced Fabricating Inc PO Box 3721 Galveston, TX 77552

COATINGS / CORROSION CONTROL / PAINT
DeFelsko Corporation, 802 Proctor Avenue, P.O.Box 676, Ogdensburg,NY 13669
Ferro Corp., 1301 North Flora St., Plymouth, IN 46563
Flow International corp., 23500 64th Ave. south Kent, WA 98032
Hempel Coatings, 10-3511 Viking Way, Richmond, B.C Canada V6V1W1
Nace Int'l, 1440 South Creek Dr., Houston, TX 77084
Resto Motive Laboratories PO Box 1335 Morristown, NJ 07962-1235
Sherwin Williams, 101 Prospect Avenue, Cleveland OH 44115
Sigma USA, PO Box 816, Harvey, LA 70059

COMMUNICATIONS SERVICE
Maritel Marine Communications, 16 E. 41st St., NY, NY 10017

COMPOUNDS
Philadelphia Resins, P.O. Box 309, Montgomeryville, PA 18936

COMPUTER / COMPUTER SOFTWARE
Autoship Systems Corp., #403, 611 Alexander St., Vancouver, BC, CANADA V6A1E
Creative Systems, Inc., P.O. B. 1910, Port Townsend, WA 98368
Spec Tec , Professor Koth's Vey, 1366 Lysaker, Norway

COMMUNICATIONS
Mackay Comm Inc 2721 Discovery Dr Raliegh NC 27616-18
Seawave, 76 Hammarlund Way,(Tech 3) Middletown, RI 02842
World-Link Communications, 74 Main St. Framingham,MA 01701

CONSOLE - GMDSS
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851

CONSULTANTS
Captain R.J. Underhill & Associates, P.O. Box 1030 Groves, TX 77619
Elliot Bay Design Group 5301 Shishole Ave NW Ste 200 Seattle WA 98107
Hornblower Marine Services, PO Box 112476, Campbell, CA 95011-2476

CONTROL SYSTEM - Monitoring/Steering
Beier Radio1990 Industrial Ave Harvey, LA 70058
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065
Electrowave USA, 6125 W. Sam Houston Pkwy. Ste 406, Houston,TX 77041
G.R. Bowler 2261 Lake Rd, Ontario, NY 14519
Governor Control Systems, 3190 S.W. 4th Ave., Ft. Lauderdale,
Kobelt Manufacturing Co., Ltd., 8238-129 street, Surrey, B.C. V3W0A6
MMC International, 60 Inip Dr, Inwood NY 11096
Prime Mover Controls, 3600 Gilmore Way, Burnaby BC V5G 4R8 Canada
Tano Corp.,57017 Citrus Blvd., Suite E, New Orleans, LA 70123

CORROSION CONTROL
Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607
Gardner Denver Water Jetting Systems 8807 Emmett Rd. Suite 100
Ultra Strip 3515 SE Lionel Terrace Staurt, FL 34996

COUPLERS- Tug & Barge
Intercontinental Engineering, P.O. Box 9055, Kansas City, MO 64168

COUPLINGS
American Vulkan, 2525 Dundee Rd., Winter Haven , FL 33884
Centa Corp., 815 Black Hawk Dr., Westmont, IL 60559
Mapeco Products, 91 Willenbrock Rd. Unit B, Oxford, CT 06478
MMC Int'l, 60 Inip Drive, Inwood, NY 11096

CRANE—HOIST—DERRICK—WHIRLEYS
Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178
E. Crane 241 Executive Dr. #3 Marion OH 43302
Edgewater Machine & Fabricators, P.O. Box 358, Edgewater, FL 32132-0358
Holly Hoist Corp., P.O. Box 86, St. Clair Shores, MI 48080-0086

CRANKSHAFT GRINDING
Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231

CRANKSHAFT REPAIR
Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231
In-Place Machining 1929 N. Buffum St Milwaukee, WI 53212
Waltz & Krenzer, 91 Willenbrock Rd., Oxford, CT 06478

CUTTING AND WELDING MACHINES
Bug-O-Systems, Inc., 3001 W. Carson St., Pittsburgh, PA 15204
ESAB Cutting Systems, 411 South Ebenezer Road, Florence, SC 29501

DECK MACHINERY — Cargo Handling Equipment
Coastal Marine Equipment, Bldg 9114 MISAAP Ind.Complex, Stennis Space
Edgewater Machine and Fabricators, 400 Megan Z Ave Edgewater. FL 32132
Intercontinental Engineering, P.O. Box 9055, Kansas City, MO 64168
Markey Machinery. PO Box 24788. Seattle WA 98124
Rapp Hydema. 4433 27th Avenue West. Seattle WA 98199
Smith Berger Marine Inc., 7915 10th Ave S., Seattle, WA 98108
Superior Lidgerwood-Mundy. 1101 John Ave. Superior. WI 54880
W.W. Patterson 3 Riversea Rd Pittsburg, PA 15233

DESALINATION - REVERSE OSMOSIS
G.E.T., Inc., 3135 Golden Avenue, Long Beach, CA 90806
Pall Rochem, 5775 Rio Vista Drive, Clearwater, FL33760-3114
Reverse Osmosis of South Florida 12301 SW. 133 Court, Miami. FL, 33186

DESIGN CONSULTING
Fleet Technologies, 311 Legget Dr., Kanata, Ont, K2K 1Z8 Canada

DIESEL CYLINDER INDICATORS
Kiene Diesel, 325 S. Fairbanks St., Addison, IL 60101

DIESEL ENGINE — Spare Parts & Repair
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610
Cummins Marine, 4500 Leeds Ave., Suite 301, Charleston, SC 29405
Deutz Canada Inc., 4420 Garand St., Montreal, Que. H4R 2A3
GE Marine Engines 1 Neuman Way Cincinnatti, OH 45215
Giro Engineering Limited, Talisman,Duncan Road,Park Gate,Southampton,Hants SO31 7GA England
Goltens Marine, 322 Broad Ave., Wilmington, CA 90744
H.P.International, Inc., 3812 W. Linebaugh Ave , Tampa, Fl 33624
Industrial Estate, New Territories, HONG KONG
MAN B&W Diesel AG, Stadtbachstrasse 1, D-86153 Augsburg 1, GERMANY
MAN B&W Diesel A/S, Teglholmsgade 41. DK-2450 Copenhagen SV. DENMARK
MAN B&W Diesel, 17 State St , New York, NY 10004
Marine Exhaust Systems of Alabama, P.O. Box 698, 757Nichols Ave , Fairhope, AL 36533
Marine Turbo & Diesel Inc 1090 7th St Richmond CA 94801
Manso USA, Inc., 100 Davidson Ave , Somerset, NJ 08873
Motor-Service AB. Box 2115, S-144 04 Ronninge, SWEDEN
Motor Services Hugo Stamp. 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315
NREC Power Systems 5222 HWY 311 Houma, Louisiana 70360
Phone: 985-872-5480, Fax: 985-872-0611, E-mail: power@nrecps.com
EMD ®, CAT ® and Alco ® Diesel Engines, Parts, Service; World Wide,
***NRECps* supplies MARPOL Annex VI, Emissions compliant EMD ® Diesel Engines. (750 HP to 3,600 HP) Power generation plants ranging between 150 KW to 10 MW available. All inquiries invited.**
Reagan Equipment, 2550 BelleChase Hwy., Gretna. LA 70054
Rolls -Royce Commercial Marine Houston 10255 Richmond Ave
Scardana Americas Bkg , 502 Empire St., Greefield Park, J4V1V7 Canada
Wartsila Diesel. 201 Defense Highway, Annapolis, MD 21401

DIESEL ENIGINE OVERHAUL
Goltens - NY Corp., 160 Van Brunt St., Brooklyn, NY 11231
Governor Controls Systems 3190 W. 4th Ave Ft Lauderdale FL 33315
Marine Turbo & Diesel Inc 1090 7th St Richmond CA 94801

DIESEL FUEL DECONTAMINATION (www.bunkerbuyer.com)
Algae X Intnl PO Box 4011 Ft Myers Beach, FL 33932
PRI 3750 Hacienda Blvd., Suite A Davie, FL 33314

DIGITAL TORQUE METER SYSTEMS
Instruments, Computers & Controls 78 Londonderry Tpke Hookset NH 03106

DISPLAY TECHNOLOGY
Azonix-Dynalco 3690 NW 53rd St., Ft Lauderdale,FL 33309
Kent Modular Electronics Ltd.,611 Maidstone Road, Rochester ME1 3QO

DIVING & SALVAGE
Bisso Marine Co. P.O Box 4113, New Oreans, LA 70178
H.J. Merrihue, P.O Box 23123. New Orleans LA 70183

DOCK FENDERING SYSTEMS
Plastic Pilings Inc., 1485 South Willow Ave , Rialto, CA 92376

DOCUMENTATION/DATABASES
Zaetric Business Solutions, LLC 24800 I-45 North, Suite 324, Houston, Texas 77386 Phone: 713-824-1654, Fax: 713-621-4885, E-mail: inquiries@zaetric.com, Contact: David Woody, website: www.zaetric.com ZAETRIC provides marine and oilfield clients with services including business and technical documentation development, database application development/maintenance, project and vendor management, contract development/management, procedures and workflow development/analysis.
For more details, call or visit the website.

DOORS - MARINE & INDUSTRIAL
Juniper Int'l.,72-15 Metropolitan Ave , Middle Village, NY 11379
Manly Marine, PO Box 86788, N. Vancouver B.C. Canada V7L 4L3
Mapeco , Inc., 90 Forest Ave., Locust Valley, NY 11560
Walz & Krenzer, 91 Willenbrock Rd., Unit B4, Oxford CT 06478

DRIVES
Allied Systems 2300 Oregon St Sherwood OR 97140

DRIVESHAFTS
The Cline Company, 600 Buncombe St., Greenville, SC 29602

DRUG TEST KITS
Sun State Specialty K-9s, Inc.,1500 Beville Road, Daytona Beach, FL 32114

DRY DOCKS-Design
Crandall Dry Dock Engineers Inc., P.O. Box 505804, Chelsea, MA 02150
Heger Dry Dock Engineers, Inc., 13 Water St., Holliston, MA 01746

ELECTRICAL EQUIPMENT
Callenberg Equipment 2010 N. Miami Ave, Miami, FL 33127
MMC International, 60 Inip Dr, Inwood NY 11096

ELECTRONIC INFORMATION SUPPORT
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY
Scientific Marine Svcs., 101 State Pl., Ste. P, Escondido, CA 92029

ELECTRICAL INSTRUMENTS
Selco USA, 2508 Lake Brook Ct., Atlanta, GA 30360

ELECTRONIC CHARTS
C-Map Commercial 133 Falmouth Rd , Mashpee, MA 02649Marine Electronics
NOAA Office of Coast Survey, 1315 East-West Hwy.Silverspring, MD 20910
Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225

ELECTRONICS
C-MAP, P. O. Box 212, 4371 Egersund Norway
Furuno USA, Inc., 4400 NW Pacific Rim Blvd , Camas, WA 98607
Sure Seal Connections, 3951 South Plaza Dr. Suite 240, Santa Ana, CA 92704
Standard Horizon, 10900 Walker St., Cypress, CA 90630

EMERGENCY LIGHTING
Intenslite International Ltd.,Unit 6, Ettenck Riverside-Dunsdale Road, Selkirk, Scotland TD7-5EB

EMPLOYMENT
All American Marine P O Drawer 191237 Tillman's Corner, AL 33619
Military Sealift Command PO Box 120 Code APM-124 Virginia Beach,VA 23458- 0120
Peter D. Juan ESQ, 14 Lafayette Court, Greenwich Ct 06830

ENGINEERING SERVICES / MARINE ENGS
Callenberg Equipment 2010 N. Miami Ave, Miami, FL 33127
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
U.S.M.M.A., 300 Steamboat Rd, Kings Point, NY 11024

ENGINE ROOM LIGHTING/MONITORING & CONTROL
GMT Electronics, 171 Main Street, South River, NJ 08882
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851

ENGINE ROOM REPLACEMENT PARTS
Marisco USA, Inc., 100 Davidson Ave., Sommerset, NJ 08873

ENGINES
GE Marine Engines, 1 Neuman Way, Cincinnati, OH 45215
Wartsila NSD Corporation, box 252, Vasa. finland Fin-65101

EQUIPMENT RELIABILITY ANALYSIS SOFTWARE
Resurgence Software Inc., Advanced Technology Center, 2021 Lakeshore Drive, Suite 21D. New Orleans, LA 70122

EVACUATION SYSTEMS
DBC, 12351 Bridgeport Rd., Richmond, BC Canada
Fleet Technology 311 Legget Dr Kanata Ontario K2K 1Z8

EVAPORATORS
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974
Beaird Industries, 601 Benton Kelly St., Shreveport, LA 71106
Sasakura Engineering, 7-32 Takeshima, 4-chome, Nishiyodogoaw, KY, Osaka555, Japan

EQUIPMENT DISTRIBUTOR
Total Marine Solutions 4350 Oaks Rd, Ste 501, Ft Lauderdale FL 33314

EXPANSION JOINTS
Elasto Valve Rubber Products 1691 Pioneer Rd Sudbury ONTARIO Canada P3G 1B2
Silex Inc 6659 Ordan Dr Mississauga, ON CANADA L5T 1K6

EXTRUDED RUBBER PRODUCTS
Clean Seal Inc., P.O. Box 2919. South Bend. IN 46880

FAIRING COMPOUND
Philadelphia Resins, P.O.B. 309. Montgomeryville, PA 18936

FANS - VENTILATORS - BLOWERS
Jon M. Liss Associates. Inc , 411 Borel Ave , San Mateo, CA 94402

FASTENERS
Jamestown Distributors, P.O. Box 348, Jamestown, RI 02835
Superbolt, P.O.B. 683. Carnegie, PA 15106

FENDERING SYSTEMS/BUOYS - Dock & Vessel
Dolphin USA 2241 Barraud Ave Norfolk, VA 23504
Duramax Marine LLC 17990 Great Lakes Parkway, Hiram,OH 44234
Maritime International, 100 E. Vermilion Street #212, Lafayette, LA 70501
Plastic Pilings Inc , 1485 South Willow Ave., Rialto, CA 92376
Poly-Hi-Solidur, 2710 American Way, Ft. Wayne, IN 46899
Schuyler Rubber Co., 16901 Woodred Rd., Woodinville, WA 98072
Seaward Int'lP.O. Box 98. Clearbrook , VA 22624
Urethane Products 9076 Rosecrans Ave Bellflower, CA 90706
Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

FILTERS/FILTER SYSTEMS (www.bunkerbuyer.com)
Algae X Int'l, PO Box 4011, Ft. Myers Beach, FL 33932
Boll Filter, 9822 General Drive, Suite 180, Plymouth, MI 48170
G.E.T., Inc., 3135 Golden Avenue, Long Beach, CA 90806
Hellan Strainer 3249 East 80th St Cleveland, OH 44104

FIRE & SAFETY PRODUCTS
Brookdale International, 1-8755 Ash St., Vancouver BC, V6P6T3
DBC Marine Safety Systems, 101-3760 Jacombs Rd. Richmond, BC, Canada V6V1Y6
Fr.Fassmer &Co. D-27804 Berne/Motzen, Germany, IndustriestraBe2
IFSTA/Fire Service Programs, 9030 N. Willis, Stillwater, OK 74078-8045
IMSSCO Corporation, 2040 Harbor Island Drive, Suite 201 A, San Diego,CA 92101
Port Canaveral Marine Fire Fighter Academy, Canaveral Port Authority, P.O. Box 267, Cape Canaveral, FL 32920

FLANGES
Jesse Engineering, 5225 7th St. E Tacoma, WA 98424

FLOW CONTROLS
Hoffer Flow Controls 107 Kitty Hawk Lane, Elizabeth City, NC 27906

FUEL ADDITIVES
Power Research Inc 3750 Hacienda Blvd Ste A, Davie, FL 33314

FUEL DECONTAMINATION (www.bunkerbuyer.com)
Algae X Int'l, PO Box 4011, Ft. Myers Beach, FL 33932

FUEL TREATMENTS
Power Research Inc 3750 Hacienda Blvd Ste A, Davie, FL 33314

FULL SERVICE SHIPYARD & REPAIR
Marisco, Ltd. 91-607 Malakole Rd Kapolei, HI 96707-1831

GALLEY EQUIPMENT
AR Larsen, 15040NE 95th St. Redmond, WA 98052
Cospolich Refrigerator Co.,PO Box 1206 Destrehan LA 70047
Dutchess Baker's Machinery Co., 1101 John Ave, Superior WI 54880
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave, Boca Raton, FL 33431
Lang Manufacturing Co., 6500 Merrill Creek Pkwy, Everett, WA 98023

GANGING & SAMPLING
Hermatic Inc., 4522 Center St., Deerpark, TX 77536

GAS DETECTORS
ENMET, PO Box 979, Ann Arbor, MI 48106

GAS TURBINES
GE Marine Engines 1 Neuman Way Cincinnatti, OH 45215

GEARS & GEAR REPAIR
Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231
Karl Senner Inc., 25 W Third, Kenner LA 70062
The Falk Corp., PO Box 492, Milwaukee. WI 53201-0492

GENERATOR CONTROLS
Con-Select Inc PO Box 8745 Mandville, LA 70471
Selco USA, Inc.,2508 Lake Brook CT Altanta, GA 30360

GMDSS — GEAR BOXES & BEARINGS
Beier Radio, 1990 Industrial Ave Harvey. LA 70058
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607
Renk AG, Goegginger Street 73, 86159 Augsberg, Germany

GOVERNORS
Motor Services Hugo Stamp, 3190 S.W 4th Ave., Ft. Lauderdale, FL 33315

GPS
Leica Navigation 23868 Hawthorne Blvd Torrance CA 90505-5908
Standard Horizon, 10900 Walker St., Cypress, CA 90630

GROUNDINGS
Sohre Turbomachinery 132 Gilbertville Rd PO Box 889 Ware, Mass 01082-0889

HATCHES AND DOORS
Juniper Int'l.,72-15 Metropolitan Ave., Middle Village, NY 11379
Manly Marine, P.O. Box 86788, N. Vancouver, BC V7L 4L3 Canada

HEAT EXCHANGERS
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974
Duramax Marine LLC 17990 Great Lakes Parkway, Hiram,OH 44234
Tranter PHE, INC., P.O. Box 2289, Wichita Falls 7x 76307
Phone: 940-723-7125, Fax: 940-723-1131, E-mail: www.tranterphe.com
Tranter PHE is a leader in the Marine market. We are a global supplier of heat transfer solutions and products. Visit our website to learn more about our products and worldwide facilities.

HEAVY FUEL TREATMENT
Algae X Int'l, PO Box 4011, Ft. Myers Beach, FL 33932

HIGH SPEED FERRY BUILDERS
Incat Australia (Pty) Ltd.,18 Bender Drive, Hobart 7009, Australia

HOISTS
Coastal Marine Equipment, Bldg 9114 MISAAP Ind.Complex, Stennis Space Center,MS 39529
Holly Hoist Corp., P.O. Box 86, St. Clair Shores, MI 48080-0086

HORNS/WHISTLES
Airchime Mfg. Co. Ltd., 5478 267th Street, Gloucester Industrial Estate, Langley, B.C. Canada V4W 3S8
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Kockum Sonics, Inc., 933 Industry Rd., Ste105, Kenner, LA 70062

HOSES/HOSE FITTINGS
JGB Enterprises, Inc. 115 Metropolitan Drive, Liverpool, NY 13088

HYDRAULIC SYSTEMS
Allied Systems 2300 Oregon St, Sherwood OR 97140
Cunningham Marine Hydraulics 201 Harrison St, Hoboken NJ 07030
Offshore Inland 3521 Brookdale Dr.S. Mobile AL 36618

IMO PUBLISHING
4 Albert Embankment, London SEI 7SR, UK

INDUSTRIAL SAFETY
Steams Manufacturing, PO Box 1498, St Cloud, MN 56302-1498

INSURANCE SERVICES
WQIS, 80 Broad St. 21st Flr., New York, NY 10004

INCINERATORS
Therm-Tec Inc., PO Box 1105, Tualatin, OR 97062

INFLATABLES
Willard Marine, 1250 Grove St,, Anaheim, CA 98286

INFRARED IMAGING EQUIPMENT
Flir Systems,16505 SW 72nd Ave., Portland, OR 97224

INSPECTION EQUIPMENT
Staveley Instrument, 421 N.Quay St.,Kennewick, WA 99336

INSTRUMENTATION
Hoffer Flow Controls, 107 Kitty Hawk La., Eizabeth City, NC 27906
Thermo Electron, 6801 Cochran Rd , Solon, OH 44139

INSULATION
Lit Industries, 516 Costner School Rd.,Bessemer City, NC 28016-9801
Mascoat Products, 10890 Alcott, Unit 102, Houston, TX 77043
Pacor, Inc., P.O. Box 107, Westville, NJ 08093
Shannon Enterprises of WNY Inc., 162 Sweeny St., North Tonawanda, NY
Superior Energies Inc., 3115 Main Avenue, Groves TX 77619

INTERIORS
Custom Ship Interiors, Inc., P.O. Box 882, Solomons, MD 20688
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
Insulations, Inc., Rt. 5, 12360 Leisure Rd, Baton Rouge, LA 70807
Jamestown Metal Marine 4710 NW 2nd Ave., Boca Raton, Fla. 33431-4870
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031
Panel Specialists Inc./Thermax N.A., 3115 Range Road, Temple, TX 76504-1240
Phone: 254-774-9800, Fax: 254-774-7222, Email: thermax@erols.com
Contact: John Hutchison, Website: www.panelspec.com Panel Specialists Inc. warehouses, processes and distributes *THERMAX* ® marine laminated paneling in North and South America. *Thermax* ® is not-combustible hard core panel used for decorative interior wall panel systems and ceilings, which has been tested to and meets the requirements of SOLAS and IMO Resolutions, and the FTP Code.

JOINER—Watertight Door—Paneling—Ceiling System—Decking
Custom Ship Interiors, Inc. P.O. Box 882, Solomons MD 20688
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031
Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501
Walz & Krenzer, 91 Willenbrock Rd., Unit B4, Oxford CT 06478

K-9 DETECTION
Sun State Specialty K-9s, Inc.,1500 Beville Road, Daytona Beach, FL 32114

KEEL COOLERS
Duramax Marine LLC 17990 Great Lakes Parkway, Hiram,OH 44234
R.W. Femstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

LASER ALIGNMENT
Boland Industrial & Consulting Services, P.O.B. 91360, Mobile, AL 36691
LUDECA 1425 NW 88th Ave Miami FL 33172

LAUNDRY EQUIPMENT
Richard Galley Supply, PO Drawer 4035, Houma, LA 70361

LEAK REPAIR
Indumar Products Inc 2500 Tanglewilde, Suite 260, Houston TX 77063

LIFEBOATS/RAFTS
DBC Marine Safety Systems, 101-3760 Jacombs Rd. Richmond, BC, Canada V6V1Y6
Edgewater Machine & Fabricators, P.O. Box 358, Edgewater, FL 32132-0358
Fassmer & Co.D-27804 Berne/Motzen, Germany, IndustriestraBe2 v
Norsafe AS, P.O. Box 115, N-4818 Faervik, Norway
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806
Wolong International, 151 Chin Swee Road #03-14, Manhattan House, Singapore 169876

LIFEBOAT SERVICING
Technofibre Pte.Ltd., 51 Shipyard Road, Singapore 628139

LIFEBOAT TESTING
Water Weights, Inc., 5139 Brook St., Suite E, Mont Claire, CA 91763

LIFESAVING EQUIPMENT
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

LIFT EQUIPMENT
Mi-Jack Products, 3111 West 167th Street, Hazel Crest, IL 60429

LIFT EQUIPMENT TESTING
Water Weights Inc., 5139 Brooks St., Suite E, Montclair, CA 91763

LIGHTING SYSTEMS / EQUIPMENT
ACR Electronics, Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247
Archway Marine, 4501 Swan Ave., St. Louis, MO 63110
Goltens Marine, 160 Van Brunt St., Brooklyn, NY 11231
Kockum Sonics, Inc., 933 Industry Rd., Ste105, Kenner, LA 70062
L.C. Doane, P.O.Box 975, Essex CT 06426
Pauluhn Electric Mfg. LLP, 1616 North Main Street, Pearland, TX 77581

LINE & NET CUTTERS
Spurs Marine, 201 SW 33rd St., Ft. Lauderdale, FL 33315

LIQUID OVERFILL PROTECTION SYSTEMS
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106

LOAD MEASURING EQUIPMENT
Water Weights Inc. 5139 Brook St Ste E Mont Claire, CA 91763

LOAD TESTING
Water Weights Inc. 5139 Brook St Ste E Mont Claire, CA 91763

LUBRICANTS/LUBRICATION SYSTEMS
Benjamin R. Vickers & Sons Ltd., Airedale Mills, 6 Clarence Road, Leeds, W.Yorkshire England, UK L510 IND
Companion Products, Inc., 2040 Johnson Ct. Unit A, Kingston, IL 60145-0009

MACHINERY MAINTENANCE, REPAIR AND TESTING
Goltens - New York Corp., 160 Van Brunt St., Brooklyn,NY 11231
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27604-1851

MANAGEMENT SYSTEMS & SERVICE
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
PCS Marine, 174 Colonnade Road S., Nepean, Ontario K2E715

MARINE & OFFSHORE SIGNAGE
Maritime Associates, PO Box 1788, Crystal Bay, NV 89402

MARINE CONSULTANTS
Boland Industrial & Consulting Services, P.O.B. 91360, Mobile, AL 36691
Hall Associates of Washington, Inc., P.O. Box 1554, Mukilteo, WA 98275
PCS Marine, 174 Colonnade Road S., Nepean, Ontario K2E715

MARINE CONSTRUCTION/REPAIR
Sundial Marine, 5605 N.E. Sundial Road, Trautdale, OR 97060

MARINE CRANES
Liebherr-Werk Nenzing GMBH, P.O. Box A6710, Nenzing, Austria

MARINE DECKING & FLOORING
Flexible Decking, 2708 N. Australian Ave. Ste. 9, West Palm Beach, FL 33407
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
Slipnot Safety Flooring WS Molnar Co. 2545 Beavfait St., Detroit, MI48207

MARINE ELECTRONICS
ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247
Beier Radio, 1990 Industrial Ave Harvey, LA 70058
Callenberg Engineering 2010 N. Miami Ave, Miami, FL 33127
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607
GMT Electronics, 171 Main Street, South River, NJ 08882
Hatteland Display, Bogstadveien 19, N-0355 Oslo, Norway
JRC, 1011 SW Klickitatway Bldg B, Suite 100, Seattle WA 98134
Jotron Electronics, Box 85, NO-3280TJODALYNG, Norge
Kockum Sonics, Inc., 933 Industry Rd., Ste105, Kenner, LA 70062
Leica Navigation, 23868 Hawthorne Blvd., Torrance CA 90505-5908
Marine Electronic Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225
Raytheon Marine GmbH, High Seas Products, Postfach 1166 D-24100 Kiel, Germany
(Distributor for Raytheon) Klein Navigation, 11 Klein Drive, Salem NH 03079
Saab Marine Electronics AB, Box 13045, 402 5Goteborg,SWEDEN
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton,NORWAY
Scientific Marine Services, Inc., 101 State Pl., Suite F,Escondido, CA 92029
Standard Horizon, 10900 Walker St., Cypress, CA 90630

MARINE ENGINEERING
Elliot Bay Design Group, 5301 Shilshole Ave. NW, Ste. 200, Seattle, WA 98107

MARINE EQUIPMENT
Baltic Spare Services Ltd 8 Astronodomow St., 80-299 Gdansk,Poland
Commercial & Marine Products, 3924 Forest Dr., #11, Columbia,SC 29204
Plastic Pilings Inc., 1485 South Willow Ave., Rialto, CA 92376
Scardana Americas Bkg., 502 Empire St., Montreal, Greenfield Park, j4v1v7
Superior Lidgerwood-Mundy, 1101 John Ave., Superior, WI 54880
Waterman Supply, P.O.Box 596, Wilmington, CA 90748

MARINE GLASS
Bent Glass Design INc., 3535 Davisville Rd.,Hatboro PA 19040

MARINE HARDWARE
HMS Marine Hardware, 333 W.Merrick Road, Valley Stream, NY 11580-5219

MARINE MANAGEMENT
Hornblower Marine Services, PO Box 112476, Campbell, CA 95011-2476

MARINE RADIOS
Standard Horizon, 10900 Walker St., Cypress, CA 90630

MARINE SERVICES
Conam Inspection, 192 International Blvd., Glendale Heights, IL 60139

MARINE THERMAL IMAGER
Arion International 720 Glen Eagle Drive #100 Winter Springs, FL 32708

MARITIME TRAINING & SCHOOLS
Marine Safety Int'l., Marine Terminal Laguardia Airport, NY 11371

METAL ALLOY DISTRIBUTORS
Diversified Metals 49 Main St Monson, MA 01057

METERS
Selco USA, 2508 Lakebrook Ct., Atlanta, GA 30360

MONITORING SYSTEMS
GR Bowler 2261 Lake Rd Ontario, NY 14519
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851
Prime Mover Controls, 3600 Gilmore Way, Burnaby BC V5G 4R8 Canada

MOORING LINES
Bayer Faser Building F18 DV Marktg Monofil 41538 Dormagen, Germany

MOORAGE FACILITY
Sea Ark Marine, PO Box 210, Monticell,o AR 71655-0210

Washington North Tongue Point 1300 Dexter Ave., N. Ste 205 Seattle, WA 9810

MOTOR PROTECTION
Marine Safe Electronics, 261 Millway Ave. #12, Concord Ontario L4K 4K9

MOUNTING SYSTEMS
Machine Support Inc.,109B 86th Street, Virginia Beach, VA 23451

NAVAL ARCHITECTS, MARINE ENGINEERS
A.K. Suda , Inc., 3004 19th St., Metairie, LA 70002-4989
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
Band, Lavis, & Associates, 900 Ritchie Hwy, Suite 203, Severna Park, MD 21146
Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235
C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609
CDI Marine Co., 9550 Regency Square Blvd. Ste. 400, Jacksonville, FL 3222
Computer Sciences Corporation-Advance Marine Center, 1201 M St. SE, Washington, DC 20003
CT Marine, 56 Crooked Trail, Rowayton, CT 06853
Cunningham & Walker, 1762 Providence Hollow Lane, Jacksonville, FL 32223
DeJong & Lebet, Inc., 1734 Emerson Street, Jacksonville, FL 32207
Designers & Planners, 2120 Washington Blvd. Ste.200, Arlington, VA 22204
Elliot Bay Design Group 5301 Shishole Ave NW Ste 200 Seattle WA 98107
Fleet Technology, 311 Legget Dr., Karata, Ontario, Canada K2K 1Z8
George G. Sharp, Inc., 100 Church St., New York, NY 10007
Guido Perla & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104
James S. Kragen, 799 Brickell Plaza Ste. 701, Miami, FL 33131
Jamestown Marine Service, Marine Science & Tech Center 1084 Shennecossett Rd Groton, CT 06340
John J. McMullen Associates, Inc., 4300 King St., Suite 400, Alexander, VA 22302
John W. Gilbert & Assoc., Inc., 199 State St., Boston, MA 02109
Kvaerner Masa Marine Inc., 201 Defense Highway, Suite 202, Annapolis, MD 21401
M. Rosenblatt & Son, Inc., 2341 Jefferson Davis Hwy, Arlington, VA 22202
Mantech, Seacliff, Bay Road, Newmarket, NH 03857
Maritime Design, 13000 Sawgrass Village Circle, Ponte Vedra Beach, FL 32082
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
MH Systems 10951 Sorrento Valley Rd#2FSan Diego CA 92121
MIL Systems, 200-1150 Morrison Drive, Ottawa, Ontario K2H 8S9
Nautical Designs, Inc. 2101 S. Andrews Ave,Suite 202, Fort Lauderdale FL 33316
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
R.J. Mellusi & Co., 71 Hudson St, New York, NY 10013
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
Sea School, 10812 Gandy Blvd, St. Petersburg, FL 33702
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426;
The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104
TIMSCO, P. O. Box 91360, Mobile AL 36691
VUYK Engineering, P.O Box 204, 9700 AE Groningen, The Netherlands
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

NAV/COMM EQUIPMENT
Beier Radio 1990 Industrial Ave, Harvey LA 70058
C-Map/Commercial, 133 Falmouth Rd., Mashpee, MA 02649
C-Map, P.O. Box 212 4371 Egersund Norway
St. Johns, Newfoundland, Canada A1A 2GB
Charlco, New North Road, Hainault, Ilford Essex, 166 2UR England,UK
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607
Mackay Communications, 3691 Trust Dr., Raleigh, NC 27616
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboton, NORWAY
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Transas Marine USA, 19105 36th Ave. W. St. 101, Linwood, WA8036

NAVIGATION
Comnav Marine Ltd.,#15-13511 Crestwood Pl., Richmond, BC V6V2G1
D&B Technologies, 1400 S.Orland Ave., Winter Park, FL 32789
Kongsberg Maritime Ship Systems AS, PO Box 1009 3194, Horten, Norway
Nauticast AG, Mariahilfer Strasse 50/2/11,A-1070 Vienna, Austria
Transas Marine USA 19105 36th Ave West Ste 101 Lynwood, WA 98036

NOZZLES/NOZZLE SYSTEMS
Harrington Marine, 6720 124th Ave., Fennville, MI 49408
NautiCAN Research and Develop.,P.O. Box 428-115 Kelvin Grove Way, Lions Bay,BC V0N 2E0

OIL SPILL RESPONSE
Marine Preservation Association, 8777 No.Gainey Center Drive Suite 105, Scottsdale, AZ 85258

OFFSHORE MARINE CONSTRUCTION
Amfels 5177 Richmond Ave Ste 1065 Houston TX 77056

OFFSHORE TOWING
Tidewater, 601 Poydras Street, New Orleans, LA 70130

OIL/WATER SEPARATORS
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556
MMC International, 60 Inip Dr, Inwood NY 11096
Sasakura Engineering, 7-32 Takeshima, 4-chomNishiyodogoaw,KY, Osaka555, Japan

PAINTS/ANTI-FOULANTS
Jotun Paints Inc, 1401 Severn St., Baltimore,MD 21230
Sigma USA, PO Box 816, Harvey, LA 70059
Wasser High Tech Coatings, 8041 South 228th St., Kent, WA 98032

PAINT REMOVAL
Ultra Strip Systems 3515 SE Lionel Terrace Stuart, FL 34996

PARTS LOCATOR SERVICE
Inventory Locator Service 3965 Mendenhall Rd, Memphis, TN 38115

PFD's (Personal Flotation Devices)
Stearn's Mfg Co. PO Box 1498 St Cloud, MN 56302-1498

PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS
GS-Hydro U.S., 1395 Bluehills Ave.,Bloomfield CT. 06002
Jesse Engineering 5225 7th St E. Tacoma WA 98424 USA
Phone: 253-922-7433, Fax: 253-922-2536, E-mail: tmorgan@jesse-wallace.com
Complete line of pipeshop equipment: pipe benders, saddle and hole cutters, flange welders, and more.
Neptune Research, 1685 Latham Rd., West Palm Beach, Fl 33409
Norma Products (U.S.) Inc. 31132
Century Drive, Wixmon, MI 48393
RAMCO Manufacturing Co.,365 Carnegie Avenue, Kenilworth, NJ 07033

PIPE LEAK REPAIR
CSD North America 880 Canada Rd, Manchester, NH 03109

POLLUTION CONTROL PRODUCTS
Enecon Corporation, 125 Baylis Rd., Melville, NY 11747-3800

PORTABLE FOAM APPLICATORS
IMSSCO Corporation, 2040 Harbor Island Drive, Suite 201 A, San Diego,CA 92101

PORTABLE VENTILATORS
Americ Corp 1910 E. Devon Ave Elk Grove Village, IL 60007

PORT DEVELOPMENT
RTM Star Center, 2 W.Dixie Hwy., Dania, FL 33004
Sasakura Engineering, 7-32 Takeshima,4-chome,Nishiyodogoaw,KY, Osaka555, Japan

PORT SECURITY
Foss Environmental, P.O. Box 3535, Seattle, WA.98124

PRECISION FLAME CUTTING/SAWING
Ronson Technical, 2146 B Flintstone Dr., Tucker, GA 30085

PRESSURE INDICATORS
Lehman & Michaels GmbH & Co. kg,
Marlow Ring 4, D-22525 Hamburg Germany

PREVENTATIVE MAINTENANCE
Marine Safe Electronics 37 Staffern Dr Concord Ontario L4k 2A2

PROPULSION EQUIPMENT
ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372,
ABB Industry Oy, P.O. Box 185, 00381 Helsinki, FINLAND
ABB TURBOCHARGER, INC.,1460 Livingston Avenue, North Brunswick, NJ 08902
AlstomPower Conversion, 3 Ave. Des Trois Chenes 90018 Belfort Cedex France
Brunvoll A/S, P.O. Box 370, N-6401, Molde, Norway
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320
Centa Corp., 8185 Cass Ave., Darien, IL 60561
Cummins Marine, 4500 Leeds Ave., Suite 301, Charleston, SC 29405
Fincantieri, Diesel Engines Div—GMT, Bagnoli della Rosandra 3334, Trieste, ITALY
Geislinger Corporation, 200 Geislinger Drive,Battle Creek, MI 49015
Goltens Worldwide, 160 VanBrunt St., Brooklyn, NY 11231
Harbormaster Marine Inc., 31777 Industrial Rd., Livonia, MI 48150
Harrington Marine, 6720 124th Ave.,Fennville, MI 49408
Jan Verhaar Omega Thrusters 2340 AC Oegstgeest Holland
Jan Verhaar Omega Thrusters, P.O. Box 119, 2340 AC Oegstgeest, NETHERLANDS
Karl Senner Inc., 25 W Third, Kenner LA 70062
KawasakiHeavy Industries, Ltd., World Trade Center Bldg.,4-1 Hamamatsu-cho,2-chome,Minato-ku,Toyko 105-6116, Japan
Konrad 1421 Hanley Rd Hudson WI 54016-9376
LA.ME.srl, Marine Division, Via Delia Fornace 4, Opera (MI) Italy
MAN B&W Diesel, 17 State St., New York, NY 10004
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Holeby, DENMARK
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15. DK-9900 Frederikshavn, DENMARK
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-86153 Augsburg 1 GERMANY
Mapeco , Inc., 91 Willenbrock Rd., Unit B4, Oxford CT 06478
Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY
Napier Turbochargers, PO Box 1, Waterside South Lincoln LN5 7FD England
Omnithruster Inc., 30555 Solon Ind. Pkwy., Cleveland, OH, 44139
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024
Propulsion Systems Inc 601 NE 26th Court, Pompano Beach, FL 33064
Rolls -Royce Commercial Marine Houston 10255 Richmond Ave Ste 101 Houston TX 77042
Schottel Inc., 675 Industrial Blvd., Sugar Land, TX 77478
Schottel Gmbh & Co, KG-Mainzer Strasse 99-D-56322-Spay GERMANY
Schottel-Werft, Manizer Strasse 99, D-56322 Spay/Rhein, GERMANY
Siemens Electric Ltd. 1180 Courtney Park Rd, Mississauga, Ontario Canada
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492
Voith Schiffstechnik GMBH & Co., PO Box 2011, 89510 Heidenheim Germany
Wartsila Lips, 3617 Koppens Way, Chesapeake, VA.,23323
ZF Marine Group 3131 SW 42nd St., Ft. Lauderdale, FL 3331
ZF Marine Group, Ehlerstr.50, 88046 Friedrichshafen, Germany

PUMP—Repair—Drives
Advanced Environmental Systems, 2 Sutton Rd., Webster, MA 01570
Fybroc-Div.of Met-Pro, PO Box 144, Harleysville, PA 19438
Mack Boring & Parts Company, 2365 Route 22 West, Union, NJ 07083
Reagan Equipment, 2550 BelleChase Hwy, Gretna LA 70054
Scardana Americas Bkg., 502 Empire St., Greefield Park, J4V1V7 Canada

RADIATION DETECTION
Thermo Electron, 6801 Cochran Rd., Solon, OH 44139

RADARS —ARPAS
Ampco Pumps Co.,4424 West Mitchell St., Milwaukee WI 53214
Beier Radio 1990 Industrial Ave., Harvey, LA 70058
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607
Kelvin Hughes Ltd New North Rd Hainavlt, Ilford Essex 1G6 2UR

REMOTELY OPERATED VEHICLES
VideoRay LLC, 415 Engleview Blvd., Exton, PA 19341

REVERSE OSMOSIS
GET Inc 3135 Golden Ave LongBeachCA

RH PROPULSION
Goltens, 160 Van Brunt St., Brooklyn, NY 11231

RIGID INFLATABLE BOATS
Willard Marine, Inc. 1250 N. Grove St., Anaheim, CA 92806

ROPE—Manila—Nylon—Hawsers—Fibers
Cortland Cable Co., 44 River St.(PSR), Cortland, NY 13045-0330
Marlow Ropes, South Road, Hailsham, E. Sussex, BN27335
Pelican Rope Works, 4001 W.Cariage Way,Santa Ana,CA 92704
Puget Sound Rope, 1012 Second St., Anacortes, WA 98221

ROTATING EQUIPMENT
FCS, Inc., 22 Main Street, Centerbrook, CT 06409

RUDDER BEARINGS & BUSHES
Duramax Marine, 16025 Johnson St., P.O Box 67, Middlefield, OH 44062-006
Orkot Composites., 2535 Prairie Rd., Unit D, Eugene, OR 97402
Thordon Bearings, Inc., 3225 Mainway, Burlington, Ontario L7M 1A6

SAFETY & ENVIRONMENTAL SOLUTIONS
Total Marine Solutions 4350 Oaks Rd, Ste 501, Fort Lauderdale, FL 33314

SAFETY MANAGEMENT CONSULTANTS
Modern Maritime 67 Bow Street, Ste. 3, Portsmouth, NH 03801

SAFETY PRODUCTS
Brookdale International, 1-8755 Ash St., Vancouver BC, V6P6T3
D&B Technologies, 1400 S.Orland Ave., Winter Park, FL 32789
DBC Marine Safety 101 3760 Jacombs Rd Richmond BC V6V146
Fab En Co, Inc 2012 Karbach Houston, TX 77092
Lalizas SA, 21 Haidariou St., 545 Piraeus,Greece
Liferaft Systems of Australia 5 Sunmont St Derwent Park Tasmania, Australia 7009
Walport*WUSA*39-5A Dover Rd SouthToms River NJ 08757
L3 Communications PO Box 3041 Sarasota FL 34320-3041
N.Vancower, Bc Canada VZP 3n4
Norwegian Maritime Equip. AS, Box 244, NO-5460 Husnes, Norway
Slipnot Safety Flooring WS Molnar Co. 2545 Beavfair St Detroit, MI 48207
Stearns Mfg Co PO Box 1498 St Cloud, GA 56302-1498
Viking Life Saving, 1625 N. Miami Ave., Miami, FL 3313

SANITATION DEVICE—Pollution Control
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
Headhunter Inc.,4100 Ravenswood Road, Ft. Lauderdale, FL 33312
Hydroxyl systems Inc., 9800 McDonald Park Road, Sidney, BC V8L 3S8
Microphor, 452 E. Hill Rd., Willits, CA 95490
Sanitary For All, 3909 Witmer Road, PMB 472, Niagara Falls, NY, 14305

SATELLITE COMMUNICATIONS
Beier Radio 1990 Industrial Ave, Harvey,LA 70058
Comsat Maritime Services, 6560 Rock Spring Dr Bethesda MD 20817-1146
Furuno USA, Inc., 4400 N.W. Pacific Rim Blvd, Camas WA 98607
KVH Industries Inc., 50 Enterprise Center, Middletown, RI 02842
Land Sea Systems, 509 Viking Drive ,Suite KLM, Virginia Beach, VA 23452
Mackay Communications, 3691 Trust Dr., Raleigh, N.C. 27616
Nera Satcom AS, Box 91, NO-1375 Billingstad, Norway
Norwegian Telecom, Postboks 6701 St. Olivs Plass, N-0130, Oslo, Norway
Stratos, 1501 Metcalfe St., Suite 1900, Ottawa, Ontario K2P 1P1 Canada

SCARIFIERS
Desmond-Stephan, P.O.B. 30, Urbana, OH 43078

SEALS
Circle Seal Controls Inc., 2301 Wardlow Circle, P.O. Box 3300 Corona, CA
Duramax Marine, 16025 Johnson St., Middlefield, OH 44062
ExpresSeal, 204 Cemetery Road, Lancaster, NY 14086-9504
Orkot Inc., 2535 Prairie Rd., Unit D, Eugene, OR 97402
Sure Seal Connections, 3951 South Plaza Dr. Suite 240, Santa Ana, CA 92704

SEATING
H.O. Bostrom 818 Progress Ave Waukesha, WI 53186

SELF UNLOADING SYSTEMS
Seabulk Systems 3851 Shell Rd Ste 200 Richmond CANADA V6X 2W2

SENSORS
Electronic Marine Systems. 800 Ferndale Pl., Rahway, N.J. 07065

SHAFT HORSEPOWER MEASURING SYSTEM
Instruments, Computers & Controls 78 Londonderry Tpke Hookset NH 03106

SHAFT SEALS
Duramax Marine LLC 17990 Great Lakes Parkway, Hiram,OH 44234

SHAFTS
American Vulkan, 2525 Dundee Rd., Winter Haven, FL 33884
Geislinger Corporation, 200 Geislinger Drive,Battle Creek, MI 49015

SHIP LIFTS
Synchrolift Inc., Two Datran Center, 9130 S. Dadeland Blvd., Miami, Ft. 33156-7850

SHIP MANAGEMENT
Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St., Quarry Bay Hong Kong

SHIPBOARD HUMAN RESOURCES
PO 101073 Ft Lauderdale, FL 33310

SHIPBOARD TESTING
Dayton T. Brown, 555 Church St., Bohemia, NY 11716

SHIPBUILDING—Repairs, Maintenance, Drydocking
Allen Marine PO Box 1049 Sitka, AK 99835
Astilleros Espanoles, S. A. Ochandiano, 14-16 28023 El Plantio SPAIN
Atlantic Marine, Inc.,P.O. Box 3202, Mobile, AL 36652
Atlantic Marine, Inc., 8500 Heckscher Dr., Jacksonville, FL 32226
Atlas Metal Sales, 1401 Umatilla St., Denver CO 80204
Austal USA 100 Dunlap Dr Mobile AL 36602 USA or PO Box 1049, Mobile, AL 36633
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601
Bisso Marine Co., P.O.Box 4113, New Orleans, LA 70178
Blount Marine, 461 Water St., Warren, R.I. 02885
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374
Curacao Drydock Co.,Box 3012, Willemstad, Curacao, Netherlands Antilles
Cascade General Inc., 5555 N. Channel Ave., Bld. 71, Portland,OR 97217
Detyens Shipyards Inc.,1670 Drydock Ave., Bldg 236 North Charleston,SC 29450
Eastern Shipbuilding Group, 2200 Nelson Street, Panama City, FL 32402
Fincantieri Cantieri Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Trieste, ITALY
Friede Goldman Halter, 525 E. Capitol Street, Suite 402, Jackson, MS39201
Gladding Hearn,1 Riverside Ave., Somerset, MA 02725
Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231
Haller Marine Group, Inc., 13085 Industrial Seaway Rd, Gulfport, MS 39503
Hike MetalBox 698, Wheatley, ON Canada N0P 2P0
Horizon Shipbuilding Inc 13980 Shell Belt Rd, Bayou La Batre AL 36509
In-Place Machining Co., Inc. 929 North Buffum Street, Milwaukee, WI 53212-3793
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546
Malta Drydocks, The Docks, Malta
Marisco USA, Inc.,100 Davidson Ave., Sommerset, NJ 08873
Motor-Service AB, Box 2115, 144 04 Ronninge, SWEDEN
Newport News Shipbuilding, 4101 Washington Ave., Newport News,VA23607
Norshipco, 750 West Berkley Ave., Norfolk, VA 23523
Ocean Technical Services, Military Ocean Terminal Bayonne Unit #8-Foot of 32nd St., Bayonne, NJ 07002
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806
United Defense, 1525 Wilson Blvd.,Ste700 Arlington,VA 22209-2444
VT Halter, PO Box 3029, Gulfport, MS 39505

SHIP REPAIR
GMD Shipyard 360 Front St, Staten Island, NY 10304
G.S. Hydro U.S.,1395 Bluehills Ave., Bloomfield CT 06002
International Ship Repair, 1616 Penny St.,Tampa FL 33605
United Defense, 1525 Wilson Blvd., Arlington VA 22209-2444

SHIP SIMULATORS
Kongsberg Maritime Ship Systems AS, PO Box 1009 3194 Horten Norway

SHIPYARDS
Alabama Shipyard, P.O.Box 3202, Mobile AL 36652
Allen Marine PO Box 1049 Sitka, AK 99835
Atlantic Marine , 8500 Hecksher Dr., Jacksonville, FL 32226
Damen Shipyards, PO Box 1, 4200AA Gorinchem/Holland
Derecktor Shipyard, 311 E. Boston Post Rd., Mamaroneck, NY 10543
Detyens Shipyards Inc.,1670 Drydock Ave., Bldg 236 North Charleston,SC 29450
GMD Shipyard 360 Front St, Staten Island, NY 10304
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546
United Defense, 1525 Wilson Blvd.,Ste700 Arlington,VA 22209-2444

SHEAVES
Skookum, P.O. Box 280, Hubbard, OR 97032

SILENCERS
EM Products, 9700 W. 74th St., Eden Prarie, MN 55344
Houston Marine Training Services, 5728 Jefferson Hwy, New Orleans, LA 70123
Silex Inc 6659 Ordan Dr Mississauga, ON CANADA L5T 1K6

SIMULATION TRAINING
Marine Safety, Marine Air Terminal, Laguardia Airport, NY 11371
Maritime Institute of Technology 5700 Hammonds Ferry Rd, Linthicum Heights, MD 21090
Seastale, 2 Egmont Road, Henderson, WA-6166, Australia
Transas Marine Overseas Ltd., St.Petersburg Branch, 12 Obukhovskoy, Oboroni, St. Petersburg 193019 Russia

SKILLED LABORERS
Ameri-Force Inc.,3266 Talleyrand Ave.,Jacksonville, FL 32206

SLIDING DOORS
Walz & Krenzer, 91 Willenbrock Rd. Unit 4, Oxford, CT. 06478

SOFTWARE
Autoship Systems Corporation, Suite 312-611 Alexander Street, Vancouver, British Columbia, Canada V6A 1E1,
Phone: 604-254-4171, Fax: 604-254-5171 Email: sales@autoship.com,
Contact: Brigden Henry, Director of Business Development,
Website: www.autoship.com Autoship systems corporation is a leader in PC-based marine vessel CAD software and cargo management systems. For over twenty years, naval architects worldwide have depended on the Autoship integrated vessel design suite of software. Autoship load planning software systems are used by shipping and offshore industry leaders around the world.
Creative Systems, P.O. Box 1910, Pt. Townsend WA 98638
Fleet Technology 311 Leggel Dr Kanata Ontario K2K 1Z8
Loadmaster International St Varvsgarten 11B SE 211 19 Malme, Sweden
Resurgence Software Inc., Advanced Technology Center, 2021 Lakeshore Drive, Suite 21D, New Orleans, LA 70122
Yachting Consult Nieuwe Emmasingel 17 5611 AM Eindhousen

SPILL PREVENTION SYSTEM
MH Systems 10951 Sorrento Valley Rd #2F San Diego CA 92121

STABILIZATION SYSTEMS
Jered Industries 1608 Newcastle St Brunswick GA 31520

STEEL SERVICE CENTER
Ronson Technical, 2146 B Flintstone Dr., Tucker, GA 30085

STEERING GEARS/STEERING SYSTEMS
A. Van der Velden B.V. Rotterdam, P.O.B. 2061, 2930 AB Krimpen a/d Lek, NETHERLANDS
Barkemeyer-Schiffstechnik GmbH Birkenweg 11, D-21465 Reinbek
Cunningham Marine Hydraulics 201 Harrison St, Hoboken NJ 07030
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123
Hatlapa Uetersener Maschinenfabnik Tornescher WEG 5-7 D-25436 Uetersen, Germany
Jastram Engineering, 485 Mountain Hwy N., North Vancouver,B.C. CANADA V7J 2L3
Kobelt Manufacturing Co., Ltd., 8238-129 street, Surrey, B.C. V3W0A6
Offshore Inland 3521 Brookdale Dr S. Mobile, AL 36618

STERN TUBE BEARINGS/ BUSHES
Duramax Marine, 16025 Johnson StP.O Box 67, Middlefield, OH 44062-0067
Konrad 1421 Hanley Rd Hudson, WI 45016-9376
Thordon Bearings, Inc., 3225 Mainway, Burlington, Ontario Canada L7M1A6
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South Africa

STERN TUBE SEALS
Superbolt, P.O. Box 683, Carnegie, PA 15106

STRAINERS
Hellan Strainer 3249 East 80th St Cleveland, OH 44104

SURFACE PREP TOOLS
Advanced Environmental Systems, 2 Sutton Rd., Webster, MA 01570
Aurand Mfg., 1210 Ellis St., Cincinnati, Ohio 45223
Flow International Corp 23500 64th Ave S. Kent, WA 98059
Phone: 800-446-3569, Fax: 253-813-9377, Contact: mbest@flowcorp.com,
web address: flowcorp.com World leader in U.H.P water jetting equipment for surface preparation. Robotic & Handheld
Holdtight Solutions, Inc.,PO Box 770666 Houston, TX 77215-0666
NLB Corp., 29830 Beck Rd, Wixom MI 48393
RMS of Georgia, 610 McFarland 400 Drive, Alpharetta, GA 30004
Schmidt, P.O. Box 37, Fresno TX 77545
Spectrum Trading 108-B Oak St, Alpharetta GA 30004

SURVEYORS
Capt. R.J. Underhill & Assocs.,P.O.Box 1030 Groves,TX 77619

SURVIVAL EQUIPMENT
Brookdale International 1-8755 Ash St Vancouver BC Canada V6P6T3

SWIRL OFF SCARIFIER
Desmond Stephan Mfg PO Box 30Urbana OH 43078

TANK GAUGING SYSTEMS
TankTech Co.,368-3 Yangdong-Ri, Juchon-Myon, Kimhae City, Kyongnam, Korea

TANK LIQUID GAUGES
Technical Marine Services, 6040 N. Cutter Circle, Portland, OR 97217

TANK LEVELING INDICATORS
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065
ERL Marine Products div, PO Box 1026, New Albany, IN 47151-1026
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106
MMC International, 60 Inip Dr, Inwood NY 11096
Prime Mover Controls 3600 Gilmore Way Burnaby V5G 4R8 Canada
Saab Marine Electronics AB, P.O. Box 13045, S-402 51 Goteborg SWEDEN
Technical Marine Service, 6040 North Cutter Circle, Portland, OR 97217

TESTING SERVICES
Fleet Technologies, 311 Legget Dr., Kanata, Ont, K2K 1Z8 Canada
Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

THRUSTER SYSTEMS
Jan Verhaar 2340 Ac Oegstgeest Holland
Omnithruster Inc., 30555 Solon Ind. Pkwy., Cleveland, OH, 44139

TOPSIDE REPAIRS
Offshore Inland 3521 Brookdale Dr S Mobile, AL 36618

TORSIONAL VIBRATION SPECIALISTS
T.W. Spaetgens, 186 W. 8th Ave., Vancouver, BC, CANADA, V5Y 1N2
Vibranalysis Engineering Corp., 9300 Gamebird, Houston, TX 77034

TRAINING
International Maritime Training 910 SE 17th St., Ste. 200, Fort Lauderdale FL 33316
Marine Safety Marine Air Terminal Laguardia Airport, NY 11371
RTM Star Center 2 West Dixie Hwy. Dania FL 33004
Sea Technology, 6386 Three Notch Road, Mobile, AL 36619

TRANSMISSIONS
Karl Senner Inc., 25 W Third, Kenner LA 70062
ZF Marine Group 3131 SW 42nd St., Ft. Lauderdale, FL 3312

TURBOCHARGERS—Repairs
ABB Turbocharger Co 5401 Baden Switzerland
Motor Service-Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315
Napier Turbochargers, PO Box 1, Waterside South Lincoln LN5 7FD England

ULTRASONIC HOMOGENIZER
VOLMAR s.a.s. Viale Lombardia 241, 20047 Brugherio (MI) Italy

ULTRASONIC TESTING
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331
Muldoon Marine Services, PO Box 41340, Long Beach, CA 90853

ULTRASONIC THICKNESS GAUGES
Cygnus Instruments PO Box 6417 Annapolis, MD 21401

UNDERSEA CABLE CHARTS
Concert Undersea Cable, 340 Mt. Kemble Ave, Morristown, NJ 07960

UNDERWATER CAMERAS
VideoRay LLC, 415 Engleview Blvd., Exton, PA 19341

VACUUM EQUIPMENT
Vector Technologies, 6820 N. 43rd St., Milwaukee, WI 53209

VACUUM TOILET SYSTEM
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, NORWAY

VACUUM CONVEYORS
Vector Technologies, 6820 N. 43rd St., Milwaukee, WI 53209

VALVES AND FITTINGS
Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637
MMC International, 60 Inip Dr, Inwood NY 11096
William F. Williams, 38-52 Review Ave.,LIC, NY 11101

VALVE AND ROTATING EQUIPMENT SEALING
The Delamar Company, Highway 60 Rte 4, Dillwyn, VA 23436

VAPOR RECOVERY CONTROLS
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065

VENTILATION SYSTEMS / PRODUCTS
Delta T Systems, PO Box 9159, Jupiter, FL 33468

VIBRATION ANALYSIS
LUDECA 1425 NW 88th Ave Miami FL 33172
Mantech, LLC, 100 Powdermill Rd., Acton, MA 01725
Vibranalysis Eng. Corp., 9300 Gamebird, Houston,TX 77034

VIBRATION CONTROL PRODUCTS
Lo-Rez Vibration Control Ltd., 186 West 8th Avenue, Vancouver, BC. V5Y 1N2
Phone: 604-879-2974, Fax: 604-879-6588, Email: lo-rez@lo-rez.com
Contact: Ted Spaetgens, Website: www.lo-rez.com
Founded in 1956 LO-Rez Vibration Control is dedicated to design and manufacture of vibration control equipment. LO-Rez stands for low stiffness, low-resonance, low-transmissibility, low noise transmission. LO-Rez supplies a family of very high quality integrated coupling and isolator products. These include: SS-Flexible Couplings, VI-Vibration Isolators, RT-Flexible Couplings, The "Soft Mount" Package, VTD-Viscous Dampers, TL-Torque Limiters.

VISCOMETERS
Cambridge Applied Systems, 196 Boston Ave., Medford MA 02155

VOYAGE DATA RECORDER
L-3 Communications, 6000 Fruitville Road, Sarasota, FL 34232

WASTE WATER TREATMENT
Airvac, 4217 N.Old U.S. 31, Rochester, IN 46975
Envirovac, 1260 Turret Drive, Rockford, IL 61111
Evac Environmental Solutions 1260 Turret Drive
Phone: 815-654-8300, Fax: 815-654-8306, E-mail: sfrederick@evac.com
EVAC Environmental Solutions manufacturers vacuum collection systems and treatment plants for marine applications. EVAC offers both biological and physical chemical type II treatment plants which are USCG/IMO and EC certified.
Fast Systems, 8450 Cole Parkway, Shawnee, KS 66227
RWO,Leerkampe 3, D-28259 Bremen, Germany

WATER JET CLEANING
Flow Int'l., 23500 64th Ave South Kent, WA 98032
Gardner Denver Water Jetting Systems 8807 Emmett Rd, Houston, TX 77040

WATER PURIFIERS
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974
Gardner Denver Water Jet Systems 8801 Emmett Rd, Ste100, Houston TX 77040
Pall Rochem, 5775 Rio Vista Drive, Clearwater, FL33760-3114
REVERSE OSMOSIS OF SOUTH FLORIDA, INC.
150 S.E. 29TH ST., Fort Lauderdale, Florida 33316 Since 1983
THE PURE WATER SOLUTION sales@desalinator.com
Phone: 954-462-4114, 800-255-8115, Fax: 954-467-6080,
E-mail: sales@desalinator.com Don't Worry, Be Thirsty! World's Finest Watermakers/Desalinators since 1983 featuring FCI units from200 to over 15,000 GPD. Also available: Remotes, UV, Filters, Spares and Service all Brands!

WATERTIGHT CLOSURES
Walz & Krenzer, 91 Willenbrock Rd. Unit 4, Oxford, CT. 06478

WEATHER INSTRUMENTS
Aanderaa Instruments, Fanaveien 13B, 5050 Nesttun, Bergen, Norway

WEATHER PROTECTIVE CLOTHING
Carhartt Inc., 3 Parklane Blvd., Dearborn MI 48121

WEATHER SERVICES
Weather Research 3227 Audley St Houston TX 77098

WINDLASSES (Anchors)
Coastal Marine Equipment, Bldg 9114 MISAAP Ind Complex, Stennis Space Center,MS 39529
Jered Industries 1608 Newcastle St Brunswick GA 31520

WINDSCREEN & WINDOW WIPERS
Bae Systems 550 South Fulton Street, Mt. Vernon, NY 10550
Hepworth Marine international, Hepworth House, Brook St., Redditch, Worcestershire B98 8NF England
Wynn Marine Ltd Wynn House Landsdown Estate Cheltenham Gloucestershire England

WINCHES AND FAIRLEADS
Coastal Marine Equipment, Bldg 9114 MISAAP Ind.Complex, Stennis Space Center,MS 39529
Intercontinental Engineering & Mfg., P.O. Box 9055, Kansas City, MO 64168
Jeamar Winches, 1051 Clinton St. Buffalo, NY 14206
Markey Machinery, P.O.Box 24788, Seattle WA 98124
MMC International, 60 Inip Dr, Inwood NY 11096
Skookum, Inc., P.O. Box 280, Hubbard, OR 97032
Smith Berger Marine Inc., 516 S. Chicago St., Seattle, WA 98108
Superior Lidgerwood-Mundy, 1101 John Ave., Superior, WI 54880
Timberland Equipment Ltd. & Almon Johnson, 459 Industrial Avenue, Woodstock, ON N4S7Z2 Canada

WINCHES
Patterson Company 3 Riversea Road
Phone: 800-322-2018, Fax: 412-322-2785, E-mail: info@www.patterson.com

WORKWEAR
Carhartt Inc., 3 Parklane Blvd., Dearborn MI 48121

INFORMATION SHOWCASE

Get Free Information Fast

Circle the appropriate Reader Service Number on the opposite page *or* visit **www.maritimereporterinfo.com**

GET FREE INFORMATION ONLINE at: www.maritimereporterinfo.com

Page	Advertiser	Product	R/S#
C4	**ABB Turbocharger Co.**	turbochargers	201
6	**ABB Turbosystems AG**	turbochargers	202
14	**ACR Electronics**	safety and survival products	203
16	**Albacore Research**	CAD/CAM	204
22	**All American**	jobs & training	205
58	**Allied Systems**	deck machinery	206
19	**Americ Corporation**	portable ventilators	207
60	**Anchor Lamina**	portable hydraulic drilling equipment	208
8	**Anchor Marine**	marine equipment	209
51	**Arion International**	thermal imaging	210
3	**Atlantic Marine**	shipyard	211
19	**Atlas Metal Sales**	shipbuilding materials	212
68	**Aurand Manufacturing**	surface prep tools	213
17	**Austal USA**	shipyard	214
37	**Barkemeyer Schiffstechnik GMBH**	manoeuvring equipment	215
32	**Benjamin Vickers & Sons Ltd.**	lubricants	216
20	**Bent Glass Design Inc.**	marine glass	217
17	**Boatlife Industries**	teak deck sealant	218
72	**Boll Filter**	filters	219
71	**Bollinger Shipyards**	shipyard	220
70	**Bradford Marine**	shipyard	221
12	**Bristol Harbor Group**	design and engineering	222
72	**Bug-O Systems**	cutting and welding	223
39	**Capt. R.J. Underhill & Assocs.**	consultants	224
36	**Cashman Equipment**	barge rental & sales	225
9	**Chas S. Lewis & Co. Inc.**	propulsion/steering drives	226
66	**Chris-Marine AB**	diesel engine maintenance machines	227
14	**Clean Seal**	extruded rubber products	228
26	**The Cline Company**	driveshafts	327
65	**C-Map Commercial**	electronic charts	229
29	**CMP Asia Ltd-Marintec China**	exhibition	350
20	**Comnav Marine Ltd.**	navigation	230
32	**Control Screening**	security devices	231
C3	**Cooper Bearing**	bearings	232
74	**Cospolich Refrigeration**	refrigeration equipment	233
C2	**Craft Bearings**	bearings	234
74	**Creative Systems**	software	235
11	**Crowley Maritime Corp.**	marine logistics/transportation	236
48	**CSD North America**	sealing systems	237
28	**Custom Ship Interiors**	interiors	238
70	**Cutting Edge Metal Processing**	metal cutting	239
79	**CWF Hamilton & Co. Ltd.**	water jets	240
49	**Damen Shipyards**	shipyard	241
56	**DBC Marine**	safety equipment	351
89	**Deansteel Manufacturing**	galley equipment/doors	243
67	**The Delamar Company**	slade fluid sealing	328
36	**Derecktor Shipyard**	shipyard	244
46	**DMC Clad Metal**	corrosion protection	349
75	**Duramax**	heat exchangers	245
37	**Edgewater Machine**	deck equipment	246
27	**Electronic Marine Systems**	tank level indicators	247
29	**Electronic Marine Systems**	tank level indicators	248
31	**Electronic Marine Systems**	tank level indicators	249
33	**Electronic Marine Systems**	tank level indicators	250
8	**Elliot Bay Design Group**	architectural & engineering services	251
62	**Enavi Reparos Navais Ltd.**	ship repair	252
39	**Enmet**	gas detectors	253
50	**Eurocom Industries A/S**	satellite systems	254
29	**EVAC Environmental Solution**	sanitation systems	255
51	**Ferro Corporation**	coatings	256
22	**Flagship Marine**	marine a/c	257
7	**Furuno**	navigation and communications	258
89	**GJ Wortelboer**	chains	259
30	**Global Interior Group**	ship interiors	260
13	**Grand Bahama Shipyard**	shipyard	261
69	**Harbormaster Marine**	propulsion systems	262
82	**The Havnen Group**	consulting group	200
74	**Headhunter Inc.**	sanitation systems	263
80	**Hepworth Marine International**	window wipers & wash systems	264
28	**H.O. Bostrom**	seating	265
35	**Hopeman Brothers**	interiors	266
22	**Hotel Monteleone**	hotel	267
2	**IFSTA/Fire Service Program**	fire fighting manuals	268
59	**InPlace Machining**	crankshaft repair	269
39	**Integro**	welding products & power equipment	270
22	**island Boats**	boat builders	271
69	**J.J. McMullen**	naval architects	272
20	**Jastram**	steering gears	273
57	**Juniper Industries**	doors and hatches	274
45	**Kahlenberg Brothers**	airhoms/signaling equipment	275
21	**Kawasaki**	marine equipment	276
78	**King Engineering**	tank level indicators	277
77	**Kobelt Manufacturing**	control systems	278
64	**Kvaerner Masa Marine**	naval architects	242
19	**Kvichak Marine**	boatbuilders	279
15	**L-3 Communications**	VDR-AIS-VHF	280
31	**Land Sea Systems**	satcom	281
41	**Leslie Controls**	valves	282
20	**Lit Industries**	thermal insulation	283
39	**Mack Boring & Parts Company**	industrial commercial marine	284
47	**MAN B&W Diesel A/S**	diesel engines	285
81	**Manitowoc Marine Group**	shipbuilding & repair	286
19	**Manly Marine**	hatches and doors	287
67	**Marine Exhaust Systems of Alabama**	water cooled manifolds	288
89	**Marine Turbo & Diesel**	diesel engine spare parts	289
39	**Maritime Associates**	marine and offshore signage	290
50	**Maritime International**	marine bollards	291
12	**MTN**	communications	292
39	**McElroy/Catchot Winch Co.**	deck machinery	293
37	**Microphor**	sanitation devices	294
80	**Mid-West Instrument**	differential pressure gauges	295
18	**MMC International**	tank gauging tapes	296
4	**Motor-Services Hugo Stamp**	diesel engine spare parts	297
67	**Nabrico Marine Products**	winches	298
55	**NASSCO**	shipbuilders	299
53	**Nautican Research**	nozzles	300
5	**Nauticast AG**	AIS transponders	301
25	**Newport News**	shipbuilding	302
26	**NLB Corp.**	surface prep equipment	303
39	**Ocean Technical Systems**	ship repair	304
78	**Offshore Communications 2003**	conference	305
59	**Offshore Inland Marine**	hydraulic systems	306
52	**Omnithruster Inc.**	thrusters	307
32	**Orkot Marine**	bearings	308
59	**Owens Kleentank**	marine sewage treatment	309
73	**Phoenix Contact**	connection systems	310
37	**Rosbourgh Boats**	boat builders	311
42	**Saab Marine Electronics AB**	marine electronics	312
76	**Sasakura**	fresh water generators	313
10	**Scandanavian Micro Systems**	digital heading repeaters	352
23	**Sea Tel Inc.**	communcations	314
88	**Seatrade**	exhibition	315
61	**Seawave**	digital communications	316
28	**Selco USA**	alarm systems	317
63	**Sherwin Williams**	coatings	318
67	**Sierra Equipment Corp**	shipyard equipment	319
80	**Skookum**	rigging products	320
92	**SNAME**	exhibition	321
76	**Stearns Manufacturing Company**	industrial safety	348
24	**Stratos**	satellite communications	322
16	**Superior Energies**	insulation manufacturers	323
74	**Superior Lidgerwood Mundy**	capstans/deck machinery	324
16	**Sure Seal Connections**	electronic connectors	325
48	**Technical Marine Systems**	tank level indicating systems	326
10	**United Marine Enterprise**	shipbuilders	329
45	**Urethane Products**	fendering products	330
66	**US Filter Electrocatalytic**	electrocatalytic products	331
1	**USMMA**	training	332
27	**VideoRay**	underwater cameras/ROVs	333
33	**Vigilant Systems**	gas and level monitoring	347
52	**Viking Fender**	fenders	334
60	**Viking Life Saving Equipment**	life saving equipment	335
43	**Wartsila Corporation**	propulsion systems	336
28	**Warwick Mills**	water armor	337
39	**Washburn Doughty**	boat builder	338
58	**Washington Aluminum Company**	gangways & ladders	339
16	**Water Weights**	lifeboat testing	340
80	**Waterman Supply**	marine equipment	341
39	**Western Machine Works**	deck machinery	342
78	**Westfalia Separator Inc.**	bilge systems	343
87	**Willard Marine Inc.**	RIB/inflatables	344
68	**Wolong International Pte.Ltd**	lifeboat manufacturers	345
58	**ZF Marine Group**	marine propulsion systems	346

The listings above are an editorial service provided for the convenience of our readers.

THE MARINE MART

The Classified and Employment Section

TO ADVERTISE, Call Today at: 212-477-6700

Products & Services

New England Marine Electronics

GMDSS w/Radar ABYC Electricians
FCC Vessel Safety Inspections AIS
Troubleshooting Specialists
Major Mfg. Sales, Install, Service
Mobile Shops Equipment Repair

Toll Free: 866-246-5439 Fax: 518-431-0022
www.newenglandmarineelectronics.com

ANKER MARINE PAINTS

STOCKS IN MAJOR U.S. PORTS
ASSOCIATED COMPANIES IN MEXICO, EUROPE AND THE FAR EAST

21 CHARLES ST., WESTPORT, CT 06880
Ph: 203-226-5200 Fx: 203-226-5246
ANKERPAINT@aol.com

NEW BOOKS

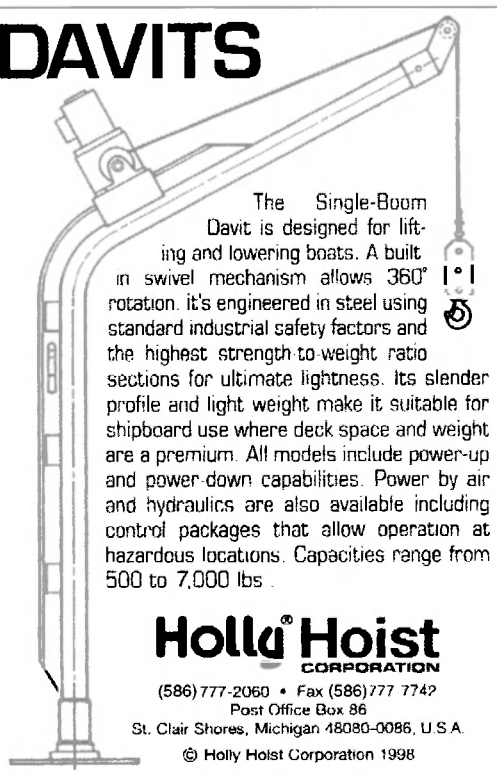
MULTI-HULL SHIPS

This is a comprehensive description of major aspects of naval architecture (hydrostatics, stability, resistance and propulsion in calm water and waves, seakeeping, controllability, strength, and design) focused specifically on all types of multihulls from catamarans and trimarans to SWATH, wave-piercing, hydrofoil- assisted, and super-critical-speed catamarans. This unique and only reference book in English is akin to the 3-volume SNAME's "Principal of Naval Architecture". 7.5"x10", 495p, 431fig, 510bibl., Hardcover

ARC WELDING OF ALUMINUM & MAGNESIUM ALLOYS
WELDING STRESS RELIEF BY EXPLOSION TREATMENT

BACKBONE PUBLISHING Co.
PO Box 562, Fair Lawn, NJ 07410
ph 201 447-1834; bbpub@optonline.net FAX 201 670-7892

DAVITS



The Single-Boom Davit is designed for lifting and lowering boats. A built in swivel mechanism allows 360° rotation. it's engineered in steel using standard industrial safety factors and the highest strength-to-weight ratio sections for ultimate lightness. Its slender profile and light weight make it suitable for shipboard use where deck space and weight are a premium. All models include power-up and power-down capabilities. Power by air and hydraulics are also available including control packages that allow operation at hazardous locations. Capacities range from 500 to 7,000 lbs.

Holly® Hoist CORPORATION

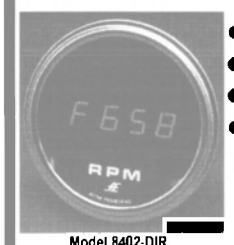
(586) 777-2060 • Fax (586) 777 7742
Post Office Box 86
St. Clair Shores, Michigan 48080-0086, U.S.A.
© Holly Hoist Corporation 1998

NOW REQUIRED:

A Shipping Vessel Equipped with Fixed Pitch Propellers Must Have A Propeller Speed and Direction Indicator For each Shaft

U.S.C.G. 46 CFR113.37-5

DIRECTIONAL SHAFT TACHOMETER



Model 8402-DIR

- Guaranteed Accurate To 1 RPM
- Withstands Severe Marine Use
- Economical & Reliable
- Other Applications For Engine & Shaft

"Call For Free Brochure"

AETNA ENGINEERING
FIREBOX - XINTEX, Inc.

800-776-7962 616-735-9380
616-735-9381 Fax
www.aetnaengineering.com
e-mail: aetna@fireboy-xintex.com

SCALE MODELS

SCALE REPRODUCTIONS
WWW.2SCALE.COM
9121 PRECISION PL.
FAIRHOPE, AL 36532 251-928-3820

Peck & Hale

180 Division Avenue, West Sayville NY 11796
Tel: (631) 589-2510 Fax: (631) 589-2925
Web Site: www.peckhale.com
e-mail: sales@peckhale.com

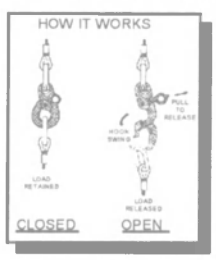
Release-A-Matic H44 R.A.M. Hook

Features:

- Quick disconnect
- Remote release or disengagement
- Place loads where access is restricted
- Saves Manpower
- Wide range of angles of release

101 Applications!!

- Towing
- Maritime
- Construction
- Material Handling
- Fishing
- Boating
- Lifeboats
- Laboratory



Specifications:

Material: Heat Treated Forged Steel
Finish: Zinc or Cres.

Strength:	S.W.L.	M.B.S.
H44-3L	2,000 lbs.	8,000 lbs.
H44-3	4,500 lbs.	18,000 lbs.
H44-9	18,000 lbs.	71,700 lbs.

Peck & Hale is your Full Service Cargo Securing Systems and Equipment Supplier!
Military • Maritime • Railroad • Aircraft Applications
Sockets • Hi-shock Chain • Wire & Web Lashing Tiedowns

LOWER OPERATING COST

- **More Power**
- **Less Smoke**
- **Save Fuel**

CLEANS ENTIRE FUEL SYSTEM

Fuel Optimization Certified by EPA Approved Lab
Available through Major Engine Distributors
CARB# D-538

ALGAE-X® Fuel Optimization 877-425-4239 www.algae-x.net

Tel: 239-463-0607 Fax: 239-463-7855 algae-x@algae-x.net

JOINER SYSTEMS™

ENGINEERING • DESIGN • MANUFACTURING

- **Bulkhead Systems - Isolamin** Panels in stock
- Ceiling Systems • Floating Floors
- **Doors:** A-60, B-30 Fire Rated Weathertight, Watertight
- Hatches, Scuttles & Manholes
- **Toilet Modules**

Tel: (514) 636-5555 Fax: (514) 636-5410
e-mail: info@joinersystems.com
Web Site: http://www.joinersystems.com

IC³ SHAFT HORSEPOWER MEASUREMENT
The Digital Torque Meter System

- Fiber Optic Sensors
- Accurate & Repeatable
- Simple Installation
- Easy Calibration
- HP & Engine Hours
- Competitively Priced
- Sea Trials
- Purchase or Lease

The DTMS measures shaft horsepower, torque & RPM. Calibration is accomplished by turning gear at dock or coasting the shaft down at sea while using the step by step manual. The system consists of an electronic display/enclosure, fiber optic cables, stationary sensors & interrupters, and interrupter rings that flex over the shaft. We can interface to other instrumentation and customize as required. The DTMS can be sold either as a permanent or portable system

Instruments, Computers & Controls, Corp.
TEL 603-628-3900 / FAX 603-628-2884 *Email RJHICC@aol.com*

WORLD-WIDE TURN-KEY TOW-DELIVERIES, TOW-PREPARATIONS, ANY DWT, SURVEY-& INSURANCE ASSISTANCE, DEMO-VESSEL & EQUIPMENT SALES.
http://www.nordicship.com

THE MARINE MART

The Classified and Employment Section

TO ADVERTISE, Call Today at: 212-477-6700

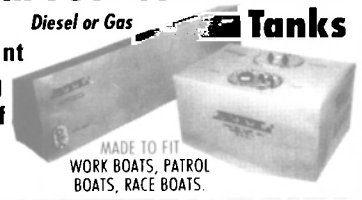
Products & Services

TANKS

Custom Fuel Cell Bladder Tanks

Diesel or Gas

- Impact Resistant
- Non-Exploding
- Vibration Proof
- Lightweight
- Fully Baffled



MADE TO FIT WORK BOATS, PATROL BOATS, RACE BOATS.

TOLL FREE 800-526-5330

AERO TEC LABORATORIES, INC.
Spear Road Industrial Park, Ramsey, NJ 07446-1251 USA
Phone: 201-825-1400 Fax: 201-825-1962

Rudder & Stern Tube Bearings **AGENTS WANTED**

e-mail:vesconite@vesconite.com
full info **www.vesconite.com**
Tel +27 11 616 44 44
UK Toll free 0800 731 9745
USA Toll free 1866 635 7596

STCW
Practical and Written
www.SeaSchool.com

Coast Guard Approved Courses

800-237-8663

SEA TOW

Protected Franchise Areas Available!

Contact
Sea Tow Services
International

1-800-4-SEATOW

JON M. LISS ASSOCIATES, INC.
63 BOVET ROAD NO. 503 • San Mateo California 94402

NAVY STANDARD
VANEAXIAL
FANS
Delivery
From
Stock

(650) 573-9191

Fax (650) 572-8458

jon411@pacbell.net

Barataria Lofting Company, Inc.
"Professional Lofting Services"
Phone/Fax: (504) 340-5859
P.O. BOX 2298
Marrero, LA 70073

A. R. LARSEN COMPANY INC.
The Leader in Custom Galley Equipment, Design & Fabrication
www.marinegalley.com
(425) 861-8868 • FAX: (425) 861-8668 1-800-735-7286 or (425) 861-8868 arlarsenco@yahoo.com • Redmond, WA

SEAWOLF MARINE PATROL
LAND AND WATER BASE SECURITY
2551 South Shore Blvd. Ste.C
League City, Texas 77573
Web Site: www.seawolfmarinepatrol.org
281-334-2745 Office
281-334-2750 Fax

EXPRESSEAL™

Hydraulic & Pneumatic Seals

FROM STOCK
- Seals, U-Cups, Wipers, Piston Rings, Rotary Shaft Seals, Bushings, Bearings, Packings, O-Rings

PLUS
- Now available — Seals up to 60" O.D.
- Fast prototype molding
- Custom Molded: Rubber Bonded to Metal or Plastic, Special Shapes or Seals
- Materials: Polyurethane, Teflon®, HNBR, Viton®, SL, Buna, EP, Engineered Plastics & Others
- LIM (Liquid Injection Molding - Silicone)
- Full Q.C. Laboratory

MACHINED SEALS
Metric or Standard for Replacement on Original or Obsolete Equipment with ExpresSeal's 24 Hour Service.

1-800-446-4773
www.expresseal.com
Fax: 716-684-1678
email: exinfo@expresseal.com or exsales@expresseal.com
204 Cemetery Road • Lancaster, NY 14086-9504

OrionCase

We sell cases for just about anything!

OrionCase L.L.C.
409-A Mecca Drive
Lafayette, LA 70508
Tel: (337) 291-1847 Fax: (337) 291-1850
www.orioncase.com

ShipMan Preventive Maintenance Software

Written by experienced ship engineers and operators
Use for one vessel or for your entire fleet

Maintenance scheduling and reporting
Integrated onboard/shoreside spares
Stocking levels and reorder points
Vessel configuration tracking

Build your own PM program using our software, or let our experienced technicians develop it for you.

Technical manual and data tracking
Manufacturer and vendor tracking
Preventive maintenance history
Spare parts usage history

Quantic
Engineering and Logistics Corporation

Windows 95, 98, NT and Macintosh

Box 9567 Panama City Beach, Fl. 32417
850-234-7933 FAX - 850-234-1032
Email - Info@quanticeng.com

Vessels for Sale/Charter

FOR SALE / CHARTER
(1) STEEL LIQUID CARGO BARGE

Size: 120' x 33' x 10.5' • 6 compartments mid-body
Liquid Capacity: Approx. 188,416 Gallons
Deck Capacity: 578 L Tons (piping below deck)
Built: 1989 • ABS LL org issued • Located Pier 96 SF,CA
Condition: Excellent Unused condition
Price and specifications available upon request
richr@rasmussenco.com - Phone: (800) 227-7920

Selling your vessel or marine equipment is easy!

A classified ad in ***MarineNews*** is one of the fastest and cheapest ways to sell any marine item... whether it's new or used equipment... a commercial vessel... or any kind of service.

Each month the classified section in ***MarineNews*** is read by over **22,000** marine industry buyers... ship and boat owners... shipyards... boatyards. Its **18 times** a year frequency means your ad gets results... ***fast!*** ***MarineNews*** reaches the entire North American marine industry.

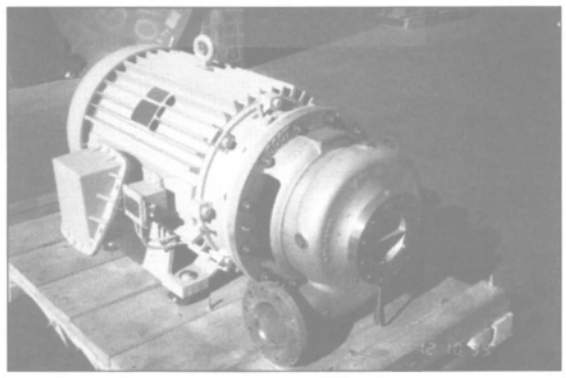
Experience the selling power of ***MarineNews*** classifieds! Contact a ***MarineNews*** representative today!

Florida Office
Tel: 561-732-1659
New York Office
Tel: 212-477-6700
E-mail: info@marinelink.com

Travel Lift 70 BFM
"WANTED NEW OWNER"

I am seeking new employment and I will lift 140,000 lbs.easily! I have less than 400 original hours and I was born in 1988.I am gas powered 6 cyl. Ford Cloned. I have been dissembled by a Marine Travel Lift Dealer and am ready to be shipped to your location! I have been told to purchase me today about $250,000 and I can be yours for $120,000. Call Alan @ Z K Yacht 954-646-3662 financing possible! Trades likely!

NEW FIRE PUMPS
1,000 G.P.M. at 125 P.S.I. - 6" IN x 5" OUT
Driven by a Low Noise 150 H.P. 440 Volts Elect. Motor
Titanium casing, totally enclosed motors.
Ideal for MARINE or INDUSTRIAL USES
COMPLETE MANUAL and CURVES AVAILABLE



WATERMAN SUPPLY CO. INC.
910 MAHAR AVE · WILMINGTON, CA. 90748
Phone : (310) 522-9698 Fax: (310) 522-1043
e-mail: waterman@bigplanet.com

(2) New Double Drum - Anchor Winches

Barge Mooring System
Model AW1500
150,000# 1st layer SLP
3,000' 1-1/2" W/R Cap / drm
6-71 GM-TD/TC
$225,000.00 / ea.

(1) Crewboat
29' Alum, GM 6-71
Located SF, CA - USA
$33,000.00 (or best offer)

RASMUSSEN EQUIPMENT COMPANY
(800) 227-7920 • info@rasmussenco.com • www.rasmussenco.com

TOP DOLLAR PAID
BARGES WANTED SHIPS, TUGS, ALUMINUM BOATS FOR SCRAP METAL.

BAY BRIDGE ENTERPRISES LLC
JACOBSON METAL COMPANY
IS BUYING ALL SCRAP METAL
AND REUSABLE EQUIPMENT.
PH: (757) 543- 2006
FX: (757) 543- 6632
Ask for- Mario Mazza, Tim Mullane

4300 BUELL St.
CHESAPEAKE, VA. 23324

Specializing In Barges

- Single or Double Hull, Inland or Ocean-Going
- Design, Construction & Modification
- Chartering, Sales & Brokerage

Ask for Bill Gobel or Jack Breshears

ZIDELL MARINE CORPORATION
503-228-8691 1-800-547-9259
3121 SW Moody Avenue, Portland, Oregon 97239

CRANE BARGE FOR SALE

BUCYRUS ERIE 88-B Crane S/N 138913 Pedestal mounted on 155' x 50' x 10' deck barge:

- **Crane certified May 2003, barge drydocked February 2003**
- **120' Lattice Boom in 5 sections**
- **Pedestal Height above deckline 22'. Deck to boom heel pin 26'3"**
- **Cummins KT1150C rated 405 HP @ 2000 RPM**
- **Main 4 part and auxiliary 2 part blocks included**
- **McGinnis approximately 10 CY clamshell bucket**
- **4000 Gallon fuel capacity in two underdeck tanks**
- **Barge S/N 262267 by Nashville Bridge later modified/strengthened for crane.**

Equipped with one 3 drum American Hoist 70B deck winch and one Clyde model 220 two drum, both GM 454 powered. 40' Storage container on deck. Deck generator 3 phase 60 KW Detroit 471 driven.

Package also includes 203' x 45' x 11'6" Deck Barge used in conjunction with crane above as cover handling barge. Will sell as separate item.

Contact:

Stevedoring Services of America
New Orleans, Louisiana
Sid Hotard, (504) 212-4005

Baker Maritime Associates
New Orleans, Louisiana
Kingsley Bakler, (504) 393-1880

TO ADVERTISE, Call Today at: 212-477-6700

Employment/Recruitment

MARITIME INJURIES

Schechter, McElwee & Shaffer's attorneys have over 70 years of combined experience representing injured seamen, offshore workers and longshoremen in cases nationwide. Our services are on a contingent fee basis - there is no bill or fee for our services unless we recover for you.

Schechter, McElwee & Shaffer, L.L.P.
Houston & Galveston, Texas
Nationwide 24-hour help line
1-800 282-2122
(713) 524-3500
Website - www.smslegal.com

Immed. need for lic. CEs, AB/TK, AB/1600T lic., AB/Cook, OS/Cook. Union work. Towing exp. desired. Ocean/Coastwise. 206-284-7393 or ibudispatch@earthlink.net

BENDER

NOW HIRING!

A/B's & O/S's
OVER 50 POSITIONS AVAILABLE

100 TON MASTERS
IMMEDIATE JOB OPENINGS

1600 TON MASTERS
CALL TODAY FOR JOB OFFERS

LICENSED ENGINEERS
$3000 SIGNING BONUS

QMED's & OILERS
EAST COAST, GULF, CARRIBEAN

CALL TOLL FREE 1-888-824-1626

APPLY ONLINE
www.bendermarine.com
www.maritimejobsonline.com

L & L EMPLOYMENT

Immediate Openings for **AB'S & O/S.** Company paid fee for **100 TON CAPT & DDE's.** Calling all **EXPERIENCED TUG CAPTAINS. OUTV's.** *Paid Trans. Top Pay for* **200 TON CAPT - 1600 TON CAPT/MATES. CHIEF, ASST. ENG - 3RD ASST ENG .** *Excellent Pay.* **QMED'S, TANKMAN, DH'S, UNI ENG** *Need Immediately.*

888-580-9600

SOUTH FLORIDA'S PREMIER YACHT SERVICE FACILITY IS SEEKING SKILLED, MOTIVATED, PROFESSIONALS TO FILL POSITIONS AS Marine Carpenters/ Joiners, Marine Diesel Generator Mechanics, Systems Mechanics, & Marine Painers.
COMPETITIVE SALARIES AND EXCELLENT BENEFITS PLUS A GREAT LOCATION!

RYBOVICH SPENCER
4200 No. Flagler Drive, W. Palm Beach , FL 33407
(561) 840-8113 Fax: (561) 844-8393
www.rybovich.com e-mail: beths@rybovich.com

Marine Architect

Experience required. Mail resume to:
Terry Logue at Noramtec Consultants, Inc.
13817 Village Mill Dr., Midlothian, VA 23113
Refer to Ad# MA

Positions Available:

Captains • Mates
Pilots • Engineers
Tankerman • AB's
QMED's • OS's

ATT: All boat companies. When you are in need and your boat can't move, call for all crew members - trip or permanent. We are here for you.

BUCCANEER CREWING

Buccaneer Crewing
The Offshore Employment Specialists
866-675-6300
Fax: 251-442-3696
hr@buccaneercrewing.com
www.buccaneercrewing.com

maritime Recruiters

Administration – Construction
Crewing – Engineering
Finance – M & R
Operations – Sales

(Established 1969) P O Box 260 • Mercer Island, WA 98040 • **206-232-6041**

OFFSHORE STRUCTURAL ENGINEER

Experience required. Mail resume to:
Terry Logue at Noramtec Consultants, Inc.
13817 Village Mill Drive, Midlothian, VA 23113
Refer to Ad# OSE

VICE PRESIDENT, FINANCE

Global development and financial services company looking for vice president, finance for Houston, Texas office. **Duties:** Oversee all aspects of finance for power plant projects. Manage multilateral & commercial bank financing, ensuring timely & reasonable use of debt vehicles. Structure & arrange financing, bridge financing, non-recourse project financing, lease financing & tailor financial solutions for customers. Maintain relationships with commercial banks, export credit agencies & multi-laterals. Establish, implement & manage budget & assist in closing equity sales for company developed projects. Close projects, both small & large scale, aggregating in excess of 2,000 MW & non-recourse financing in excess of $1.5 billion. Close lease financing on reciprocating engine power plant projects. **Minimum Requirements:** Bachelor's degree in economics or finance. 5 years progressively responsible experience in investment banking or financing of power plant ventures. Knowledge of reciprocating engine technology as evidenced by 5 years experience working in power field. Successful negotiation of power purchase agreements, implementation agreements & fuel supply agreements, as evidenced by negotiation of at least 2 independent power projects. 3 years experience in acquisitions with leading energy companies & Asian project development. Willingness to work unpredictable hours & travel frequently on short notice for varying periods of time. **Send resume to:** Marie Cristobal, Wartsila North America, Inc., 2900 S.W. 42nd Street, Ft. Lauderdale, FL 33312.

TO ADVERTISE,
Call Today at:
212-477-6700

Employment/Recruitment

Production Engineer

Jacksonville, FL. Work under the direction and supervision of the company's Engineering Department in pre-outfitting of all modules in support of the ship construction process including scheduling of work, coordination with all supervisors, material management and review of all engineering drawings. Bachelor's Degree in Mechanical Engineering or a related field plus two years of job offered experience or two years of related occupation experience as a Ship Construction Manager. 40 hrs/wk, M-F, 9-5. $78,500 per year.

Send resume to: Mr. Phil Sutton, Director of Human Resources, Atlantic Marine, Inc., 8500 Heckscher Drive, Jacksonville, FL 32226.

BOAT JOB LISTINGS UPDATING
DAILY
CALL 24 HOUR
MARINE JOB HOTLINE
504-889-JOBS *(5627)*

Project Director

Pacific Int'l Eng'g, PLLC seeks Project Dir/Sr Research Scientist in Edmonds, WA. Work in coastal geomorphology + coastal processes w/ exp. in sediment transport under combined waves + currents. Develop, lead, & provide tech direction of multi-disciplinary collaborative coastal projects & research studies incl. inlet channel shoaling, shoreline & shoal stability in jettied + unjettied inlets & nearshore environments w/ & w/o coastal structures. Coordinate + lead dev't, enhance in- house operational sediment transport models. Supervise + mentor jr staff. Must have PhD in Coastal Geology or Geography + 4 yrs relevant exp. Applicants send resume to Pacific Int'l, 123 Second Ave, South , P.O. Box 1599, Edmonds WA 98020.

Keough Associates

Since 1975, providing Professional Search and Recruitment Services in areas of Middle and Senior Management, Technical Support, Engineering, Operations, etc., to the Maritime Industry

Michael R. Keough, CPC
PH: (718) 979-8698
FAX: (718) 667-8347

McAllister Towing EST. 1864

is recruiting qualified marine personnel to work in New York Harbor.

Tug Captains & Mates: Must have 1-2 years experience in New York Harbor. Minimum 500 gross tons license and all appropriate endorsements. Very competitive salary.

Marine Engineers: Licensed chief engineers for ocean & coastal towing tugboats. Must have EMD engine experience with minimum 4000 h.p. DDE license. Must be willing to travel.

Able-Bodied Seamen: MMD with STCW-95, plus tugboat experience.

All applicants must have current documentation and be willing to undergo drug screening.

Excellent benefits, including major medical & 401(k) plan, long-term disability, life insurance, training reimbursement program, and flexible spending account.

McAllister Towing is an EEO / AA company.

Send Resume To: Capt. Joseph Alleyne
McAllister Towing
3165 Richmond Terrace, Staten Island, NY 10303
Fax: 718.273.6325
E-mail to: alleyne_j@mcallistertowing.com
No phone calls, please.

Time,
Experience,
& Reliability...

THE MARITIME GROUP

Since 1939 The Maritime Group has been a leader in the marine industry. Today it's supported by a network of publications and electronic products.

MARITIME REPORTER AND ENGINEERING NEWS

MarineNews

MarineLink.com MaritimeEquipment.com
MaritimeJobs.com MaritimeToday.com

THE MARITIME GROUP
a combined audience of over
450,000
each month.

Reserve your ad today!
Call: 212-477-6700

THE MARITIME GROUP
118 East 25th Street, New York, NY 10010
tel: (212) 477-6700 fax:(212) 254-6271

THE MARINE MART

The Classified and Employment Section

TO ADVERTISE, Call Today at: 212-477-6700

Professional

BAYFRONT MARINE, INC.

EXPERT WORLDWIDE VESSEL DELIVERY SERVICE
EXPERIENCED PROFESSIONALS
Licensed
Masters, Engineers and Crews
Call Mel or Diane Longo (904) 824-8970

The ultimate stop for solving marine propulsion shafting vibration or design problems

CADEA www.cadea.hr

TRG M. PAVLINOVICA 6 • HR-21000 SPLIT • CROATIA
PHONE: + 385 21 490 151 • FAX + 385 21 490 154

Serving the marine industry for over 140 years

CRANDALL
DRY DOCK ENGINEERS, INC.
●Consulting ●Design ●Inspection
Railway and Floating Dry Docks
Dry Dock Hardware and Equipment
Box 505804, Chelsea, MA 02150 (617) 884-8420 Fax: (617) 884-8466
www.crandalldrydock.com

BISSO MARINE

- OFFSHORE & INLAND
- SALVAGE & WRECK REMOVAL
- PLATFORM REMOVAL
- PLATFORM INSTALLATION
- HEAVY LIFT
- SURVEY
- DIVING

P.O. BOX 4113
NEW ORLEANS, LOUISIANA 70178
Phone: (504) 866-6341
Fax: (504) 865-8132
www.bissomarine.com
e mail info@bissomarine.com

Captain Kelly Pulsifer & Associates, Inc
6054 Arlington Expressway; Suite #7
Jacksonville, Florida 32211-7177

MARINE SURVEYORS
Hull, Machinery, Cargo, Damage, Towing, Flag, Hazmat & Project

(904) 722-3994 (904) 720-0205 fax (904) 504-3018 mobile e-mail: Kellypul@attbi.com

---

GHS
General HydroStatics
Ship Stability and Strength Software
Creative Systems, Inc.
Creators of GHS™
P.O. Box 1910 Port Townsend, WA 98368 USA
phone: (360) 385-6212 fax: 385-6213
email: sales@ghsport.com
www.ghsport.com/ghs

CDI

CDI Government Services

CDI Marine Company 904-805-0700
The M&T Company 732-657-5600
Band, Lavis & Associates 410-544-2800 301-261-1030

Naval Architecture • Marine Design
Military Aviation Support

JACKSONVILLE, FL • BREMERTON, WA
ISLANDIA, NY • PHILADELPHIA, PA
LAKEHURST, NJ • PATUXENT RIVER, MD
PASCAGOULA, MS • PORTSMOUTH, VA
SEVERNA PARK, MD • SAN DIEGO, CA

Visit us at our web site at: http://www.cdi-gs.com
Email: cdi-gs@cdicorp.com
solutions at work

CUNNINGHAM & WALKER
MARINE CONSULTANTS, INC

NAVAL ARCHITECTURE & MARINE ENGINEERING
MARINE HVAC ENGINEERING
MARINE ELECTRICAL ENGINEERING

1762 PROVIDENCE HOLLOW LANE, JACKSONVILLE, FL 32223
TEL 904 292 9293 FAX 904 824 1423

BMT

BMT Designers and Planners

Naval Architecture
Marine Engineering
Environment & Safety
Offshore Engineering Services

2120 Washington Blvd. Suite 200 Arlington, VA 22204-5717
Phone: (703) 920-7070 Fax: (703) 920-7177 Email: dandp@dandp.com
Website: www.dandp.com

sms BMT Scientific Marine Services

Marine Instrumentation
Hull Monitoring
Trials & Testing
Ocean Engineering

9835B Whithorn Drive Houston, TX 77095 Phone: (281) 858-8090 Fax: (281) 858-8898
101 State Place, Suite N Escondido, CA 92029 Phone: (760) 737-3505 Fax: (760) 737-0232
Email: sms@scimar.com - Website: www.scimar.com

FTL BMT Fleet Technology Limited

Concept Development
Materials and Welding Technology
Structural Integrity Assessment
Icebreakers & Arctic Engineering

311 Legget Drive Kanata, Ontario Canada K2K 1Z8
Phone: (613) 592-2830 Fax: (613) 592-4950 Email: tleet@tleetech.com
Website: www.tleetech.com

FLEETING SERVICE

Central Boat Rentals, Inc.
Morgan City, LA
20 ft. Draft
Barges - Boats - Ships
985-384-8200
www.centralboat.com

CUNNINGHAM
MARINE HYDRAULICS CO., INC.

Service Parts Repair Consulting

Litton Marine Systems
Authorized Sperry - Decca - C. Plath Dealer

CMH HELE-SHAW, INC.

201 Harrison Street
Hoboken, N.J. 07030
(201) 792-0500 # (212) 267-0328
1-800-322-2641
FAX# (201) 792-7716

E-Mail Address:
cmh-hydraulics@erols.com

Willie C. Clayton
Serving Texas and Surrounding States

Oilfield Hauling • Winch Work • Low Boy

Houston,Texas
(281) 436-1359
(903) 987- 2256 Mobile

Kilgore, Texas
Home (903) 984-1135
Pager (800) 266-7281

BRISTOL HARBOR MARINE DESIGN
a division of Bristol Harbor Group, Inc.

Naval Architects
Marine Engineers

103 Poppasquash Road
Bristol, RI 02809
phone: 401-253-4318
fax: 401-253-2329
www.bristolharborgroup.com
design@bristolharborgroup.com

CHILDS ENGINEERING CORPORATION

WATERFRONT ENGINEERING•DIVING INSPECTION

BOX 333 MEDFIELD, MA 02052 (508)359-8945

C. R. CUSHING & CO., INC.

NAVAL ARCHITECTS, MARINE ENGINEERS,
TRANSPORTATION CONSULTANTS

30 VESEY STREET, 7TH FLOOR, NEW YORK, NY 10007
P:(212) 964-1180 F:(212) 285-1334 INFO@CRCCO.COM
WWW.CRCCO.COM

THE MARINE MART

The Classified and Employment Section

TO ADVERTISE, Call Today at: 212-477-6700

Professional

Donjon Marine Co., Inc.

Marine Construction

Salvage

Dredging

Diving

Heavy-Lift

Towing

Cable-Lay Support

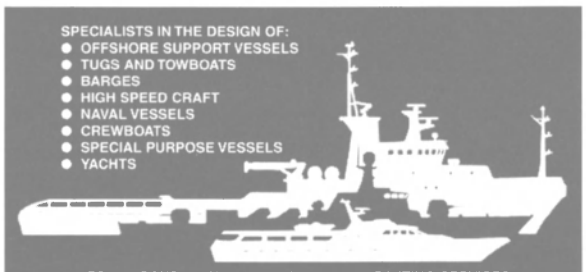
www.donjon.com inquiries@donjon.com
1250 Liberty Avenue, Hillside, New Jersey 07205
Phone: (908) 964-8812 Fax: (908) 964-7426

Detail Design & Drafting
3D Modeling, Lofting, Nesting

Tel: 709-834-7428
www.genoadesign.com

Genoa Design International Ltd.

SPECIALISTS IN THE DESIGN OF:
- OFFSHORE SUPPORT VESSELS
- TUGS AND TOWBOATS
- BARGES
- HIGH SPEED CRAFT
- NAVAL VESSELS
- CREWBOATS
- SPECIAL PURPOSE VESSELS
- YACHTS



DESIGN, CONSULTING, SURVEYING AND DRAFTING SERVICES

GUARINO & COX, LLC
Naval Architects, Marine Designers and Consultants
639 Lotus Drive North, Suite 3, Mandeville, LA 70471
Telephone (985) 626-1600 Fax (985) 626-0016

ICI **International Consultants & Investigations, Inc.**

We are trained investigators, advisors and guardians. We will protect your company and its employees throughout the world. In addition we offer VIP protection teams.

ICI operatives are trained and licensed in the following areas:
- U.S. Coast Guard license for private and commercial vessels.
- Security for marine and air travel, private and commercial
- Marine Surveyors
- Maritime investigations-3D animation reenactments of accidents and crime scenes

Phone: 212-582-3115 Toll Free: 866-977-3700
World Wide: 866-511-1110 Fax: 212-582-0028
www.ICIcompanies.com

John J. McMullen Associates, Inc.
An Employee Owned Company

JJMA

Naval Architects
Marine Engineers
Program Support Specialists

Alexandria, VA • Washington, DC • New York, NY
Newport News, VA • Pascagoula, MS • Pittsburgh, PA
Philadelphia, PA • Bath, ME • Port Hueneme, CA
Bremerton, WA • N. Charleston, SC

Corporate Headquarters:
4300 King Street Suite 400 Alexandria, VA 22302
Business Development: (703) 933-6690 Fax: (703) 933-6777
Web Site: www.JJMA.com Email: Marketing@JJMA.com

EVERETT ENGINEERING, INC.
"INGENUITY UNLIMITED"

BEST EQUIPPED SHOP IN THE AREA
A.B.S. certified carbon & stainless steel propeller shaft weld repair
http://www.everettengineering.com
1420 W. MARINE VIEW DRIVE • EVERETT, WA. 98201
FAX (425) 258-1288 • (425) 259-3117

JOHN W. GILBERT ASSOCIATES, INC.
Naval Architects *Marine Engineers*

(781) 740-8193
FAX (781) 740-8197

75 Terry Drive, Suite 200
Hingham, MA 02043

GLOSTEN
The Glosten Associates, Incorporated

Naval Architecture Marine Engineering | Ocean Engineering Hydrodynamics | Transportation Analysis Contract Administration

605 First Avenue, No. 600
Seattle, WA 98104-2224

Phone: (206) 624-7850
Fax: (206) 682-9117

CONSULTING ENGINEERS SERVING THE MARINE COMMUNITY

CERTIFIED ISO 9002

JMS

JMS NAVAL ARCHITECTS
SALVAGE ENGINEERS
The sea-going naval architects.
860-448-4850 • jmsnet.com

FAB - IT - RITE. INC.

OFFICE: (425) 787-5832
FAX: (425) 787-2522
CELLULAR: (206) 786-2354

VESSEL DOCKSIDE REPAIRS & CONVERSIONS
SEAFOOD PROCESS PLANT UPGRADES

.....FULL MACHINE & FABRICATION SHOPS.....
.....MOBILE CREW WITH TOOLS.....

15332 Hwy 99 #4, Lynnwood, WA 98037
E-MAIL: RDITTMER@EXCITE.COM

HEALY & BAILLIE, LLP
29 Broadway, NewYork, NY 10006
Providing Legal Services to the Maritime Industry Since 1948
Contact: William N. France, Esq.
(NA & ME and PE)
tel (212) 709-9226 fax (212) 487-0326
www.healy.com

FBM Babcock Marine

Proven design, build and support of:
- High Speed Ferries
- Para-Military Vessels
- Specialist Craft

Supported design licences available for shipyards world-wide

Delivering quality designs and completed vessels since 1899

babcock FBM

FBM BABCOCK MARINE
5 Town Quay, Southampton, SO14 2HJ UK
tel: +44 (0)23 8021 0000
fax: +44 (0)23 8021 0001
e-mail: fbm@babcockbes.co.uk

HEGER DRY DOCK, INC.

13 Water Street, Holliston, MA 01746
Engineering for all types of dry docks
- Design
- Docking Calculations
- Certifications
- Engineer/Diver
- Inspections
- U.S. Navy 1625C FCR's
- Dockmaster Training Classes

Phone: (508) 429-1800 Fax: (508) 429-1811
www.hegerdrydock.com

Specializing in Marine & Industrial Supplies, Provisions & Bonded

Liberty Marine Services, Inc.

606-6 N. Lane Ave.
Jacksonville , FL 32254

Tel 904-695-2577

Fleetway Inc.

- Marine Engineering • Naval Architecture
- Life Cycle Support

IRVING

Suite 200, 155 Chain Lake Drive, Halifax, Nova Scotia, Canada B3S 1B3
Phone: (902) 494-5700 Fax: (902) 494-5792

HOUSTON MARINE CONSULTANTS
MARINE INSURANCE CLAIMS, SURVEYS & CONSULTANCY
HULL · MACHINERY · CARGO

MUKUL H. ADVANI
PRESIDENT
4509 MAPLE ST.
BELLAIRE, TX 77401

PHONE: 713-592-9867 (24 HRS)
FAX: 713-592-0244
CELL: 713-303-5677
E-MAIL: HMCTX@EV1.NET

THE MARINE MART

The Classified and Employment Section

TO ADVERTISE, Call Today at: 212-477-6700

Professional

The Lightship Group, LLC

MARINE SUPPORT SERVICES

SHIPBOARD VIBRATION • INFRARED •
VOYAGE REPAIRS • INVENTORIES

PHONE: 401 294-3341
FAX: 401 294-3415
SHIPS@LIGHTSHIPGROUP.COM
WWW.LIGHTSHIPGROUP.COM

QUONSET POINT, RHODE ISLAND
NORFOLK, VIRGINIA

M.A.C.E.

Marine Industry

FT. LAUDERDALE - USA - WORLDWIDE
PHONE: (954) 493-8913 • FAX: (954) 493-9559

- N.D.T. Services
- Vibration - noise - structural/modal analysis
- Field balancing, Laser Alignment
- Torque - torsional vibration analysis
- IR - Thermography inspection
- Emmision tests, Engine Performance tests

MCA CONSULTANTS, INC.

* Marine Structural Engineering (FEA, Fatigue,...)
* Hull Monitoring System (Motions, Stress,...)
* Ship Repair Analyses & New Designs
* Mooring Master (Analyses / Monitoring)
* Vessel Information Archive System (Multimedia)
* FracTrac Relational DataBase
* Ultrasonic Leak Detection

e-mail: info@mcaco.com
web-site: www.mcaco.com
Phone: (714) 662-0500 Fax: (714) 668-0300
2960 Airway Ave , A-103, Costa Mesa, CA 92626

www.acmo-inc.com

Alan C. McCLURE ASSOCIATES, INC.

Naval Architects • Engineers

2600 South Gessner • Suite 504 • Houston, Texas 77063
Tel: (713) 789-1840 • Fax: (713) 789-1347 • E-mail: info@acma-inc.com

McELROY/CATCHOT WINCH COMPANY, INC.

DESIGNERS OF QUALITY DECK MACHINERY, WINCHES, WINDLASSES, CAPSTANS, SHAFT AND MACHINE WORK, AND REPAIRS

SERVING THE MARINE INDUSTRY SINCE 1915

P.O.BOX 4632, BILOXI, MS 39535-4632
5921 Gulf Tech Drive, Ocean Springs, MS 39564
Phone: 228-875-6327 Fax: 228-872-7880
www.mcelroycatchotwinch.com

Coast Guard/State Pilotage License Insurance

Worried about defending your license or yourself in a hearing conducted by the Coast Guard, National Transportation Safety Board or a State Pilotage Authority, which could result in license revocation, suspension or assessment of a fine/money damages against you personally?

Stop worrying. Insure yourself and your license with a Marine License Insurance Policy. For more information, contact R.J. Mellusi & Co., 71 Hudson Street, New York, N.Y. 10013, Tel. (212) 962-1590 Fax (212) 385-0920, E-mail rmellusi@idt.net

MSC MARINE SYSTEMS CORPORATION

MARINE ENGINEERS / NAVAL ARCHITECTS

HM&E Design Drawings Logistic Support
Inspection Vibration Testing Programs

68 FARGO STREET, BOSTON, MA 02210
TEL (617) 542-3345 FAX (617) 542-2461
INFO @ MSCORP.NET
WWW.MSCORP.NET

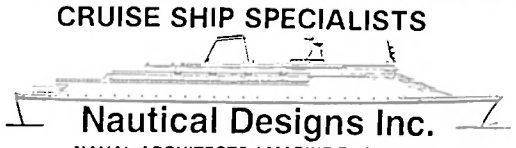
MURILLO, MALDONADO, ARREDONDO & ASOCIADOS, S.C.

ATTORNEYS & CONSULTANTS

AV. COYOACAN 936, DESPACHO 402
COLONIA DEL VALLE, CODIGO POSTAL 03100
DELEGACION BENITO JUAREZ
MEXICO, DESTRITO FEDERAL

24 HOUR TELEPHONE LINE (+52 55) 5559 1718
FAX (+52 55) 5559 1619
TELEPHONE (+52 55) 5559 1620
E-MAIL MMAasociados@aol.com
www.mma.com.mx

CRUISE SHIP SPECIALISTS



Nautical Designs Inc.
NAVAL ARCHITECTS / MARINE ENGINEERS
2101 S.ANDREWS AVE.FT.LAUDERDALE, FL.33316 PH.(954)463-2033

OCEANIC CONSULTING CORPORATION
Marine Performance Evaluation
St. John's, Newfoundland Canada
Houston, Texas USA
www.oceaniccorp.com

The Palumbo Company

Your premier source for finding your commercial maritime executive, managerial and difficult-to-fill, professional-level needs.
Strictly confidential.
1101 Gulf Breeze Pkwy, Suite 316
Gulf Breeze, FL 32561
Ph: 850-932-2714
Fax: 850-932-4671
e-mail: Info@thepalumbocompany.com

Daily updated comprehensive information is just one click away.
www.MarineLink.com

M. ROSENBLATT & SON

AMSEC
An AMSEC LLC Group
Naval Architects • Marine Engineers

Naval Ships from Carriers to Patrol Craft
Ship Inspection, Maintenance & Repairs
Homeland Security Engineering Design
Integrated Logistics Support
Concept-Through-Detail Design
New Construction-Conversions
Transportation Economics
Commercial Ships & Workboats

Over 20,000 design assignments successfully completed for 1,400 clients worldwide during the past half century

New York, NY • Oakland, CA • Washington, DC • Hampton, VA • Bremerton, WA
Charleston, SC • San Diego, CA • Philadelphia, PA • AMSEC LLC Corporate Headquarters, Virginia Beach, VA
www.amsec.com 757-463-6666

SARGENT & HERKES, INC.

NAVAL ARCHITECTS • MARINE ENGINEERS
225 BARONNE ST., SUITE 1405
NEW ORLEANS, LA 70112
504-524-1612 • 504-523-2576 (Fax)
E-mail: sahinc@bellsouth.net

Schrider

Naval Architects & Associates, Inc. Marine Engineers

P.O. Box 2546
Daphne, AL 36526
E-mail: info@schrider.com
Office: (251) 621-1813
Fax: (251) 626-1814

Technical and Managerial Solutions for Shipyards & Vessel Owners

Seaworthy Systems, Inc.

ISO 9001
MARINE ENGINEERS AND NAVAL ARCHITECTS
Essex, CT 06426
(860) 767-9061; Fax: (860) 767-1263; www.seaworthysys.com
SAN FRANCISCO • PHILADELPHIA • WASHINGTON, DC

GEORGE G. SHARP, INC.

100 CHURCH STREET, NEW YORK, NY 10007
TEL (212) 732-2800 FAX (212) 732-2809

WASHINGTON (703) 548-4400
VIRGINIA BEACH (757) 499-4125
SAN DIEGO (619) 425-4211

MARINE SYSTEMS • ANALYSIS & DESIGN

A. K. Suda, Inc.

NAVAL ARCHITECTS & MARINE ENGINEERS

- Concept & Contract Design
- Transportation Analysis
- Construction Drawings
- Owner Representation

3004 19th Street • Metairie, LA 70002
Ph. (504) 835-1500 • Fax (504) 831-1925 • info@aksuda.com

SURVIVAL SYSTEMS INTERNATIONAL

931 Industry Road Kenner LA, 70062

LIFEBOAT INSPECTION, REPAIRS, PARTS.
PHONE: (504)469-4545, FAX: (504)466-1884.
E-mail: lifeboatserv@earthlink.net

A propulsion system bearing that gives you competitive advantage...

WITH COOPER COMPLETELY SPLIT TO THE SHAFT ROLLER BEARINGS

The Cooper Bearings Group is a full service global supplier with over 100 years of product knowledge and marine propulsion expertise.

The Cooper split to the shaft roller bearing solves difficult alignment problems, minimises downtime and reduces maintenance hours giving you and your customers a competitive edge.

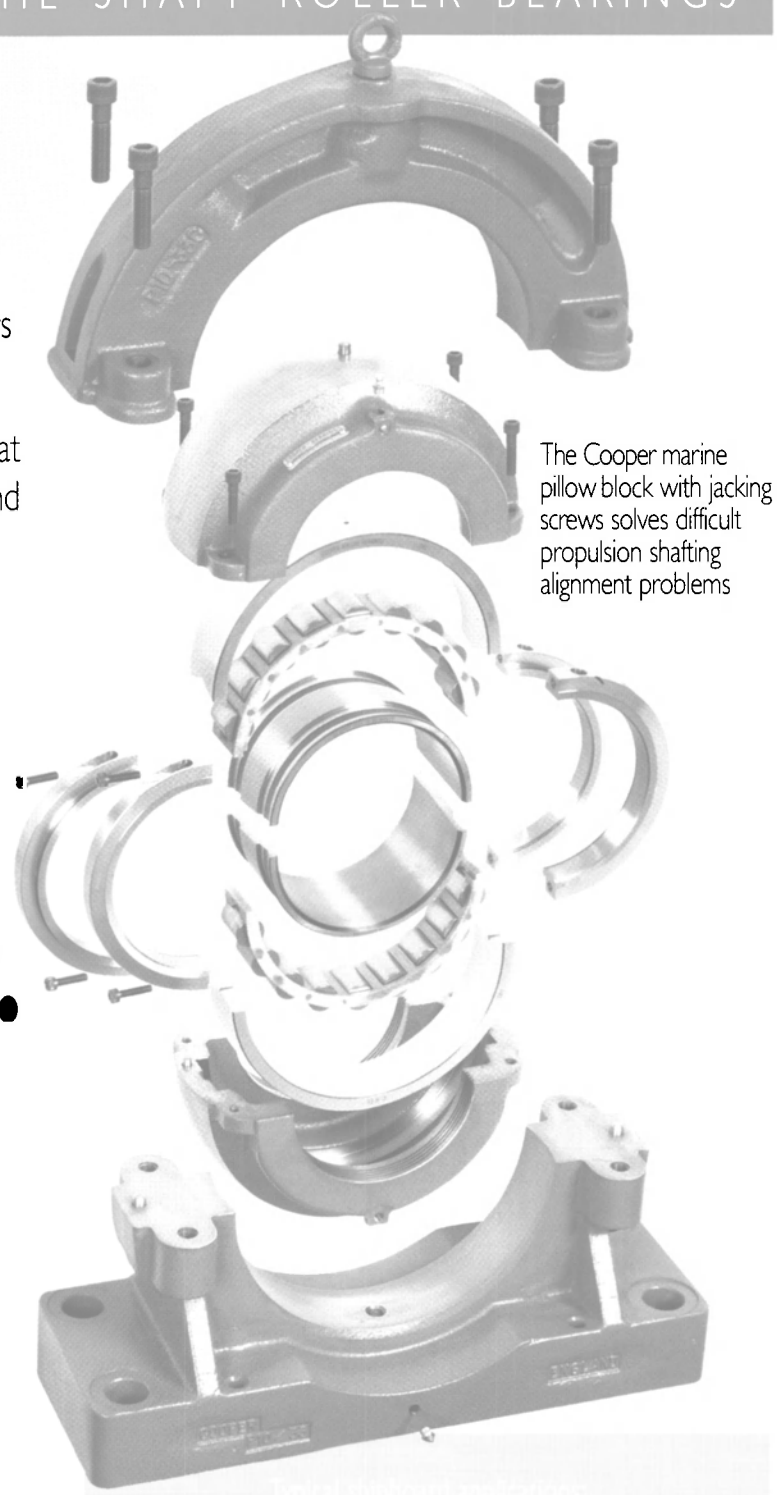
In addition, when replacement is necessary, Cooper users save valuable time that would otherwise be lost by the time consuming replacement of sleeve bearings and non-split bearings.

As a global company, we place great emphasis on professional local representation and have an established network of authorized partners and local sales managers to assist you.

A call to our local sales office will be your first step to having the advantage.

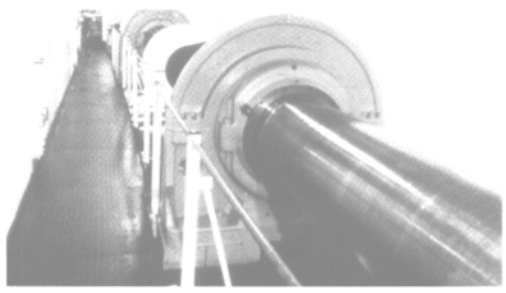
Call Cooper now...

...and we'll prove how.



The Cooper marine pillow block with jacking screws solves difficult propulsion shafting alignment problems

Easy access for maintenance and inspection on propulsion shafting gives more uptime and lower maintenance, inspection and replacement costs



Cooper Bearings Group

The Cooper Split Roller Bearing Corp
5795 Thurston Avenue
Virginia Beach, VA 23455 - 3378
USA.
Telephone 757 460 0925
Fax 757 464 3067

Cooper Roller Bearings Co Ltd
Wisbech Road
King's Lynn
Norfolk PE30 5JX
England.
Telephone +44 (0) 1553 763 447
Fax +44 (0) 1553 761 113

Cooper Geteilte Rollenlager GmbH
Postfach 100 423
Oberbenrader Str 407
-7704 Krefeld
Germany.
Telephone + (49) 2151 713 016
Fax +(49) 2151 713 010

www.cooperbearings.com

- **Propulsion shafting**
- **Bow thrusters**
- **Deck machinery**
- **Rudder stocks**
- **Shipboard conveyors**
- **Fans for inert gas**

COOPER

A Supplier of Competitive Advantage

Accepted by American Bureau of Shipping, Det Norske Veritas, Germanischer Lloyd, RINA and Lloyds

Circle 232 on Reader Service Card

All roads lead to ABB Turbocharger Service.

ISO 9002
Certificate Number: 30458, 32700, 32113, 33399, 32112

ABB Turbochargers' network of service centers around the U.S. equals less down time for your vessel, saving you time and money!

We at ABB recognize that every additional hour your ship stays in port for repairs is money lost. This is why 24-hour service for your ABB turbocharger, often within hours, is now available locally from our facilities in Houston, Los Angeles, Miami, New York and Seattle.

Staffed by ABB factory-trained technicians, our repair facilities offer swift handling of your maintenance concerns by people you know you can trust. With the help of our computer network, ABB technicians can access your turbocharger's complete history to aid in speedy diagnosis. They can then utilize our locally maintained stocks of genuine ABB parts or go on-line to rapidly locate necessary parts in our worldwide inventory.

You asked for the best in service, and we delivered. But you would expect nothing less. After all, we design and build the industry's most efficient turbochargers. It's only natural that we also offer the finest in repair and maintenance service, worldwide.

We Design It... We Build It... We Service It Best!

ABB Turbochargers

U.S. Headquarters*
1460 Livingston Ave., North Brunswick, NJ 08902
24 Hour Service: (732) 932-6103
Telefax: (732) 932-6378

***ISO 9002 Certified Facilities**

ABB Turbocharger U.S. Service Centers:

*Houston	(281) 930-8383	Fax: (281) 930-9595
*Los Angeles	(310) 324-4814	Fax: (310) 324-5102
*Miami	(954) 450-9544	Fax: (954) 450-8957
*New York	(732) 932-6103	Fax: (732) 932-6378
*Seattle	(253) 383-1806	Fax: (253) 383-1270

ABB

Circle 201 on Reader Service Card