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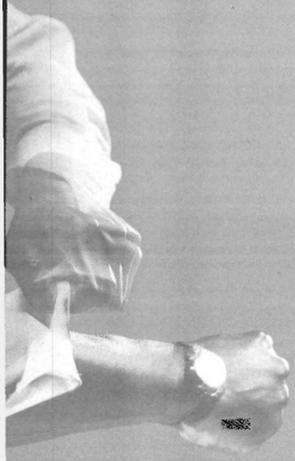
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EDITOR'S NOTE

Gathering, registering and analyzing information on the various forces which drive the world's maritime industry is, at times, a daunting task, considering the complexity of the issues and the players. At other times, however, an emerging trend, smacks you right between the eyes, and the industry's unfolding events provide a clear indication of their significance.



Crystal clear, in fact.

The latter is the case of the consolidating market trend. With news that the parent companies Metra and Fincantieri plan to merge the interests of Wartsila Diesel, New Sulzer Diesel and Grand Motori -- and the revelation that Pe&O and Nedlloyd have, in effect, created the new, fourth-largest containership company in the world -- it appears which direction the maritime market has been, and is heading. These cases are just the latest in a line of spectacular mergers, partnerships and international cooperations which have dominated maritime news the past few years. Pick your own cliché ("Only the strong survive" seems particularly appropriate) and it will apply to most any situation. Companies seeking to dominate their regional, national or international niche must find new, creative means to either win additional market share or conquer new markets. Doing "business as usual" seems a sure ticket out of tomorrow's maritime industry.

But while maritime companies continue to consolidate, shipyard capacity continues its rapid expansion, particularly in the Far East.

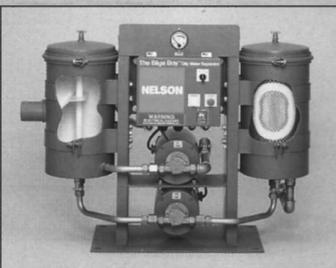
International Editor Alan Thorpe has filed two reports this month -- his bi-monthly Far East Update, beginning on page 60, and a Ship Repair Update, which begins on page 9 of our special International Ship Repair Guide supplement. In the repair guide, he reports that the expansion of ship repair facilities is playing a large part in keeping prices too low. While this bodes well for shipowners, it could mean trouble for yards which have recently struggled to compete for business. Cascade General is one U.S. yard which appears to have reorganized in order to compete for international business. In fact, Cascade General and the Port of Astoria recently announced the establishment of a voyage repair station at the Port, to handle dockside ship repair work for emergency repairs, routing maintenance and inspection services for all types of marine vessels. Check out the Ship Repair Guide for these, and other stories on recent, unique repair and conversion jobs, as well as our country-by-country directory of vessel repair facilities.

Gregory R. Trauthwein

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On The Cover

Pictured on this month's cover is the Spanish-built, 311.6-ft. (95-m) *Alcantara*, from Bazan's Mestral class. This vessel is a prime example of the trend toward building larger and faster ships. For more coverage on the yard's accomplishments in the fast ferry sector, turn to page 62.

14 EUROPEAN UPDATE

Schottel marks its 75th anniversary with the introduction of a new propeller.
— by Carol Fulford & Andy Smith

35 MARINE ENVIRONMENTAL REVIEW

An update on the "green" regulations, services and products influencing the industry, with insight from USCG Radm. James Card, Pete Bontadelli from the State of California, and Associate Editor Bridget Murphy.

62 FAST CRAFT REVIEW

While fast ferry technology takes the industry into the next era of development, a German company's new alloy technology is being utilized for crafting these speed-hungry vessels.

77 AUSTRALIAN MARITIME FOCUS

Australia's position as a forerunner in the high speed market has been established by the dominance of its fast ferries in diverse world markets.

82 TANKER TECHNOLOGY

Market reports indicate that tanker fleet numbers are up and scrapping rates are down. Look for tables of 1996 sector orders and deliveries.

ALSO IN THIS EDITION:

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- 12 **Shipping Merger:** P&O and Nedlloyd form new containership company.
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- 60 **Far East Review** — by Alan Thorpe, international editor
- 93 **FERLISHIP's New Contracts Received**

ALSO ... *International Ship Repair Guide*

This month, a special *MR/EN* supplement focuses on the international repair scene, with a feature story by Alan Thorpe, a *World Shipyard Directory*, a *Marine Literature Review* and a preview of London's November *Ship Repair & Conversion* show.

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Maritime Reporter/Engineering News

"New Kid" On Response Scene Stresses Pro-Activity For Improved Ops

A main editorial section of the October edition of *Maritime Reporter & Engineering News* focuses on Marine Environmental issues (starting on page 35). As part of our coverage, Bob Umbdenstock, president, Donjon Environmental Marine Services, LLC (DEMS), offers some insights.

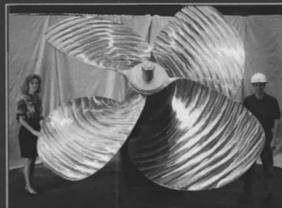


Oil spill response organization (OSRO) leader **Bob Umbdenstock** was gracious enough to contribute his two cents' worth to MR/EN's Marine Environmental section this month. DEMS is the newest response alliance on the scene, comprising the services of four companies — Clean Venture, Inc.; Donjon Marine Co., Inc.; Eklof Marine Corp.; and Garner Environmental Services — and their associated contractor networks. Mr. Umbdenstock discussed the goals of the alliance, what sets it apart from other response operations and what positive lessons were gleaned from the North Cape response earlier this year in the following conversation.

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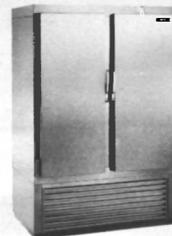
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MR/EN: The backbone of any response organization being its independent contractor network, let's talk about DEMS' network. What sets DEMS apart from other spill response networks that offer services in its geographical response area?

BU: The difference is that DEMS is entirely contractor-based. We are a corps of active marine responders, rather than a network appended to a large core company. The DEMS partner companies and supporting contractors are the most prominent in their operating areas and fields of specialization, and work together frequently. This regular work keeps the equipment busy and our workforce trained. The relationships enable DEMS to keep its capability up and its overhead down with the savings passed on to customers.

MR/EN: Is an alliance with another response organization with a

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Q&A

larger and/or different geographical scope of operations, or the addition of contractors on, for example, the U.S. West Coast, a possibility for the future of DEMS?

BU: As I have indicated, DEMS is all about alliances. And from the start, we have been looking at

alternatives to those assembled in the rush some years ago. DEMS plans to pursue expansion of geographical coverage and response services through additional arrangements with selected contractors with complementary resources. In all likelihood, there are partnering opportunities that

might help us support our customers' needs better and improve the national response posture.

MR/EN: Referring to the notion "practice makes perfect," how will DEMS use its experience gained from the *North Cape* effort to

enhance its response capability in the future?

BU: Other than reconfirming that an effective marine casualty response must be proactive and include such primary methodologies as lightering and salvage, the salient lesson relearned in Rhode Island was the criticality of immediate and sustained liaison with the Responsible Party's qualified individual and spill management team. In a response, they are effectively our customer. They are the ones to whom we deliver our emergency services and who we support in their participation in the unified command. We will emphasize the development of our communications and logistics management plans.

MR/EN: In your company's literature it states that "DEMS is not a creation of OPA 90, but a response to the needs of the maritime community." Please expand upon this idea.

BU: In setting up DEMS in 1996, we had the benefit of hindsight along with our practical experience. OPA 90 regulations were written. DEMS took a progressive approach by assembling active operators into a unique and comprehensive response service capability. DEMS offers all types of marine response expertise. It is an organization of doers; pragmatic people organized to respond appropriately to any marine casualty putting the environment at risk. And the DEMS concept did that without building in high carrying costs.

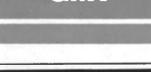
MR/EN: Going back to the basics, how did your organization demonstrate to the U.S. Coast Guard that it was worthy of Level E OSRO classification?

BU: DEMS was originally able to qualify for Level E classification in all environments on the basis of equipment the four partner companies own and operate. Like every other OSRO, we listed our resources and the Coast Guard compared our application to the guidelines. Our classification is testimony to the strength of the marine services contractor community in 1996. Since then we have expanded significantly, aug-









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Maritime Reporter/Engineering News

Q&A

menting our organizational plan not only to strengthen our response capability, but also to meet the new guidelines which actually have been very helpful to our planning.

MR/EN: DEMS is marketing itself

as "an alternative to bureaucracy," and "an alternative to the large and expensive U.S. OSROs assembled in the early 1990s." How will the company achieve this goal in real terms?

BU: The DEMS management staff

is, and will remain, relatively small.

We employ the resources of participant companies that are entrepreneurial and cannot afford inefficiency if they want to be successful. We know that tank vessel and facility owners also operate in very

competitive industries and we don't see any reason why compliance with plan citation criteria should be as expensive as it has been. We shall succeed by finding innovations that share a cost-conscious approach with our customers.

AAPA Recognizes Environmentally Outstanding Ports

The American Association of Port Authorities (AAPA) has recognized Canaveral Port Authority and the Port of Houston Authority for their efforts to improve the environment in and around the ports.

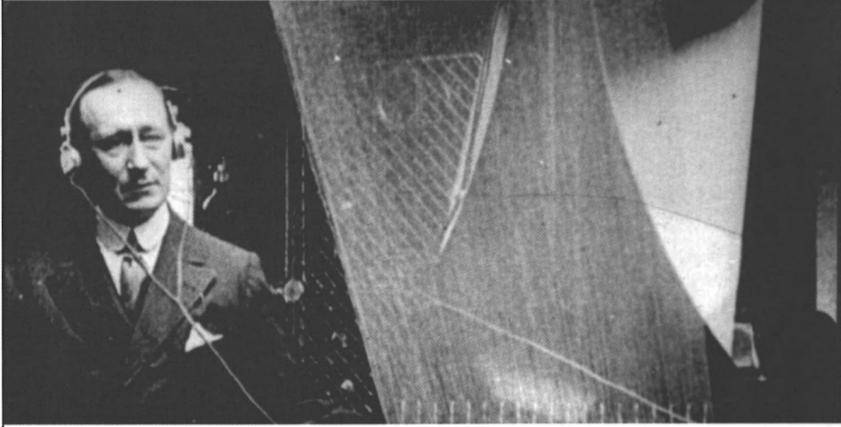
Projects entered by both port authorities were selected for AAPA's Environmental Improvement Awards from a total of 16 entries from 13 ports, which were judged on the following criteria: level and nature of benefits to environmental quality; beautification or community involvement; level of independent involvement and effort by the port; creativity of the solution or program; whether the project results are apparent; cost-effectiveness of the activity or program; and transferability of the technology or idea to the port industry.

Florida's Canaveral Port Authority received an award for Community/Port Involvement for its Manatee Protection Program. Key elements of this project include improvements to the Port's fendering system, grating stormwater outfalls to prevent manatees from entering stormwater pipelines, and implementation of an educational awareness program for port users.

The Port of Houston Authority won an award for Environmental Enhancement for its Demonstration Marsh Creation Project. In cooperation with the Army Corps of Engineers, the Port constructed a 220-acre demonstration marsh using criteria developed by an interagency working group. Information gained throughout the life of the demonstration project will reportedly be used in the development and management of 4,250 acres of marsh to be created from dredged material from the Houston Ship Channel.

The awards were scheduled to be presented to respective port managers on September 18 in Vancouver, during the AAPA's 85th Annual Convention.

THE SIGNALS WERE CLEAR.



Help was needed.

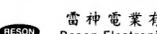
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Australian Plans Protect Great Barrier Reef

As detailed in a recent ABS report, in late May, the Australian Maritime Safety Authority (AMSA) published an updated contingency plan for the Great Barrier Reef. The oil spill contingency plan for the Great Barrier Reef — better known as the REEF PLAN — updates an 1987 accord, taking into account changes in Australia's national contingency plan following recommendations by the Australian Transport Council in June 1993.

The REEF PLAN has four major sections: an introduction to the scope of the plan, including statutory arrangements and information regarding the threat of oil spills; a strategic plan, with information on administrative and response arrangements; an environmental protection section, with information on the reef world heritage area; and appendices, with maps and instructions concerning response techniques for oil spill response.

AMSA has also contracted with the Australian Institute of Marine Science to conduct a two-year research program on the use of bioremediation for oil spill cleanup. The study will focus on whether the method can be used to clean mangrove and salt marsh habitats in the northern part of the country. Funding for the project is also being provided by the Australian Energy Research and Development Corp.; the Australian Institute of Petroleum through the Australian Marine Spill Centre; and the Australian Environmental Protection Agency.

ABB Fits Swedish Icebreaker With NOx Central Equipment

ABB Flakt Marine AB of Gothenburg has been awarded a contract to supply 10 catalytic converters for the first in a series of three, diesel-powered Swedish icebreakers owned by the Swedish National Maritime Administration. The vessel — with five Pielstick main engines, four Wartsila auxiliary engines and an emergency/harbor engine — produces a total installed power of 21 MW. Part of the Atle class, the icebreaker is manned by the Swedish Royal Navy. The NOx emissions from all 10 engines will be reportedly reduced by 90 percent or more with the installation of ABB's SCR (selective catalytic reduction) converters. Vessel silencers and spark arrestors will be replaced by the converters, which will reduce HC and CO by 70 percent, in addition to NOx reduction. High NOx emissions from ships in regional and local areas where the land mass is very sensitive to acidic deposition prompted the Swedish government to introduce stringent marine NOx limits to substantially reduce the environmental impact of ships. This recent order follows a performance and cost evaluation of the ABB SCR converter installed aboard Administration supply vessel *Scandica* in 1994.

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Magnavox Software Supports Spill Crisis Response Efforts

Magnavox Electronic Systems Co.'s OSARMS (Oil Spill Automated Response Management System) is a PC based software (SW) application that provides a command, control, communications and computer information (C4I) system for responding to oil spill incidents. Automation is achieved by interactively linking personal computers into a Local Area Network (LAN), and providing fully integrated SW application tools that allow efficient management of spill response and assets and activities, effective communications, coordination and real-time situation monitoring. OSARMS combines a regional database (Microsoft's ACCESS); a PC based Geographical Information System (GIS); automated response management, resource management and financial management systems; and an oil trajectory modeling system. The communications package runs under Microsoft's Windows NT operating system. According to Magnavox, the strength of OSARMS is derived from not only the unique software developed for the application, but the integration of existing commercial software packages that are in use by the oil spill response community. The system includes online assistance and help with federal and state regulatory requirements, and future enhancements include fully automated resource and asset acquisition, allocation, deployment, tracking, cost accounting and cost containment support.

For more information on Magnavox
Circle 21 on Reader Service Card

BFI Provides Waste Disposal Solutions

Through its subsidiaries and affiliates, Browning-Ferris Industries (BFI) provides collection, processing, transportation and disposal services for a wide range of commercial and industrial wastes, including shipboard waste. According to the company, it worked with the U.S. Department of Agriculture (USDA) and the U.S. Coast Guard (USCG) to aid in the development of disposal standards under IMO's MARPOL Annex V standards.

BFI Shipboard Waste Services representatives organize waste offloading the moment ships dock.

October, 1996

Specially lined boxes and labeling materials for waste and garbage are sent aboard, with acceptable quantities ranging from a single box to tonnage volumes. Ships' crews are responsible for packing waste in containers — a process the USDA or USCG may choose to monitor — and transporting them to the quay. From this point, BFI ensures that the materials are cor-

rectly and securely packaged before acceptance. BFI agents take delivery of the containers, organize them, label those requiring special handling under APHIS (Animal Plant Health Inspection Services) regulations, and provide ships' masters with appropriate receipts and documentation. BFI's certificates also reportedly satisfy various legal requirements for port

authority or terminal operators. Containers are transported to proper disposal facilities in refrigerated, sealed trucks for steam treatment, thermal treatment or incineration. BFI provides shipboard waste disposal program at major ports in the U.S., Canada, and internationally.

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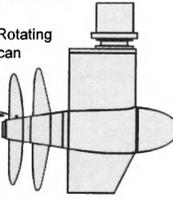


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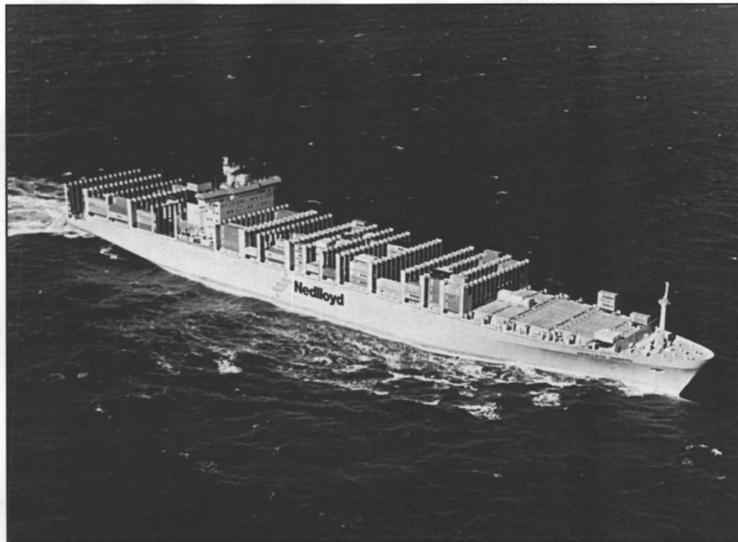
By providing an understanding of the basic concepts and language of naval architecture, this book is the perfect companion for the maritime professional who is not a naval architect, but needs to be able to communicate effectively with naval architects. Written in engaging and easily understood terms, this volume concentrates on two aspects of naval architecture: design and analysis. Technical discussions are almost entirely qualitative rather than quantitative. 239 pp. Hardbound. \$24.50, less \$5.00 if you mention this ad.

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Circle 296 on Reader Service Card

INDUSTRY TRENDS



With its unique characteristics — and characters — the maritime industry has always marched to the beat of its own drummer in the business world. However, the proliferation of recent high-profile mergers has the industry mirroring company-consolidating, employee-eliminating Wall Street corporate maven, challenged to find the most efficient means to compete in the ever-changing global marketplace.

The consolidation of the maritime market is, by no means, a new occurrence. Shipyards and equipment suppliers of all sizes, worldwide, have been faced with declining military and government work, hence increased competition for commercial newbuild and repair business. As a result, the number of strategic and technological collaborations — and bankruptcies — has mushroomed in recent years.

On the vessel operation front, larger companies have sought to get larger, while smaller competitors have, in general, fought to survive. Again, mergers, acquisitions and strategic alliances to ensure vessels sail in the most economical manner have been the norm rather than the exception.

The containership market has led the way, by many counts, in this transportation transformation, as the emergence of the global "hub and spoke" system has spurred a number of mergers and acquisitions. The latest announcements heralded the formation of the new, fourth-largest containership carrier in the world.

One + One = One?

Perhaps the most interesting collaboration recently announced was that of P&O and Nedlloyd. The two companies recently signed a memorandum of understanding which, in

effect, creates the fourth largest container shipping company in the world.

The agreement was for the merger of the companies' container businesses to form a major new European company, to be dubbed P&O Nedlloyd Container Line (P&O Nedlloyd).

The new company will have a combined turnover of approximately \$4 billion and a net asset value of \$1.5 billion.

"For some time now I have been convinced that the best way forward in the container shipping industry is through consolidation and rationalization internationally," said Lord Sterling, executive chairman of P&O.

While some analysts have questioned the logic of such an arrangement, James R. McCaul, president of Washington, D.C.-based International Maritime Associates said:

"Shares in P&O Nedlloyd will be held 50 percent each by P&O and Nedlloyd, with Nedlloyd making a balancing payment of \$175 million to P&O to equalize the shareholdings. The new U.K. company will be based in London, with fleet management in Rotterdam. It is to begin operation as soon as possible, but no later than



Wartsila 8L46

Maritime Reporter/Engineering News

INDUSTRY TRENDS

December 31, 1996.

The union of these two shipping powerhouses will create a consolidated fleet, and will enable greater container volumes to be handled at lower costs. For example, from a total cost base of \$3.9 million, savings in excess of \$200 million have already been identified, primarily through a 15 percent reduction in the combined workforce.

Other cost savings will come from greater network efficiency, improved IT systems and more efficient box utilization.

P&O Containers is the sixth largest container line in the world in terms of standing slots on fully containerized ships, operating 52 ships, with a capacity of 110,016 TEU. Nedlloyd Lines operates 60 owned and chartered container ships, totaling 240,000 TEU.

P&O and Nedlloyd's throughputs for 1995 were 1,259,000 and 978,000 TEU, respectively.

A Concentration Of Power

By forging new alliances, the propulsion segment has also generated more than its fair share of news lately.

In early July, Caterpillar announced an intended takeover of Germany's Krupp MaK. More recently, the parent companies of Wartsila Diesel (Metra) and New Sulzer Diesel and Grand Moteri (Fincantieri) announced the intention to merge.

Metra Corp. and Fincantieri Navali Italiani S.p.A. have tentatively agreed on joining the operations of Metra-owned Wartsila Diesel and Fincantieri-owned New Sulzer Diesel and Diesel Ricerche, as well as Fincantieri's diesel engine division Grandi Moteri. The new company would be the largest in the field. The finalization of the agreement is expected by the end of 1996, as it is subject to the approval of relevant competitive authorities.

"With the globalization of business, we're going to see more mergers. There is a trend towards fewer, but larger companies," said Metra Corp. President and CEO **Georg Ehrnroot**, at the recent SMM exhibition. Also at SMM, **Peter Sulzer** of New Sulzer Diesel, stated, "I'm convinced the merger will help stabilize the market. There is a consolidation in the market. We are creating bigger, stronger and more reliable players."

New Sulzer manufactures slow and medium-speed diesel engines, and has been owned jointly by Fincantieri and Germany's Vulkan Industrie Holding (VIH) GmbH. The majority of Sulzer engines are manufactured by licensees in major shipbuilding countries. In

1995, the group had net sales of \$570 million, with an operating profit of \$3.3 million.

Wartsila Diesel, Metra's largest division, had net sales of \$1.5 billion in 1995 and an operating profit of \$89 million, contributing to the parent's net sales of \$2.3 bil-

lion.

Fincantieri's Grand Moteri, with 1995 net sales of \$285 million, manufactures medium speed GMT engines and diesels under New Sulzer license.

Diesel Ricerche S.p.A. does R&D for New Sulzer and Grand Moteri.



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Circle 289 on Reader Service Card

Innovation Links Modern Technology With Maritime Past

by Carol Fulford and Andy Smith, contributing editors

Schottel maintains 75-year heritage

Celebrations to mark the 75th anniversary of German propulsion specialist Schottel, culminating in a spectacular fireworks display on the River Rhine, incorporated the launch of a new product and the presentation of technical papers outlining the company's latest research. *MR/EN* recently joined 150 guests which included customers, suppliers and distributors from around the world in a busy weekend of high technology mixed with revelry.

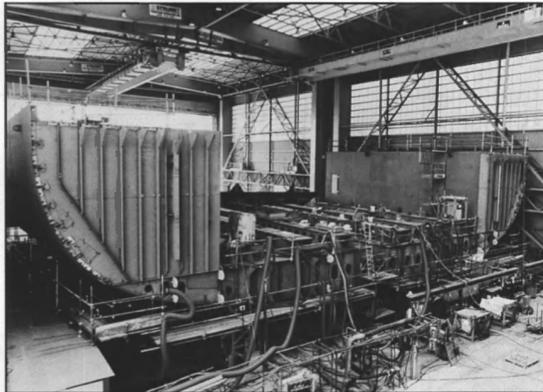
From a technical standpoint, the highlight of the event was the unveiling of the Schottel Twin Propeller (STP) by Sales and Marketing Director **K. Peter Hammer**. Developed in association with the Potsdam shipbuilding research establishment, the system consists of a 360 degree steerable propulsion unit which, in contrast to the company's popular and highly successful single screw Rudderpropeller, is equipped with two propellers of identical diameters turning in the same direction. Touted by **Mr. Hammer** as having a 20 percent higher level of efficiency and a significantly reduced noise level, the STP covers the entire power range for 360 degree steerable propulsion units, which makes it a favorable propulsion choice

for passenger ships, freighters, supply vessels and other vessels in the medium speed range.

For many years marine engineers have been attracted by the efficiency improvement offered by two moderately loaded propellers, in comparison with a single, highly loaded unit. However, the complex design, maintenance and sealing problems associated with a tandem arrangement of contra-rotating propellers prompted Schottel to seek a new, uncomplicated and reliable concept, and henceforth sprung the development of a two propeller/single shaft arrangement with fins located between the propellers to recover the swirl energy. The only mechanical difference between the STP and the conventional Rudderpropeller, proven in thousands of applications, is the presence of an extended propeller shaft.

Although the basic principle of the STP appears to be relatively simple, Schottel liaised with Potsdam in an effort to define the optimum propeller/fin relationship for maximum efficiency improvement. Model tests were carried out in the research establishment's cavitation tank, while extensive full-size trials were conducted at the company's own test pontoon.

These tests resulted in the production of a robust 360 degree steerable propulsion unit with superior efficiency. Two low-load propellers are fitted to a single shaft driven by a bevel gear system in an underwater gearbox. The front propeller attains a very high efficiency acting in 'pull' mode; the guide fins deflect the water to produce a straighter flow when it reaches the second, 'push' propeller. Further cooperation between



HAL's Rotterdam VI is shown under construction at Fincantieri's Marghera yard.



VT's latest fast attack craft for the Qatar Emiri Navy, QENS Al-Deebel, is shown being launched at the yard's Southampton shipyard.

Schottel and Potsdam resulted in the development of special geometry for the rear propeller, enabling the unit to achieve high efficiency during exposure to inhomogeneous flow conditions stemming from both in and out of the front propeller flow. This new geometry reduced the need for a smaller rear propeller diameter — the traditional, but inefficient solution to the problem.

The configuration of the stem and underwater housing and the shape and position of the fins were also determined by extensive testing and experimentation. Not only are the fins arranged to eliminate swirl between the screws, but being aerofoil-shaped in section, they can produce a lifting force as the water passes around. This force possesses an axial component in the forward direction which is considered more than sufficient for offsetting any resistance.

The low noise and vibration levels will be particularly valuable assets for passenger vessel applications, contended **Mr. Hammer**, and the STP will allow either the economic efficiency to be improved or the speed to be increased with the same power. "The STP is exceedingly attractive for freighters and supply ships owing to the high efficiency and reduced fuel costs. In many instances, existing ships can be cost-effectively converted to this propulsion system. Furthermore, we have shown that efficiency-optimized, multi-propeller solutions do not necessarily have to be mechanically complicated and thus more trouble-prone," he stated.

(Continued on page 17)

Han-Padron Starts Engineering For \$270-M Container Port

Under a contract with the Sultanate of Oman, Han-Padron Associates, LLP has begun detailed engineering and bid package preparation for Port Raysut (Mina Raysut), a new state-of-the-art container transshipment terminal which, along with a planned industrial and free trade zone, is intended to establish Oman as a major gateway for container traffic in the Middle East. The project is on an intensive fast-track schedule, with the first two berths, designed to accommodate the largest containerships afloat, scheduled to be in operation by the second quarter of 1998. Han-Padron will also provide overall project management and construction supervision services for the project.

The Sultanate of Oman is directly funding the project's \$128.7-million dredging and infrastructure costs. The Oman Ministry of Communications has finalized an agreement for management and operation of Port Raysut with Sea-Land, Inc., of Charlotte, N.C. Sea-Land will provide additional investment of approximately \$140 million for container handling equipment and other ancillary facilities for the first five years. Once the port is in full operation, a free trade zone will be established nearby to serve a wide range of industrial and commercial ventures, with Oman's extensive natural-gas resources providing a source of low-cost fuel and electricity.

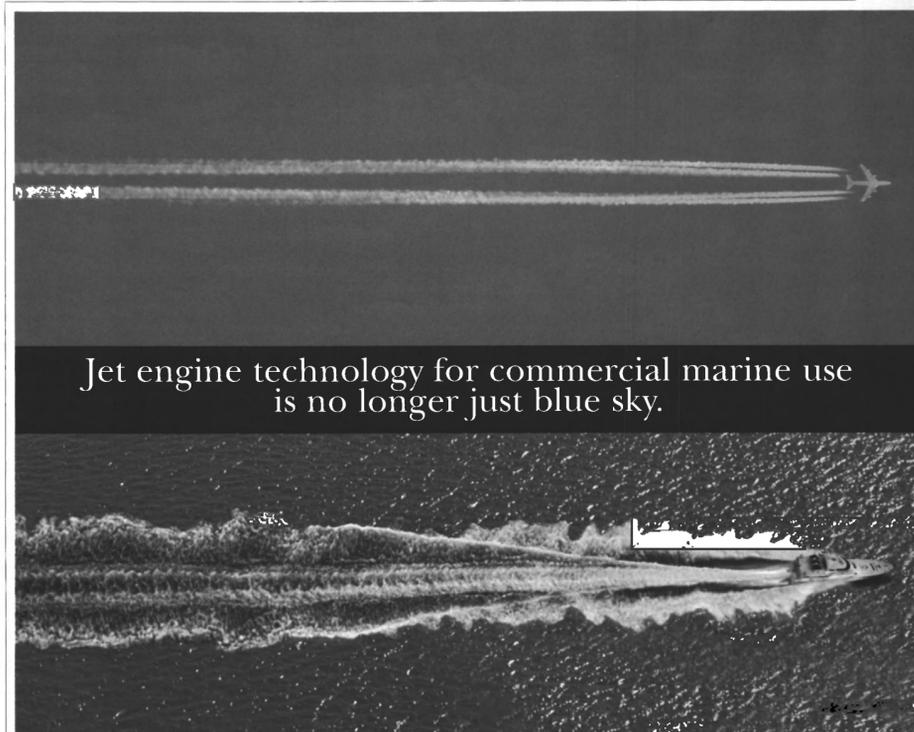
This plan will reportedly give Oman the largest and best-equipped container handling facility in the region, according to **Bernard M. Lubetkin, P.E.**, Han Padron's partner-in-charge for the project. "Raysut, a small commercial port adjacent to the town of Salalah in southern Oman, is well-suited to become a major Middle East shipping hub," said Mr. Lubetkin. "It is strategically placed at a safe location on the main shipping route between Europe and the Far East. A modern, high-capacity port at Raysut will shorten long-distance trips by several days, while enabling smaller feeder vessels to very efficiently serve ports throughout the Gulf Region and on the Indian subcontinent, as well as along the coast of East Africa."

The new port will reportedly accommodate the newest post-Panamax container vessels. The

water depths will initially be 49.2 ft. (15 m), designed to be deepened to 52.2 ft. (16 m). Four berths, totaling 4,000 ft. (1,220 m), will be built in the first phase of development, with a capacity of more than one million lifts, or 1.5 million TEUs per year. Docks facilities

will include 12 high-speed, 50-ton-capacity container cranes designed to load ships up to 18 containers wide; 27 rubber-tired gantry cranes; and four toploaders. Support facilities will include systems for supplying ships with fuel and water, maintenance and

administration building, container repair facilities, and storage facilities for 500 containers — all on approximately 125 acres of reclaimed land. In later phases the terminal may be enlarged to accommodate as many as 12 ships at a time.



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CONTRACTS

FBM Marine Secures Order For Portuguese Option Boats

Portuguese ferry operator Transtejo S.A. has confirmed an order for two further catamaran ferries from FBM Marine of Cowes, Isle of Wight, U.K. These two option boats will bring the number of FBM-supplied 147.6-ft. (45-m) river catamarans for this operator to six. The first four craft operate a regular service on the 14-nm route across the River Tagus between Lisbon and Montijo.

The newbuildings will be constructed to the same design as the four existing craft, and will travel at a service speed of 20 knots, carrying 500 passengers with a maximum cruising speed capability of 25 knots. To facilitate a speedy turnaround at low height pontoon berths, two wide entrances will be provided on each side with hydraulically operated ramp doors. The vessels are due for delivery in September and November 1997.

STN Atlas Elektronik To Supply Simulator For Training Center

On September 2, STN Atlas Elektronik's Bremen-based Simulation Division announced the award of a contract to design and install a multi-purpose training simulator at the Warnemunde Maritime Simulation Centre, Rostock, part of Wismar Polytechnic.

The system will reportedly be the largest of its type assembled in Germany, and will be used for training ships' masters and pilots, students, and for research applications. Its bridge section will comprise instructor and database preparation stations together with a main deck area equipped with a full range of combined radar/ECDIS functions. The bridge unit will be connected to three, fully equipped own-ship trainee cubicles for ship handling operations, each with 120-degree visual systems.

The contract also calls for design and installation of complementary engine control and VTS simulators. Funding for the complete project is being jointly pro-

vided by the state government of Mecklenburg-Western Pomerania and the German Ministry of Research & Technology, with the Federal Ministry of Transport contributing additional assistance for the VTS section of the installation.

C&M Technology Awarded NSWC Contract

C&M Technology, Inc., Old Saybrook, Conn., has been awarded a contract by the Naval Surface Warfare Center (NSWC) in Crane, Ind., for the fabrication of a portable pressure test chamber. According to company President **George Waugh**, this award complements current pressure vessel work being performed for NSWC in Newport, R.I. The company has designed and fabricated these units and their associated control systems since 1984.

NCL Awards SeaVision \$2 M Contract

SeaVision, Inc. has been awarded a contract reportedly worth in excess of \$2 million, involving the installation of an interactive television system onboard Norwegian Cruise Line's (NCL) *S/S Norway*. The first stage of the project, scheduled to commence last month, involves complete renewal of the ship's television distribution and broadcast systems, and the installation of new televisions throughout the vessel. "Norwegian Cruise Line was the launch customer for the SeaVision interactive television system onboard the *M/S Dreamward* last year," said **Robert G. Walters**, executive vice president of NCL. "Based on that experience, we decided the time was right to offer our passengers aboard the *Norway* the improved services and increased entertainment options provided by the SeaVision system," added the executive.

Kvaerner Installasjon Contracts With MFI

Kvaerner Installasjon has awarded a contract for delivery of eight multiphase meters to

Statoil's Gullfaks satellite project to Stavanger-based Multi-Fluid International (MFI). The meters will be used for well testing and allocation metering of produced oil and gas. The compact meters employ microwave technology and advanced electronics to determine flow rates without any separation.

MFI considers the award an important reference contract, since it follows a comprehensive test program performed by Norsk Hydro at its research center in Porsgrunn, where all available systems for multiphase metering were tested.

MFI will also soon deliver the first unit of a subsea version of the meter to Kongsberg Offshore/Statoil.

AmClyde Receives Army Crane Order

AmClyde Engineered Products, Inc. received a contract from the U.S. Army through Bollinger Shipyard, Inc. of Bollinger, La., to design and build a 115-ton floating marine crane -- a project valued at \$6.9 million.

AmClyde designed the crane at its headquarters in St. Paul, Minn., and manufacturing will be performed in Slidell, La. The crane is designed to operate in unprotected waters in up to Sea State 3. The Army will reportedly use the unit to offload heavy military equipment, such as battle tanks. The contract calls for delivery of the crane in 1998, and may be expanded to include a total of six cranes.

Tracor Acquires Cordant, Wins Navy Contract

Defense electronics company Tracor, Inc., located in Austin, Texas, and Reston, Va.-based Cordant, Inc., an information technology company, announced a definitive agreement providing for Tracor's purchase of all Cordant's outstanding shares. The cash purchase price of \$65 million is subject to contingent payments up to an additional \$15 million, based upon Cordant's performance in 1996 and the potential award of a large contract. The transaction,

publicized on September 3, was expected to close by September 30.

"The acquisition of Cordant is another key step in our strategic goal to strengthen Tracor's position in the rapidly growing technology market. A substantial portion of Tracor's business includes a broad range of information technology applications for both Department of Defense (DOD) and non-defense customers," said Tracor Chairman and President **James B. Skaggs**.

Tracor will establish a separate business unit, Tracor Information Systems Co., comprised of Cordant, Inc., under the continued leadership of **Peter P. Kusek**, and Quality Systems Inc., currently a subsidiary of Tracor's Vitro Corp., headed by **William Shernit**. It is expected that half of the new unit's sales will be to the DOD and the other half primarily to non-DOD federal government agencies and the U.S. Postal Service.

Additionally, on September 10, Tracor Applied Sciences, Inc. announced the receipt of a \$38-million contract, including options, from the Naval Air Warfare Center Aircraft Division (NAWCAD), Patuxent River, Md., for the provision of engineering and technical services for Exterior Communications Systems in support of the Special Communications Branch at St. Inigoes, Md. Under this five-year contract, Tracor will provide design, development, integration, test and evaluation, installation and integrated logistics for Navy, Joint and National Agency communications-electronics (C-E) systems, including shipboard exterior communications systems, mobile and transportable C-E systems and airborne communications systems.

Litton Awarded \$72.4 M For Continuation Of Navy Contract

The U.S. Navy has awarded \$72.4 million to Litton's Ingalls Shipbuilding division, Pascagoula, Miss., for the second year of a five-year contract to continue technical and engineering services in support of the Navy's fleet of Ticonderoga class Aegis guided missile cruisers and Spruance and

("Contracts" continued on page 30)

EUROPEAN UPDATE

Emergency Propulsion Systems

During the anniversary celebration, Schottel employee **Uwe Gragen**, a naval architect and project manager, provided an update concerning IMO's Design and Equipment Subcommittee's thoughts on the subject of emergency propulsion systems, particularly for ships carrying hazardous cargoes. He cited a number of recent incidents where he supposed vessel losses would have been prevented, had Schottel pump jets been installed at vessel bows.

Pump jets, which provide 360 degree steerable thrust, are available in a range of sizes to accept an input power of up to 3,500 kW, and the Manovriertechnisches Institut (MTI) in Hamburg has reportedly calculated that many environmental disasters could have been prevented with an emergency propulsion system requiring less power than this.

IMO has concluded that an independently powered pump jet installed at the bow has no effect on the efficiency of the vessel being flush with the hull and can increase maneuverability during normal operation. Moreover, the unit's position, situated at a distance from the engine room — the most likely source of a vessel-crippling fire — is in the best position for guaranteeing maximum maneuverability with the lowest power requirements.

Interestingly, the IMO Subcommittee has commented on the fact that many tankers are under-motorized. A combination of advanced shiplines and improved propulsion enables these vessels to achieve their service speed in calm water at very low power. At Beaufort wind and Sea States 10 and 11, however, the speed attainable by these vessels is hardly enough to give the rudder any effect, and at Beaufort 12, full power is insufficient to keep station. A pump jet used in conjunction with the main engine would also reportedly solve this problem.

The Schottel pump jet comprises an impeller, diffuser assembly and bottom plate. The impeller, driven through a right angle gear, sucks water via an intake funnel and diffuser into a pressure casing which is connected to the bottom plate. The water is expelled through three symmetrically arranged out-

let nozzles in this plate, and as the whole pressure casing can be turned through 360 degrees, thrust may be directed without losses in any direction. The unit can be installed flush at any point on the ship's hull and driven by any power source.

Mr. **Gragen** conceded that additional safety for ships carrying hazardous cargoes cannot be realized at zero cost. "The environmental disasters caused by tanker accidents and our responsibility to future generations, however, force us to react immediately to mini-

mize these risks," he said. Bearing in mind that a double hull is a secondary means of protection and often only provides a delay before the cargo starts to pollute, fitting an independent emergency propulsion system such as the Schottel pump jet seems a step in the right

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EUROPEAN UPDATE

direction.

Russian Steam Tug Restored As Testbed

Rudokop, a 108-ft. (32.8-m), ex-Russian Navy multi-purpose seagoing steam tug built at the Dubitsky yard in St. Petersburg in the late 1950s, has been acquired

and carefully restored by Canadian marine bearing specialist Thordon International as a testbed for the company's products and mobile exhibition booth. The vessel is currently in the U.K. as part of an eight-year grand European tour which began following its purchase by Thordon president **Sandy**

Thompson in November 1991.

The early history of the vessel is shrouded in secrecy, but its last major mission before the Thordon acquisition was reportedly as an icebreaking water tender in the Port of Archangelsk, for which role it was strengthened, with tanks added for carrying capacity of more

than 100 tons.

In the winter of 1992-93, the first refurbishment contract was given to the Nauta yard in Poland. At this time, tanks were removed to provide guest cabin spaces, the boiler was repaired and the hull was blasted and painted. During the winter, as part of a progressive European tour, *Rudokop*, (the name is Russian for miner), returned to St. Petersburg where all auxiliary engines and pumps were rebuilt and more work was performed on the accommodation areas.

The next winter stopover was in Hamburg, Germany, mainly for mechanical repairs which included the fitting of a second boiler and rebuilding all the main and crank bearings to the superbly balanced 600-hp triple expansion steam engine which, according to Mr. **Thompson**, is quieter at 160 rpm than any diesel, while providing a maximum speed of 10 knots. By the winter of 1995-96, the grand tour had reached Zandaam in Holland where new bilge keels and a stainless steel propeller were added and the work to the deckhouse further enhanced. *MR/EN* visited *Rudokop* in St. Katherine's Dock alongside the famous Tower of London, the vessel's first port of call in the U.K.

During the course of the refurbishment work, the vessel was equipped with a number of Thordon products. Low friction, water-lubricated Compac open bearings were fitted to the specially coated propeller shaft, with an automatic stuffing box incorporated. The rudder line was also provided with new stainless pintles and Thordon bearings. Other components have been fitted to the anchor windlass, steering chain rollers and rope guides. An experimental intermediate bearing, which may find its way on to the market, was also installed to replace the original white metal unit.

"*Rudokop* fulfills three separate roles," advised Mr. **Thompson**. "Primarily, she is a demonstration platform for Thordon marine products, and the saloon acts as a meeting room for presentations including VCR. As no test rig can ever simulate conditions as well as the real thing, the vessel serves this additional role and she also provides our distributor personnel with the experience of living close to the world of the shipowner, our customer," he added.

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Maritime Reporter/Engineering News

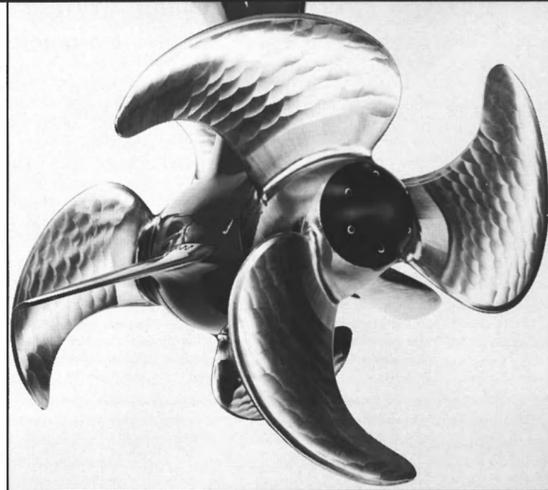
EUROPEAN UPDATE

In order to carry on his business while living aboard the vessel, Mr. **Thompson** installed a full complement of modern communications, including satcom e-mail, in order to provide a link to his company's Ontario headquarters. Despite the scientific and electronic modifications made to the vessel, the work carried out retains its original essence. As he pointed out: "Our objective is to preserve this ship indefinitely for the benefit of today's and future generations, who wonder what it was like to go to sea with steam." He expects *Rudokop* to make a transatlantic crossing before the end of the century.

Ulstein UT700 Offshore Design Remains Dominant

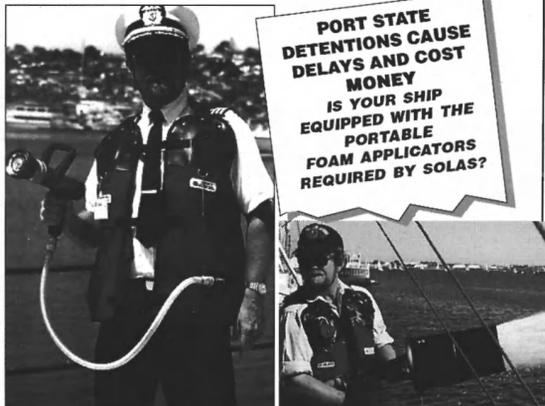
Ulstein Verft, the mainstay of the Norwegian Ulstein Group's ship-building division, remains securely in offshore tonnage, reporting a healthy orderbook which emphasizes the company's dominance of this market sector. Of the 18 offshore support vessels on order at Northern European yards in July, nine were being built to an Ulstein UT700 design, and six of these were placed at Ulstein Verft itself.

Recent deliveries include *Normand Neptune*, an UT740 heavy-duty anchor-handling vessel for Solstad Shipping, delivered in March and tasked with a long-term contract for Petrobras in Brazil. A sistership is scheduled for completion in October next year, and Ulstein Verft and Solstad have also



Schottel's new twin propeller is reportedly ideal for passenger vessel applications due to its high level of efficiency and low noise level.

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This year the Society of Naval Architects and Marine Engineers and the interagency Ship Structure Committee will present the sixth joint triennial symposium on ship structures. The year marks the 50th anniversary for the Ship Structure Committee. While an opportunity to recognize past successes of the committee's work, the symposium appropriately focuses to the future with an area new to ship structures - *the human element*.

Because of the newness of human factors considerations to ship structural engineers, a tutorial day is being planned. The second and third day will feature papers and panels to address critical topics of interest including subjects of risk assessment, safety and quality management (including roles and relationships of international codes, standards organizations, and class societies), case studies in human and organizational errors in marine structures, inspection and maintenance processes, loading and ship handling impacts on structures, and human and organizational impacts on design, analysis, producibility, and maintenance.

Registration materials will be sent out in September. To be placed on the distribution list please contact CDR Stephen E. Sharpe, Executive Director, Ship Structure Committee, % Commandant (G-MMS/SSC), 2100 Second Street S.W., Washington, D.C. 20593-0001, (202) 267-4816 or Email at CDR_SSharpe/G-M@cgsmtp.uscg.mil

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EUROPEAN UPDATE

concluded an option agreement for a third ship in the series. A significant feature of *Normand Neptune* is a new 500-ton, anchor-handling winch developed by the Brattvaag division of Ulstein Deck Machinery.

The yard's orderbook also includes six more UT700 vessels with deliveries continuing through October 1997. July saw the most recent handover — *Northern Gambler* — an UT745 support vessel, for local Norwegian operator Saevik Supply. This will be followed in October by a pioneering UT756 design for AP Muller, an unusual multi-purpose vessel which can be adapted for cable-laying duties. It is the seventh vessel ordered by Muller from Ulstein Verft since 1991, following six UT745 vessels. A further two vessels of this design were also ordered from the Marystown Shipyard in Newfoundland by Muller subsidiary Maersk Company Canada.

Due for delivery at the end of the year is an UT723 survey vessel for the Korean Institute of Geology, Mining and Materials (KIGAM). This tailor-made vessel draws on Ulstein's experience in designing and building a series of six seismic vessels for Western Atlas between 1991 and 1995.

The Korean vessel will be followed by an UT736 cable-layer for Care Offshore in early January. The group's most recent contract is for two UT720 anchor-handling tug supply vessels for Swire Pacific of Singapore, with deliveries scheduled for April and June 1997.

Although modified and refined to meet specific requirements, the UT700 series was originally conceived in the 1970s with the advent of North Sea oil and gas exploration. More than 250 of these designs have now been built, either by Ulstein or under licence at other shipyards around the world.

Most recently, Ulstein released technical details of the 246-ft. (75-m) anchor handling tug/support vessel design package, a variation on the UT722, to be built by Aukra Industrier for Simon Mokter Shipping AS of Stavanger, Norway. Further information on this vessel, together with a ship description and photo of the latest UT745, *Northern Gambler*, will be featured in the November issue of *MR/EN*.

Princess Liner Stores Upgraded To USPH Standards

The refrigeration section of the newly formed, French-based Passenger Ship Division of Finnish international ship equipment giant MacGregor has recently completed the modernization and upgrading of provision stores for cruise vessels *Island Princess* and *Pacific Princess*. Replacement was required as the existing stores no longer complied with U.S. Public Health (USPH) requirements.

MacGregor's modular prefabricated panel system was considered a more cost-effective remedy than attempting to upgrade the existing provision stores which had been built and insulated in the traditional way with mineral wool and stainless steel cover sheets. Piecemeal replacement of the old panels was ruled out in favor of installing the MacGregor system within the existing rooms. All drawings, calculations and coordination were carried out by MacGregor, as was the onboard instal-

Maritime Reporter/Engineering News

COMMUNICATIONS UPDATE

AT&T Mobile Launches Marine Services

Global communications giant well positioned to solidify fragmented marketplace

Selecting a single-source communications provider simplified

The ability to communicate — clearly, immediately and dependably — has become paramount to profitable modern-day ocean shipping. The proliferation of Information Technology has infiltrated even conservative shipowners' strategic planning, and the issue of improving overall communication efficiency and effectiveness is on the "front burner" in most every organization.

As shipowners are forced to more thoroughly explore a relatively new area of technology — and evaluate how improved data, voice, and other types of communications

can positively impact the bottom line — the matter is further complicated by the rapidly increasing number of communication service providers and service plans.

AT&T's entrance into the maritime satellite service market should offer reassurance to shipowners, both small and large. AT&T — the world's largest communication services provider — has not only a long history, but a proven ability to deliver comprehensive communications solutions tailored to its customers' needs.

Although AT&T introduced high-frequency radiotelephone service more than 60 years ago, and

has offered shore-to-ship service since 1993, the company was prohibited from offering ship-to-shore service until February 23, 1996, when the Federal Communications Commission granted AT&T's petition to compete in the market. AT&T launched its service just six weeks after the removal of a long-standing federal regulation that barred the company from offering such services.

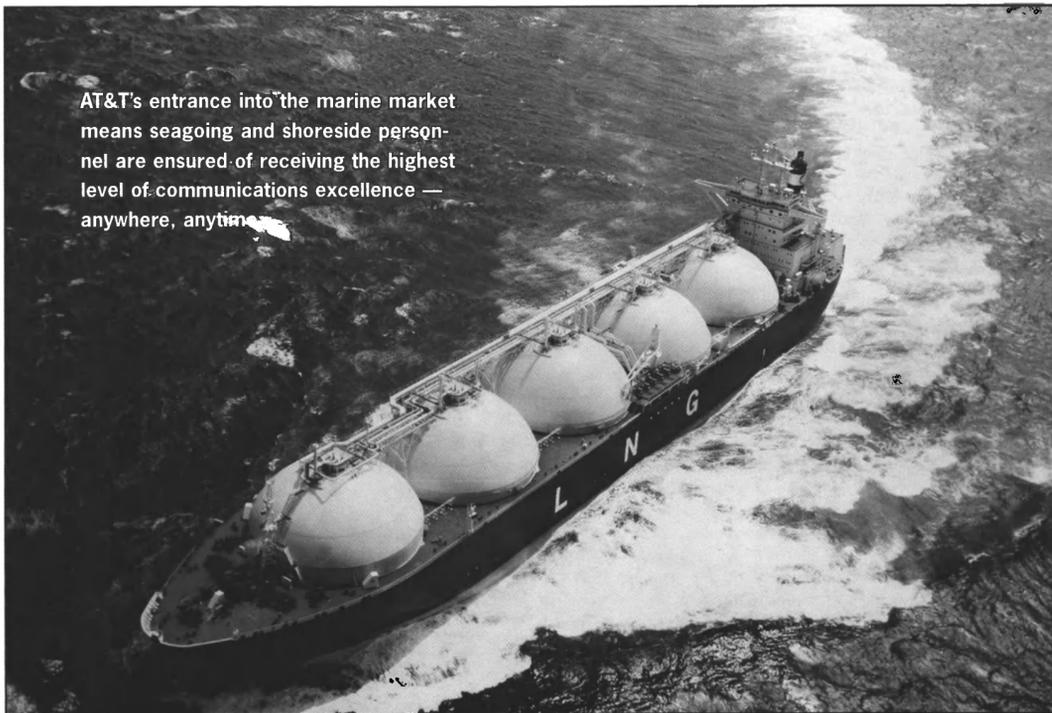
The "Wired" Ship

"Wiring" ships obviously presents unique operational and logistic challenges as opposed to traditional terrestrial communication

setups. The mere fact that a ship is constantly on the move is challenge enough. But these challenges are not impossibilities, and the rapid evolution of technological solutions has led to a seemingly nonstop new offering of satellite communication products and services. Ship-to-shore, shore-to-ship, and ship-to-ship communication is becoming more economical and accessible daily.

AT&T's offering to the maritime community includes direct-dialed, operator-handled, and person-to-person calls and Telex through Inmarsat A, B, and M systems.

AT&T's entrance into the marine market means seagoing and shoreside personnel are ensured of receiving the highest level of communications excellence — anywhere, anytime.



COMMUNICATIONS UPDATE



Whether in the middle of an ocean or the middle of a river, reliable communication is paramount to operational safety and efficiency.

"Now we can offer our customers full two-way mobile satellite service," said Mario Persico, product manager for AT&T's Mobile Satellite Services group. "Our prices are competitive, we'll do our own billing, and the service we will deliver to customers will make our offer very attractive."

The advantages of such seamless communications are illustrated in extreme emergency situations, as well as the mundane situations, such as the daily transfer of voice, fax and data.

Technology is driving the acceptance and implementation of satellite communication services, as equipment and antennas become much smaller and lighter, while allowing for faster transmission times and, ultimately, a reduction in cost-per-minute prices.

Shipowners' and seafarers' communications equipment and service are particularly crucial considering the nature of the ocean shipping business. Secure, reliable communication is the only means to keep a ship at sea from isolation.

The AT&T service was introduced for customers requiring anywhere, anytime global communications between mobile locations not served by land-line telephone service.

Innovative Uses

Keeping a ship in service is the first key to profitability. Today's advanced communications can greatly aid to that end, providing ship personnel an immediate and authoritative link when problems arise. Say, for example, a tanker develops engine problems en route. The master and chief engineer can immediately report the problem to shoreside personnel, and gain insight and technical advice in solving the matter. In a scenario that would require the ship to stop at the nearest repair port, onboard communications could be utilized to prepare spare part and service engineers at the port so the job could start as soon as the ship arrived. The concept of land-based ship management nearly presupposes the existence of fast, effective, and efficient communications. To this end, AT&T has developed an array of products for the maritime industry. (See chart to the right)

Services To Meet Any Need

The maritime industry is demanding, and AT&T offers a comprehensive package of communication plans. Refer to the chart on the right to determine which AT&T plan best fits your company's needs.

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Ship-to-Shore Inmarsat A, B, M

Permits ship-to-U.S. and ship-to-international calling over Inmarsat A, B, M. Customer dials earth station I.D., call type prefix, and called party number.

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Ship-to-Ship Inmarsat A, B, M

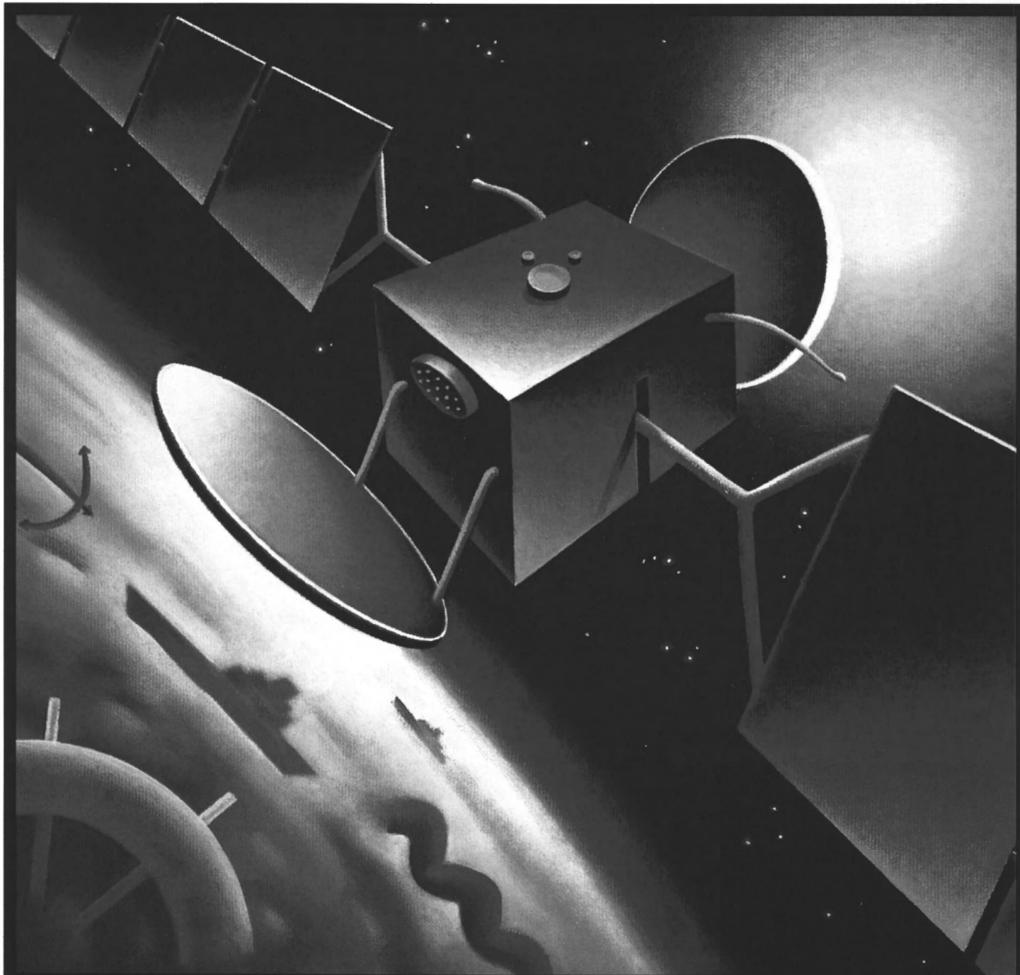
Permits ship-to-ship calling over Inmarsat A, B, M. Call is placed using two satellite links.

Usage Cost: Calls are rated at two times the ship-to-shore rate.

Ship-to-Shore Telex over Inmarsat A, B

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EUROPEAN UPDATE

lation work, which took place in Genoa, Italy, for *Island Princess*, and in Singapore for *Pacific Princess*.

A similar conversion has also been completed on cruise ship *Club Med 1*. The existing provision stores were completely removed and replaced with new modular panels within 17 days during a scheduled docking period. Due to the very tight time schedule, all rooms were preassembled in the factory and each component marked before disassembly and dispatch to the vessel for installation by the company's own team of engineers.

The MacGregor Group operates through 30 companies in 25 major shipping and shipbuilding countries and is expanding its local presence worldwide. The company's service network consists of more than 50 service stations located in major shipping centers, reportedly offering 24-hour service to a fleet of approximately 25,000 ships outfitted with its products. Since 1993, the group has been part of the Swedish international industrial corporation, Incentive AB, with revenues of approximately \$3.6 billion.

Construction Of HAL Flagship Continues At Fincantieri

According to reports issued from Holland America Line's (HAL) Seattle office, construction is progressing on the cruise line's upcoming flagship *Rotterdam VI*, at Fincantieri's Marghera yard in Italy. The ship is slated to begin service in September 1997, and like its predecessor, will specialize in world voyages, carrying 1,320 passengers. *Rotterdam VI* is being constructed with a long hull for speed and a soft, non-linear design with dual smokestacks. The ship will also feature an entire deck of suites with verandahs, with the balance of the ship's cabins sized at 185 to 195-sq.-ft. *Rotterdam* will also boast a Venetian-style alternative dining room, a concierge deck and a large children's playground.

U.K. Strike Craft Launch Strengthens Ties With Qatar

On the August 31, U.K. builder Vosper Thornycroft (VT) launched the fourth of four strike craft for the Qatar Emiri Navy at its Southampton shipyard. The 183.7-ft. (56-m) vessel was named *QENS*

Al-Deebel in a ceremony performed by Brigadier General **Said Al Sowaidi**, commander of the Qatar Emiri naval forces. The strike craft takes its name from a coral reef famous for its legendary pearl diving, situated off the northwest coast of Qatar.

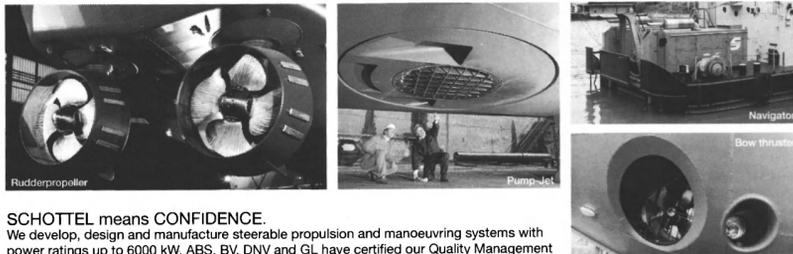
The first two ships of this class,

QENS Barzan and *QENS Huwar*, have already been accepted, and the third ship — *QENS Al Udeid* — is scheduled to be handed over later this year. If all progresses according to schedule, the fourth ship project is expected to be completed approximately five years after the initial contract signing.

Throughout the building program, a U.K. project office, comprising officers of the Qatar Emiri Navy, has overseen construction, sea trials and crew training.

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Circle 286 on Reader Service Card

EUROPEAN UPDATE

strike craft. The systems installed provide for one-person operation of main propulsion, electrical generation and auxiliary systems from the bridge.

Vosper's design for Qatar has reportedly evolved from similarly-sized vessels supplied to Oman

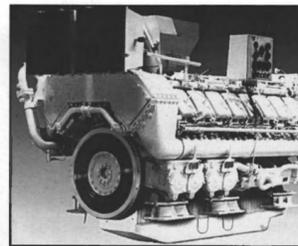
and Kenya, using the same basic hull form, but with a totally redesigned superstructure and internal arrangement.

During the past 30 years, Vosper has also constructed ships for eight Middle East navies, and believes that its latest contract for Qatar

strike crafts underlines its role as a leading exporter of naval vessels to the area.

The vessel builder also recently announced successful completion of sea trials for one of two first-of-class, 272.3-ft. (83-m) corvettes for the Royal Navy of Oman.

French Navy Equips Patrol Boats With Deutz MWM Engines



For the new Flament class patrol boats, the French Navy will be given Deutz MWM main propulsion systems of series 620 (pictured).

In the next year, the French Navy will receive three patrol boats of the Flament class. These 179.7 ft. (54.8 m) long boats have been designed by Leroux & Lotz Naval. The first boat was already launched at CMN Constructions Mechanique de Normandie in Cherbourg in spring 1995. The second boat was launched at Leroux & Lotz in summer 1995.

The main propulsion systems and the complete generating sets have been delivered by Deutz MWM. The main propulsion unit consists of a CODAD plant with two 16-cylinder engines of series 620 (2,240 kW each) for cruising speed, and two, 12-cylinder engines of series 234 (720 kW each) to be switched on for high speed cruising. Three generating sets, each with six-cylinder engines of series 234 delivering some 95 kW each, will be chosen for the power and emergency power supply.

The 620 series engines were subjected for this application to a 500-hr. endurance test run at Deutz MWM in Mannheim, in accordance with the requirements of the French Navy. Specialists of German and French authorities supervised this acceptance test run.

Cable Fault Detector Available From Advanced Electronic Applications

Advanced Electronic Applications offers CableMate Time Domain Reflectometer (TDR) which reportedly locates faults in coaxial and two-wire cables. CableMeter graphically indicates the severity of faults and the distance from the user to the fault.

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The distance is displayed numerically in feet or meters, and the amplitude in dB down from the injected pulses.

A serial port is standard on the CableMate with the optional AEA CableCon serial cable and Software package, and it is reportedly possible to link CableMate to a PC for real-time remote control and display, for uploading or downloading plots and cable lists, and for printing plots.

For more information on Advanced Electronic Applications
Circle 30 on Reader Service Card

Newport News Continues On Navy, Commercial Work

Newport News Installs Deckhouse On First Double Eagle Tanker



Pictured is the installation of the deckhouse on Double Eagle tanker *Despotico* at Newport News Shipbuilding.

Newport News Delivers Submarine *Cheyenne*



Pictured is U.S. Navy submarine *Cheyenne*, the last of the Los-Angeles class submarines to be delivered to the U.S. Navy by NNS.

NNS delivered the final Los Angeles class submarine — *Cheyenne* (SSN 773) — to the U.S. Navy on August 15, two weeks ahead of schedule. *Cheyenne* is the 53rd nuclear-powered submarine built by the company. Named for the capital city of Wyoming, NNS christened *Cheyenne* on April 1. The Navy was scheduled to put the ship into active service at a commissioning ceremony in Norfolk, Va., on September 13. The submarine measures 360 x 33 ft. (110 x 10 m) and has 14 officers and 126 enlisted marines assigned to it.

For more information
Circle 24 on Reader Service Card

October, 1996

AmClyde Acquires John T. Hepburn Product Line

AmClyde Engineered Products, Inc. has acquired the intellectual property and all associated assets of the offshore marine mooring systems from John T. Hepburn, Ltd. of Toronto, Canada.

The Hepburn products include chain windlasses, wire rope winches, traction winches,

combination chain/wire rope mooring systems, fairleads, ball connectors and other ancillary systems.

This equipment is used to anchor deepwater oil drilling rigs and related vessels to the ocean floor during offshore oil exploration and production activity.

AmClyde is a designer and builder of large specialty equipment for lifting, pulling and mooring the heaviest loads in the offshore oil markets for shipyards, materials handling and for U.S. government installations.

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27

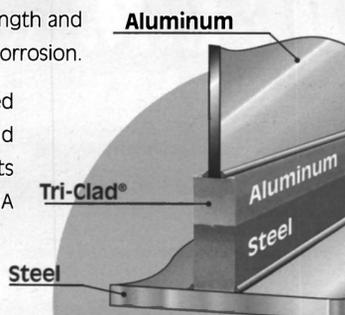
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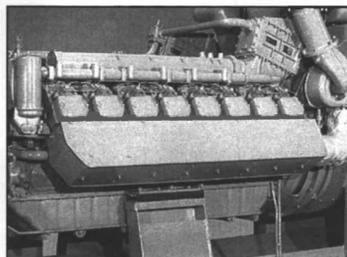
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Circle 272 on Reader Service Card

28

Deutz Reconditioned Engines Delivered For Use In Russian Grain Elevators



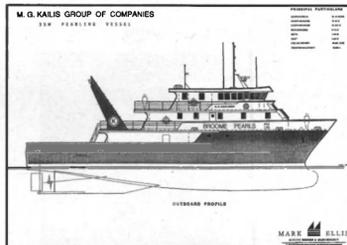
For the re-engining of Russian grain elevators, Deutz Service delivered reconditioned engines from the Deutz MWM 816 series.

For the first of four Russian grain elevators built in Austria in 1980, Deutz Service, Cologne, has delivered reconditioned engines from the Deutz MWM 816 series. The grain elevators, powered by diesel-electric drives, were equipped with two 16-cylinder engines, each with exhaust turbocharging and charge air cooling, as well as a six-cylinder, naturally aspirated engine. The engines were set to a continuous power of 705 and 94 kW at a speed of 1,500 rpm and outlet temperatures of 45 degrees Celsius.

The engines were rebuilt at the Dusiburg Service Center which specializes in this work within the Deutz Service organization. Reconditioned engines are built at the Center within a power range from 100 to 2,000 kW, for various applications.

For more information on Deutz Service
Circle 25 on Reader Service Card

International Shipyards To Build Pearl Vessels For Kailis Group



Pictured is the outboard profile of Broome Pearls.

International Shipyards, a member of the Oceanfast Marine Group, has signed a contract to build a custom 114.8-ft. (35-m) steel/aluminum pearling vessel for Kailis Broome Pearls, a division of the M.G. Kailis Group. International Shipyards is a waterfront facility equipped with a 1,200-ton slipway, and heavy engineering and refrigeration divisions which specialize in new steel construction, refit and repair work.

The Kailis Group is a dominant player in the West Australian fishing and pearling industries, operating an extensive fleet of vessels throughout Australia.

For more information on International Shipyards
Circle 26 on Reader Service Card

Maritime Reporter/Engineering News

Fast Landing Craft To Be Built By Swedish Defense

The Swedish National Defense has opted to increase the number of landing craft in its fleet to include an amphibious battalion designed for the rapid transport of troops. The boats will be driven by Volvo Penta engines combined with waterjet propulsion units.

The order for these engines is in addition to an order already received from the Swedish National Defense for engines intended for landing craft.

The TAM42WJ engines, scheduled to be delivered sometime this fall, will develop 230 hp when combined with KaMeWa 240 waterjet units, giving the landing craft a reported top speed of more than 30

knots. The landing craft have a pulpit helm and are 26.2 ft. (eight-m) long with a beam of 7 ft. (2.1 m) and draft of 30 cm.

The unladen weight is 1.7 tons, with maximum load measuring one ton.

For more information on Volvo Penta Circle 49 on Reader Service Card



Volvo Penta has already delivered engines for a large number of landing craft to the Swedish National Defense.

BP Shipping Installs Advanced Gas Detection Systems On Tankers

BP Shipping has installed state-of-the-art gas detection systems on product tankers *British Argosy* and *British Admiral* and medium crude carriers *British Skill* and *British Spirit*. The company has also taken delivery of bulkhead infrared detection systems supplied by TQ Environmental Ltd., of Wakefield, U.K.

The systems and vendor were reportedly subject to BP's quality assessment and were subsequently accepted for the supply of pump room gas detection. BP opted to install the system while the vessels were out of operation, using traditional hot work methods. Installation is also reportedly possible during normal operations using the cold-mount arrangement which reportedly avoids downtime and allows the system to be installed at the owner/operator's convenience.

Controlled by the TQ4000 control panel up to a maximum of four GD100, detectors are situated at low levels between the cargo pumps, and reportedly give prompt notice of dangerous hydrocarbon gas levels. Reportedly, the detectors cannot be poisoned, are maintenance free and can operate in an inert gas atmosphere. The dual wavelength infrared detectors are continuously self-testing, and the system is reportedly approved by Lloyds, ABS, DNV and NKK.

For more information on TQ Environmental Ltd. Circle 78 on Reader Service Card

AMEROID® 2000 Environmentally Responsible Cleaners

Scrubbing oily decks, removing carbon deposits and degreasing engine room machinery can be as hard on the marine environment as on your crew. Drew's commitment to safeguarding both inspired the development of the innovative AMEROID® 2000 cleaners. These highly effective water-based and natural solvent-based products handle common messy shipboard jobs with ease - without the typical harsh ingredients.

ENVIROMATE® 2000 general purpose cleaner is formulated for efficiency in cleaning and degreasing a wide range of deck, hotel and galley areas. • Clean, fresh odor • Rinses film-free with fresh or sea water • Requires no special handling or storage • Acts as a deodorizer • Biodegradable with a neutral pH in use.

SNC™ 2000 carbon remover is a pine-scented degreaser for penetrating and removing baked-on and carbonized soils - such as oils, grease or varnish - from valves, injectors, burner tips and other combustion parts. • Contains no cresylic acid or chlorinated hydrocarbons • Non-corrosive to most metals • High flash point permits heating.

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CONTRACTS

(“Contracts” continued from page 16)

Kidd class destroyers. The three ship classes include 62 of the Navy's most advanced surface combatants. Ingalls built all 35 of the Spruance and Kidd class destroyers during the 1970s and 1980s, and as lead shipbuilder for the Aegis cruiser program, delivered 19 of the 27 ships in the Ticonderoga class between 1982 and 1994.

In addition to design and engineering services, Ingalls provides schedule and planning, materials acquisition and installation support for the worldwide maintenance, upgrade and overhaul of the three ship classes.

As part of the program, Ingalls maintains fleet support offices at Navy bases where these ships are stationed in the U.S. and Japan.

Litton is a leader in worldwide technology markets for advanced electronic, information and defense systems, and a major designer and builder of surface combatant ships for the U.S. Navy and allied nations.

Navy Adds Sun Microsystems' Servers To CAD-2 Contracts

Sun Microsystems, Inc., announced on September 26 that the U.S. Navy had added its workstations and servers to the Naval Sea Systems Command (NAVSEA) and the Naval Air Systems Command and Space and Naval Warfare Systems Command (NAVAIR/SPAWAR) CAD-2 contracts.

These workstations and servers will support a broad range of Sun solutions for enterprisewide applications, as well as Intergraph products running on the Solaris operating system, such as Intergraph's DM2 information management software.

The contract was awarded to Sun Microsystems Federal, Inc.

“Intergraph is pleased to be able to offer Sun systems to our NAVSEA and NAVAIR/SPAWAR CAD-2 customers,” said **Edward A. Wilkinson**, Intergraph Federal Systems executive vice president.

“The addition of Sun workstations and servers to these CAD-2 contracts offers powerful RISC-based hardware that is truly scalable to match technical and business applications across the enterprise.”

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The first CAD-2 contract from NAVSEA was awarded to Intergraph in 1991 for engineering and design hardware, and software and services for applications such as shipbuilding, overhaul and repair.

The most recent CAD-2 contract was awarded in 1994 to Intergraph for computer-aided sys-

tems and services for electronic and mechanical design, manufacturing and engineering in aeronautical and aerospace applications.

An agreement with the Department of Defense reportedly enables all branches of the U.S. military to purchase from these contracts, which have an eight-year term for hardware, software and services,

in addition to four more years for the acquisition of maintenance and support services.

Woodward Governor, Catalytica Form Venture

Woodward Governor Company (“Contracts” continued on page 80)

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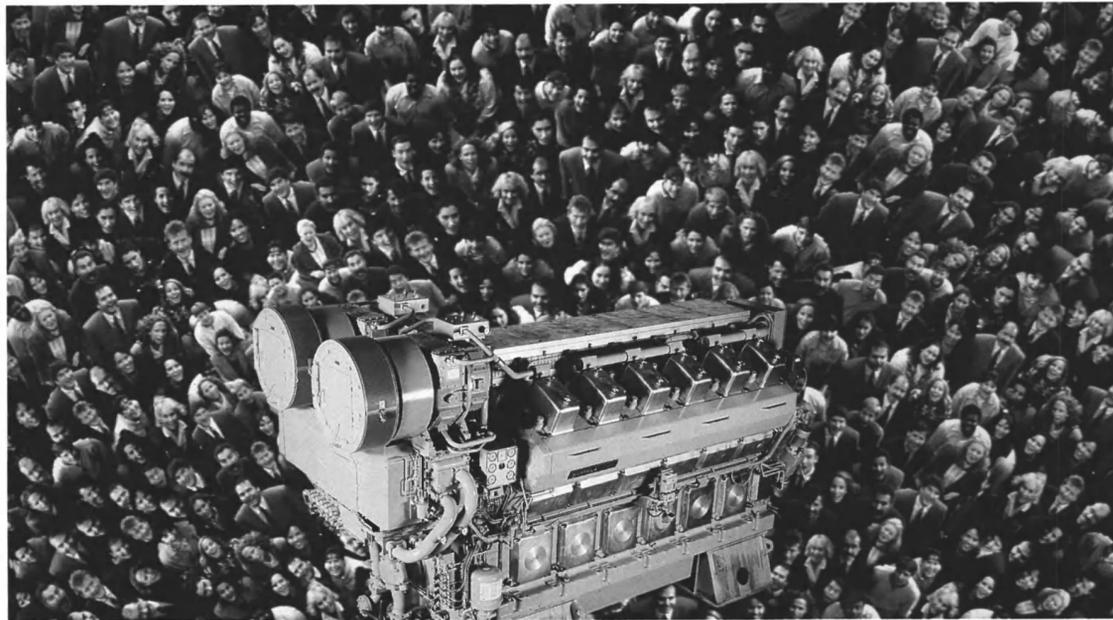
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Circle 363 on Reader Service Card

Maritime Reporter/Engineering News

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Circle 309 on Reader Service Card

NYK Returns To Bremerhaven Terminal

After a hiatus of several years, Japanese shipping line Nippon Yusen Kaisha (NYK) will again call at the Bremerhaven Container Terminal as part of its Far East service. The first NYK ship to call at the terminal was *Kamakura*. At 50,462 gt, the carrier reportedly offers storage capacity for 3,661

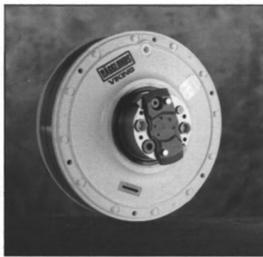
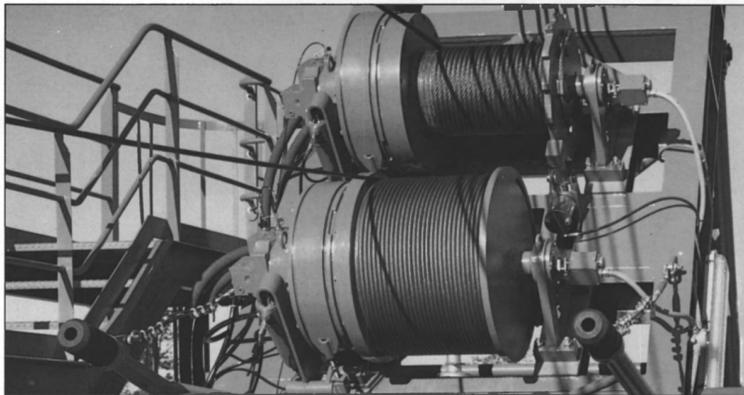
container units. While forming new consortia with worldwide operations, NYK joined the Grand Alliance, which also comprises shipping lines Hapag-Lloyd, NOL and P&O. The Grand Alliance serves Bremerhaven every week in a service linking Europe and the Far

East with Singapore, Hong Kong, Busan, Kaohsiung and Jeddah, as overseas ports of call. In addition, NYK — in conjunction with Hapag-Lloyd and NOL — provides a weekly service to North America via



NYK containership *Kamakura* called at Bremerhaven Container Terminal as part of its Far East service in the Grand Alliance consortium.

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Circle 243 on Reader Service Card

Bremerhaven. The regular ports of call within the scope of the Pax service there include Halifax, Nova Scotia; New York, N.Y.; Norfolk, Va.; Savannah, Ga.; Los Angeles and Oakland, Calif.; and Seattle, Wash.

NYK's automobile carriers, which already number among the traditional guests at the car terminals of BLG Bremer Lagerhaus-Gesellschaft, also regularly sail to Bremerhaven.

Seacraft Delivers Dive Yacht To Belizean Interest

Seacraft Shipyard Corp. of Amelia, La., has delivered M/V *Belize Aggressor III*, a 115-ft. (35 m), all aluminum live-aboard dive yacht, to its owners in Belize City, Belize. The new vessel will replace *Belize Aggressor II*, also built by Seacraft. *Belize Aggressor III* reportedly represents a new generation of live-aboard dive yachts, built to transport and support recreational scuba divers. Designed in-house by Seacraft, the vessel is reportedly certified for ocean service, built to USCG, ABS and SOLAS standards. Located on the main deck is the dining room which doubles as a classroom complete with its own entertainment center. Located in the hull is the engine room and the machinery room and eight-guest stateroom. On the dive platform are two dive ladders, two freshwater showers and a cradle for the rigid hull dinghy. Mounted in the hull are underwater dive location illumination lights.

Propulsion is supplied by a pair of GM 12V71T1 engines equipped with TD 514B 2.5:1 gearboxes driving 3.5-in. stainless steel shafts. The vessel has a cruising speed of 12 knots and a range of 1,500 nautical miles. Auxiliary power comes from two vibration isolated GM 3-71 40kW generator sets. All engines are equipped with "hospital zone" class exhaust silencers. Fresh water is supplied by a 1,600 gallon per day water maker. Compressed air for diving is supplied by two 5,000 psi air compressors. The air conditioning is provided by a 15-ton chilled water system with individual controls in each compartment.

For more information on Seacraft
Circle 63 on Reader Service Card

Maritime Reporter/Engineering News

Washburn & Doughty Delivers Royal Princess

Washburn & Doughty Associates Inc. of East Boothbay, Maine, has delivered *Royal Princess* to Dana Goodell, owner of Princess Yacht Charters of Boston. The sleek, steel vessel, Hull 53 for Washburn & Doughty, measuring 162 x 36 x 10.9 ft. (49.3 x 11 x 3.3 m), was designed by John Gilbert Associates' naval architects and Washburn & Doughty's in-house naval architect, Bruce Washburn. The interior was designed by Bauer Interiors of New Orleans.

The challenge faced by the architects was to insure a comfortable trip both in the protected harbors of New England — where the vessel joined the Princess Yacht Charters fleet operating from Rowes Wharf, Boston, and the

rougher offshore conditions along the Florida coast — where *Royal Princess* will commence gaming operations this fall. The dinner cruise/gaming vessel was designed from the keel up to accommodate the weight added by gaming operations.

For the dinner cruise end of the spectrum, a full 1,000-sq.-ft. galley was designed with the capacity to serve 500 passengers. Electrical power is supplied by two, 250-kW 3506 Caterpillar generator sets, each capable of driving the 200-hp bowthruster or providing sufficient power for all shipboard requirements.

On sea trials, *Royal Princess* reportedly exceeded its design speed of 12.5 knots by logging continuous runs of 13.5 knots, as well

as a top speed of 14 knots. These speeds were achieved with a powerplant consisting of a pair of Caterpillar 3412 TAs, each producing 636 hp through Twin Disc MS-520 reduction gears.

For more information on Washburn & Doughty Associates Circle 50 on Reader Service Card

Royal Princess main particulars

Length o.a.	162 ft. (49.4 m)
Breadth (molded)	36 ft. (11 m)
Depth (molded)	10.9 ft. (3.3 m)
Draft	7 ft. (2.1 m)
Passengers	500
Main engines	(2) CAT 3412C DIT 640 hp
Reduction gear	4.5:1 Twin Disc MGS20
Bowthruster	200 hp American Trac Series
Propellers	.54 x 62-in. 4-blade
Generators	(2) CAT 3406 250 kW

NNS Delivers Sealift Ship USNS Gordon

On August 23, Newport News Shipbuilding (NNS) delivered sealift ship USNS *Gordon* to the U.S. Navy. In 1993, NNS was awarded the contract to convert two containerships into combi RoRo/LoLo ships to carry U.S. Army equipment, vehicles and supplies. The ships will be strategically pre-positioned near areas of potential conflict around the world.

Christened on July 4 in a naming ceremony at NNS, *Gordon* is named for Master Sergeant Gary Gordon, a posthumous recipient of the Medal of Honor. Master Sergeant Gordon won the nation's highest military award by saving the life of a downed pilot of an Army helicopter in Mogadishu, Somalia, in 1993.

For more information on Newport News Circle 70 on Reader Service Card

Diffused Gas Technologies Introduces Diffuser For Wastewater System Tanks

Diffused Gas Technologies, Inc., a Cincinnati, Ohio-based manufacturer of gas diffusers for the water and wastewater treatment industries, now offers Hydro-Chek, a gas diffuser for onboard wastewater treatment systems and domestic waste holding tanks used on commercial vessels. The Hydro-Chek diffuser features a downflow design with airflow orifices located in the body, not in the air check diaphragm which is prone to tearing. This design reportedly preserves the flexible diaphragm's structural integrity for a significantly extended operational life, eliminates problems caused by sediment that could otherwise settle in the diffuser orifices, and maximizes the shearing of air bubbles as they emerge from the orifices and turn upward around the perimeter of the diffuser. The positive checking action of the flexible air diaphragm prevents backflow, which is normally due to variations or interruption of the air flow. When the air flow is stopped, the diaphragm contracts and is seated against the diffuser body by the water pressure in the tank. The Hydro-Chek diffuser offers a variety of design features for the marine maintenance crew who may be upgrading or repairing a vessel wastewater treatment/holding system, including: NPT fitting for easy change out; units constructed of non-corroding molded plastic or stainless steel; a diaphragm made of durable EPDM-based rubber that resists both fatigue and chemical attack for long trouble-free service; and the ability to handle air flow for up to 12 CFM each.

For more information on the Hydro-Chek Circle 55 on Reader Service Card

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The McNeill 1900 dual channel portable sampling monitor provides two sensors for two ranges of gas detection — one designed for low ranges and one for high ranges. A coalescing filter removes condensate and particles larger than .1 micron from the sample line, and a low flow switch automatically turns off the pump if flow is restricted. The McNeill 1900 operates in temperatures ranging from 20 degrees C to 50 degrees C and gas measurement ranges of 0-200ppm or 0-5000ppm of hydrogen sulfide (H₂S). The McNeill 1900 runs off of a high capacity, 12-volt, rechargeable lead acid battery and is housed in a fiberglass, NEMA 12 x 10 x 6 in. enclosure.

For more information on McNeill International Circle 56 on Reader Service Card

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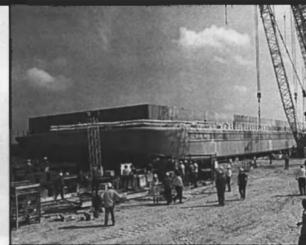
Trinity Launches First Of Two U.S. Navy Quarter Barges

APL 61, the first of two nearly identical 360 x 94-ft. (110 x 29-m) quarter barges under construction at Gulf Coast Fabrications Inc., a Trinity Marine Group shipyard in

Pearlington, Miss., was recently launched at the shipyard.

The barge is reportedly the first U.S. Navy vessel in many years to be designed and built to commer-

cial standards rather than military specifications. The resultant savings to the Navy and to taxpayers is reportedly expected to be approximately \$22 million, since the Navy



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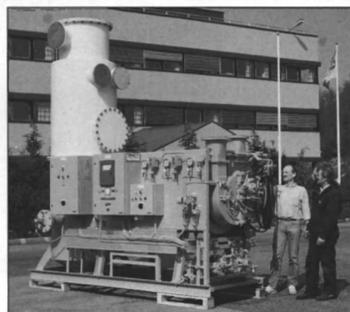
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had budgeted \$72 million for the two barges and Trinity's winning bid was approximately \$50 million for both barges.

Each of the new barges will house 600 persons and will have dining and locker facilities for 3,020 people. The barges will be used to house and feed Navy personnel at shipyards doing major repair, overhaul and conversion on Navy vessels. APL 61 is scheduled for delivery in September 1997, and APL 62 will be delivered in January 1998. Both barges are being built to well accepted commercial shipbuilding practices and will be classed to ABS standards.

"This contract is a significant milestone in Department of Defense and U.S. Navy acquisition reform because it demonstrates that non-MILSPEC contracting can provide the military and government with high quality, mission capable products at significant savings," said **John Dane III**, president of the Trinity Marine Group.

Mr. Dane added that this non-MILSPEC contract is approximately 75 percent shorter than a similar standard military contract reflecting many changes such as significantly reduced documentation and paper work for everything from engineering and purchasing to inspections. "Those inspections will be done primarily by ABS inspectors who are already in place, freeing up more Navy SUPSHIP (Supervisor of Shipbuilding, Conversion and Repair) personnel for other missions and greater manpower utilization," he said.

The Trinity Marine Group, Gulfport, Miss., is owned by Trinity Industries Inc., of Dallas, Texas. The group includes 21 shipyards in Texas, Louisiana, Mississippi, Florida, Tennessee and Missouri.

For more information on Trinity
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Maritime Reporter/Engineering News

MARINE ENVIRONMENTAL



Whoever coined the expression "OPA 90 is here to stay," probably understood that when environmentalism became a legislative force in transportation, the maritime sector would undergo a certain evolution. Accordingly, since oil pollution legislation took effect, marine environmentalism has shaped the industry significantly.

On the positive side, the Oil Pollution Act of 1990 is opening the floodgates for newbuild and retrofit business -- thanks to its infamous double hull requirements -- and has also spurred unprecedented expansion in the spill response sector, including extensive research into new cleanup technologies such as chemical dispersion methods.

Since the beginning of the year, one oil spill response organization (OSRO) has undergone a major reorganization and another OSRO has formed and supervised a major spill cleanup.

In addition, legislators on all levels are shying away from regulatory roles, stressing that their protection of waterways resources actually facilitates commerce, and that solutions can be reached through joint industry/government cooperation. As a result, programs offering incentives to

operators in voluntary, and in some cases, self-audited compliance with safety and environmental standards are cropping up in greater and greater numbers.

But while environmentalism can produce new avenues for cooperation and economic growth, challenges to legislation have been ignited that some say have the potential to overhaul current oil pollution mandates.

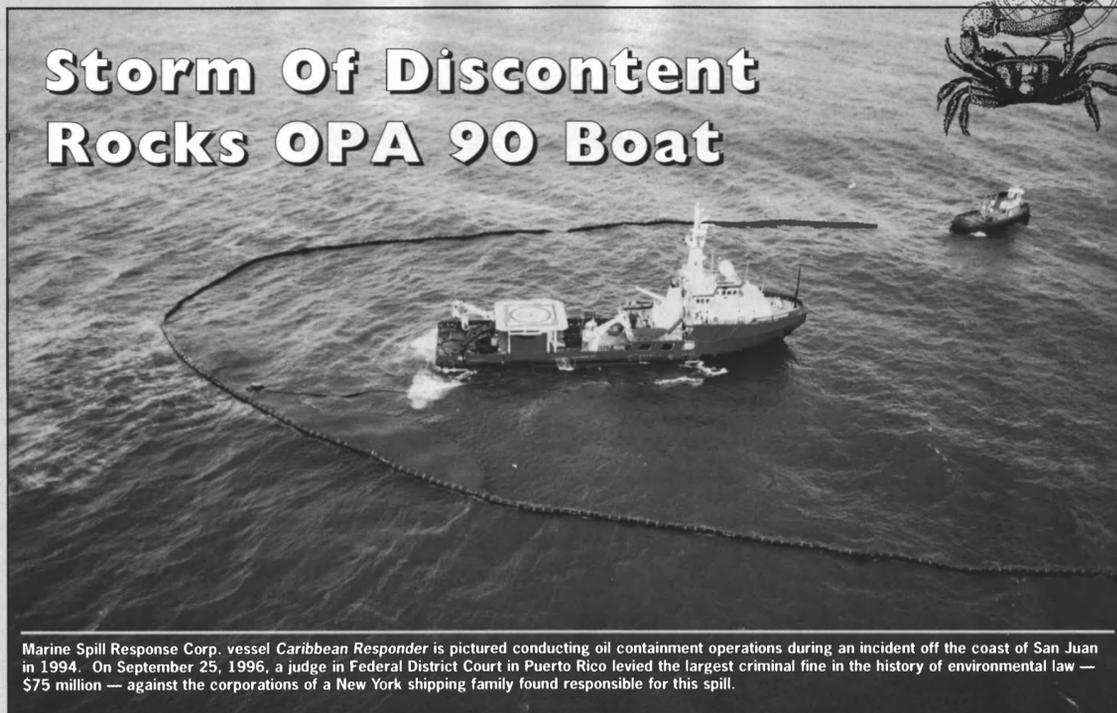
In preparation for this section, I found myself speaking to fewer company executives, spill experts, engineers and even legislators, in place of conversations with more and more lawyers. It appears that all "sides" have taken stock and are ready to fight to protect their interests.

The section that follows, as well as a Q&A with an OSRO leader starting on page 6, provides insight into the environmental legislation, products and services currently influencing maritime activities, and attempts to document the struggles of government and industry as the two institutions strive to establish mutually-acceptable standards and practices.

Bridget Murphy
Associate Editor

Photo credit: The Center for Marine Conservation

Storm Of Discontent Rocks OPA 90 Boat



Marine Spill Response Corp. vessel *Caribbean Responder* is pictured conducting oil containment operations during an incident off the coast of San Juan in 1994. On September 25, 1996, a judge in Federal District Court in Puerto Rico levied the largest criminal fine in the history of environmental law — \$75 million — against the corporations of a New York shipping family found responsible for this spill.

Environmental mandates provide courtroom stumbling blocks while setting the stage for a newly proactive maritime era.

by Bridget Murphy, associate editor

Six years after the tenets of environmentalism splashed onto the high seas in the form of oil pollution legislation, the industry is charting a straighter and narrower course toward cleaner oceans, but not without navigating its share of stormy waters. With an eye on company bottom lines, maritime interests today are assuming increasingly proactive roles in hammering out environmental statutes. This newfound involvement is perhaps most clearly illustrated by challenges to the Oil Pollution Act of 1990 (OPA 90) that have erupted in both congressional and judicial arenas.

A Jones Act trader has singlehandedly filed suit against the U.S. federal government, attempting to recover significant assets to be forfeited in the wake of mandatory OPA 90 compliance.

A contingent of marine underwriters has petitioned the U.S. Circuit Court of Appeals, claiming that the National Oceanic & Atmospheric Administration's (NOAA) natural resource damage assessment (NRDA) regulations need serious revision. On Capitol Hill, efforts to amend OPA 90 have also been initiated in a U.S. Senate Committee, championed by several legislators with Rhode Island Senator **John Chafee** taking a leading role, in the aftermath of a major spill in his state.

Lone Operator Initiates Litigation

On August 22, U.S.-flagged fleet owner and operator Maritrans Inc. announced that it had filed suit against the U.S. government, seeking compensation in excess of \$200 million for being "deprived of its reasonable investment-backed expectation in the continued use of its barges by Section 4115 of OPA 90". According to OPA, tank barges must be retrofitted with double hulls or retired by 2003 — a requirement that was not imminent in 1987 when Maritrans financed 37 single-hulled tank barges. The company contends that the legislation effectively "seizes" the barges by preventing their operation, violating the Fifth Amendment to the Constitution, which prohibits the federal government from taking private property for public use without just compensation.

According to Maritrans' Associate General Counsel **Skip Volkle**, "We undertook litigation because we believe(d) it was the right thing to do ... The government is taking our whole asset base and expecting us to survive. If they're going to take our property, they can take it, but they have to pay us for it," Mr. Volkle told *MR/EN*.

While a plaintiff's decision in this case would seemingly open the floodgates for other similar lawsuits, the Maritrans counselor explained

that according to his company's calculations, the statute of limitations for filing claims against OPA 90 has expired since six years have elapsed since the legislation was enacted in August 1990. "We filed just a few days before the statute expired," said Mr. Volkle, adding, "We are hopeful that our claim will prevail and that our argument on the statute of limitations will also prevail so that we will be the only ones to recover."

"We don't quibble with the government's objectives ... The government does have an obligation to protect natural resources. We believe that there are many extremely beneficial parts of OPA. We support statutory provisions and the goals they attempt to meet. We don't believe that double hull provisions are adequate means of meeting this goal," said the attorney.

According to the Maritrans rep, the fact that other challenges to OPA 90 are pending did not influence his company's decision to file suit, although he said that Maritrans does support NRDA challenges being made by industry. "My own belief is that the industry is behind us and everyone hopes we win," concluded Mr. Volkle.

(continued on page 90)



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Oil Storage Bags Sail The Seas

In recognition of the fact that response time is critical in reducing and effectively containing oil spills, Unitor manufactures a system designed to augment the storage capacity of skimmers, and to transport recovered oil to storage either onshore or on other vessels. The Unitor Oil Bag (UOB) is available in sizes ranging from 10 to 1,000-sq.-m., and can be manually deployed, dragged into the sea by a small boat or deployed from a crane or jetty.

Materials are pumped into UOBs through skimmers, and a variety of fill hose sizes and fittings are available. During filling of the unit, it can be towed alongside a ship or streamed behind smaller vessels at speeds of up to eight knots when full. The units have shallow drafts, and for greater maneuverability, can be towed by aft bridle lines. In addition, if access to shoreline pollution is not possible from land side, liquid pollution can be pumped into an UOB positioned just offshore.

UOBs require little deck space, are suited for ships, offshore structures and barges, and in the event of groundings or collisions, provide immediate additional temporary storage capacity.

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Unitor Oil Bag carries oil like a giant ocean bladder during an exercise on the North Sea.

Song Of Norway Gets Sewage Treatment Refit

Royal Caribbean Cruises Ltd. (RCCL) recently replaced the sewage treatment system onboard *Song of Norway* while the vessel was underway with a full complement of passengers and crew.

From the placement of the purchase order to the systems initial start-up, the project was reportedly completed in only four months, with an Omnipure system supplied by Eltech International

Corporation.

The system consists of four (15 MX) process modules and utilizes existing tanks modified for sewage handling by AMT. The units interface with both an existing vacuum collection system and a separate gravity system. Omnipure macerates, oxidizes and disinfects sewage utilizing sodium hypochlorite produced electrolytically from seawater in combination with the waste stream.

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38



Convertible Cleanup Vessels Ready For Action



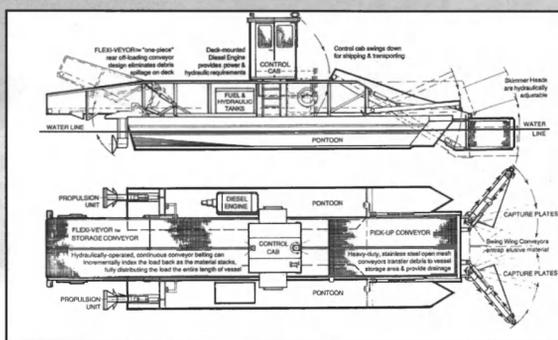
This "combo" oil/debris Marineskimmer offers rapid response to typical non-catastrophic, protected water oil spills commonplace in harbors, rivers and navigable waterways.

United Marine International Inc. (UMI) produces a line of Marineskimmer vessels for clearing inland waterways of dangerous and environmentally harmful debris. The company's Trashskimmer model utilizes a combination of hydraulically controlled conveyor systems in order to capture, contain and retrieve a wide variety of floating material up to 4.5 ft. (1.3 m) in diameter. Trash is captured within a 16-ft. (4.8-m) maximum span of the conveyor's sweeping wings, channeled to skimmer pickup conveyors, accumulated in onboard storage containers, and stacked by indexing open-mesh storage bed conveyors.

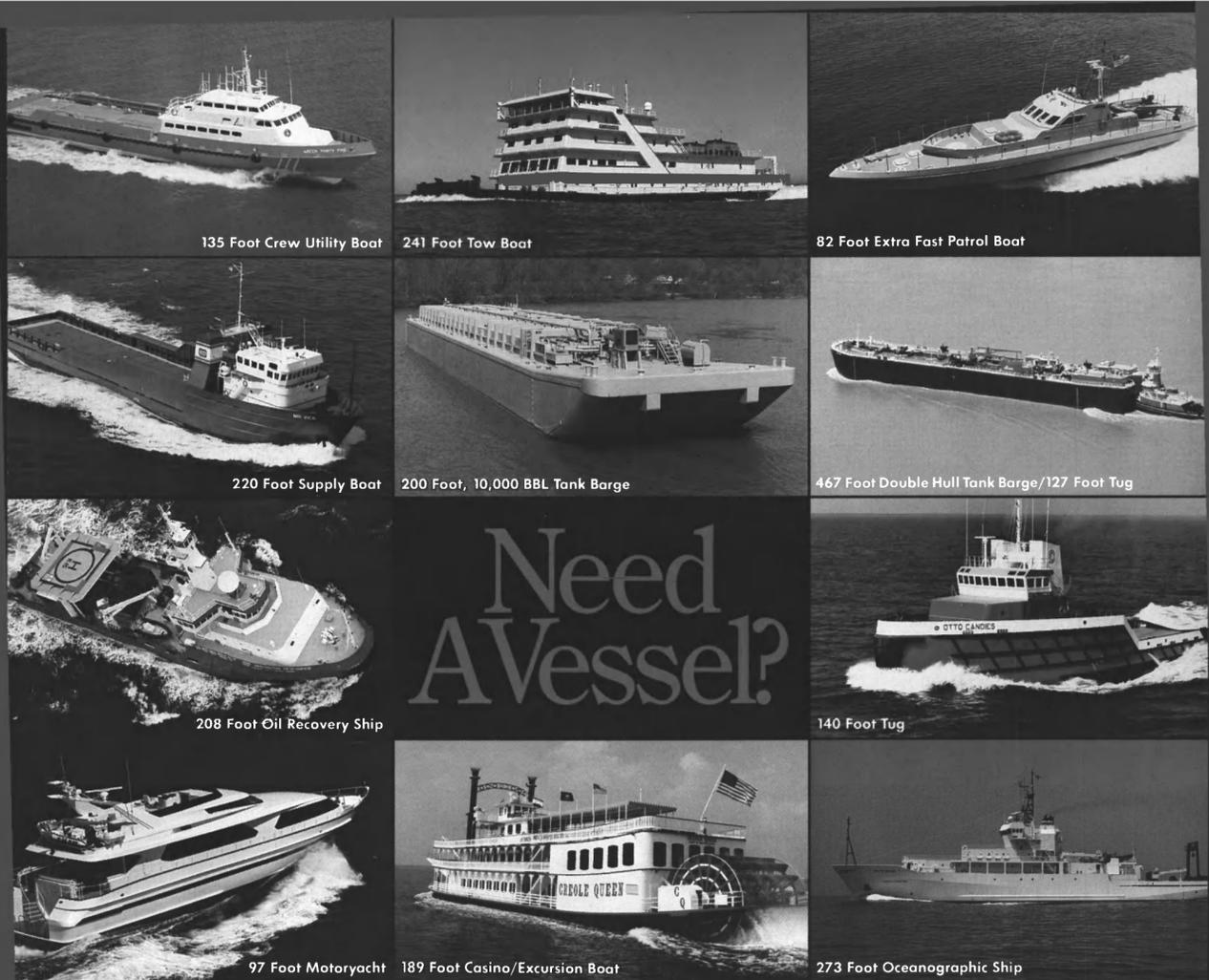
UMI's "combo" oil/debris Marineskimmer model was designed in response to the need for rapid response to oil spill incidents in protected waterways such as harbors and rivers. All of the company's debris scooping vessels can also be retrofitted with the oil skimming equipment, consisting of: a self-contained, floating oil skimmer; a gantry crane with hydraulic cable hoist to raise and lower the skimmer; quick-connect hydraulic and oil discharge lines; and oil tanks or "bladders" to receive recovered oil.

While handling normal trash and debris skimmer operations, the "combo" Marineskimmer can reportedly convert to an oil skimmer in less than an hour, deeming it a true rapid-response vessel.

For more information on United Marine International Inc.
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System description and design features of UMI's Marineskimmer.



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Safety Is Everyone's Business



by Rear Admiral James C. Card, Chief, USCG Office of Marine Safety, Security and Environmental Protection

One hundred and twenty years ago, in response to a series of deadly boiler explosions on steamboats, the U.S. Congress passed the first vessel inspection laws and the role of government was expanded into the arena of vessel safety. To enforce these new laws, Congress created the Steamboat Inspection Service, one of the precursor agencies of today's U.S. Coast Guard (USCG). Thus through law and regulation, government set out to become the protector of the seafarer, maritime passengers and the public. Later, protection of the environment was added. Historically, therefore, vessel safety and protection of the environment were considered to be the "government's business."

Today we know that maritime safety and protection of the environment is everyone's business. This is not to say that the role of the government has diminished, but that the role of all other involved parties is of equal importance. I am convinced that our greatest opportunities for furthering maritime safety and the protection of the environment arise through the synergy of government, industry, labor, environmental and other interest groups working in partnership to achieve common goals.

There are ample studies available to indicate that using government regulation as the primary driver of safety and environmental protection is inefficient, and that greater safety and environmental benefit is often derived from industry initiatives subject to market forces than from regulatorily mandated initiatives alone. The lesson here is that when industry recognizes that, as responsible companies, safety is as much their business as it is government's, everyone benefits.

We in the Coast Guard are seeing today that this recognition of company responsibility for safety and the environment is beginning to pervade the maritime industry,

and that the quality leaders within the industry are showing the way. In the most responsible segments of the maritime industry, a culture of safety is becoming a way of corporate life. We view this change in corporate culture as an opportunity to further our nation's safety and environmental objectives.

Within recent years the Coast Guard has committed itself to accomplishing measurable performance goals in maritime safety and environmental protection that do not focus on our own activities but rather on the outcomes we are charged by Congress to achieve. No longer do we simply measure the number of inspections performed or licenses issued, but rather whether or not these activities are contributing to a reduction in vessel casualties or pollution incidents. This change in focus has dramatically underscored for us the need to work cooperatively with industry and labor to accomplish our performance goals, since only industry and labor, as the process owners, control the means for achieving them. Government can only influence the results, either through law and regulation, or by cooperative means.

When I assumed my current position within the Coast Guard as Chief of Marine Safety and Environmental Protection, I announced two broad program initiatives — titled Prevention Through People (PTP) and Quality Partnerships for Safety and Environmental Protection — as the Coast Guard's strategic approach toward achieving our marine safety and environmental protection goals. These two initiatives, although based on regulatory approaches to safety. The Coast Guard's PTP initiative recognizes



that 80 to 95 percent of all accidents are caused by the human element and that if we are ever to achieve substantial gains in safety, the gains must come in this area. Our PTP vision is to achieve the world's safest, most environmentally sound and cost-effective marine operations,

by emphasizing the role of people in preventing casualties and pollution. I believe that to accomplish this vision industry must be engaged. A tenet of PTP is the cooperative participation of industry in partnership with government.

Thus the second of my strategic initiatives, quality partnerships. I foresee a change for government from that primarily of regulator to that primarily of public and industry facilitator, auditor and educator. It is not so much a change in role as a change in emphasis. It is a recognition that safety is everyone's business, and thus, through partnership with industry we have the greatest potential for achieving our PTP vision.

Under this initiative the Coast Guard has entered into formal partnerships with the barge and towing industry, and with the domestic small passenger vessel industry. Additionally, we are actively working on partnership arrangements with the cruise industry and the domestic tanker industry. Under these partnerships, the Coast Guard and industry are working together to identify opportunities for improvement in safety and the environment. Once problems are identified and agreed upon, we are establishing joint government/industry working groups to address the problems using quality tools to identify root causes and develop solutions.

Over and beyond our formal partnerships, the Coast Guard has also

developed other initiatives for working cooperatively with industry. Two such programs are the Alternative Compliance Program (ACP) and a Streamlined Inspection Program (SIP). Both of these are part of a broader regulatory reform program that seeks to both lessen the regulatory burden on industry, and at the same time to involve industry to a greater degree in the accomplishment of our safety and environmental goals. The ACP and SIP programs are designed for those quality companies that have demonstrated a commitment to a corporate culture of safety. The ACP accepts third-party (i.e. classification society) evidence of inspection as proof of compliance with U.S. regulations, while SIP looks to the vessel owner/operator to assume a greater reliance on industry for achieving our safety objectives, with a concomitant reduction in direct governmental action. In each of these programs there is the implicit recognition that the greatest gains for safety will be achieved through cooperative government/industry/labor cooperation. Therefore, the message that I want to leave is that today we are on the forefront of a revolutionary change in approach to safety. No longer do we believe that safety and the protection of the environment is the business of government alone. Today we recognize that the greatest potential for achieving our nation's safety and environmental goals is through the cooperative efforts of government, industry, labor and environmental and other interest groups working together to achieve common objectives. As change occurs and lessons are learned, each of us will need to share our success stories with the rest of the maritime community so that all can benefit. If we engage the talents and experience of government, industry and labor, I know that we will succeed in reaching our goals. Cooperation is the key to success.

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The States' Role



by
Pete Bontadelli, administrator, Office of Oil Spill Prevention and Response,
State of California Department of Fish and Game

On a late February afternoon in 1990, the state of California came face to face with the reality of a major marine oil pollution incident. *American Trader*, a large crude oil tanker, holed by its own anchor, wallowed close to the shore at Huntington Beach spilling almost 10,000 barrels into California waters. For the next several weeks, state and local governments worked with the U.S. Coast Guard (USCG) to activate a response and ensure a proper cleanup. The legal aftermath is still underway.

The memory of *Valdez* was still fresh in everyone's mind. A short time later, the scene of the burning *Megaborg* in the Gulf of Mexico would become yet another vivid image imprinted in the minds of citizens and legislators alike. Soon, comprehensive oil spill legislation would be enacted in Washington, D.C.; Sacramento, Calif.; Juneau, Alaska; and Austin, Texas. Within a year, other state legislatures would follow suit, and oil spill prevention and response statutes would be the law of the nation and many of its coastal states.

Portions of federal law and many state statutes deal with the same subjects, providing variation according to the perceived need at each level of government. This has prompted international shipping interests to raise questions about the proper role of the federal government acting as a "state" in the international scene, and individual states acting independently or unilaterally outside of international convention or agreements made by the International Maritime Organization (IMO). Recently, however, strong proponents have surfaced advocating the rights of individual nations and individual states to take independent action to guarantee the protection of their coastal resources from the impact of pollution from either foreign or domestic vessels.

Just as the U.S. has a right to

ensure that its waters are protected, as consistent with its right to maintain international commerce, states have a long-standing right to ensure protection of their shores from pollution, and to take the appropriate actions to prevent such incidents from

occurring. While many may question the wisdom of a nation proceeding independent of international convention, few would challenge its legality. Those raising questions about the propriety of individual states acting independently would be greater in number, but in my opinion, their concerns are no better founded.

Individual states have always had the right to take actions independent of the federal government. This right is guaranteed in part by the Tenth Amendment to the U.S. Constitution. The real issue in this debate is the scope and nature of states' roles, not the right of the states to act to protect citizens and resources.

Historically, prevention of marine accidents has been a role shared between the states and the federal government. The area of marine pilot regulation is a good example. Likewise, the role of states in implementing the proper cleanup and recovery of damages has been assured in numerous legal cases. Statutes like the Clean Water Act provide that individual states are free to act, as long as their statutes ensure that federal standards are met or exceeded. The Oil Pollution Act of 1990 (OPA 90) is an amendment to this statute and contains specific non-preemptive language. In my opinion, as long as pollution incidents (such as those cited previously) occur, legislation at both the federal and state level will ensue. Such actions are both proper and necessary, as long as they are not directly in conflict and their enforcement is compatible.



Californian Role Model

In California, our oil spill law is, in many ways, more extensive than the Federal Act. We have imposed higher limits on Certificates of Financial Responsibility (COFRs) for vessels and marine facilities, required prevention elements in our contingency plans, established Harbor Safety Committees, created a Vessel Traffic Information System (VTIS), imposed tug escort requirements, and more clearly defined recovery for damage to natural resources. Our statute, like most other state laws, recognizes the lead role of the federal government in several areas, and requires us to work cooperatively with the USCG and other federal agencies before, during and after an incident. Additionally, our statute requires us to work cooperatively with other West Coast states to help facilitate consistency, and where possible, to standardize state programs.

Working to improve safety before an incident through Harbor Safety Plans, VTIS, tug escort regulations, prevention plans, and joint assessment actions following a spill are actions which seem to have broad acceptance throughout industry, government and the environmental community. In general, the state of California has chosen to follow the course of action outlined first by our state attorney general in an amicus curiae brief filed in the *ARCO v. Ray* case several years ago. That is, in a situation where Congress has not clearly intended to provide an exclusive remedy, where states' actions supplement federal objectives and present no actual conflict and coordinated state and federal efforts exist within a complementary framework, states are clearly not preempted by the federal government from regulating in the field.

In California, we have chosen to bolster this position through a Memorandum of Understanding with the USCG which recognizes that neither state nor federal government have all of the resources to do everything that needs to be done. We have, therefore, outlined areas in which we can both make the best use of resources under our control.

Jointly, we have worked to establish common oil spill response systems and to standardize response protocols at the federal, state and local levels. This has been accomplished largely by adoption of the Incident Command System which has spread throughout the U.S. and Canada, and the development of a Field Operations Guide, standardizing response agency practices. These two joint efforts have resulted in a unified and coordinated approach to oil spill response and cleanup at all levels of government.

The state takes the lead in some areas, such as oil transfers at marine terminals (State Lands Commission), crude oil lightering, vessel bunkering, and vessel and marine facility prevention planning (Office of Oil Spill Prevention and Response). In other areas, the USCG retains the primary responsibility of inspecting tank vessels, allowing the state to monitor actions in the recently implemented Port State Control Program. At the state level, we have recently convened committees, headed by industry in many cases, to review all oil spill regulations, clarify the role of lead agencies, and to recommend existing standards or regulations at the national or international level, which should be included in the upcoming revision to our vessel and marine facility contingency plan regulations. Through this process, we are striving to eliminate overlap and redundancy in regulatory control while meeting our statutory mandate of "best achievable protection while using best achievable technology."



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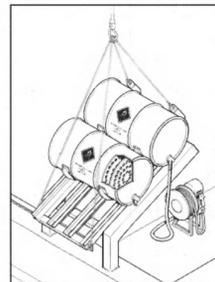
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- Railing panels.
- Code Red Mariner (CRM). Crew training package.
- Thermal Protective Aid (TPA).
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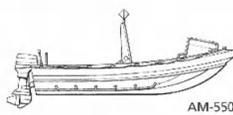
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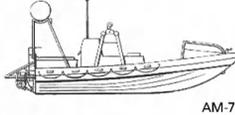
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AM-550

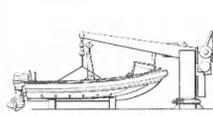


AM-700

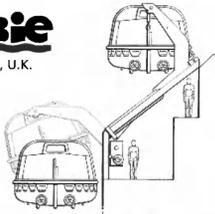
WELINLAMBIE

Brierley Hill, West Midlands, England, U.K.

Davits



Rescue Boat Davit

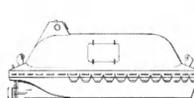


Overhead Gravity Trackway Davit

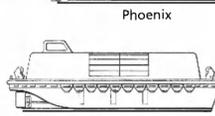


Peterlee, County Durham, England, U.K.

Lifeboats



Phoenix



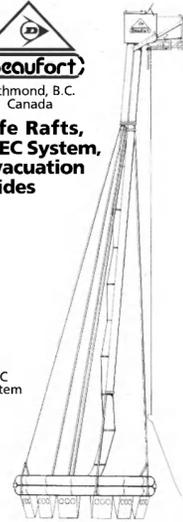
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MARINE ENVIRONMENTAL — PRODUCTS

Slickbar Awarded Major Oil Boom Contract For Vietnam

Slickbar Products Corporation has been awarded its first major oil boom contract for a Vietnamese interest since trade restrictions were lifted. Vietsovetro, Vung Tau, Vietnam, a Vietnamese and Russian joint venture, has placed an order for 3,280 ft. (1,000 m) of Slickstop, Slickbar's high seas model air inflatable oil boom. The unit will reportedly be stationed in Vung Tau, where most of the major oil exploration and production is currently taking place.



Pictured is Slickbar's Slickstop, a high seas model air inflatable oil boom recently ordered by Vietsovetro, Vung Tau, Vietnam.

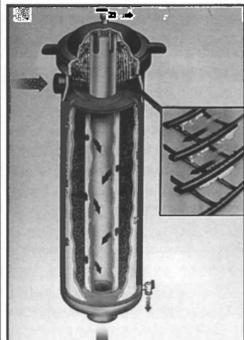
Stephen J. Reilly, Slickbar's director of Sales and Marketing, attributes Slickstop's durability to its double air tight construction. "If the outside wall is punctured during operations, the inside bladder will still be intact and will not be compromised," Mr. Reilly explained. The inside inflation compartment is fabricated of a lifevest grade, high puncture-resistant, polymer coated nylon approved for SOLAS floatation devices.

Also included in the order are four heavy-duty storage reels, two diesel/hydraulic power packs with rapid inflation assemblies, accessories and spare parts.

For more information on Slickbar
Circle 51 on Reader Service Card

RGF Develops Multi-Filter For Waste Water Treatment Systems

RGF Environmental Systems, Inc., a member of the RGF Environmental Group, announced the development of a new polypropylene multi-filter that works in conjunction with waste water treatment and recycling systems, or waste water treatment systems for the discharge of water to sewers. The multi-filter features a pre-filter chamber which coalesces and stores hydrocarbons for a periodic or continuous purge. Additionally, the pre-filter chamber attracts large solids to prolong the life of the main filter cartridge. The secondary chamber utilizes a 360-degree full length shroud to maximize the filter surface area. Fluids exit a hollow center, polypropylene filter tube, while solids collect on the surface of the spun polypropylene filter shell and settle to a solids purge drain. The shell cartridge is designed to hold a variety of filter types, including carbon, fibers, granulars, sands and powders. The filter housing is a one-piece molded polypropylene vessel with an operating pressure rating of 90 psi, a pH range of 1-14, and a maximum temperature rating of 110 degrees F. Reportedly the multi-filter is light weight, channeling and bypass resistant, has a housing that is corrosion-free and a molded threaded polypropylene lid that provides easy ser-



The Mighty Mini, manufactured by Abanaki Corporation, reportedly removes medium weight oil at a rate of two gallons per hour.

Abanaki Reveals New Line Of Oil Skimming Equipment

Abanaki Corporation, a manufacturer and supplier of oil skimming equipment, has introduced a new skimmer, the two-in. Mighty Mini. The new unit features a two-in.-wide belt that reportedly removes medium weight oil at a rate of two gallons per hour, double the capacity of the previous one-in. Mighty Mini.

Mighty Mini skimmers remove free-floating oil contamination, reportedly extending the operating life of coolant and wash water.

The skimmer is designed to minimize water content in disposed oil, and it comes with an optional Oil Concentrator, which further reduces the water content in disposed oil to less than one percent.

The unit is powered by a fan-cooled gear motor and is constructed of carbon steel with a chip-resistant powder coated finish.

For more information
Circle 57 on
Reader Service Card



Ashland Develops Kits For Controlling Shipboard Oil Spills



Pictured is the standard shipboard oil spill control kit from Drew Marine.

Ashland Chemical's Drew Marine Division introduced new shipboard oil spill control kits that enable oil tanker operators to satisfy OPA 90 requirements for discharge removal.

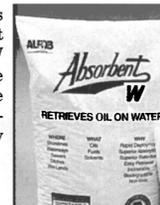
The enhanced shipboard oil spill control kit is designed to contain and absorb up to 12 barrels (504 gal) of oil, which is reportedly the regulatory standard for vessels with an overall length of 400 ft. (121.9 m) or greater. The kit consists of three weather and corrosion-resistant containers suitable for holding recovered waste; a variety of sorbents, which absorb only oil while separating water; a non-sparking hand scoop, shovel and bucket; a non-sparking pump; and protective clothing.

For more information on Ashland
Circle 54 on Reader Service Card

Lightning Lines Presents Safe Absorbent For Oil Cleanup

Absorbent W, a new environmentally safe absorbent manufactured by Lightning Lines Inc., utilizes natural capillary action, enhanced by a proprietary process, that reportedly absorbs all oil-based liquids and other liquid hydrocarbons into its fibers while repelling water. The absorbent prevents the leaching and draining associated with conventional polypropylene and diatomaceous clay absorbents, works at all temperatures, floats when saturated for recovery and is reportedly 100 percent organic. Made from reclaimed cellulose fibers, Absorbent W is silica-free. It reportedly absorbs two to three times more volume than polypropylene and up to 14 times more volume than diatomaceous clay. After absorbing liquid hydrocarbons to full saturation, Absorbent W can be disposed of by means of landfill, bioremediation or incineration.

For more information on Absorbent W
Circle 53 on Reader Service Card



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Circle 297 on Reader Service Card

Northern Know-How

Canada's maritime industry has quietly won some very significant orders for vessels and equipment in the past year. Long noted for its strong ties to the marine industry, Canadian companies, in general, offer a wide variety of technically advanced products and services.

CSL International, Seabulk Systems of Richmond, B.C., recently debuted a new, innovative self-unloading bulk carrier design which met the needs of Canada Steamship Lines (CSL) (See August 1996 edition of *MR/EN*, page 30).

CSL wanted to reduce up front and maintenance costs; and improve flexibility in cargo handling and environmental protection. According to **Rob Jones**, president of CSL International, Seabulk Systems, his company not only filled that need but created the template for all self-unloading bulk carriers of the future.

Seabulk, which has designed several self-unloaders in the past, has battled the problems of uneven belt loading and the resultant spillage and product loss, jamming of product in the hoppers, time loss due to a mismatch of ship and shore capabilities, as well as environmental issues such as dust and noise. Various attempts have been made to solve these problems by automating existing hopper-and-hold designs.

But, according to **Sidney Sridhar**, president of Seabulk Systems, these solutions resulted in only marginal improvements. Seabulk's radical design approach reportedly solves many of the problems with completely redesigned holds and delivery system.

Seabulk's Controlled Feeder Gate (CFG) is designed to eliminate the delivery problems inherent in the standard hopper/gate configuration. The 80-ft. (24.4-m) hoppers are open bottomed and capped with a reciprocating panel. Each panel has eight openings, the size of which are regulated by a closure plate. Hydraulic cylinders adjust the closure plates, and hence the opening size, to control the product flow rate. Another cylinder moves the entire panel back and forth along the hopper bottom. The hydraulic system is remotely operated by a computer designed by Siemens Electric, Industrial Systems Division, of Montreal, Canada. Mr. **Sridhar** presented his design to CSL International in Boston. To prove it would work, Seabulk built a

\$850,000, full-size prototype consisting of one complete cargo hold/hopper and

conveyor. They tested gypsum in the prototype and were able to demonstrate the 2,000 tons per hour flow rate.

CSL has purchased exclusive rights to the design for a four-year period. It currently has three ships underway at the Jiangnan Shipyard in Shanghai, China. Two of these vessels are for CSL International, and the third is for Egon Oldendorf.

The big news at MIL Davie is that Dominion Bridge Corp. (formerly the Cedar Group) acquired from La Societe Generale de Financement (SGF) 100 percent equity of the MIL Group (MIL Davie.) The deal was concluded on May 29th, at which time Dominion Bridge Corp. Chairman **Michel L. Marengere** said it would immediately put into place an overall business development plan to increase MIL's shipbuilding and industrial capability on a global scale. On the repair front, the yard accomplished several significant jobs throughout the year. The beginning of 1996 saw the completion and re-delivery of the modified M.V. *Cabot*, a cargo/container vessel owned by Oceanex of Montreal. The vessel was lengthened to increase its carrying capacity from 440 to 770 TEU.

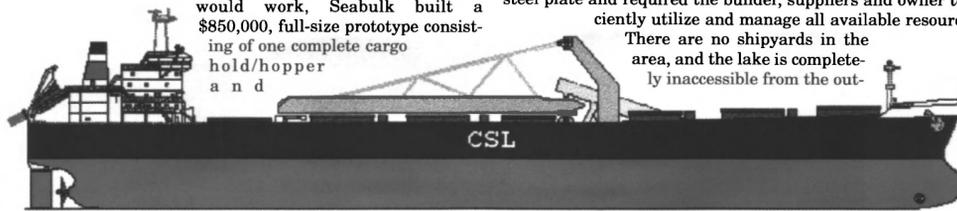
Another vessel lengthening involved the M.V. *Jos-Deschenes*, a passenger/car ferry which provides year round service from Baie St. Catherine to Tadoussac in the province of Quebec. The vessel was lengthened from 212 to 269 ft. (62.5 to 82 m), increasing its car-carrying capacity from 56 to 75. A second vessel, *Armand Imbeau*, was scheduled to have arrived on September 18 (and scheduled for re-delivery in December) for a similar lengthening.

The yard enjoyed newbuild triumphs during the year as well, and on July 11, a contract was signed for the construction of a new multi-service, car/passenger ferry for la Societe des Traversiers du Quebec. The ferry will be capable of fulfilling any service between Montreal and Riviere du Loup, and also the Saguenay River. The vessel will be built to Lloyd's Register classification standards and is scheduled for delivery in September 1997.

Custom Built

One of the more unique maritime projects coming from Canada in the past year was the 361-ft. (110-m) icebreaking log ferry built for Finlay Navigation. The vessel, built on the shores of land-locked Williston Lake, was constructed of .5-in. to .75-in. steel plate and required the builder, suppliers and owner to efficiently utilize and manage all available resources.

There are no shipyards in the area, and the lake is completely inaccessible from the out-



An innovative self-unloading cargo ship design from Seabulk for Canada Steamship Lines. The ship features an innovative, remotely operated hydraulic system, which was designed by Siemens.

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CANADIAN MARITIME REVIEW

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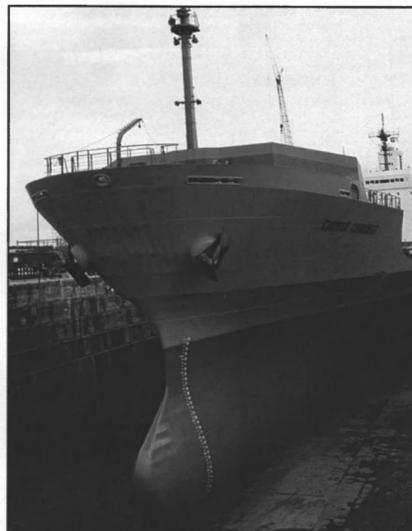
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Circle 345 on Reader Service Card

side world by water. Undaunted, Finlay Navigation — with assistance from its service and product suppliers — designed and built the vessel in less than 20 months.

Finlay Navigation Ltd. tasked Vancouver, B.C.-based Polar Design Associates with the design of the ferry, a design which includes four, 1,850-bhp Mitsubishi S16R diesel engines, each driving a Lips steerable thruster with open fixed-pitch propellers.

The vessel was also outfitted with a unique monitoring system, the Sea-Hornet V-MAC 5500, which monitors virtually all systems onboard, including 15 flood zones and 27 fire zones. The total system on the vessel supervises 152 sensors and pickup points via six data gathering panels located around the

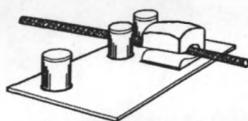


The 1,000-TEU Canmar Conquest entered Mill Davie's Champlain Dock for general maintenance, repairs and a new paint job.

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ship.

The vessel is believed to be the largest icebreaker in the world to carry its own cargo.

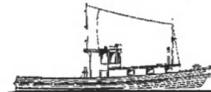
The 32,000-sq.-ft. main cargo deck accommodates 5,000 long tons of loaded logging trucks and short cut logs.

Ontario-based Thordon Bearings was selected to participate in the much ballyhooed Disney cruise ship project, supplying its open, water-lubricated Compac bearing system for the Fincantieri new-builds.

Thordon is no stranger with complying to the high standards of government work, and has recently been involved in the U.S. Coast Guard Seagoing Buoy Tender newbuild project at Marinette Marine, as well as the repair of aircraft carrier *Dwight D. Eisenhower* (CVN 69) at Newport News Shipbuilding.

Meanwhile, Allied Shipbuilders of North Vancouver, B.C., has delivered a 71-ft. (21.6-m) high speed patrol catamaran for the Royal Canadian Mounted Police, and is currently building a

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360-ft. (109.7-m), 600-passenger vehicle ferry for the British Columbia Ferry Corp.

The vessel is scheduled for delivery during the first quarter of 1997.

For more information on the companies mentioned in this article, circle the appropriate number on the Reader Service Card

Allied Shipbuilders	1
MIL Davie	89
Polar Design	2
Seabulk Systems	3
Siemens	4
Thordon Bearings	5

Evac-U8 Provides Asphyxiation Protection

Smoke and toxic fumes are the biggest killers in all fires, but in ships' fires in particular. A product introduced three years ago was designed to change that: the Evac-U8 Emergency Escape Smoke Hood. The product is designed for all ships, particularly passenger ships. Each product is the size of a soft drink can, and stored in a dedicated wall dispenser.

The product is distributed in Canada by Scardana Americas Brokerage, a company which offers a large number of products and services, including: compressor spare parts; coolers, charge air; cylinder covers; cylinder liners; diesel engine components; filters; gauges; and thermometers, to name a few.

For more information from Scardana Americas Brokerage Circle 6 on Reader Service Card

Alscott Keeps The Air Flowing

Alscott Air Systems Ltd. specializes in heating, ventilation and air conditioning (HVAC) systems for the Canadian marine and offshore industry, providing turnkey engineering, procurement, installation and commissioning (EPIC) services.

Formed in August 1995 by the previous management of Norris Warming Canada Limited, an HVAC company which provided services to the marine and offshore industry for more than 35 years, Alscott now provides the same

products and services as those previously supplied by Norris Warming. Within its first year of operation, the company has been involved in some high profile projects, including HVAC design engineering and drafting services for the Washington State Ferries

building at Todd Shipyards.

For more information from Alscott Circle 10 on Reader Service Card

Jastram Offers Independent Steering Control System

Jastram Engineering offers a

unique electronic control system for precise, accurate and fully independent control of twin steering gears.

Vessels with multiple rudder arrangements are specifically targeted to benefit from the system, and mechanical linkage between



So you were surprised to get the entire design package so fast! That's because you haven't visited our offices recently. Our Autoship systems have speeded up our work - and they let us use all of our knowledge, experience and creativity to develop the design that best meets the needs.

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Once we've optimized the ship numerically, we design the hull form in **Autoship**. It's a full NURBS-based 3-D modeling program and it's automatically faired.

Throughout, we can check hydrostatics and resistance on-line with **Autopower**. That saves us a lot of time, and we use it to look for extra speed.

Next, we define all the tanks and compartments in **Autohydro**. Calculating volumes and balancing the ship is easy and quick, so we can spend more time to optimize the layout.

We define the structural members in **Autobuild**; the program automatically checks for interference and generates a bill of materials and a complete list of weights. That eliminates manual drafting, saves the yard manhours, and reduces the usual worry about weight.

To save even more, we can export directly to NC cutting machines, radically reducing lofting and nesting costs.

Yes, all these programs come from the same place - Autoship Systems, the world's largest developer of Windows™-based marine software. With Autoship, the entire design process, from concept to cut plates, is a smooth, seamless flow.

Autoship helps us produce better designs, faster, with lower construction costs...benefits you appreciate, and our competitive edge!

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CANADIAN MARITIME REVIEW

the port and starboard rudders is not required.

Each vessel rudder, or set of rudders, is electronically controlled by a Jastram full follow-up amplifier system.

Rudders can be selected to operate in either fully synchronized

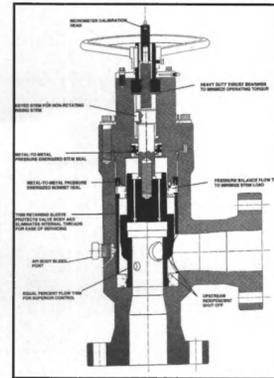
mode or independent mode.

For more information from Jastram
Circle 7 on Reader Service Card

Master Flo Enhances Service

Master Flo Valve recently opened

a new facility in Edmonton, Alberta, which it describes as Canada's first custom-designed subsea choke, design assembly and testing facility with one of the largest engineering groups specifically dedicated to the development of high tech, subsea and surface



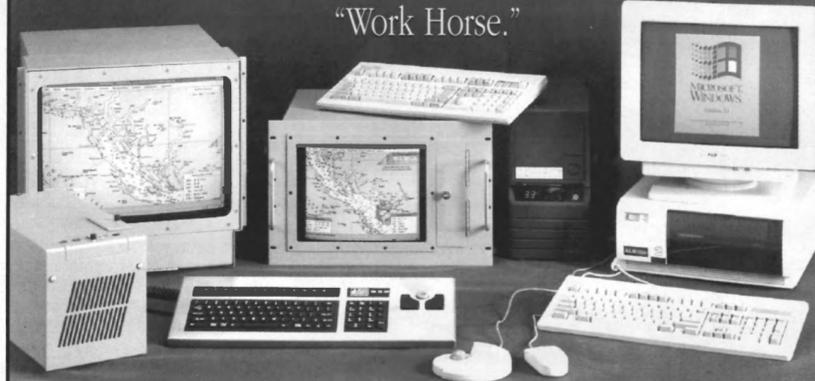
production chokes.

Since the company's inception in 1979, it has focused on the design and manufacture of quality, reliable, high performance choke valves and specialty control valves.

The company has been very successful in the Norwegian North Sea, Australian and Brazilian markets. Its subsea division has developed a complete manual and automated subsea choke package that includes: manually operated or hydraulically actuated, non-retrievable bolted bonnet; retrievable actuator-bolted bonnet; diver-assist insert retrievable, complete with clamp bonnet; tool insert retrievable; and ROV insert retrievable.

For more information from Master Flo
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Naval Architecture Firm Dedicated To Delivering Solutions

Peter S. Hatfield (PHL) — naval architects, marine engineers and marine consultants — has offices on the Vancouver waterfront complete with networked computer engineering and CADD drafting workstations. The company has extensive experience in new vessel design, conversion and modification construction and inspection, stability analysis, preparation of tender documents, tender evaluation, cost estimation and rendering assistance. To date, more than 725 projects have been completed since the company's incorporation in 1973.

Northstar Software Inc. (NSI) is an associated company of PHL,

dedicated to the development of PC software in support of naval architecture, ship design and vessel operations. SHIPHUL 2000, SHIPWT and SHIPROP are the principle PC packages which have been developed and marketed by NSI to date.

For more information from
Peter S. Hatfield

Circle 9 on Reader Service Card

SJSL Hones Technology Skills On Canadian Patrol Frigate Project

Saint John Shipbuilding Ltd. (SJSL) is a technically advanced shipbuilder, but more accurately, it is a next-generation technology company offering the marine industry a wide variety of products and services.

SJSL has invested heavily in its facilities, its methods and its team, and many of its successful practices have been developed during its management of the Canadian Patrol Frigate Project.

In its 70-year history, SJSL has built and repaired a wide range of commercial and military vessels for shipowners and governments in Canada and abroad.

In 1983, SJSL won the job of prime contractor and lead shipbuilder for the \$6.2-billion Canadian Patrol Frigate Project. In addition to design and construction of 12, leading edge frigates, SJSL's total project responsibility included delivery and complete support infrastructure:

- a bottom-up ship maintenance profile
- maintenance and support planning for the ship's complete operational life-cycle;
- sparing recommendations and procurement;
- a computerized supply system and supply depots;
- comprehensive technical documentation;
- a complete training program; and
- shore-based testing and training facilities.

For more information from
Saint John Shipbuilding Ltd.
Circle 12 on Reader Service Card

The Midas Touch

GasTops offers MIDAS, a portable system for the collection, storage and analysis of machinery operating data.

MIDAS can reportedly be used for control system tuning, performance surveys, troubleshooting, periodic data collection to support condition based maintenance, or for any task requiring collection and analysis of machinery operating data.

MIDAS is composed of: a data acquisition unit; a data processor; sensors and cables; lightweight enclosures; and operating software.

Up to 20 MIDAS units can reportedly be directly connected on a local or wide area network.

For more information from GasTops
Circle 11 on Reader Service Card

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SNAME to meet in Canada in 1997...

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For more information on the SNAME exhibition, contact: SNAME, 601 Pavonia Ave., Jersey City, N.J. 07306, tel: (201) 798-4800.

October, 1996

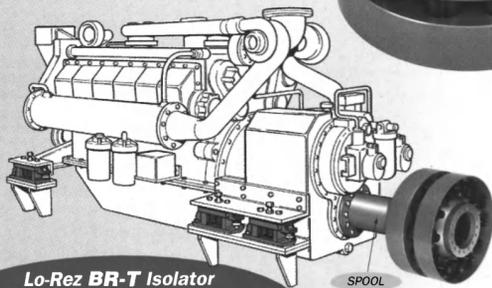
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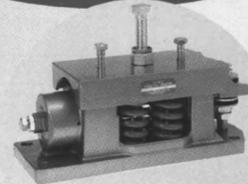
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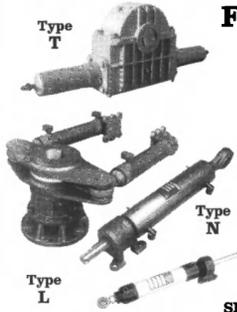
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Thordon Offers Bearings Solutions

Thordon Bearings Inc., a member of the Thomson-Gordon Group, is a manufacturer of pollution-free performance marine bearing systems. The Canadian bearings manufacturer offers its Thor-Lube system — which is comprised of Thordon XL bearings lubricated with Thor-Lube, a water soluble, biodegradable polymer based lubrication in a sealed stern tube — designed to offer shipowners a reliable, non-polluting option to conventional, oil-lubricated systems.

The Thor-Lube system is reportedly gaining popularity, and was recently specified for a five-ship project for Wagenberg Shipping and the conversion of Red River Shipping's *M/V Advantage*.

Another significant contract for Thordon is the selection of its open, water-lubricated Compac bearing system for the new Disney cruise ships being built by Fincantieri in Italy.

Long life guaranteed

Thordon offers a guarantee on the wear life performance of its Thordon SXL self-lubricating pintle, stock and carrier rudder bearings. Guaranteed for 10 years in newbuild applications and approved by all major classification



Thor-Lube Stern Tube Bearings

societies, Thordon elastomeric rudder bearings absorb shock without permanent deformation, are highly abrasion resistant and do not require grease.

Marinette Marine ordered propeller shaft and rudder bearing systems for the new Seagoing Buoy Tenders for the U.S. Coast Guard, while the U.S. Navy has ordered the conversion of the rudder pintle bearings on CVN 69, the aircraft carrier *Dwight D. Eisenhower*, to grease-free Thordon SXL. The work is being carried out at Newport News Shipbuilding.

For more information from Thordon
Circle 5 on Reader Service Card

Fleet Technology Ltd. Continues Expansion

Fleet Technology Ltd. (FTL), with a strong history with icebreakers, model tests and sea trials, continues to expand its marine division. In recent months, FTL has developed a hull structural integrity program, and has added hull inspection services to support this. A number of damage assessment and repair procedure projects have been completed, these involving finite element modeling and weld repair expertise. Other services provided have included: estimation of motions and sea loads; dynamic loading analysis; application of various class and regulatory codes; and fatigue analysis. FTL also has fast ferry design and operation technology, and recently conducted a feasibility study of fast ferries for Canadian ferry routes. Software development includes a program delivered this year which provides guidance on the selection of moorings, advising on chain type, size, length for a selected floating device and environmental conditions. The Windows version of the ShipmoPC seakeeping program (which is sold worldwide by SML software, FTL's subsidiary) has recently been launched.

For more information on FTL
Circle 13 on Reader Service Card



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- GMDSS

Hawboldt Partakes In Coastal Defence Vessel Program

Hawboldt Industries, located on Nova Scotia's East Coast, manufactures a wide product line including

deck machinery, propellers, steering systems and fishing hardware.

During the past year, Hawboldt has manufactured 10 electro-hydraulic windlasses and capstans for the Royal Canadian Navy's Maritime Coastal Defence Vessel program, a new minesweeper class.

The windlasses incorporate the hydraulic power unit in the main windlass assembly, which is designed to provide a cleaner fore-deck and eliminate through-deck hydraulic fittings.

Plans are underway to expand the in-house foundry and propeller finishing shop. At present, 55 per-

cent of Hawboldt's 120,000 sq. ft. is dedicated to the production and repair of propellers.

The introduction of a more comprehensive propeller line, suitable for boats up to 95 ft. (28.8 m), is the intention.

For more information on Hawboldt
Circle 16 on Reader Service Card

OSL Leads The Way, Electronically

Company unveils new software release

Offshore Systems Ltd. (OSL) is a leader in Electronic Chart Display and Information Systems (ECDIS). Pioneers in the industry, OSL has manufactured ECDIS for vessels ranging from passenger ferries to 1,000-ft. (304-m) bulk carriers.

In March 1996, OSL was chosen as one of the companies representing high technology achievements in Canada for Canada Post Corporation's 1996 high technology stamp series. The stamp was intended to commemorate significant high technology areas in which Canadians have made important accomplishments.

OSL's product, Electronic Chart Precise Integrated Navigation System (ECPINS), reportedly enjoys high recognition and use in North America. The versatility of ECPINS is illustrated by an order from the Canadian Coast Guard, which purchased 12 systems for training institutes and its vessels. Other recent orders were from the U.S. Coast Guard, which ordered two ECPINS for its new buoy tenders, and from the U.S.'s Great Lakes Inc., which ordered two more systems for its commercial fleet. In September 1996, OSL released its latest ECPINS software, ECPINS Version 1.5. Version 1.5 offers new features for route planning, parallel indexing, ARPA Tracked Target interface and many other useful navigational features.

For more information
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MARINE BEARING ENVIRONMENTS DEMAND POLLUTION-FREE RELIABILITY



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Today's environmental challenges and government regulation demand a move from traditional oil lubricated stern tube systems to pollution-free alternatives.

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For pollution-free reliability in your marine bearing application contact Thordon Bearings Inc. or your local Thordon distributor (located in over 55 countries around the world).



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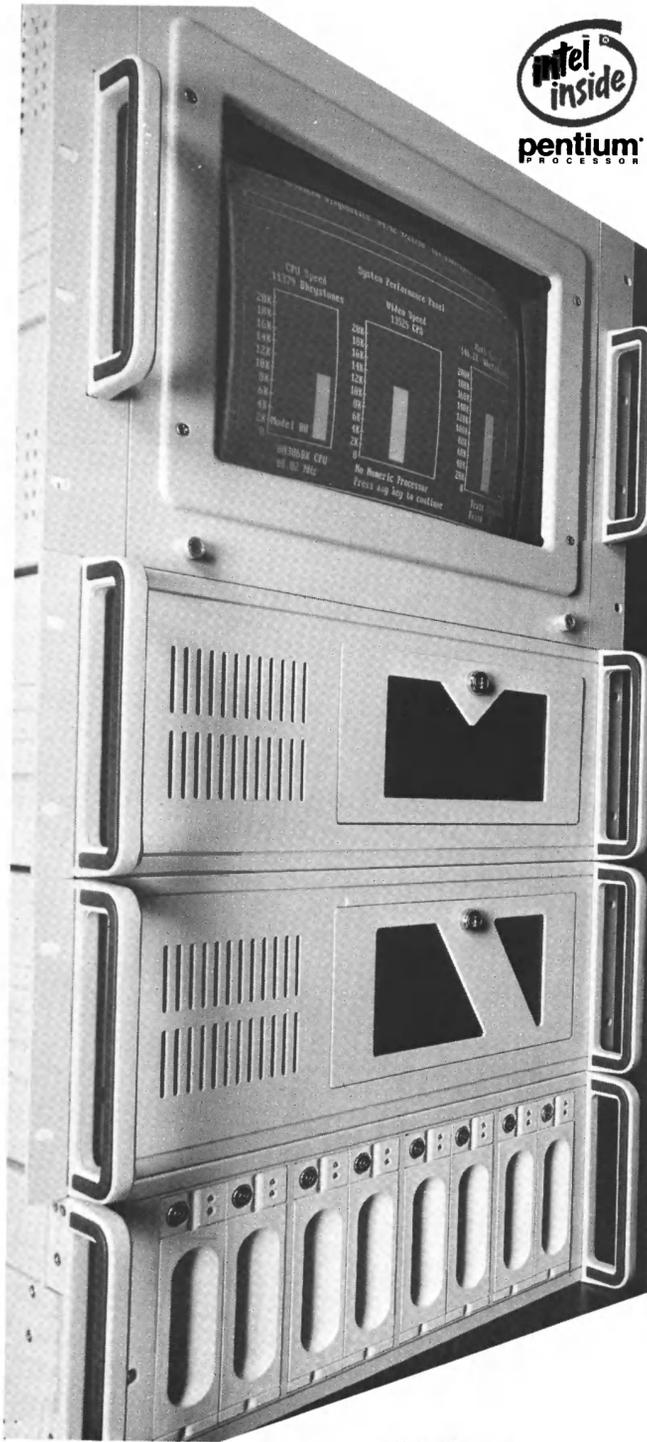
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CANADIAN MARITIME REVIEW

Clarke Chapman Equipped To Fill Many Needs

Clarke Chapman Canada's marine division has recently won three orders for offloading systems for the offshore industry.

The systems each incorporate a 33-ft. (10-m) high hose reel, which stores more than 330 ft. (100 m) of 16-in. or 20-in. hose. The systems are to be used at locations in the North Sea and Atlantic Ocean to transfer cargo oil from FPSO vessels to shuttle tankers.

The company's crane division is currently involved with bulk materials handling contracts in South Africa, India, China and Egypt. Recent installations include a turnkey coal handling terminal in Liverpool, England; an alumina handling system in Murmansk, Russia; and a shiplift system — with five high-integrity dockside and overhead cranes — at the Clyde nuclear submarine base in Scotland.

Clarke Chapman Canada, part of the Rolls-Royce Materials group, supplies a wide range of custom-built equipment for naval and commercial shipbuilding, ports, shipyards, bulk terminals and the oil/gas offshore industry.

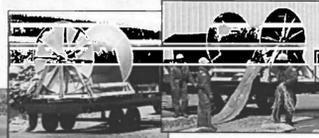
Products include deck machinery, deck cranes, steering gear, replenishment-at-sea systems, all types of rail mounted and pedestal cranes, ship loaders/unloaders, stackers/reclaimers and more.

For more information on the company
Circle 75 on Reader Service Card

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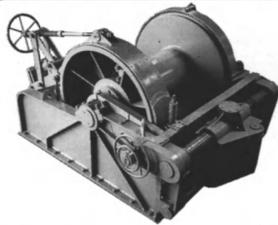


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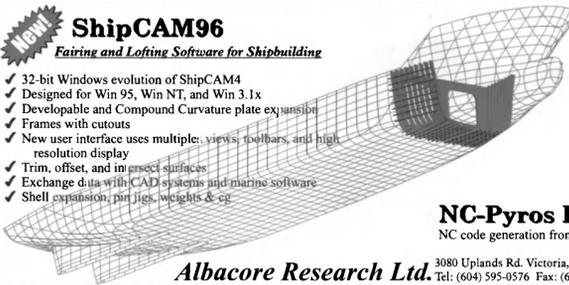
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Technomarine Expertise Lies In Getting People On & Off

Technomarine is a pacesetter in the field of marine public access systems and floating berthing. The company has been active in the field of small craft harbors for more than 15 years, primarily in the design and construction of marine facilities, but also in the development of public access marine gangway systems and floating berthing facilities for passenger ferries ranging from 10 to 100 tons. The company has seen the demand for proper public access systems and floating berthing facilities increase dramatically in the past five years, due in large part to rapid growth in the fast ferry, and other passenger vessel markets. Technomarine has developed mechanically articulated

gangway systems which are required for supporting five different types of passenger vessels with a gangway capable of meeting ADA standards. For 1997, Technomarine has developed — under contract from the government — a multi-level access platform for a cruise ship or ferry.

For more information on the company
Circle 76 on Reader Service Card

Marine Safe Electronics Monitors Deterioration

Marine Safe Electronics of Canada Ltd. has focused on a costly problem, namely the environmentally-caused deterioration of insulation that takes place while the motor is idle. MSE has supplied its MotoSafe and FailSafe monitors to major marine clients around the world. Insulation deterioration can prove costly as it can lead to motor failure or burnout when the motor is restarted after an idle period. MotoSafe and FailSafe continuously monitor insulation, and can alert an owner days or weeks in advance of it reaching failure level.

For more information on the product
Circle 83 on Reader Service Card

Timberland Equipment Supplies Range Of Winch/Windlass Systems

Timberland is a leading Canadian designer and manufacturer of a variety of winch/windlass systems for anchor, mooring and towing applications. All units are available with diesel, electric or hydraulic drives. A new product for 1996 is a 100-ton double drum anchor/towing winch. A 200-ton winch for riser and anchor leg installations on FPSOs will be introduced later this year. This electro-hydraulic winch has capacity for more than 500 m of 70 mm diameter wire rope.

For more information from Timberland
Circle 82 on Reader Service Card

Kobel Expansion Fuels Growth

Kobel Manufacturing Co. recently moved to more expansive, 60,000-sq.-ft. facilities, and is reportedly now positioned to continue expansion of its production and product lines.

In business since 1962, the company has a strong history of expanding its product lines from mechanical and pneumatic controls, control systems and disc brakes to include steering systems and electronic versions of its control systems. Kobel has worked to maintain top quality of manufacture through all the changes, and has been successful in doing so by keeping virtually all phases of manufacture under its own control.

From design through delivery, the company employs stringent controls over internal and external-supplied parts and services to control quality and costs.

For more information on Kobel
Circle 80 on Reader Service Card

Allied Keeps Busy With \$15M In Contracts

Two significant contracts worth more than \$15 million have significantly contributed to Allied Shipbuilders' good year. The family-run shipbuilding, ship repair and engineering firm delivered a 69-ft. (21 m) high-speed patrol vessel to the Royal Canadian Mounted Police

in January, and is currently completing a 361-ft. (110-m) century class ferry for B.C. Ferries. The \$14 million ferry contract is the largest for the yard in a decade, said contracts manager **Malcolm McLaren**.

For more information on Allied
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October, 1996

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CANADIAN MARITIME REVIEW

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DBC has developed a full range of liferafts to meet coast guard (both U.S. and Canadian) and

international specifications and standards. It was reportedly the first North American liferaft maker to successfully complete testing and obtain approvals for both the 50-person liferaft to SOLAS and the 100-person platform from both the CCG and USCG.

For more information on
Dunlop-Beaufort Canada
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MGI Opens Marine Safety Center

MGI International Marine Safety Solutions Inc. (MGI) manufactures marine safety equipment, distributes products and provides professional services including evacuation systems design, equipment installation and supervision, shipboard safety management and contingency plants and comprehensive crew training packages.

Products available from MGI include the Life Raft System (LRS), a self-contained liferaft stowage and deployment system which meets SOLAS requirements and offers a number of other advantages to shipowners, operators and builders.

MGI's recently opened its Total Marine Safety Center, a division of MGI America Inc. The center, located in Illinois, specializes in evacuation and fire fighting training for personnel in all marine applications.

For more information on MGI
Circle 95 on Reader Service Card

Wagner Offers Hydraulic Steering Systems

Wagner manufactures hydraulic steering systems including five different types of steering gears in 60 different sizes, as well as controls systems, rudder angle indicators and other accessories. All Wagner products are manufactured in Summer Equipment's manufacturing plant in Vancouver, B.C. Wagner products are sold throughout a worldwide network of distributors and agents providing sales, service and technical assistance. Wagner offers special systems design, installation supervision, in-plant and field service, in addition to general product support. Wagner products meet international classification society requirements and can be supplied with approval certificates.

Summer Equipment is an independent Canadian company whose activ-

ities include manufacturing, fabrication, machining, distribution, marine towing and marine freight terminal operation.

For more information on Wagner
Circle 97 on Reader Service Card

OceanVision Provides Maritime Software And Products

OceanVision Systems Inc., is a Canadian company providing software for installation in a wide range of marine applications. More than 300 systems are reportedly in operation, including on government vessels and Canadian Coast Guard vessels; for fishing vessels operating on both coasts. The software reportedly provides one of the most dynamic displays of chart and navigation information. By push-button operation, the user is able to display any region of a chart, or charts, on-screen. For comprehensive uses, the user can reportedly switch instantly from hydrographic charts to bathymetry maps.

For more information on OceanVision
Circle 98 on Reader Service Card

ARL's Software Helps Manage Ship Drawings

Albacore Research Ltd. (ARL) has added CAD-Link to its shipbuilding software produces. CAD-Link is designed to provide shipbuilders with an easy-to-use, power ship production program to create and manage the large number of drawings required for each project. The program is designed to run with AutoCAD R13 for Windows, Windows 95 or Windows NT.

CAD-Link uses a 3-D model showing a view of all part drawings in the vessel or construction block to generate a 2-D drawing of selected 3-D parts ready for design and drafting operations. The process of establishing the correct user coordinate system is automatically taken care of, and changes to working drawings are linked to a copy of the 3-D model at the original location for ease of drawing management. The product provides full structural modeling within AutoCAD 13 for 3-D modeling with the ease of working in 2-D. ARL also released ShipCAM96, a 32-bit Windows evolution of its ShipCAM4. ShipCAM96 is a fairing and lofting program that can be used for all types and sizes of vessels, and is designed to integrate easily with all major CAD systems using DXF exchange format.

For more information on CAD-Link
Circle 81 on Reader Service Card

Seabulk Reports New Activities

Seabulk Systems Inc., once involved only in bulk materials handling systems for the marine industry, has added to its repertoire since 1989 when the company started as an engineering firm.

Seabulk has completed the engineering work for new generation self-unloading ship built in Jiangnan Shipyard, China, for Canada Steamship Lines and Egon Olderdorff. The vessel is scheduled to be constructed in November, and launched in 1998. Seabulk is currently involved with a handymax self-unloader project

for Marbulk Shipping Inc. This project is scheduled for completion in 1997. In addition, asemi-submersible transhipper for barge to ship transfer of bulk cargo is expected to be in operation by 1998.

For more information on Seabulk Systems Inc.
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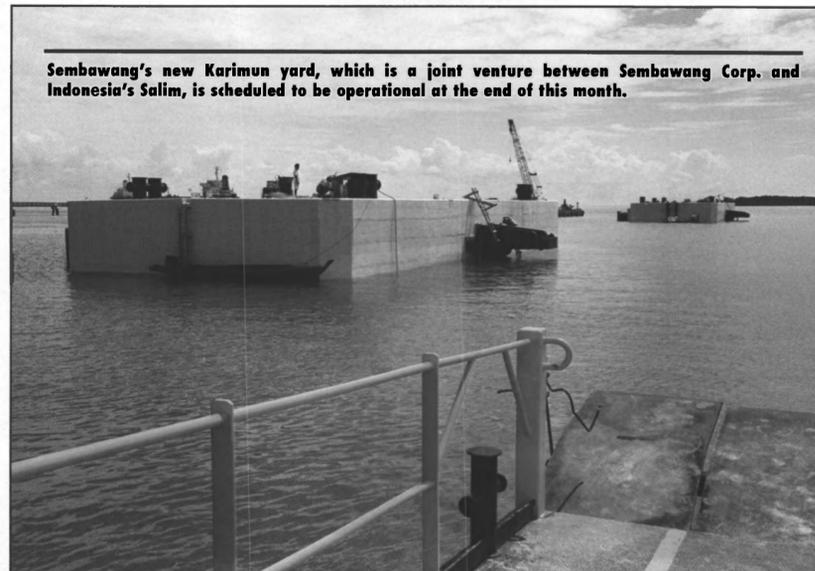
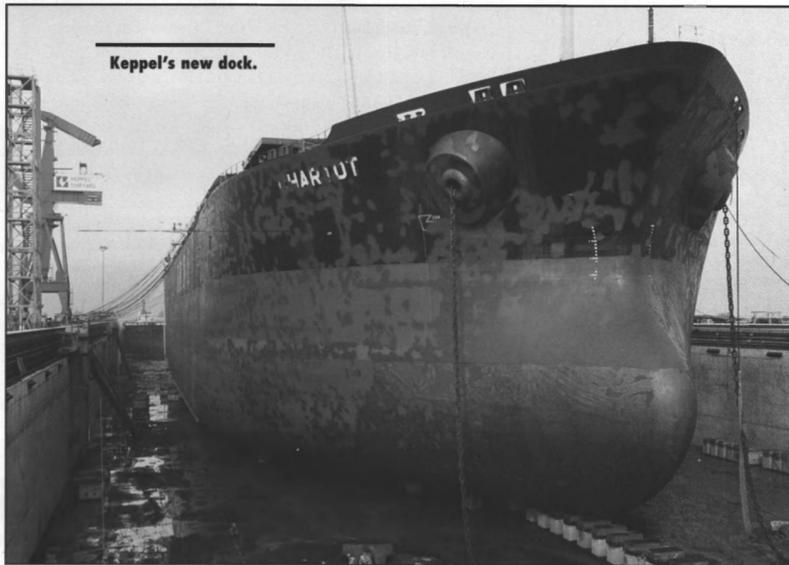
Stretching the limits

Despite contentions that the world already has too much new build and repair capacity, expansion continues in the Far East

by Alan Thorpe, international editor

Indonesia appears to be the current favorite for expansion programs, especially from Singapore interests. Progress towards a late October official opening date at Sembawang's new Karimun yard is well underway. In addition, a new, 65,000-dwt capacity floating dock — Perdana Dock — built by Sembeth, was scheduled to leave Sembawang Shipyard, Singapore, on August 24th.

At press time, the 1,312.3-ft. (400-m) finger pier was already constructed as were the two mooring dolphins for the floating dock. There will also be two, 15-ton capacity cranes, one on the floating dock and the other on the pier, installed at about the same time. A visit to the new Sing\$100-million facility, which is a joint venture



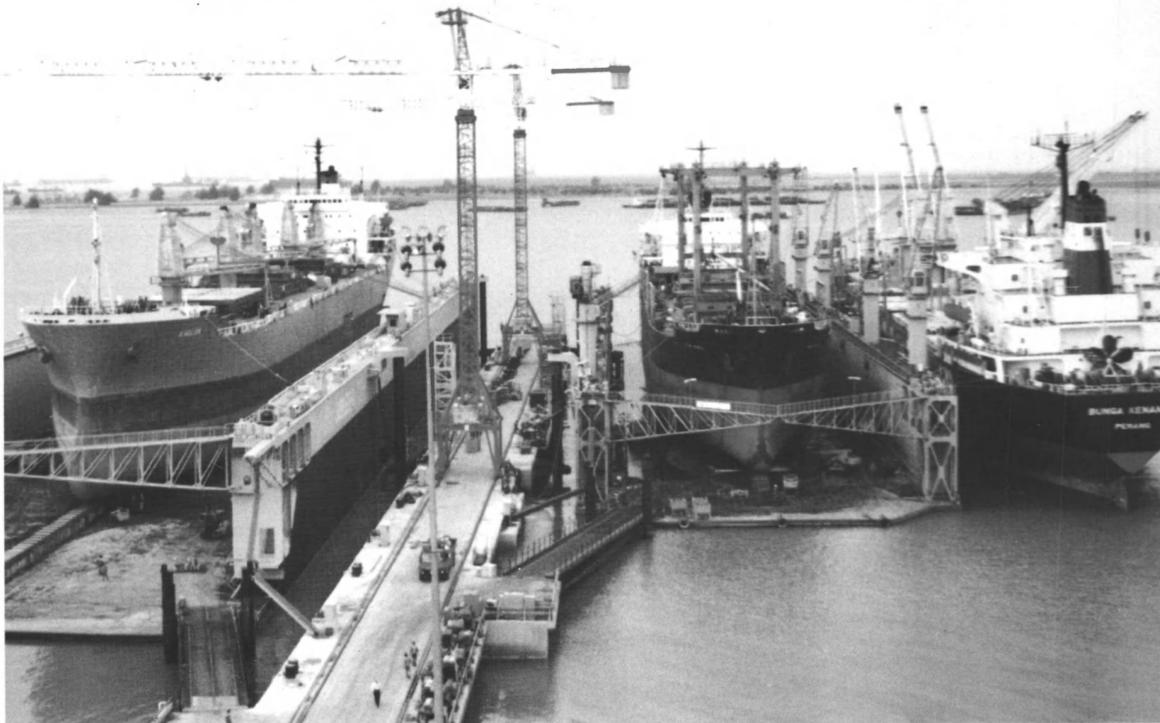
Sembawang's new Karimun yard, which is a joint venture between Sembawang Corp. and Indonesia's Salim, is scheduled to be operational at the end of this month.

between Sembawang Corp. (65 percent) and Indonesia's Salim (35 percent), demonstrates the type of investment Sembawang Corp. is willing to put into this impressive facility.

Singapore's Pan United has also announced that it will build a new shipyard in Pulau Batam, an Indonesian island located southwest of Singapore, approximately 30 minutes away by ferry. The Sing\$30-million investment scheme will involve the construction of a site 20 minutes away from the ferry port of Sekupang in an area known as Tanjong Uncang. The initial phase will involve the relocation of Pan United's two smaller floating docks to the new site to begin repair operations during the end part of next year. The project involves a joint venture agreement with an Indonesian company, and negotiations are reportedly underway. Meanwhile, construction consultancy Posford Duvivier is continuing with a feasibility study; this company is also likely to be handed the consultancy contract for the construction of the yard. In

(Continued on page 66)

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Fast Ferry Business Booming At Bazan

The first Mestral-class fast ferry, *Albayzin*, was delivered in October 1994 to Argentinian operator Buquebus and chartered to Sea Shuttle in New Zealand for operation across the Cook Strait between Wellington and Picton. The second Mestral-type fast ferry, *Alcantara*, was delivered to owner C. Trasmeditarranea in May 1995, and entered service on the Palma de Mallorca route on June 4, 1995 until September 15, 1995, when it was deployed to the Straits of Gibraltar route (in place of *Albayzin*). The third Mestral-type fast ferry, called *Almudaina*, was delivered to C. Trasmeditarranea in May 1996, and started its operational life on June 1 on the Palma de Mallorca route.

Regarding Bazan's vessels under construction, the first Alhambra-

type fast ferry — *Giant Mestral* — was launched in the San Fernando Shipyard on July 2, and will be commissioned this month. The vessel's owner — Buquebus of Argentina, also owner of *Albayzin* — has announced that *Giant Mestral* will enter service on the River Plate for the 1996/97 Argentina summer, to be deployed later to the Kattegatt Sea for the 1997 northern hemisphere summer.

The Alhambra class is similar in concept (but larger) than Mestral, in that the main characteristics of deep-V monohull, all-aluminum construction and conventional diesel propulsion are maintained. Alhambra is divided into four decks, the upper two for passenger accommodation and the lower two for vehicles. Nine transverse bulk-



Pictured is *Alcantara*, the second Mestral-type fast ferry delivered by Bazan.

heads subdivide the vessel longitudinally and the bridge has been elevated above the passenger upper level to provide a 360 degree vantage. The main level of the continuous garage area has a capacity for 135 cars and the upper level for 109 cars.

The propulsion machinery consists of five propulsion units, four

on the sides and one in the center. Each lateral propulsion unit consists of one Caterpillar 3616 diesel engine which drives a steerable and reversible KaMeWa 112S waterjet intercoupled by a direct drive reduction gearbox. The central propulsion unit, which serves

(Continued on page 64)

	Alhambra class main particulars	Mestral class main particulars
Length o.a.	411 ft. (125.2 m)	312 ft. (95 m)
Maximum breadth	61.3 ft. (18.7 m)	48 ft. (14.6 m)
Depth	37 ft. (11.2 m)	29.2 ft. (8.9 m)
DWT	475	175
Propulsion power	33,900 kW	20,000 kW

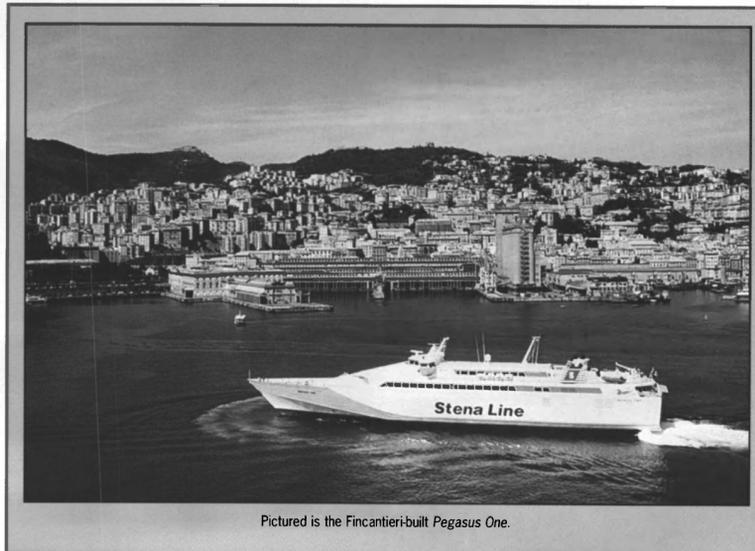
Rapid Access Structural Fire Protection Released To World Market

Colbeck & Gunton, specializing in fast ferry fire protection, has introduced its new Rapid Access structural fire protection system. The system was developed more than two years ago, and installation has begun on the new Incat 86-m (282.-ft.) catamaran.

The Rapid Access system, developed in conjunction with insulation supplier Thermal Ceramics, can be sold as a package which includes the Rapid Access system, the original structural fire protection system and the new light weight structural fire protection system. These systems reportedly allow installation in all areas of the vessel.

The new Rapid Access system is reportedly to first to be tested to the new IMO regulations specifically designed for aluminum high speed craft.

For more information on Colbeck & Gunton
Circle 45 on Reader Service Card



Pictured is the Fincantieri-built *Pegasus One*.

FAST CRAFT REVIEW

New Alloy Development Cuts Hull Weight, Maintains Strength

Getting from Point A to Point B as quickly and efficiently as possible has always been one of humankind's biggest challenges, and obsessions. The fast craft shipping industry has recently been borrowing a page from its aircraft manufacturing counterparts, converting from steel structural designs to all-aluminum production.

These new all-aluminum big boats with the catamaran dual hulls are clearly making waves in the fast craft and ferry business. First and foremost, by replacing the steel with lightweight aluminum and a more modern, hydrodynamic design, these vessels are able to carry bigger loads at faster speeds, while being powered by similar engines. The new style reflects more than just a switch in metal materials, though. It also marks a cultural shift in the design and utilization of new technologies.

"In designing materials for today's transportation equipment — whether we're talking about a large cargo aircraft or a 100,000-hp catamaran ferry — we are using a much more detailed team approach to develop products, rather than just improving currently available alloys," said **Alfred Haszler**, Technology manager for Hoogovens Aluminium Walzprodukte GmbH of Koblenz, Germany, a leading supplier of aluminum plate, sheet, coil and extrusions.

"We are using integrated product teams made up of engineers from our rolling mill in Koblenz and our research center in Holland to develop materials to maximize the performance of the boat.

Additionally, we are working with welding rod suppliers, naval architects and DNV experts to provide a total compatible material system. For the North American market, we have a team of technical, commercial and customer service personnel located in our Secaucus, N.J., facility to support the growing shipbuilding industry."

A Splashing Debut

Hoogovens' foray into the fast ferry industry came recently with the production of the high-speed catamaran ferry HSS 1500, which was manufactured by Finnyards, a major shipbuilder headquartered

in Rauma, Finland. Hoogovens' facility in Koblenz, Germany, supplied all of the aluminum plate for the HSS 1500, which is operated by the Stena Line AB, Gothenburg,

Sweden. The HSS 1500 is 410 ft. (125 m) long and 131 ft. (40 m) wide, about five times bigger than conventional high-speed ferries in operation today, yet twice as fast at

speeds of up to 40 knots.

The unit uses four waterjets in total, a larger and smaller one in both hulls, powered by four GE gas

(Continued on page 65)

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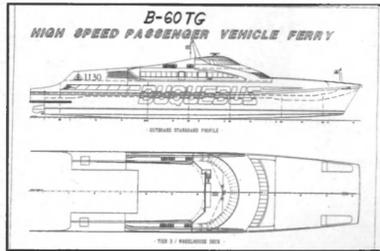
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Circle 239 on Reader Service Card

FAST CRAFT REVIEW



B-60TG main particulars

Length o.a.	254 ft (77.3 m)
Beam	62.3 ft (19 m)
Draft	7 ft (2.1 m)
Propulsion power	32,000 kW

as a booster, available in the ahead mode only, consists of two Caterpillar 3616 engines each driving a KaMeWa 140B waterjet intercoupled by a direct drive double input and single output reduction gearbox.

Three diesel generators of 437-KVA output each provide the required auxiliary power. In addition, an emergency genset which is capable of supplying all essential equipment is located on the main

deck. Also building at the San Fernando Shipyard for Buquebus is a vessel, known as B-60TG, which is slated to be the fastest fast ferry every built. The B-60TG will be commissioned sometime next summer, and is intended for service on protected areas such as the River Plate or in some parts of the Baltic Sea.

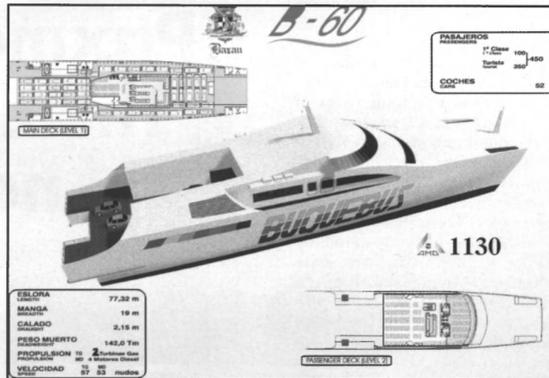
The B-60TG is divided into two decks, the upper for passenger accommodation and the lower for duty-free shops and cars. The machinery plant is located in the two aft-most watertight compartments, the forward containing the gas turbine room and the aft housing the waterjet local. The propulsion equipment is formed by two ABBGT35 gas turbine engines (one in each hull), each driving a steerable and reversible KaMeWa 112S waterjet through a flexible cou-

pling and gearbox. Two generating sets of approximately 400 kW each will be installed.

Also included in Bazan's current orderbook are two more fast ferries, *Alhambra II* and the B-60 MD. *Alhambra II* is very similar to *Alhambra*, but with a transport capacity of up to six coaches instead of four, and a maximum speed of 43 knots. This higher speed will be reached by using six

Caterpillar 3618 engines, presently in a development phase in a joint venture between Caterpillar and Bazan, and expected to be available on the market next September. The B-60 MD is a vessel with the same arrangements as the TG, but propelled by four Caterpillar 3618s, with a service speed of 53 to 54 knots.

For more information on Bazan Circle 46 on Reader Service Card



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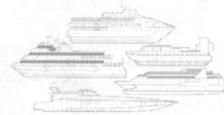
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The BUSINESS of SAFETY

FAST CRAFT REVIEW

(Continued from page 63)

turbines with a total of 100,000 hp.

The boat can accommodate 1,500 passengers and 375 cars, or 100 cars and about 50 trucks. All told, the HSS 1500 uses 1,000 tons of aluminum plate spread over 100,000 parts.

With the successful experience of the HSS 1500 in its wake, Hoogovens launched a major R&D initiative designed to develop an advanced materials system that would yield even greater reductions in structural weight over existing aluminum boats, which in turn would deliver a faster-moving, stronger and more durable vessel.

The result of this major program is a new alloy called Alustar, that is reportedly 20 percent stronger than the standard AA5083, both before and after welding.

In addition, the manufacturer reports that the new alloy features improved corrosion resistance, less distortion during welding, a smaller heat-affected zone and improved fatigue life of welds.

The new 5000-series alloy (patent applied) also offers improved melt quality to provide sound weld joints and superior bending behavior.

The superior strength of the new alloy was achieved through a combination of alloy, chemistry and process modifications. Its improved weld strength is derived from the overall strength increase in both the plate and heat-affected zone.

At the same time, carefully controlled precipitation of intermetallics helps the new alloy achieve a high level of corrosion resistance. Applications are also being developed for similar alloys for use in extrusions for the marine industry.

"The major breakthrough is that this material is not just 20 percent stronger than conventional alloys in the base mechanical properties, but also much stronger in the weld zone," said Mr. Haszler. "These boats are very large, welded structures — so you must achieve an increase in the weld zone strength, which historically has been one of the limiting design factors in the previous generation of aluminum alloys. Existing alloys with higher magnesium content are available with higher strength but inferior corrosion resistance. By working closely with companies like International Catamaran and

Finnyards, we identified the need to produce a material with a much higher strength, and we have the technical and production resources with our plant in Koblenz to develop this material as well as the global marketing and distribution capability to make it available for a wide range of applications

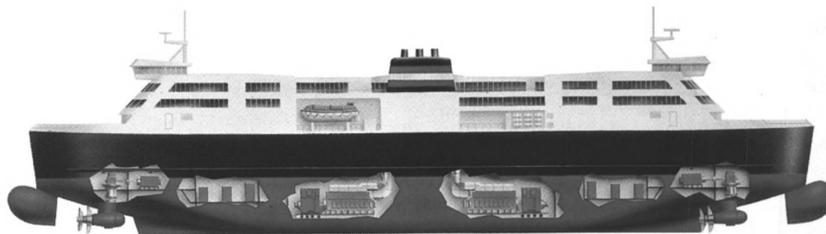
throughout the world."

The Koblenz facility houses a 148-in., four unit high reversible hot rolling mill with a modern gauge control system for tight tolerances.

The state-of-the-art Koblenz equipment allows for the production of plates up to 72 ft. (21.9 m)

long, 130 inches wide and thicknesses down to .118 inches for sheets and plates and up to 15.7 inches thick for the rings used in the supports of the waterjet propulsion engines.

For more information on Hoogovens
Circle 79 on Reader Service Card



In addition to the four PWM propulsion drives, ABB is supplying the five 3,620 kW main generators and the 6.6 kV main switchboard for the two double-ended ferries.

PWM Propulsion Power

The Danish ferry operator DSB Rederi selected variable-speed electric drives to power the four 3,000 kW contra-rotating main propulsion units on board their two new and innovative double-ended ferries being built at the Ørskov Shipyard.

They opted for speed-controlled AC cage induction motors because of their inherent simplicity, reliability and minimum maintenance requirements—not to mention their superior fuel economy, especially when combined with contra-rotating propellers.

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Circle 315 on Reader Service Card

Yard expansion continues in the Far East

(Continued from page 60)

contrast to Sembawang's Karimun development program, which involves a very remote area, there are already a number of industrial sites on Pulau Batam, including the PT Batamas repair yard, the PT Nanindah Mutiara newbuilding yard and an offshore fabrication yard owned by McDermott.

The two new graving docks at Jurong Shipyard Ltd. (JSL) and Keppel have both been virtually fully occupied throughout the past few weeks, although official opening ceremonies were scheduled during late August (Keppel) and October (JSL). The 400,000-dwt capacity ULCC graving dock at JSL has now had its fourth ship in for general repair work, the ship involved being Tokyo Tankers' 258,096-dwt VLCC *Sunrise 11*. This vessel was preceded by 258,090-dwt Japanese VLCC *Idemitsu Maru*, 413,160-dwt *Chevron South America* — the largest ship ever to be drydocked in Singapore, and 87,768-dwt Malaysian tanker *M.T. Melor* — the first ship to use the facility.

Keppel's new 330,000-dwt capacity graving dock at the Tuas shipyard was opened on August 24th by the Singapore Prime Minister as the latest part of Keppel's reorganization program to centralize ship repair operations at Tuas following the closure of the City yard earlier this year. The facility has already had six ships in for general repair work, the latest being Navix's 124,292-dwt bulk carrier *Chariot*.

A second Floating Storage Unit (FSU) conversion contract has been placed with JSL by Singapore-based Tanker Pacific. The 178,344-dwt *Intan* project for Conoco has been underway for the most part of this year; the vessel is now nearing completion. The second vessel is the 323,094-dwt, 1974-built *Deep Blue*, formerly *Saint Constantinos*, which has been laid up in Jebel Ali since July 1994 with its sistership *Saint Dimitrios*, which is still there. The vessel is to be chartered to Maxus when the conversion is completed.

The Singapore ship repair industry is somewhat bullish at present

despite price levels remaining lower than many yards would like to see. The large tanker market is also a very important market in which the Singapore yards operate. Sembawang has been particularly successful during this year in the fourth survey market involving VLCCs, with seven such contracts already completed. The latest concerns 283,861-dwt *Boree*, which is managed by France

Shipmanagement on behalf of Euronav Luxembourg SA.

On the newbuilding side of Singapore's maritime industry, it has been announced by Sembawang Corp. (SemCorp) that its newbuilding shipyard, Sembeth, is to close down by the end of next year. It is the consensus among some that JSL will be asked to complete any outstanding newbuilding orders. JSL has also

Current expansion plans include projects totaling Sing\$559m:

Jurong Shipyard	400,000-dwt dock (opened 7/96)	170m
Keppel	330,000-dwt dock (opened 7/96)	100m
Pan United	45,000-dwt floating (due 3/97)	19m
Pan United	New yard in Indonesia	30m
Sembawang	Karimun Shipyard (Indonesia)	100m
Singmarine	New floating dock	20m
Singapore Technologies	New syncrolift	40m
Singapore Technologies	Tuas Shipyard (opened 1996)	80m

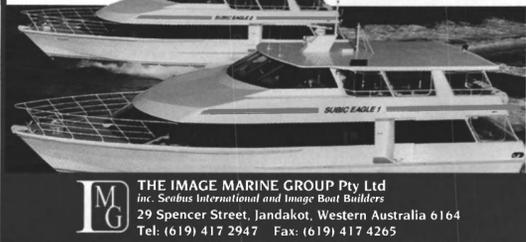
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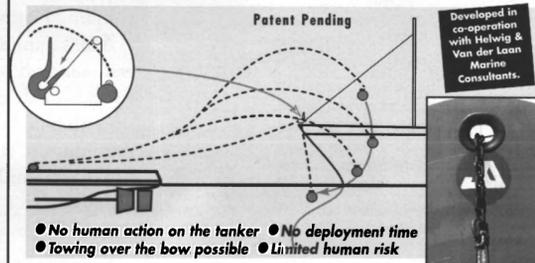
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Maritime Reporter/Engineering News

FAR EAST UPDATE

been in the market, winning an order for three 650-TEU containerships from local shipowner Neptune Orient Lines (NOL). Meanwhile, Hitachi Zosen has also announced a newbuilding expansion program, upgrading its facility from 12,000 to 30,000-dwt capacity.

Apart from Sembawang's announcement that Sembeth is to close, SemCorp has also announced that it is to take over its subsidiary Sembawang Maritime, which operates an extensive towage and salvage operation as well as a small repair and conversion yard in Singapore. Meanwhile, SemCorp has also looked at a share increase in JSL, in which it already holds a 20 percent stake. Singapore's Kvaerner Fjellstrand has won a high speed ferry contract involving two 131.2-ft. (40-m) Flying Cats, for Philippines-based Negros Navigation. Also in the fast ferry market, Tasmanian-based Incat has signed a deal with Hong Kong's Afai High Performance Ships to build three 255.9-ft. (78-m) ferries at a yard in Panyu on China's Pearl River, where Afai has a joint venture building yard with Hong Kong's Southern Shipping & Enterprise.

The largest order placed during the past two months on a worldwide basis has involved a series of six 135,000-sq-m LNG carriers as part of the latest round of deals offered to domestic shipowners by Korea Gas Corporation (KGC). This U.S. \$1.3-billion deal involves cooperation between ship operators and shipbuilding yards. Hyundai Heavy Industries (HHI) will build two vessels to be operated by Hyundai Merchant Marine (HMM); Daewoo Heavy Industries (DHI) will also build two ships for operation by Korea Line Corp. and Yukong Line; Samsung Heavy Industries (SHI), which makes its debut in the gas carrier market, will build one ship, to be operated by Yukong Line; and Hanjin Heavy Industries (HHHI) will build one vessel to be operated by its shipowning arm, Hanjin Shipping. Containment systems include Kvaerner Moss for the HHI ships, Technigaz for SHI, and Gaz Transport for the DHI and HHHI ships.

Malaysian state-owned shipowner Malaysian International Shipping Corp. (MISC) is rumored to have placed an order for two

20,000-dwt chemical tankers with South Korea's HHI. HHI is also emerging as favorite for an order for three 2-m barrel VLCCs from Kuwait Oil Tanker Co. (KOTC). Talking of the South Korean shipbuilding industry, Halla Engineering & Heavy Industries (HE&HI) has announced plans to build a diesel manufacturing plant at its new \$780-million Samho Shipyard. It is understood that HE&HI has signed a license deal with MAN B&W to build the slow-speed MC series. The main builder of diesel engines in South Korea has been, for many years, HHI, although Hanjung (formerly Korea Heavy Industries & Construction) and SHI both have licensing agreements with either MAN B&W or Sulzer.

New orders for South Korea have included a series of nine 25,000-dwt containerships from Germany's Fred Detjen and a series of six 46,000-dwt tankers

from Sovcomflot for HE&HI's new Samho Shipyard; two 20,000-dwt containerships from Hansa Treuhand for HHHI; two Suezmax tankers from Seatankers Management for Hyundai; four 35,000-dwt containerships from HHI, also from Detjen; and a total of nine containerships from Detjen for SHI.

Japanese shipyards have reported a 46 percent improvement in export orders gained during July this year compared with the same month last year. A total of 20 ships (652,370 gt) were ordered during the month. From the domestic market, Hitachi Zosen has won an order for a 258,000-dwt VLCC from Mitsui OSK Lines.

It has been confirmed that IHI's Kure shipyard will build the two 6,200+ TEU containerships for P&O Containers. IHI has also won an order from Marfin Management for two 42,600-dwt bulk carriers. Singapore's Neptune Orient Lines

(NOL) has increased an order for 4,918-TEU containerships from two to four from Mitsubishi Heavy Industries (MHI), and has also ordered a series of four 72,000-dwt bulk carriers from Sasebo Heavy Industries (SHI).

Indonesia's state-owned oil company, Pertamina, has placed charter contracts with various shipowners to build at least eight newbuildings at yards in Singapore, mainland China, Japan and South Korea.

These include two 17,500-dwt units from Hanjin Heavy Industries (HHIC); two similarly-sized vessels from an unnamed mainland Chinese shipyard; small crude carriers from Singapore's Pan United and Japan's Sasebo Heavy Industries (SHI); and two 30,000-dwt units from South Korea's HHI and Singapore's Sembeth, although this last order is likely to be subcontracted to JSL upon Sembeth's closure.

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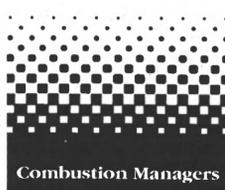
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COMPANY & PEOPLE NEWS

Lundborn Named VP At Gear Products

Don J. Lundborn has accepted the position of vice president of Finance at Gear Products, Inc., Tulsa, Okla. He has a background of experience managing the finan-

cial responsibilities of several Blount, Inc. operations.

Alaskan Materials Supplier Hires Crockett

Joanne Crockett has joined Spenard Builders Supply (SBS),

Alaska's largest building materials supplier, as Traffic manager. Based at the central warehouse of SBS' parent company Lanoga Corp., Ms. **Crockett** is responsible for negotiating contracts with freight companies and electing the optimal routes for product delivery to locations in urban and rural

Alaska. Previous to this appointment, she worked as a pricing analyst and specialist for Totem Ocean Trailer Express.

Navionics Relocates

Electronic chart producer Navionics Inc. has moved from Woods Hole, Mass., to a state-of-the-art facility in Wareham, Mass. The new, 10,000-sq.-ft. facility houses electronic chart and cartridge production, executive offices, and handles shipping, sales and customer service. The new address is: 6 Thacher Lane, Wareham, MA 02571, tel: (508) 291-6000; fax: (508) 291-6006.

Sandford Ship Management Earns ISM Certification

Sandford Ship Management Ltd., an Isle of Wight company currently operating tonnage for Stena Line and a worldwide fleet of vessels, has achieved International Safety Management (ISM) Code certification for the operation of RoRo passenger ferries. The company became one of the first independent ship management companies to comply with the ISM requirements when it received its certificates in the spring. According to company reports, "valuable and flexible consultancy towards attainment" was provided by Lloyd's Register's Marine Quality Services Division.



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Bjorkner Named Bisso GM For Alabama

Erik A. Bjorkner has joined Bisso Marine Company, Inc., of New Orleans, La., as the general manager of Bisso Marine Alabama in Mobile. He has been active in the marine industry for eight years, and formerly served as project engineer for repairs at Bender Shipbuilding and Repair Co.

Bisso Marine Alabama specializes in salvage, towing, heavy lift, sonar survey and diving services.

Leica Names Marine Sales Manager For GPS Products

Leica GPS, based in Torrance, Calif., has named **Lesa Freshman** to the position of marine sales manager. Before accepting her latest appointment, Ms. **Freshman** worked for Magnavox Electronic

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COMPANY & PEOPLE NEWS

Systems Co. for 13 years. At Magnavox, she was most recently responsible for North American sales of Inmarsat satellite communications systems, and in her new job, has assumed responsibility for Leica's growing sales of GPS products in the North American yacht and sportfishing markets.

Leica's GPS Division is involved in advanced satellite navigation technology. The division designs, manufactures and markets products using GPS (Global Positioning Systems) for both marine and land applications.

Lykes Names New Project Services Manager

Lykes Bros. Steamship Co., Inc. promoted **Veronica A. Clark** to the position of project services manager in Tampa, Fla. In her new position, she is responsible for all aspects of project and non-liner cargo development and management for Lykes worldwide, including marketing and sales, vessel selection/chartering and move coordination for both export and import activities.

With extensive prior experience in the transportation industry, Ms. Clark joined Lykes' Operations department in October 1994, as fleet vessel coordinator. Before assuming her latest position, she served as project services coordinator.

Lykes, in the midst of reorganization, operates a fleet of container ships and multi-purpose vessels providing transportation and logistical services to customers throughout North America, Northern Europe, the Mediterranean region and Africa.



Veronica A. Clark

Richard Rice's duties as marketing planning director. Mr. Rice will continue to work part-time for the next year.

In addition to the U.K., ASRYMAR represents ASRY directly in other European areas including Sweden, Finland, Switzerland, the Netherlands, Monaco and Italy. The company's other clients include: Kvaerner Gibraltar; Wechong Shiprepair Yard; Turbo-Technik; Ameron and Schneekluth Hydrodynamik.

St. Lawrence Seaway Development Corp. Names Board Chairman

On August 28, St. Lawrence Seaway Development Corp. Administrator **Gail McDonald** announced that the agency's advisory board elected **Anthony S. Earl**, former governor of

Wisconsin, to serve as board chairman. The election took place at the board's meeting held earlier in August at the corporation's headquarters in Massena, N.Y.

The five-member advisory board meets quarterly to discuss organization policies and programs with senior corporation officials. Each member is nominated by the President of the U.S. and appointments are confirmed by the Senate.

Administrator **McDonald** was reportedly pleased with the board's decision to elect the former governor as its chairman. "He has an impeccable leadership record and has played an active role in the short time he has been on the board. He is an outstanding choice," said the administrator.

While serving as governor of Wisconsin, **Anthony Earl** chaired the National Governors' Association Committee on Energy

and Environment. He also served as secretary of the Wisconsin Department of Natural Resources for five years, and as a director of the Great Lakes Protection Fund.

Thermo King Adds Sales Manager For China

As part of its expanding container sales effort, Thermo King Corp., Minneapolis, Minn., has hired **Li Yi-Zhou** as container sales manager for China. Prior to joining the company, Mr. Yi-Zhou was sales manager of a German company which manufactures chemical, paper converting and glass machinery. In addition, he was also responsible for work leading to the patent-



Li Yi-Zhou

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ASRYMAR Appoints Marketing Sales Manager

ASRYMAR, the London-based, wholly-owned marketing company of the Arab Shipbuilding and Repair Co. (ASRY) of Bahrain, has appointed **Peter Smith** to the position of marketing sales manager. Formerly employed by Calvey Marine, Mr. Smith will assume

October, 1996

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COMPANY & PEOPLE NEWS

ing of major chemical plant projects for companies such as BP Chemicals and Monsanto.

Thermo King manufactures temperature control systems for a variety of mobile applications, including shipboard containers and railway cars.

Cockett Marine Oil Welcomes New Bunker Trader

Worldwide bunker supplier Cockett Marine Oil Ltd. has hired **Ian Grayston** as a bunker trader

for its Cape Town, South Africa, office. He reportedly has considerable bunker experience in the South African market, having spent a number of years in the marine department of oil major Engen, and more recently with Durban-based trader Amoil.

Sonsub Int'l Names New VP For Americas Region

Sonsub International Inc. has appointed **Peter Breese** to the position of vice president of Engineering and Operations for the Americas region. He will primarily be involved in overseeing the company's subsea engineering operations, and his responsibilities will include the development of the Completion/Workover Riser and Control System for Shell's Mensa field and for BP Exploration's deepwater Troika field, both in the Gulf of Mexico. Dr. Breese has more than twenty years of industry experience, and has been employed in both the U.S. and U.K.

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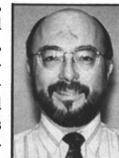
Transmatic Announces Promotions

Waterford, Mich.-based Transmatic, Inc., a Trans-Industries company, announced three promotions due to recent company growth.

Mike Hoffman, former manager of Marketing and Sales for Assembled Products, was named vice president of Marketing and Sales for Lighting Products. **Vicki Vollett** was promoted to vice president of Manufacturing and Customer Service for Lighting Products after previously serving as manager of the department.

Joseph Trimai was promoted from Assets manager to vice president of Finance and Assets.

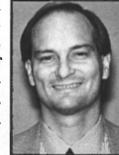
Transmatic manufactures lighting and display products for mass transit and specialty vehicles. The company's Environmental Services division designs, fabricates and installs turnkey dust control systems for industrial market applications.



Mike Hoffman



Vicki Vollett



Joseph Trimai

Maritime Reporter/Engineering News

COMPANY & PEOPLE NEWS

Astican Names Exclusive North American Rep

Astilleros Canarios S.A. (Astican), of the Canary Islands, has appointed Volger Marine Agencies, LLC of Bridgewater, N.J., as its exclusive representative for North America, the Bahamas and Bermuda.

Astican operates a syncrolift with seven land positions, capable of docking vessels up to approximately 38,000 dwt. Located off the northwest coast of Africa, Astican offers modern ship repair facilities for all types of repairs and conversions.

GL Forms Polish Committee

On September 6, Germanischer Lloyd (GL) established a Polish Committee consisting of leading representatives from Polish maritime authorities, shipping lines, shipyards and industry, with a goal towards expanding relationships in this area of the world.

Forty seagoing vessels totaling more than 577,000 gt are reportedly under construction with GL class at Polish shipyards, many of them intended for German owners. In addition, substantial amounts of equipment, engines and ship sections are being produced under GL class, some for ships being built in Germany.

GL branches were reportedly first set up in Poland at the time the society was founded in 1867. GL has been certifying quality management systems in Poland under the ISM Code since 1994.

MHI Opens Office In Czech Republic

Mitsubishi Heavy Industries, Ltd. (MHI) opened a liaison office in Praha, the Czech Republic, on September 1, in order to further strengthen its local procurement and business development capability. MHI will reportedly increase its procurement activities in Eastern European countries through its new office, with a concentration on industrial products.

Fuyuhiko Nishikida is heading the office and supervising local employees with responsibilities in the Czech Republic, Slovak Republic, Poland, Hungary, Romania, Bulgaria and Slovenia. Flue gas desulfurization systems

and oil refinery equipment are two orders that MHI has supplied to this region in the past. Recently, business discussions concerning supplying products such as environmental equipment, rubber and tire machinery and compressors have been held.

MDA Announces Appointments

Marine Development Associates, Inc. (MDA), a company based in Saratoga, Calif., involved in ocean engineering and marine technology consultation and development services, has announced two new appointments. Former Senior Associate **Larry L. Gentry** has been named vice president. Mr. Gentry retired in April from Lockheed-Martin Missiles & Space as a program manager for Unmanned and Underwater Vehicles (UUVs). **Edward**

Clausner will fill the position of senior associate. He formerly served with Western Instrument Corp. and Tracor Marine, and currently occupies the presidency of the Marine Technology Society.

MDA was formed in 1984, and is currently involved in a major Ocean Thermal Energy (OTEC) commercialization project.

Kelly Joins Network Americas

Owen D. Kelly has joined Network Americas, Inc. to assist in the development of new business. Prior to joining the company, he was a senior executive at Norton Lilly International, where he was in charge of the Latin American Division. In the past, Mr. Kelly also served as the director for South America for United States Lines and held positions at Moore-McCormack Lines and Netumar

Lines.

Network Americas provides a broad range of containerized intermodal transportation services for commercial and government shippers from points throughout North America to more than 400 locations in Russia and Western Europe.

Crowley Announces Death of Former President

Crowley Maritime Corp. (CMC) has regretfully announced the death of **Leo L. Collar**, a member of Crowley's board of directors, and past president and CEO. Mr. Collar passed away on September 5 in San Jose, Calif., at the age of 66. He started at the company at the age of 17 as a clerk, and contributed a total of 48 years to Crowley. Mr. Collar had primary responsibility for the development of oil field services in Alaska, as



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COMPANY & PEOPLE NEWS

well as environmental activities throughout the entire company. He also led a management team that successfully established cargo service throughout the Americas, which ultimately became a major service between the U.S., Puerto Rico and key markets in Central and South America. Active in industry affairs, Mr. Collar was a member of several industry organizations, including the American Institute of Merchant Shipping, the American Waterways Operators, the Offshore Marine Transportation Association and the Propeller Club of the U.S.

C-Map Forms U.S. Subsidiary

C-Map, a producer of electronic charts for ECS (Electronic Charting Systems) and ECDIS (Electronic Charting Display and Information Systems) users, has announced the formation of a U.S. subsidiary, C-Map/Commercial, to oversee the expanding high seas market in North America. The subsidiary will be based in Cape Cod, Mass., and will be primarily responsible for the marketing and distribution of CM93 data, the company's proprietary electronic chart format, for use in company ECDIS and ECS systems.

SNAME Announces Award Recipients

The Society of Naval Architects and Marine Engineers (SNAME) has announced the recipients of its prestigious David W. Taylor, Vadm. "Jerry" Land and Davidson Medals. These honors, along with a variety of other awards and certificates, will be formally presented during the 1992 Annual Meeting scheduled for October 2-5 at New York City's Marriott Marquis.

Roy L. Harrington, a past director of Productivity for Newport News Shipbuilding, will be presented with the Taylor Medal for notable achievement in naval architecture/marine engineering. **Robert W.**

Schaffran, manager of the ARPA Maritech program, will be presented with SNAME's Land Medal for outstanding accomplishment in the marine field. The society's bi-annual Davidson Medal, for outstanding accomplishment in scientific ship research, will be presented to **Daniel Savitsky**, a long-time teacher of marine engineering, naval architecture and ocean engineering.

SNAME has also announced that this year's banquet speaker will be **Lillian C. Borrone**, director of the Port Department for the Port Authority of New York and New Jersey.

Zodiac Names Dealer For U.S. Virgin Islands

Stevensville, Md.-based inflatables manufacturer Zodiac of North America, Inc. has named Caribbean Inflatables Services (CIS) as its factory authorized dealer for sales and service in the U.S. Virgin Islands. CIS will represent the entire Zodiac line of products, including commercial liferafts, and will serve as an authorized service center.

Based in St. Thomas, CIS' facility serves the cruise ship and yachting industries, as well as the commercial vessel market. Established 15 years ago, the company is reportedly the largest liferaft repacking station in the Caribbean.

PCCI Welcomes Hunt To Staff

Alexandria, Va.-based PCCI, Inc. has recently welcomed **Walter "Bud" Hunt, Jr.**, to its staff as a senior engineer where he will assist in the development of integrated contingency plans and the provision of spill management training to commercial and government clients. Previously, Mr. Hunt was a senior project manager on the U.S. Coast Guard's (USCG) OPA 90 staff, which was tasked with implementing more than 40 regulations and studies. He has

more than 20 years of operational, management and regulatory experience in environmental protection, commercial vessel safety and public policy making. During his 20-year USCG career, he directed the investigations of 2,500 discharge incidents, including the response to more than 30 federally funded pollution incidents. As a marine inspector, Mr. Hunt conducted more than 600 commercial vessel inspections.

Unicon Names New VP

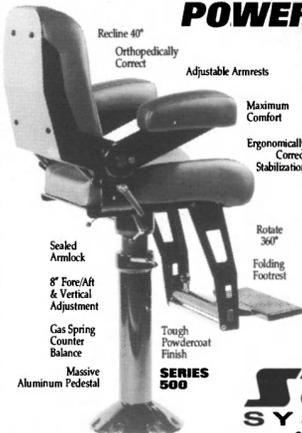
Wendy Lapham has been named vice president of Information Systems for Unicon International, a San Francisco-based company providing global information services and solutions for the transportation industry. She has 26 years of experience in the ocean carrier and leasing industries, and has held posts at APL, Sea-Land, Seatrain, TOL and Flying Tigers. Ms. Lapham's management experience includes the areas of operations, equipment, maintenance and repair, quality, loss management and information resources.

Ameron Announces New Appointments

Raymond E. Foscante, formerly president of Ameron's Protective Coatings Group, has been named senior vice president of Technology and Business Development for Ameron, Inc.'s corporate staff. He joined the company in 1975, and played a pivotal role in the development of the company's patented PSX engineered siloxane technology, now being used in Ameron coatings and fiberglass pipe products.

Michael J. Tornberg has been named to the presidency of the Protective Coatings Group. He previously held the position of vice president of Marketing. Before being hired by Ameron in 1995, Mr. Tornberg held a number

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USCGC WMEB-13 Stidd Seats aboard
photo by Dan Herney

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COMPANY & PEOPLE NEWS

of marketing and general management positions at GenCorp. Both Mr. Foscante and Mr. Tornberg were integrally involved in Ameron's recent acquisition of the Devoe marine and offshore coatings business from Imperial Chemical Industries plc.

Ameron produces protective coatings, concrete and steel pipe systems, fiberglass pipe and other specialized construction products. Company sales in 1995 totaled \$481 million.

OMI Elects New Chief Executive

OMI Corp. announced that Jack Goldstein, chairman of the board and CEO, would relinquish his role as CEO of the company effective at year end and that Craig H. Stevenson, Jr., president and chief operating officer of the company, had been elected by the board of directors to assume the role of CEO.

Mr. Goldstein will reportedly retain his position as chairman, and in addition, will head a newly created board committee that will help to guide the long-term strategy of the company.

OMI Corp. is a diversified major bulk shipping company operating in both international and U.S. shipping markets. Its fleet currently totals 35 vessels, totaling approximately three million dwt.

McDermott Director Passes Away

On September 4, James J. Wildalsin, president, Europe and Subsea Development, J. Ray McDermott, S.A., died in his sleep in Aberdeen, Scotland, at the age of 61. Mr. Wildalsin's recent service with the company began in 1989 when he was named president of a joint venture between McDermott and French company ETPM. In 1990, he was named vice president and general manager of McDermott's London engineering division, and the next year, was promoted to vice president and group executive for marine construction operations in the North Sea, Middle East and West Africa. In 1993, he was named president and chief operating officer of McDermott Marine Construction, and held that position until January 1995, when he was named

J. Ray McDermott president, chief operating officer, and a member of the board. Following company realignment, in September 1995, Mr. Wildalsin assumed his most recent position. He is survived by spouse Arden and three sons.

Blue Star Announces Appointments

Anne Millians has been named assistant vice president of Eastern region sales for Blue Star Line (BSL). She manages daily sales activities and develops and implements sales strategies for the company's East Coast Container Service (ECCS). R. Mitchell Wilkes has been named Southeast district manager for BSL in Atlanta. He is responsible for management of the Atlanta office, and overseeing a sales territory which includes Georgia, Alabama, Tennessee and Mississippi. BSL is

an ISO 9002-accredited shipping line, providing service between North America, Australia, New Zealand and Fiji.

Maerkisches Werk Establishes U.S. Base

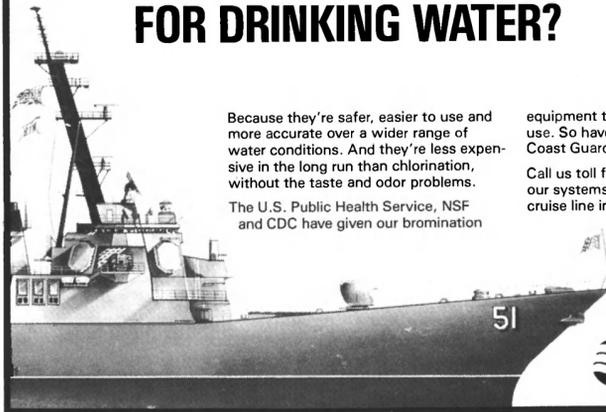
Halver, Germany-based Maerkisches Werk has established an incorporated subsidiary, Maerkisches Werk of North America, Inc. (MWNA), and has opened offices in Northboro, Mass., in support of its commitment to the U.S., Canadian and Mexican markets. The company specializes in new and reconditioned cylinder head components for high capacity diesel engines, as well as offers technology in the alternating gas control of diesel engines. According to MWNA executive Allyn Taylor, "Stock keeping of products in close vicinity to our customers provides prompt deliv-

ery upon receipt of orders. This improved service does not need to drive product costs since with better knowledge of our customers and their markets, efficient decisions can be made on production planning and inventory control."

Moragas Named GM At Trinity-Gulf Repair Shipyard

Lucien F. Moragas, Jr. has been promoted to the position of general manager of Trinity-Gulf Repair, Inc., a Trinity Marine New Orleans shipyard, specializing in the repair and conversion of many types of commercial and military vessels. Previously, he was the director of Repairs/Conversions for Trinity Marine Group, responsible for coordination and evaluation of proposal requests, estimates and bid proposals for six Trinity shipyards in Texas, Louisiana and Mississippi.

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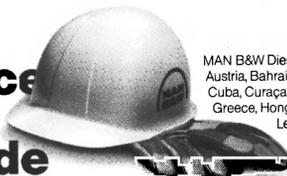
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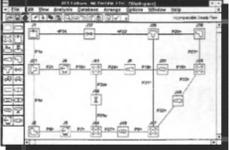
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Two Giant Container Cranes On Short Haul From Rotterdam To Antwerp

Pictured is Dock Express 10 with its second shipment of one of the world's largest container cranes, arriving from Rotterdam at Noordzee terminal in Antwerp.



Dockwise N.V., operator of a large fleet of semi-submersible heavy-lift vessels, has carried out the transportation of what are reportedly two of the world's largest container cranes, from Rotterdam to Antwerp.

Dock Express 10, one of the company's dock-type, semi-submersible heavy-lift vessels, has completed two individual shipments of two giant container cranes built by Nelcon in Rotterdam and destined for the new Noordzee container terminal on the River Scheldt in Antwerp.

The post-Panamax container cranes, each with a height of 223.1 ft. (68 m) and boom length of (57 m), weigh 1,155 tons. Two cranes were shipped fully erected by Dockwise, and two were erected on-site in order to fit in with the construction schedule of the new quay.

Dockwise N.V. operates a fleet of 15 semi-submersible heavy-lift vessels. Nine vessels focus on the oil, gas and petrochemical industry and three focus on the fully erected container cranes and dredging material markets. Three of the vessels are fully operational in specialized fields — two in the subsea cable laying market and one in luxury yacht transportation.

Bisso Marine Delivers Two Salvaged Drydocks

Bisso Marine Company has delivered two salvaged drydocks. The first operation was for Louisiana Drydocks, whose drydock sank in the Mississippi River at mile 105.9 downriver of the Huey P. Long Bridge. The drydock measured 160 x 82 ft. (49 x 25 m) and sank in 80-ft. (24.4 m) of water. Three of Bisso's derrick barges — 700-ton *Cappy Bisso*, 600-ton *Lili Bisso* and 250-ton *Ajax* — provided the necessary lifting capacity. A fourth derrick, *Robyn*, was supplied by McKinney Landing of Louisiana, Inc., of Baton Rouge.

The second salvage operation was at Bollinger Shipyard in Amelia, La. The salvage operation on the 180 x 100-ft. (5 x 30.4-m) drydock, complicated by its location in a narrow slip which eliminated the use of heavy lifting equipment, and required the use of various patching materials to seal the vessel.

Beghelli Offers Fluorescent Lighting Fixture For Marine Applications

Beghelli has introduced Regina, a new concept in technologically advanced fluorescent lighting for marine applications. This NEMA 4x rated luminaire is U.L. listed for marine applications, meets U.S. Coast Guard requirements and can be installed in wet and damp locations, both indoors and outdoors. Regina features a lexan diffuser and is constructed of corrosion-resistant polycarbonate, which is U.V. rated. State-

of-the-art plug-in modules reportedly assure ease of installation and maintenance.

For more information on Beghelli
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New ASNE Publications Available

Available from the American Society of Naval Engineers (ASNE) are two new publications: *The Changing Realities of Logistics* and *Modeling and Simulation Applications and Technology in the Acquisition Process*, both presented at the technical programs of two symposia sponsored by ASNE earlier this year.

The Changing Realities of Logistics consists of 15 papers from the 10th Annual U.S. Navy, Naval Sea Systems Command/Naval Supply Systems Command/Space and Naval Warfare Systems Command Logistics Symposium which was held in Harrisburg, Pa., on May 7-9, 1996. *Modeling and Simulation Applications and Technology in the Acquisition Process* is the proceedings from the 1996 Modeling, Simulation & Virtual Prototyping Conference which took place in Crystal City, Va., from June 24 to 26. It consists of 29 papers in two volumes covering topics such as ship programs, software design and physics-based modeling, modeling and the acquisition process, missions/engagements, electronic systems modeling, virtual prototyping, verification, validation and accreditation and signatures. These and other publications may be obtained from ASNE. For a complete list or to order, contact **Doris Gibbon**, ASNE, 1452 Duke St., Alexandria, Va., 22314, tel: (703) 836-6727; fax: (703) 836-7491.

Maritime Reporter/Engineering News

Speedy Ships In Demand At SMM '96

With fast ferries becoming a strong segment of the shipbuilding market in recent years, not only has competition with air-travel operators spurred on ship designers, manufacturers of ships' engines have also forced the pace of progress in the development of propulsion systems. All this was evidenced at the 17th International Shipbuilding, Machinery & Marine Technology Exhibition and Conference (SMM '96), which was scheduled to take place at the Hamburg Exhibition Centre, Hamburg, Germany, from October 1-5. More than 1,000 exhibitors from 37 countries were reportedly represented at the show.

Filling the demand for high speed ships, Stena Line's HSS catamaran is now reportedly touted as the world's fastest ferry. Powered by four turbines, this ferry can reportedly carry up to 1,500 passengers and 375 cars at a speed of 75 km/h. In contrast, the British Columbia Ferry Corporation has specified MTU diesel engines for its three catamarans which are to start operating ferry services in Vancouver next year.

MTU's new high speed engines were scheduled to be presented at SMM '96, as was MaK's third series of Langhuber engines and the V version of the M32 series, which was first presented as an in-line engine at SMM '94. Wartsila, New Sulzer Diesel AG and MAN B&W were also to present new propulsion units, specifically for large freighters.

University Of Washington Engineers Build Prototype For Barnacle Imaging System

Engineers at the Applied Physics Laboratory, University of Washington, have built a prototype sonar that reportedly detects fouling, damage and foreign objects on the hulls of ships moored in turbid water conditions where optical systems fail. Funded by the Naval Explosive Ordnance disposal Technology Division and the Naval Surface Warfare Center, Carderock Division, the sonar can reportedly image individual barnacles, water intakes, anodes and peeling paint

even in water with zero visibility.

The U.S. Navy conducts underwater hull inspections using divers and remotely operated vehicles (ROVs) equipped with video cameras to save the cost of drydock inspection.

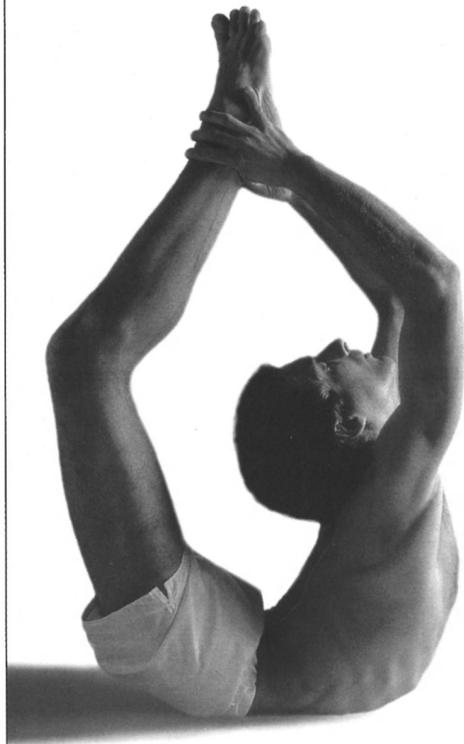
However, many of the Navy's moorage sites where the inspections are conducted have turbid waters, with visibility ranging

from only zero to eight in. With eight-in. visibility, hull inspection proceeds very slowly. With zero visibility, divers must use their hands to detect fouling, hull damage and foreign objects.

The University of Washington prototype, the Acoustic Barnacle Imaging System, reportedly provides a method of efficient and accurate inspection even in turbid

waters. Mounted on the front of the ROV, the system images a surface of seven ft. from the soundhead and is capable of imaging a section of hull measuring 2 x 5 ft. (.6 x 1.5 m) in .5 seconds with a resolution better than .4 in. The Navy has reported successful testing of the system in water, and the developers believe that the system could be used on commercial ships as

Resistance to alternate flexing

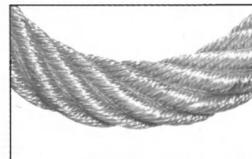
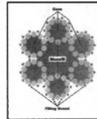


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COUNTRY FOCUS • AUSTRALIA



Fast Craft Market Big Business Down Under

In response to the growing demand for faster craft, Australia has become a frontrunner in the high speed market. With companies such as Austal Ships, Incat and WaveMaster leading the pack, Australian shipbuilders are providing the craft to fill the booming need for speed. Furthering its lead even more, Australia has pioneered its way into the Japanese market, supplying fast ferries to the country traditionally known for building its own ships.

In the past year, Western Australian shipbuilder Austal Ships has delivered its 26th high speed passenger catamaran to China, established itself as a major player in the large capacity car ferry market in Europe, and opened a regional office in Tokyo, Japan. While the company's passenger-only ferries are reportedly dominating the Asian market, Ferries Australia, Austal's joint venture marketing company dedicated to the production of large capacity vehicle and passenger carrying catamarans, has delivered three such vessels in the 80 m (262.5 ft.) size range to European

operators.

Recently delivered, \$50-million, 82-m (269-ft.) vehicle/passenger ferry *Delphin* entered service for TT-Line of Germany in May, and has reportedly slashed previous conventional ferry journey times by more than half. With the capacity for 600 passengers and 175 cars, *Delphin* reportedly makes the crossing between the north German port of Rostock and Trelleborg, Sweden, in less than 2 hrs. 45 min. Fully loaded maximum speed with 340 dwt is 40 knots.

In August, Austal launched the third of these vessels for Swedish and Danish partners Sweferry and DSO. Dubbed *Felix*, the 82-m CAT ferry will operate between Limhamn and Dragor, linking the two countries on a short, eight-mi. nautical route.

In other yard activities, Austal has announced what is reportedly one of the largest shipbuilding contracts in the history of Australia's lightweight shipbuilding industry, securing a four vessel contract estimated at \$56 million with

Turkish operator Istanbul Deniz Otobusleri (IDO). The contract includes two 40-m (131.2-ft) passenger catamarans and two 60-m (197-ft.) Auto Express passenger/vehicle designs. All four aluminum catamarans will join two Austal-built, 30-m (98.4-ft) monohull ferries previously delivered to the Istanbul-based operator in 1995.

Both car ferries will be fitted with Austal's Ocean Leveller stabilizing system — an automatic, electronically controlled and hydraulically operated motion dampening system — and will be delivered next summer, while the 40-m sisterships are scheduled for delivery in November.

Since its development in 1992, the Ocean Leveller has reportedly been installed in 10 vessels, including a fast monohull ferry and the second generation T-foil system designed specifically for its large car ferry designs. These vessels are in operation along the coastline of Guangzhou and Shanghai in the People's Republic of China, Indonesia, the Inland Sea of

COUNTRY FOCUS • AUSTRALIA

Japan, the French Polynesian islands around Tahiti, Scandinavia and the Baltic Sea.

Tasmanian company Incat Australia, winner of the 1996 Australian British Export Award, has delivered three 81-m (266-ft.) wave piercing catamarans. Each 81-m wave piercer is certified to carry up to 700 people and 173 cars, achieving fully loaded, in-service speeds of 39 knots.

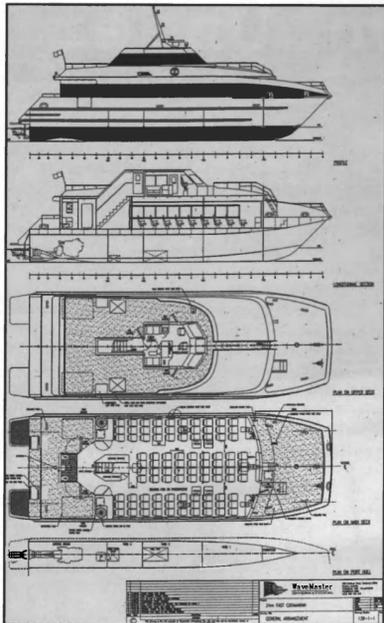
In July, Incat signed a memorandum of agreement with Afai High Performance Ships Ltd. for construction of at least three Incat K50 high speed car passenger ferries in Panyu, China. The agreement, worth more than \$80 million, will see the first vessel delivered in 1997. The K50 is designed to carry 450 passengers and 90 cars at fully loaded speeds of up to 50 knots.

Presently, Incat is producing three eighth generation wave piercing catamarans. The 86-m (282.1-ft.) model is reportedly slated to become the new benchmark for high speed ferries. The ships can carry up to 800 passengers and 200 cars at fully loaded speeds of 41 knots. Renk AG was awarded the contract to supply 12 gearboxes for installation on these ferries. Each features four drive trains with Ruston 20VRK270 diesel engines; Renk ASL 60 gearboxes with horizontally offset input and output shafts and integrated, multi-plate clutches; and Lips waterjets. The gearboxes are of light-weight design and are equipped with integrated thrust bearings. Two units on each ferry have PTOs (power take-offs) for operating the rudder function of two waterjets, as well as for reversing the direction of ferry motion. The 86-m wave piercers can achieve 48 knots and all three ships are under construction and due for delivery before next June. In addition, Incat is working on a 92-m (301.8-ft.) high speed catamaran, a further development of the company's 74, 78 and 81-m (242.7, 255.9 and 265.7-ft.) vehicle/passenger ferries. The vessel will be built to comply with Det Norske Veritas' high speed, light craft rules and IMO's high speed craft code, and is designed to operate at 45 knots light ship and 32 knots fully loaded. The vessel's main deck will be fitted to carry a total of 152 containers double stow, with a total dwt of 980 tons. Loading and unloading will be via a tran-



Austal Ships recently built Cat Link 3 for DSB Rederi and Delphin for TT Line.

Pictured below is a general arrangement drawing of the Johor Riau design.



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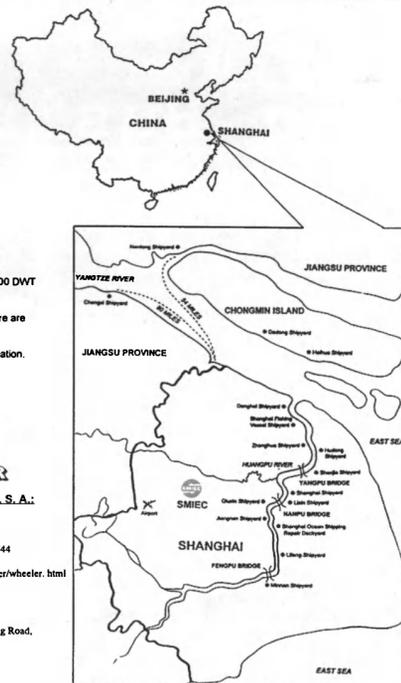
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Maritime Reporter/Engineering News

som over an external loading platform, and by overhead container crane from the open hold. Powered by four conventional, medium speed diesels each developing 7,080 kW, each of the vessel's engines drive a transom-mounted waterjet through a reduction gearbox with internal clutch. An optional application involves two marine-type gas turbines driving transom-mounted waterjets through a reduction gearbox with internal clutch. A ride control system is fitted to the vessel, providing trim and motion dampening with structural hydraulic services for the fitting of forward active ride control foils as an option.

Making Waves

Breaking through the Japanese border, WaveMaster International has reportedly become the first non-Japanese shipbuilder to conclude a shipbuilding contract with the Maritime Credit Corporation (MCC) of Japan, an organization which provides government financial assistance to ship and ferry operators in Japan. The contract, valued at \$370,000, is a significant breakthrough for WaveMaster in the important Japanese high speed ferry market. WaveMaster's current orders include two 44-m (144.3-ft.) high speed passenger/vehicle/cargo catamaran ferries for Valfajr-8 of Iran; a new-design catamaran ferry with passenger capacity of 639 for Fuller Group of New Zealand, to be delivered at the end of this year; and three 37.5-m (123-ft.), 240 passenger, high speed monohulls, an order valued at approximately \$1.7 million for Malaysian ferry operator Johor Riau Ferry Services Sdn. Bhd, slated for operation in the Malaysia-Singapore-Indonesia triangle.

In addition, WaveMaster has also won a \$16-million contract from SeaFlyte Ferry Services to build four high speed passenger ferries for operation between Singapore and Indonesia's Batam Island. Two of the vessels are scheduled to be delivered next month, the remaining two in January. All four 28.5-m (93.5-ft.) monohull sister-ships will each carry 162 passengers on two decks at 30 knots across the 12 nautical mile stretch between Singapore and Batam. The vessels will be propelled by three Hamilton waterjets powered by MTU engines.

A new state-of-the-art shipbuild-

ing facility capable of accommodating the construction of two vessels — to be up to 120 m (393.7 ft) in length each — and up to 12 smaller vessels reflects WaveMaster's recent growth in the international market. The \$1.6 million first stage of the facility, to be built on a

6.9 hectare site at Jervoise Bay, is expected to be operational by early 1997. Upon completion, the new shipyard will comprise two construction halls measuring 120 x 84 m (393.7 x 275.5 ft.), with two adjacent areas, each capable of handling the construction of six ves-

sels, and a 90 x 40-m (295 x 131.2-ft.) launch and retrieval facility.

Other recent activities at WaveMaster include the construction of vessels for operation in New Zealand, Singapore and Iran, at the company's existing shipbuild-

(Continued on page 88)

SHIP OF THE YEAR, 1995

SOCIETY OF NAVAL ARCHITECTS OF JAPAN



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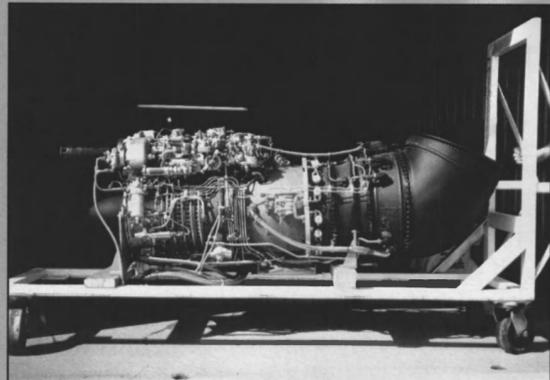
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Turbine Power Debuts New Gas Turbine For Fast Ferry Operation



Turbine Power Systems, Inc. of West Point, Neb., has introduced the TPS-2500 marine gas turbine for powering fast ferries, interdiction craft and crewboats. This high-compression, straight-flow, aeroderivative gas turbine reportedly provides a continuous 2,500 shp (1,865 kW) at 15,000 rpm cruising speed. Possessed of a 12-stage axial compressor driven by two gas producing disks, power is extracted by two high-efficiency free turbine disks. Fully adapted for sea service, the unmodified

form of the TPS-2500 has reportedly been in service for more than 10 million hours in more than 40 countries worldwide, with a total of 33,000 of these engines in use.

The TPS-2500 weighs 628 lbs. and measures 28 x 30 x 80 in. This powerplant is also available as either a base load or peak-shaving generator set, and in a mobile "mini" combined-cycle cogeneration array.

For more information on Turbine Power Systems Circle 48 on Reader Service Card

("Contracts" continued from page 30)

and Catalytica Combustion Systems, Inc., a subsidiary of Catalytica, Inc., announced the formation of a new 50/50 joint venture company to serve the gas turbine retrofit market for installed, out-of-warranty engines. The new company, GENXON™ Power Systems, will initially provide gas turbine fleet asset planning and utilization services for both power generation and mechanical drive markets. These planning services will result in the delivery of an integrated product portfolio which includes Catalytica's XONON™ technology for ultra low NOx emissions, Woodward's NetCon® control systems, turbine overhaul and upgrades, as well as contract maintenance and service. The first order to retrofit a gas turbine with the XONON Combustion System has reportedly been received, although details have not been released.

Coflexip Stena Offshore Contracted for Shell Project

Coflexip Stena Offshore an-

nounced that Coflexip Stena Offshore Ltd. (CSOL), a U.K. subsidiary, has been awarded an EPIC contract for the Shell U.K. Exploration and Production Curlew project by the "MAS Alliance."

CSOL will undertake the infield subsea construction for this field development project involving the engineering, manufacture and installation of a number of flexible flowlines and dynamic risers as well as the installation of control umbilicals and a 28-km long, 12-in. diameter rigid gas export line.

Onshore work has commenced and is scheduled to continue for 18 months with the six-month long offshore phase beginning in April 1997.

The flexible flowlines and risers will be manufactured at the CSO plant located in Le Trait, Normandy.

All flexible flowlines, risers and control umbilicals will be installed by *Flex Installer*, one of the CSO Group's fleet of installation and construction vessels.

The CSO *Apache* will also be utilized to install the rigid gas export line which will connect to the gas

CONTRACTS

line running between Fulmar and St. Fergus.

The project will be concluded with the installation of the FPSO mooring system and hookup of the FPSO on site.

ILA, Employers Reach Contract

Waterfront labor and employers said they reached a tentative five-year master contract covering containership and RoRo vessel operations at seaports on the East and Gulf Coasts. The agreement will benefit both sides and provide long-term stability for port users, said **John Bowers**, president of the International Longshoremen's Association, AFL-CIO, and **David J. Tolan**, chairman of the Carriers Container Council and chief management negotiator. It is reportedly the longest-term contract the two sides ever have negotiated.

Further details were withheld pending a ratification vote by the ILA's rank and file. Mr. Bowers and Mr. Tolan said negotiators in each ILA port now will take up local contract issues, like pension benefits.

Florida Yard To Revamp Combo Tanker For Marine Tanker Services

North Florida Shipyard, Inc. has been awarded a contract by Marine Tanker Services, Ltd., to increase the carrying capacity of combination product/LPG tanker *M/T Atlantic Breeze*.

The contract involves significant modifications to the vessel, which will include a length increase of 51 ft. (15.5 m) and installation of a 53,000-gallon LPG tank.

After the midbody has been constructed by subsidiary company North Florida Steel, the vessel will enter North Florida Shipyard's drydock and will be cut in two, with the three pieces then welded together and the new LPG tank installed.

The addition of the midbody will reportedly increase the vessel's cargo capacity by 240 tons.

Other recent work performed by the yard includes a supply boat re-engineering; major wheelhouse, engine and propulsion modifications to a large tug; steel renewals of more than 200 tons to a

Panamax tanker; and various topside, boiler and engine repairs for a 97,600-dwt tanker.

All work was performed while vessels were alongside North Florida's wharf at Commodore Point. Steel for these projects was fabricated at a plant at the same facility.

Texaco And Marathon Oil Advance Gulf Deepwater Project

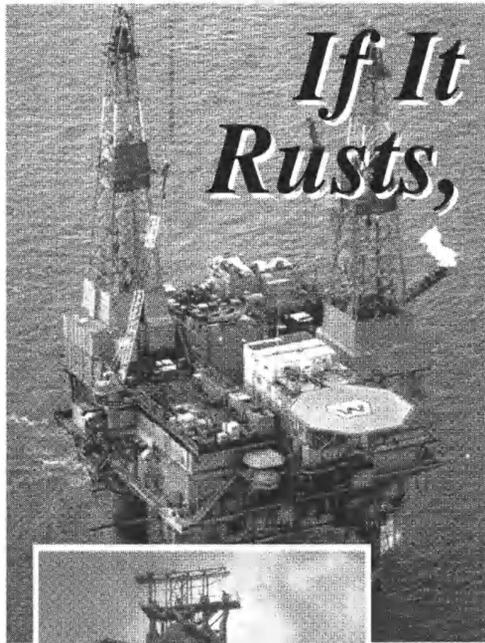
Texaco, as operator, and Marathon Oil Company have moved ahead with design and construction of *Petronius*, a \$400-million deepwater Gulf of Mexico drilling and production project which will allow the development of an estimated 80 to 100 million barrels of oil equivalent.

Among the companies awarded contracts for the project are: J. Ray McDermott, Morgan City, La., which was given a \$140-million contract for construction of the compliant tower and the installation of the entire structure; Gulf Island Fabrication, based in Houma, La., awarded a \$50-million deck fabrication and integration contract; and W. H. Linder & Associates, a Metairie, La., engineering firm given a \$10-million contract for engineering design work of the topsides and procurement support.

Petronius is reportedly equally owned by Texaco and Marathon Oil, and the drilling and production project is located in 1,754 fsw, approximately 130 miles southeast of New Orleans.

Penn Yan Awarded Patrol Boat Contract

Penn Yan Marine Mfg. Corp. has received a contract to build a specially outfitted patrolboat for the American River District in Folsom, Calif. The twin outboard, 20.6-ft. (6.3-m) boat meets criteria for "continuous operation during all weather conditions on lakes, inland waterways and reservoirs" and is structurally designed for maximum durability and safety. The boat is scheduled to be used for enforcement patrol and search and rescue operations. Penn Yan will use its model 2001 SPECTOR as the base for this contract.



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MARKET REPORT: Fleet Numbers Up, Scrapping Down

According to the World Tanker Fleet Review from Jacobs & Partners Ltd., the world commercial tanker fleet of 10,000 dwt and larger grew by 37 ships during the first half of 1996, a figure representing approximately 3.7 million dwt. The total world fleet now totals 3,074 ships with a total capacity of 269 million dwt. Of this group — which does not include 98 government ships and 69 "miscellaneous" ships — 1,020 (84.2 million dwt) are oil company-owned, and 2,054 (185.3 million dwt) are privately owned.

The government fleet increased by one vessel, the 27,518-dwt fleet replenishment tanker *Laramie*, completed by Avondale for the U.S. Navy.

Overall, delivery of newly built tankers rose sharply to 68 vessels (7.3 million dwt). However, even if this rate of building is maintained during the second half of the year, it will still remain significantly below the 1.4 million dwt completed in 1993, the highest figure during the 1990s, and much lower than the peak annual figure of more than 44 million dwt.

It is no surprise that South Korean and Japanese companies accounted for most of

the tankers completed during the first half of 1996, building no less than 85 percent of the tonnage between them. All of the tankers completed in Korea during the first half of 1996 were for foreign companies with the exception of three VLCC and the 132,800-dwt *Oriental Opal*.

In the past, the country's shipbuilding achievements had also been assisted by the support of Korean shipowners who invariably ordered vessels in domestic yards. This habit can now be observed in the construction of gas carriers, where vessels required to transport LNG to Korea from Southeast Asia are to be built in South Korea. Both Daewoo and Hyundai each completed four VLCCs, while the former also delivered a 96,000-ton ship to Greek owners.

Nine Japanese shipyards contributed to the country's output of 23 vessels, accounting for 2.7 million dwt. Among the vessels delivered by Namura Shipbuilding was the 103,300-dwt *Glas Dour*, a ship originally ordered by Greece's Alafouzos but sold to the Dutch Group Bluewater Offshore Production Systems while still under construction. Other notable deliveries were from Kurushima, which completed two chemical carriers for Formosa Plastic Co. of

Table 2

New Orders Received In First Half Of 1996

Country	No.	DWT
Japan	23	1,820,300
S. Korea	9	1,243,800
Croatia	6	280,800
Spain	7	250,700
U.S.	5	226,000
China	4	181,200
Norway	4	96,400
Ukraine	2	58,000
Russia	2	56,400
Italy	1	40,000
Romania	1	39,000
U.K.	1	36,200
Poland	1	15,250
Total	.66	4,344,050

Source: Jacobs & Partners

Wärtsilä Diesel Supplies Auxiliary Propulsion For Chemical Tanker

A 40,000-DWT product and chemical tanker was recently ordered by the Italian owner Finaval at Nuovi Cantieri Apuania in Italy. The ship will be outfitted with an interesting auxiliary propulsion drive solution from Wärtsilä. The main engine is a Wärtsilä 9L46 with an output of 8,775 kW at 500 rpm, driving a Wichmann CP propeller through a Valmet reduction gear with a power take-off for a Marelli shaft generator of 1,800 kW. Wärtsilä Diesel will also supply the three auxiliary engines — type 6L20 — each with an output of 930 kW at 900 rpm. All engines will run on heavy fuel.

The manufacturer said that the advantage of the auxiliary propulsion drive is that the ship can be propelled without the main engine, by using the shaft generator as an electric motor, supplied by gensets.

A voluntary class notation can be assigned to the ship to verify its unusual advantage of having a redundant propulsion system.

The classification society RINA offers two such class notations: THS (Take-Home Systems); and APS (Alternative Propulsion System).

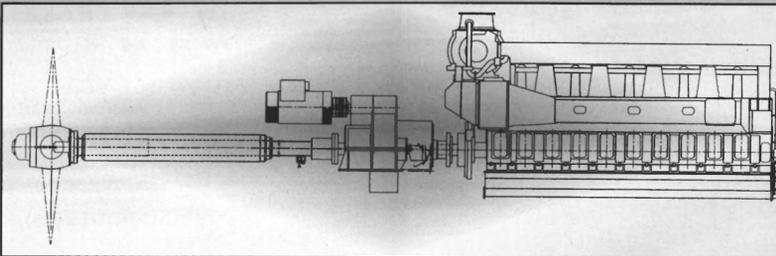
The medium-speed engine with CP propeller and shaft generator offer additional safety features:

- With the main pumps of the main engine being mechanically driven, propul-

sion is available even without voltage on the main switchboard; and

- On ships with FP propellers sailing with shaft generators (without a frequency converter), the propeller speed cannot be reduced before a diesel-generator has been started, phased in, connected and has taken over the entire load. Otherwise, the (only) shaft generator will trip from under-frequency. This lengthy procedure increases the stopping distance of the ship. Even if frequency converters are fitted, and can be avoided by installing a CP propeller.

For more information from Wärtsilä Diesel
Circle 90 on Reader Service Card



General layout of the auxiliary propulsion drive arrangement for the Italian product and chemical tanker.

TANKER TECHNOLOGY

Taiwan and a 29,500-dwt methanol tanker. The Minami Shipbuilding Co. also concentrated on chemical carriers, while Mitsubishi, Mitsui, Namura and Sumitomo all completed crude oil tankers.

As the VLCC spot market improved to yield an average income of more than \$15,000/day for a typical older steam-powered, 260,000-dwt vessel, scrapping was reduced to a disappointing level, according to the report. Only seven VLCCs reached demolition sites during the first half of 1996. If scrapping continues at this modest level, the last of the mid-1970s built VLCCs will still be trading in the year 2011.

New Orders

Sixty-six new tanker orders (4.3 million dwt) were placed or confirmed at the world's shipyards during the first half of 1996, significantly more in terms of ship numbers than in the previous six months, when 40 vessels were ordered. In addition to the definite orders, there are unconfirmed orders and undeclared options for an additional 30 tankers. (See Table 2).

While orders for new crude tankers placed were very similar to the second half of 1995, interest in product tankers doubled to 23 firm contracts amounting to more than 900,000 dwt. In the chemical carri-

er sector, even more confidence emerged when 24 ships (520,000 dwt) were ordered compared to only eight vessels amounting to 110,000 dwt in the previous half year.

Product Carriers

At the end of June, the world fleet

of tankers capable of carrying clean petroleum had grown by 38 vessels (1.5 million dwt) to 1,459 vessels (50.9 million dwt). The fleet was augmented by the delivery of 38 newbuildings with a total capacity of 1.3 million dwt during the first half of 1996. Fifteen of the new deliveries were of the

40/46,000-dwt class, with only one newbuilding, the 85,160-dwt, Hyundai-built *Tenacity*, exceeding 50,000 dwt. Novorossiysk Shipping Co., having received its first newbuilding in six years, the 40,075-dwt *Trogir*, took delivery of

(Continued on page 86)

Estimated Newbuilding Tanker Prices (June 1996)

Type	Size	Price (\$M)
Products Tanker	30,000	31
Products Tanker	40,000	35
Crude/Products Tanker	80,000	47
Crude Tanker	95,000	45
Crude Tanker	140,000	55
VLCC	280,000	85

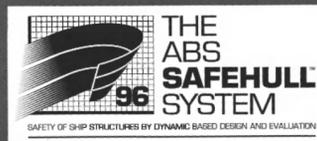
Source: Jacobs & Partners

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Port To Port, Dock To Dock

The Georgia Port Authority Gains a Competitive Edge Using Wireless Data Communications Technology

On any given day, the Georgia Port Authority (GPA) tracks up to 30,000 containers within its massive, 853-acre Garden City-based facility. GPA handles containers from up to six vessels, as well as hundreds of railway cars and trucks each day. Whether shipping farm tractors to Australia or receiving fresh produce from South America, this facility is an integral link in each of its customers' supply chains. Accuracy and response time are crucial to GPA's customer service.

To effectively meet demands while improving operating efficiencies and container turnaround time, GPA implemented a wireless data communications system from Teklogix, with application software from Americas Systems Inc. (ASI).

A Complex Business Environment

"Before we had this system, all tracking was totally manual and very labor intensive," said **Steve Black**, GPA's Container Field Office administrative manager. "The Container Field Office gave orders to the truck drivers handling the containers. After receiving the order, they would handle the freight and then update their paperwork. When the order was finished, the driver would return the paperwork to the office for manual data entry into the computer system," said Mr. Black. "This process was very slow and subject to human error. As a result, our turnaround time for getting containers out the gate was high; plus, we couldn't provide our customers with freight status until after the computer was updated. We realized that if we wanted to stay competitive, it was time for a change."

GPA soon realized that a wireless data communications system was the answer to its problem, but it was unsure how to implement the system.

"This was a new technology for us, we could not rely on internal expertise to guide us through the choices made when implementing RF technology," said **Tom Armstrong**, GPA's manager of Support Services and Operations division. "The GPA hired ASI as a consultant to evaluate our facility and determine the technology that would best meet our needs," he added.

Real-time Container Turnaround

Working with New Jersey-based ASI, GPA implemented a wireless data communications system that provides direct access to its IBM ES9000 mainframe computer system. All yard personnel are equipped with Teklogix wireless terminals, allowing the GPA to track all terminal activity in real-time without paper. Every container movement is tracked and verified against computer records in sub-second time, dramatically reducing container turnaround

time.

Now when a container arrives at the facility by truck, it is interchanged and immediately assigned a berth and a row by the location system via a Teklogix wireless terminal.

After the driver parks the container at its location, an inventory clerk inspects the container and reconfirms its location using the wireless terminal. Inventory clerks also use the terminals to help the stevedore prepare each order for ocean carriers.

All container orders being loaded onto a vessel are sent to GPA personnel via the wireless data communications system. Whether a container is being pre-mounted, demounted, transferred or being taken through governmental inspections, all the orders are tracked in real-time. Similarly, when a container is passed from an ocean carrier, its movement and location are accurately tracked. When the container is moved from one slot to another, the yard operators update the location using their wireless terminal.

"Productivity has gone through the roof," said Mr. Black. "Our drivers and lift operators don't waste time trying to find the right containers anymore. Night-shift drivers are also more productive. Before the wireless data communications system, when orders were printed at night, the locations were not updated and the drivers wasted a lot of time locating the containers."

Full Coverage with Rugged Technology

As the first port on the South Atlantic coast of the U.S. to implement RF technology, GPA's facility posed challenges that Teklogix's wireless data communications system easily met.

"This facility is a mile-and-a-half long and three-quarters-of-a-mile wide," said **Wally Barelka**, ASI's senior consultant. "We needed a system that could provide complete coverage for the facility."

"Plus, the GPA is one of the few port authorities in the U.S. that stacks containers five high, and we had to make sure we had full cov-



The Georgia Port Authority's 853-acre facility can reportedly handle up to six vessels and hundreds of railway cars and trucks each day.



All Georgia Port Authority personnel are equipped with Teklogix wireless terminals.

erage in the stacks themselves. That's why we chose narrow band radio technology for this system. It guarantees the GPA the coverage they need without using a large amount of base stations."

Ready for Future Growth

Although the GPA currently has a single mainframe host connected to the network, it also needed a system that could grow with its needs.

"The facility's level of transactions will increase using this new system and the wireless data communications system backbone has to support this increase," said **Mark Grubbs**, ASI's vice president of Technology Services.

Reportedly, future modifications will make it possible for stevedores and steamship companies to utilize GPA's wireless data communications system for their own warehousing, equipment maintenance and break bulk cargo operations.

"Other companies have expressed interest in using the wireless data communications system's backbone to connect their computer to the GPA's network, leveraging the benefits of this system even further," said Mr. Grubbs.

Turning Cost into Profit

By eliminating the paper chase, GPA has improved port efficiencies, increased productivity and reduced labor costs.

"Being able to update our customers with real-time information as their containers move throughout our yard has had a dramatic impact to our level of customer service," said Mr. Armstrong. "From point to point, we now know exactly where their freight is at all times."

"With economic conditions impacting revenue and expenses, most of your port authorities and terminal operators are trying to find ways to keep their costs under control," added Mr. Armstrong. "Our wireless data communications system has helped the GPA create new economies that we are now passing along to our customers. Using a wireless data communication system, we have a definite competitive advantage over ports that aren't using this technology."

TANKER TECHNOLOGY

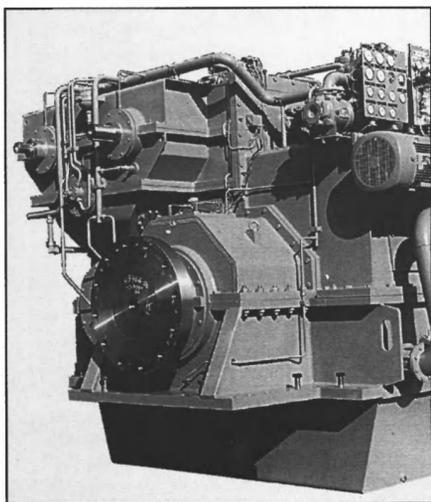
Reduction Gear Designed To Improve Tanker Safety

Valmet Power Transmission Inc. has delivered to Wartsila a marine propulsion gearbox with a new PTI drive configuration for installation on a new chemical tanker. The solution is designed to increase machinery related safety, to enhance operational economy and to provide additional benefits. The concept from Valmet features a single input/single output gearbox in a horizontal form, three hydraulic multi-disc clutches — which are incorporated in the gearbox — and a PTI drive. The main clutch is for engaging the propeller shaft, while the two others are for the PTO and PTI drive, respectively. The PTI drive includes a pony motor. In normal drive at sea when the entire propulsion system is in operation, the main and the PTO clutches are engaged. The CP propeller is driven by the main diesel engine and part of the engine power can be supplied to the shaft alternator to produce electricity. The unit delivered to Wartsila for the chemical tanker was designed for the following duty:

Input power	8,775 kW
Input speed	500 rpm
Propeller speed	112.5 rpm
Propeller thrust	910 kN
PTO drive	1,800 kW @ 1,800 rpm
PTI drive	1,500 kW @ 1,800 rpm
Classification	RINA, no ice

Emergency Propeller Drive

In the event of engine failure, Valmet's new PTI drive, with its unique clutch solution, will reportedly make it possible to propel the ship away from hazards. This takes place in such a way that the pony motor, with its shaft integrated in the gearbox, is connected to the PTO shaft to accelerate the shaft



Valmet reduction gear with new PTI drive configuration.

alternator. After the alternator has reached its nominal speed, the main and the PTO clutches are disengaged and the propeller shaft is started by engaging the PTI clutch. The propeller is then driven by the shaft alternator, which is functioning as an electric motor and is supplied with power from the generator sets onboard.

The shaft alternator can again be used as a motor to drive the propeller should it become necessary for the ship to change berth. This arrangement allows the vessel to meet port authorities' requirements for it to be ready for possible transfer at any time.

For more information from Valmet
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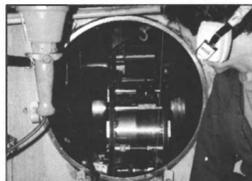
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TANKER TECHNOLOGY

(Continued from page 83)

three similar vessels from Croatian yards during the first half of 1996. The company, with a total products tanker fleet now amounting 27 ships (864,000 dwt) has eight more of these vessels on order in the for-

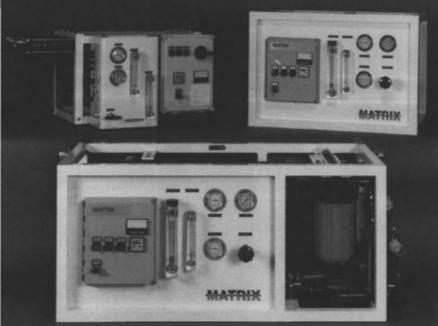
mer Yugoslavian province, scheduled for completion by the end of this year.

The preceding was excerpted from the World Tanker Fleet Review, January - June 1996, from Jacobs and Partners Ltd. For information on receiving the

entire 72 page report, complete with in-depth analysis and dozens of charts and graphs, contact Jacobs at: 18 Mantel St., London, U.K. E1 8AA; tel: +44 171 459 2100; fax: +44 171 459 2199.

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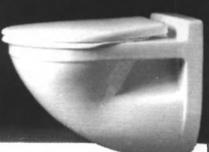
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**Tankers
Delivered During
The First Half Of
1996**

Type	No.	DWT
Crude Carriers	30	6,015,023
Product Carriers	29	968,643
Crude/Product Carriers	2	142,115
Chemical Carriers	7	213,386
Methanol Carrier	1	29,520
Fleet Replenishment	1	27,518
Total	70	7,396,205

Source: Jacobs & Partners

**Ruston Diesels
Chosen For
Petroleum Tankers**

GEC Alsthom Ruston Diesels, based in Merseyside, will supply a pair of 8RK270 medium speed diesel engines for propulsion of two double hull, 4,500-dwt petroleum tankers being built by VSEL for James Fisher & Sons. Each of the clean product tankers will measure approximately 299 ft. (91 m) long and will achieve speeds up to 12 knots. The engines will drive Ulstein CP propellers through Ulstein Liaaen reduction gearboxes. Each engine will generate 2,300 kWb at 900 rpm. A 600 kWb take-off will provide all on-board electrical power, and will enable cargo pumps to function when the ship is docked. All machinery, auxiliary equipment and accommodation will be located aft. Delivery is scheduled for this month and next February.

For more information on GEC Alsthom Ruston Diesels
Circle 92 on Reader Service Card

Maritime Reporter/Engineering News

TANKER TECHNOLOGY

First International Petroleum Posts 70 Percent Increase In Net Earnings

First International Petroleum Transport Corp. posted an operating profit of \$21 million for the year ended March 31, 1996. Income for the period increased to \$30.9 million, and net earnings rose to \$3.3 million, a 70 percent jump. The company's chairman, Paul Slater, said that the six 46,000-dwt tankers which are owned by the company on long-term charter to Shell International were trading widely in Southeast Asia and in certain trans-pacific trades. In addition, the Standard & Poor Review comments that customer emphasis in the maritime segment is shifting towards safety and quality (reflecting concern over liability for spills), and therefore, double hull ships.

S&P believes that the long-term trend line for the products trade will continue to rise between three and eight percent annually, with demand led by the Asia Pacific region.

Emergency Towing System To Meet International Standards

The Willem Pot Emergency Towing System, developed with Helwig & Van Der Laan naval architects, is a new concept in tanker safety.

Since the new regulation V/15-1 of SOLAS, as adopted by the Maritime Safety Committee in May 1994, requires that all tankers of 20,000-dwt and above be fitted with emergency towing arrangements, the objectives of the guidelines were to be able to establish a towing connection between a tug and a tanker in distress.

Part of the uniqueness of the system is that it demands no human action or power supply on the disabled ship, so that the action can be fully controlled by the tugboat. This is especially important considering that in many serious ship disasters, the entire crew will often abandon ship.

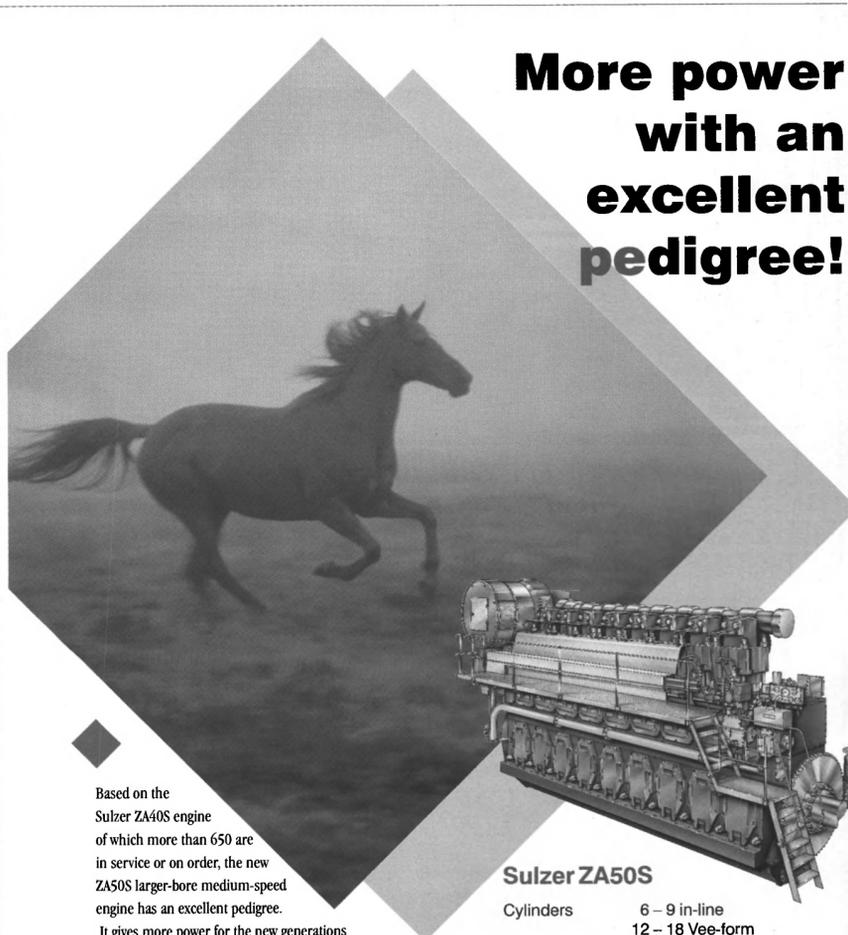
The Willem Pot system consists of a strongpoint on the deck (Smit bracket) and a chafing chain. On the bow of the ship, a so-called grabhook is placed in a support connected to the bulwark. A sloping cable runs from the foremost to this support. When the tug propels shoot-

ing line over the bow of the tanker, this line will glide down the stay and end in the opening of the grabhook that has a large spoon-shaped end. Small non-return lips prevent the shooting line from slipping out. Only a light force is required to pull the grabhook from its support.

To the grabhook, a long double messenger line is connected that runs through the fairlead and the endlink of the chafing chain. When the tug has pulled the grabhook onboard, the chafing chain can be pulled out by heaving on both parts of the messenger line. In a tryout of the system earlier

this year — using the tanker *Jo Elm* and the tug *Waker* — the operation of firing to full connection and readiness to tow took 30 minutes.

For more information on the system
Circle 93 on Reader Service Card



More power with an excellent pedigree!

Based on the Sulzer ZA40S engine of which more than 650 are in service or on order, the new ZA50S larger-bore medium-speed engine has an excellent pedigree.

It gives more power for the new generations of larger and faster cruise ships, ferries and Ro-Ro vessels, yet it can be expected to offer the same economic benefits of reliability, long times between overhauls and ability to run on heavy fuels. It is developed by the leaders in diesel technology to put the power in your projects.

Sulzer ZA50S

Cylinders	6 - 9 in-line 12 - 18 Vee-form
Power range	6480 - 21 600 kW 8820 - 29 340 bhp
Speed	450 rev/min

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New Sulzer Diesel

NSD.1e

Circle 271 on Reader Service Card

COUNTRY FOCUS • AUSTRALIA

(Continued from page 79)

ing facility in Henderson, Australia. Later this year, construction is set to begin on a 74-m (243-ft.) high speed passenger/vehicle ferry reportedly capable of carrying more than 450 passengers and 98 vehicles at speeds in excess of 40 knots.

Joining The High Speed Race

Oceanfast Ferries is another company making a name for itself in the Australian fast craft market. Currently under construction at the shipyard is a 45-m (147.6-ft.) ALT (Air Lubricated Technology) fast passenger ferry. This first-of-class vessel, *Hull 16*, is based on

advanced technology initially developed in the Soviet Union. The propulsion configuration for the vessel is based on 4 x MTU 16V 396 engines coupled to 4 x MJP 650 waterjets. The unique cavern hull design allows for the injection of high volume, low pressure air which reportedly provides for considerably reduced resistance with

corresponding increases in speed or alternatively higher deadweight carrying capacities. *Hull 16* was scheduled to be launched between September and October, and will operate in the Caribbean. Oceanfast plans to continue producing 45 and 60-m ALT fast ferries in both passenger and passenger/vehicle configurations. *Hull 18*, an 80-m (262.4-ft.) RoRo passenger/vehicle ferry, incorporates bow and stern ramp loading and has the capacity for approximately 100 cars and 450 passengers. Passenger accommodation is divided equally into a passenger saloon for 262 passengers and outside seating on the observation deck for an additional 188 passengers. The propulsion arrangement is configured around 4 x MTU 16V 396 engines coupled to 7:1 reduction gears and four separate shafts and propellers. A 500-kW bowthruster and flap rudders reportedly provide enhanced maneuverability in confined areas. Completion is scheduled for July 1997. In addition, International Shipyards, a member of the Oceanfast Marine Group, has announced a contract for the conversion of a 59-m (193.5-ft.) pilot vessel into a luxury motor yacht. Initially built for the Dutch government by the Amels shipyards, the vessel is powered by three Paxman engines driving a diesel-electric, single screw plant. The interior accommodation, which currently allows for 45 crew and pilot personnel, will be modified into entertainment and cabin areas for up to 14 guests, with all amenities and crew accommodation for 18-20 persons. This major conversion and refit, estimated to take approximately 14 months, will include a significant restyling of the exterior and a total change to the interior layout of the vessel.

Also speeding up the fast craft market is the Image Marine Group Pty. Ltd. Having relocated to Western Australia's shipbuilding precinct of Henderson, Image Marine currently has under construction three high speed catamaran ferries and is planning a joint marketing initiative in Japan with Austal Ships. In addition, Image Marine has created a divisional structure to include Image Boat Builders and Seabus International. The catamaran ferries now under construction include one measuring 30 m (98.7 ft.) long and two measuring 23 m (79 ft.) long.

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Maritime Reporter/Engineering News

COUNTRY FOCUS • AUSTRALIA

demand for faster vessels, Australia is making its way to the front of the fast craft market. With the impressive combined orderbook of the active Australian fast craft builders — which includes the grandeur of Japanese orders — Australian shipbuilders have seemingly found a niche in which they will succeed.

AMECRC Announces Restructuring Of Maritime Engineering Research Overhaul

The Australian Maritime Engineering Cooperative Research Centre (AMECRC) has announced a major restructuring of its research program aimed at capturing new opportunities for Australia. As announced by Chairman Dr. Don Williams at AMECRC 96, the first annual meeting of all researchers and participants of the Cooperative Research Centre (CRC) at its Launceston, Tasmania, headquarters, the restructuring signals a new direction in Australia's maritime engineering sector. The new research programs will reportedly encompass all forms of ships, structures for offshore oil and gas activities and fisheries technology. The first major initiative will be an extensive market evaluation to quantify opportunities from the ocean for Australia into the next century. "We have already built a strong research resource to tackle industry's research problems, and we are continually attracting some of the country's leading companies as participants in our research program," Dr. Williams said. The CRC includes 27 participants from academic bodies, key industry groups and leading companies in marine technologies, and has research bases in Tasmania, Victoria, Western Australia and New South Wales.

Sontec Expands Marine Intercom System

Sontec Western Australia, developer of solutions for the public address, closed circuit television and intercommunications fields for the fast ferry industry (mainly in Western Australia) has expanded its Surecom marine intercom system. The system — designed for high speed craft, fast ferries, workboats and tender vessels — now offers up to 20 substations with a modular designed master switching unit allowing system design flexibility. A range of optional headset station, goose-neck or hand-held microphones and new handset stations are also included in the system.

For more information on Sontec
Circle 72 on Reader Service Card

Saydair Offers Seating To Australian Fast Ferry Market

Saydair Commercial Seating offers transit seating for the Australian market. The company's MetroMarina line for high speed surface craft, river ferries and tourist and commuter vessels reportedly meets the U.S. standard MVSS302 Fire Standard.

For more information on Saydair
Circle 73 on Reader Service Card

Hibernia Owners To Use Newfoundland Terminal

Partners in the Hibernia project announced they have signed an agreement to transship Hibernia crude oil that is not directly shipped to market, using transshipment facilities to be built in Newfoundland.

Mobil Oil Canada Properties, Chevron Canada Resources, and Petro-Canada will form a company that will own and construct a crude oil transshipment terminal in Newfoundland.

Jerry Anderson, president of Mobil Oil Canada said, "I am very pleased the consortium has made the decision to build this world-class facility in Newfoundland. An efficient transportation system is important to ensure Hibernia and future Grand Banks production can be competitively marketed."

The Newfoundland transshipment facility will have a minimum of one berth for the tankers, capable of being expanded to two or more berths as necessary. The berth will accommodate crude oil tankers up to 155,000 dwt. The heated crude oil storage facilities at the terminal will have a capacity of at least 1.5 million barrels, with provisions to expand to accommodate future Grand Banks production. In addition, the site will include associated utility systems, such as storage tank heating systems and electrical power to support the facility.

Sea-Land Uses Intranet To Improve Productivity

Sea-Land Service, a subsidiary of CSX, involved in container shipping transportation and related trade services, is using the intranet to improve communications and productivity among its terminal offices. The company's solution was implemented by Electric Press Inc.

Sea-Land's intranet, the Terminal Productivity Reporting System, services fourteen shipping terminals around the U.S. The system allows each terminal to upload and compare weekly terminal data such as number of marine lifts, costs per ton and costs of repairs. Actual, budgeted and variance data can be simultaneously depicted in spreadsheets, as well as in bar or line graphs for multiple terminals.

"There was a need by Sea-Land to get comparative operating data into the hands of terminal managers, a process complicated by the geographic location of the terminals," said Duffy Mazan, president of Electric Press.

"The Terminal Productivity Reporting System developed by Electric Press will greatly reduce the time and effort we currently spend to collect and consolidate terminal data," said Jim Watkins, Sea-Land's vice president of Planning and Development.

Lam Named President, CEO of McDermott

James L. Dutt, interim chairman of the

board and chief executive officer, J. Ray McDermott, S.A., announced that Mike H. Lam has been named president and chief operating officer of the company.

Mr. Lam, who was previously president of J. Ray McDermott's Marine Construction Services, is the former vice chairman of the board and chief operating officer of Offshore Pipelines, Inc. (OPI).

Mr. Dutt also announced that F. Rickey Oehrlein was named vice president and group executive, Europe Operations, including the European operations of the company's joint ventures.

EPA Clarifies Sediment Testing Rules

The U.S. Environmental Protection Agency (EPA) has issued a final rule to clarify provisions of the agency's ocean dumping regulations for sediment testing to determine the potential effects of ocean disposal of dredged material on the marine environment.

Issuance of the rule is one part of the Clinton Administration's plan — announced on July 24 — to take steps toward resolving dredging issues in the New York/New Jersey Harbor area.

Under the final rule, EPA will continue to require sediment testing using at least two sensitive marine species that must collectively represent three characteristics—burrowing, filter feeding and deposit feeding—that make them susceptible to exposure to sediment contaminants.

The species currently required by EPA's testing manual are sensitive indicators of the potential effects of ocean disposal of dredged material.

"This rule protects the marine environment while clearing the way for applicants to move forward in applying for dredge permits," said EPA Region 2 Administrator Jeanne Fox. "We keep the same stringent protections we've had since 1991, but eliminate the confusion about testing procedures."

NRC Commissions Four Vessels Into Service

National Response Corp. (NRC) has commissioned four additional vessels to provide offshore oil spill response coverage in the U.S. Gulf of Mexico.

The units, Identified Deployment (I.D.) Boats, are fitted with oil recovery systems, crewed by trained personnel capable of deploying the spill response equipment, and will supplement NRC's six dedicated oil recovery vessels staged in the Gulf of Mexico.

The vessels will be operating in the Mississippi River area, Cameron, La., and Galveston and Corpus Christi, Texas.

NRC's Gulf of Mexico network reportedly constitutes the single largest response fleet in the region.

Adding further depth, NRC has access to an additional 184 marine platforms owned by affiliates Seacor Marine Inc., Graham Marine and McCall Boat Rentals.

MARINE ENVIRONMENTAL — FEATURE STORY

Insurers Contest Resource Recovery Guidelines

OPA 90 tasked NOAA with the development of standards for the restoration, rehabilitation, replacement or acquisition of equivalent natural resources and services in spill areas — NRDA regulations.

In April, a petition was filed with the U.S. Circuit Court of Appeals by **Marilyn L. Lytle**, partner, Thacher Proffitt & Wood, on behalf of the Water Quality Insurance Syndicate (WQIS) and the American Institute of Marine Underwriters (AIMU), asking for a review of the procedures under which the final rule establishing NRDA was promulgated by NOAA.

The petition said that NOAA issued "vague" regulations which permit trustees to "exercise unfettered discretion in making assessments," using unproven or unscientific methods of assessment that would permit recovery of costs not related directly to restoration or assessment of oil spill areas.

"It will become very difficult, if not impossible, to anticipate costs of NRDA, which will skyrocket without adequate controls," Ms.

Lytle told *MR/EN*. In terms of progress with the petition, she explained: "We are currently trying to work out a briefing schedule. Oral argument could be heard in May 1997."

Ms. **Lytle** said that her clients took legal action because their concerns were ignored by NOAA. "AIMU and WQIS commented extensively on the proposed regulations. WQIS hired a specialist in environmental economics to review computer models ... NOAA never made any overtures to us about fine tuning, working out or anything else."

"AIMU and WQIS have testified before both the House and Senate concerning the problem with NRDA," said Ms. **Lytle**, when asked if her clients support parties lobbying to amend OPA 90 in the congressional arena. Offering the petitioners' best case scenario for the outcome of this situation, she stated: "Court will require NOAA to issue regulations with clear guidelines without non-use values. Congress will also amend OPA to prohibit some."

On the flip side, "I'm confident

that our rule is going to be upheld ... I've urged industry to get down to business with us ... to stop wasting time on litigation on issues that have already been dealt with by the D.C. Circuit Court of Appeals," NOAA General Counsel **Terry D. Garcia** told *MR/EN*.

Mr. Garcia pointed out that in *Kennecott et al v. Department of Interior* — a similar challenge recently brought by industry concerning damage assessment regulations under CERCLA (Comprehensive Environmental Response Compensation and Liability Act of 1980) — the very same court upheld the legality of the regulations. He said that he was confident because NRDA regulations "have specific, clear protocols" for the way trustees can act, and because the court "has looked at and approved a similar regulatory scheme regarding a trustee's discretion to determine appropriate damage assessment procedures."

Washington Mulls It Over

According to reports from the congressional front, the Senate

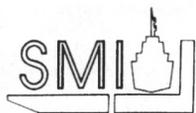
Environment and Public Works Committee is considering proposing an amendment to OPA 90. Bill S. 1730, the Oil Spill Prevention and Response Improvement Act, seeks to ensure that "citizens and communities affected by an oil spill receive prompt and full compensation." While the bill's provisions were being discussed this summer, the Senate Committee was also reportedly considering measures aimed at reforming NRDA, and a mandate that would free operators of double-hulled vessels from responsibility for spill damages exceeding \$10 million, except in cases of negligence or misconduct.

With challenges to OPA 90 brewing, it is essential not to overlook the positives — the uncharacteristic proactivity being displayed by the industry, and the fact that environmental legislation is making a difference. As emphasized by **Mr. Garcia**, "We're working with oil companies on pre-spill protocols ... I think we've done a very good job balancing the interests of industry and government ... I think that we've made some headway here."

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Caley Announces Contracts For Davit Projects

Caley Ocean Systems, Glasgow, Scotland, has announced a number of major contracts for the Caley davit. In the North Sea, the company is completing a range of davit projects for deployment of daughter craft from standby vessels. Caley has also received an order from a New Zealand interest and U.S. Coast Guard approval of its davit. The Caley davit, an all-weather boat handling system, complies with the SOLAS Convention. Most specifically, the davit lifts rescue boats well clear of the ships' sides before capturing them and bringing onboard.

In addition, Caley has fitted one of its single-point davits on HMS *Fearless*. This is reportedly the first Caley RIB launch and recovery system to be fitted to a U.K. warship and the Royal Navy is the second navy to fit this launch and recovery system. Features of the Caley system include a light auto tension system which reportedly allows for easily controlled recovery; a pendulation head which reduces snatch and shock loadings on the boat; and a forward towing boom which provides directional stability and allows the boat to be recovered and launched in clear water.

For more information on Caley
Circle 47 on Reader Service Card

Ruston Engines Reach Half-Million-Hour Mark

GEC Alsthom Ruston Diesels medium speed engines, fitted or currently being installed on 19 fast ferries worldwide, have reportedly run up more than 500,000 operating hours since the introduction of the 16RK270 in 1990. The Ruston 20RK270, with a MCR of 7080 kWb at 1030 r/min., was part of the four engine installation for the first of Incat's new class of 86-m (282.2-ft.) wave piercing catamarans. The first vessel is scheduled to be delivered to Condor for use on the U.K. Channel Island route at the end of this year.

Ruston is also currently manufacturing 20RK270 engines for the next three Incat 86-m vessels and for two 100-m (328-ft.) Fincantieri monohull fast ferries for Sea Containers, with another four options pending.

For more information on Ruston Diesels
Circle 74 on Reader Service Card

Steering Controls Offered By Jastram

Jastram, a designer and manufacturer of steering gears and controls including ram-type and rapsion slide gears, offers a complete range of steering controls including electric helms, full follow-up levers, jog levers, rudder angle

indicators and various steering control amplifiers. Jastram can reportedly provide a proportional steering system, in which rudder movements are accelerated and decelerated, resulting in shackless and noiseless operation of the steering rams.

For more information on Jastram
Circle 27 on Reader Service Card

Scanvaegt Presents Marine Weighing Equipment Line At Fish Expo '96

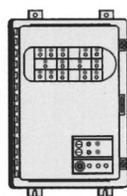
Scanvaegt was scheduled to show its weighing equipment, including marine scales with Weight Indicator 8496 and FlowWeigher 4500 with Flow Weigher Indicator 4583 for the fish industry, at Fish

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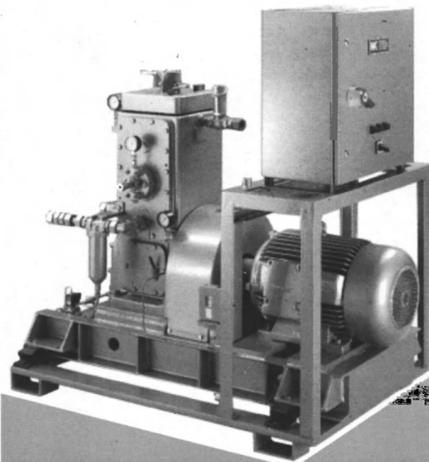
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Circle 341 on Reader Service Card

Expo '96, which was scheduled to be held in Seattle, Wash., from September 26 to 28. All Scanvaegt marine scales are made of stainless steel, including hermetically sealed load cells to prevent water and moisture from damaging the scale. The Weight Indicator 8496 is reportedly suitable for packing operations at sea.

This compact system is designed for both onboard and land-based processing.

For more information on Scanvaegt
Circle 28 on Reader Service Card

SPD Technologies Introduces New Line of Advanced Circuit Breakers

A new, advanced line of Actron Electronic

AQB circuit breakers has been introduced by SPD Technologies, representing the next generation of "smart," combat-tough, onboard circuit breakers, which reportedly deliver a 70 percent increase in electrical coordination in shipboard applications. Both the 250 and 400 amp molded-case Actron units have already achieved QPL approval from the Navy. SPD's Actron features include solid-state overcurrent protection, RMS sensing and adjustable short-time trip delay for precise coordination and uninterrupted performance. Further enhancements include rating plugs, ground fault detection, real-time state monitoring and a bi-directional communications port. These circuit breakers also feature microprocessor systems which reportedly enable current and

voltage parameters to be monitored automatically and continuously, enhancing onboard automation through integration with ships' automated control systems. Actron Electronic AQB's are shock resistant and meet Navy performance-specification requirements, including EMI, EMC and MIL-S-901 shock and MIL-STD-167 vibration.

For more information on SPD Technologies
Circle 68 on Reader Service Card

Sorbent Products Instrumental In Delaware Spill Cleanup

Sorbent Products Company, Inc. (SPC) was part of a recent response effort to cleanup an oil slick formed when 40,000 gallons of crude emptied into the Delaware River, after Norwegian ship *Jahre Spray* was blown away from a dock in stormy conditions while offloading product from West Africa. SPC was among local contractors tasked with cleanup operations.

SPC's role in the spill cleanup centered around its re-oiling prevention methods, accomplished through installation of its shoreline barrier RIP WRAP. The product is configured to 10 x 100-ft. (3.04 x 30.48-m) or 10 x 200-ft. (3.04 x 60.96-m) sections. SPC designed the product for use in zones with sensitive environmental areas that double as commercially active tanker lanes.



Spill crews prepare RIP WRAP for installation.

Spill Testimonial

RIP WRAP is configured with grommets in each of its four corners, allowing contractors to roll the product into 100-ft. lengths, thread securing ropes through top grommets, and chain the ballast through the bottom. This technology, reportedly manufactured from 100 percent polypropylene fabric, serves as a protective skirt or curtain against recontamination for seashore areas such as coastlines, wharfs, jetties, docks, marinas, seawalls and pilings. The product is UV coated for long-term applications, and color-coded with heavy duty Velcro, which allows quick fastening of multiple lengths. Coating backing is designed to prevent oil penetration.

For more information on Sorbent Products Co., Inc.
Circle 14 on Reader Service Card



RIP WRAP protects the dock landing and vessel *Bulldog II* from the effects of re-oiling.

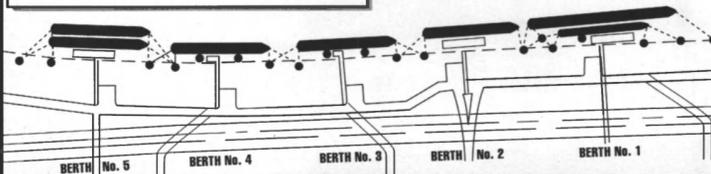
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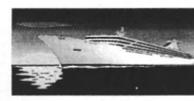



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Circle 218 on Reader Service Card

Principal Contracts Recorded, August 1996

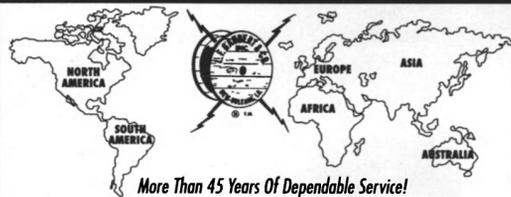
Orders are listed alphabetically, by vessel type. Publisher is not responsible for errors or omissions. For additional information on this, or other ship market information, contact: FERLISHIP, Paseo De San Francisco De Sales, 8, 28003 Madrid, Spain, tel: +341 441 4138; fax: +341 441 4138.

Owner/ Operator	Country (Owner)	Shipyard	Country (Shipyard)	Ship Type	No.	DWT	Delivery Date	Price \$M
CHUBU DENRYOKU	—	HITACHI ZOSEN	JAPAN	BULK CARRIER	1	90,000	1998	30
COSCO	CHINA	HUDONG SHIPYARD	CHINA	BULK CARRIER	1	45,000	1998	25.5
COSCO	CHINA	HUDONG SHIPYARD	CHINA	BULK CARRIER	2	73,000	1998	—
COSCO	CHINA	HUDONG SHIPYARD	CHINA	BULK CARRIER	3	47,500	1998	—
CSAV	CHILE	DALIAN SHIPYARD	CHINA	BULK CARRIER	1	47,000	1998	—
DAICHI CHUO KISEN	JAPAN	SHIN KURUSHIMA	JAPAN	BULK CARRIER	2	70,000	1997	54
GOWILL CO	HONG KONG	SASEBO	JAPAN	BULK CARRIER	1	63,200	1997	—
JAPANESE INTERESTS	JAPAN	KOYO DOCK	JAPAN	BULK CARRIER	1	158,100	1998	—
mitsui O.S.K. LINES (MOL)	JAPAN	HITACHI ZOSEN	JAPAN	BULK CARRIER	1	71,400	1997	—
mitsui O.S.K. LINES (MOL)	JAPAN	IMABARI SHIPBUILDING	JAPAN	BULK CARRIER	1	28,000	1997	—
mitsui O.S.K. LINES (MOL)	JAPAN	mitsui ENG.&SHIPBUILDING	JAPAN	BULK CARRIER	1	46,000	5/97	22
MO SEAWAYS	—	WATANABE	JAPAN	BULK CARRIER	2	11,000	1997	—
NIPPON YUSEN KAISA (NYK)	JAPAN	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	2	46,700	1998	—
NIPPON YUSEN KAISA (NYK)	JAPAN	SAMSUNG	KOREA	BULK CARRIER	1	170,000	1998	44
POLISH STEAMSHIP	POLAND	SZCZECINSKA	POLAND	BULK CARRIER	3	—	98/00	—
TAIHEI KAIUN	JAPAN	SASEBO	JAPAN	BULK CARRIER	1	72,000	9/97	26
TOYO SENPAKU	JAPAN	SHIN KURUSHIMA	JAPAN	BULK CARRIER	1	70,000	1997	27
U MING MARINE TRANSPORT CORP	TAIWAN	HITACHI ZOSEN	JAPAN	BULK CARRIER	1	71,400	1998	28
WORLD WIDE	HONG KONG	SASEBO	JAPAN	BULK CARRIER	2	72,000	8/98	51.8
mitsui O.S.K. LINES (MOL)	JAPAN	DAEWOO	KOREA	BULK CARRIER	1	170,000	1998	—
KYODO FERRY	JAPAN	MIURA	JAPAN	BULK CARRIER	1	1,550	1997	—
—	—	SHIN KURUSHIMA	JAPAN	BULK CARRIER	1	22,000	1997	—
FERROSTAHL	GERMANY	TURKISH SHIPBUILDING IND	TURKEY	BULK CARRIER	9	6,750	1999	84.7
HACHIUMA KISEN	JAPAN	TSUNEISHI	JAPAN	BULK CARRIER	1	45,000	1998	24
HAYAMA SENPAKU	JAPAN	TSUNEISHI	JAPAN	BULK CARRIER	1	45,000	1997	24
CYNTHIA OCEAN TRANSPORT	JAPAN	SHIN KURUSHIMA	JAPAN	BULK CARRIER	1	71,900	12/97	—
KOREA LINE	KOREA	DAEDONG SHIPBUILDING	KOREA	BULK CARRIER	1	73,000	6/98	27.3
UNKNOWN	CHINA	PANYU	CHINA	CATAMARAN	3	—	1997	64
BALMTANKER LTD	RUSSIA	ALABAMA SHIPYARD	U.S.	CHEMICAL	5	16,000	—	125
HOLLMING OY	FINLAND	FINNYARDS	FINLAND	CHEMICAL	1	10,000	—	32
JO TANKERS	NORWAY	KVAERNER GOVAN	U.K.	CHEMICAL	1	36,000	1998	77
KNUD I LARSEN	DENMARK	QIXING SHIPYARD	CHINA	CHEMICAL	3	15,000	98/99	63
KNUTSEN OAS SHIPPING	NORWAY	NAVAL GIJON	SPAIN	CHEMICAL	1	19,000	1997	47.6
MIWA KAIUN	JAPAN	SHIN KURUSHIMA	JAPAN	CHEMICAL	1	15,300	1997	30
NT MARINE	JAPAN	SHIN KURUSHIMA	JAPAN	CHEMICAL	1	15,300	1997	30
POLISH STEAMSHIP	POLAND	SZCZECINSKA	POLAND	CHEMICAL	2	—	1999	—
STOLT NIELSEN	NORWAY	AESA	SPAIN	CHEMICAL	3	—	1998	—
STOLT NIELSEN	NORWAY	JULIANA C.G.	SPAIN	CHEMICAL	1	—	1998	—
HOLLMING OY	FINLAND	FINNYARDS	FINLAND	CHEMICAL/OIL	3	5,500	1998	95.5
SOC NAV ULTRAGAS	CHILE	SPLIT	CROATIA	CHEMICAL/OIL	1	45,000	1997	35
BERNHARD SCHULTE	GERMANY	JIANGNAN	CHINA	CONTAINER	4	—	1998	96
CHINESE INTERESTS	CHINA	WENZHO SHIPYARD	CHINA	CONTAINER	1	3,300	1997	—
CONTI REEDEREI/WSB NIEDERELBE	GERMANY	DAEWOO	KOREA	CONTAINER	6	30,000	1997	—
COSCO	CHINA	ALABAMA SHIPYARD	U.S.	CONTAINER	4	—	—	150
COSCO	CHINA	BRAILA-SANAB	ROMANIA	CONTAINER	1	8,530	1996	—
EGON KOPKE	—	SIEIAS	GERMANY	CONTAINER	1	6,800	3/97	—
FRENCH CARIBBEAN GROUP	FRANCE	BARRERAS	SPAIN	CONTAINER	6	—	—	213
HANJIN SHIPPING CO.	KOREA	HANJIN H.I.	KOREA	CONTAINER	1	53,000	1998	67.5
HANSA MARE	GERMANY	HANJIN H.I.	KOREA	CONTAINER	1	—	10/97	30
HERMAN BUSS KG	GERMANY	VOLKSWERFT STRALSUND	GERMANY	CONTAINER	2	—	1998	—
KOREA MARINE	KOREA	SAMSUNG	KOREA	CONTAINER	2	21,200	1998	58
KREY SCHIFFAHT GmbH	GERMANY	MARMARA	TURKEY	CONTAINER	1	—	—	—
MANFRED LAUTERJUNG	GERMANY	VOLKSWERFT STRALSUND	GERMANY	CONTAINER	2	—	1998	—
MISC	MALAYSIA	DAEWOO	KOREA	CONTAINER	2	—	1998	66
NANTAI LINE	TAIWAN	KYOKUYO ZOSEN	JAPAN	CONTAINER	2	—	1997	—
NEPTUNE ORIENT LINES (NOL)	SINGAPORE	JURONG	SINGAPORE	CONTAINER	4	—	1998	—
NIEDERELBE SCHIFFAHT	GERMANY	DAEWOO	KOREA	CONTAINER	4	—	1998	—

Principal Contracts Recorded, August 1996

Owner/ Operator	Country (Owner)	Shipyard	Country (Shipyard)	Ship Type	No.	DWT	Delivery Date	Price \$M
NOL	SINGAPORE	JURONG	SINGAPORE	CONTAINER	4	10,000	1998	—
PHOENIX REEDEREI	—	MARMARA	TURKEY	CONTAINER	2	—	1997	—
SEA-LAND SERVICE	U.S.	ISHIKAWAJIMA HARIMA H.I.	JAPAN	CONTAINER	4	—	—	—
—	—	STOCZ SZCZECIN	POLAND	CONTAINER	1	—	1998	—
SVENDBORG KOMMUNE	DENMARK	TORSHAVNAR SKIPASMIJJA	DENMARK	FERRY	1	400	4/97	3
AFAI HIGH PERFORMANCE SHIPS	HONG KONG	INCAT AUSTRALIA	AUSTRALIA	FERRY	3	—	97/98	64
OFOTEN VESTERAALENS DAMPSK.(OVDS)	NORWAY	KVAERNER FJELLSTRAND	NORWAY	FERRY	3	—	1997	14
POLAR SEAFOOD TRAWL	—	STERKODER KRISTIANSTUND	NORWAY	FISHING	1	700	1997	—
HUNGARIAN SHPG	HUNGARY	SEVERNAYA	RUSSIA	GENERAL CARGO	4	5,880	1998	—
JAPANESE INTERESTS	JAPAN	HONDA	JAPAN	GENERAL CARGO	1	3,600	1997	—
KG JEBSEN	NORWAY	KORMANO	SLOVAKIA	GENERAL CARGO	1	—	1997	—
KYOWA SANSHO	JAPAN	MIYOSHI	JAPAN	GENERAL CARGO	1	8,500	1997	—
M MYKLEBUSTHAUG	NORWAY	BOURGAS SHIPYARD	BULGARIA	GENERAL CARGO	1	3,000	1997	—
OSAKA SENPAKU	JAPAN	HONDA	JAPAN	GENERAL CARGO	1	2,200	1997	—
TEJIN KAIUN	—	MIURA	JAPAN	GENERAL CARGO	1	1,900	1996	—
—	—	SANYO SHIPYARD	JAPAN	GENERAL CARGO	1	6,250	1996	—
JUMBO SHIPPING	NETHERLANDS	MADENCI GEMI	TURKEY	HEAVY-LIFT CARGO	1	6,500	1997	—
JUMBO SHIPPING	NETHERLANDS	MADENCI GEMI	TURKEY	HEAVY-LIFT CARGO	1	7,350	1998	—
HANJIN SHIPPING CO.	KOREA	HANJIN H.I.	KOREA	LNG	1	—	1999	218.5
HYUNDAI MERCHANT MARINE (HMM)	KOREA	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	LNG	2	—	1999	437
KOREA LINE	KOREA	DAEWOO	KOREA	LNG	1	—	1999	218.5
YUKONG LINE	KOREA	DAEWOO	KOREA	LNG	1	—	1999	218.5
YUKONG LINE	KOREA	SAMSUNG	KOREA	LNG	1	—	1999	218.5
SEMBAWANG WAH KWONG SHIPPING	HONG KONG	HITACHI ZOSEN	JAPAN	LPG	1	—	11/96	73.5
BERNHARD SCHULTE	GERMANY	JIANG ZHOU	CHINA	MULTI-PURPOSE	4	5,400	97/98	—
QUINGDAO MARINE SHIPPING	CHINA	HUSUMER WERFT	GERMANY	MULTI-PURPOSE	2	10,300	1997	—
MAERSK SUPPLY SERVICE	DENMARK	SIMEK	NORWAY	OFFSHORE	2	—	5/98	—
KUWAIT OIL TANKER CO.	KUWAIT	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	OIL CARRIER	2	—	1998	—
—	INDONESIA	PAN-UNITED SHIPYARD	SINGAPORE	OIL CARRIER	1	17,500	1998	—
TALLMADGE BROTHERS	U.S.	BLOUNT SHIPYARD	U.S.	OYSTER DREDGE VESSEL	1	—	11/96	1.2
GERMAN INTERESTS	GERMANY	HUSUMER SCHIFF	GERMANY	PASSENGER	1	—	1997	—
PARKVIEW FERRY SERVICES	HONG KONG	FBM MARINE	U.K.	PASSENGER	5	—	—	—
STENA LINE	SWEDEN	FINNYARDS	FINLAND	PASSENGER / FERRY	4	—	97/98	223

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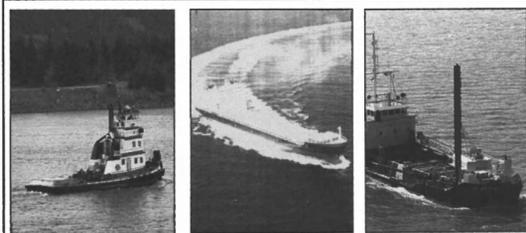
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Principal Contracts Recorded, August 1996

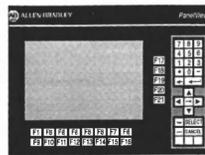
Owner/ Operator	Country (Owner)	Shipyard	Country (Shipyard)	Ship Type	No.	DWT	Delivery Date	Price \$/ft
NEGROS NAVIGATION	PHILIPPINES	KVAERNER SINGAPORE	SINGAPORE	PASSENGER FERRY	2	—	96/97	12
KANSAI KISEN	JAPAN	MITSUBISHI H.I.	JAPAN	PASSENGER/VEHICLE	2	10,000	97/98	78
—	—	OCEANFAST	—	PASSENGER/VEHICLE	1	—	1997	—
NISSHO SHIPPING	JAPAN	SEMBAWANG	SINGAPORE	PRODUCT CARRIER	1	30,000	7/98	—
APSIDES SHIPPING	—	SHIKOKU DOCKYARD	JAPAN	REEFER	1	11,000	10/97	—
BETELGUESE SHIPPING	—	SHIKOKU DOCKYARD	JAPAN	REEFER	1	11,000	2/98	—
INDONESIA INST. OF SCIENCE	INDONESIA	MJELLEM & KARL	NORWAY	RESEARCH	1	—	12/97	—
KWANG YANG	KOREA	SHIN-A SHIPBUILDING	KOREA	RORO	2	6,000	1997	31
NIIPPONKAI NAIKO KISEN	JAPAN	KANDA SHIPBUILDING CO.	JAPAN	RORO	1	525	1997	—
TAKEHARA	—	KANDA SHIPBUILDING CO.	JAPAN	RORO	1	700	1997	—
STENA UGIAND SHUTTLE TANKERS	SWEDEN-NORWAY	TSUNEISHI	JAPAN	SHUTTLE TANKER	1	126,000	1998	100
AP MOLLER	DENMARK	SIMEK	NORWAY	SUPPLY	2	4,250	1998	—
REMOY SEA GROUP	NORWAY	KVAERNER KLEVEN LEIRVIK	NORWAY	SUPPLY	1	—	7/97	—
PHILIPPINES NATIONAL MAP	PHILIPPINES	FACT. VULCANO	SPAIN	SURVEY	2	1,160	1997	—
GOLDEN OCEAN	U.K.	HITACHI ZOSEN	JAPAN	TANKER	1	310,000	1998	90
HYUNDAI MERCHANT MARINE (HMM)	KOREA	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	105,000	1998	88
NANJING CHANGJIANG	CHINA	BOHAI SHIPYARD	CHINA	TANKER	1	35,000	1998	—
SIKINOS SHIPPING	—	NKK CORP	JAPAN	TANKER	1	106,000	8/98	—
YUKONG LINE	KOREA	SAMSUNG	KOREA	TANKER	2	—	—	—
UNKNOWN	INDONESIA	SASEBO	JAPAN	TANKER	1	—	—	—
HYUNDAI MERCHANT MARINE (HMM)	KOREA	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	—	7/97	170
CHANGJIANG OIL TRANSPORT	—	BOHAI SHIPYARD	CHINA	TANKER	1	35,000	10/97	28
HANJIN SHIPPING CO.	KOREA	HANJIN H.I.	KOREA	TANKER	1	17,500	1998	24
LUKOIL MURMANSK	RUSSIA	MTW	GERMANY	TANKER	2	16,000	1998	—
WW MARPETROL	SPAIN	UNION NAVAL DE LEVANTE	SPAIN	TANKER	2	15,000	1997	56
MTSUI O.S.K. LINES (MOL)	JAPAN	HITACHI ZOSEN	JAPAN	TANKER	1	260,000	1997	85
HOKKAIDO PREFECTURE	JAPAN	NARASAKI	JAPAN	TRAINING VESSEL	1	—	1997	—
FAIRPLAY	GERMANY	SANTODOMINGO	SPAIN	TUG	6	—	1997	—
ISRAELI PORTS AUTHORITY	ISRAEL	ISHII ZOSEN	JAPAN	TUG	2	—	—	—
KEPPEL SMIT TOWAGE	SINGAPORE-NETHERLANDS	SINGMARINE DOCKYARD	SINGAPORE	TUG	2	—	1997	8.4
AP MOLLER	DENMARK	HASHIHAMA	JAPAN	VEHICLE CARRIER	1	12,490	1997	—
RGI	NORWAY	BENETTI	ITALY	YACHT	1	—	1998	30



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BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. 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/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

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Ervin Industries, Inc., 3893 Research Park Drive, Ann Arbor, MI 48106-1668
- ACQUETTERS**
Predict/DLI, 253 Winstow Way West, Bainbridge Island, WA 98110
BBN Acoustic Technologies, 70 Faucett St., Cambridge, MA 02138
- ADHESIVES**
Life Industries, Corp., 2081 Bridge View Dr., N. Charleston, SC 29405
- AIR CONDITIONING AND REFRIGERATION - Repair & Installation**
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Adcock Marine, 1410 Central Ave., Farmingdale, NY 11735
Carnier Transcold, P.O. Box 4805, Syracuse, NY 13211
Noverco Hi-Press A/S, P.O. Box 310, Roskildevej 22A, DK-2630 Taastrup, DENMARK
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Chempac Environmental, 3405 Highway 33, Neptune, NJ 07753
- AUCTIONEERS**
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- AUTOPILOT SYSTEMS**
ComNav Marine, 1915 Stansburg Ave., Vancouver, B.C. CANADA
- BALLAST**
Mineral Research & Recovery Inc., 4620 South Coach Dr., Tucson, AZ 85714
- BASKET STRAINERS**
Beard Industries, P.O. Box 31115, Shreveport, LA 71130
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B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401
Blom & Voss Industrie GmbH, P.O. Box 100720, D-2000 Hamburg 1, GERMANY
U.S.A. Repps Simplot-Turner Inc., P.O. Box 168, Little Neck, NY 11363p, -0168
Kaltenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Orion Corp., 1111 Cedar Creek Rd., Graton, WI 53024
Okon Engineering Plastics, 2535 Prairie Rd., Eugene, OR 97402
Thornton Bearings Co., 1025 Highway 1, Burlington, Ont., CANADA L7M 1A6
- BILGE OIL/FUEL ABSORBER**
Northstar Marine, 84 Wall Street, Farmingdale, NY 11735
- BILGE SYSTEMS**
Nelson Div., Exhaust & Filtration Sys., Hwy 51 West, P.O. Box 428, Sloughon, WI 53589
- BOAT SHAPING**
Western Branch Metals, Inc., 2401 Wesley St., Portsmouth, VA 23707
- BOILERS**
Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, Ontario CANADA
- BOW THRUSTERS**
Van Dusen & Meyer, Inc., 50 Parrott Dr., Shelton, CT 06484-0558
- BRIDGE WIPEERS**
In-Mar Systems, Yellowstone Street, Kenner, LA 70064
- BROKERS**
151 Maritime Services, 34922 El Encanto St., Dana Pt. CA 92629
Captain Astag Company, Inc., P.O. Box 359496, Ft. Lauderdale, FL 33335
Jack Faulkner, 2419 Cassidy Lane, P.O. Box 371, Flossmoor, IL 60422
Monroy's & Barrie Sales Corp., 35 De Hart St., Morristown NJ 07960
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Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76701
U.S.A. Repps Simplot-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
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C-Z Godfrey-Nelson Firestop, P.O. Box 726, Tulsa, OK 74101-0726
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All Alpha Int'l, Inc., P.O. Box 489885, Cincinnati, OH 45249
Autopipe Systems Corp., 8400, 611 Alexander St., Vancouver, BC, Canada V6A1E
Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368
MSA 20 Ridgely Ave., Annapolis, MD 21401
Kokum Computer Systems AB, P.O. Box 95955, S-202 15 Malmo SWEDEN
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
TIMSCO, P.O. Box 91360, Mobile, AL 36691
- CARDIO MONITORING & CONTROL SYSTEM**
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
- CHAINS**
All Alpha Int'l, Inc., P.O. Box 489885, Cincinnati, OH 45249
Crandall Dry Dock Engineers Inc., P.O. Box 505804, Chelsea, MA 02150
Mart Char, 230 Avenue Desandrouins, 93000 Valenciennes FRANCE
Washington Chain & Supply Inc., Box 3945, Seattle, WA 98124
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748
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Ashland Chemical/Drew Amrod Marine, One Drew Plaza, Bonton, NJ 07005
Unservice Americas, 57174 Hardin Rd., Shedd, LA 70461
Intor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813
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Conquest Inc., 1045 12th Ave. NW FSA, Issaquah, WA 98027
Euronavy, 2600 NW 55th Court, Ft. Lauderdale, FL 33309
Royal Chemical Corp., 2705 Concord Rd., Belle Chasse, LA 70037
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Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492
- COMMUNICATIONS SERVICE**
Ascot Telecom AB, Eppendorfer Weg 234, D-20251 Hamburg, GERMANY
AT & T Maritime Services, 101 Jefferson Pkwy, Short Hills, NJ 07078
- COMPOUNDS**
TW Phosphoric Resins, 130 Commerce Dr., Montgomeryville, PA 18936
- COMPRESSORS**
Hamworthy Marine Inc., 1129 Hospital Dr. Ste 3C, Stockbridge, GA 30281
- COMPUTER LOFTING**
Barstair Lofting Co., Inc., 1616 Barataria Blvd., Ste. 4, Marrero, LA 70072
- COMPUTER / COMPUTER SERVICE**
Almas Computer, Inc., One Chestnut St., Nashua, NH 03060
Applied Flow Technology, 7293 Hahn St., Louisville, OH 44641
Autopipe Systems Corp., 8400, 611 Alexander St., Vancouver, BC, CANADA V6A1E
Chand Corporation, 157 Hwy 654, Matthews, LA 70375
Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368
IUSA 20 Ridgely Ave., Annapolis, MD 21401
Marine Management System, 102 Hamilton Ave., Stamford, CT 06902
Planimeter Software, P.O. Box 536, Ledyard, CT 06339
Sener, C/Severo Ochoa, 4 Parque Tecnologico de Madrid, 28760 Tres Cantos - Madrid
- SPAN**
- CONDENSERS/SEPARATORS**
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130
- CONSOLE-GIMDS**
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
Sea, Inc., 7030 220th S.W., Mountlake Terrace, WA 98043
- CONTROL SYSTEMS-Monitoring**
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123
GEC ALSTHOM Diesels Inc., 10601 Kemper Drive, Suite 1, Houston, TX 77043-1412
Ilan-Contrat Bergan, 3409 Gulf Brezeze Pkwy, Gulf Breeze, FL 32561
IMO Insulators, Gears Sensors Division, One Cowles Ln., Plainville CT 06062
MMC International, 60 Imp Dr., Inwood NY 11696
Roberson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
- CONTROL SYSTEMS-Steering**
Engine Monitor, Inc., 179 Hickory Avenue Harahan, LA 70123
Kokum Sonics, Inc., 818 Veterans Blvd., Suite 201, Kenner, LA 70068
- CONTROL VALVES**
Leslie Controls, 12501 Telecom Dr., Tampa, FL 33687
- CONVERSION/REPAIRS**
Vancouver Shipyards, 50 Pemberton Ave., N. Vancouver, B.C. CANADA V7P 2R2
- CORROSION CONTROL**
Conquest Inc., 1045 12th Ave. NW #5A, Issaquah, WA 98027
TMT Services Corp./RUSTECO P.O. Box 11393, Tonawanda, CA 90813
- COUPLINGS**
American Vulcan, P.O. Drawer 673, Winter Haven, FL 32882
Apollo International, 78 Degraw St., Brooklyn, NY 11231
Haley Clutch and Coupling Corp., 1820 Hwy. 1 North, Greenville, MS 38702
Mapoco Products, 90 Forest Avenue, P.O. Box 262, Locust Valley, NY 11550
Tylok International, 1061 East 260th Street, Euclid, OH 44132
- CRANE-HOIST-DERRICK-WHIRLEYS**
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130
Marine Travelift, Inc., 49 E. Yaw St., Surgeon Bay, WI 54225
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
- CRANES**
Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, Ontario CANADA
Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Smith Berger Marine Inc., 518 South Chicago Street, Seattle, WA 98108
- DECK MACHINERY - Car Hoists, Hoisting Equipment**
Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Purpus, PO Box 102, N-4818, Faerink NORWAY
Smith Berger Marine Inc., 518 South Chicago Street, Seattle, WA 98108
T.C.W., 1607 Port Barnmouth Pl., Newport Beach, CA 92660
Timberland Equipment, P.O. Box 490, Woodstock, Ontario N5Z 7Z2 CANADA
Ulven Forging, Inc., P.O. Box 425, Hubert, CT 06032
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748
- DECK MACHINERY - Crane, Hoisting Equipment**
Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, Ontario CANADA
International Engineering, P.O. Box 955, Kansas City, MO 64169
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Purpus, PO Box 102, N-4818, Faerink NORWAY
Smith Berger Marine Inc., 518 South Chicago Street, Seattle, WA 98108
T.C.W., 1607 Port Barnmouth Pl., Newport Beach, CA 92660
Timberland Equipment, P.O. Box 490, Woodstock, Ontario N5Z 7Z2 CANADA
Ulven Forging, Inc., P.O. Box 425, Hubert, CT 06032
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748
- DELAMINATION - REVERSE OSMOSIS**
Lifespan Water Systems, Inc., P.O. Box 24, Huntington Beach, CA 92647
Matrix Desalination, 3295 S.W. 11th Ave., Fort Lauderdale, FL 33315
- DIESEL ACCESSORIES**
General Thermodymics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02560
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101
- DIESEL ENGINE ANALYZER**
FCS, Inc., 22 Main St., Centerbrook, CT 06409
- DIESEL ENGINE - Spare Parts & Repair**
Alaska Diesel, 4420 14th Ave. NW, Seattle, WA 98107
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610
Cummins Engine Co., 4500 Leeds Ave., Ste. 301, Charleston, SC 29405-8521
Cummins Mid-South, Inc., 110 E. Melrose Highway, Kenner, LA 70062
John Deere, John Deere Rd., Moline, IL, 61265
DMI Norfolk Co., P.O. Box 2100, Norfolk, VA 23501-2100
GEC ALSTHOM Diesels, 1700 East Lake Rd., Erie, PA 16531-0001
GEC ALSTHOM Diesels Inc., 10601 Kemper Drive, Suite 1, Houston, TX 77043-1412
GTO Chemical Services, Inc., 8020 Landdale Suite A, Houston, TX 77012
In-Face Machining Co., Inc., 1929 North Bullum Street, Milwaukee, WI 53212-3793
Kiene Diesel, 325 S. Fairbanks, Addison, IL, 60101
Kaltenberg Marine, 17 Gwynn Ave., W. Orange, NJ 07067
MAN B&W Diesel AG, Tegelhmsgade 41, DK-2450 Copenhagen SV, DENMARK
MAN B&W Diesel, 17 Gwynn St., New York, NY 10004
Motor-Service AB, Box 2115, S-144 04 Rominge, SWEDEN
Paxman Service-Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315
Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND
Ustlen Bergen AS, PO Box 924, N5002 Bergen, NORWAY
Warrilla Diesel, 201 Defense Highway, Annapolis, MD 21401
- DISPUTES ANALYSIS**
Resolution Management, 11 Eves Drive Suite 140, Marlton, NJ 08053
- DIVING & SALVAGE**
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178
H.J. Merritt, P.O. Box 23123, New Orleans, LA 70183
J.W. Fishers, 65 Anthony St., Berkeley, MA 02779
Munson Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731
- DOORS - MARINE & INDUSTRIAL**
Branton Int'l, 1101 Edwards Ave., Jefferson, LA 70181
Insulations, Inc., 1101 Edwards Ave. Harahan, LA 70123
Mapoco Walz & Krenzer, Inc., 90 Forest Ave., Locust Valley, NY 11550
- DRIVE SHAFTS**
Acoustic Systems, 17 Ave. D, Atlantic Highlands, NJ 07716
Conrad Industries, 1501 Front Street, P.O. Box 780, Morgan City, LA 70381
Crandall Dry Dock, 2 Williams St., Chelsea, MA 02150
- DUCTORS**
Via Molvator, 566 Parker St., Newark, NJ 07104
- ELECTRICAL EQUIPMENT**
Askew Hardware Products, Inc., 2920 Supply Ave., Commerce, CA 90040
L.F. Gaubert & Co., Inc., P.O. Box 50505, New Orleans, LA 70150
- MMC International, 60 Imp Dr., Inwood NY 11696**
Semco Marine Inc., 3721 SW 47th Ave., Ste. 309, Ft. Lauderdale, FL 33314
- ELECTRONICS/ELECTRONIC DISPLAY**
Kokum Sonics, Inc., 818 Veterans Blvd., Suite 201, Kenner, LA 70068
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kobolton, NORWAY
- ELECTRONIC INFORMATION SUPPORT**
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kobolton, NORWAY
- ELEVATOR SERVICE**
Alimak Elevator Co., 1100 Boston Ave., Bridgeport, CT 06610
Millar Elevator Service, 840 South Military Trail, Deerfield Beach, FL 33442
- EMISSION CONTROL**
ABB Fiat Marine, Box 1043, S-436 21 ASKIM SWEDEN
Hastor Topsoe Nymolvel 55, DK-2800, Lyngby, Denmark
- EMPLOYMENT**
Boat Crews, 1 Serre Court, Suite 309, New Orleans, LA 70114
Marine Jobs, Inc., 800 Downtowner Blvd., Ste. 111, Mobile, AL 36609
- ENGINEERING SERVICES / MARINE ENGINEERS**
Kraemer Massa Marine Inc., 201 Defense Highway, Suite 202, Annapolis, MD 21401
NKF Engineering, Inc., 4200 Wilson Blvd., Arlington, VA 22203
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
- ENGINE - EFFICIENCY/TEST EQUIPMENT**
General Thermodymics Corp., P.O. Box 1105, Plymouth, MA 02560
- ENGINE ROOM LIGHTING/MONITORING & CONTROL SYSTEM**
Pauluhn Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearland, TX 77581
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
- EPHIBES**
ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247
- EVAPORATORS**
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130
- EXPANION JOINTS**
Apollo International, 78 Degraw St., Brooklyn, NY 11231
- FANS - VENTILATORS - BLOWERS**
ABB Fiat Marine, Box 1043, S-436 21 ASKIM SWEDEN
Jon M. Liles Associates, Inc., 411 Bore Ave., San Mateo, CA 94402
- FASTENERS**
Askew Hardware Products, Inc., 2920 Supply Ave., Commerce, CA 90040
Vangor Fender Co., 1165 State St., Portsmouth, NH 02876
- FIBERS**
Allied Signal, Meyer I Box, 101 Columbia Rd., Morristown, NJ 07962
- FIBER SYSTEMS**
Everup, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Luber-Fraser, Inc., 5050 Quorum Drive, Dallas, TX 75240
- FIN STABILIZERS**
Blom & Voss Industrie GmbH, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY
U.S.A. Repps Simplot-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76701
- FIRE SUPPRESSION AGENT**
Askew Hardware Products, Inc., 2920 Supply Ave., Commerce, CA 90040
- FIRE RESISTANT PANELS**
Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76701
- FLAME CUTTING MACHINE**
Bug-O-Systems, 3003 West Carson St., Pittsburgh, PA 15204
- FLEXIBLE COUPLINGS**
American Vulcan, P.O. Drawer 673, Winter Haven, FL 32882
- FUEL CONSERVATION**
General Thermodymics Corp., 210 South Meadow Rd., Plymouth, MA 02560
- FUEL DECONTAMINATION**
Eniro Response Prod., P.O. Box 4011, Ft. Meyers, FL 33932
- GALLEY EQUIPMENT**
Cospolch Refrigerator Co., 949 Industry Rd., Kenner, LA 70062
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Lube Manufacturing, P.O. Box 905, Richmond, VA 98073
- GANGWAYS, LADDERS**
Woolster Products Inc., 1000 Spruce St., P.O. Box 886, Wooster, OH 44691
- GEAR REPAIR**
Haley Marine Gears International, Inc., 2600 N. Concord Belle Chasse, LA 70037
- GENERATOR**
Alaska Diesel, 4420 14th Ave. NW, Seattle, WA 98107
Sasulaku Engineering, 732, Takayama, Nishiyodogawa-ku, Osaka, JAPAN
- HATCH COVER SEAL RENOVATION**
Baywood Inc., 3941 Soundway, Bellingham, WA 98223
KGI Corporation, U.S. Repps Simplot-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
- HEAT EXCHANGERS**
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130
- HOISTS**
JD Neuhaus Corp., 2603 Rolling Rd., Gwynn Oak, MD 21207
- HORN/WHISTLES**
Kaltenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Kokum Sonics, Inc., 818 Veterans Blvd., Suite 201, Kenner, LA 70068
- HOSES**
Apollo International, 78 Degraw St., Brooklyn, NY 11231
- HYDRAULICS**
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken, NJ 07030
Del Gaudio Marine Hydraulics Inc., 619 Industrial Rd., Carlsbad, NJ 07072
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123
Hamilton Jet, P.O. Box 709, Christchurch, New Zealand
GTC Chemical Services, Inc., 8020 Landdale Suite A, Houston, TX 77012
- INERT GAS SYSTEMS**
Hilar Systems, 3710 Lakeside Court, Mobile AL 36693
- INFORMATION TECHNOLOGIES**
Marine Management Systems, 102 Hamilton Ave., Stamford, CT 06902
- INSULATION**
Blom & Voss Light Insulation, Barrels & Ladders GmbH, Nordereibtrasse 1S, 20457 Hamburg GERMANY
Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76701
- INSULATIONS**
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Marine Services Corp., 3457 Gulgard Dr., Hood River, OR 97031
PAOCO, Inc., P.O. Box 187, Marion, OH 43082
- JOINER - Watertight Door - Flaming-Ceiling System - Decking**
All Alpha Int'l, Inc., P.O. Box 489885, Cincinnati, OH 45249

Brantford Ind., 1101 Edwards Ave., Jefferson, LA 70181
CustomShip Interiors, Inc. P.O. Box 237, Luddy, MD 20657
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., 1101 Edwards Ave., Hanahan, LA 70123
Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76701
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Shid Systems, Inc., 220 Carpenter St., Greenport, NY 11944
Witz & Kenner, Inc., 30 Forest Ave., Luce Valley, N.Y. 11950

KEEL COOLERS
R.W. Fensum & Co., 1715 Eleventh Ave., Menominee, MI 49858
Kaltenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
The Water Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

LIFEBOATS/RAFTS
America Eagle Mfg., Inc., 780 Pearle Jensen Way, LaConner, WA 98257
Dunlop Boatcraft, 12551 Bridgeport Rd., Richmond, B.C. CANADA V6V1J4
Norsale AS, P.O. Box 115, N-4918 Farnvik, Norway
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of North America, P.O. Box 400, Stevesville, MD 21666

LIFESAIVING EQUIPMENT
Mol International, 119-225 West 1st St., North Vancouver, B.C. CANADA
Reams Manufacturing, P.O. Box 1498, St. Cloud, MN 56302

LIGHTING SYSTEMS / EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., 5757 Ravenwood Rd., Lauderdale, FL 33310-5247
Archway Marine, 4501 Swamp Ave., St. Louis, MO 63110
Datex Inc., P.O. Box 1150, Kinder, LA 70648
Gallen Marine, 160 Van Brunt St., Brooklyn, NY 11231
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Pauluhn Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearlman, TX 77581
Ramsco Searchlights/Star Supply Co., 4415 6th NW, Seattle, WA 98107

LIQUID LEVEL GAUGES
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106

LIQUID LEVEL INDICATORS
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226

LIQUID OVERFILL PROTECTION SYSTEMS
E.F.L. Marine Products, P.O. Box 1025, New York, NY 47151-1025
Metriplex, Inc., 59 Porter Rd., Litchfield, MA 01460
Metriplex Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226

LOGISTICS
Newport News Shipbuilding, 12129 Jefferson Ave., Newport News, VA 23603
V. Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs, MS 39564

LUBRICANTS
Exxon Co. USA, 800 Bell St., Houston, TX 77002
E. I. du Pont de Nemours & Co., 1901 E. 17th Ave., Denver, CO 80202

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
Del Gavio, 619 Industrial Rd., Carlstadt, NJ 07007
Fisher Marine Company, Inc., 160 Van Brunt St., Brooklyn, NY 11231
Maritime Power 200 Henderson St., Jersey City, NJ 07302
New England Trawler Equipment Co., 291 Eastman Avenue, Chelsea, MA 02150
Walton Coast Machinery, 1520 Wagoner Rd., Glenview, IL 60045

MARINE ACCOMMODATIONS
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave., Boca Raton, FL 33431
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE CEILING
Hydro-Aluminium, Via Verk, N-5880 VIK 1 SOGN, Norway
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501

MARINE DECKING
E. I. du Pont de Nemours & Co., 1605 Chippendale Road, Lutherville, MD 21093
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Seiby, P.O. Box 1650, Seattle, WA 98106

MARINE DOCKING
Titlar Industries, 1775 First Rd., Downersview, Ontario CANADA

MARINE DRILLING & BLASTING
Marine Drilling & Blasting, Inc., P.O. Box 10455, Jacksonville, FL 32247-0455

MARINE ELECTRONICS
Frank L. Beer Radio, 2001 Ridgeland Drive, Metairie, LA 70001
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Sabb Marine Electronics AB, Box 13045, 402 S1 Goleborg, SWEDEN
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

MARINE ELEVATORS
McClure Machine, 1100 Lorraine Rd., Bloom, MI 38535-4544

MARINE EQUIPMENT
Barnett & Associates, 1150 Rule Rochelle, Stoll, VA 70458
McClure Machine, P.O. Box 454, Bloom, MI 38535-4544

MARINE FINANCING
Saltero Credit Co., Inc., 4209 156th Ave. NE, Redmond, WA 98052

MARINE FIRE PROTECTION
Hiller Systems, 3710 Lakeside Court, Mobile, AL 36693
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Unifor Ship Service Inc., 2735 West Esther Street, Long Beach, CA 90813

MARINE FURNITURE
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave. Boca Raton, FL 33431
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE GEARS
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492
Haley Marine Gears, Inc., P.O. Box 688, Greenville, MS 39012
Marine Gears, P.O. Box 688, Greenville, MS 39012

MARINE INSURANCE
John G. Aiken, 1320 SE 17th St., Fort Lauderdale, FL 33316

MARINE INTERIORS
Insulations, Inc., R. 5, 12950 Leisure Road, Baton Rouge, LA 70807
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Johnson Construction Specialties, Inc., 3420 Rusk P.O. Box 1360 Houston Texas 77251
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031

MARINE PUMPS
Giles Inc., P.O. Box 628, Seabrook, TX 77586

MARINE SURPLUS SALES
Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114

MARITIME ARTWORK
Sabra Art Studio, 6 Ridge Drive, Old Saybrook, CT 06475

MOTOR PROTECTION EQUIPMENT
Marine Safe Electronics, 37 Stalham Dr., Concord, Ontario L4K 2X2

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202
Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235
Donald L. Blount, 2550 Elmwood Ave., Ste. K, Norfolk, VA 23513
C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609
CDI Marine Co., 4040 Woodstock Dr., Suite 200, Jacksonville, FL 32207
Childs Engineering Corp., Box 353, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., P.O. Box 55004, Chelsea, MA 02150
Crane Consultants, 1501 First Ave. S., Seattle WA 98148
C.R. Cushing, 18 Vessey St., New York, NY 10007
CT Marine, 56 Crooked Trail, Rowayton, CT 06863
Cunningham & Walker, 1762 Providence Hollow Lane, Jacksonville, FL 32223
Arthur D. Darden, 3200 Ridgely Dr., Suite 403, Metairie, LA 70002
DeLong & Label, Inc., 1734 Emerson Street, Jacksonville, FL 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, 2120 Washington Blvd., Ste. 200, Arlington, VA 22204
Elliot Bay Design Group 5301 Shilshole Ave. N.W. Ste. 200, Seattle, WA 98107
Enzon Mgmt. & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
GIM Inc. (Int. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601
Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010
John W. Gilbert & Assoc., Inc., 199 State St., Boston, MA 02109
The Gloster Assoc. Inc., 600 Mutual Life Bldg., 655 First Ave., Seattle, WA 98104
Guido Paris & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104
Morris Guarinich Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110
Hydrocomp, Inc., 202 C Packets Court, Williamsburg, VA 23185
ISA 20 Ridgely Ave., Annapolis, MD 21401
J.H. Inc., 3412 Progress Dr., Bensalem, PA 19020
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Kvaerner Masa Marine, Inc., 201 Delaware Highway, Suite 202, Annapolis, MD 21401
James S. Krogen, 799 Brickell Plaza Ste. 701, Miami, FL 33131

Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
MCA Engineers, Inc., 2980 Airway Ave., AA-103, Costa Mesa, CA 92626
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
McClure Machine & Mfg. Co., Inc., P.O. Box 4454, Bloom, MI 38535-4544
John J. McKelvie Associates, Inc., 1 World Trade Ct., Ste. 3000, N.Y. NY 10048
Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401
Marine Design & Operations, Inc., 225 E. 1st Ave., Roselle, NJ 07068
Marine Management Systems, Inc., 102 Hamilton Ave., Stamford CT 06902
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109
Maritech, Sacchi, Bay Road, Newmarket, NH 03857
Maritime Design, Inc., 3020 Hatley Rd., Jacksonville, FL 32257
R.J. Mellusi & Co., 71 Hudson St., New York, NY 10011
Nautical Designs, Inc., 2101 S. Andrews Ave., Suite 202, Ft. Lauderdale, FL 33316
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 650 Fulton St., Ste. 301, San Francisco, CA 94107
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 Boulevard, St. Petersburg, FL 33702
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426, 17 Battery Pl., New York, NY 10004, P.O. Box 975, Barnegat Light, NJ 08006, 2001 N. Beausuregard Street, Alexandria, VA 22311, 50 Vashell Way, Orlando, FL 32803
George G. Shan, Inc., 100 Church St., New York, NY 10007
H.A. Searin, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
A.K. Suda & Ass., 3004 19th St., Metairie, LA 70002-4989
TIMSCO, P.O. Box 91800, Mobile, 36691

NAVIGATION & COMMUNICATIONS EQUIPMENT
Furuno U.S.A., 271 Harbor Way, San Francisco, CA 94980
IC3 Electronics Inc., 1225 E. 17th Ave., Denver, CO 80202
KVH Industries, Inc., 110 Enterprise Center, Middletown, CT 06242-5268
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837
Neyron Marine Consultants, 840 Bond Street, Elizabeth, NJ 07201
Offshore Systems Ltd., 107-930 West 1st St., North Vancouver, B.C. V7P 3N4 CANADA
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
Scandinavian Mago Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY
Sea, Inc., 7020 220th S.W., Mountlake Terrace, WA 98043
Simrad, 12010 52nd Avenue West, Lakewood, WA 98036
Simrad Robertson, 10801 Hammett Way, Suite 100, Houston, TX 77043-1923
Sperry Marine Inc., 1070 Semmore Trail, Charlottesville VA 22901
Nelson Communications, 1125 Hospital St., Stockbridge, GA 30009
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086
Waterway Communications System, Inc. 433 E. Park Pl., Jeffersonville, IN 47130

NOISE CONTROL
Soundco, One Butte Drive, Deer Park, NY 11729

NOZZLE SYSTEM
Custom Nozzle Fabrication, P.O. Box 547, Pascagoula, MS 39568
Roc Propellers, Av Rio Esplanada 883, Mazatlan, MEXICO 81280

OIL—Marine—Additives—TESTING
Motul Corporation, 1000 Wagoner Rd., Glenview, IL 60045, VA 22037-0001

OILWATER SEPARATORS
Alfa-Laval Separation, Inc., 455 Williams Rd., Westminster, PA 16791-0556
U.S.A. Repe-Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
Farr Systems, 3240 North Broadway, St. Louis, MO 63147
Harmony Marine Inc., 1125 Hospital St., Stockbridge, GA 30081
MMC International, 60 Hip Dr., Inwood, NY 11696
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Permatop Rust, 284 South Main St., Wallingford, CT 06492
Proseal Research Services, 2259 Hwy 22, P.O. Box 159, Belle Chasse, LA 70037
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70037
Sealy Coatings, 8979 Market St., Houston, TX 77029, 330 River Rd., Harvey, LA 70059, 1100 State St., Houston, TX 77029
Unifor Ship Services Inc., 2375 West Esther Street, Long Beach, CA 90813

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Sound Propeller, 1608 Fairview Ave. E., Seattle, WA 98102

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ABB Drives Inc., P.O. Box 972, Milwaukee, WI 53201-0372, USA
ABB Industry, P.O. Box 185, 00081 Helsinki, FINLAND
ABB TURBOCHARGER, Inc., 1460 Livingston Avenue, N. Brunswick, NJ 08902
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Markisches Werk, P.O. Box 1442, D-5884 Hever GERMANY
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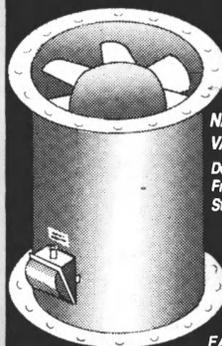
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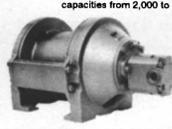


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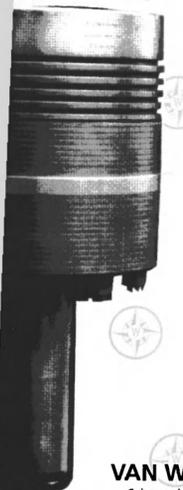
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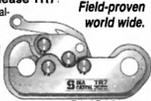
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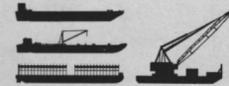
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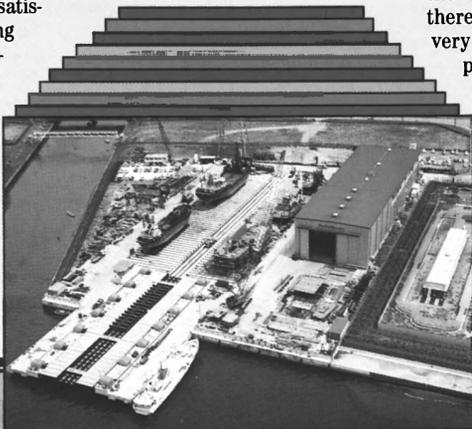
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