

MARITIME REPORTER

AND
ENGINEERING NEWS

JUNE 1994



- **World Newbuilding Statistics**
- **Cruise Ship Review & Directory**
- **Ports Report.**
- **Europe**
Insider's guide to prevailing and future market trends.
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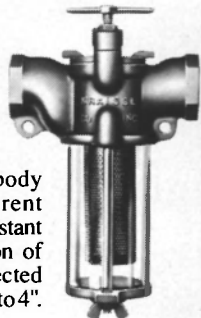
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Volume 56

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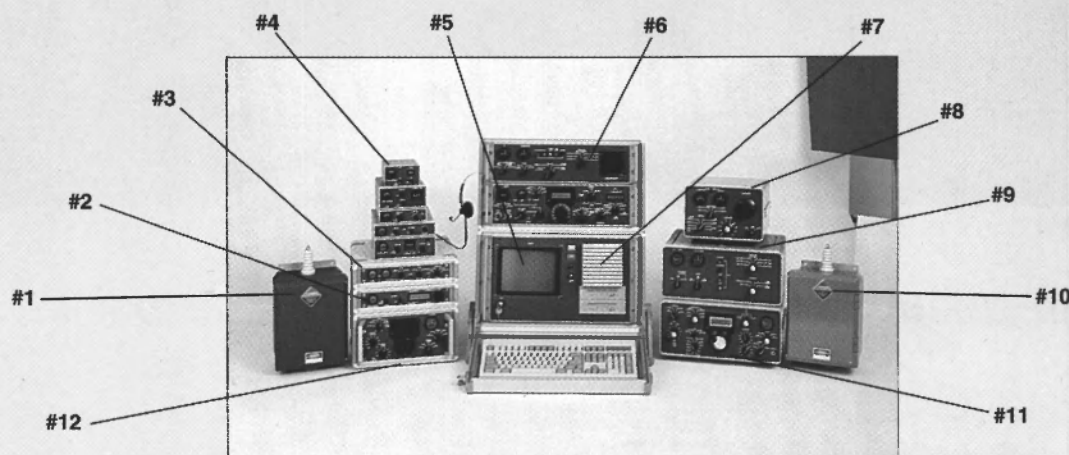
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NNS Wins Contract To Renovate American Hawaii Cruise Ship

Newport News Shipbuilding (NNS) and American Hawaii Cruises signed a contract for NNS to renovate the cruise ship *SS Independence*. The ship will finish its Hawaii service on July 2, 1994 and sail to the Virginia shipyard for the two-month drydock on July 19. The ship will resume inter-island service around the Hawaiian islands on October 8, 1994. The shipyard work is part of an overall \$28 million renovation of the U.S.-flag cruise ship. The 683-ft (208.2-m) ship, along with her sistership, the *SS Constitution*, operates three, four and seven-day cruises among the Hawaiian islands. They are the only two U.S.-flag liners in operation. The *SS Constitution* will also be refitted in the near future, and American Hawaii has reportedly decided that work will also be done by a U.S. shipyard.

According to **Bob Leber**, director of shiprepair at NNS, the contract represents much more to the yard than its dollar value. "This is one more incremental step in our strategic plan to get back into the building of commercial vessels," he said. ("NNS Gets Letter of Intent For Four Tankers," see story page 140, this issue). That plan, said Mr. **Leber**, addresses two major tasks for NNS: 1) re-establishing industry's confidence in NNS's ability to construct commercial ships, and 2) rebuilding the internal infra-

structure necessary for the actual construction of those ships. "In 1992 we refurbished four commercial vessels, and in 1993 we did nine," he said. "In 1994, we'll at least equal that number." NNS will be project manager for the entire renovation; while they have been back in commercial shiprepair for some two and a half years, this is the first time since that re-entry that they've been given that distinction, according to Mr. **Leber**. The renovation will

consist of marine work including structural repairs and machinery replacement, extensive hotel work including cabin renovation and upgrading air conditioning, electrical and pollution control systems.

Congressman **Herb Bateman** (R-Va.), who represents the area where the shipyard is located, said, "As the winner among 16 other shipyards, including two foreign shipyards, Newport News is showing this nation and the world that it will

not just be the premier shipyard for naval construction projects, but it can and will regain the same stature in the commercial market."

SS Constitution will go into drydock in 1995, and the question of who will get the contract for her refit is still undecided. "The yard that has the first ship has a better chance of getting the second," said NNS's Mr. **Leber**. "But we have to prove ourselves on the first ship."

For more information on Newport News Shipbuilding,

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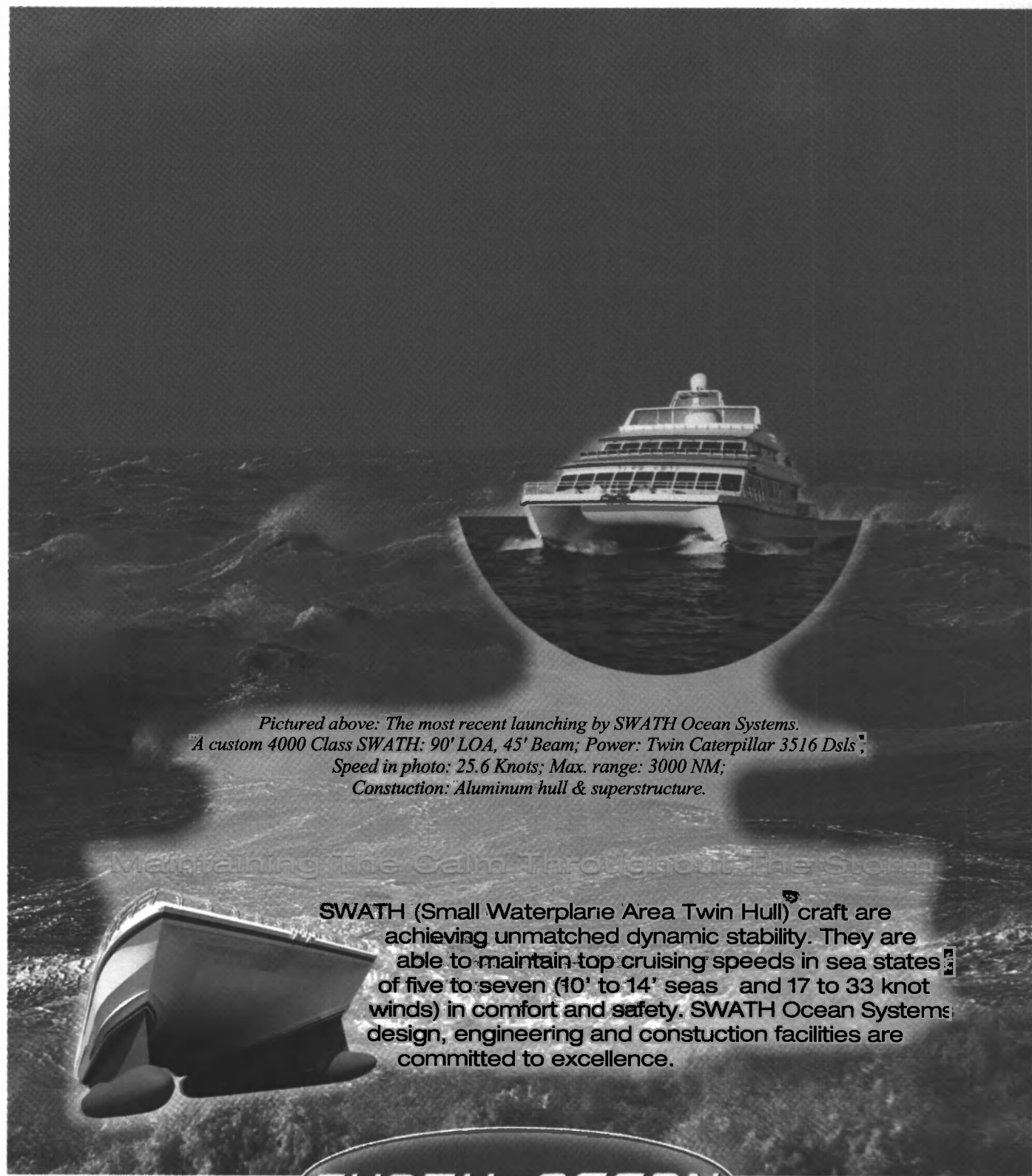
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Austal Venture Wins Order For 258-Ft. SuperCat

Ferries Australia, a newly-formed joint venture of Austal Ships and luxury motor yacht builder Oceanfast, has secured an order with Sea Containers, Ltd., a high-speed ferry operator, for the first of a new series of SeaCats with options on four additional sisterships.

The venture markets mega ferries of 197 ft. to 328 ft. (60 m to 100 m) in length to Europe and South America.

The 257.8-ft. (79-m) Super SeaCat, as the new vessel will be called, is scheduled for delivery in May 1995 for service in Northern Europe.

This will be the first mega ferry to be constructed at Austal Ships' new \$15 million shipbuilding facilities near Fremantle in Western Australia.

Four Ruston 16RK270 diesels will drive KaMeWa waterjets through Reintjes VLJ 4430 gearboxes to give the Super SeaCat a service speed of about 39 knots.

Swede Ship Group Wins Far East Foilcat Order

The Swede Ship Group, developer of the Foilcat 3000, won a new contract from Singapore's Paciro Group for one Foilcat 3000 diesel-driven ferry catamaran, with an option for one more.

Delivery is expected for summer 1995. The newbuilding is intended for a route in the growing Southeast Asia ferry market.

The Foilcat 3000 has a maximum speed of about 50 knots, a service speed of about 45 knots, and a passenger capacity of 200, and can reportedly operate in rough sea states — up to 13-ft. (4-m) wave heights.

A Foilcat 2900 ordered earlier this year by an Indonesian organization is now in operation between Indonesia and Malaysia.

The Swede Ship Group is owned and managed by Swede Ship Invest AB of Ronnang, Sweden.

Reson SeaBat Sonar Tested For Hull Damage Assessment

The Deep Ocean Systems Branch of the Naval Surface Warfare Center (NSWC) in Annapolis, Md. performed tests this month to evaluate deployable systems for a hull-crawling underwater vehicle for ship hull damage assessment to be performed by the U.S. Coast Guard (USCG), including Reson's SeaBat 9001S switchable multi-beam sonar system.

The vehicle, conceptualized in part by Battelle and the USCG Research and Development Center, employs a suite of underwater sen-

sors designed to detect damage to ship hulls in a wider range of environments and conditions.

The USCG Research and Development Center in Groton, Conn. contracted to lease the Reson SeaBat 9001S to be tested by the NSWC for possible use on the vehicle.

Tests were performed in an underwater acoustic tank maintained by NSWC, as well as several outdoor basins. Mounted on a Phantom ROV,

the SeaBat 9001S was evaluated for its capabilities as an obstacle avoidance system, as well as for a hull-proofing system for rapid assessment of a ship's hull damage. The SeaBat 9001S can be toggled between Forward-Looking and Bathymetric modes.

The first mode enables the user to navigate a moving vehicle underwater at rapid speeds without distortion of the field of view. The

Bathymetric mode provides a wide profile of the ship's hull and updates data at a rate of 30 times per second. Stored to an on-board computer, the collected data can be replayed to provide the user with a 3-D view of the ship's hull, displaying dents, holes, and tears to the surface. SeaBat sonar units have recently been sold to HAM dredging in Holland and to the Port of Harwich, U.K.



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The PATHFINDER/ST raster display with ENP includes a navigation sensor interface, stored Navline maps (ARPA only), new "pop-up" menu operation, and configurable serial data output ports.

Navigation sensor input can accept NMEA sentence structure from conventional sensors such as differential GPS, GPS, or LORAN-C. A second input port is available that will accept information from a Syledis precision positioning system. The navigation sensor is used to position and stabilize

Navline maps on the PATHFINDER/ST ARPA display.

Operation of the PATHFINDER/ST ENP is simplified by the "pop-up" menus. Three main menus are: MAPS, OPERATE, and ARPA. The MAPS page is used to save, retrieve, edit, and control Navline maps. The OPERATE page contains operational functions such as: Vector Selection; Trial Maneuver, and Course Up. The ARPA page allows selection of features such as Collision Assessment Mode, Auto Drift, and Auto Acquisition.

Comparison Tests Prove PATHFINDER/ST Radars See What Others Can't.

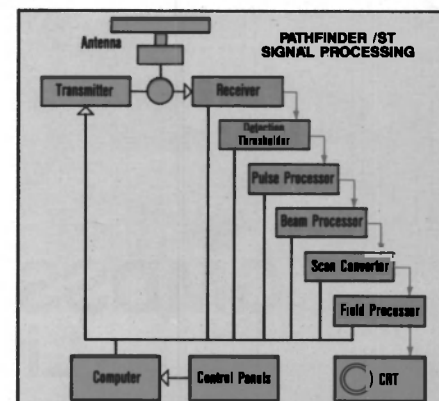
In side-by-side comparison tests, a PATHFINDER/ST display and a conventional radar display were connected to the same radar system. PATHFINDER/ST consistently displayed targets not detected by the conventional display.

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Deutz MWM Wins French Navy Ships Engine Order

Deutz MWM France, a subsidiary of Motoren-Werke Mannheim AG (Deutz MWM), recently won an order for main and auxiliary engines for three high-speed French Navy vessels from the yards Leroux et Lotz Naval (LLN) and Construction Mecaniques de Normandie (CMN). The order handling period will be nearly three years. Commis-

sioning of the first vessel is scheduled for mid-1995 and the last vessel will presumably be commissioned in mid-1996. Two vessels will be built at CMN in Cherbourg, one at LLN in Lorient, but the design for the vessels was conceived by LLN.

The propulsion systems for the vessels will be CODAD installation, consisting of two type TBD 620 V16 and two type TBD 234 V12 engines. The 234 engines will power the auxiliary sets; both 234 engines deliver a combined power of 196 kVA. They

will be equipped with turbocharged, charge air-cooled six-cylinder engines.

Stolt-Nielsen Predicts Tanker Newbuilds, Market Upswing

Jacob Stolt-Nielsen, chairman of Stolt Partner SA, predicted improved profitability for the company due to fast growth of the demand for chemicals in the developing Asian countries as well as the economic

recoveries beginning in Japan and Europe. He cited a substantial increase in cargo, utilization and freight rates. Freight rates were reportedly up 20 percent in the first quarter of 1994 over the first quarter of 1993, and have continued to rise.

Samuel Cooperman, president of Stolt Partner SA, said that the present market has seen volume increases of up to 15 percent on major trade lanes, contributing to a shortage of parcel tankers. Scrapping and downgrading have also had an effect. "We now have to build to meet growth in demand as well as replacement," he said. "Demand continues to grow at a high rate in developing countries" he said, also indicating economic recovery in Europe and Japan. "We therefore expect to see a strong market for the balance of the nineties."



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Crowley Completes 15 Barges For MSRC

Crowley Marine Services, Inc. has completed preparation of 15 out of a total 16 barges for the Marine Spill Response Corporation (MSRC) for standby service accompanying spill cleanup vessels at 16 U.S. ports.

The barges range from 32,000 barrels to 68,000 barrels in standby reservoir capacity, with the majority between 40,000 and 45,000 barrels. The multi-faceted contract required over a year to complete.

The shipyards involved in the modifications were: Colonna's Shipyard, Norfolk, Va.; Lyons Shipyard, Norfolk, Va.; Detyens Shipyard, Charleston, S.C.; International Ship Repair, Tampa, Fla.; Bludworth Bond Shipyard, Houston & Texas City, Texas; Diversified Marine, Inc., Portland, Ore.; and AK-WA, Inc., Tacoma, Wash.

Swedish Coast Guard Orders Moland Equipment

The Swedish Coast Guard, Svensk Kustbevakning, has chosen Moland's alarm and monitoring equipment Macon 100 for its newbuilding series of 10 Coast Guard vessels to be built at Karlskronavarvet AB.

The alarm and monitoring equipment Macon 100 has been customized to meet the special needs of the Coast Guard vessels. Some of the qualities the vessels require are light weight and user-friendliness.

Hynes Elected President Of IRPT

Jack Hynes, administrator of waterways, Missouri Highway and Transportation Department, was elected president of the Inland Rivers, Ports and Terminals, Inc. (IRPT) at its annual meeting held in Portland, Ore. IRPT is a national trade association of port authorities, terminal operators and other allied marine companies located in 19 states along the inland waterways of the U.S. It is headquartered in Jefferson City, Mo.

Maritime Reporter/Engineering News

Kepphil Shipyard Clinches \$6 Million in New Contracts

Kepphil Shipyard Inc., a member of Singapore's Keppel Group, has clinched contracts worth about \$6 million for steel fabrication and shipbuilding.

The yard is fabricating a steel synchrolift platform for civil construction company H.B. Zachry Co. of the U.S. to be installed in a dockyard in Kwajalein in the South Pacific. Construction began in April

and is expected to be completed by the middle of this year.

The platform, measuring 180 feet (55 m) by 83 feet (25.3 m), is being fabricated in Kepphil's yard in Labuan, Batangas Province using 500 tons of special grade steel.

Kepphil is also designing and building a fuel oil storage barge for Far East Levingston Shipbuilding Limited of Singapore. The barge,

with a capacity of 50,000 barrels of oil, will store fuel to be used by a power plant for power generation. It has a pumping capacity of 125-cu.-m. per hour and will include modern safety and pollution control systems. The vessel is expected to be delivered in May.

The company has also won the bidding to build a floating crane with a 35-ton capacity for Petron, a subsidiary of Philippine National

Oil Corp. The floating crane will be used at the Petron Refinery on Bataan Island. The contract is scheduled for completion at the end of the year. Kepphil, in cooperation with sister company Keppel Engineering Pte. Ltd., is also fabricating two container handling cranes for International Container Terminal Services, operator of the Philippines' largest container port, Manila International Container Port.

MarAd News

- Mormac Marine Transport, Inc. asked the Maritime Administration (MarAd) for permission to purchase the stock of Moran Towing Corp. Mormac Marine Transport is a subsidiary of Mormac Marine Group. Mormac needs the approval for the acquisition of Moran for the brief period of time remaining under the terms of Mormac's Operating-Differential Subsidy Agreements, which will terminate in December 1995, June 1996 and February 1997.

- MarAd has approved three section 9 applications:

- Evening Star, Inc., Petersburg, Alaska, received permission to transfer the fishing vessel *Evening Star* to Russian registry.

- Atlantic Pacific Marine Corp., Houston, Texas, received approval to transfer two drilling barges, *APMC Rig 11* and *APMC Rig 14*, to Venezuelan registry, without change in their U.S. ownership.

- Sondenfeldske Energy KS, a Norwegian limited partnership, has received approval to sell the Liberian drilling unit *Sonat DF-87* to Dual 87, Inc., a Delaware corporation, but not a citizen within the meaning of section two of the Shipping Act, 1916, as amended.

Its Liberian registry would not change.

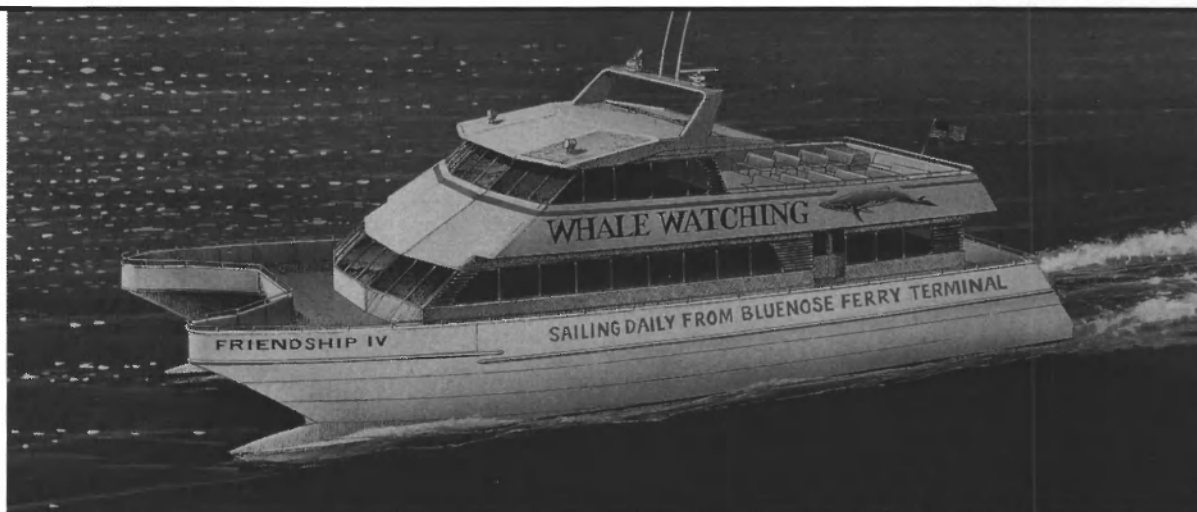
- MarAd received an application from Gulfcoast Transit Co. for temporary written consent under section 506 of the Merchant Marine Act, 1936, as amended, to transfer the *Janis Guzzle* to the domestic coastwise trade for not more than six months in the aggregate during 1994.

The vessel was built with the aid of construction differential subsidy.

In its application, Gulfcoast said it currently provides coastwise transportation for its affiliate company, Tampa Electric Co., under a long-term contract for the movement of coal from the New Orleans, La. area to Tampa, Fla.

The tug/barge use in the coastwise trade will depend on its availability, its customer's requirements and the scheduled maintenance on its tugs, barges and tug/barge units utilized in its coal/phosphate operations.

- MarAd has given approval to M.K. Fisheries, Inc., Burlington, Wash. to transfer the fishing vessel *Bering Empire* to Russian registry.



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Nichols-Built Bay Breeze Starts Ferry Operations For Alameda/Oakland

The Alameda/Oakland Ferry Service celebrated the arrival of the fast catamaran *Bay Breeze*, the first vessel constructed specifically for the service, with ceremonies in Alameda and Oakland on May 21.

The \$3.2 million catamaran was christened on April 9 at Nichols Brothers, Inc. shipyard.

The *Bay Breeze* holds 250 passengers and travels at speeds in excess of 25 knots. The *Bay Breeze* will reportedly be the first ferry on the San Francisco Bay to use the latest in modern technology, according to **Ernest Sanchez**, manager of the Alameda/Oakland Ferry. Mr. Sanchez claims this catamaran will be quieter than other ferries, with a smaller wake, and computers will monitor its operation continuously.

Funds to purchase the vessel came from the California Transportation Commission. It is owned jointly by the City of Alameda and the Port of Oakland.

The Alameda/Oakland Ferry Service began after the Bay Bridge was damaged in the 1989 Loma Prieta earthquake. More than \$48 million in state and federal funds has been allotted for improvements in Bay Area ferry services since the earthquake. The *Bay Breeze* is the first of the new boats to go into service on the Bay as a result of these grants.

For more information on Nichols Brothers, Inc.,

Circle 84 on Reader Service Card

Bay Breeze Specifics

Builder	Nichols Brothers, Inc.
Length o.a.	97 ft. (29.5 m)
Beam	29 ft. (9 m)
Draft	4 ft. (1.2 m)
Designer	Intl. Catamarans, Pty. Ltd.



Bay Breeze Equipment List

Main engines	Detroit Diesel	Propulsion controls	Systems Engineering
Reduction gear	Detroit Diesel	Paints	Hempel
Auxiliary engine	Isuzu	Aluminum ..	Reynolds Aluminum Supply
Generators	Lima	Electrical controls & monitoring	Industrial Integrators
Propulsion	KaMeWa	Seating	Turnbull
Pumps	Pump Industry		

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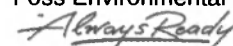
CANFLEX (USA), Inc.'s new 12,500-gallon Sea Slug under tow at approximately 5 knots during recent sea trials in Anacortes, Washington. Insert shows the unit moored alongside the dock, ready to be offloaded. The Sea Slug is an ideal unit for emergency lightering.



CANFLEX towable and free-standing liquid storage and transport tanks are suitable for oil, fuel, potable water, and other liquid commodities. They offer users a variety of features, including: durable fabrics up to 140 oz./sq. yd., unique hydrodynamic design, reserve buoyancy, disposable liners, highest quality fill and discharge hardware. CANFLEX temporary storage bags are sized from 264 gallons (US) to 25,000 gallons (US).



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BOATS AND BARGES

Trinity Delivers First Of Super Jumbo Barge Class

The Trinity Marine Group introduced a new class of Super Jumbo Hopper Barges that allows operators to double the capacity of conventional barges while reducing costs.

"The secret," said **John Dane III**, president of the Trinity Marine Group, "is its 260-foot length and its 52.5-foot beam."

Compared to a jumbo 195- by 35-foot barge, the Super Jumbo Hopper can carry twice the cargo at the same operating draft.

That is quite significant in terms of overall operating costs. Also, they are versatile because they can be used on the upper Mississippi and Ohio Rivers where the locks are typically 110 feet wide."

Mid-South Towing Co., a subsidiary of Teco Transport Trade, Inc., took delivery of the first 16 giant barges produced by Trinity's Madisonville, La. shipyard.

They were immediately loaded with 53,000 tons of coal at the Cora docks in Illinois on the upper Mississippi River and towed to the Electro-

Coal Transfer Corp., another Teco subsidiary.

The tow averaged 3,350 tons of coal per barge at a draft of 9.5 feet (2.9 m).

Donald Salsbury, vice-president and general manager of Mid-South Towing in Metropolis, Ill., said, "Since there are fewer barges to load, transload and fleet, we are more efficient and that translates to money saved."

For more information on Trinity Marine Group,

Circle 3 on Reader Service Card

The first of Trinity Marine's new Super Jumbo Hopper barges are pictured loaded with 53,000 tons of coal. The 260-foot (79-m) by 52.5-foot (16-m) barges were delivered by Trinity-Madisonville to Mid-South Towing Co. for loading at the Cora docks in Illinois and towed to Electro-Coal Transfer Corp., Devant, La. It would have required 32 jumbo rake and box barges to carry the same load. The photo was taken on the Mississippi River just below New Orleans.



Mobil Orders Second Double-Hull VLCC From Sumitomo Heavy Industries

Mobil Corp. ordered a double-hull supertanker, identical in size and design to its *Eagle* supertanker, from Japan's Sumitomo Heavy Industries (SHI).

The vessel will carry more than two million barrels of crude oil, and like the *Eagle* (which SHI also built), it will feature a double hull and an

array of special safety features.

"At issue is safety—the double-hull tanker is only part of the answer to safer movement of crude oil and petroleum products over water," said **Gerhard Kurz**, president of Mobil Shipping and Transportation Co.

The VLCC will measure 1,089

feet (332 m) long, and at press time the vessel was scheduled for delivery in mid-1996.

The new Mobil VLCC will feature: an integrated voyage navigating system; a computer-directed system to detect hydrocarbon gases in ballast tanks; a new light-colored epoxy coating for ballast tanks for

the early detection of rust or leakage; and a structural strength which meets the Dynamic Load Analysis criteria of ABS.

Mobil has a fleet of 34 ocean-going tankers it owns or charters.

The company transports more than 700 million barrels of crude oil and petroleum products each year.



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Maritime Reporter/Engineering News

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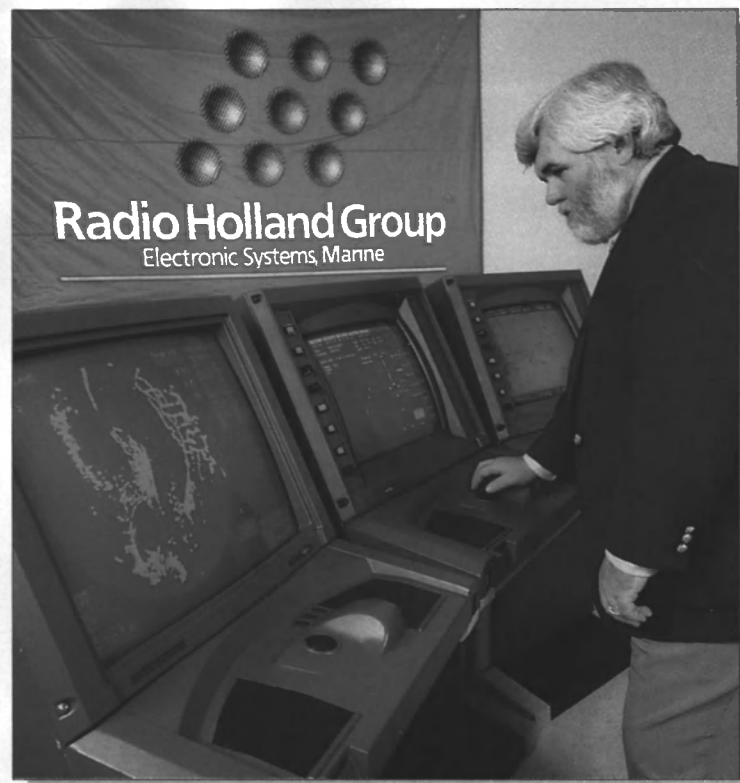
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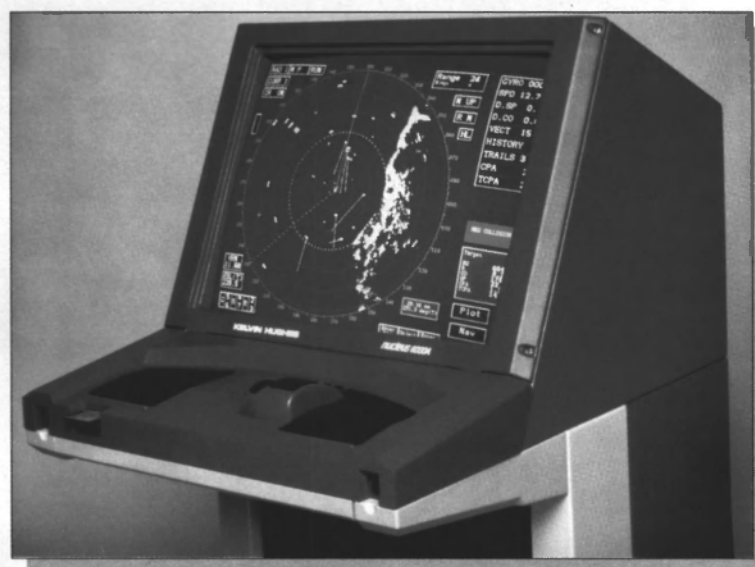
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Functions are selected by simply clicking a button after moving the pointer with the tracker ball through the easy-to-use, on-screen menus. The high definition display provides a superior color radar picture with very sharp target contrast. The data displays clearly show operating functions, warnings, target information, and integrated own-ship navigational data.

The NUCLEUS Series offers five choices of displays, NUCLEUS 6000 A (ARPA), 6000 T (true motion) and 6000 R (relative motion) Color Radars with 26 inch display; and NUCLEUS 5000 T (true motion) and 5000 R (relative motion) Color Radars with 20 inch display. NUCLEUS features powerful X-Band and S-Band transmitters in different configurations.



Other standard features include interswitching, dual preset

Guard Zones; the NAVCARD for extended, customized map creation, storage, and retrieval; and an improved plotting facility. The ARPA also features a simulator for training and maintenance tasks.

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Maritime Reporter/Engineering News

Sonsub Awarded Shell Contract

Shell Offshore awarded Sonsub its 1994 underwater inspection contract. Sonsub will mobilize a 20-hp Viper ROV and will be working with a team of support divers from aboard one of Shell's vessels conducting surveys on Shell's installation in the Gulf of Mexico.

Avondale Wins \$12M Drydock, Repair Contract

Avondale Industries was awarded a \$12 million contract for the drydock and repair to two TAKR-Fast Sealift ships for Bay Management Inc. The work will be performed on the USNS *Algol* (TAKR-287) and the USNS *Altair* (TAKR-291) at the company's main shipyard facility and will be completed by January 1995.

Newman Named President And CEO Of Diagnostic/ Retrieval Systems

Diagnostic/Retrieval Systems, Inc. (DRS) appointed **Mark S. Newman** president and CEO. He succeeds his father, **Leonard Newman**, who retains the position of chairman of the board.

Mark Newman has been employed with DRS for 20 years. Since 1987 he has served as executive vice president and CFO. He has been a director on the company's board of directors since 1988.

The company also named three corporate vice presidents: **Paul G. Casner, Jr.**, president of DRS's Electronic Systems Group; **Stuart F. Platt**, president of Precision Echo, Inc.; and **Richard Ross**, president of Photonics Corp. **Nancy R. Pitek** was named controller and treasurer.

Dorman Installs First Of New Sea Prince Engines

Staffordshire-based Dorman Diesel has supplied four custom-designed Sea Prince 6LTD5 marine engines for auxiliary purposes, via its wholly owned subsidiary company in The Netherlands, to Zwart Technikk BV for use by the Gemeenteveroerbedrijf (GV) ferry company in Amsterdam. The four engines will power the waterjets on two canal water-buses designed to ferry the 22,000 locals and tourists who use the ferries every day to cross the inland canals in Amsterdam.

Carolina Skiff To Build New Boat Model

Carolina Skiff is gearing up to build a new model boat, called the 120 series. It will be 10 feet (3 m) wide and will be available in lengths

from 24 feet (7 m) to 38 feet (11.5 m). A movable transom insert will allow customized lengths, depending on application. Bottom thickness of six, eight or 12 inches will be offered.

The hulls will be hand-laid. Material and layups schedules can be tailored to specific applications. While a standard 38/120 will weigh around 3,400 pounds, a 38-foot hull can be built to weigh less than 1,600 pounds if the end use requires a light-weight hull.

Sulzer Engines Chosen For OOCL Containerships

The six 4,960 TEU post-Panamax containerships contracted in Japan and South Korea by Orient Overseas International Ltd. (OOIL) will each be propelled by a 12-cylinder Sulzer RTA84C low-speed diesel engine with a maximum continuous output of 48,600 kW (66,120 bhp) at 102 rpm. The ships will have a

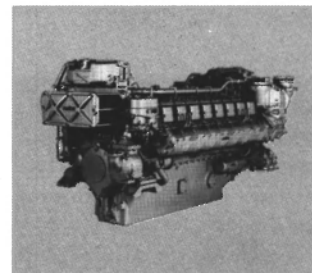
beam of just under 131 feet (40 m), and their service speed will be 25 knots. They will be deployed on the transpacific trade of OOIL's liner operation, Orient Overseas Container Line Ltd. (OOCL).

Four of the OOCL vessels will be built by Mitsubishi Heavy Industries Ltd. in Japan, while the other two vessels will be built to the same design by Samsung Shipbuilding & Heavy Industries Co. Ltd. in South Korea.

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SCA: OECD Talks Fail On Jones Act, European Export Credit Issues

The most recent round of the Organization for Economic Cooperation and Development (OECD) talks on shipbuilding subsidization have broken down, reportedly due to lack of agreement on two remaining bones of contention: U.S. Jones Act policies and European export credit policies.

The postponement of further talks was a mutual decision on the part of

the U.S. and the European Union (E.U.).

Shipbuilders Council of America (SCA) Chairman **John Stocker** said the SCA was disappointed by the outcome of the talks, and that the E.U. had given the impression of true political commitment to settle the remaining issues. However, he said he was not prepared to speculate on what the next step might be.

According to Mr. **Stocker**, the U.S. made it clear that the Jones Act was too sensitive an issue for it to be repealed and tried to ease European concerns on the "potential production impact of future Jones Act orders," but the issue could not be resolved.

The OECD Agreement included government-supported financing programs for export ships until re-

cently, when the E.U. insisted on exempting them, according to the SCA. SCA also said the provision of export financing is a major form of shipbuilding assistance within the E.U., and that U.S. yards have not had access to export credit financing for ships until the expanded Title XI loan guarantee program was authorized for fiscal year 1994.

Drew Ameroid Marine Forms CFC Conversion Alliance With York Marine Systems



Drew Ameroid Marine, based in Boonton, N.J., and York Marine Systems, headquartered in York, Pa., entered into an alliance to provide shipboard CFC refrigerant conversion, as well as repair and maintenance service to commercial marine customers worldwide.

Drew Ameroid Marine's product line includes welding and refrigerant products, specialty chemicals and sealing products. York Marine Systems is a manufacturer and supplier of heating, ventilation, air-conditioning and refrigeration equipment to the marine industry.

The initial focus of the joint effort is the conversion of shipboard refrigeration and air-conditioning systems presently using CFCs to one of the leading alternative refrigerants, such as HFC-134a. CFCs are chlorofluorocarbons linked to ozone depletion. HFC-134a, favored by many fleet owners and operators, is a hydrofluorocarbon which contains no chlorine atom; it therefore has zero potential to deplete stratospheric ozone. The Drew/York alliance extends to all major brands of air-conditioning and refrigeration equipment, including York, Carrier, Sabroe and Stal.

Neuman Cruise & Ferry Christens Ferry *Emerald Empress*

Neuman Cruise & Ferry Line christened the newest vessel in its fleet, the \$2.7 million-plus *Emerald Empress*, on May 21.

The vessel, 150 feet (46 m) by 33 feet (10 m), has three decks to handle 600 passengers for cruising on the Great Lakes, specifically the Lake Erie Islands. The *Emerald Empress*, featuring a bulbous bow and powered by two 960-hp Caterpillar diesel engines, can attain speeds up to 17 mph.

The *Emerald Empress* was designed in Boston, Mass. by naval architect **John Gilbert** and built by Washburn & Doughty of East Booth Bay, Me.

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Westinghouse Given DOD Grant For Ukraine Project

Westinghouse Electric Corp. announced that it was awarded a grant by the U.S. Department of Defense for the first defense conversion project in the Ukraine, to be awarded under the Nunn-Lugar program for the newly independent states of the former Soviet Union. The \$5 million grant will help fund the start-

up of a joint venture between Westinghouse and the Ukrainian enterprise, Khartron Production Association, to produce the state-of-the-art instrumentation and control systems required for the safe operation of nuclear power plants.

"Through this venture, Khartron and Westinghouse will convert a high-technology military capability to a use that will benefit the entire population of Ukraine," said **Gary M. Clark**, president of Westing-

house Electric Corp. "Together, we will improve the safety of the Ukraine's civilian nuclear power plants."

"Khartron's people feel deep satisfaction for the hard work of Westinghouse, the U.S. government and themselves for this excellent grant. We are anxious to start work quickly," said **Michail Cherneshov** of Khartron.

To be called WESTRON, the project will focus initially on sup-

plying advanced instrumentation and control systems to the 14 VVER nuclear power generation units in operation in the Ukraine. The systems are based on Westinghouse WDPF plant control technology and also will be produced for use in fossil-fueled and hydroelectric power generating plants, as well as industrial plants.

The grant awarded to Westinghouse is funded under a Cooperative Threat Reduction program agreement between the U.S. and the Ukraine to assist in the conversion of military-industrial enterprises to civilian Ukraine enterprises that formerly developed, produced and installed control systems for missiles and space systems. It is one of 26 Ukrainian firms identified as Nunn-Lugar program defense conversion candidate companies.

Kvaerner Unit Wins Contracts For Ferry, Chemical Tankers

Kvaerner Industrier AS's unit Kvaerner Kleven Ulsteinvik won an order worth \$66 million to build a fast ferry for Ofotens og Vesterdaalens Dampskipsselskap AS. The order is the second Kvaerner has won for a fast ferry recently: in April, Kvaerner Kleven Ulsteinvik won a similar contract for a fast ferry from the same customer.


Kvaerner Kleven Ulsteinvik's orders to date total close to \$200 million. Kvaerner has also confirmed orders to build a chemical tanker for Storli, based in Norway, and for National Chemical Carriers of Saudi Arabia. In November 1993 Kvaerner signed an agreement to construct two chemical tankers for Storli and NCC, with an option to cancel the construction of the second vessel. The companies did not exercise that option. The contract amounts to approximately \$60 million.

Disney Announces New Cruise Venture; Names Rodney President

Crystal Cruises' president **Arthur Rodney** has resigned and will become president of The Walt Disney Company's new cruise venture.

Mr. **Rodney** remained an advisor to his as-yet-unnamed successor during the month of May. Mr. **Rodney** has 24 years of experience in cruise line management. He founded, developed and built Crystal Cruises, where he has served as president since its inception in 1987. Prior to his place at Crystal Cruises, Mr. **Rodney** was president of Princess Cruises.

In June Mr. **Rodney** joins Disney. Mr. **Rodney** will oversee all Disney cruise development and operations, including the design and construction of Disney's first ship (which could be launched in 1998); a second ship is expected to follow soon after. The ships will be equipped for 2,400 passengers.



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Nautronix Appoints Agent

Nautronix appointed Frank L. Beier Radio as its sales and service agent for Dynamic Positioning Systems for the Gulf of Mexico.

Nautronix, with more than 25 years experience in Dynamic Positioning, produces the 4th generation ASK4000 series of Dynamic Positioning Systems. The series ranges from Simple Joystick to Triple Redundant Automatic Position Keeping Systems per DNV, Lloyds and ABS guidelines. Beier Radio provides a variety of electronic products and services to the offshore oil, ocean shipping and workboat markets. Products and services include navigation and communication equipment, vessel monitoring systems, cargo monitoring, on-board communications and dynamic positioning systems. The company has service and installation offices in Mobile, Ala.; New Orleans and Michigan City, La.; Los Angeles; and Houston, Texas.

Aalborg Ciseru Makes New Appointments

Aalborg Ciseru San Francisco, Inc. appointed **Benny Elmengaard** as president of the organization, and **Jorgen Regstad** as executive vice president, which will include responsibility for sales, marketing and business development.

Tracor Unit Wins \$32 Million Navy Contract

Tracor Applied Sciences, Inc., a subsidiary of Tracor, Inc., won a \$32 million, four-year contract with options to provide engineering and technical services for U.S. Navy communications-electronics platforms.

The contract is for the Joint Special Operations Division, Naval Command and Control and Ocean Surveillance Center In-Service Engineering East Coast Division Detachment in St. Inigoes, Md. The work will include rapid-response engineering, design and systems integration of communications-electronics equipment for vehicles, boats, ships and aircraft, including manned-portable systems, to a wide variety of Navy, Joint Service, and other non-defense agencies.

P&O European Passenger Traffic, Bookings Rise

P&O Steam Navigation Co. said passenger traffic from January 1994 until May 1994 for its P&O European Ferries unit was up 10 percent from the previous year, and that its bookings for the remainder of the year were up 13 percent.

The Dover-Calais service carried 3.7 million passengers during those months, up 32 percent from the same period in 1993. P&O also said tourist vehicle traffic was up 42 percent, and that its market share on the Dover-Calais route rose eight percent during the five months.

Kvaerner Wins Sealift/MarAd Contracts

Kvaerner Ships Equipment AB of Gothenburg, Sweden has secured two contracts for vessels being converted and upgraded for operation with the U.S. Navy's Strategic Sealift Command and the Ready Reserve Force. Three former Maersk L-Class container ships, *Laura Maersk*, *Liese Maersk* and *Lica Maersk*, un-

dergoing conversion at NASSCO into RoRo container ships for the U.S. Navy's Military Sealift Command, will be fitted with Kvaerner-designed hatch covers, hoistable RoRo decks and watertight cargo doors. Meanwhile a team of specialist RoRo engineers from Gothenburg, assisted by Kvaerner Eureka Inc. of New Orleans, recently completed one of Kvaerner Eureka's largest service contracts ever on two former Leif Hoegh

RoRos purchased by the Maritime Administration (MarAd) for operation with the Ready Reserve Force. The vessels involved were the 32,772-gt *Cape Wrath* (formerly *Hual Trader*) and the 32,695-gt *Cape Washington* (formerly *Hual Transporter*), built in Gdynia, Poland. Kvaerner personnel worked on the vessels for three months at Bethlehem Steel's Sparrows Point yard in Maryland, overhauling and upgrading systems.

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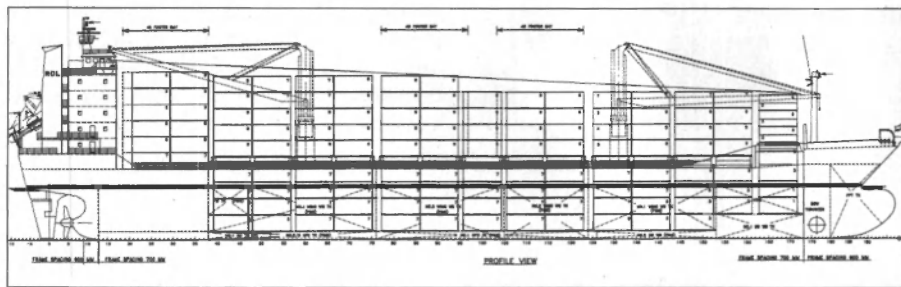
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SSE To Build Two Container Vessels For Thai Customer



Singapore Shipbuilding & Engineering Limited (SSE) has secured a contract to build two 950-TEU container vessels, with an option for two more, for Thailand-based Regional Container Lines Public Co. Ltd. (RCL).

The vessels, including owner-supplied cranes, are priced at about \$22 million each and will be delivered in 1995/96.

The 12,000-dwt vessels will have

service speeds of 17 knots.

With its fleet of 24 container vessels, RCL offers a range of services covering 30 ports in China, Hong Kong, Taiwan, Australia and Indochina.

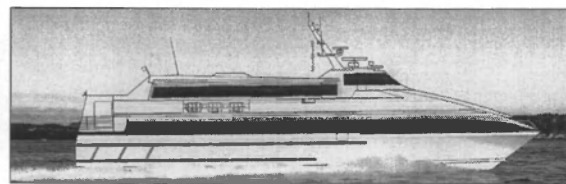
SSE's recent deliveries include three 456-TEU vessels for Singapore's Neptune Orient Lines and two 400-TEU RoRo/LoLo vessels for U.S.-based Tropical Shipping and Construction Co. Ltd.

Norwegian Batservice Holding To Build Fast Ferry

Mandal-based Norwegian shipyard Batservice Holding a/s has received an order to build a fast ferry for Troms Fylkes Dampskibsselskap for \$5 million.

The catamaran will be the Sea Lord 38 type.

This is the largest catamaran to be built at Batservice Holding to date. The main engines, which have not been selected yet, will provide a power of 2,550 kW to the Cpp propellers from Servogear, giving the vessel a service speed of 35 knots.



An artist's rendition of the Sea Lord 38 type fast ferry, being built by BatserviceHolding a/s.

The fast ferry is due to sail on the Harstad-Tromso route in Norway and will be able to carry 307 passengers plus a crew of five.

SSC Publishes Report On Reliability-Based Design Methods

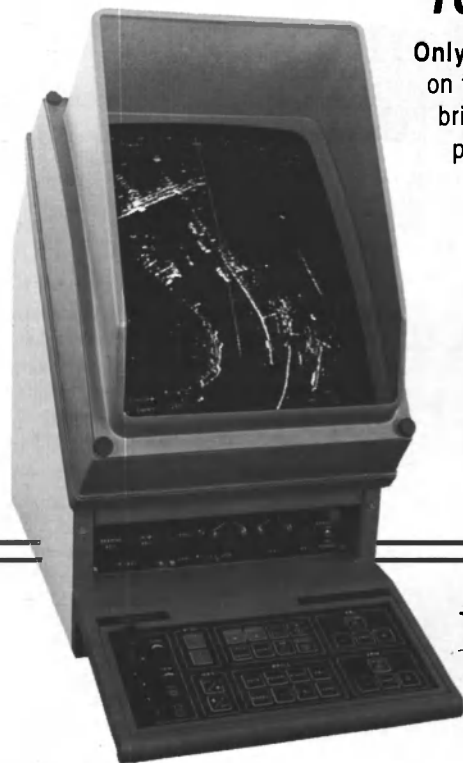
The Ship Structure Committee (SSC), an interagency committee that sponsors ship structure research projects, has made available

a report on a uniform format for data reporting of material properties in reliability analysis.

The SSC has instituted several studies in developing reliability-based design methods for marine structures. Inherent in the process is the need to define the uncertainties of the design parameters. The report made available by the SSC proposes a material property reporting format that is based on an earlier report, SSC-352, and adds to it the necessary statistical data processing elements. A hierarchy for the data fields is developed to facilitate estimation of values where an insufficient quantity of data exists for a specific property. Recommendations are presented for future development of a working database of material properties.

This newest report, SSC-371, or any other SSC reports, may be ordered from: National Technical Information Service, Springfield, Va. 22151, tel: (703) 487-4650; fax: (703) 321-8547. The SSC's membership is made up equally of members of the American Bureau of Shipping, Defence Research Establishment Atlantic (Canadian National Defence), Maritime Administration, Military Sealift Command, Naval Sea Systems Command, Transport Canada, and the U.S. Coast Guard.

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California Makes \$10 Million Available For Defense Conversion

The California Trade and Commerce Agency's Office of Strategic Technology released a request for proposals for \$10 million in state matching funds available to industry alliances for defense conversion activities under the federal Technology Reinvestment Project (TRP) "focused solicitation." The funds have been made available in order to increase California's response to federal programs that offer resources for defense conversion and technology transfer. The funds are designed to assist applicants who responded to the TRP's May 20 request for proposals.

Additional funding has been made available through the California Department of Transportation, the Employment Development Department and the Employment Training Panel.

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Status of U.S. Shipbuilding Assistance Programs

by James R. McCaul, president
IMA Associates, Inc.

The U.S. has initiated a major effort to transition from a naval to a commercial shipbuilding base. Here's a summary of key programs in existence or proposed to help U.S. shipyards compete for shipbuilding orders, described and listed in approximate order of importance.

Ship Export Financing Guarantees

Public Law 103-160 signed by President Clinton on November 30, 1993 created the National Shipbuilding and Shipyard Conversion Act of 1993. The major provision in this act is creation of a facility to provide government financing guarantees for ship export orders.

The general intent of PL 103-160 is to provide a financing facility similar to that available through Eximbank. It is designed to provide work to U.S. shipyards. The objective is to assist U.S. shipyards in developing a commercial workbase to offset the decline in military work.

Under the act, the Department of Transportation (DOT) is authorized to guarantee up to 87.5 percent of the ship's cost. This would be used for credit enhancement of a loan placed with a commercial bank. It will allow a repayment period of up to 25 years at terms generally applicable to AAA rated borrowers. Foreign as well as U.S. owners are eligible to apply for the financing guarantee. The ship can be registered in the U.S. or in a foreign registry. It can be classed with ABS or another registry. The only major requirement is that the ship be built in the U.S.

A provision of the law enables the DOT to match more favorable financing terms available through foreign governments.

The government estimates that the value of ships to be built with financing guarantees will total \$1.85 billion over the first two years of the

program.

This program is already attracting considerable interest. It is understood that there have been about a dozen applications already submitted to the Maritime Administration for guarantees on ship export contracts. In IMA's opinion, access to financing guarantees for export orders will be a major boon to U.S. shipyards.

Shipyard Modernization Support

PL 103-160 also provides federal financing guarantees for shipyard modernization. A U.S. shipyard can submit an application requesting the DOT to guarantee 87.5 percent of the cost of capital improvements and acquisition of modern shipbuilding technology. This guarantee will be used by the shipyard for credit enhancement of a loan from a commercial bank.

This program is specifically designed for shipyards which otherwise would find difficulty obtaining financing for capital improvements. It enables the shipyard to obtain financing at terms available to AAA rated companies.

Up to 12.5 percent of the total commitments made by the DOT for financing guarantees can be used for shipyard modernization support.

It is understood that one major shipyard has already submitted an application for a loan guarantee totaling \$22.7 million to finance a \$27.7 million shipyard modernization project.

Cost Sharing Contracts

Under the TRP, shipyards as well as other U.S. firms are eligible to submit proposals to the Advanced Research Projects Agency (ARPA) to cost share commercialization projects. ARPA will fund up to 50 percent of the cost of developing products designed to transition military

to commercial activity. Five projects have already been awarded in the shipbuilding area (see chart this page).

A new round of cost-sharing awards is expected in the near future. These awards will be funded under the Maritech program—also managed by ARPA. About 40 proposals have been submitted to ARPA. Many of the proposals involve developing specific ship designs that will be marketed to international buyers. ARPA will pay for half of the cost to perform design and other work necessary to bring each project to the contract signing stage. To date, \$30 million has been funded for Maritech, and another \$40 million is planned for the fiscal year beginning October 1994. Total funding of the five-year period is to be \$220 million.

Series Transition Payment Program

This proposed program calls for a construction subsidy of about \$2 billion over a 10-year period to pay half the cost of building ships in U.S. shipyards. The subsidy would be available for projects involving two or more ships. Over time, the subsidy percentage would decrease as U.S. yards become more competitive.

The House of Representatives has passed a bill authorizing the program. However, the program is opposed by the Administration and funding has not yet been provided.

Gibbons/Breaux Bills

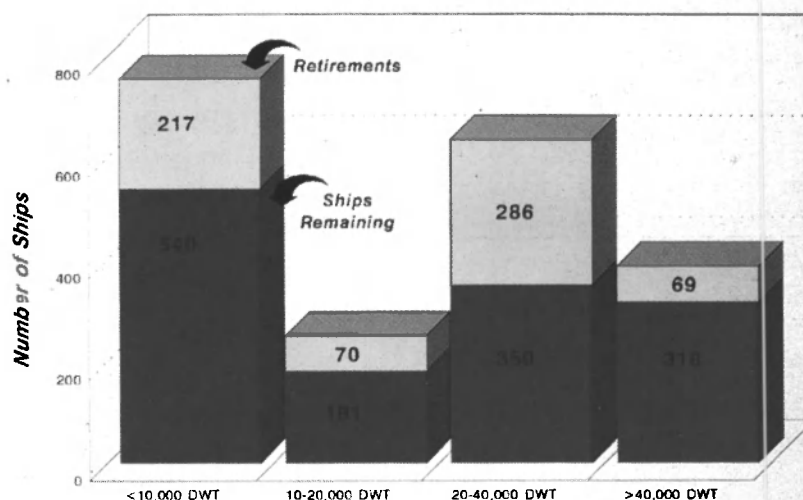
A proposed bill introduced in the House of Representatives by Rep. Gibbons calls for penalties on ships calling in U.S. ports that have been built with foreign subsidy support. A similar bill has been introduced in the Senate by Sen. Breaux. The objective of both bills is to cause other governments to eliminate their support of shipbuilding in order to "level the playing field" for U.S. shipyards. This legislation is heatedly opposed by the cruise industry. It has until now not gained the support of the previous or present administration. The Clinton Administration has been attacking the trade policies of other countries and this legislation may end up passing in some fashion. Chances of passage will increase if U.S. yards do not obtain some orders within the near future as a result of the new ship export financing program.

Jones Act

This has been a traditional protection for U.S. shipyards. The law requires that cargo ships trading between U.S. ports be built in domestic shipyards. A similar law requires that passenger ships operating between U.S. ports be U.S.-built. Legislation introduced in the House would permit the use of foreign-built ships in the domestic cruise trade. As a condition, the operator would need to commit to buy a replacement vessel in a U.S. shipyard within a two-year period.

Company	Project	# Participating Organizations	\$ (mil)
Bath Iron Works	Commercial Shipbuilding Focused Development	5	\$13.9
Westinghouse Electric Corp.	Demonstration & Spin-Off of the Integral Motor/Propeller Propulsion System	5	\$9.8
Norfolk Shipbuilding & Drydock	Center for Advanced Ship Repair & Maintenance	4	\$2.4
CYBO Robots, Inc.	Portable Shipbuilding Robotics	13	\$12.5
Westinghouse Electric Corp.	Development of the Submerged Electric Drive Cargo Pumping System	7	\$4.9

Industry Trends



Source: IMA Associates, Five Year Outlook for U.S. Shipbuilding, 1994

640 of the 2,030 product tankers now in service will be retired over the next five years, producing a major replacement opportunity for shipbuilders and ship system suppliers.

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STORMING AHEAD

European Market Is Looking Up



HMS *Bridport* completes the series of Sandown Class minehunters built by Vosper Thornycroft for the British Royal Navy.

by
Carol Fulford and Andy Smith,
International Editors

Over the past few years Europe has been dealt its share of the world wide economic recession which has resulted in many European ship and boatbuilders, both big and small, struggling to survive.

Breakdown of Eastern Bloc barriers, while excellent news on a humanitarian level, has also created further problems by increasing strain on Western economies as well as, ironically, creating a doorstep competitor which makes up in cheap labor for what it lacks in technology.

This has come at a time when EC politicians, bent on the idealism of a unified Europe, are confronted with nationalistic pride and the inevitable bickering which arises when any one nation sees itself suffering at the expense of others.

Outside influences have, however, come to the rescue and genuine signs of economic recovery can be felt in most countries within the European continent.

Certain bright spots are bright indeed and even bleak areas have caused yards and in some cases even governments to rally resources in order to win through.

Size, Speed Drive Cruise & Ferry Market

Perhaps the greatest area of activity lies in the cruise and ferry sector. Statistics collated by the Cruise & Ferry Conference Secretariat in promoting next year's London-based event reveal an exciting current orderbook for no fewer than 28 cruise ships, 27 large luxury ferries and 81 fast ferries. Although such orders have been placed with yards around the world, European builders have attracted a healthy slice.

Size and speed are criteria which affect design considerations in both vessel types, with currently the largest ferry ever built under construction for Stena AB at the Rauma yard of Finnyards, and a wealth of giant sized cruise ships on order at yards in Scandinavia, France, Germany and Italy. In the cruise ship market, size has in fact become all important primarily because the level of investment required to operate a fleet in a cut-throat marketplace can only be sustained at big ship levels.

Speed, obviously important in the ferry sector, has also become a de-



A 12-m water taxi plies its trade on the River Thames in London. Similar vessels could be put into service in Manhattan in the future.

sign force in the cruise arena with P&O's new flagship *Oriana*, currently nearing completion at Meyer Werft in Germany, perhaps the first of a new style of vessel capable of 25 knots. Reasoning behind this lies in further increasing the viability of Mediterranean cruises as well as enhancing possibilities for round-the-world cruises. To enforce the trend, Royal Caribbean Cruise Lines has placed recent orders for new vessels which will also possess higher than average service speeds.

With *Oriana* in service, P&O will look forward to yet further strengthening of its fleet with a giant vessel just ordered from Fincantieri in Italy which will carry 2,500 passengers. P&O's American arm Princess Cruises has also ordered two new ships of smaller carrying capacity (1,950) from the Monfalcone yard of Fincantieri, the first—*Sun Princess*—scheduled for delivery by the end of 1995.

Sun Princess is being built alongside a diesel-electric cruise ship (as yet un-named) for Carnival Cruise Lines and the second of the three-vessel Statendam class for

Holland America, *Maasdam*. The third vessel in the series, *Rydam*, should be delivered by the end of this year.

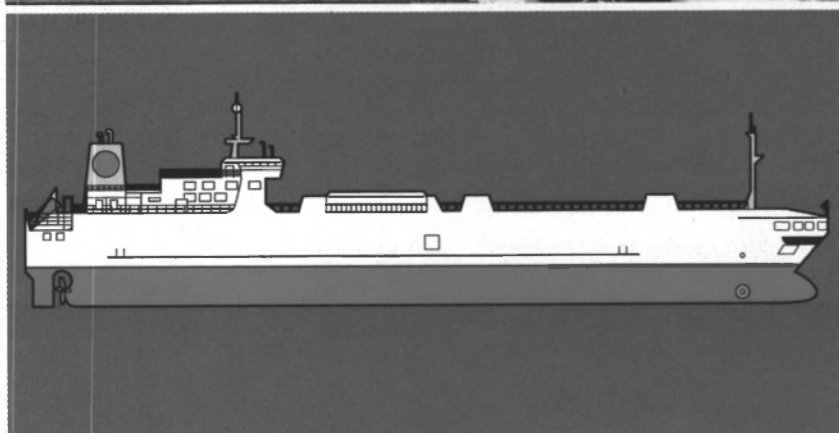
Despite the Fincantieri order, Carnival Cruise Lines has, however, placed the bulk of its impressive recent orders with the Finnish yard Kvaerner Masa: *Sensation*, the third in the series of Fantasy class passenger vessels, was delivered late last year with *Fascination* and *Imagination* currently in build and scheduled for delivery by end 1994 and 1995 respectively.

The French shipyard Chantiers de l'Atlantique at St Nazaire, having delivered *Windward* last May to Kloster Cruise Line, is now active again in the sector building two sizeable vessels for Royal Caribbean Cruise Lines while in Germany, Meyer Werft in Papenburg boasts another impressive orderbook. With *Oriana* close to completion it is now the recipient of a \$1 billion project, known as 'Project Century' to build three 70,000 grt cruise ships. The first two are due for delivery in late 1995 and fall 1997 with the third vessel following a year later to bring Celebrity's passenger carrying ca-



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Belgian builder Boelwerf delivered two Crystal Class reefers, the *Crystal Pilgrim* and the *Crystal Pioneer*.

capacity to over 9,000. In addition, the yard has also announced an order for a fourth Leuser class passenger ship of 328 ft. (100 m) in length and passenger capacity of 1,000 for an Indonesian operator.

With the world's largest cruise vessel now building in Italy and the world's first high speed passenger/freight ferry in build in Finland, European technology is certainly being tested. The first of the two scheduled for delivery, the HSS (High-speed SeaService) catamaran, itself part of a two-vessel order, will be capable of speeds in excess of 40 knots when it enters service for Stena Sealink on its central corridor service between Wales and Southern Ireland.

Other Scandinavian yards are getting a fair share of fast ferry orders with Fjellstrand's 40m Flying Cat catamarans being put to the test, particularly in the Far East. Norwegian yard Batservice has received an order for a 102 ft. (31 m) fast monohull ferry for a Swedish operator requiring room for 450 passengers and 30 bicycles...and has also confirmed an order for a Paxman-powered Batservice Sea Lord 154 ft. (47 m) fast ferry capable of carrying 449 passengers at a service speed of 38 knots.

As competition in the sector is fierce, at least two yards have learned to keep business 'in the family'. Kvaerner Fjellstrand, currently building a waterjet powered 40m Flying Cat for an operator in northern Norway, has turned to its sister company Kvaerner Energy for the 680mm waterjets, examples from a recently developed range and, fortuitously, the first commercial order that Kvaerner Energy has so far received.

U.K. yard FBM Marine, however, has gone one step further—by securing a \$61.5 million contract to build seven TriCat passenger ferries for its parent company in Hong Kong. Despite the relationship, FBM claims fierce battle with world-wide competitors for the order which

is by far its most prestigious to date. Futuristic in style and powered by Solar Taurus gas turbines and KaMeWa waterjets for a top speed of 34 knots, the decision to purchase was based largely on impressions gained from a 115-ft. (35-m) pre-production vessel which is now in service.

Intriguing also, although very much at the smaller end of the scale, is a 12-seater aluminium trimaran water taxi, *Ebenezer Scrooge*, currently in operation on London's River Thames as an experiment conducted by Whitehorse Ferries. Even at 25 knots, the vessel has low wash characteristics and its waterjet propulsion system has a single joystick control to facilitate one-person operation at 'minimum stop' pick-up points. Negotiations are about to be concluded giving the company access to the Port of London Authority's many piers with the result that construction of two further trimaran taxis is to commence immediately. Whitehorse has also completed a preliminary study of Manhattan with a view to launching a similar operation.

Cargo Ships: Coming To Grips With Backyard, Far East Competition

Western European yards have seemingly at last come to terms with Far Eastern competition where it counts most—in the large tonnage cargo sector. However, many are anxiously anticipating a new challenge closer to home from ex-Eastern Bloc countries with the more far-sighted, such as Kvaerner in Norway, already doing deals to take advantage of cheaper labor rates.

Even in the re-united Germany, builders on the western side of the former divide are complaining about unfair subsidized competition from the country's eastern yards. Nevertheless, Bremer Vulkan is managing to maintain its strong position in the containership market with three vessels ordered by China Ocean Shipping and three in build to follow

Tokyo Senator, delivered to Conti-Reederei late last year. HDW in Kiel has an order for six post-Panamax containerships from APL to keep it busy until the end of 1995 and the Thyssen yard has three to build for Claus-Peter Offen and shares another two for China with Flensburger. On the other hand, it should be remembered that German ship owner Deutsche Seereederei Rostock put economy first when it contracted with the Slovakian yard of Slovenske Lodenica for six 3,650 dwt coasters.

Spain's Astilleros Espanoles has two 11,000 dwt vessels to build for Malaysia and is to construct a 123,000 dwt shuttle tanker for a Norwegian operator, doubtless a blow for Scandinavian yards vying for the order. However, other news from the region is good. Kvaerner Floro has an order book stretching to the end of 1996, mainly for chemical tankers, while in Denmark, Orskov has two containerships under construction and Odense will be delivering to its parent, AP Moller, five 60,000 dwt container liners and two 299,000 dwt tankers during 1995-96. Danyard has four identical 620-ft. (189-m) bulk carriers on order for two different customers and two 440 ft. (134 m) cargo vessels for Royal Arctic Line.

Belgium's premier yard, Boelwerf, leaner and fitter following a government led rescue plan, has completed the backlog of orders held up by a six month 'sit-in' by its workforce with the delivery of *Crystal Pilgrim* and *Crystal Pioneer*, a pair of 430 ft. (131 m) reefers. The company anticipates its first order under new ownership—for two 748 ft. (228 m) long tankers, while in neighboring Holland, Damen continues a remarkable run of success with its 410-ft. (125 m) Combi Coaster. Vessel number 24, *Leysand*, was recently delivered to a German owner and three more are under construction, one of which is destined for Caribbean operations.

Fishing Vessel Construction: Down, Not Out

Despite good tidings in the shipping arena, many European yards are having to contend with the dramatic depression in the fishing industry. After good times years back when EC grants occasioned a glut of fishing boat building, the marketplace has approached near hysteria with many boat builders having to look beyond their traditional markets.

Although the EC's common fish-

ing policy has failed to overcome national rivalries and quarrels over quotas in an undoubtedly over-fished area—resulting in a dearth of new builds for use in European waters—the break-up of the old Soviet Union has caused a minor flurry of activity and a larger than ever share of the new vessels are longliners.

The Elbwerft Boizenburg yard in Germany is currently in the midst of a contract to build 13 172-ft. (52-m) longliners for the Akros Fishing Company in Russia. The first vessel, *Antias*, has commenced operations in the Sea of Ohodsk and vessel number five, *Blanket*, will start its three month delivery trip shortly. This contract follows the operational success of two similar 152-ft. (46-m) vessels, the *Kapitan Kartashov* and *Kapitan Samolienko*, built last year by Soviknes Verft in Norway for leasing to a Vladivostok based fishing company. Another German yard, Volkswerft, is building 15 210-ft. (64-m) factory trawlers for another Russian company, Bering Trawlers, mainly for use in Far East waters.

In the quest for work from further afield, French yards have a respectable record with Chantiers Vergos having secured an order from Navimon SA on the Pacific island of New Caledonia for two 52-ft. (16-m) longliners with an option for six more. Beneteau, France's premier producer of glass fiber hulls, both leisure and commercial, has recently delivered three of its 55-ft. (16.6-m) longliners to Tahiti for Papete-based Stardust Marine to add to the four vessels it supplied in 1992.

To help in their promotional endeavours, 10 privately owned boat builders in Spain have recently formed an export marketing organization called Construnaves-CNE with the world's major fisheries a prime target. Armon, probably the best known concern in the association, has already picked up an order for a 143-ft. (43.5-m) tuna and swordfish longliner for South Pacific operations. Due for delivery in September 1994, the steel vessel will carry a crew of 22 and be powered by a 900 hp diesel from ABC in Belgium. The same yard has also caused some embarrassment and considerable discomfort among U.K. boat builders, themselves hungry for work, by securing orders from Scottish owners for two shelterdeck trawlers, each of 74 ft. (24 m) and 80 ft. (26 m), by the simple technique of being exceptionally competitive.

There are, however, close to 400



The cruise ship *Sensation* was built in Finland at Kvaerner Masa-Yards, one of a series ordered by Carnival Cruise Lines.

yards in Europe claiming to be builders of fishing vessels of one type or another. Only the biggest—and those prepared to form co-operative promotional ventures—will be able to succeed in bringing home orders from far and wide. Resilience is the key to success and many yards are adapting to new work with success. Chantiers Croisicais, renowned French fishing boat specialist, is now concentrating on small passenger/tourist ferries, while in the U.K.,

the even more prominent Hepworth yard has built its first ever tug.

Workboats

For tug traditionalists, Wyeforce, Hepworth's commendable first effort, is an interesting highlight in a fairly static year for tug construction. A bright spot does, however, appear for Richard Dunston on the Humber in the U.K. which managed to maintain its order books with delivery of *Fiery Cross* and

Phoenix Cross, two 98-ft. (30-m) Voith Schneider propelled vessels for Cory Towage, one of Europe's largest harbor tug operators. This \$10.2 million order, along with another for two impressive berthing tugs for the U.K. Ministry of Defence, has kept the yard active. Such sophisticated vessels are a sharp contrast to the 62-ft. (19-m) Wyeforce, a simple and rugged vessel, having two Caterpillar 3412 DITA diesels each developing 671

bhp at 1,800 rpm driving 1,600mm fixed pitch propellers via Reintjes 6:1 reduction boxes. The Kort nozzles are fixed but twin rudders combine to give excellent maneuverability, a free running speed of 11 knots.

Dutch giant Damen, which incidentally is parent company to Dunston in the U.K., has developed a new 102-ft. (31-m) tug with a high fire fighting capability, the first of which, *Citta Della Spezia*, has just been delivered to Italy. Another is to follow shortly. Two Schottel rudder propellers, each powered by a 1,470 kW Wartsila Nohab diesel, give the craft outstanding maneuverability, a free running speed in excess of 13 knots and a bollard pull of 51 tons. Damen has also been doing well in the Middle East, recently supplying four 56-ft. (17-m) mooring boats to Kuwait and a 74-ft. (22.5-m) berthing tug with firefighting capabilities to Yemen. Belgian conglomerate BSC has achieved equal success in the area with a six tug order for Saudi Arabia.

Currently under construction at the Simek yard in Norway are two 115-ft. (35-m) x 35-ft. (10.8-m) oil terminal escort tugs destined for the Fawley refinery on Southampton Water. Wartsila Wichmann engines will drive Ulstein Liaaen Compass thrusters with the intention of giving 60 tons bollard pull and a speed of 13.5 knots. Fawley also took delivery late last year of a 47-ft. (14.4-m) Damen tug/workboat for linehandling and towing duties. Named *Ibex*, the vessel has two 300 bhp Volvo diesels turning 1,000mm propellers inside nozzles giving a bollard pull of 7.6 ton and a speed of 9.2 knots.

The *Piper Alpha* disaster resulted in the U.K.'s Health & Safety Executive issuing a new Code of Practice for standby support vessels and *Trafalgar Guardian* and *Scott Guardian*, the first two vessels built to the new Code, are now in service in the North Sea. Designed by the Scottish naval architects, IMT Marine Consultants, the 180-ft. (55-m) sisterships were built by Yorkshire Dry Dock with double skin hulls, twin Aquamaster azimuth thrusters aft, a single Aquamaster thruster at the bow and highly sophisticated fire-fighting and self-drenching systems. IMT's **Bengt Johanneson** told *Maritime Reporter* that although the double hull would enhance the vessel's chance of survival in the event of collision damage, the main benefit was in heat insulation when coming alongside a blazing platform. "We have also given the utmost consideration to rescue facilities and survivor reception, treatment and recovery," he said. Mr. **Johanneson** also confirmed that the vessels were designed and built purely on the basis of computer predictions: "We simply did not have the time for adequate tank testing but fortunately both performed better than expected," he advised.

The Ulstein Group, one of Norway's leading shipbuilding concerns, although recently announcing major investment at its three

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yards in order to concentrate on the construction of larger ships, originally made its name with the prolific production of North Sea offshore support vessels. Two such vessels among the latest from the production line are noteworthy—claimed to be the first to fully integrate dynamic positioning and ECDIS systems. Built for Farstad AS for use on the Shell Draugen field, *Far Grip* and *Far Fosna* at 244-ft (74.5-m) combine anchor handling and supply capabilities with ROV deployment, oil recovery and emergency accommodation for 250 survivors.

Military Vessels

Increased stability in Eastern Europe (Yugoslavia apart) has had a marked effect in the military sector. For once, the politicians appear to have listened to the electorate and most governments have cut defense budgets, although in naval terms this has simply reduced the size of vessels being built—nothing bigger than frigates. Turkey is having four 380-ft. (116.72-m) craft built, two at Blohm + Voss in Germany and two at the country's own Golcuk yard. France, Italy and the U.K. have joined forces to form a project to develop a 459-ft. (140-m) frigate design with the U.K. requiring 12 vessels to replace the Type 42 destroyers with the other two nations requiring four each. Spain and the Netherlands, originally in the project with the 'big' three, are now jointly looking at a less ambitious proposal. Abu Dhabi is known to be in the market for frigates and the U.K.'s Vosper Thornycroft, Bazan in Spain, DCN in France and Lurssen in Germany are likely to be the front runners.

More typical of the current scene, however, is the plethora of smaller patrol and other military craft orders being placed on European builders with more, it seems, on the way. Finnyards is building a 190-ft. (58-m) multi-role patrol boat for the Finnish Frontier Guard, Vosper is building a 154-ft. (47-m) fast patrol craft capable of 40 knots for Greek waters and Kvaerner Mandal is in the midst of a contract to build nine mine countermeasure vessels for the Norwegian Navy. Karlskronavarvet has signed up with the Swedish Defence Material Administration to build four 118-ft. (36-m) inshore mine sweepers and the same customer has ordered a further 30 waterjet-propelled strike craft from Dockstavvarvet. French builders Leroux & Lotz have just handed over a 177-ft. (54-m) aluminium patrol vessel to Mauritania and compatriots CMN have two similar craft under construction for the French Navy. The Italian Customs has ordered 15 patrol boats with surface piercing propellers from Moschini in Italy. Trials with two identical 54-ft. (16.5-m) prototypes proved a superior 54-knot performance from the chosen propulsion system over waterjets.

Vosper Thornycroft, a pioneer in the use of GRP in minehunters, is awaiting funding from Saudi Arabia to complete the second half of a six

vessel contract for 173-ft. (52.7-m) Sandown Class minehunters. HMS *Bridport*, another Sandown Class, is the last in the current series for the Royal Navy although the U.K. Ministry of Defence is to issue an invitation to tender for a further seven and as Vosper holds the molds, it must be in with a good chance. Vosper is also producing four 184-ft. (56-m) strike craft for Qatar and two 272-ft. (83-m) corvettes for Oman.

Sentinel, the latest version of

Vosper's Island Class, the 'parent' to the 49 Bollinger built 108-ft. (33-m) USCG patrol vessels, has been delivered to U.K. Customs & Excise with some enhancements, the most significant being the introduction of a PP waterjet driven by a 400 kW Perkins diesel engine on the centerline to provide improved slow speed maneuverability and an economical loiter capability up to nine knots.

Halmatic, another U.K. yard well

known for fast patrol boats up to 98 ft. (30 m), has developed a 77-ft. (23.5-m) 'mother and daughter' version with *Protector III*, built for fishery protection duties on the English north east coast. A stern ramp allows the rapid deployment and recovery of a 22-ft. (6.7-m) rigid hull, foam collar daughter craft in up to Sea State 5 and Force 6 winds. Although the mother craft in this first example has a top speed of 27 knots, Halmatic envisages a big

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market in anti-terrorism and drug enforcement applications, particularly in the Middle and Far East, and is actively marketing a 40-knot version.

Undoubtedly the U.K.'s largest producer of small commercial vessels, Halmatic has also been a major contributor to the highly active European pilot boat building scene by delivering vessels, based on the established Nelson hull design, to countries as far apart as France and

Mozambique. This type of vessel is undoubtedly a strength of U.K. yards where a fairly healthy commercial boatbuilding industry is all that now survives in a once world-renowned shipbuilding nation.

Amid several deliveries in recent months were *Estuary Warden* (for Estuary Services) and *Humber Alert* (for Humber Pilotage)—in each case the fourth Halmatic pilot boat to be ordered by each operator. Both are based on Nelson 48/50 hulls with

Humber Alert joining a fleet which boasts the busiest operation of its kind in the U.K. with 160 authorized pilots making approximately 25,000 boardings and landings a year of all shipping entering the River Humber. Scania-powered with Twin Disc gearboxes, the boat's most significant design feature is a specially configured superstructure with a forward-raked windscreen which gives more wheelhouse space for the two-person crew and six

pilots.

Nelsons were also selected by Associated British Ports, U.K., last year with Halmatic and Berthon Boat Co. recipients of orders. The Berthon vessel, a Nelson 45 dubbed *Protector*, was also designed to police the 'Moving Prohibited Zone' in front of ships using the busy navigable channel in Southampton Water and as such was designed for loitering purposes.

New to the pilot boat building scene in the U.K., William Osborne delivered a Nelson 45 to Portsmouth harbor and also promoted designs for the Osborne 350—a vessel offered with a greater beam to length ratio than most traditional hulls and a heavily strengthened GRP hull. Vessels can be bought or leased—an unusual offer from a small yard.

Other yards such as Goodchild Marine, FBM Marine and Jones Buckie Shipyard have also made recent deliveries to the home market while the U.K. naval architect **Alastair Cameron** has furnished the design for the innovative high speed Voyager class of pilot boat for Loodswezen, the Dutch Pilotage Organisation, built by Engelaer in Holland as part of a \$1.5 million research project.

An equally impressive research project has also been concluded by the British rescue organization, the RNLI, resulting in the Trent class lifeboat, the first production version of which has recently undergone self-righting trials. The Trent class differs most significantly in being built in lightweight composite materials as opposed to aluminium.

Eight Trent class lifeboats are now in various stages of completion and although exact future requirements are as yet unclear it is expected that about 45 of this class of lifeboat will eventually enter RNLI service. Much of the search and rescue deliveries of late, however, revolve around the extremely busy rigid inflatables marketplace—yet another small boat area in which U.K. yards are dominant.

Ideally suited to sprint speed rescues, RIBs are popular with police, coastguard and rescue authorities in Europe with companies such as Delta, FBM (TaskForce), Avon, Dunlop and Carson making regular deliveries. Reputable headway is also being made in the Far East with seven Carson boats, for example, due for delivery to Indonesia this year and substantial paramilitary orders in the offing. Delta has delivered four of its outstanding rigid inflatables to European Customs authorities over the past few months while Tornado teamed up with Nimbus of Sweden to produce a 32-ft. (9.9-m) RIB for a successful, if eventful, trans-Atlantic challenge crossing.

Look for Carol Fulford's and Andy Smith's "EUROPEAN" feature each month in the *Maritime Reporter & Engineering News*, as the duo reports on the latest technological advances and happenings of the day.

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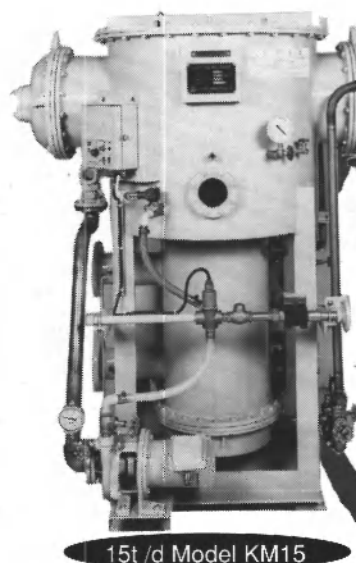
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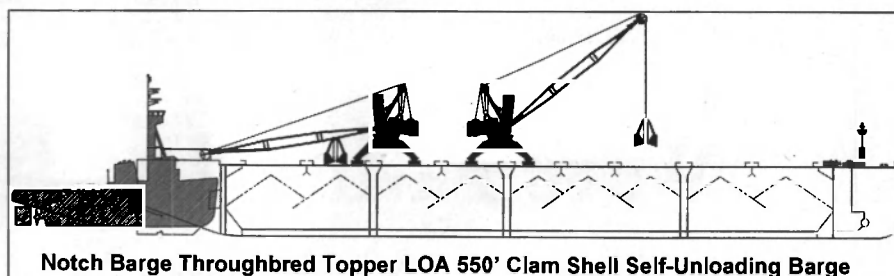
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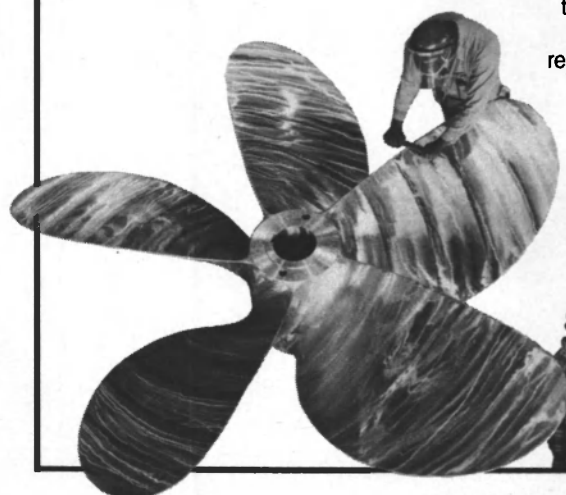
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Stena Line Orders Third High Speed Ferry From Finnyards

Stena Line AB recently announced an order for a third high-speed HSS ferry from Finnyards Oy, and its intention to order a fourth by the end of the year, from a yet to be determined shipyard. The original order for two HSS ferries to Finnyards will be delivered in the spring and at the end of 1995 respectively. The third vessel is set for delivery in the spring of 1996, and the fourth vessel, should it be ordered, will be delivered in early 1997.

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U.S. Shipyards: Survey Of Naval Construction

The following data on U.S. Navy newbuilding activity in U.S. shipyards is the results of a limited survey by the editors of *Maritime Reporter*. Publisher is not responsible for errors or omissions. (Source: *Maritime Reporter & Engineering News*, June 1994)

Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Avondale Industries, Shipyard Division, New Orleans, La.					Bataan (LHD 5)				
T-AO 201/Patuxent	15,000-lt.-displ.-ton		U.S. Navy	6/95	Ross (DDG 71)	844 x 140 x 106	Steam Boilers	U.S. Navy	5/97
T-AO 204/Rappahannock	15,000-lt.-displ.-ton		U.S. Navy	11/95	McFaul (DDG 74)	505 x 67 x 27	LM2500	U.S. Navy	6/97
T-AO 203/Laramie	15,000-lt.-displ.-ton		U.S. Navy	4/96	Bon Homme Richard	505 x 67 x 27	LM2500	U.S. Navy	3/98
LSD 49 (CV)/Harpers Ferry	11,894-lt.-displ.-ton		U.S. Navy	11/94		844 x 140 x 106	Steam Boilers	U.S. Navy	5/98
LSD 50 (CV)/Carter Hall	11,894-lt.-displ.-ton		U.S. Navy	7/95	Intermarine, USA, Savannah, Ga.				
LSD 51 (CV)/Oak Hill	11,894-lt.-displ.-ton		U.S. Navy	3/96	USS Heron/MHC-52	188 x 36 x 10	Isota Fraschini	U.S. Navy	6/94
MHC 53/Pelican	827-lt.-displ.-ton		U.S. Navy	3/95	USS Oriole/MHC-55	188 x 36 x 10	Isota Fraschini	U.S. Navy	12/94
MHC 54/Robin	827-lt.-displ.-ton		U.S. Navy	9/95	USS Blackhawk/MHC-58	188 x 36 x 10	Isota Fraschini	U.S. Navy	8/95
MHC 56/Kingfisher	827-lt.-displ.-ton		U.S. Navy	3/96	USS Cardinal/MHC-60	188 x 36 x 10	Isota Fraschini	U.S. Navy	11/96
MHC 57/Cormorant	827-lt.-displ.-ton		U.S. Navy	9/96	USS Raven/MHC-61	188 x 36 x 10	Isota Fraschini	U.S. Navy	6/97
T-AKR 300/Bob Hope	34,408-lt.-displ.-ton		U.S. Navy	9/97	USS Shrike/MHC-62	188 x 36 x 10	Isota Fraschini	U.S. Navy	3/98
Bath Iron Works Corp., Bath, Maine					National Steel & Shipbuilding Company (NASSCO), San Diego, Calif.				
John S. McCain/DDG 56	505 x 59 x 32	LM2500	U.S. Navy	5/94	AOE-6	754 x 107 x 38	LM2500 (4)	U.S. Navy	1/94
Laboon/DDG 58	505 x 59 x 32	LM2500	U.S. Navy	10/94	AOE-7	754 x 107 x 38	LM2500 (4)	U.S. Navy	10/94
Paul Hamilton/DDG 60	505 x 59 x 32	LM2500	U.S. Navy	1/95	AOE-8	754 x 107 x 38	LM2500 (4)	U.S. Navy	7/95
Fitzgerald/DDG 62	505 x 59 x 32	LM2500	U.S. Navy	6/95	AOE-10	754 x 107 x 38	LM2500 (4)	U.S. Navy	6/97
Carney/DDG 64	505 x 59 x 32	LM2500	U.S. Navy	11/95	Sealift	950 x 106 x 34	LM2500 (2)	U.S. Navy	n/a
Gonzalez/DDG 66	505 x 59 x 32	LM2500	U.S. Navy	4/96	Laura Maersk/ Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
The Sullivans/DDG 68	505 x 59 x 32	LM2500	U.S. Navy	9/96	Leise Maersk/ Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
Hopper/DDG 70	505 x 59 x 32	LM2500	U.S. Navy	3/97	Lica Maersk/ Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
DDG 72	505 x 59 x 32	LM2500	U.S. Navy	8/97					
DDG 73	505 x 59 x 32	LM2500	U.S. Navy	12/97					
DDG 75	505 x 59 x 32	LM2500	U.S. Navy	5/98					
DDG 76	505 x 59 x 32	LM2500	U.S. Navy	9/98					
Bollinger Machine Shop & Shipyard, Lockport, La.					Newport News Shipbuilding, Newport News, Va.				
USS Sirocco/Cyclone Class	170 x 25 x 13	Paxman	U.S. Navy	3/94	Charlotte/SSN 776	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1994
USS Squall/"	170 x 25 x 13	Paxman	U.S. Navy	5/94	Toledo/SSN 769	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Zephyr/"	170 x 25 x 13	Paxman	U.S. Navy	8/94	Tucson/SSN 770	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Chinook/"	170 x 25 x 13	Paxman	U.S. Navy	10/94	Greenville/SSN 772	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1996
USS Firebolt/"	170 x 25 x 13	Paxman	U.S. Navy	1/95	Cheyenne/SSN 773	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1996
USS Whirlwind/"	170 x 25 x 13	Paxman	U.S. Navy	4/95	John C. Stennis/CVN 74	91,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Thunderbolt/"	170 x 25 x 13	Paxman	U.S. Navy	6/95	United States/CVN 75	91,000-Lt.-Displ. Tons	n/a	U.S. Navy	1998
USS Shamal/"	170 x 25 x 13	Paxman	U.S. Navy	9/95					
(18) 10-Meter RIBs	33 x 11 x 3	Cummins	U.S. Navy	1/94 to 9/94	Orange Shipbuilding Co., Inc., Orange, Texas				
General Dynamics, Electric Boat Division, Conn.					2-YON	185 x 35 x 13	GM	U.S. Navy	11/95
Rhode Island/SSBN 740	171 x 13	n/a	U.S. Navy	6/94	22-YC	130 x 32 x 9	n/a	U.S. Navy	10/96
Hartford/SSN 768	110 x 10	n/a	U.S. Navy	11/94	Peterson Builders, Inc., Sturgeon Bay, Wis.				
Maine/SSBN 741	171 x 13	n/a	U.S. Navy	6/95	MCM-14 Chief	224 x 39 x 11	Isotta Fraschini	U.S. Navy	7/94
Columbia/SSN 771	110 x 10	n/a	U.S. Navy	9/95	Boom Handling Boats (4)	24 x 8	Detroit Diesel	U.S. Navy	12/94
Seawolf/SSN 21	108 x 12	n/a	U.S. Navy	5/96	Landing Craft				
Wyoming/SSBN 742	171 x 13	n/a	U.S. Navy	6/96	Personnel Large (6)	36 x 12 x 4	Detroit Diesel	U.S. Navy	1994
Louisiana/SSBN 743	171 x 13	n/a	U.S. Navy	6/97	MK V SOC Ultra Fast Patrol	71 x 18 x 3	MTU	U.S. Navy Spec.	1994
Connecticut/SSN 22	108 x 12	n/a	U.S. Navy	6/98	Personnel Large (5)	36 x 12 x 4	Detroit Diesel	U.S. Navy	1994
Ingalls Shipbuilding, Inc., Pascagoula, Miss.					(10) Patrol Craft Coastal	45 x 13 x 3	MTU	U.S. Navy	1995
Port Royal (CG 73)	567 x 55 x 31	LM2500	U.S. Navy	4/94	Landing Craft				
Stout (DDG 55)	505 x 67 x 27	LM2500	U.S. Navy	5/94	Trinity Marine Group, Gulfport, Miss.				
Mitscher (DDG 57)	505 x 67 x 27	LM2500	U.S. Navy	9/94	Hull 1392/SOC	82 x 18	GM	U.S. Navy	2/94
Boxer (LHD 4)	844 x 140 x 106	Steam Boilers	U.S. Navy	10/94	Hull 1393/SOC	82 x 18	MTU	U.S. Navy	2/94
Saar 5 (3)	202 x 25 x 8	LM2500/MTU	Israel	10/94	Hull 1261/TAGS				
Russell (DDG 59)	505 x 67 x 27	LM2500	U.S. Navy	11/94	Oceanographic Survey	329 x 58	LIPS	U.S. Navy	1/94
Ramage (DDG 61)	505 x 67 x 27	LM2500	U.S. Navy	3/95	Hull 1262/"	329 x 58	LIPS	U.S. Navy	7/94
Stethem (DDG 63)	505 x 67 x 27	LM2500	U.S. Navy	7/95	Hull 1315/"	329 x 58	LIPS	U.S. Navy	11/95
Benfold (DDG 65)	505 x 67 x 27	LM2500	U.S. Navy	12/95	AGOR Oceanographic	273 x 52	GE	U.S. Navy	5/96
Cole (DDG 67)	505 x 67 x 27	LM2500	U.S. Navy	5/96	Hull 1416/"	273 x 52	GE	U.S. Navy	4/97
Miluis (DDG 69)	505 x 67 x 27	LM2500	U.S. Navy	10/96	Hull 1417/"	273 x 52	GE	U.S. Navy	8/97





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241 Foot Tow Boat



82 Foot Extra Fast Patrol Boat



220 Foot Supply Boat



200 Foot, 10,000 BBL Tank Barge



467 Foot Double Hull Tank Barge/127 Foot Tug



208 Foot Oil Recovery Ship



140 Foot Tug



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189 Foot Casino/Excursion Boat



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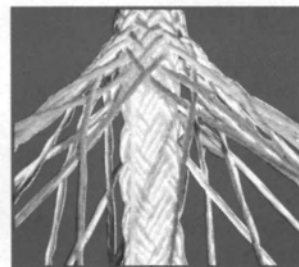
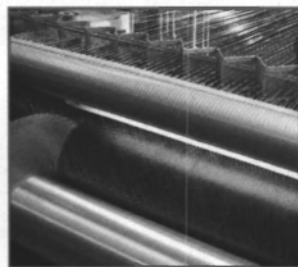
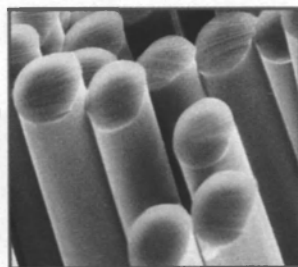
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Strategic Value Added: Navy-Industry Cooperation for the Future

by
John Dalton, Secretary of the Navy

The job of the Department of the Navy is to deliver a quality and cost-effective defense for America. My role as the Secretary is to ensure that quality Naval forces are trained, equipped and provisioned for service in harm's way. How to balance competing requirements and come up with a quality product is the problem all of us are facing in the current defense environment. The solution for the Navy lies in fostering a relationship of mutual respect, innovation and cooperation with all the levels of the shipbuilding industry (e.g. shipbuilders, ship repairers and ship suppliers). Working closely with the industry, the Navy is implementing a concept that could be defined as "Strategic Value Added" to ensure American taxpayers are getting the best possible strategic return on their tax dollar.

Navy-industry cooperation is not something to be taken for granted. In the past this "cooperation" was often defined by the government setting a fixed amount for Research and Development on a specific program and industry picking up the rest of the tab as a prerequisite if they wanted to participate. The shipbuilding industry will find that — with the Navy's awareness of a shrinking shipbuilding industrial base — our definition of cooperation has undergone a vast change. It will be a more cooperative environment. Both the industry and the Navy must be more cooperative if we are going to improve quality, reduce cost and preserve our military and industrial base.

This newfound spirit of cooperation should be centered on the concept of "Strategic Value Added." Both the Navy and industry must look closely at the Navy's requirements based on ill-defined post-Cold War threats and a new strategy that projects Naval power "... From the Sea." There are many tough decisions to make about what will truly add value to the Navy's strategic capabilities. When focused on shipbuilding, the concept of "Strategic Value Added" takes the shape of one major initiative: the President's *Strengthening America's Shipyards: A Plan for Competing in the International Market*. Under the guidelines of this plan, there are two notable programs: The Advanced Research Projects Agency (ARPA) program known as the Technology Reinvestment Project (TRP), and MARITECH, a \$40 million joint dual use program in the FY '95 budget request.

Both of these programs are geared towards preserving our nation's shipbuilding industrial base. For example, the MARITECH

program aims to develop and implement technologies for U.S. shipyards to design, market, produce and support commercial ships. The program seeks to integrate shipbuilding technologies to enhance overall U.S. productivity. During FY '95 the Navy will initiate a new dual-use program with the office of the Secretary of Defense and the White House. This \$50 million program is different from the

successful Technology Reinvestment program managed by ARPA. The new program is focused on developing partnerships with industry and academia to identify and further develop the emerging technologies that are needed for improving or developing new products for future commercial markets and military systems.

The key to each of these programs is their focus on the critical need to revitalize the commercial shipbuilding industry, encourage acquisition reform, and maximize dual-use technology. By implementing the President's plan, it will be possible to minimize the impact of the expected decline in shipbuilding contracts during the next few years while preserving our shipbuilding industrial base. If implemented with foresight, these initiatives should help the American shipbuilding industry expand their customer base beyond the Navy. Doing so is critical not only for the industry but also for our nation's economy and national security.

The results of the Bottom-Up Review clearly indicated that the U.S. must maintain its shipbuilding capabilities. The Navy's FY '95 Budget Request of approximately \$5.6 billion for shipbuilding demonstrates our determination to do just that. Looking beyond the FY '95 request, our support for CVN 76, SSN 23 (third Seawolf) submarine, the New Attack Submarine, much needed sealift vessels and surface combatants will establish a Navy that will take us into the 21st Century. Given our global commitments and our global strategy we will need all of these capable ships to recapitalize and modernize our fleet. However, it is no secret that we cannot preserve our shipbuilding industrial base at the Cold War level.

The next few years of shipbuilding will appear modest in numbers,

but one must look closely at what it is the Navy is proposing to build. In FY '95 we ask for only four ships, but one of them is CVN 76. I am personally fighting hard for full funding for CVN 76, because it is the right thing to do for our nation. In FY '96, we plan to ask for only five ships, but one of them is LPD-17, an advanced amphibious assault ship, and another is the third highly-

The next few years of shipbuilding will appear modest in numbers, but...it does represent a covenant with the industry that the Navy will maintain the shipbuilding skills our nation has worked so hard to develop.

capable Seawolf submarine. In FY '98, one of the six ships we expect to request is the New Attack Submarine. Throughout the next five years, we hope to build three new Aegis destroyers a year. By 1999 we are ramping up to a total of seven ships per year. Although the plan indicates a decline in actual contracts, it does represent a covenant with the industry that the Navy will maintain the shipbuilding skills our nation has worked so hard to develop.

Many companies recognized long ago that it would be necessary to implement their own "right-sizing" plans. The one thing I want the shipbuilding industry to know is that we are deeply concerned about the long-term health of the defense industrial base. No one in the Department of Defense (DOD) is cavalier about the industry's prospects for future success. We know how much "right-sizing" is affecting industry, but shaping our forces for the threats of the post-Cold War world is essential for the long term economic health of America, and it's the right thing to do. My job is to see that it is done right.

Doing it right means remaining committed to keeping our submarine industrial base and aircraft carrier-building base alive despite recent slowdowns in acquisition. We recognize that we must maintain a capacity for building submarines and carriers — those are simply not areas we can start from scratch. Preserving our shipbuilding industrial skills is tied directly to our overall recapitalization strategy. While I do think our current programs — when combined with maintenance contracts — are sufficient to preserve a portion of our industrial capacities, long-term capitalization is necessary for maintaining a healthy, albeit smaller, industrial

base. Freeing future funds for recapitalization requires us to make continuing cuts in Department of the Navy infrastructure. This, of course, is linked to the closure of the naval bases and shipyards identified by the Base Realignment and Closure Commission (BRAC).

These times of base closures and shrinking defense budgets are difficult for both the Navy and the industry. We would prefer to minimize the loss of jobs and businesses, but the bottom line is that we simply cannot maintain a level of infrastructure that is too big for the fleet it supports. That is simply not adding value for the taxpayer; it is in fact, significantly diminishing the strategic return on the dollar, and puts our recapitalization program and the preservation of the industrial skills base at risk. Reducing the Department's infrastructure is a key prerequisite of our recapitalization strategy.

Another element of the Navy's recapitalization strategy that will determine our success in future defense acquisition will be our ability to reduce the acquisition cycle time, which, in turn, controls overhead costs. DOD is scrutinizing acquisition policy and making every attempt to streamline and simplify what has become a cumbersome, inefficient system. The acquisition cycle time must be reduced. The Navy is looking to apply the principles and lessons learned from reducing cycle times for maintenance to reform our acquisition process. Everyone agrees that the process takes too long, has too many rules and costs both the Navy and industry too much.

Navy-industry cooperation represents a crucial link between a healthy economy reinvigorated by industrial competitiveness and a strong defense. At the heart of competitiveness in today's marketplace is the concept of adding value. We will only be able to add strategic value to today's Navy by safeguarding the interests of "the Navy after next" — the Navy that will exist well into the 21st Century. In order to succeed, the Navy and industry must work together to preserve our shipbuilding base by making it competitive in the global economy.

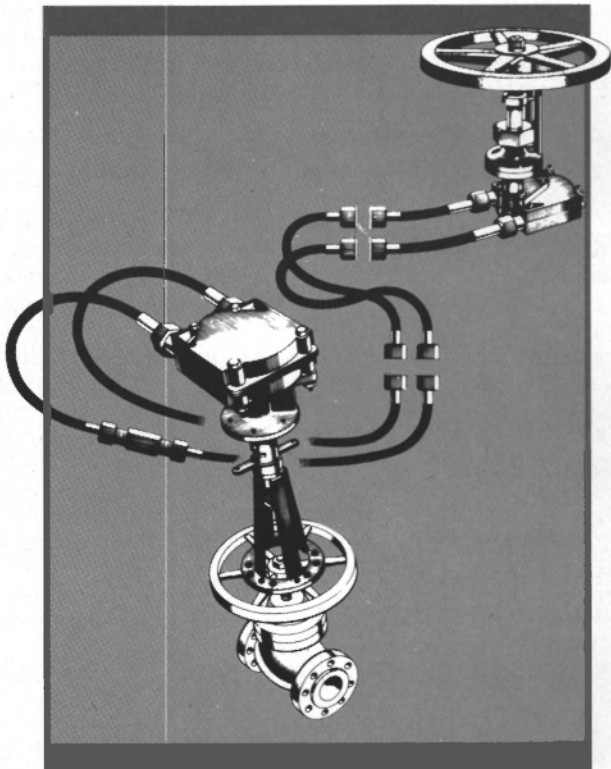
The recapitalization of the Navy and the revitalization of commercial shipbuilding are integral elements of the administration's plan to lay the foundation for "the Navy after next." The strength of our nation's defense is inextricably linked to the strength of our shipbuilding industry. This is how I picture our true national security — as a product of a strong defense and a globally competitive industrial base.

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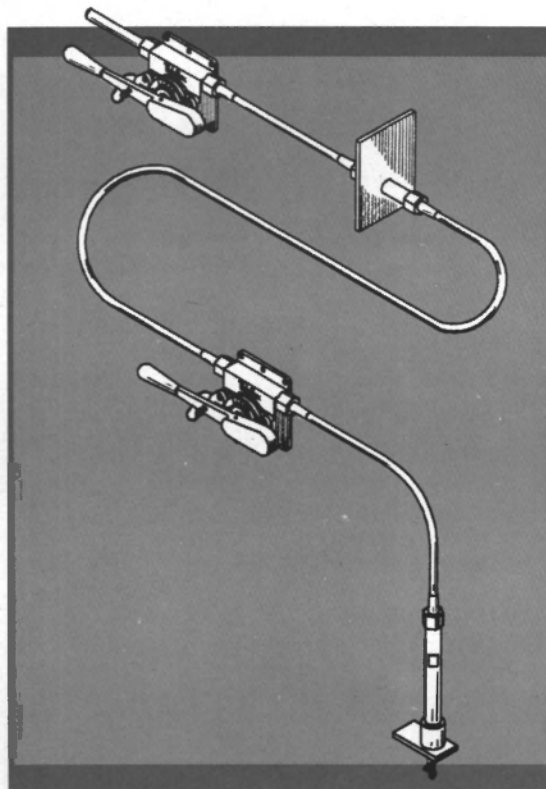
Simpler by design: Teleflex Remote Valve Operators — RMVA, RTVA, and RVVO — are clearly in a class by themselves. Each system employs the Teleflex Flexible Cable Technology to mechanically transfer rotary and linear motion through complex routings over long distances.

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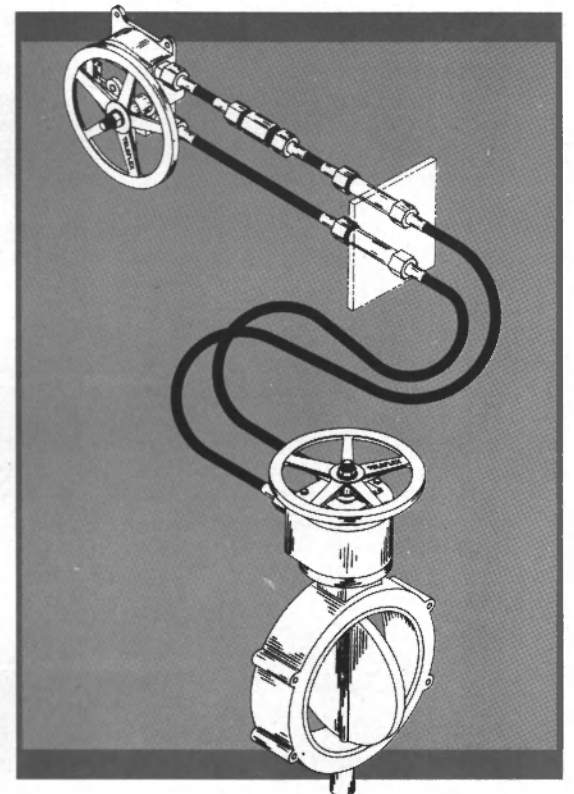
RMVA: Remote Mechanical Valve Actuator Systems for applications requiring delivery of multiple-turn rotary motion from remote locations.

- Meets U.S. Navy MIL-STD-777E and Tech. Manual S6435-QJ-MMC-010



RTVA: Remote Trip Valve Actuator Systems for applications requiring delivery of quick-acting linear motion from remote locations. Systems include a patented shock compensator coupling.

- Meets U.S. Navy MIL-A-24780 and Tech. Manual S6438-AA-DDT-010/ODME5



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U.S. Shipyards: Survey Of New Construction

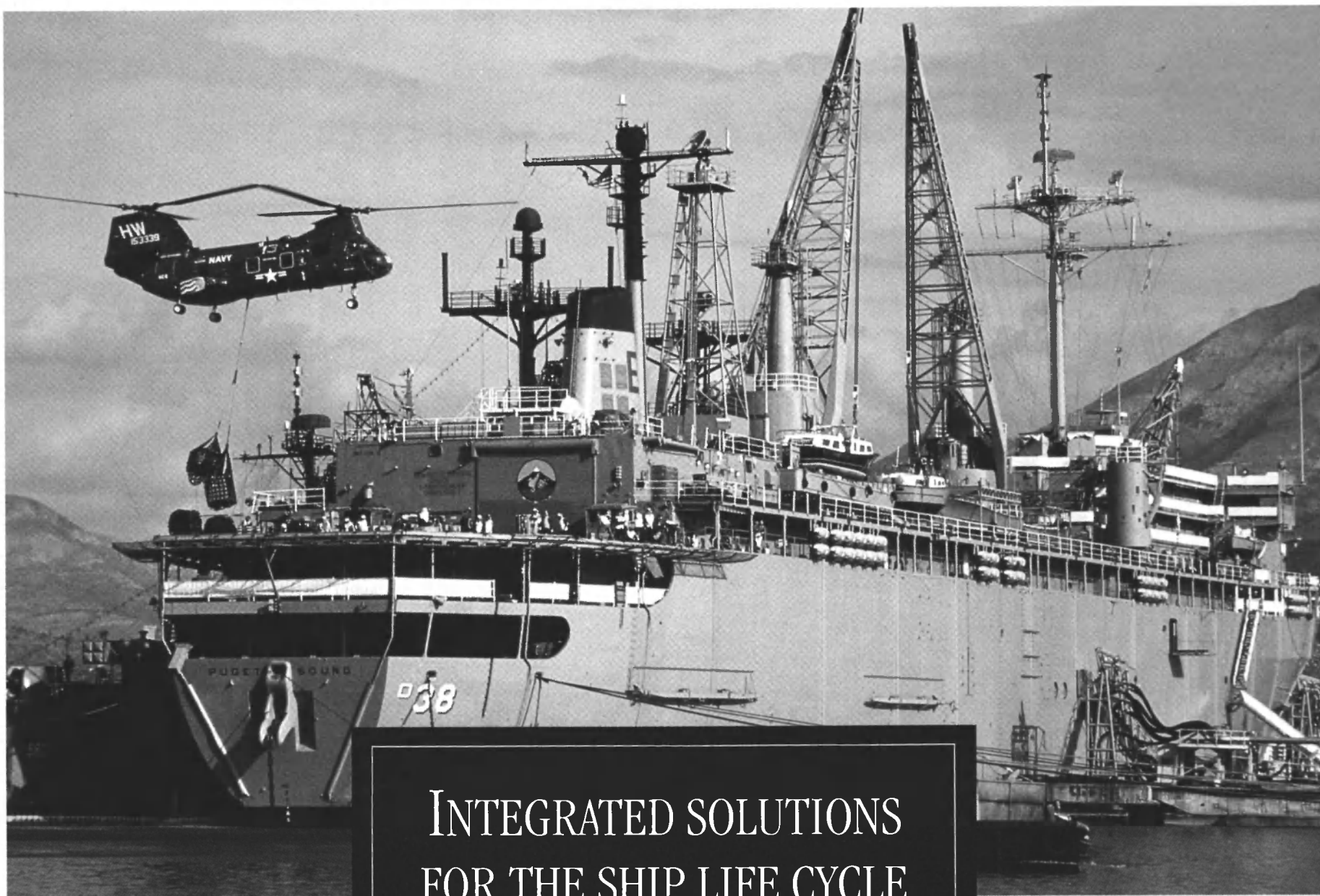
The following data on newbuilding activity in U.S. shipyards is the results of a limited survey by the editors of *Maritime Reporter*. Publisher is not responsible for errors or omissions.

(Source: *Maritime Reporter & Engineering News*, June 1994)

Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Alabama Shipyard Inc., Mobile, Ala.					HITECH/				
Circle 5 on Reader Service Card					Commuter Passenger	83 x 21 x 2.5	Man Diesel	n/a	11/94
Riverside Belle/Casino	249 x 77 x 26	Detroit Diesel	Missouri Gaming Co.	7/94	Bollinger Machine Shop & Shipyard, Lockport, La.				
Asphalt Barges (2)	460 x 72 x 36	n/a	Penn Maritime	1/95 & 6/95	Circle 12 on Reader Service Card				
Atlantic Marine, Inc., Jacksonville, Fla.					USS Sirocco/Cyclone Class	170 x 25 x 13	Paxman	U.S. Navy	3/94
Circle 6 on Reader Service Card					USS Squall/"	170 x 25 x 13	Paxman	U.S. Navy	5/94
Par-A-Dice/Casino	240 x 66 x 6	Caterpillar	Greater Peoria Riverboat	6/94	USS Zephyr/"	170 x 25 x 13	Paxman	U.S. Navy	8/94
Empress III/Casino	280 x 74 x 10	Caterpillar	Empress River Casino	11/94	USS Chinook/"	170 x 25 x 13	Paxman	U.S. Navy	10/94
Avondale Industries, Shipyard Division, New Orleans, La.					USS Firebolt/"	170 x 25 x 13	Paxman	U.S. Navy	1/95
Circle 7 on Reader Service Card					USS Whirlwind/"	170 x 25 x 13	Paxman	U.S. Navy	4/95
T-AO 201/Patuxent	15,000-lt.-displ.-ton		U.S. Navy	6/95	USS Thunderbolt/"	170 x 25 x 13	Paxman	U.S. Navy	6/95
T-AO 204/Rappahannock	15,000-lt.-displ.-ton		U.S. Navy	11/95	USS Shamal/"	170 x 25 x 13	Paxman	U.S. Navy	9/95
T-AO 203/Laramie	15,000-lt.-displ.-ton		U.S. Navy	4/96	(18) 10-Meter RIBs	33 x 11 x 3	Cummins	U.S. Navy	1/94 to 9/94
LSD 49 (CV)/Harpers Ferry	11,894-lt.-displ.-ton		U.S. Navy	11/94	Utility/Supply	145 x 36 x 12	Detroit Diesel	Gilbert Cheramie Boats	10/94
LSD 50 (CV)/Carter Hall	11,894-lt.-displ.-ton		U.S. Navy	7/95	9m Aluminum RIB	30 x 11	Cummins	AMBAR	6/94
LSD 51 (CV)/Oak Hill	11,894-lt.-displ.-ton		U.S. Navy	3/96	7m Aluminum RIB	25 x 9	Cummins	AMBAR	6/94
MHC 53/Pelican	827-lt.-displ.-ton		U.S. Navy	3/95	Breaux's Bay Craft, Inc., Loreauville, La.				
MHC 54/Robin	827-lt.-displ.-ton		U.S. Navy	9/95	Circle 13 on Reader Service Card				
MHC 56/Kingfisher	827-lt.-displ.-ton		U.S. Navy	3/96	Hull 1662/Crewboat	48 x 14	Detroit Diesel	n/a	2/94
MHC 57/Cormorant	827-lt.-displ.-ton		U.S. Navy	9/96	Hull 1675/Sportfisher	40 x 15	Volvo Penta	n/a	3/94
T-AKR 300/Bob Hope	34,408-lt.-displ.-ton		U.S. Navy	9/97	Hull 1651/Crew-Supply	134 x 26	Caterpillar	n/a	5/94
Avondale Industries Inc.-Boat Div., New Orleans, La.					Hull 1667/Crew-Supply	152 x 30	Detroit Diesel	n/a	7/94
Circle 7 on Reader Service Card					Hull 1668/Crew-Supply	152 x 30	Detroit Diesel	n/a	9/94
Boomtown Belle/Gaming	250 x 72	Caterpillar	Boomtown	7/94	Hull 1680/n/a	140 x 30	Caterpillar	n/a	12/94
Belle of Baton Rouge/	266 x 77	Detroit Diesel	Argosy	7/94	Campbell Shipyard, San Diego, Calif.				
Gaming					Circle 14 on Reader Service Card				
Paddlewheel Gaming	350	n/a	Belle of Orleans	1stQ 95	Golden Shadow/Yacht	219 x 39 x 27	KHD Deutz	Actaeon Shipping Ltd.	9/94
Bath Iron Works Corp., Bath, Maine					Conrad Industries, Morgan City, La.				
Circle 8 on Reader Service Card					Circle 15 on Reader Service Card				
John S. McCain/DDG56	505 x 59 x 32	LM2500	U.S. Navy	5/94	Hull C-588/Spud Barge	120 x 52 x 8	n/a	Canal Barge	1/94
Laboon/DDG58	505 x 59 x 32	LM2500	U.S. Navy	10/94	Hull C-585/Deck Barge	180 x 54 x 14	n/a	Weeks	2/94
Paul Hamilton/DDG 60	505 x 59 x 32	LM2500	U.S. Navy	1/95	Hull C-586/Deck Barge	180 x 54 x 14	n/a	Weeks	2/94
Fitzgerald/DDG62	505 x 59 x 32	LM2500	U.S. Navy	6/95	Hull C-587/Spud Barge	120 x 45 x 7	n/a	Gateway	2/94
Carney/DDG 64	505 x 59 x 32	LM2500	U.S. Navy	11/95	Hull C-589/Crane Barge	130 x 50 x 7	n/a	W.C. Fore	2/94
Gonzalez/DDG 66	505 x 59 x 32	LM2500	U.S. Navy	4/96	Hull C-593/Deck Barge	130 x 30 x 7	n/a	Marshland	3/94
The Sullivans/DDG 68	505 x 59 x 32	LM2500	U.S. Navy	9/96	Hull C-590/Deck Barge	200 x 40 x 10	n/a	Lockwood	4/94
Hopper/DDG 70	505 x 59 x 32	LM2500	U.S. Navy	3/97	Hull C-594/Deck Barge	130 x 30 x 7	n/a	Ed Broussard	4/94
DDG 72	505 x 59 x 32	LM2500	U.S. Navy	8/97	Derektor Shipyards, Mamaroneck, N.Y.				
DDG 73	505 x 59 x 32	LM2500	U.S. Navy	12/97	Circle 16 on Reader Service Card				
DDG 75	505 x 59 x 32	LM2500	U.S. Navy	5/98	The Boat III/Fishing Yacht	66 x 18 x 6	MTU	n/a	6/94
DDG 76	505 x 59 x 32	LM2500	U.S. Navy	9/98	Freeport Shipbuilding & Marine Repair, Freeport, Fla.				
Bender Shipbuilding & Repair Co., Mobile, Ala.					Circle 17 on Reader Service Card				
Circle 9 on Reader Service Card					Dinner Cruise	90 x 32	Cummins	n/a	5/94
Gen. Roy S. Kelly/	95 x 26 x 11	Detroit Diesel	Port of New Orleans	4/94	Sightseeing	98 x 26	Caterpillar	n/a	9/94
Treasure Chest/					Gaming Vessel	236 x 72	Cummins	n/a	12/94
Paddlewheel Casino	260 x 78 x 14	Caterpillar	Treasure Chest, Inc.	5/94	General Dynamics, Electric Boat Division, Groton, Conn.				
Horseshoe/					Circle 50 on Reader Service Card				
Paddlewheel Casino	295 x 78 x 14	MTU	Horseshoe Entertainment	5/94	Rhode Island/SSBN 740	171 x 13	n/a	U.S. Navy	6/94
Harrah's North Kansas					Hartford/SSN 768	110 x 10	n/a	U.S. Navy	11/94
City/Paddlewheel Casir o	295 x 78 x 14	n/a	Promus Co.	5/94	Maine/SSBN 741	171 x 13	n/a	U.S. Navy	6/95
YFB-92/Ferryboat(2)	150 x 36	Detroit Diesel	NAVSEA	6/94	Columbia/SSN 771	110 x 10	n/a	U.S. Navy	9/95
Casino Rouge/					Seawolf/SSN 21	108 x 12	n/a	U.S. Navy	5/96
Paddlewheel Casino	260 x 78 x 14	Caterpillar	Louisiana Casino Cruises	6/94	Wyoming/SSBN 742	171 x 13	n/a	U.S. Navy	6/96
Lucky Seven/Casino	232 x 78 x 14	Caterpillar	Randolph Riverboat Co.	8/94	Louisiana/SSBN 743	171 x 13	n/a	U.S. Navy	6/97
Elgin Lady/Casino	400 x 114 x 8	Caterpillar	Nevada Landing Hotel & Casino/Hyatt	10/94	Connecticut/SSN 22	108 x 12	n/a	U.S. Navy	6/98
Crescent City Queen/	360 x 99 x 14	Caterpillar	Capital Development Group	12/94	Gladding-Hearn Shipbuilding (Duclos Corp.), Somerset, Mass.				
Grand Palais/Casino	360 x 99 x 14	Caterpillar	Grand Palais Riverboat	12/94	Circle 18 on Reader Service Card				
Bethship-Sabine Yard, Port Arthur, Texas					Empire State/Passenger	97 x 24	n/a	Port Imperial Ferry	3/94
Circle 10 on Reader Service Card					Police Patrol	55 x 16	n/a	N.Y.C. Police Dept.	3/94
Gulfstar/Jack-up Rig	208 x 178	n/a	Chiles Offshore	1/94	Whale Watch Catamaran	92 x 29	n/a	Fish 'n Friend	6/94
Star of Texas/Cruise Ship	600 x 87 x 48	n/a	Epirotiki Continental	1/94	Vizcaya/Pilot Boat	52 x 16	n/a	Miami Key Biscayne Pilots	8/94
Blount Industries, Inc., Warren, R.I.					Passenger	97 x 24	n/a	Port Imperial Ferry	8/94
Circle 11 on Reader Service Card					Gulf Coast Fabrication, Inc., Lakeshore, Miss.				
Niagara Prince/Passenger	170 x 40 x 6	Man Diesel	Am. Carib. Cruise Line	8/94	Circle 19 on Reader Service Card				
					Cape Cod/Oil Barge	400 x 80 x 30	n/a	Eklaf Marine	1/94

U.S. Shipyards: Survey Of New Construction

Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Boomtown/Gaming Vessel	400 x 110 x 12	n/a	Boomtown Hotel & Casino	1/94	Marinette Marine Corp., Marinette, Wis.				
Al's Casino Fascination/Gaming Vessel	300 x 90 x 10	n/a	American Intl. Gaming	2/94	Circle 27 on Reader Service Card				
Biloxi Belle/Deck Barge	444 x 116 x 12	n/a	Bay Vessels Inc.	3/94	High-Speed Catamaran	100 x 30	n/a	Arnold Transit Line	8/94
Grand Casino/Deck Barge	300 x 148 x 12	n/a	Grand Casinos	4/94	Juniper/Seagoing				
Flat Deck Cargo	322 x 90 x 18	n/a	Pacific Hawaiian Line	4/94	Buoy Tender	225 x 46 x 13	Caterpillar	U.S. Coast Guard	12/95
Deck Barge	280 x 60 x 16	n/a	Turecamo Maritime	7/94	Ida Lewis/Seagoing				
Gaming Vessel	275 x 108 x 14	n/a	American Entertainment	7/94	Buoy Tender	175 x 36 x 8	Caterpillar	U.S. Coast Guard	12/95
Taku Provider/Deck Barge	322 x 90 x 18	n/a	Western Towboat	1/95	McDermott Shipyard, Morgan City, La.				
Houma Fabricators, A Div. of L.O.R., Inc., Houma, La.					Circle 28 on Reader Service Card				
Circle 20 on Reader Service Card					La Isabella/Power				
Paddlewheel Casino	292 x 74 x 13	Cummins	n/a	2/94	Generation Barge	258 x 76 x 14	n/a	Wartsila Diesel, Inc.	4/94
Paddlewheel Casino	292 x 74 x 13	Cummins	n/a	2/94	Sulphur Enterprise/Sulphur Carrier	524 x 90 x 50	Wartsila	Sulphur Carriers Inc.	7/94
Paddlewheel Casino	292 x 74 x 13	Cummins	n/a	5/94	American Queen/River Cruise	419 x 89 x 14	Aqua Master Z-Drives	Delta Queen Steamboat Development Inc.	3/95
Paddlewheel Casino	292 x 74 x 13	Cummins	n/a	8/94	Push Tugs (2)	80 x 29 x 10	Caterpillar	Crowley	12/94-3/95
Ingalls Shipbuilding, Inc., Pascagoula, Miss.					Munson Manufacturing Inc., Edmonds, Wa.				
Circle 21 on Reader Service Card					Circle 29 on Reader Service Card				
Port Royal (CG 73)	567 x 55 x 31	LM2500	U.S. Navy	4/94	Dive Boat	45 x 16	Caterpillar	n/a	4/94
Stout (DDG 55)	505 x 67 x 27	LM2500	U.S. Navy	5/94	National Steel & Shipbuilding Company (NASSCO), San Diego, Calif.				
Mitscher (DDG 57)	505 x 67 x 27	LM2500	U.S. Navy	9/94	Circle 30 on Reader Service Card				
Boxer (LHD 4)	844 x 140 x 106	Steam Boilers	U.S. Navy	10/94	AOE-6	754 x 107 x 38	LM2500 (4)	U.S. Navy	1/94
Soar 5 (3)	202 x 25 x 8	LM2500/MTU	Israel	10/94	AOE-7	754 x 107 x 38	LM2500 (4)	U.S. Navy	10/94
Russell (DDG 59)	505 x 67 x 27	LM2500	U.S. Navy	11/94	AOE-8	754 x 107 x 38	LM2500 (4)	U.S. Navy	7/95
Ramage (DDG 61)	505 x 67 x 27	LM2500	U.S. Navy	3/95	AOE-10	754 x 107 x 38	LM2500 (4)	U.S. Navy	6/97
Stethem (DDG 63)	505 x 67 x 27	LM2500	U.S. Navy	7/95	Sealift	950 x 106 x 34	LM2500 (2)	U.S. Navy	n/a
Benfold (DDG 65)	505 x 67 x 27	LM2500	U.S. Navy	12/95	Laura Maersk/Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
Cole (DDG 67)	505 x 67 x 27	LM2500	U.S. Navy	5/96	Leise Maersk/Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
Miluis (DDG 69)	505 x 67 x 27	LM2500	U.S. Navy	10/96	Lica Maersk/Sealift Conversion	855 x 106 x 35	B&W	U.S. Navy	n/a
Bataan (LHD 5)	844 x 140 x 106	Steam Boilers	U.S. Navy	5/97	Navatek Ships, Ltd., Honolulu, Hawaii				
Ross (DDG 71)	505 x 67 x 27	LM2500	U.S. Navy	6/97	Circle 31 on Reader Service Card				
McFaul (DDG 74)	505 x 67 x 27	LM2500	U.S. Navy	3/98	Navatek II/SWATH	85 x 44 x 9	MTU	Pacific Marine	3/94
Bon Homme Richard (LHD 6)	844 x 140 x 106	Steam Boilers	U.S. Navy	5/98	Newport News Shipbuilding, Newport News, Va.				
Intermarine, USA, Savannah, Ga.					Circle 32 on Reader Service Card				
Circle 62 on Reader Service Card					Charlotte/SSN 776	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1994
USS Heron/MHC-52	188 x 36 x 10	Isota Fraschini	U.S. Navy	6/94	Toledo/SSN 769	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Oriole/MHC-55	188 x 36 x 10	Isota Fraschini	U.S. Navy	12/94	Tucson/SSN 770	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Blackhawk/MHC-58	188 x 36 x 10	Isota Fraschini	U.S. Navy	8/95	Greenville/SSN 772	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1996
USS Cardinal/MHC-60	188 x 36 x 10	Isota Fraschini	U.S. Navy	11/96	Cheyenne/SSN 773	6,000-Lt.-Displ. Tons	n/a	U.S. Navy	1996
USS Raven/MHC-61	188 x 36 x 10	Isota Fraschini	U.S. Navy	6/97	John C. Stennis/CVN 74	91,000-Lt.-Displ. Tons	n/a	U.S. Navy	1995
USS Shrike/MHC-62	188 x 36 x 10	Isota Fraschini	U.S. Navy	3/98	United States/CVN 75	91,000-Lt.-Displ. Tons	n/a	U.S. Navy	1998
Jeffboat, Jeffersonville, Ind.					Nichols Brothers Boat Builders, Inc., Freeland, Wash.				
Circle 22 on Reader Service Card					Circle 33 on Reader Service Card				
Deck Barge	195 x 35 x 10	n/a	Nugent Sand Co.	1/94	M/V Bay Breeze	95 x 29 x 4	Detroit Diesel	City of Alameda	4/94
Tank Barge	195 x 52 x 12	n/a	ACBL	2/94	M/V Christine				
Hopper Barge	195 x 35 x 12	n/a	Carlisle	2/94	Anderson/Ferry	213 x 66 x 10	Caterpillar	Pierce County	5/94
Hopper Barge	200 x 35 x 12	n/a	MBT	3/94	M/V Cloud 10/SWATH Ferry	122 x 59 x 12	Textron Lycoming	Martin Automatic	8/94
Tank Barge	298 x 54 x 12	n/a	n/a	3/94	M/V Palau Aggressor/Catamaran	100 x 31 x 4	Caterpillar	Alaska Dive Boat Co.	10/94
Tank Barge	195 x 35 x 13	n/a	ACBL	3/94	Orange Shipbuilding Co., Inc., Orange, Texas				
Hopper Barges (75)	200 x 35 x 12	n/a	n/a	6/94	Circle 34 on Reader Service Card				
Kvichak Marine Industries, Seattle, Wash.					2-YON	185 x 35 x 13	GM	U.S. Navy	11/95
Circle 23 on Reader Service Card					Towboats (2)	59 x 22 x 9	Caterpillar	U.S. Army	12/95
Gillnetter	32 x 14 x 3	Volvo	n/a	2/94	Towboat	75 x 30 x 9	Caterpillar	U.S. Army	4/96
Gillnetter	32 x 14 x 3	Lugger	n/a	3/94	22-YC	130 x 32 x 9	n/a	U.S. Navy	10/96
Gillnetter	32 x 14 x 3	Lugger	n/a	4/94	Patti Shipyard, Inc., Pensacola, Fla.				
Longliners (3)	32 x 12 x 4	Caterpillar	Aleutian Pribilof Islands Community Development	4/94	Circle 35 on Reader Service Card				
Fishing Vessels	32 x 12 x 4	Lugger	Yukon Fisheries	4/94-6/94	Service Barge	150 x 52 x 10	n/a	U.S.A.C.E. Huntington	2/94
Passenger Vessel	58 x 18 x 5	Lugger	Decatur North-West	8/94	Quarters Barge	266 x 40 x 11	n/a	U.S.A.C.E. Vicksburg	6/94
Leevac Shipyards, Inc., Jennings, La.					Quarters-Office Barge	266 x 40 x 11	n/a	U.S.A.C.E. Vicksburg	5/95
Circle 24 on Reader Service Card					Peterson Builders, Inc., Sturgeon Bay, Wis.				
Casino Vessel	210 x 62 x 11	Cummins	Columbia	6/94	Circle 36 on Reader Service Card				
Capitol Queen & Casino/Casino Vessel	218 x 62 x 11	Cummins	Becker Gaming	8/94	MCM-14 Chief	224 x 39 x 11	Isotta Fraschini	U.S. Navy	7/94
Casino Vessel	325 x 75 x 12	Caterpillar	n/a	1994	Boom Handling Boats (4)	24 x 8	Detroit Diesel	U.S. Navy	12/94
Casino Vessel	236 x 56 x 11	Cummins	Sodak Gaming	9/94	Landing Craft				
Marine Builders, Inc., Utica, Ind.					Personnel Large (6)	36 x 12 x 4	Detroit Diesel	U.S. Navy	1994
Circle 25 on Reader Service Card					MK V SOC Ultra Fast Patrol	71 x 18 x 3	MTU	U.S. Navy Spec. Oper. Comm.	1994
Workbarge	60 x 22 x 5	n/a	ACOE 3	3/94	Personnel Large (5)	36 x 12 x 4	Detroit Diesel	U.S. Navy	1994
Workboat	52 x 22 x 8	Caterpillar	ACOE	6/94	(10) Patrol Craft Coastal	45 x 13 x 3	MTU	U.S. Navy	1995
Workboat	52 x 22 x 8	Cummins	n/a	7/94					
Marine Inland Fabricators, Panama City, Fla.									
Circle 26 on Reader Service Card									
Workboat	24 x 14 x 5	Detroit Diesel	Riley's Boatyard, Inc.	n/a					
Deck Barge	40 x 10 x 4	n/a	Riley's Boatyard, Inc.	n/a					
Workboat	55 x 18 x 6	Detroit Diesel	T.L.C. Marine Svc., Inc.	n/a					



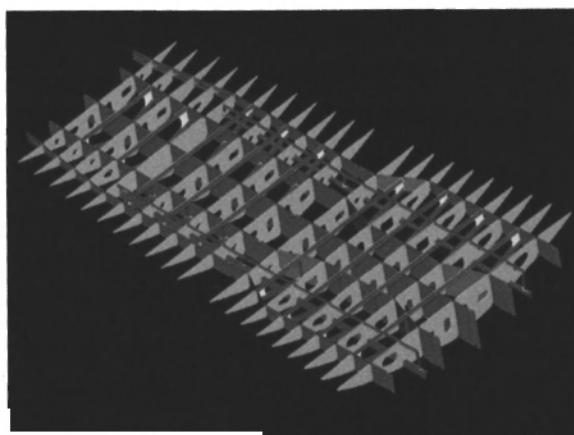
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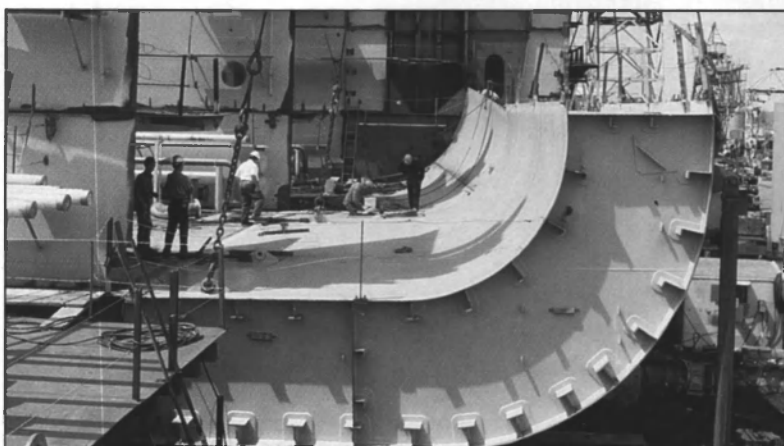
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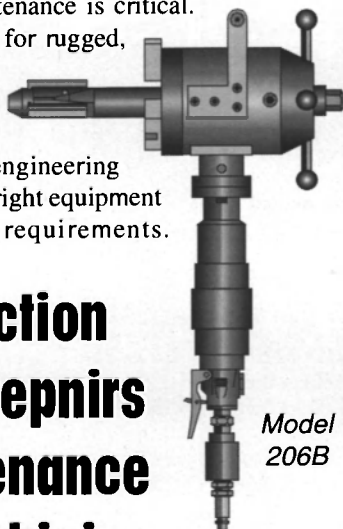
Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Landing Craft					Hull 123/Ferry	220 x 50	Caterpillar	State of N. Carolina	12/94
Quality Shipyards, Inc., Houma, La.					Hull 124/Ferry	263 x 65	EMD	State of Virginia	9/95
Circle 37 on Reader Service Card					Hull 1420/Tug Boat	127 x 38	EMD	n/a	2/95
Hull 1210	292 x 74 x 13	Cummins	Kehl Riverboats	10/94	Hull 1421/Tug Boat	127 x 38	EMD	n/a	4/95
Hull 1211	292 x 74 x 13	Cummins	Kehl Riverboats	3/95	Yard 86-Halter Moss Point				
SeaArk Marine, Inc., Monticello, Ark.					Hull 1261/TAGS				
Circle 38 on Reader Service Card					Oceanographic Survey	329 x 58	LIPS	U.S. Navy	1/94
SAMA0448/Patrol	34 x 12	n/a	Government	2/94	Hull 1262/"	329 x 58	LIPS	U.S. Navy	7/94
SAMA0460/Buoy	20 x 8.5	n/a	Government	n/a	Hull 1315/"	329 x 58	LIPS	U.S. Navy	11/95
SAMA 461-465/ Oil Spill (5)	16 x 5	n/a	n/a	2/94	Hull 1358/ AGOR Oceanographic	273 x 52	GE	U.S. Navy	5/96
SAMA 466-468/ Oil Spill (3)	22 x 7	n/a	n/a	2/94	Hull 1416/"	273 x 52	GE	U.S. Navy	4/97
SAMA 469/Fishing	18 x 5	n/a	n/a	3/94	Hull 1417/"	273 x 52	GE	U.S. Navy	8/97
Service Marine Industries, Morgan City, La.					Yard 84-Halter Lockport				
Circle 39 on Reader Service Card					Hull 1354/Tractor Tug	155 x 46	EMD	n/a	1/94
Southern Star/ Casino Boat	210 x 78	Caterpillar	Harrah's	n/a	Hull 1383/FOCSLE Tug	124 x 37	EMD	n/a	4/94
Isle of Capri/ Paddlewheel Casino	254 x 78	Caterpillar	Casino Am./La. Downs	2/94	Hull 1386/ Paddlewheel Riverboat	245 x 62	Cummins	n/a	4/94
Shreveport Rose/ Paddlewheel Casino	210 x 78	Caterpillar	Harrah's	4/94	Hull 1391/ Paddlewheel Riverboat	245 x 62	Cummins	n/a	6/94
Dinner Cruise	95 x 28 x 11	Deere	Winner Boat Tours	7/94	Hull 1389/Tug-Supply	218 x 46	Caterpillar	n/a	12/94
Paddlewheel Casino	254 x 78	Caterpillar	Boyd Gaming Corp.	8/94	Hull 1425/Tow Boat	130 x 47	EMD	n/a	1/95
Paddlewheel Casino	254 x 78	Caterpillar	Harrah's	8/94	Yard 82-Aluminum Boats				
Paddlewheel Casino	254 x 78	Caterpillar	Boyd Gaming Corp.	10/94	Hull 372/Crew Boat	100 x 23	GM	n/a	5/94
SkipperLiner Industries, Inc., La Crosse, Wis.					Hull 373/Rescue Crew Boat	100 x 24	Caterpillar	n/a	8/94
Circle 40 on Reader Service Card					Hull 374/Rescue Crew Boat	100 x 24	Caterpillar	n/a	9/94
Unnamed	63 x 17	Cummins	Al & Alma's Supper Club	3/94	Hull 375-376/Crew Boat (2)	85 x 21	Caterpillar	n/a	7/94
Branson Princess	80 x 20	Caterpillar	Snadon Development	3/94	Yard 88-Trinity Gulfport				
Storm King	65 x 18	Cummins	Mosquito Fleet	4/94	Hull 1394/DH Tank Barge	287 x 54	n/a	n/a	1/94
M.S. Dixie II	141 x 33	Caterpillar	Travel Systems, Ltd.	5/94	Hull 1395/DH Tank Barge	287 x 54	n/a	n/a	2/94
Bailey Princess	80 x 20	Caterpillar	Blue Sky Harbor	5/94	Hull 1397/ DH Chemical Barge	195 x 54	n/a	n/a	3/94
Island Girl VII	80 x 20	Caterpillar	Island Girl Cruiselines	5/94	Hull 1398/"	195 x 54	n/a	n/a	4/94
Sun State Marine, Green Cove Springs, Fla.					Hull 1399/"	195 x 54	n/a	n/a	5/94
Circle 41 on Reader Service Card					Hull 1400/"	195 x 54	n/a	n/a	6/94
Sun River City/Towboat	70 x 25 x 8	Caterpillar	n/a	4/94	Hulls 1408-1415/Double Sink Tank Barges (8)	298 x 54	n/a	n/a	7/94 to 6/95
Superior Boat Works, Inc., Greenville, Miss.					Yard 37-Gretna Machine				
Circle 42 on Reader Service Card					Hull 259/Casino Barge	200 x 73	n/a	n/a	1/94
Chris Way MacMillian/ Towboat (Rebuild)	200 x 45 x 10	EMD	n/a	4/94	Hull 261/Drilling Barge	200 x 85	n/a	n/a	3/94
SWATH Ocean Systems, Inc., National City, Calif.					Hull 260/DH Tank Barge	300 x 50	n/a	n/a	6/94
Circle 43 on Reader Service Card					Yard 83-Beaumont Texas				
Western Flyer	117 x 53 x 12	GE	Monterey Bay Aquarium	1995	Hull 1360/Double Hull Tank Barge	325 x 60	n/a	n/a	1/94
Swiftships, Inc., Morgan City, La.					Hull 1396/Casino Barge	200 x 73	n/a	n/a	1/94
Circle 70 on Reader Service Card					Hull 1402/Drilling Barge	200 x 85	n/a	n/a	3/94
35-foot Riverine Assault Craft (10)	35 x 9 x 6	Cummins/Hamilton Waterjets	U.S. Marine Corp.	1/94 to 3/94	Hull 1403/Drilling Barge	200 x 85	n/a	n/a	4/95
Coastal Minehunter (3)	110 x 26 x 9	MTU	Arab Republic of Egypt	n/a	Hull 1404/Drilling Barge	200 x 85	n/a	n/a	6/94
35-foot Riverine Assault Craft (8)	35 x 9 x 6	Cummins/Hamilton Waterjets	U.S. Marine Corp.	n/a	Hull 1406/Deck Barge	250 x 72	n/a	n/a	6/94
Pilot Launch	53 x 15 x 8	Detroit Diesel	Panama Canal Comm.	n/a	Hull 1407/Deck Barge	250 x 72	n/a	n/a	8/94
Parasail Launch	93 x 32 x 16	Detroit Diesel	U.S. Air Force	n/a	Hull 1419/Ocean Deck Barge	272 x 100	n/a	n/a	8/94
Crewboat	141 x 26 x 12	MTU	Diamond Services Corp.	n/a	Hull 1418/Deck Barge	250 x 72	n/a	n/a	10/94
Tidewater Equipment Corp., Norfolk, Va.					Yard 80-Brownsville-Trinity Inland Marine Group				
Circle 44 on Reader Service Card					Yard 38-Madisonville-Trinity Inland Marine Group				
Split Hull Hopper Barge	250 x 54 x 21	n/a	Norfolk Dredging Co.	3/94	Yard 75-Caruthersville-Trinity Inland Marine Group				
Chesapeake/Crane Barge	80 x 26 x 5	n/a	State of Maryland	3/94	Hopper Barges (197)	195 x 200	n/a	n/a	thru 3/94
Split Hull Hopper Barge	250 x 54 x 21	n/a	Norfolk Dredging Co.	11/94	Hopper Barges (16)	260	n/a	n/a	thru 3/94
Trinity Marine Group, Gulfport, Miss.					Deck Barges (25)	195 x 200	n/a	n/a	thru 3/94
Circle 45 on Reader Service Card					Washburn & Doughty, Boothbay, Me.				
Yard 85-Equitale, New Orleans					Circle 46 on Reader Service Card				
Hull 1347/Tow Boat	85 x 30	Caterpillar	U.S. Army C.O.E.	1/94	Emerald Empress/Dinner	152 x 33 x 11	Caterpillar	Neuman Boat Line	5/94
Hull 1348/Tow Boat	85 x 30	Caterpillar	U.S. Army C.O.E.	1/94	Double Hull Tank Barge	36 x 14 x 8	n/a	Boston Harbor Commuter	6/94
Hull 1392/SOC	82 x 18	GM	U.S. Navy	2/94	Maquoit II/Ferry	81 x 30 x 11	Detroit Diesel	Casco Bay Island Transit	6/94
Hull 1393/SOC	82 x 18	MTU	U.S. Navy	2/94	M/V Sunbeam/ Mission Vessel	65 x 21 x 9	Detroit Diesel	Maine Seacoast	10/94
Hull 1382/ Paddlewheel Riverboat	323 x 90	Caterpillar	n/a	11/94	Westport Shipyard, Westport, Wash.				
Yard 81-Moss Point Marine					Circle 47 on Reader Service Card				
Hull 121/Ocean Tug	127 x 37	EMD	n/a	2/94	Blacksheep/Yacht	112 x 23	MTU	n/a	3/94
Hull 1260/Support Vessel	272 x 60	EMD	U.S. Army	3/94	Hull 7609/Yacht	106 x 23	MTU Westship	n/a	9/94
Hull 802-806/ Large Tugs (5)	128 x 36	EMD	U.S. Army	2nd Qtr. 94	Hull 7516/Yacht	106 x 23	Detroit Diesel	n/a	10/94
Hull 122/Ferry	263 x 65	EMD	State of Texas	12/94	Island Express/Passenger	100 x 23	Detroit Diesel	n/a	5/95
					Catalina Express/ Passenger	100 x 23	Detroit Diesel	n/a	5/95
					Hull 7614	106 x 23	MTU	n/a	3rd Q/95

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U.S. Shipyards: Survey Of New Construction

Yard/Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Hull 7612/Yacht	106 x 23	MTU	n/a	3rd Q/95
Hull 7615	106 x 23	MTU	n/a	2nd Q/96
Winninghoff Boats, Inc., Rowley, Mass.				
Circle 48 on Reader Service Card				
Research	28 x 9	Volvo	Cornell University	4/94
Jet Lobster	28 x 9	Hamilton Jet	Stanley Wood	5/94
OSRV (3)	20 x 6	Outboard	n/a	6/94
OSRV	45 x 15	Volvo	Clean Harbors Coop.	6/94
Fire/Rescue	29 x 10	Hamilton Jet	Lake George VFD	7/94
Research	28 x 9	Volvo	State of Connecticut	7/94
Patrol (2)	23 x 7	OMC	Commonwealth of Pa.	10/94
Spill Response	23 x 7	Outboard	BASF	11/94
Zidell Marine Corp., Portland, Ore.				
Circle 49 on Reader Service Card				
Pioneer/Petroleum Barge	272 x 84 x 19	n/a	Tidewater Barge Lines	3/94
Hull 650/Deck				
Cargo Barge	335 x 76 x 22	n/a	Zidell Marine	5/94

U.S. YARD NOTES

From Maritime Reporter's recent survey of U.S. shipyards, the following is a quick reference on the planned facility improvements and market focuses of several builders.

Bender Shipbuilding

Bender is in the process of constructing wingwalls which will be added to existing pontoons and then added to its 20,000-ton drydock. When completed, the lengthened dock will have 668 ft. (203 m) of length over the blocks, with the capacity to handle vessels up to 800 ft. (243 m) long, and have a lifting capacity of 25,000 tons. Market segments the yard focuses on include casino riverboats, the oil industry, and the NOAA fleet modernization.

Gladding-Hearn Shipbuilding

Gladding-Hearn plans to offer CAD computer draftings and numerical cutting in the near future. The yard has been involved in many innovations, including the development of a 40-knot InCat, U.S. Coast Guard-approved fast ferry, and counts on steady growth in the fast ferry segment—both InCat and monohulls—for future business. The yard also is looking to the pilot, patrol and research vessel market for business.

Ingalls Shipbuilding

Ingalls invests an average of \$25 million annually to enhance productivity and support engineering. A \$50 million productivity improvement program was completed in 1988 which added covered work areas to increase productivity and early outfitting. Most recent facility improvements include a new medical support building and a chemistry laboratory. Future plans in-

clude the addition of a one-sided butt welding and new machinery building. Ingalls plans to continue to pursue U.S. Navy and foreign navy surface combatant construction, modernization and overhauls. In the future, the commercial shipbuilding market segment is envisioned as a substantial part of the Ingalls business base. A re-entry into the commercial shipbuilding market is underway with the Ingalls Gulf Islands Class tanker, the MarcGuardian VLCC, and cruise ship construction.

Patti Shipyard Inc.

The Pensacola, Fla.-based builder has plans to add a third launch track, as well as miscellaneous other machine shop equipment in the future. The yard was among the first to create passenger vessels via integrated tug and barge. Market hopefuls include Corps of Engineers and gaming vessels.

Peterson Builders, Inc.

Peterson Builders now offers an Ingleside, Texas Repair Shop Division, which is a 4.5 acre facility with a 449-ft. (137-m) pier, as well as several ship repair shop buildings. The builder is looking to build casino vessels for the Midwest market, high speed ferries for the U.S. market and high speed patrol craft for the international markets.

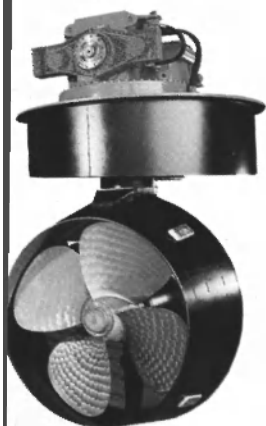
Tidewater Equipment Corporation

Tidewater recently installed a panel fabrication line and a subassembly transfer system from building to launchways.

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U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
AMERICAN AUTOCARRIERS, INC. c/o Wallenius Lines North America, Inc., P.O. Box 1232, Woodcliff, NJ 07675-1232						Cape Taylor	RoRo	13,098	14,689	D-17,330	77
*Faust	PCC	51,858	28,070	D-16,980	85	Cape Trinity	RoRo	12,450	15,075	D-18,990	77
NOSAC Ranger	PTC	16,568	17,631	D-18,600	78	Charleston	Tanker	21,649	39,366	T-12,000	56/80
*Managed by International Marine Carriers, Inc., Mineola, N.Y.						Golden Monarch	Bulker	44,900	91,388	T-24,500	75
AMERICAN AUTOMAR INC. 6550 Rock Spring Plaza, Suite 300, Bethesda, MD						Gulf Banker	Breakbulk	8,988	11,368	T-11,000	65
*American Cormorant	Semisub HvyLft.	10,186	47,230	D-19,700	75/82	Gulf Farmer	Breakbulk	8,988	11,368	T-11,000	65
*American Kestrel	LASH	24,406	39,130	T-35,000	72	Gulf Merchant	Breakbulk	8,988	11,368	T-11,000	65
*American Merlin	RoRo	26,409	19,669	D-11,700	78	Gulf Shipper	Breakbulk	8,988	11,368	T-11,000	65
*Vessels managed by Osprey Ship Management, Washington, D.C.						Gulf Trader	Breakbulk	8,988	11,368	T-11,000	65
AMERICAN HAWAII CRUISES 550 Kearny Street, San Francisco, CA 94108						ARCO MARINE, INC. (ATLANTIC RICHFIELD COMPANY) 300 Ocean Gate, Long Beach, CA 90802-4341					
Constitution	Cruise	30,090	7,100	T-37,000	51/94	Arco Alaska	Crude Tanker	83,675	188,436	T-28,000	79
Independence	Cruise	30,090	7,100	T-37,000	51/94	Arco Anchorage	Crude Tanker	57,691	120,266	T-26,000	73
AMERICAN HEAVY LIFT SHIPPING CO. 520 Post Oak Blvd., Suite 480, Houston, TX 77027						Arco California	Crude Tanker	83,675	188,436	T-28,000	80
King	Tanker	20,138	34,723	T-13,600	57	Arco Fairbanks	Crude Tanker	57,691	120,319	T-26,000	74
Knight	Tanker	20,026	34,723	T-13,600	58	Arco Independence	Crude Tanker	117,515	262,376	T-35,000	77
Solar	Tanker	18,116	30,806	T-13,600	59	Arco Juneau	Crude Tanker	57,691	120,266	T-26,000	74
Spray	Tanker	18,150	30,806	T-13,600	60	Arco Prudhoe Bay	Product Tanker	31,487	70,278	T-20,000	71
AMERICAN MARITIME TRANSPORT, INC. 120 White Plains Rd., Second Floor, Tarrytown, NY 10591-5573						Arco Sag River	Product Tanker	31,487	70,215	T-20,000	72
Golden Endeavor	Tanker	44,870	91,849	T-24,500	74	Arco Spirit	Crude Tanker	117,515	262,376	T-35,000	77
AMERICAN OVERSEAS MARINE CORPORATION 116 East Howard Street, Quincy, MA 02169						Arco Texas	Crude Tanker	39,664	89,950	T-20,000	73/81
2nd Lt. John P. Bobo	RoRo	32,903	22,700	D-26,400	85	ATLANTIC TANKSHIPS, INC. 5 Koger Executive Center, P.O. Box 13348, Norfolk, VA 23506					
Pfc. Dewayne T. Williams	RoRo	32,903	22,700	D-26,400	85	Sea Venture	Chemical Tanker	9,993	18,924	D-8,680	72/83
1st Lt. Baldomero Lopez	RoRo	32,903	22,700	D-26,400	85	BAY SHIP MANAGEMENT INC., AFFILIATE OF BAY TANKERS INC. 270 Sylvan Ave., Englewood Cliffs, NJ 07632					
1st Lt. Jack Lummus	RoRo	32,903	22,700	D-26,400	86	* American Explorer	Tanker	14,984	22,908	T-20,000	—
Sgt. William R. Button	RoRo	32,903	22,700	D-26,400	86	* American Osprey	Tanker	20,143	32,650	T-13,600	58
* Cape Juby	Cargo	12,724	12,840	T-17,500	62	* Chesapeake	Tanker	29,911	—	T-13,600	—
* Cape Johnson	Cargo	12,724	12,840	T-17,500	62	* Mount Vernon	Tanker	27,412	46,997	T-15,000	61
* Cape Nome	Cargo	11,500	15,694	T-33,000	69	* Mount Washington	Tanker	27,797	47,184	T-15,000	63
* Southern Cross	Cargo	9,259	12,519	T-12,100	62	* Petersburg	Tanker	27,470	50,063	T-13,500	63
* Cape Jacob	Cargo	12,724	12,840	T-17,500	62	* Potomac	Tanker	15,630	25,200	T-18,600	57
* Cape John	Cargo	12,724	12,840	T-17,500	62	* Shoshone	Tanker	15,630	25,200	T-18,600	57
* Cape Lambert	RoRo	22,999	19,857	D-17,000	73	** USNS Algal	SL-7	48,142	25,595	T-120,000	—
* Cape Lobos	RoRo	22,999	19,857	D-17,000	72	** USNS Altair	SL-7	48,142	25,595	T-120,000	73
* Curtiss	T-AVB	23,255	15,694	T-30,000	69	** USNS Antares	SL-7	48,142	25,595	T-120,000	—
* Washington	RoRo	51,960	32,379	D-14,790	82	** USNS Bellatrix	SL-7	48,142	25,595	T-120,000	—
* Wrath	RoRo	51,960	32,379	D-14,790	82	** USNS Capella	SL-7	48,142	25,595	T-120,000	—
* Wright	T-AVB	23,255	15,694	T-30,000	70	** USNS Denabola	SL-7	48,142	25,595	T-120,000	73
*Under contract from Maritime Administration						** USNS Kane	Oceanographic	2,616	—	D-3,000	67
AMERICAN PRESIDENT LINES, LTD. 1111 Broadway, Oakland, CA 94607						** USNS Pollux	SL-7	48,142	25,595	T-120,000	73
President Adams	Conbulk	50,205	53,613	D-57,000	88	** USNS Regulus	SL-7	48,142	25,595	T-120,000	73
President Arthur	Container	36,800	44,966	D-28,800	87	** USNS Silas Bent	Oceanographic	2,456	—	D-3,000	65
President Buchanan	Container	36,800	44,966	D-28,800	87	** USNS Wilkes	Oceanographic	2,616	—	D-3,000	71
President Eisenhower	Container	36,860	46,600	D-43,200	80/84	** USNS Wyman	Oceanographic	2,617	—	D-3,000	71
President F.D. Roosevelt	Container	36,195	46,600	D-43,200	80/84	* Under contract from Maritime Administration.					
President Garfield	Container	36,800	44,966	D-28,800	87	** Under contract from MSC.					
President Grant	Container	26,746	37,942	D-32,000	71/78/83	CENTRAL GULF LINES, INC. 650 Poydras Street, Suite 1700, Poydras Center, New Orleans, LA 70130					
President Harding	Container	36,800	44,966	D-28,800	87	Austral Rainbow	LASH	26,456	39,493	T-32,000	72
President Harrison	Container	28,163	34,515	T-32,000	71/78	Caps Express	SSB	—	14,894	—	76
President Hoover	Container	26,746	39,419	T-32,000	71/78/83	Green Valley	LASH	28,487	46,908	T-32,000	74
President Jackson	Conbulk	50,205	53,613	D-57,000	88	Green Island	LASH	28,487	46,908	T-32,000	75
President Jefferson	Container	21,467	23,170	T-28,500	73	Green Harbour	LASH	28,487	46,908	T-32,000	74
President Kennedy	Conbulk	50,205	53,613	D-57,000	88	Green Wave	Cargo	9,521	12,487	D-10,000	81
President Lincoln	Container	40,627	35,765	D-43,200	82	Green Ridge	Cargo	9,521	12,487	D-10,000	81
President Monroe	Container	40,627	35,765	D-43,200	83	Green Bay	PCC	38,659	13,491	D-11,600	87
President Polk	Conbulk	50,205	53,613	D-57,000	88	Green Lake	PCC	46,950	14,104	D-13,120	87
President Truman	Conbulk	50,205	53,613	D-57,000	88	CHESAPEAKE SHIPPING CO. c/o Prentice-Hall Corp., 229 S. State Street, Dover, DE 19901					
President Tyler	Container	26,746	39,419	T-32,000	72/78/83	Bridgeton	Tanker	210,065	407,823	T-45,000	77
President Washington	Container	40,627	35,765	T-43,200	82	Chesapeake City	Tanker	44,313	82,572	D-17,000	81
APEX MARINE CORPORATION 2001 Marcus Avenue, Lake Success, NY 11042						Ocean City	Tanker	55,620	82,572	D-17,000	81
American Heritage	Tanker	44,000	91,849	T-24,500	78	Sea Isle City	Tanker	55,454	81,283	D-12,720	81
Beaver State	Crane Ship	9,851	14,001	T-19,000	65	CHEVRON SHIPPING COMPANY 555 Market Street, San Francisco, CA 94105					
						Chevron Arizona	Product Carrier	16,941	39,207	GT/E-12,500	77
						Chevron California	Tanker	35,588	70,213	T-20,000	72
						Chevron Colorado	Product Carrier	16,941	39,213	GT/E-12,500	76
						Chevron Louisiana	Product Carrier	16,941	39,167	GT/E-12,500	77

U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
Chevron Mississippi	Tanker	35,589	70,213	T-20,000	72	Energy Ammonia	LPG Barge	11,438	12,110	—	82
Chevron Oregon	Product Carrier	16,941	39,218	GT/E-12,500	75	LNG Aquarius	LNG	95,084	71,475	T-43,000	77
Chevron Washington	Product Carrier	16,941	39,167	GT/E-12,500	76	LNG Aries	LNG	95,084	71,466	T-43,000	77
COASTAL TANKSHIPS USA, INC. 9 Greenway Plaza, Houston, TX 77046						LNG Capricorn	LNG	95,084	71,409	T-43,000	78
Coastal Corpus Christi	Tanker	23,299	51,196	T-19,000	60	LNG Gemini	LNG	95,084	71,327	T-43,000	78
Coastal Eagle Point	Tanker	26,198	51,051	T-19,000	60	LNG Leo	LNG	95,084	71,409	T-43,000	78
Coastal Manatee	Tanker	19,030	30,806	T-13,600	61	LNG Libra	LNG	95,084	71,503	T-43,000	79
Coastal New York	Tanker	23,459	39,400	T-13,650	56/72	LNG Tarus	LNG	95,084	71,495	T-43,000	79
COASTAL TUG & BARGE, INC. 8700 West Flagler Street, Miami, FL 33174						LNG Virgo	LNG	95,084	71,482	T-43,000	79
Coastal Port Everglades/ Coastal 101	ITB	17,634	36,846	D-15,200	81/79	FARRELL LINES, INC. One Whitehall Street, New York, NY 10004					
Coastal Jacksonville/ Coastal 23	ITB	6,231	12,200	D-3,700	71/77	Argonaut	Container	17,904	16,205	T-17,500	79
COVE SHIPPING INC. 200 Virginia Street, Mobile, AL 36603						Export Freedom	Container	17,904	16,230	T-17,500	72
Cove Endeavor	Tanker	35,633	70,459	T-20,000	71	Export Patriot	Container	17,904	16,345	T-17,500	73
Cove Liberty	Tanker	33,596	69,306	T-22,000	43/74/81	Resolute	Container	17,904	16,205	T-17,500	80
Cove Trader	Tanker	28,310	49,339	T-15,000	59/79/82/91	HVIDE SHIPPING INCORPORATED 2200 Eller Drive, Bldg. 27, Fort Lauderdale, FL 33316					
CREST TANKERS, INC. 8182 Maryland Ave., St. Louis, MO 63105						Seabulk America	Chemical Tanker	—	47,000	D-11,550	90
Montrachet	Tanker	18,047	30,806	T-15,000	59	Seabulk Challenger/ STL 3901	ITB	20,982	39,345	D-14,000	75
CROWLEY MARITIME CORPORATION 155 Grand Avenue, Oakland, CA 94612						Seabulk Magnachem/ SCC3902	ITB	18,671	39,344	D-14,000	77
Ambassador	RoRo	13,412	9,900	D-10,000	80	INTERNATIONAL MARINE CARRIERS, INC. 22 Jericho Turnpike, Mineola, NY 11501					
Senator	RoRo	13,498	9,900	D-10,000	81	Green State	Container	16,956	17,449	T-19,250	65
American Condor	RoRo/Lo-Lo	15,636	20,730	D-21,600	81	Grand Canyon	Container	17,137	17,448	T-19,250	65
American Falcon	RoRo/Lo-Lo	15,636	20,730	D-21,600	81	Keystone State	Container	17,128	26,330	T-19,250	66
Sea Fox	Con./RoRo	32,781	33,625	D-23,030	84	Cape Farewell	LASH	29,508	41,363	T-32,000	73
Sea Lion	Con./RoRo	32,781	33,625	D-23,030	85	Cape Flattery	LASH	29,508	41,363	T-32,000	73
Sea Wolf	Con./RoRo	32,781	33,625	D-23,030	84	Cape Florida	LASH	26,406	30,298	T-32,000	71
ENERGY TRANSPORTATION CORPORATION 1185 Avenue of the Americas, New York, NY 10036						Cape Race	RoRo	13,379	22,858	D-28,000	77
Energy Altair	Tug	262.6	—	D-4,800	82	Cape Ray	RoRo	14,825	22,735	D-28,000	77
						Cape Rise	RoRo	14,835	22,853	D-28,000	77
						M/S Faust	PCTC	17,951	28,050	T-16,980	85
						M/S Fidelio	PCTC	47,219	15,681	D-11,850	87
						S/L Antarctic	Tanker	17,157	27,221	T-14,000	75
						S/L Arabian Sea	Tanker	17,134	27,202	T-14,000	75
						S/L Arctic	Tanker	17,158	27,221	T-14,000	75
						S/L Atlantic	Tanker	17,158	27,214	T-14,000	75
						S/L Caribbean	Tanker	17,158	27,223	T-14,000	75
						S/L China Sea	Tanker	17,134	27,400	T-14,000	75

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U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
S/L Indian Ocean	Tanker	17,134	27,400	T-14,000	75	Tonsina	Crude	60,385	122,781	T-30,000	78
S/L Mediterranean	Tanker	17,158	27,717	T-14,000	74	*Vessels operated for Maritime Administration.					
S/L Pacific	Tanker	17,134	27,400	T-14,000	74						
INTEROCEAN MANAGEMENT CORPORATION						LIBERTY MARITIME CORPORATION					
Echelon II Plaza, Suite 300, 221 Laurel Rd., Voorhees, NJ 08043-2349						1979 Marcus Avenue, Suite 200, Lake Success, NY 11042					
Brooks Range	Tanker	74,250	165,037	T-26,700	78	Liberty Belle	Tanker	44,900	91,630	T-24,500	76
Thompson Pass	Tanker	74,250	165,037	T-26,700	78	Liberty Sea	Bulk	33,784	63,739	D-12,300	84
* Cape Bon	Breakbulk	10,723	14,700	T-12,500	67	Liberty Spirit	Bulk/Container	33,337	64,152	D-15,800	86
* Cape Ducato	RoRo	N/A	13,800	N/A	72	Liberty Star	Bulk/Container	33,337	64,152	D-15,800	86
* Cornhusker State	T-ACS	17,932	17,500	T-19,250	69/88	Liberty Sun	Bulk/Container	33,337	64,059	D-15,800	86
* Diamond State	T-ACS	16,303	17,500	T-19,250	89	Liberty Wave	Bulk	33,784	64,463	D-12,300	84
* Equality State	T-ACS	16,518	17,500	T-19,250	89	LYKES BROS. STEAMSHIP COMPANY					
* Flickertail State	T-ACS	17,932	17,500	T-19,250	88	300 Poydras Street, New Orleans, LA 70130					
* Gopher State	T-ACS	17,904	17,500	T-19,250	87	Adabelle Lykes	Container	16,891	15,378	D-15,750	68/73
* Northern Light	Breakbulk	9,489	12,739	T-12,100	61	Ashley Lykes	Cargo Cont.	11,892	14,524	T-11,000	63/73
* Under contract from MarAd.						Charlotte Lykes	Container	16,891	15,443	D-15,750	68/73
KEYSTONE SHIPPING CO.						Elizabeth Lykes	General Cargo	10,955	15,538	T-15,500	66
313 Chestnut Street, Philadelphia, PA 19106						Genevieve Lykes	General Cargo	10,724	15,538	T-15,500	68
Atigun Pass	Crude	74,251	173,380	T-26,700	77	Howell Lykes	Container	17,802	22,661	T-24,000	67/72
* Cape Orlando	RoRo	—	20,641	—	81	James Lykes	Cargo Cont.	11,892	14,524	T-9,900	60/72
* Cape Victory	RoRo	—	22,215	—	84	Jean Lykes	Container	21,467	23,147	T-28,500	73
* Cape Vincent	RoRo	—	22,215	—	84	John Lykes	Cargo Cont.	11,892	14,524	T-9,900	60/72
Chelsea	Crude/Products	22,358	39,235	T-15,000	75	Leslie Lykes	Cargo Cont.	11,892	14,524	T-9,900	62/72
Cherry Valley	Crude/Products	22,385	39,230	T-15,000	74	Letitia Lykes	General Cargo	10,724	15,538	T-15,500	68
Chestnut Hill	Crude/Products	44,875	91,295	T-24,500	76	Louise Lykes	General Cargo	10,955	15,538	T-15,500	65
Chilbar	Chemical Tanker	21,937	39,363	T-10,460	59/81	Margaret Lykes	Container	16,375	15,450	D-15,750	68/73
Coronado	Crude/Products	22,358	39,237	T-15,000	73	Marjorie Lykes	Cargo Cont.	11,892	14,524	T-11,000	62/73
Denali	Crude/Products	83,649	188,099	T-28,000	78	Ruth Lykes	General Cargo	10,955	15,538	T-15,500	66
Energy Independence	Collier	24,901	38,234	T-12,000	83	Sheldon Lykes	Container	16,375	15,284	D-15,750	69/73
Fredricksburg	Crude/Products	21,557	39,374	T-20,460	58/80	Stella Lykes	Cargo Cont.	15,949	22,564	T-24,000	69
Golden Gate	Crude/Products	27,899	61,952	T-20,000	70	Sue Lykes	Cargo Cont.	15,949	22,564	T-24,000	69
Kenai	Crude	60,385	123,113	T-30,000	79	Thompson Lykes	Container	21,475	23,212	T-28,500	74
Keystone Canyon	Crude	74,251	173,380	T-26,700	78	Tillie Lykes	Containership	31,920	36,004	D-19,740	85
Kittanning	Crude/Products	44,875	91,344	T-24,500	77	Tyson Lykes	Containership	31,920	36,004	D-19,740	85
Prince William Sound	Crude	60,084	121,000	T-30,000	75	Velma Lykes	Cargo/Cont.	11,892	14,524	T-9,900	72

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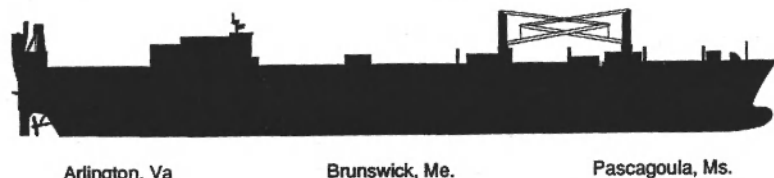
U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
MAERSK LINE, LTD. Giralda Farms, Madison Avenue, P.O. Box 884, Madison, NJ 07940-0884						Manukai	Container	23,786	26,616	T-32,000	70
*Cpl. Louis J. Hauge Jr.	RoRo	38,412	23,068	D-16,800	84	Manulani	Container	23,786	26,674	T-32,000	70
*1st Lt. Alexander	RoRo	38,412	23,068	D-16,800	85	Matsonia	Container/RoRo	19,301	22,550	T-30,000	73/87
Bonnyman Jr.						Mauai	Container	24,545	26,623	T-32,000	78
Maersk Constellation	RoRo	21,799	29,750	D-16,500	80	Mauna Loa	Container Barge	3,562	4,658	—	84
*Pfc. William B. Baugh	RoRo	38,412	23,068	D-16,800	84	R.J. Pfeiffer	Container	31,573	28,555	D-30,000	92
*Pfc. James Anderson Jr.	RoRo	38,412	23,068	D-16,800	85	Waialeale	RoRo Barge	5,621	7,735	—	91
*Pvt. Harry Fisher	RoRo	38,412	23,068	D-16,800	85	MOBIL OIL CORPORATION 3225 Gallows Road, Fairfax, VA 22037-0001					
*Under contract to MSC.						Seminole	Tanker	28,218	49,298	T-15,000	61
MARINE TRANSPORT LINES, INC. 150 Meadowland Parkway, Secaucus, NJ 07094-1550						MORMAC MARINE TRANSPORT INC. Three Landmark Square, Stamford, CT 06901					
B.T. Alaska	Tanker	83,650	188,099	T-28,000	78	Mormacsky	Tanker	22,354	39,232	T-15,000	77
B.T. San Diego	Tanker	83,650	188,099	T-28,000	78	Mormacstar	Tanker	22,354	39,232	T-15,000	75
Chemical Pioneer	Chemical Tanker	18,500	35,00	T-15,000	83	Mormacsun	Tanker	22,354	39,232	T-15,000	76
Marine Chemist	Chemical Tanker	20,237	35,949	T-15,000	70	OCEAN SHIPHOLDINGS, INC. 16211 Park Ten Place, Houston, TX 77084					
Marine Duval	Sulfur Tanker	11,080	24,693	TE-7,000	44/70	Paul Buck	Tanker	19,037	30,127	D-15,300	85
Marine Floridian	Sulfur Tanker	11,150	24,838	TE-7,000	44/67	Samuel L. Cobb	Tanker	19,037	30,127	D-15,300	85
Marine Princess	Bulk Carrier	26,060	51,355	D-13,800	79	Gus W. Darnell	Tanker	19,037	30,127	D-15,300	85
Marine Reliance	Pure Car Carrier	35,700	11,400	D-11,700	87	Lawrence H. Gianella	Tanker	19,037	30,127	D-15,300	86
Cape Lambert	RoRo	34,382	20,544	D-18,000	73	Richard G. Matthiesen	Tanker	19,037	30,127	D-15,300	86
Cape Lobos	RoRo	34,380	20,220	D-18,000	72/86	Julius Hammer/ Oxy 4101	ITB	1,594	45,313*	D-9,100**	81
Cape Decision	RoRo	23,913	23,865	D-27,000	73	Frances Hammer/ Oxy 4103	ITB	1,594	45,313*	D-9,100**	81
Cape Diamond	RoRo	23,911	23,725	D-28,890	72	*Long tons; **Metric.					
Cape Domingo	RoRo	23,911	23,725	D-28,890	73	OMI CORPORATION 90 Park Avenue, New York, NY 10016					
Cape Douglas	RoRo	23,972	22,880	D-27,000	73	Courier	Product Tanker	21,572	35,100	D-14,000	77
Marine Glory/ MBC#1	Chemical Tug/ Barge	N/A	3,700	D-1,900	73	OMI Champion	Product Tanker	20,858	37,874	T-15,000	69
Marine Guardian/ MBC#2	Chemical Tug/ Barge	N/A	3,700	D-2,600	73	OMI Charger	Product Tanker	20,877	37,807	T-15,000	69
Williamsburgh	Crude Tanker	103,800	225,281	T-50,000	74	OMI Columbia	Crude Tanker	67,856	136,507	D-27,300	74/83
Mission Buenaventura	Product Tanker	20,900	38,238	D-15,000	68	OMI Dynachem	Chemical Tanker	32,328	50,852	D-14,100	81
Mission Capistrano	Product Tanker	20,800	37,276	D-15,000	71	OMI Hudson	Chemical Tanker	32,328	50,852	D-14,100	81
MATSON NAVIGATION COMPANY 333 Market Street, San Francisco, CA 94105						OMI Leader	Product Tanker	20,877	37,807	T-15,000	69
Haleakala	Container Barge	3,562	4,658	—	84	OMI Missouri	Bulk Carrier	26,800	48,890	D-11,100	83
Islander	Container Barge	2,474	6,671	—	88	OMI Sacramento	Bulk Carrier	26,800	48,890	D-11,100	83
Kaimoku	Container/RoRo	17,525	14,551	T-30,000	76/90	OMI Star	Chemical Tanker	19,047	37,106	T-15,000	70
Kainalu	Container/RoRo	17,513	14,976	T-30,000	74/89						
Kauai	Container	24,550	26,308	T-32,000	80						
Lurline	Container/RoRo	24,901	22,220	T-30,000	73/82						

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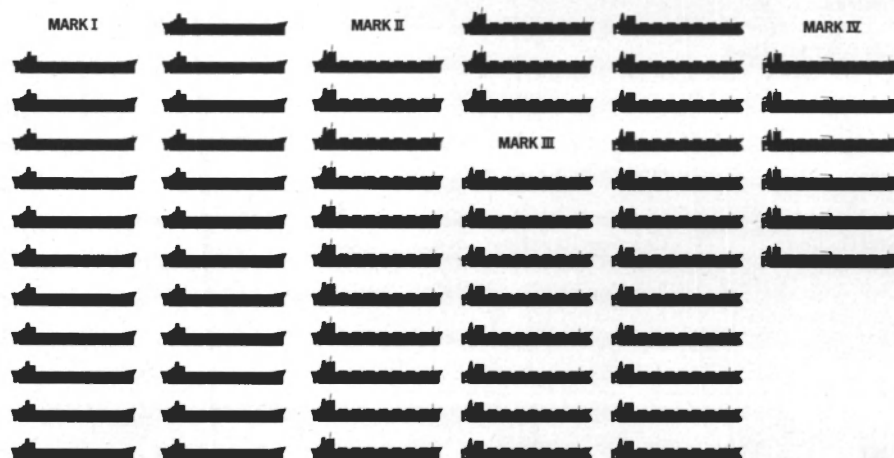
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U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
OMI Wabash	Product Tanker	20,884	37,853	T-15,000	69	PACIFIC - GULF MARINE, INC.					
OMI Willamette	Product Tanker	20,884	37,853	T-15,000	69	401 Whitney Ave., Suite 211, Gretna, LA 70053; P.O. Box 6479, New Orleans, LA 70174-6479					
Patriot	Product Tanker	21,572	35,100	D-14,000	76	Fred G.	Cargo/Cont.	11,892	14,286	T-9,900	60/71
Ranger	Product Tanker	21,572	35,100	D-14,000	76	Nosac Ranger	RoRo	16,568	17,316	D-20,500	78
Rover	Product Tanker	21,572	35,100	D-14,000	77	Sugar Islander	Bulk Carrier	155,544	29,984	D-12,000	73
Star of Texas	Bulk Carrier	24,384	36,500	D-15,600	82	PENN ATRANSO CORP.					
OSG BULK SHIPS						1155 Avenue of the Americas, New York, NY 10036					
1114 Avenue of the Americas, New York, NY 10036						Baltimore Trader	Tanker	27,269	57,884	T-15,000	55/71
Overseas Alaska	Tanker	28,250	62,000	T-20,000	70	Chesapeake Trader	Tanker	24,669	50,116	D-11,400	82
Overseas Alice	Product Tanker	17,330	37,800	T-15,000	68	Delaware Trader	Tanker	24,669	50,057	D-11,400	82
Overseas Arctic	Tanker	28,250	62,000	T-20,000	71	Iowa Trader	Bulker	21,734	36,476	D-15,600	82
Overseas Boston	Tanker	61,213	120,800	D-26,000	74	Kansas Trader	Bulker	21,734	36,476	D-15,600	81
Overseas Chicago	Tanker	44,869	90,650	T-24,500	77	Potomac Trader	Tanker	24,669	50,057	D-11,400	83
Overseas Harriette	Bulk Carrier	14,310	25,550	D-11,200	78	PUERTO RICO MARINE MANAGEMENT, INC.					
Overseas Joyce	PCC	48,017	15,900	D-13,150	87	212 Fernwood Avenue, Edison, NJ 08818					
Overseas Juneau	Tanker	57,701	120,500	T-26,000	73	Carolina	Container	19,127	20,100	T-26,000	71
Overseas Marilyn	Bulk Carrier	14,310	25,550	D-11,200	78	Guayama	Container	18,877	20,600	T-26,000	69
Overseas New Orleans	Product Tanker	21,446	42,950	D-11,244	83	Humacao	Container	18,765	22,200	T-26,000	68
Overseas New York	Tanker	44,906	90,400	T-24,500	77	Mayaguez	Container	18,878	20,600	T-26,000	68
Overseas Ohio	Tanker	44,869	90,550	T-24,500	77	Nuevo San Juan	Container	19,127	20,000	T-26,000	70
Overseas Philadelphia	Product Tanker	21,446	42,600	D-11,400	82	Ponce	RoRo	17,513	16,943	T-32,000	68/81
Overseas Valdez	Product Tanker	17,330	37,800	T-15,000	68						
Overseas Vivian	Product Tanker	17,330	37,800	T-15,000	69						
Overseas Washington	Tanker	44,906	90,500	T-24,500	78						



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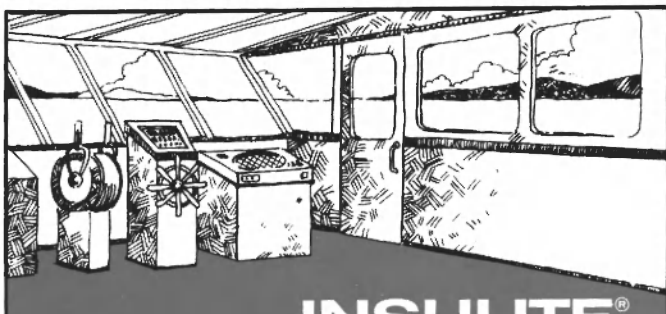
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Maritime Reporter/Engineering News

U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
RED RIVER SHIPPING CORP. 5110 Executive Blvd., Suite 620, Rockville, MD 20852						OOCL Inspiration					
M/V Advantage	Breakbulk	12,755	21,990	D-14,000	77	Pacer	Container	57,075	58,992	D-28,000	85
M/V Buffalo Soldier	RoRo/Bulk	26,409	—	D-14,000	78/88	Pacific	Container	17,736	15,298	D-17,400	63/80
SABINE TRANSPORTATION COMPANY P.O. Box 1528, Groves, TX 77619						Patriot	Container	30,685	30,776	T-28,500	79/83
Colorado	Tanker	16,822	30,590	T-7,240	44/72	Performance	Container	30,685	29,748	D-30,150	80/85
Concho	Tanker	18,682	32,741	T-7,000	45/71	Producer	Container	57,075	58,992	D-28,000	85
Guadalupe	Tanker	17,985	30,369	T-7,240	45/78	Quality	Container	23,764	25,206	D-32,000	74
Neches	Tanker	20,066	34,930	T-15,000	58	Raleigh Bay	Container	57,075	58,992	D-28,000	85
Pecos	Tanker	17,291	28,749	T-13,750	50	Reliance	Container	29,965	45,896	T-32,000	81/91
Sabine	Tanker	20,020	35,018	T-15,000	57	S-L Shining Star	Container	17,802	22,661	T-24,000	68/72
SEA - LAND SERVICE, INC. 150 Allen Road, Liberty Corner, NJ 07938						Spirit	Container	29,965	45,896	T-32,000	80/90
Achiever	Container	57,075	58,892	D-28,000	84	Tacoma	Container	20,965	20,833	D-22,540	87
Anchorage	Container	20,965	20,833	D-22,540	87	Trader	Container	30,990	31,158	T-28,500	73/83
Atlantic	Container	57,075	58,892	D-28,000	85	Value	Container	57,075	58,992	D-28,000	85
Challenger	Container	19,168	25,508	T-27,300	68	Voyager	Container	30,086	29,911	D-30,150	80/85
Consumer	Container	23,764	25,206	32,000	73/74	SEALIFT, INC. 68 West Main Street, Oyster Bay, NY 11771					
Crusader	Container	18,389	24,938	T-27,300	69	Bravado	Tanker	2,110	4,400	D-2,880	77
Defender	Container	30,086	29,861	D-30,150	80/85	Cleveland	Cargo	16,000	22,200	T-24,000	69
Developer	Container	30,086	29,818	D-30,150	80/85	Inger	Bulker	14,192	23,977	T-7,240	45/62
Discovery	Container	18,876	20,269	T-27,300	68	Noble Star	Multi-Bulk	15,922	18,230	D-13,100	77
Endurance	Container	30,086	29,738	D-30,150	80/85	M/V Valiant	Tanker	4,415	7,635	D-4,500	73/91
Enterprise	Container	30,686	30,982	D-28,500	80/83	Ultramax	Bulker	39,827	82,199	T-24,500	73
Expedition	Container	13,000	21,694	T-28,500	73/81	Ultrasea	Bulker	39,827	83,438	T-24,500	74
Explorer	Container	30,086	29,811	D-30,150	80/85	SEARIVER MARITIME, INC. P.O. Box 1512, Houston, TX 77251-1512					
Express	Container	30,086	29,943	D-30,150	80/85	S/R Baton Rouge	Tanker	34,266	76,809	T-19,000	69
Freedom	Container	30,086	29,831	D-30,150	80/85	S/R Baytown	Tanker	32,136	56,686	D-17,000	84
Galveston Bay	Container	57,075	58,992	D-28,000	85	S/R Benicia	Tanker	75,272	149,900	T-26,700	79
Hawaii	Container	13,000	21,564	T-28,500	73/81	S/R Charleston	Products Tanker	27,669	42,000	T-17,000	83
Independence	Container	30,086	29,790	D-30,150	80/85	S/R Galveston	Tanker	12,769	27,153	D-7,000	70
Innovator	Container	30,086	29,862	D-30,150	80/85	S/R Long Beach	Tanker	95,000	211,469	D-31,650	87
Integrity	Container	57,075	58,992	D-28,000	84	S/R New Orleans	Tanker	32,035	72,655	T-19,000	65
Koiaic	Container	20,965	20,833	D-22,540	87	S/R North Slope	Tanker	75,272	149,900	T-26,700	79
Liberator	Container	30,086	29,764	D-30,150	80/85	S/R Philadelphia	Tanker	34,266	76,863	T-19,000	70
Mariner	Container	30,086	29,903	D-30,150	80/85	S/R San Francisco	Tanker	34,266	76,863	T-19,000	69
Navigator	Container	30,990	30,610	T-28,500	72/84	S/R Mediterranean	Tanker	95,000	212,755	D-31,650	86
Nedlloyd Hudson	Container	57,075	58,992	D-28,000	84	S/R Wilmington	Products Tanker	27,508	42,000	D-17,000	84
Newark Bay	Container	57,075	58,992	D-28,000	84	SUN TRANSPORT, INC. (SUN REFINING & MARKETING INC.) 500 W. Duttons Mill Road, Aston, PA 19014-3094					
OOCL Inspiration	Container	57,075	58,992	D-28,000	84	New York Sun	Tanker	19,500	34,400	D-14,200	80



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U.S. Flag Oceangoing Merchant Fleet

Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt	Owner/Operator Vessel Name	Type	GT	DWT	HP T= Turbine D= Diesel	Year Built/ Rebuilt
Philadelphia Sun	Tanker	19,500	34,400	D-14,200	81	VAN OMMEREN SHIPPING (U.S.A.) INC. 46 Southfield Ave., Stamford, CT 06902					
Texas Sun	Tanker	26,300	53,453	T-18,500	60	Strong American	ITB/RoRo				
Tropic Sun	Tanker	20,177	34,700	T-13,600	57	Strong Texan	Hvylft./RoRo	1,383	2,804	D-2,500	76
TEXACO MARINE SERVICES, INC. P.O. Drawer 1028, Port Arthur, TX 77641-1028						Strong Virginian	Hvylft./RoRo	20,000	—	—	—
Star Georgia	Tanker	16,514	25,156	T-13,600	64	WATERMAN STEAMSHIP CORPORATION One Whitehall Street, New York, NY 10004					
Star Marrero	Tug & Barge	(25,000 BBLs)—	—	—	—	Jeb Stuart	LASH	—	47,500	—	69
Star Massachusetts	Tanker	16,515	19,364	T-13,600	63	Major Stephen W. Pless	RoRo/Container	29,091	25,073	T-30,000	83/85
Star Rhode Island	Tanker	16,584	19,364	T-13,600	64	Pfc. Eugene A. Obregon	RoRo/Container	29,091	25,073	T-30,000	83/84
Valiant/Pennsylvania	ITB	194/12,591	28,500	D-7,780	81/80	Robert E. Lee	LASH	32,269	46,150	T-32,000	74
Victory/Texas	ITB	194/12,591	28,500	D-7,780	81/80	Sam Houston	LASH	32,269	46,150	T-32,000	74
TOTEM OCEAN TRAILER EXPRESS, INC. 500 Alexander Avenue, Tacoma, WA 98421						Sgt. Matej Kocak	RoRo/Container	29,091	25,073	T-30,000	83/84
Great Land	RoRo	17,673	17,914	T-30,000	75	Stonewall Jackson	LASH	32,269	46,150	T-32,000	74
Northern Lights	RoRo	31,515	17,915	T-30,000	75	WEST COAST SHIPPING COMPANY 1201 W. Fifth Street, Los Angeles, CA 90017					
Westward Venture	RoRo	17,527	17,914	T-30,000	77	Coast Range	Tanker	21,257	39,990	T-13,000	81
UNION OIL COMPANY OF CALIFORNIA 1201 W. Fifth Street, Los Angeles, CA 90017						Cornucopia	LPG/Tanker	21,688	21,717	T-13,600	58/78
Blue Ridge	Tanker	21,359	42,268	T-13,000	81	Sierra Madre	Tanker	21,357	39,990	T-13,600	81

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Maritime Reporter/Engineering News

MAN B&W Holeby Signs License Agreements With Japanese, Russians

MAN B&W Diesel, Holeby in Denmark has entered into license agreements with Niigata Engineering Co., Japan, and Bryansk Engineering Works, Russia, for the production of the Holeby heavy fuel 23 & 28 series gensets covering the output range from 500- to 4,000-kW.

The license agreement with Niigata Engineering Co. is made on the basis of a manufacturing agreement established in 1990, with Niigata as the engine producer and the marketing of the genset performed in cooperation with MAN B&W Japan Ltd.

During the three years since the initial agreement, MAN B&W/Niigata has won orders for 65 gensets to be placed on both foreign and domestic newbuildings.

Bryansk Engineering Works has been in cooperation with MAN B&W Diesel since 1961 when the production of two-stroke propulsion engines started.

MAN B&W entered into this newest license agreement with Bryansk Engineering Works in anticipation of shipbuilding activity in Russia and the Ukraine.

APL Signs Up For Safety Management Certification

American President Lines (APL) has signed up with Det Norske Veritas (DNV) to have a minimum of 10 vessels certified for DNV's Safety Environmental Protection (SEP).

DNV's SEP program is now in its fourth year, and more than 120 clients internationally have signed certification contracts. APL is DNV's eighth North American client.

Companies and vessels certified under the SEP program as a minimum fully comply with the International Safety Management (ISM) Code which is expected to become a new chapter in the SOLAS Convention, and will be mandatory for all vessels starting in 1998. Additionally, SEP encompasses elements of the ISO 9000 series, all relevant international maritime conventions (MARPOL, STCW, SOLAS, etc.), and DNV's Loss Control Principles, making SEP a management tool for quality improvement.

Chemical Tankers of America (CTA) of Houston, the first company certified to SEP in North America, have been named Union Carbide Corp.'s "Supplier of the Year." SEP is reportedly one of the contributing factors in improving CTA's performance to attain this award.

Diversified Lifting Systems Opens Florida Facility

Tampa-based Diversified Lifting Systems, Inc. opened its Ft. Lauderdale manufacturing and distribution facility. **Greg Fields**, vice presi-

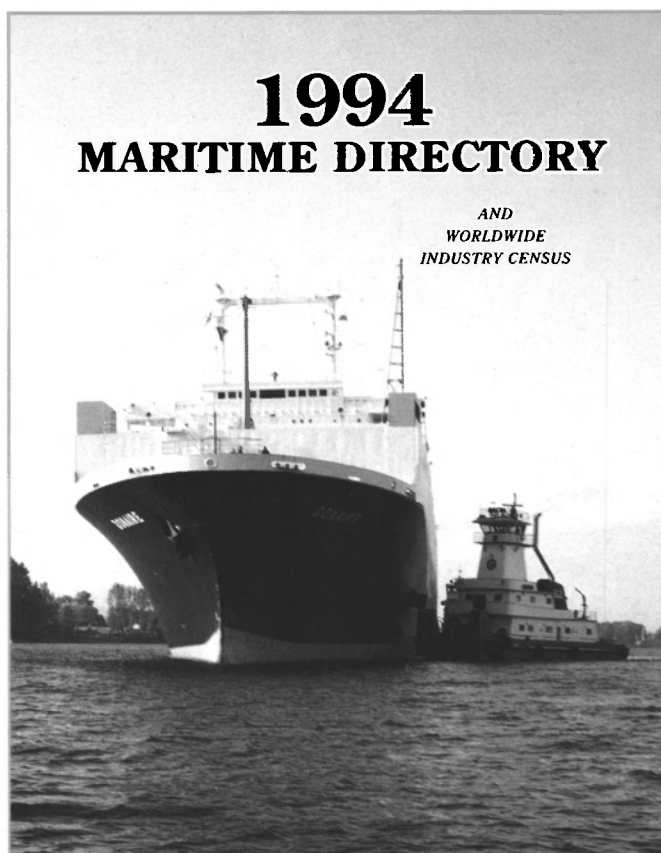
dent, says this facility is fully-equipped to manufacture wire rope slings, web slings, chain slings and synthetic tiedowns to supply the south Florida marine transportation market. The 8,800-sq.-ft. facility will stock mooring lines, mooring wires, tow wires, shackles and all rigging hardware. The new facility will be headed by **Alan White**, general manager, and **Harvey Buker**, sales manager.

Kerr Steamship Relocates

Kerr Steamship Co. relocated its agency representation offices for Compania Chilena de Navegacion Interoceanica S.A., CGM (French line) North America, and Torm West African Line, from Cranford, N.J. The new address is: Kerr Steamship Co., 200 Plaza Drive, Secaucus, N.J. 07096, tel: (201) 392-2800; fax: (201) 392-2891.

Genesis Container Line Inaugurates New Service

Genesis Container Line (GCL) of Miami has a new liner service connecting Houston, Texas-Cartegena, Colombia Bogota, Colombia and San Nicolas, Aruba. The M/V *Florida Star* sailed from Inbesa Terminal Houston, Texas marking the start of the new service for which Southern Steam, Inc. is the agent.



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World Yards: Survey Of New Construction



Chantiers de l'Atlantique-built LNG carrier during sea trials.

Yard-Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard-Vessel Name/Type	Dimensions	Engines	Owner	Delivery
(** All measurements in feet)					Car Carrier	394 x 62 x 58	Wartsila	United European Car Carriers	10/94
Aarhus Flydedok AS, Denmark					Long Liner	164 x 39 x 27	Caterpillar	Antarctic Longliner	12/94
#208/Container	307 x 62 x 30	Krupp MaK	n/a	3/94	Bremer Vulkan und Maschinenfabrik GmbH, Germany				
#209/Container	307 x 62 x 30	Krupp MaK	n/a	6/94	Ynanhe	902 x 106 x 70	Sulzer	China Ocean Shipping	8/94
#210/Container	307 x 62 x 30	Krupp MaK	n/a	9/94	Zhonghe	902 x 106 x 70	Sulzer	" " "	11/94
#211/Container	307 x 62 x 30	Krupp MaK	n/a	11/94	Burmeister & Wain Skibsværft A/S, Copenhagen, Denmark				
#212/Container	307 x 62 x 30	Krupp MaK	n/a	3/95	#947/OBO	n/a	n/a	K/S OBO	4/94
Belgian Shipbuilders Corporation, N.V., Antwerp, Belgium					#948/OBO	n/a	n/a	K/S Danskib	7/94
Trailing Suction					#949/Bulk carrier	n/a	n/a	Hellca S.A.	10/94
Hopper Dredger	361 x 73 x 27	n/a	Jan De Nul N.V.	5/94	#950/Bulk carrier	n/a	n/a	Oceana Shipping	12/94
Dipper Dredger	148 x 49 x 10	n/a	Jan De Nul N.V.	5/94	#951/Bulk carrier	n/a	n/a	Bottiglieri di	
Mooring Vessels (2)	107 x 35 x 13	n/a	n/a	1994-95	#952/Bulk carrier	n/a	n/a	Navigazione SpA	1/95
Docking Tugs (4)	135 x 42 x 21	n/a	n/a	1994-95	#953/Bulk carrier	n/a	n/a	Bottiglieri di	
Split Hopper								Navigazione SpA	3/95
Barge (2)	290 x 60 x 20	n/a	Jan De Nul N.V.	1995				K/S Bulk	5/95
Blohm + Voss AG, Hamburg, Germany					Chantiers De L'Atlantique, St. Nazaire, France				
Hull #50/Brandenburg	Frigatte	n/a	GE/MTU	12/94	LNG Tanker (5)	889 x 142 x 36	n/a	Petronas Marine	1994-97
Hull #53/Barbaros	Frigatte	n/a	GE/MTU	1995	Hull D37/Passenger-Car Ferry	564 x 100 x 22	n/a	SNCM	2ndQ 96
Boelwerf Vlaanderen N.V., Temse, Belgium					Cruise Ships (2)	n/a	n/a	RCCL	4/95 & 4/96
Crystal Emerald/					Finnyards Ltd., Rauma, Finland				
Chemical Tanker	368 x 60 x 33	Sulzer	Hol-Chem N.V.	1/94	Nordica/Multipurpose	381 x 85 x 39	Wartsila Vasa	Finnish Board of	
Crystal Amethyst/					IceBreaker			Navigation	1/94
Chemical Tanker	368 x 60 x 33	Sulzer	Hol-Chem N.V.	2/94	Offshore Patrol Vessel	189 x 36 x 17	n/a	Finnish Frontier Guard	1994
Crystal Pearl/Chemical Tanker	368 x 60 x 33	Sulzer	Hol-Chem N.V.	2/94	Catamaran-Fast Ferry (2)	394 x 131	GE gas turbines	Stena Line	1995/96
Crystal Pilgrim/	431 x 64 x 29	MAN B&W	Ahlers Unes		RoRo/Passenger Ferry (2)	588 x 89 x 47	MaK	TT-Line	1995
Reefer Vessel			N.V. & Partners	2ndQ 94	Flender Werft Aktiengesellschaft, Germany				
Crystal Pioneer/	431 x 64 x 29	MAN B&W	Ahlers Unes		Santa Margherita/Container	564	MAN B&W	Claus-Peter Offen	5/94
Reefer Vessel			N.V. & Partners	2ndQ 94	Santa Maddalena/Container	564	MAN B&W	Claus-Peter Offen	10/94
Navigator/Cable-laying	454 x 64 x 21	Wartsila	Friary Subsea	4thQ 94	#659/Container	761	MAN B&W	Claus-Peter Offen	6/95
Kamira Gas/LPG-	467 x 70 x 20	MAN B&W	Hol-Chem VI N.V.	4thQ 94	#660/Container	761	MAN B&W	Claus-Peter Offen	12/95
Ammonia-VCM tanker					Hanjin Heavy Industries Co. Ltd., Pusan, Korea				
Hull 1550/Shuttle Tanker	787 x 135 x 70	n/a	N.V. Shuttle	1stQ 96	Hanjin Tokyo/Container Ship	906 x 107 x 39	Sulzer	Grenville Shipping	2/94
Hull 1551/Shuttle Tanker	787 x 135 x 70	n/a	N.V. Shuttle	3rdQ 96	Bankinchandra Chatterjee/			Shipping Of India	
Brattvaag Skibsværft AS, Brattvaag, Norway					Product Carrier	551 x 99 38	MAN B&W		2/94
Car Carrier	394 x 62 x 58	Wartsila	United European Car Carriers	7/94					

The following data on newbuilding activity in world shipyards is the results of a limited survey by the editors of *Maritime Reporter*. Publisher is not responsible for errors or omissions.

(Source: *Maritime Reporter & Engineering News*, June 1994)



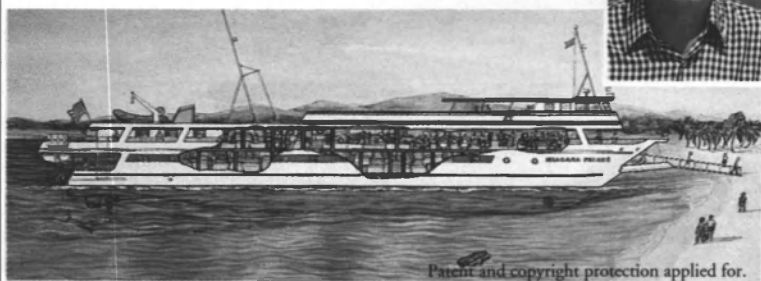
Yard-Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Imagination/Cruise Ship	855 x 118 x 25	ABB Marine Wartsila Sulzer/ ABB Marine	Lines Carnival Cruise Lines	94 2ndQ 95
River Ice Breaker	139 x 33 x 7	Azipod	n/a	n/a
Inspiration/Cruise Ship	855 x 118 x 25	Wartsila Sulzer/ ABB Marine	Carnival Cruise Lines	96
Cruise Ship	886 x 106	n/a	Royal Caribbean	4thQ96
Cruise Ship (option)	886 x 106	n/a	Royal Caribbean	3rdQ97
Meyer Werft, Papenburg, Germany				
s. 633/Passenger Ship	327 x 59 x 14	n/a	Indonesia	4/94
s. 634/Passenger Ship	327 x 59 x 14	n/a	Indonesia	7/94
s. 635/Passenger Ship	327 x 59 x 14	n/a	Indonesia	95
Oriana/Cruise Ship	853 x 106 x 26	n/a	P&O	95
S. 637/Cruise Vessel	797 x 106 x 25	n/a	Celebrity Cruises	95
S. 638/Cruise Vessel	797 x 106 x 25	n/a	Celebrity Cruises	96
S. 639/Cruise Vessel	797 x 106 x 25	n/a	Celebrity Cruises	97
MTW Schiffswerft GmbH				
129 COT 20/Havelstern	502 x 75 x 38	MAN B&W	Rigel Schiffshrts	2/94
381 BW 3000/Tor Bay	676 x 106 x 64	DMR-Sulzer	Conti Reederei	3/94
291 CC 1600/Westerdeich	512 x 88 x 47	DMR-Sulzer	Gebr. Peterson Reederei Horstan	7/94
130 COT 20/Alstenstern	502 x 75 x 38	MAN B&W	Rigel Schiffshrts	10/94
382 BW 3000/ Chesapeake Bay	676 x 106 x 64	DMR-Sulzer	Conti Reederei	10/94
292 CC 1600/Westerhever	512 x 88 x 47	DMR-Sulzer	Gebr. Peterson Reederei Horstan	10/94
293 CC 1600	512 x 88 x 47	DMR-Sulzer	Oskar Wehr KG	11/94
294 CC 1600	512 x 88 x 47	DMR-Sulzer	Oskar Wehr KG	1/95
131 COT 20	502 x 75 x 38	MAN B&W	Petro Lloyd Reederei GmbH	3/95
391 BV 1600	536 x 90 x 47	MAN B&W	Reederei Schapers	3/95
161 PCV	451 x 79 x 43	n/a	China National Machinapex	8/95
141 PT 14	445 x 64 x 35	MaK	China National Machinapex	9/95
162 PCV	451 x 79 x 43	n/a	China National Machinapex	11/95
142 PT 14	445 x 64 x 35	MaK	China National Machinapex	12/95
132 COT 20	502 x 75 x 38	MAN B&W	Petro Lloyd Reederei	12/95
392 BV 1600	536 x 90 x 47	MAN B&W	Reederei Schapers	1/96
NKK Corporation, Japan				
Tsu Works				
Bulk Carrier	853 x 141 x 54	B&W	Rainbrace Navigation	1/94
VLCC	n/a	n/a	n/a	2/94
VLCC	n/a	n/a	n/a	6/94
VLCC	n/a	n/a	n/a	11/94
Bulk Carrier	853 x 141 x 54	B&W	Shows Line Ltd.	11/94
Bulk Carrier	853 x 141 x 54	B&W	Ross Shipping Inc.	3/95
Oil Tanker	866 x 152 x 54	Sulzer	Global Transport	8/95
Tsurumi Works				
RoRo	349 x 59	n/a	Maritime Credit	3/94
Bulk Carrier	525 x 89 x 32	B&W	Gracia Maritime S.A.	3/95
Schichau Seebeckwerft AG, Bremerhaven, Germany				
Contship New Zealand/ Container Ship	538 x 90 x 47	n/a	Conti Zweite Corso Schiffahrts-GmbH	3/94
Contship Singapore/ Container Ship	538 x 90 x 47	n/a	Conti Dritte Corso Schiffahrts GmbH	6/94
Container Ship	538 x 90 x 47	n/a	n/a	12/94
Fast Car/Passenger Ferry	577 x 79 x 29	n/a	Attica Enterprises	3/95
Fast Car/Passenger Ferry	577 x 79 x 29	n/a	Attica Enterprises	5/95
Simek A/S, Flekkefiord, Norway				
Escort Tug	115 x 35 x 19	Wartsila Wichmann	Torksey	7/94
Escort Tug	115 x 35 x 19	Wartsila Wichmann	Torksey Ltd.	9/94
Pelagic Trawler	196 x 39 x 27	Caterpillar	O'Shea Fishing	12/94
Purse Seiner/Trawler	166 x 39 x 26	Wartsila Wichmann	Lunar Fishing	3/95
Singapore Shipbuilding & Engineering Ltd., Singapore				
Container Vessel -950 TEU	459 x 75	MAN B&W	Regional Contain- er Line	4thQ 95
Container Vessel -950 TEU	459 x 75	MAN B&W	Regional Contain- er Line	1stQ 96
Landing/Supply Craft (2)	141 x 32	MTU	Kuwait Coast Guard	7/94
Sterkoder A.S., Kristiansund, Norway				
EK-River	475 x 72 x 62	MaK	Ektank A.B.	2/94
Stocznia Gdynia S.A./Gdynia Shipyard JSC, Poland				
Bulk Carrier	928 x 147 x 83	6RTA76	L. Dreyfus	3/94
Tanker	811 x 136 x 56	6RTA76	Burwain	5/94
Tanker	811 x 136 x 56	6RTA76	Burwain	6/94
Container Vessel	614 x 98 x 55	6RTA72	Coral Steatel Navig.	7/94

Yard-Vessel Name/Type	Dimensions	Engines	Owner	Delivery
Harmony/Container Ship	518 x 89 x 29	B&W	Projex Shiffart	2/94
Needlloyd River Plate/ Container Ship	518 x 89 x 29	B&W	Leonhart Blumberg	5/94
Harmony/Container Ship	518 x 89 x 29	B&W	Projex Shiffart	2/94
Hull #024/Container Ship	433 x 67 x 23	MAN B&W	Sea Breeze Marine	10/94
Hull #019/Container Ship	518 x 89 x 29	MAN B&W	HJSA Intl. S.A.	10/94
Hull #616/Container Ship	518 x 89 x 29	MAN B&W	Projex Shiffart/ Leonhart Blumberg	10/94
Hull #617/Container Ship	518 x 89 x 29	MAN B&W	Projex Shiffart/ Leonhart Blumberg	12/94
Hull #017/Container Ship	909 x 107 x 39	Sulzer	KMJ Intl./LNK Intl.	2/95
Hull #622/Bulk Carrier	518 x 86 x 32	MAN B&W	SKL Intl. S.A.	3/95
Hull #020/Bulk Carrier	594 x 100 x 35	MAN B&W	Kraker Marine Inc./ Doric Maritime	4/95
Hull #02/Bulk Carrier	594 x 100 x 35	MAN B&W	Kraker Marine Inc./ Doric Maritime	6/95
Hull #623/Bulk Carrier	518 x 86 x 32	MAN B&W	SKL Intl. S.A.	7/95
Hull #018/Container Ship	909 x 107 x 39	Sulzer	KMJ Intl./LNK Intl.	8/95
Hull #016/LNG	899 x 155 x 36	Turbine	Albatross Lease	9/95
Hull #624/Bulk Carrier	518 x 86 x 32	MAN B&W	SKL Intl. S.A.	11/95
Hull #022/Crude- Product Oil Carrier	571 x 107 x 36	MAN B&W	The Great Eastern Shipping Co. Ltd.	11/95
Hull #625/Bulk Carrier	518 x 86 x 32	MAN B&W	SKL Intl. S.A.	2/96
Hull #023/Crude- Product Oil Carrier	571 x 107 x 36	MAN B&W	The Great Eastern Shipping Co. Ltd.	3/96
Hitachi Zosen Corp., Japan				
Zhen He/Container	902 x 106 x 70	HZ Sulzer	Cosco	1/94
Christitsa/Bulk Carrier	734 x 106 x 61	HZ B&W	Sumitomo Corp.	1/94
De He/Container	902 x 106 x 70	HZ Sulzer	Cosco	3/94
Ishikawajima-Harima Heavy Industries, Co., Ltd., (IHI) Tokyo				
Nikator/Tanker	864 x 146 x 88	DU-Sulzer	Blue Legend Corp.	2/94
Nedlloyd Hong Kong/ Container Ship	869 x 124 x 76	DU-Sulzer	Nedlloyd Lines B.V.	2/94
Blest Future/Bulk Carrier	561 x 100 x 50	DU-Sulzer	Cosmic Transport	2/94
Takao/Tanker	1,046 x 197 x 94	DU-Sulzer	Eternity Maritime S.A.	3/94
Kvaerner Masa-Yards, Helsinki, Finland				
Turku New Shipyard				
Cable Ship	417 x 72	n/a	Intl. Cablesip	3rdQ94
Crystal Symphony/Cruise Ship	778 x 99	Diesel Electric	NYK Line	95
Cable Ship	467 x 79 x 27	n/a	Cable & Wireless Ltd.	95
LNG Carriers (4)	948 x 158 x 37	n/a	ADNOC	1996-97
Helsinki New Shipyard				
Fascination/Cruise Ship	855 x 118 x 25	Wartsila Sulzer/	Carnival Cruise	2ndQ

Yard-Vessel Name/Type	Dimensions	Engines	Owner	Delivery	Yard-Vessel Name/Type	Dimensions	Engines	Owner	Deliver
Container Vessel	614 x 98 x 55	6RTA72	Altavia GmbH	7/94	Reefer	453 x 71 x 43	n/a	Latreefers Inc.	8/95
Container Vessel	614 x 98 x 55	6RTA72	Highenergy Navig	9/94	RoRo/Passenger	600 x 94 x 50	n/a	Finnlines Group Oy	8/95
Container Vessel	784 x 106 x 63	7RTA84C	Ludwigsburg	9/94	Bulk Carrier	654 x 101 x 56	n/a	East Asiatic Co. Ltd.	9/95
Container Vessel	614 x 98 x 55	6RTA72	Bonavia GmbH	7/94	Bulk Carrier	654 x 101 x 56	n/a	East Asiatic Co. Ltd.	12/95
Container Vessel	784 x 106 x 63	7RTA84C	Ludwigsburg	12/94	Container Vessel	563 x 87 x 47	n/a	Scholler Holdings Ltd.	6/96
Bulk Carrier	928 x 147 x 83	6RTA76	L. Dreyfus	6/95					
Bulk Carrier	928 x 147 x 83	6RTA76	L. Dreyfus	6/96					
Stocznia Gdanska S.A., Gdansk, Poland					Stocznia Polnocna S.A. (Northern Shipyard), Gdansk, Poland				
Container Vessel	673 x 106 x 62	n/a	SCAC Delmas	4/94	Aart Maaskant/Fishing Vessel	139 x 28 x 16	n/a	n/a	1/94
Reefer	493 x 74 x 43	n/a	Dole Fresh Fruit Co.	4/94	Piorun/Missile Boat	161 x 28 x 15	n/a	Polish Navy	2/94
Reefer	493 x 74 x 43	n/a	Dole Fresh Fruit Co.	4/94	Concorde III/Fishing Vessel	139 x 28 x 16	n/a	n/a	2/94
Reefer	493 x 74 x 43	n/a	Dole Fresh Fruit Co.	5/94	Noorderhaaks/Fishing Vessel	145 x 30 x 17	Deutz	n/a	4/94
RoRo/Passenger	600 x 94 x 50	n/a	Finnlines Group Oy	6/94	Container Vessel	397 x 61 x 30	Zgoda-Sulzer	Globe Baltic Inc.	end 94
Reefer	493 x 74 x 43	n/a	Dole Fresh Fruit Co.	10/94	Huragan/Missile Boat	161 x 28 x 15	n/a	Polish Navy	end 94
Reefer	453 x 71 x 43	n/a	Latreefers Inc.	10/94					
RoRo/Passenger	600 x 94 x 50	n/a	Finnlines Group Oy	11/94	Ulstein Industrier AS				
Reefer	453 x 71 x 43	n/a	Latreefers Inc.	1/95	Coastal Steamer	400 x 62	n/a	Troms Fylkes Dampskibsselska	3/96
Reefer	453 x 71 x 43	n/a	Latreefers Inc.	1/95					
RoRo/Passenger	600 x 94 x 50	n/a	Poseidon Schiff. Ohg	1/95	Union Naval De Levante, Valencia, Spain				
Reefer	453 x 71 x 43	n/a	Latreefers Inc.	3/95	Santa Cruz De Tenerife	383 x 68 x 42	MAN B&W	Transmediterranea	1/94
Container Vessel	563 x 87 x 47	n/a	Scholler Holdings Ltd.	3/95					

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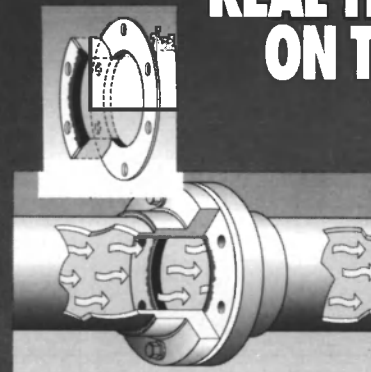
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World Yard Notes

From MR/EN's recent survey of World shipyards, the following is a quick guide to the planned facility improvements and market focuses of several builders.

Boelwerf Vlaanderen

Boelwerf Vlaanderen was established in April 1993 by Gegemann Belgium N.V. and the Flemish regional government holding Gimvindus N.V., taking over the former Boelwerf shipyard, now in bankruptcy. To date, a \$55 million investment program is planned. The yard will focus on building LPG and LNG carriers, chemical tankers, reefer vessels and offshore projects.

Flender Werft

Recently this Lubeck, Germany yard installed a new plasma arc and autogeneous gas cutting machine, as well as a new panel production line.

Hitachi Zosen

Involved in several technology developments, including CAD system (HICADEC), CAM system, model testing, fatigue analysis, finite element analysis and welding robots. Last December, the Ariake Works put into operation a high-speed optical LAN (FDDI: Fiber Distributed Data Interface). With this move, it is creating an integrated system to maximize production efficiency.

This high-speed optical network integrally links CAD/CAM data as well as production control and office work control systems.

NH-HISAW, a high-speed one-side welding system which Hitachi Zosen developed jointly with Nippon Steel Corp and Nippon Steel Welding Production and Engineering Co., has helped increase welding speeds dramatically, reportedly up to 2.5 times faster than traditional processes.

The NH-HISAW system received the 28th Award of Japan Society for the Promotion of Machine Industry (1993), and has displayed its efficient capabilities in the construction of double-hull tankers at the Ariake Works.

Singapore Shipbuilding & Engineering Ltd. (SSE)

SSE's plan for expansion and diversification is right on course with recent completion of its multi-million dollar floating dock, which has a lifting capacity of 17,000 tons. The floating dock took on its first vessel on April 20. With the increased size (it measures 607 ft. (185 m) x 109 ft. (33.2 m)) SSE

will be able to provide a service for handy size vessels.

The floating dock is served by five fixed cranes on the upper deck. A total of four capstans and two mooring winches together with two hauling rails are installed for positioning ships in the dock. With the new floating dock entering service together with its existing syncrolift facility, SSE is positioned to provide a

larger scope vessels of up

Stocznia Polna Shipyard

The shipyard plans to focus on fishing vessels, tugboats, support container vessels (up to 500 TEU), workboats and fast ferries.

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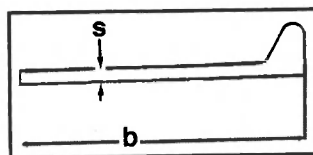
U.S. MARKETING AGENT

Premier Steel Inc.
560 Sylvan Avenue
Englewood Cliffs, N.J. 07632
Tel: 201-894-5200 • Fax: 201-894-5223

FUNDIA NORSK JERNVERK AS

Marketing Department •
FUNDIA NORSK JERNVERK AS
Nydalsveien 15 • P.O. Box 4225 Torshov
N-0401 Oslo, Norway • Tel: +47 22 45 08 20
Fax: +47 22 18 35 69 • Telex 76 068 jverk n

Bulb flats



Dimension, mm			weight		
b	s	kg/m	b	s	kg/m
100	*6	6.0	240	10	25.4
	7	6.8		11	27.4
	8	7.6		12	29.3
120	*6	7.31	260	10	28.3
	7	8.25		11	30.3
	8	9.19		12	32.4
140	7	9.74	280	11	33.5
	8	10.8		12	35.7
	*9	11.8		13	36.7
160	7	11.4	300	11	36.7
	8	12.7		12	39.0
	9	14.0		13	41.5
180	8	14.8	320	12	42.5
	9	16.2		13	45.0
	10	17.6		14	46.1
200	9	18.5	340	12	46.1
	10	20.1		14	51.5
	11.5	22.5		15	54.6
220	10	22.8	370	13	54.6
	11.5	25.4		15	60.5
				16	63.9
			400	14	63.9
				16	70.2
			430	15	73.9
				17	80.6

All weights refer to nominal dimensions and density 7.85 kg/dm³
*Dimensions not included in DIN 1019

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World Yards: All Ships Under Construction At End Of 1st Qtr., 1994

For the quarter ended March 31, 1994, there were 1,131 steamships and motorships with a gross tonnage of 15,694,824 under construction in the world, which is 92,494 gt less than last quarter, according to the Lloyd's Register's Mer-

chant Shipbuilding Return. There are 1,043 ships on order which have not been commenced, representing a total 23,375,947 gt, which is 78,500 gt less than last quarter. More than 87 percent of the world orderbook is scheduled for

delivery by the end of 1995. New orders reported during the quarter amounted to 5.5 million gt. Significant increases to their orderbooks were reported for Ukraine (+25.1%); the Republic of China (Taiwan) (+17.3%); and Poland (+12.7%).

Source: Lloyd's Register, Merchant Shipbuilding Return, March 1994

Country	Oil Tankers		Bulk/Oil Carriers (Inc'l. Ore/Oil)		Ore & Bulk Carriers		General Cargo (2,000 GT +)		Liquefied Gas & Chem. Carriers		All Fishing Types		Misc.		Total	
	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT	No.	GT
Argentina	5	41,976	0	0	0	0	0	0	0	0	7	1,623	1	1,078	13	44,677
Australia	0	0	0	0	0	0	0	0	0	0	2	360	14	8,487	16	8,847
Belgium	0	0	0	0	0	0	2	15,500	2	10,500	0	0	8	26,305	12	52,305
Brazil	8	249,259	0	0	6	187,000	11	134,242	0	0	5	1,109	2	320	32	571,930
Bulgaria	7	45,023	0	0	3	74,597	3	22,917	0	0	0	0	0	0	13	142,537
Chile	0	0	0	0	0	0	0	0	0	0	7	3,910	0	0	7	3,910
*China, People's	4	62,588	0	0	12	390,502	7	63,000	1	2,000	8	2,184	8	12,507	40	532,781
Republic of																
China, Republic	2	151,400	0	0	3	232,200	1	46,700	0	0	0	0	2	712	8	431,012
of (Taiwan)																
Croatia	7	286,607	0	0	2	51,900	2	38,062	3	56,620	0	0	2	49,000	16	482,189
Cuba	0	0	0	0	0	0	0	0	0	0	0	0	1	120	1	120
Denmark	1	160,000	2	91,186	3	113,000	8	72,804	0	0	1	176	0	0	15	437,166
Egypt	1	200	0	0	0	0	7	30,000	0	0	0	0	8	4,180	16	34,380
Fiji	0	0	0	0	0	0	0	0	0	0	0	0	1	3,125	1	3,125
Finland	0	0	0	0	0	0	0	0	2	230,600	0	0	5	204,734	7	435,334
France	0	0	0	0	0	0	0	0	3	315,000	2	265	7	73,948	12	389,213
Germany	1	9,420	0	0	0	0	33	592,975	0	0	14	21,975	12	117,654	60	742,024
Greece	0	0	0	0	0	0	1	9,000	0	0	3	420	3	7,350	7	16,770
India	0	0	0	0	2	60,000	2	4,400	0	0	21	2,678	23	29,929	48	97,007
Indonesia	6	14,100	0	0	0	0	6	27,500	0	0	0	0	2	3,650	14	45,250
Iran	0	0	0	0	0	0	0	0	0	0	2	240	11	9,161	13	9,401
Italy	10	270,600	0	0	0	0	3	64,500	11	203,480	10	3,070	9	217,291	43	758,941
Japan	35	1,135,069	0	0	68	2,444,631	38	794,871	22	696,696	8	2,049	64	326,407	235	5,399,723
Korea (South)	12	986,120	0	0	12	462,900	16	371,025	6	317,306	1	220	3	140,000	50	2,277,571
Malaysia	7	21,927	0	0	0	0	0	0	1	4,100	1	1,500	3	607	12	28,134
Malta	1	5,000	0	0	0	0	2	12,790	0	0	0	0	4	3,600	7	21,390
Mexico	0	0	0	0	0	0	2	7,998	0	0	1	191	0	0	3	8,189
Netherlands	0	0	0	0	0	0	16	96,879	0	0	7	17,056	16	32,918	39	146,853
Norway	0	0	0	0	1	10,000	4	32,275	1	22,400	2	1,600	9	31,347	17	97,622
Pakistan	1	150	0	0	0	0	1	8,200	0	0	0	0	0	0	2	8,350
Peru	0	0	0	0	0	0	0	0	0	0	31	14,990	0	0	31	14,990
Philippines	0	0	0	0	0	0	0	0	1	546	0	0	0	0	1	546
Poland	2	107,660	0	0	0	0	18	301,209	0	0	16	19,963	28	64,692	64	493,524
Portugal	2	1,460	0	0	0	0	2	7,612	0	0	17	2,773	2	536	23	12,381
Romania	11	288,621	0	0	8	413,572	34	214,179	3	24,870	9	1,856	9	14,055	74	957,153
*Russia	2	42,106	0	0	0	0	12	72,272	0	0	0	0	7	17,580	21	131,958
Singapore	17	77,392	0	0	0	0	0	0	2	7,000	1	183	10	3,494	30	88,069
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	1	1,600	1	1,600
Spain	4	153,914	0	0	0	0	5	115,550	0	0	21	27,186	9	9,252	39	305,902
Sweden	0	0	0	0	0	0	0	0	0	0	0	0	1	128	1	128
Turkey	4	1,110	0	0	2	84,000	11	62,900	0	0	0	0	7	11,899	24	159,909
*Ukraine	0	0	0	0	0	0	0	0	0	0	1	4,407	0	0	1	4,407
United Kingdom	2	82,260	0	0	1	82,701	0	0	2	46,000	0	0	9	6,042	14	217,003
United States	0	0	0	0	0	0	0	0	1	14,000	10	1,212	25	21,291	36	36,503
Yugoslavia	0	0	0	0	5	22,500	7	21,500	0	0	0	0	0	0	12	44,000

* Information incomplete

TOTAL 152 4,193,962 2 91,186 128 4,629,503 254 3,240,860 61 1,951,118 208 133,196 326 1,454,999

Total Vessels In World Order Book: 1,131 Total GT In World Order Book: 15,694,824

BOATS AND BARGES

Trinity Acquires Rights To St. Louis Ship Towboat Designs



Pictured is the M/V *Karen J*, a 170-foot by 45-foot towboat operated by Mid-South Towing Co., typical of the many designs of St. Louis Ship which have been acquired by the Trinity Marine Group.

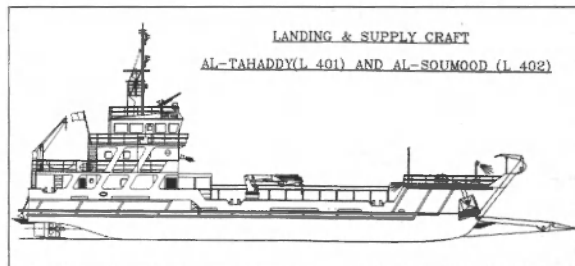
The Trinity Marine Group has acquired exclusive rights to the towboat designs of the former St. Louis Ship Division of Pott Industries, Inc. The designs range from 50 feet (15 m) to 200

feet (61 m), with horsepower ratings from 500 to 10,000 hp. The vessels are used for a variety of purposes, from towing or pushing barges of all types to fleetings, bunkering and other uses.

From its beginning in 1933 to its closure in 1988, St. Louis Ship designed and built 314 towboats. One of its most popular designs is the twin screw, 170-foot (52-m) by 45-foot (14-m) by 11-foot (3.3-m) towboat. The company ceased operations in 1985, when the supply of towboats exceeded the demand. **John Dane III**, president of the Trinity Marine Group, says the situation is changing as many existing vessels have now reached or are approaching the end of their service lives. Mr. **Dane** says new improvements in more efficient engines, deck equipment, electronics and underwater gear can be incorporated into the St. Louis designs.

Mr. **Dane** says the addition of the St. Louis Ship designs to current Trinity designs complements the boat/barge packages Trinity can offer to barge and towing operators. Trinity owns and operates 14 shipyards, six of which are dedicated to barge building, and seven others can build towboats as well as barges.

SSE Launches Two Landing And Supply Craft For Kuwait



Landing and supply craft *Al Tahaddy* (L 401) and *Al Soumood* (L402).

Singapore Shipbuilding and Engineering Ltd. (SSE) launched two 141-foot (43-m) landing and supply craft for the Kuwait Coast Guard, Ministry of Interior. The vessels will be named *Al Tahaddy* (L 401) and *Al Soumood* (L 402). They are expected to be delivered in July 1994. The vessels have a molded breadth of 33 feet (10 m) and a draft of five feet (1.5 m). The vessels are each driven by two MTU high speed diesel engines and are capable of achieving speeds in excess of 13 knots. The design features a bow-ramp forward for Ro/Ro capabilities for vehicles up to 80 tons. The \$10 million contract for the design and construction of the vessels also includes the provision of integrated logistics support, such as spares support, technical and operation training.

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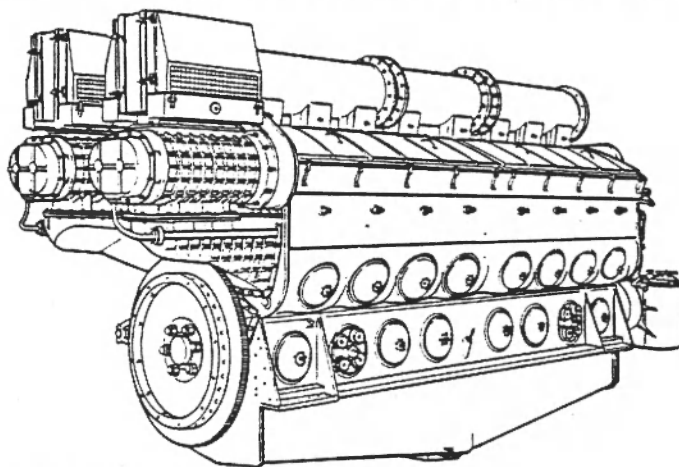
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U.S. Parent Company Foreign Flag Ships

Source: Maritime Administration

PARENT COMPANY Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built	PARENT COMPANY Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built
ALCOA STEAMSHIP CO. INC.						Chevron Transport Corp.					
<i>Lib-Ore SS Co. Inc.</i>						Alden W. Clausen					
	Marlin	Ore/Bulk/Oil	9,792/15,183	Lib.	'77		Carla A. Hills	Tanker	23,709/35,587	Lib.	'81
	Pathfinder II	Bulk Carrier	34,353/47,560	Lib.	'81		Charles B. Renfrew	Tanker	23,709/35,596	Lib.	'81
	Prospector II	Bulk Carrier	34,353/47,535	Lib.	'82		Chevron Antwerp	Tanker	44,840/78,656	Bah.	'88
	Sentinel II	Bulk Carrier	34,353/47,503	Lib.	'82		Chevron Horizon	Tanker	122,627/276,798	Bah.	'75
	Tarpon	Ore/Bulk/Oil	9,794/15,163	Lib.	'77		Chevron Meteor	Tanker	60,491/123,965	Lib.	'74
AMERADA HESS CORP.							Chevron Pacific	Tanker	60,886/140,044	Lib.	'77
<i>Seal Island Shipping Corp.</i>							Chevron Perth	Tanker	23,709/35,950	Lib.	'83
	Seal Island	Tanker	123,009/259,042	Lib.	'73		Chevron Sky	Tanker	122,627/276,840	Bah.	'75
<i>Serpentsea Corp.</i>							Chevron Star	Tanker	77,588/154,934	Lib.	'76
	Mt. Cabrite	Tanker	122,960/259,447	Lib.	'71		Chevron Sun	Tanker	76,547/156,313	Lib.	'77
<i>Swansea Corp.</i>							David Packard	Tanker	76,547/156,299	Lib.	'77
	Saint Lucia	Tanker	122,960/259,447	Lib.	'72		Geo. H. Weyerhaeuser	Tanker	196,334/413,119	Lib.	'77
AMOCO CORPORATION							J. Dennis Bonney	Tanker	23,709/35,597	Bah.	'81
<i>Amoco Congo Exploration Co.</i>							James N. Sullivan	Tanker	88,946/147,631	Lib.	'91
	Conkouati	Tanker	88,439/232,112	Lib.	'73		John Young	Tanker	81,500/134,119	Lib.	'92
<i>Amoco Ocean Tanker Co.</i>							Kenneth E. Hill	Tanker	88,946/155,548	Lib.	'90
	Ocean Challenger	Tanker	24,584/39,729	Lib.	'87		R. Hal Dean	Tanker	43,428/81,274	Bah.	'79
	Ocean Conqueror	Tanker	24,584/39,729	Lib.	'87		Samuel H. Armacost	Tanker	44,840/78,656	Bah.	'88
	Ocean Explorer	Tanker	49,279/81,274	Lib.	'88		William E. Mussman	Tanker	23,709/35,608	Bah.	'82
	Ocean Leader	Tanker	49,279/81,274	Lib.	'89				43,428/81,274	Lib.	'79
	Ocean Navigator	Tanker	49,279/81,274	Lib.	'88	Chevron International Ltd.					
	Ocean Victor	Tanker	50,169/81,283	Lib.	'81		Chevron Zenith	Tanker	48,645/96,712	Lib.	'72
<i>Amoco Transport Co.</i>						CHIQUITA BRANDS INTERNATIONAL					
	Ocean Voyager	Tanker	35,315/71,204	Lib.	'73	<i>GPH Ltd.</i>					
	Whiting Sea	Tanker	76,472/132,500	Lib.	'75		Edyth L.	Container	19,595/12,900	Bah.	'90
BANKERS TRUST OF CALIFORNIA N.A.							Frances L.	Container	19,595/12,900	Bah.	'91
	C.W. Kitto	Tanker	118,218/268,348	Lib.	'74	CKQ Ltd.					
	Charles Pigott	Tanker	118,221/268,375	Lib.	'73		Chiquita King	Reefer	8,041/10,598	Bah.	'80
	Chevron Copenhagen	Tanker	118,179/268,240	Lib.	'74		Chiquita Queen	Reefer	8,041/10,600	Bah.	'80
	Chevron Feluy	Tanker	118,197/268,432	Lib.	'73	<i>Diffko LXXIV K/S</i>					
	Chevron Nagasaki	Tanker	118,147/268,244	Lib.	'74		Chiquita Belgie	Reefer	13,049/13,100	Bah.	'80
	Kenneth T. Derr	Tanker	23,709/35,588	Bah.	'82		Chiquita Deutschland	Reefer	13,049/13,100	Bah.	'91
CSX CORPORATION						<i>Diffko LXXV K/S</i>					
<i>Intersea Operation Inc. (Bahamas)</i>							Chiquita Nederland	Reefer	13,049/13,100	Bah.	'91
	Sea Adventure	Container	17,618/15,417	Bah.	'63	<i>Enterprises Shipping & Trading SA</i>					
	Sea Leader	Container	17,618/15,417	Bah.	'62		Magnolia	Reefer	6,513/5,911	Bah.	'72
	Sea Pioneer	Container	17,618/15,417	Bah.	'62		Margarita	Reefer	6,513/5,818	Bah.	'73
<i>Marine RO-RO Feedships Corp.</i>							Mimoza	Reefer	6,513/6,127	Bah.	'72
	Sea Lark	Container	8,654/12,085	Lib.	'84		Myrtia	Reefer	6,513/6,118	Bah.	'73
	Sea Link	Container	8,654/12,083	Lib.	'83	<i>Surrey Shipping Co. Ltd.</i>					
<i>Sandy Steamship Co. SA</i>							Chiquita Milano	Reefer	8,254/9,398	Bah.	'83
	Santa Paula	Container	8,635/12,066	Pan.	'83		Chiquita Roma	Reefer	8,245/9,399	Bah.	'83
<i>Shelly Bay Ltd.</i>						<i>Telegraph Shipping Co. Ltd.</i>					
	Shelly Bay	Container	8,635/12,067	Pan.	'83		Cariban	Reefer	5,321/6,371	Bah.	'83
<i>World Feedship Inc.</i>							Chiquita Cincinnati	Reefer	6,117/6,413	Bah.	'84
	Sea Legend	Container	10,381/13,101	Sin.	'78	COASTAL CORPORATION					
	Sea Lotus	Container	10,382/13,101	Sin.	'78		Coastal Golden	Bulk/Oil	78,164/129,017	Lib.	'83
	World Lynx	Container	10,385/13,562	Lib.	'79		Nordic Apollo	Bulk/Oil	78,164/129,017	Lib.	'83
CALTEX PETROLEUM CORPORATION						COMEICA LEASING CORP.					
<i>Caltex Tanker Co. (Australia) Pty. Ltd.</i>							Rio Sulaco	Reefer	6,417/5,656	Bah.	'78
	Australia Sky	Tanker	21,718/33,239	Aus.	'89	CONOCO INC.					
<i>Hal Investments (Australia)</i>						<i>A.T. Sentinel Inc.</i>					
	Australia Star	Tanker	54,656/94,783	Aus.	'86		Sentinel	Tanker	60,339/106,722	Lib.	'86
CASTLE AND COOKE INC.						<i>Conoco Shipping Co.</i>					
<i>Dole Fresh Fruit Int'l. Ltd.</i>							Constitution	Tanker	43,850/81,131	Lib.	'78
	Limon	Reefer	6,709/7,244	Lib.	'68	EQUILI COMPANY AND EQUITABLE LIFE					
	Tropical Queen	Reefer	4,662/5,270	Lib.	'68		Kentucky	Tanker	42,175/79,996	Pan.	'80
	Tropical Sun	Reefer	4,662/5,354	Lib.	'68	EQUILI COMPANY II					
<i>OCP (Atlantic) Ltd.</i>						<i>U.S. Trust Co. of N.Y. (Trustee)</i>					
	Tropical Estoril	Reefer	6,882/9,735	Lib.	'74		West Virginia	Tanker	42,175/81,279	Pan.	'81
	Tropical Sintra	Reefer	6,881/9,736	Lib.	'74	EXXON CORPORATION					
<i>Tropical Shipping Italiana SPA</i>						<i>Esso Int'l. Shipping (Bah.) Co. Ltd.</i>					
	Dole California	Container	16,488/11,613	Lib.	'89		Esso Africa	Tanker	133,969/274,467	Bah.	'75
	Dole Costa Rica	Container	16,500/11,800	Ita.	'91		Esso Albany	Tanker	12,806/22,678	Lib.	'73
	Dole Ecuador	Container	16,488/11,613	Lib.	'89		Esso Bahamas	Tanker	123,126/256,715	Bah.	'74
CHEMICAL TRUST CO. OF CAL.							Esso Bangkok	Tanker	12,994/21,414	Lib.	'68
	Georgia S.	Bulk Carrier	15,462/30,187	Pan.	'81		Esso Bayway	Tanker	31,677/50,915	Bah.	'78
CHEVRON CORPORATION							Esso Bermuda	Tanker	123,126/256,715	Bah.	'74
<i>Chevron Tankers (Bermuda) Ltd.</i>							Esso Demetia	Tanker	123,375/258,979	Bri.	'73
	Chevron Edinburgh	Tanker	118,179/268,336	Bri.	'74		Esso Freeport	Tanker	122,967/256,712	Bah.	'74
	Chevron No. America	Tanker	207,987/412,616	Bri.	'76		Esso Geneva	Tanker	149,608/307,235	Bah.	'75
	Chevron So. America	Tanker	207,987/413,163	Bri.	'76		Esso Guatemala	Tanker	17,218/29,634	Lib.	'73
							Esso Hawaii	Tanker	139,150/283,276	Bah.	'75
							Esso Honolulu	Tanker	139,150/283,399	Bah.	'74

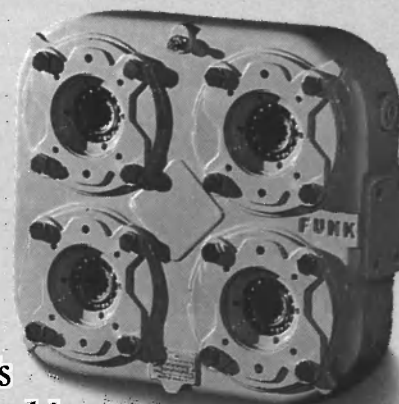
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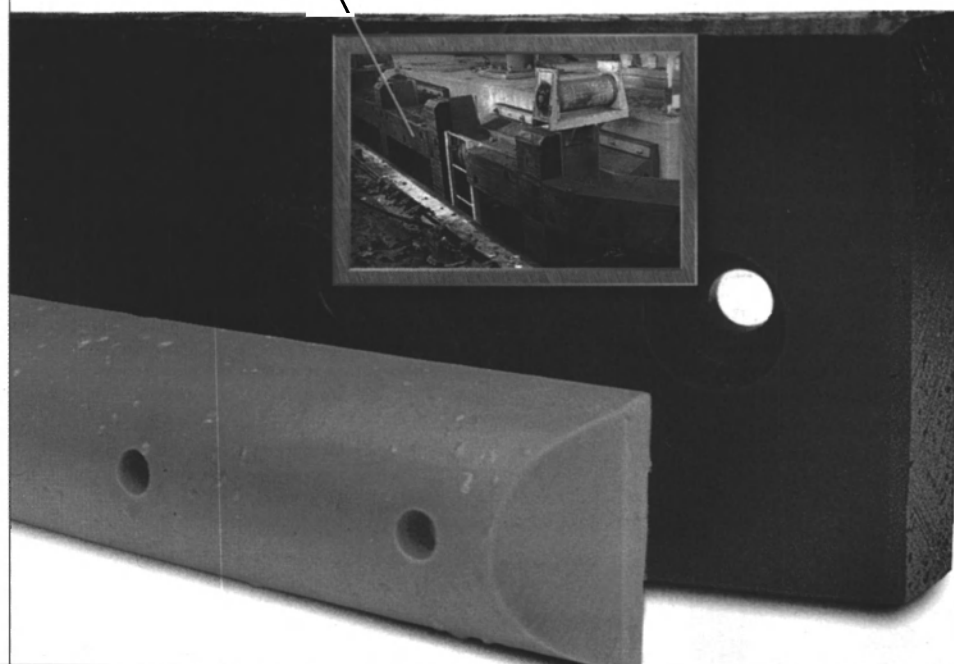
Direct Owner	Name of Ship	Class	GT/DWT	Flag	Built	Direct Owner	Name of Ship	Class	GT/DWT	Flag	Built
NEW CONNECTICUT BANK & TRUST CO.						Anglomar Shipping Co. Ltd.					
	Europe	Tanker	122,395/276,050	Lib.	'75		Tropical Lion	Tanker	122,376/256,387	Lib.	'72
	Independence	Tanker	117,646/274,774	Lib.	'76	Ania Tanker Corp.			78,244/135,134	Lib.	'89

U.S. Parent Company Foreign Flag Ships

PARENT COMPANY					PARENT COMPANY				
Direct Owner	Name of Ship	Class	GT/DWT	Flag	Direct Owner	Name of Ship	Class	GT/DWT	Flag
MARINE TRANSPORT LINES INC.									
Oswego Chemical Carriers Corp.					Mobil Oil Singapore Pvt. Ltd.	D'Artagnan	Tanker	134,478/275,225	Fra.
Amalina	LPG Tanker	9,954/10,750	Lib.	'64	Mobil Singapura		Tanker	1,998/3,523	Sin.
M.P. Grace	LPG Tanker	13,483/15,414	Lib.	'67	Mobil Overseas Shipping (Bermuda)				
Savonetta	LPG Tanker	9,942/10,744	Lib.	'64	Alcides	Tanker	72,540/136,304	Bri.	'71
MARINE TRANSPORT LINES INC./PENINSULAR & ORIENTAL STEAMSHIP NAVIGATION					Harrier	Tanker	144,209/271,709	U.K.	'75
Rowbotham Tankships Ltd.					Mobile Petrel	Tanker	139,092/280,428	Bri.	'73
Astraman	Chem. Tanker	1,597/3,202	Isl.	'73	Mobil Shipping & Transport Co.				
Bridaeman	Tanker	3,701/6,210	Isl.	'72	Astral	Tanker	60,946/127,505	Lib.	'75
Cableman	Tanker	4,916/8,496	Isl.	'80	Conastoga	Tanker	17,506/29,931	Lib.	'72
Eastgate	Tanker	1,599/3,415	Isl.	'79	Corsicana	Tanker	17,505/29,931	Lib.	'73
Echoman	Chem. Tanker	3,759/6,125	Isl.	'82	Mobil Aladdin	Tanker	68,502/140,803	Lib.	'74
Guidesman	Tanker	1,421/2,162	Isl.	'80	Mobil Flinders	Tanker	93,940/149,235	Aus.	'82
Helmman	Tanker	3,705/6,165	Isl.	'72	Mobil Swift	Tanker	119,969/272,494	Lib.	'73
Northgate	Tanker	1,599/3,290	Isl.	'80	Osprey	Tanker	104,362/227,756	Lib.	'71
Oarsman	Tanker	1,550/2,547	U.K.	'80	Royal Arrow	Tanker	22,587/39,776	Lib.	'83
Orionman	Tanker	3,623/6,176	Isl.	'75	Sachem	Tanker	18,258/31,102	Lib.	'74
Polarisman	Chem. Tanker	1,597/3,202	Isl.	'73	Sacona	Tanker	19,580/38,481	Lib.	'81
River Shannon	Tanker	1,567/2,979	Isl.	'70	Samoset	Tanker	19,580/38,529	Lib.	'82
Tankerman	Tanker	5,881/10,716	Isl.	'83	Satucket	Tanker	16,861/30,397	Lib.	'71
Tillerman	Tanker	7,308/12,800	Isl.	'75	Saucon	Tanker	19,580/38,452	Lib.	'83
Westgate	Tanker	1,599/3,368	Isl.	'79	Saudi Glory	Tanker	122,297/275,199	Lib.	'74
Wheelsman	Tanker	2,897/4,648	Isl.	'67	Saudi Splendour	Tanker	125,394/280,511	Lib.	'75
MARU SHIPPING CO. INC.					Sequoia	Tanker	18,843/32,590	Lib.	'73
Billie Fay	Bulk Carrier	17,959/30,853	Lib.	'77	Shabonee	Tanker	18,258/31,102	Lib.	'74
MOBIL OIL CORPORATION					Sylvan Arrow	Tanker	22,587/39,371	Lib.	'83
Matco Tankers (U.K.) Ltd.					Wabasha	Tanker	50,222/81,278	Lib.	'75
Matco Clyde	Tanker	54,172/81,944	U.K.	'82	Waneta	Tanker	41,135/81,282	Lib.	'82
Mobil Oil Australia Ltd.					Wapello	Tanker	41,135/81,283	Lib.	'82
Mawsan	Tanker	15,579/24,489	Aus.	'72	Mobil Shipping Co. Ltd.				
Tasman	Tanker	20,662/35,367	Aus.	'90	Lubchem	Chem. Tanker	2,080/3,310	U.K.	'73
Mobil Oil Francaise					Matco Avon	Tanker	43,622/77,696	U.K.	'64
Athos	Tanker	134,478/276,221	Fra.	'74	Matco Thames	Tanker	51,472/88,215	U.K.	'76
					MORTON INTERNATIONAL INC.				
					Inagua Transports Inc.				
					Cecile Erickson	Salt Carrier	3,300/5,588	StV.	'57

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U.S. Parent Company Foreign Flag Ships

PARENT COMPANY					PARENT COMPANY				
Direct Owner	Name of Ship	Class	GT/DWT	Flag	Direct Owner	Name of Ship	Class	GT/DWT	Flag

U.S. Parent Company Foreign Flag Ships

PARENT COMPANY						PARENT COMPANY					
Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built	Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built
NEW CONNECTICUT BANK & TRUST CO.						<i>Anglomar Shipping Co. Ltd.</i>					
	Europe	Tanker	122,395/276,050	Lib.	'75		Tropical Lion	Tanker	122,376/256,387	Lib.	'72
	Independence	Tanker	117,646/274,774	Lib.	'76	<i>Ania Tanker Corp.</i>					
NICOR INC.							Ania	Tanker	78,244/135,134	Lib.	'89
<i>Birdsall Shipping S.A.</i>						<i>Atlantia Tanker Corp.</i>					
	Tropic Jade	Ro-Ro	1,813/2,536	StV.	'78		Atlantia	Tanker	42,155/96,920	Lib.	'79
	Tropic Key	Ro-Ro	1,786/2,530	StV.	'80	<i>Canopus Tankers Inc.</i>					
	Tropic Lure	Ro-Ro	1,795/2,563	StV.	'83		Canopus	Tanker	18,402/31,309	Lib.	'81
	Tropic Mist	Ro-Ro	1,795/2,563	StV.	'83	<i>Chrimmir Shipping Corp.</i>					
<i>Tropical Shipping & Constr. Co. Ltd.</i>							Chrimmir	Bulk Carrier	31,243/62,185	Lib.	'80
	Tropic Palm	Ro-Ro	2,944/4,734	StV.	'78	<i>Colombia Tanker Corp.</i>					
	Tropic Quest	Ro-Ro	7,948/9,989	StV.	'83		Columbia	Tanker	144,139/258,076	Lib.	'89
	Tropic Reign	Ro-Ro	7,947/9,793	StV.	'84	<i>Commonwealth Shipping Co. Ltd.</i>					
OCCIDENTAL CHEMICAL CORP. & D.S. VENTURES							Ulla	Bulk Carrier	17,228/29,399	Bri.	'85
<i>Oxychem Shipping Ltd.</i>						<i>Concord Tanker SA</i>					
	Armand Hammer	Chem. Tanker	32,194/59,806	Mal.	'67		Concordia C.	Tanker	61,111/132,594	Pan.	'76
OMI CORPORATION						<i>Conti-OSG Associates III</i>					
<i>Ebro Transport Inc.</i>							Continental Reliance	Ore Carrier	30,151/65,224	Net.	'83
	Ebro	Ore/Bulk/Oil	43,444/71,882	Lib.	'78	<i>Conti-OSG Associates IV</i>					
<i>Nile Transport Inc.</i>							Continental Spirit	Ore Carrier	35,603/65,224	Net.	'83
	Nile	Tanker	33,932/65,689	Lib.	'81	<i>Delphina Tanker Corp.</i>					
<i>Sokolica Transport Inc.</i>							Delphina	Tanker	22,972/39,674	Lib.	'89
	Sokolica	Tanker	76,883/133,300	Lib.	'75	<i>Diane Tanker Corp.</i>					
<i>Tagus Transport Inc.</i>							Diane	Tanker	38,241/64,140	Lib.	'87
	General	LPG Tanker	42,461/49,882	Lib.	'75	<i>Edinburgh Bulk Carriers Inc.</i>					
<i>Thames Transport Inc.</i>							Endeavor	Bulk Carrier	64,552/122,933	Bri.	'75
	Ocean Spirit	Tanker	39,534/61,391	Lib.	'82	<i>Enterprise Shipping Co. Ltd.</i>					
<i>Volga Transport Inc.</i>							Enterprise	Bulk Carrier	64,741/117,955	Bri.	'73
	Volga	Tanker	33,932/59,998	Lib.	'81	<i>Excelsior Bulk Carriers Ltd.</i>					
OVERSEAS SHIPHOLDING GROUP INC.							Excelsior	Bulk/Ore	64,141/122,200	Bri.	'90
<i>Amity Products Carriers Inc.</i>						<i>Exemplar Bulk Carrier Ltd.</i>					
	Julie N.	Tanker	18,965/29,994	Lib.	'82		Exemplar	Bulk/Ore	64,141/122,760	Bri.	'90
						<i>First Aframax Tanker Corp.</i>					
							Beryl	Tanker	52,518/84,406	Lib.	'86
						<i>First Pacific Corp. and Second Pacific Corp.</i>					
							Pacific Hunter	Tanker	18,736/32,109	Lib.	'79

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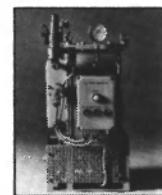
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U.S. Parent Company Foreign Flag Ships

PARENT COMPANY Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built	PARENT COMPANY Direct Owner	Name of Ship	Class	GT/DWT	Flag	Year Built
First Product Tankers, Inc.	Lucy	Tanker	36,512/64,000	Lib.	'86	SECURITY PACIFIC NATIONAL BANK (Trustee)	Chevron Burnaby	Tanker	122,627/276,778	Lib.	'75
First Shipco Inc.	Continental Friendship	Bulk Carrier	33,200/61,270	Lib.	'77	TANKSHIP TRANSPORT LTD.	Empress Partners Ltd.				
First United Shipping Corp.	Western Lion	Tanker	130,539/269,117	Lib.	'74	Sea Empress	Tanker	211,359/423,700	Bah.	'76	
Fourth Products Tankers, Inc.	Neptune	Tanker	22,946/39,171	Lib.	'89	TEXACO INC.					
Glasgow Bulk Carriers Co. Ltd.	Trudy	Bulk Carrier	17,228/29,432	Bri.	'85	Texaco Panama Inc.	Star Houston	Tanker	66,816/136,100	Lib.	'75
ITI Shipping S.A.	Ruth M	Tanker	60,815/130,257	Pan.	'75	Star Kansas	Tanker	65,407/124,897	Bah.	'76	
Intercnt'l. Coal Transport Ltd.	Equinox	Ore Carrier	76,449/138,820	Bri.	'82	Star Louisiana	Tanker	65,407/114,001	Bah.	'75	
Interocean Tankers Corp.	Southern Lion	Tanker	126,850/269,085	Lib.	'75	Star South America	Tanker	130,959/268,535	Lib.	'76	
Island Tanker S.A.	Shirley	Tanker	60,815/130,286	Pan.	'75	Star Tulsa	Tanker	67,244/131,350	Lib.	'71	
Jostelle Shipping Co. Ltd.	Jostelle	Bulk Carrier	63,863/122,970	Bri.	'75	Refineria Panama S.A.	Taboga	Tanker	2,978/6,868	Pan.	'71
Loire Carbulk Carriers Inc.	Argus Traveler	Bulk Carrier	20,515/33,013	Lib.	'75	Texaco Overseas Tankship Ltd.	Star Westminister	Tanker	49,809/79,999	U.K.	'81
Mansfield Marine Corp.	Meridian Sky	Bulk Carrier	36,042/64,293	Lib.	'89	Star Windsor	Tanker	49,809/79,997	U.K.	'80	
Marina Tanker Corp.	Mary Ann	Tanker	38,241/64,239	Lib.	'86	TEXACO COMMERCE BANK N.A. (Trustee)	Star Japan	Tanker	129,973/263,516	Lib.	'75
Matilde Tanker Corp.	Matilde	Tanker	78,344/135,134	Lib.	'89	USG CORPORATION					
Northanger Shipping Corp.	Caribbean Sky	Bulk Carrier	36,042/64,282	Lib.	'89	Gypsum Transportation Ltd.	A.V. Kastner	Bulk Carrier	12,702/18,699	Ber.	'87
Oleron Tanker S.A.	Vesta	Tanker	42,048/81,278	Pan.	'80	Gypsum Baron	Bulk Carrier	12,839/18,314	Ber.	'76	
Olympia Tanker Corp.	Olympia	Tanker	144,139/258,076	Lib.	'90	Gypsum King	Bulk Carrier	12,839/18,314	Ber.	'75	
Overseas Coal Transport Ltd.	Esplanade	Ore Carrier	76,449/138,787	Bri.	'82	WILMINGTON TRUST CO.	Brooklyn	Tanker	103,9813/229,727	Mis.	'73
Pluto Tankers Inc.	Pluto	Tanker	18,402/31,303	Lib.	'81						
Saturn Bulk Carriers Inc.	Saturn	Bulk Carrier	31,243/62,212	Lib.	'80						
Second Aframax Tanker Corp.	Eliane	Tanker	52,524/84,323	Lib.	'87						
Second Products Tankers Inc.	Suzanne	Tanker	36,512/65,000	Lib.	'86						
Second United Shipping Corp.	Northern Lion	Tanker	126,851/269,077	Lib.	'74						
Third Products Tankers Inc.	Uranus	Tanker	22,946/39,451	Lib.	'88						
Third United Shipping Corp.	Eastern Lion	Tanker	126,796/269,164	Lib.	'73						
Tiber Carbulk Carriers Inc.	Argus Explorer	Bulk Carrier	20,513/33,046	Lib.	'75						
Timor Navigation Ltd.	Northern Light	Bulk Carrier	31,007/65,592	Lib.	'81						
Trader Shipping Corp.	Esperanza	Ore Carrier	31,814/66,136	Lib.	'73						
Vega Tanker Corp.	Vega	Tanker	22,972/39,710	Lib.	'89						
Venus Tanker Corp.	Venus V	Tanker	42,048/97,531	Lib.	'81						

Bender Shipbuilding Delivers Fire Boat To Port Of New Orleans

Bender Shipbuilding & Repair Co., Inc. delivered a multi-purpose fire boat for the Port of New Orleans. Designed by Bender engineers and built at the company's Mobile shipyard, the 95-foot (29-m) by 26-foot (8-m) *Gen. Roy S. Kelley* is equipped to perform a wide variety of functions including fire fighting, policing the harbor, search and rescue and harbor tours. The *Gen. Kelley* has a fire-monitor control system that allows the fire boss to direct eight fire monitors from within the pilothouse.

The *Gen. Kelley* and its fire fighting equipment are driven by two pair of Detroit Diesel 12V-92TA engines. The first pair drives the boat's main propulsion system. The



second pair of engines drives two three-stage waterjet pumps. The waterjets help propel the boat to speeds of more than 20 knots.

Gen. Roy S. Kelley Equipment List

Main engines	Detroit Diesel
Marine gear	ZF Industries
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Waterjet engines	Detroit Diesel
Waterjet pumps	North American Marine Jet
Generators	Detroit Diesel
Crane	Morgan Crane

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Maritime Reporter/Engineering News

Elliott Bay Design Group Completes Plans For First 20-Foot RIB

Elliott Bay Design Group of Seattle has completed a design, engineering and lofting project for the company's first aluminum rigid-hull inflatable boat (RIB) built by Twin Dolphin Distributors of Half Moon Bay, Calif.

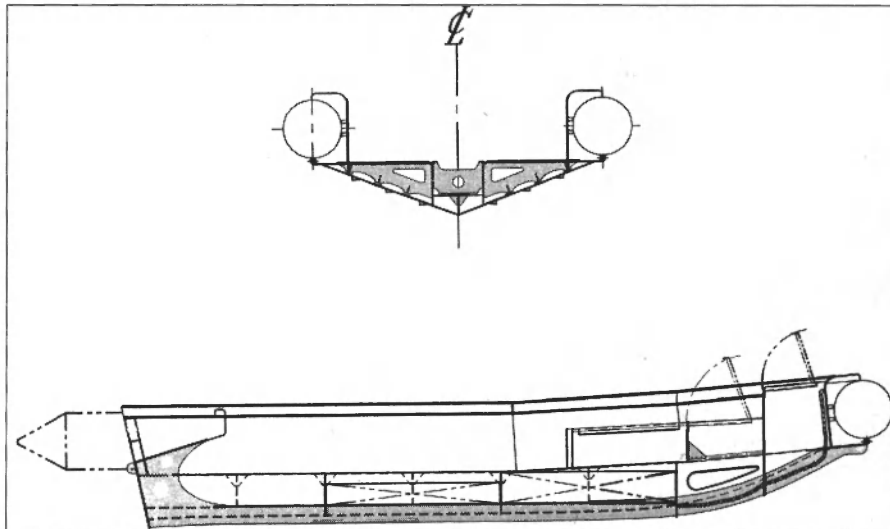
The 20-foot (6-m) boat, originally constructed in fiberglass, features a deep cockpit, a built-in water ballast tunnel and a patented deck design that extends up over the inflated tube. The boat is designed to be fully operational even when its tube is removed, and the extended deck reportedly makes operations such as personnel transfer easier and safer.

With the move to aluminum fabrication, Twin Dolphin wanted to produce an even tougher version for the workboat market, while retaining its reputation for speed and sta-

bility. They also wanted the lofting to provide a "kit" approach for efficient volume production.

"Elliott Bay's design incorporates numerous features to improve the manufacturing process," said Twin Dolphin President **Rodney Robertson**.

Although the scale was much smaller than the tankers, ferryboats, and other commercial vessels Elliott Bay routinely works on, the same CAD and NC cutting techniques were applied to the Twin Dolphin boat, according to project engineer **Eric Jolley**. "We wound up with a plan that calls for 75 pieces that will be pre-cut and formed for the builder, ranging from an 18-foot (5.5-m) by four-foot (1.2-m) shell plate piece to a 6-inch (15-cm) by 3-inch (7-cm) bracket. All major parts are tabbed and slotted for easy fit-up and accu-



The 20-foot (6-m) rigid-hull inflatable boat (RIB) designed, engineered and lofted by Elliott Bay Design Group.

rate assembly."

Enhancing the "fit and finish" aspect of the project, the Elliott Bay design calls for the use of 3M's VHB tape system to attach stiffeners to the shell plate. Replacing a good deal of welding, the flexible VHB

system provides ease of assembly due to lack of welding distortion and reduced metal fatigue.

For more information on Elliott Bay Design Group,

Circle 1 on Reader Service Card

Raytheon, Software Co. Win Technology Contract

Raytheon Co. and Compact Software have been awarded an approximately \$4 million contract to develop a computer-based system to aid in the design of high frequency

vacuum power tubes in specialized areas including antenna design and computational electromagnetics.

The contract is the second phase of a joint Army, Navy and Air Force microwave and millimeter-wave advanced computational environment program (MMACE)—the first phase of which was the implemen-

tation of a prototype system now in use in the power tube industry.

The goal of MMACE is to combine existing high-frequency power tube design software into a single environment employing standardized modeling, simulation, communications and data processing practices and techniques.

The work will be performed at Raytheon's Missile Systems Division Laboratories.

Other organizations participating in MMACE are NASA, the National Institute of Standards and Technology, Hughes Aircraft Corp., ITT, Litton Industries, and Teledyne Corp.

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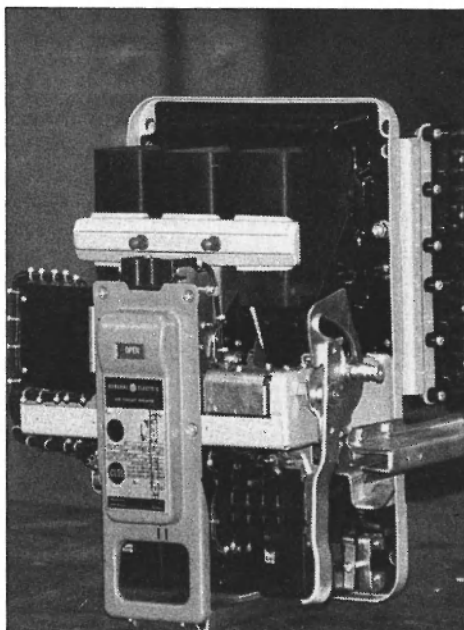
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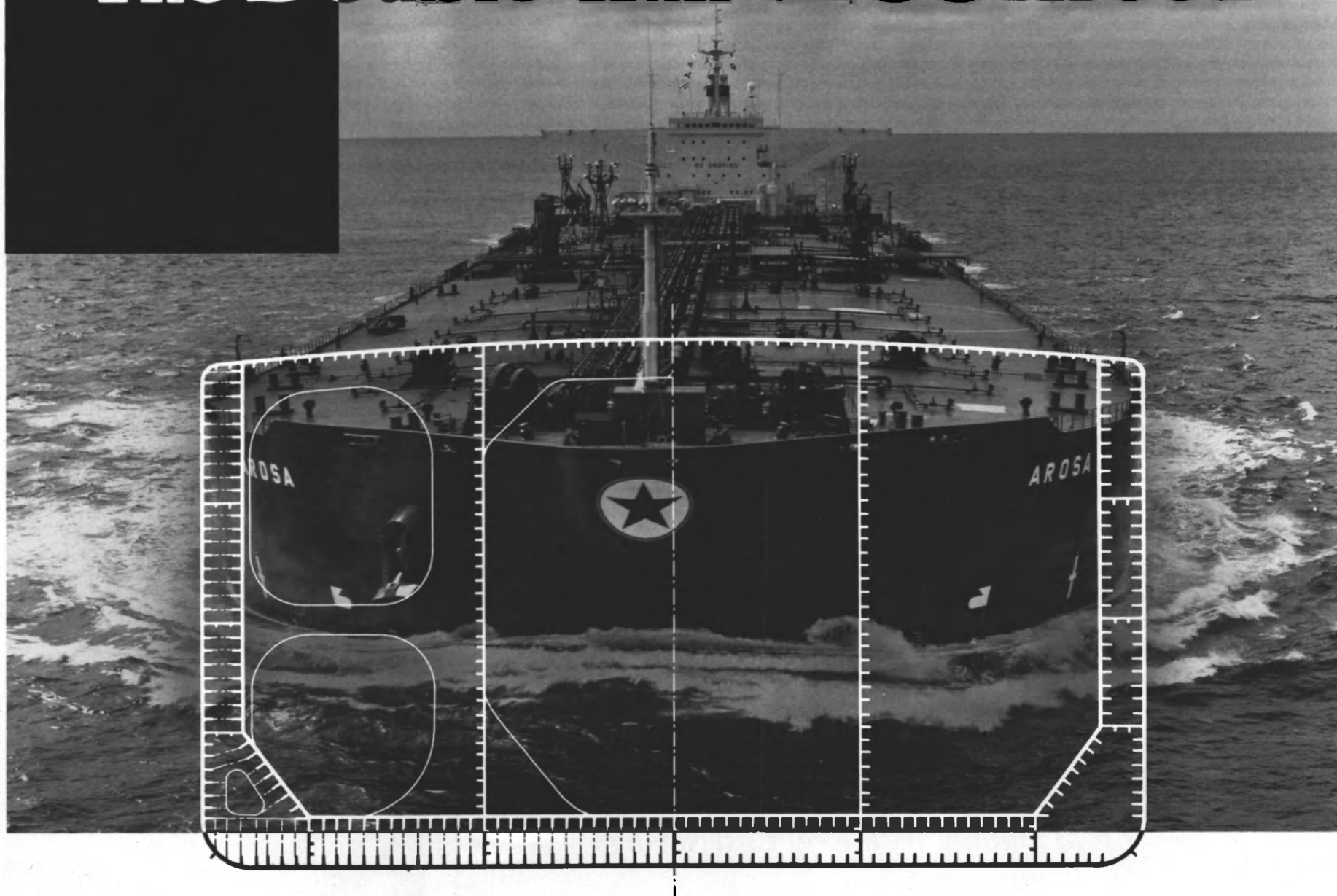
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PROPULSION UPDATE

DMR's New Assembly Plant Inaugurated

by Graeme MacLennan, International Editor

The first stage of what will be the most up-to-date large engine assembly and testing facility in Europe, and probably the world, was inaugurated at a ceremony in Warnemunde, Mecklenburg-Vorpommern, on the Baltic Coast of Germany. The high point of the occasion was a demonstration run of a Dieselmotorenwerk Rostock (DMR)-Sulzer 6RTA62U engine, supported by an elaborate outfit of auxiliary pumps, etc. and measuring equipment. This was achieved only 13 months after commencing to build the facility on a "green fields" site.

DMR was established in 1947 in premises to the west of the Hansa city of Rostock to build medium-speed four-stroke engines. In 1958 a license was acquired from MAN to

build two-stroke loop-scavenging engines for supply to the neighboring shipyards on the Baltic coast of the former German Democratic Republic. Later a Sulzer engine license was obtained and six 7RND90 engines were built in 1973/75; MAN engines continued to be built up to 1991, but from 1987 onwards, Sulzer RTA engines have been the principal delivery, exclusively after 1991. The inland situation of the works has made it necessary to break the engines down, after testing, into sections which could be transported by road.

DMR has been, since 1992, a member of the Vulkan Group, centered on the Bremer Vulkan shipyard at Vegesack, and one of Germany's most important heavy engineering concerns. They are co-proprietors, with

the GMT diesel engine division of Fincantieri, of New Sulzer Diesel.

The new assembly hall has been built on a riverside site at Warnemunde, immediately adjacent to where the Kvaerner Group, with substantial financial assistance from the German government's Treuhandanstalt privatization agency, are engaged in a three-year program to make the Warnowwerft one of the most modern, competitive and flexible shipyards in the world.

The hall is 680 feet (207 m) long, 105 feet (32 m) wide and 88 feet (27 m) high, with crane tracks at two levels; the lower one having three 20-ton gantry cranes and the upper one two gantries, each with two 160-ton hooks; together they can lift 580 tons. There is ample height below the cranes for building the largest engines.

Almost half the length on the North side of the hall is taken up by two strongly-supported floor-level platforms on which four or five engines, according to length, can be erected simultaneously. Sub-assembly takes place on the south side of the hall, and a bogie track extends right through and out on to the

quay. The procedure is to lay down the engine bedplate upon a fabricated stool in the assembly and test area, to insert the crankshaft and continue building up, using the largest possible sub-sections. The engine is tested against a large Zollner hydrodynamic brake and then lifted, complete with its stool on to the 56-wheel bogie which is run out to the quay, where a specially-designed jib crane will lift it directly into a newbuilding brought alongside the quay from a nearby shipyard or on to a lighter for shipment elsewhere. This assumes that the destination shipyard has craneage able to lift the complete engine. Only in the case of the larger engines will it be necessary to break the engine down into smaller sections.

For the present, the components are still manufactured in the factory at Rostock, but the plans indicate that large-capacity machine tools, vertical boring mill and planer, are to be installed at the shoreward end of the hall. A second bay will accommodate the machine tools for manufacture of smaller components and other DMR products, including reduction gears.

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MIP cylinder vs. mean engine deviations

Cylinder pressure vs. crank angle

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(Construction of small vessels. Repair and overhaul of small- & medium-sized vessels)
Max. ship size: 137 x 23 MR

Atlantic Marine-Mobile
P.O. Box 3202
Mobile, Ala. 36652
Classification: Repair w/Drydock
(Ship repair and overhaul)
Max. ship size: 217 x 26 FD; 305 x 49 FD

Avondale Industries, Inc.
P.O. Box 50280
New Orleans, La. 70150-0280
Classification: Shipbuilding
(Modular ship construction, conversion and repair on all types of vessels)
Max. ship size: 265 x 38 SW**; 137 x 27 SW***; (2) 311 x 53 LL*; (2) 265 x 38 LL**;
305 x 66 FD*; 229 x 35 FD** (*upper main yard/**lower main yard/***Westwego plant)

Bath Iron Works Corp.
700 Washington St.
Bath, Me. 04530
Classification: Shipbuilding
(Construction, conversion, repair on all types of vessels)
Max. ship size: 213 x 26 SW; 219 x 34 SW;
219 x 39 SW

Bay Shipbuilding Corp.
605 N. Third Ave.
Sturgeon Bay, Wis. 54235
Classification: Repair w/Drydock
(Ship repair & conversion)
Max. ship size: 195 x 20 FD; 351 x 41 GD;
222 x 32 SW

Bender Shipbuilding & Repair Co.
265 S. Water St.
Mobile, Ala. 36601
Classification: Repair w/Drydock
(Construction of vessels up to 91.44 m in length. Also repair and conversion)
Max. ship size: 201 x 27 FD; 126 x 17 FD;
126 x 14 FD; 183 x 36 FD

Bethlehem Steel Corp.



Norshipco.

BethShip Sparrows Point Yard
Sparrows Point, Md. 21219
Classification: Shipbuilding
(Construction, conversion and repair of vessels)
Max. ship size: 244 x 32 SW; 365 x 59 GD;
274 x 40 FD

BethShip, Sabine Yard
P.O. Box 1448
Port Arthur, Texas 77641
Classification: Repair w/Drydock
(Repair of ships and offshore oil rigs)
Max. ship size: 274 x 36 FD

Bludworth Bond Shipyard, Inc.
P.O. Box 5065
8114 Huckley
Houston, Texas 77262-5065
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 130 x 24 FD* (*two drydocks combined)

Boland Marine Manufacturing Co.
P.O. Box 53287
New Orleans, La. 70153
(General ship repair and conversions)

Bollinger Machine Shop & Shipyard
P.O. Box 250
Lockport, La. 70374-0250

(Coast Guard vessel construction)

Boston Graving Dock Corp.
256 Marginal St.
East Boston, Mass. 02128
Classification: Topside Repair
(General ship repair)

Boston Marine Industrial Park (EDIC)
38 Chauncy St.
Boston, Mass. 02211
Classification: Repair w/Drydock
(Leases public drydock in former Boston Naval Annex to local ship repair companies)
Max. ship size: 350 x 34 GD

Buck Kreihs Co., Inc.
P.O. Box 53305
New Orleans, La. 70153
(Ship repair & conversion)

Caddell Dry Dock & Repair Co.
P.O. Box 327
Staten Island, N.Y. 10310
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 137 x 25 FD

Campbell Industries
P.O. Box 1870
501 E. Harbor Drive

San Diego, Calif. 92112
Classification: Topside Repair
(General ship repair & construction of vessels up to 91 m)

Century Marine Inc.
200 Pier Road
Orange, Texas 77630
(General ship repair)

Coastal Marine Service of Texas
1051 Houston Ave.
Port Arthur, Texas 77640
Classification: Topside Repair
(General ship repair)

Colonna's Shipyard Inc.
400 E. Indian River Rd.
Norfolk, Va. 23523
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 122 x 22 MR; 195 x 25 FD

Continental Maritime of San Diego, Inc.
1995 Bay Front St.
San Diego, Calif. 92113-2122
Classification: Topside Repair
(General ship repair)

Delta Marine Inc.
P.O. Box 2191, Hwy. 421 N.
Wilmington, N.C. 28402
Classification: Topside Repair
(General ship repair)

Detyens Shipyard Inc.
Rt. 2, Box 180
Mt. Pleasant, S.C. 29464
Classification: Repair w/Drydock
(General ship repair and conversion)
Max. ship size: 152 x 25 FD; 152 x 20 FD

Dixie Machine Welding & Metal Works
1031 Anunciation St.
New Orleans, La. 70130
Classification: Topside Repair
(General ship repair)

Erie Marine Enterprises
Div. of Jonathan Corp.
Foot of Holland St.
P.O. Box 1730
Erie, Pa. 16507-1730
Classification: Shipbuilding
(Ship construction, repair & conversion)
Max. ship size: 375 x 35 GD

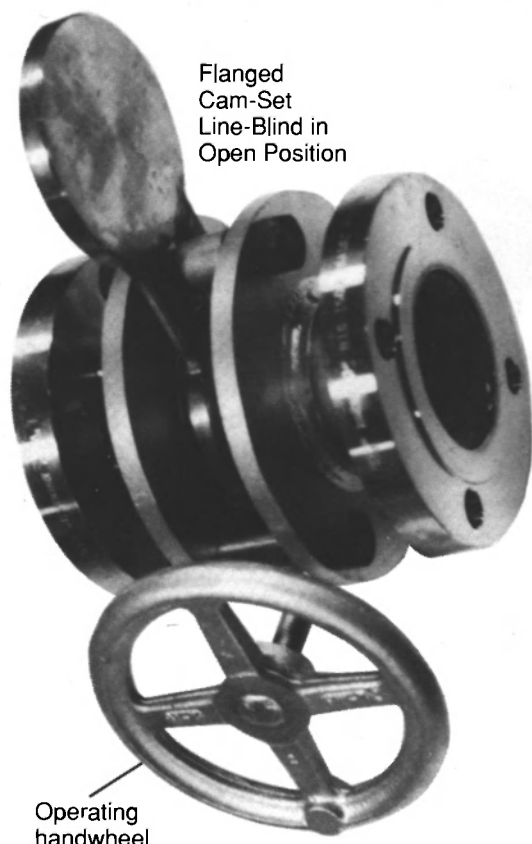
Foss Shipyard
660 West Ewing St.
Seattle, Wash. 98119
Classification: Topside Repair
(Vessel repair, alteration & overhaul)

Fraser Shipyards Inc.
P.O. Box 997
Superior, Wis. 54888
Classification: Shipbuilding
(Ship construction, repair & conversion)
Max. ship size: 252 x 23 GD; 189 x 17 GD

Fredeman Shipyard, Inc.
P.O. Box 129
Sulphur, La. 70664-0129
Classification: Topside Repair
(Construction & repair of offshore vessels)

G. Marine Diesel of New York
P.O. Box 050221
Brooklyn, N.Y. 11205
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 330 x 43 GD

General Ship Repair
1449 Key Hwy.
Baltimore, Md. 21230
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General Ship Corp.
400 Border St.
East Boston, Mass. 02128-2533
Classification: Repair w/Drydock
(Ship repair, overhaul and modernization)
Max. ship size: 208 x 24 GD* (on long-term lease from Boston Marine Industrial Park)

General Dynamics
Electric Boat Div.
75 Eastern Point Road
Groton, Conn. 06340-4989
Classification: Shipbuilding
(Exclusively engaged in construction, conversion & repair for U.S. Navy)

Gulf Coast Fabrication, Inc.
P.O. Box 539
Lakeshore, Miss. 39558
Classification: Repair w/Drydock
(Small vessel construction & repair)
Max. ship size: 127 x 44 GD

Gulf Cooper & Manufacturing Corp.
320 Houston Ave.
Port Arthur, Texas 77640
Classification: Topside Repair
(General ship repair)

Gulf Marine Repair Corp.
1200 Sertoma Drive
Tampa, Fla. 33605
Classification: Topside Repair
(Ship repair and overhaul)

Halter Marine, Inc., Equitable Shipyards
4325 France Road
New Orleans, La. 70126
Classification: Topside Repair
(Construction & repair of small vessels and barges)

Halter Marine, Inc., Moss Point
P.O. Box 767
Moss Point, Miss. 39563
Classification: Shipbuilding
(Construction, conversion and repair of ships, boats & barges)
Max. ship size: 146 x 20 LL

Hendry Corp.
5107 S. Westshore Blvd.
Tampa, Fla. 33611
Classification: Topside Repair
(General ship repair)

Honolulu Shipyard Inc.
P.O. Box 30989
Honolulu, Hawaii 96820
Classification: Topside Repair
(General ship repair & overhaul)

Houston Ship Repair, Inc.
Brady Island Ship Repair Facility
8510 Cyprus St.

Houston, Texas 77012
Classification: Topside Repair
(General ship repair and conversion)

Houston Ship Repair, Inc.
Orange Div.
P.O. Box 2392
Orange, Texas 77630
Classification: Topside Repair
(General ship repair and conversion)

Ingalls Shipbuilding, Inc.

P.O. Box 149
Pascagoula, Miss. 39568-0149
Classification: Shipbuilding
(Construction, conversion and repair on all types of vessels)
Max. ship size: 259 x 53 FD*; (5) 257 x 53 LL*; 469 x 53 LL* (*West Bank can only launch ships up to 259 m x 53 m. Land level positions constrained by launching capability)

Intermarine USA
301 N. Lathrop Ave.

P.O. Box 3045
Savannah, Ga. 31402-3045
Classification: Shipbuilding

International Ship Repair & Marine Services
1616 Penny St.
Tampa, Fla. 33605
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 134 x 32 FD; 137 x 29 FD

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Goltens, Dubai
Dubai, U.A.E.



Bender Shipbuilding & Repair.

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SHIP REPAIR: Directory of Major U.S. Shipbuilding & Repair Facilities

P.O. Box 2441
Corpus Christi, Texas 78403
Classification: Topside Repair
(General ship repair)

John Bludworth Marine, Inc.
1600 N. Witter
Pasadena, Texas 77506
Classification: Topside Repair
(General ship repair)

JOMAR Corporation of Tidewater

P.O. Box 5119
Suffolk, Va. 23435
Classification: Topside Repair
(General ship repair)

Jonathan Corporation
Little Creek Shipyard
Virginia Beach, Va. 23455
Classification: Topside Repair
(General ship repair & overhaul)

Lake Union Drydock Co.

1515 Fairview Ave. East
Seattle, Wash. 98102
Classification: Topside Repair
(Ship repair & conversion)

Marine Hydraulics Intl. Inc.
800 E. Indian River Road
Norfolk, Va. 23523
Classification: Topside Repair
(General ship repair)

Marinette Marine Corp.



NASSCO

Foot of Ely St.
Marinette, Wis. 54143
Classification: Shipbuilding
(Ship construction, repair & conversion)
Max. ship size: 122 x 24 LL

Marisco, Ltd.
910607 Malakala Road
Ewa Beach, Hawaii 96707
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 152 x 24 FD

Maritime Contractors Inc.
201 Harris Ave.
Bellingham, Wash. 98225
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 122 x 17 FD

McDermott, Inc.
P.O. Box 188
Morgan City, La. 70381
Classification: Repair w/Drydock
(Construction and repair of tugs, supply boats,
barges & drill rigs)
Max. ship size: 122 x 32 FD

Melville Marine Industries
One Little Harbor Landing
Portsmouth, R.I. 02871
Classification: Topside Repair
(General ship repair)

Metal Trades, Inc.
P.O. Box 129
Hollywood, S.C. 29449-0129
Classification: Topside Repair
(General ship repair)

Metro Machine Corp.
P.O. Box 1860
Norfolk, Va. 23501
Classification: Repair w/Drydock
(Ship repair & conversion)
Max. ship size: 201 x 29 FD

Moon Engineering
Two Harper Ave.
Portsmouth, Va. 23707
Classification: Topside Repair
(General ship repair)

MPN Industries Co.
Building #62
Brooklyn Navy Yard
Brooklyn, N.Y. 11205
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 219 x 34 GD

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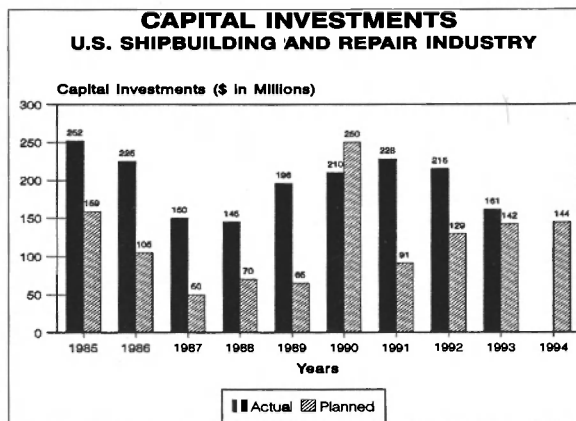
San Diego, Calif. 92186-5278
Classification: Shipbuilding
(Construction, conversion & repair on all types of vessels)
Max. ship size: 210 x 27 SW; (2) 274 x 34 SW; 303 x 52 GD; 229 x 42 FD

Newpark Shipbuilding & Repair
8502 Cypress
Houston, Texas 77012
Classification: Repair w/Drydock
(Small vessel construction & repair)

Newport News Shipbuilding
4101 Washington Ave.
Newport News, Va. 23607
Classification: Shipbuilding
(Construction, conversion and repair on all types of vessels)
Max. ship size: 292 x 37 GD*; 334 x 41 GD*; 197 x 27 GD**; 262 x 31 GD**; 139 x 21 GD**; 159 x 21 GD**; 490 x 75 GD*; 195 x 41 FD; (4) 183 x 12 LL (* used for construction/** used for repair & overhaul)

New York Shipyard Corp.
One Beard St.
Brooklyn, N.Y. 11231
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 217 x 27 GD; 198 x 29 FD

Norfolk Shipbuilding & Drydock Corp.



Source: U.S. Department of Transportation.

P.O. Box 2100
750 Berkley Ave.
Norfolk, Va. 23501-2100
Classification: Repair w/Drydock
(Ship conversion & repair on all types of vessels)
Max. ship size: 218 x 29 FD; 335 x 48 FD

North Florida Shipyards, Inc.
P.O. Box 3255
Jacksonville, Fla. 32206
Classification: Repair w/Drydock
(Ship repair & conversion)

Max. ship size: 122 x 16 FD

Peterson Builders Inc.
101 Pennsylvania St.
P.O. Box 650
Sturgeon Bay, Wis. 54235-065
Classification: Shipbuilding
(Ship construction, repair & conversion)
Max. ship size: 125 x 21 LL

Portland Ship Repair Yard
5555 N. Channel Ave., Building 50
Portland, Ore. 97217
Classification: Shipbuilding
(Facilities also leased by Cascade General, Inc. & West State, Inc.)
(Ship construction, repair & conversion on all types of vessels)
Max. ship size: 183 x 30 LL; 305 x 55 LL; 198 x 26 FD; 247 x 33 FD; 351 x 55 FD

Promet Marine Services Corp.
242 Allens Ave.
Providence, R.I. 02905
Classification: Topside Repair
(General ship repair)

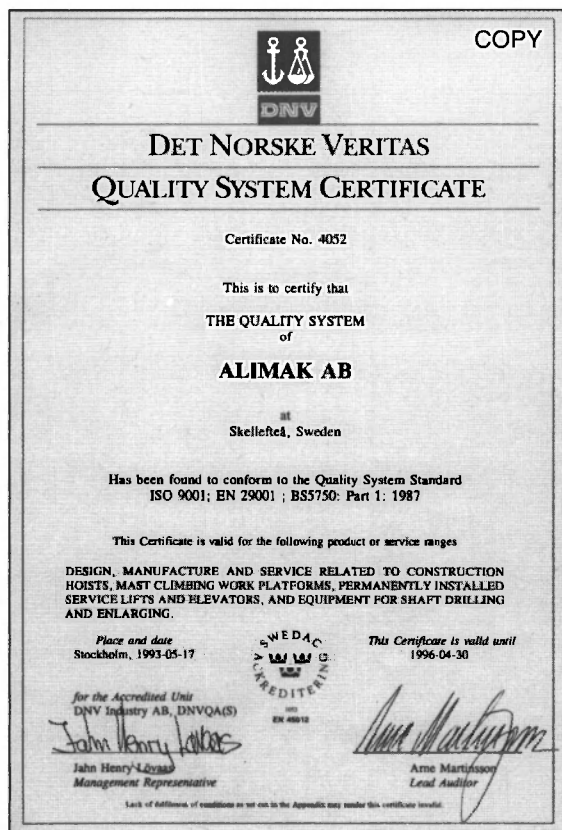
Puerto Rico Drydock & Marine Terminals
P.O. Box 2209
San Juan, P.R. 00903
Classification: Repair w/Drydock

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Max. ship size: 193 x 30 GD

Puglia Shipbuilding Inc.
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Tacoma, Wash. 98401
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(Construction & general ship repair)

Reynolds Shipyard Corp.
200 Edgewater St.
P.O. Box 0500/10
Staten Island, N.Y. 10305
Classification: Topside Repair
(General ship repair)

San Francisco Drydock Co.
Foot of 20th St.
San Francisco, Calif. 94120-7644
Classification: Repair w/Drydock
(Ship repair & overhaul)
Max. ship size: 290 x 44 FD; 213 x 29 FD

San Pedro Boat Works
Berth 44, Outer Harbor
San Pedro, Calif. 90731
Classification: Topside Repair
(General ship repair)

Service Engineering Co.
Pier 50
San Francisco, Calif. 94120
Classification: Topside Repair
(General ship repair & conversion)

Southern Oregon Marine Ind.
1746 Coos River Hwy.
Coos Bay, Ore. 97420
Classification: Repair w/Drydock
(General ship repair and barge construction)
Max. ship size: 122 x 30 MR

Southwest Marine, Inc.
P.O. Box 13308
Foot of Sampson St.
San Diego, Calif. 92170-0308
Classification: Repair w/Drydock
(Ship repair, overhaul & conversion)
Max. ship size: 128 x 16 FD; 213 x 29 FD

Steel Style, Inc.
401 S. Water St.
Newburgh, N.Y. 12550
Classification: Topside Repair
(General ship repair)

Tacoma Boatbuilding Co.
1840 Marine View Drive
Tacoma, Wash. 98422
Classification: Shipbuilding
(Construction, repair & conversion on all types of vessels)
Max. ship size: (2) 130 x 14* (*vessel with beam up to 30 m can be constructed by joining the two shipways)

Tampa Shipyards, Inc.
P.O. Box 1277
Tampa, Fla. 33601
Classification: Shipbuilding
(Ship construction, conversion & repair)
Max. ship size: 165 x 22 GD*; 273 x 44 GD*; (2) 226 x 32 GD** (*used for ship repair/**used for ship construction)

Texas Drydock, Inc.
P.O. Box 968
Orange, Texas 77631-096
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 122 x 32 FD

Textron Marine Systems
6600 Plaza Drive

New Orleans, La. 70127-2584
Classification: Topside Repair
(LCAC construction)

Todd Pacific Shipyards Corp.
Seattle Div.
1801 16th Ave., S.W.
Seattle, Wash. 98134
Classification: Shipbuilding
(Ship construction, repair and conversion on all types of vessels)
Max. ship size: 168 x 18 SW; 126 x 19 FD; 198 x 26 FD; 287 x 41 FD

Toledo Ship Repair Co.
2245 Front
Toledo, Ohio 43605
Classification: Repair w/Drydock
(Ship repair & conversion)
Max. ship size: 165 x 21 GD; 250 x 24 GD

Trinity Marine Group-Beaumont Div.
P.O. Box 3600
Beaumont, Texas 77704
Classification: Shipbuilding
(Ship construction, conversion & repair)
Max. ship size: 259 x 32 SW; 183 x 25 FD; 198 x 32 FD

United Marine Shipbuilding Inc.
1441 N. Northlake Way
N. Seattle, Wash. 98103
Classification: Repair w/Drydock
(General ship repair)
Max. ship size: 122 x 17 FD

Vessel Repair, Inc.
P.O. Box 2207
Port Arthur, Texas 77643
Classification: Topside Repair
(General ship repair)

Virginia Drydock Co.
307 Campostella Road
Norfolk, Va. 23523
Classification: Topside Repair
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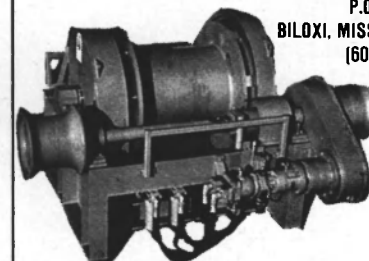
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Maritime Reporter/Engineering News

Hitachi Zosen Delivers Catamaran & 3,800-TEU Containership

Hitachi Zosen delivered the *Shoko*, a foil-assisted catamaran of the SuperJet-30 series, from its Kanagawa Works to Ishizaki Steamship Co. Ltd.

The vessel—which measures 103 ft. (31.5 m) long, 32 ft. (9.8 m) wide with a six-ft. (1.9-m) draft—is the fifth of the seven SuperJet-30 ships ordered from Hitachi Zosen, and the second to Ishizaki Steamship Co.

The *Shoko* is equipped with a computerized rolling control device in its hydrofoils, with its control effectiveness proven by its reported cruising performance. The *Shoko* is a hybrid-type vessel, with twin hulls equipped with submerged hydrofoils fore and aft. The vessel's weight is supported both by the buoyancy of the two hulls and the lift of the two hydrofoils. The vessel also features a wide deck and spacious cabin.

The computerized automatic control of the flaps attached to the hydrofoils reportedly reduces ship-body motion to about one-eighth that of an ordinary catamaran, ensuring comfort.

The vessel is driven by two diesel engines and two waterjet drives, manufactured by



The *Da He* features a Hitachi Zosen-Sulzer diesel engine, which powers drive the 3,800-TEU containership to a service speed of 24 knots.

The *Shoko* is a 103-ft. (31.5-m) foil-assisted catamaran, with a twin-diesel, twin-waterjet propulsion package driving the vessel to 38 knots.



Niigata Engineering Co., Ltd., to a maximum speed of about 38 knots.

3,800-TEU Containership Completed

The M.V. *Da He*, a 49,375-gt containership capable of carrying 3,800 TEU containers, was recently completed at Hitachi Zosen's Ariake Works and delivered to China Ocean Shipping (Group) Co. (COSCO).

The vessel's sister ship, the *Zhen He*, was delivered in January, and one more ship of the same type is scheduled for delivery in June.

The 902-ft. (275-m) ship is powered by a Hitachi Zosen-Sulzer 9RTA84C diesel engine to produce a service speed of 24 knots. The engine, along with the generators, can operate on any grade of fuel oil. The *Da He* is the largest type of container ship ever delivered by Hitachi Zosen and is at the same time one of the largest vessels that can enter Shanghai harbor and pass through the Panama Canal.

The vessel's load efficiency is enhanced by arranging the holds with 11 rows of spaces for containers, the first such design for Hitachi Zosen-built containerships.

This hold arrangement makes it possible for the ship to carry 3,800 TEU containers, reportedly the largest number that can be carried by ships of this type and size.

For more information on the vessel building capabilities of Hitachi Zosen,

Circle 4 on Reader Service Card

Falk Delivers Gear Drives For U.S. Navy Sealift Command Ships

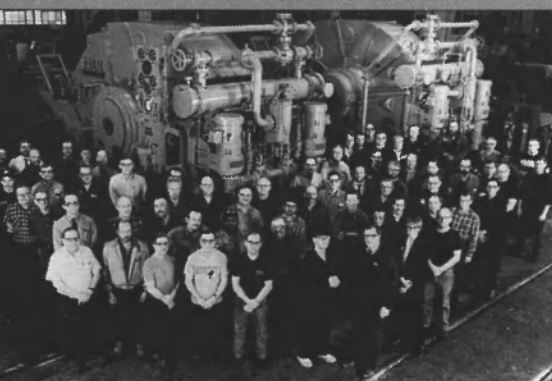
The Falk Corp. has delivered the last of sixteen 150,000-lb. special gear drive units built over the last three years for the U.S. Navy's Marine Sealift Command T-AO ships. The Navy specified Falk reduction gear drives on all eight ships in its Underway Replenishment Group.

The ships will supply petroleum, dry cargo, water, mail and personnel to the Navy's fleet at sea.

One of the 75-ton speed reduction gears will be attached to each of the ship's two 16,272-hp, 400 rpm diesel engines.

The gear drives will produce 10,706,660 in.-lbs. of output torque and will drive the output shaft connected to the propeller at 96 rpm at a top speed of 22 knots.

The Falk Corp., a Milwaukee-based subsidiary of the Sundstrand Corp., is a manufacturer of industrial power transmission products, including standard and custom gear drives, flexible shaft couplings, backstops,



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and fluid power drives and couplings.

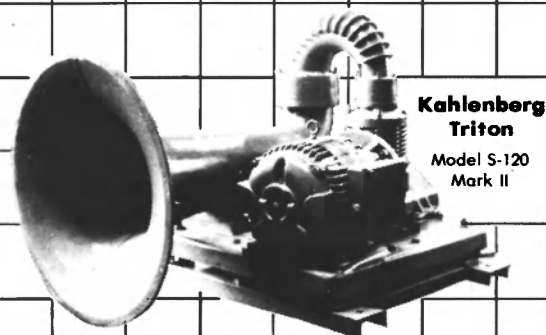
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PORTS

U.S. Waterborne Foreign Commerce -- 1993 Port Ranking By Cargo Volume (Short Tons, 000's Omitted)

Imports			Exports			Total		
Rank	Port	Volume	Rank	Port	Volume	Rank	Port	Volume
1	Houston (TX)	54,240	1	S. Louisiana (LA)	59,610	1	S. Louisiana (LA)	90,881
2	New York/New Jersey	37,893	2	Hampton Roads (VA)	43,362	2	Houston (TX)	79,192
3	S. Louisiana (LA)	31,271	3	New Orleans (LA)	27,893	3	Hampton Roads (VA)	51,902
4	Corpus Christi (TX)	29,502	4	Houston (TX)	24,952	4	New Orleans (LA)	47,739
5	Port Arthur (TX)	28,729	5	Long Beach (CA)	16,449	5	New York/New Jersey	45,175
6	Baton Rouge (LA)	28,059	6	Baltimore (MD)	12,722	6	Baton Rouge (LA)	39,900
7	Philadelphia (PA)	27,739	7	Portland (OR)	12,274	7	Corpus Christi (TX)	36,428
8	Texas City (TX)	23,654	8	Mobile (AL)	11,871	8	Port Arthur (TX)	33,179
9	Lake Charles (LA)	21,355	9	Baton Rouge (LA)	11,841	9	Long Beach (CA)	30,064
10	New Orleans (LA)	19,846	10	Tampa (FL)	11,315	10	Philadelphia (PA)	28,466
11	Marcus Hook (PA)	15,973	11	Los Angeles (CA)	10,733	11	Lake Charles (LA)	26,749
12	Los Angeles (CA)	13,771	12	Duluth/Superior (MN/WI)	8,043	12	Texas City (TX)	25,719
13	Long Beach (CA)	13,615	13	Tacoma (WA)	7,887	13	Baltimore (MD)	25,124
14	Pascagoula (LA)	13,581	14	New York/New Jersey	7,282	14	Los Angeles (CA)	24,544
15	Christiansted (VI)	13,513	15	Toledo (OH)	7,164	15	Mobile (AL)	21,230
16	Baltimore (MD)	12,402	16	Seattle (WA)	6,938	16	Tampa (FL)	17,086
17	Paulsboro (NJ)	12,068	17	Corpus Christi (TX)	6,926	17	Pascagoula (MS)	16,478
18	Wilmington (DE)	10,817	18	Savannah (GA)	6,247	18	Marcus Hook (NJ)	16,040
19	Mobile (AL)	9,359	19	Kalama (WA)	6,055	19	Portland (OR)	15,633
20	Boston (MA)	9,345	20	Lake Charles (LA)	5,439	20	Seattle (WA)	14,194
21	Portland (ME)	8,786	21	Vancouver (WA)	5,381	21	Christiansted (VI)	13,534
22	Hampton Roads (VA)	8,540	22	Charleston (SC)	5,088	22	Tacoma (WA)	12,301
23	Beaumont (TX)	8,097	23	Oakland (CA)	4,900	23	Paulsboro (NJ)	12,194
24	Freeport (TX)	7,317	24	Galveston (TX)	4,614	24	Beaumont (TX)	11,726
25	Seattle (WA)	7,256	25	Port Arthur (TX)	4,450	25	Savannah (GA)	11,643

U.S. Waterborne Foreign Commerce -- 1993 Port Ranking By Cargo Value (Millions Of Dollars, 000's Omitted)

Imports			Exports			Total		
Rank	Port	Value	Rank	Port	Value	Rank	Port	Value
1	Los Angeles (CA)	\$52,178	1	New York/New Jersey	\$17,932	1	Los Angeles (CA)	\$65,325
2	Long Beach (CA)	\$46,548	2	Houston (TX)	\$14,405	2	Long Beach (CA)	\$58,566
3	New York/New Jersey	\$37,744	3	Los Angeles (CA)	\$13,147	3	New York/New Jersey	\$56,676
4	Seattle (WA)	\$22,250	4	Long Beach (CA)	\$12,017	4	Seattle (WA)	\$28,266
5	Tacoma (WA)	\$18,655	5	Hampton Roads (VA)	\$11,858	5	Oakland (CA)	\$26,721
6	Oakland (CA)	\$16,593	6	Oakland (CA)	\$10,125	6	Houston (TX)	\$25,631
7	Houston (TX)	\$11,226	7	Miami (FL)	\$8,973	7	Tacoma (WA)	\$23,095
8	Baltimore (MD)	\$9,774	8	S. Louisiana (LA)	\$7,790	8	Hampton Roads (VA)	\$20,811
9	Hampton Roads (VA)	\$8,953	9	Baltimore (MD)	\$7,598	9	Baltimore (MD)	\$17,372
10	Charleston (SC)	\$8,365	10	Charleston (SC)	\$7,167	10	Miami (FL)	\$16,985
11	Miami (FL)	\$8,012	11	New Orleans (LA)	\$6,596	11	Charleston (SC)	\$15,532
12	Savannah (GA)	\$6,429	12	Seattle (WA)	\$6,016	12	Savannah (GA)	\$11,865
13	Jacksonville (FL)	\$5,668	13	Savannah (GA)	\$5,436	13	New Orleans (LA)	\$11,671
14	Philadelphia (PA)	\$5,584	14	Tacoma (WA)	\$4,430	14	S. Louisiana (LA)	\$10,693
15	Port Huron (MI)	\$5,443	15	Portland (OR)	\$3,974	15	Jacksonville (FL)	\$8,944
16	New Orleans (LA)	\$5,075	16	Jacksonville (FL)	\$3,326	16	Portland (OR)	\$8,113
17	Portland (OR)	\$4,139	17	Port Everglades (FL)	\$2,481	17	Philadelphia (PA)	\$6,677
18	Port Everglades (FL)	\$3,283	18	Wilmington (NC)	\$2,463	18	Port Everglades (FL)	\$5,764
19	Boston (MA)	\$3,224	19	Baton Rouge (LA)	\$1,877	19	Port Huron (MI)	\$5,483
20	Detroit (MI)	\$3,124	20	Wilmington (DE)	\$1,773	20	Baton Rouge (LA)	\$4,623
21	Port Arthur (TX)	\$2,917	21	Anchorage (AK)	\$1,749	21	Boston (MA)	\$3,800
22	S. Louisiana (LA)	\$2,903	22	Mobile (AL)	\$1,556	22	Corpus Christi (TX)	\$3,661
23	Corpus Christi (TX)	\$2,750	23	Galveston (TX)	\$1,526	23	Wilmington (NC)	\$3,627
24	Baton Rouge (LA)	\$2,746	24	Lake Charles (LA)	\$1,290	24	Wilmington (DE)	\$3,526
25	Texas City (TX)	\$2,237	25	Tampa (FL)	\$1,188	25	Port Arthur (TX)	\$3,374

Source: U.S. Bureau of the Census

EDITORIAL

U.S. Ports' Agenda: Focus Is On Infrastructure

By

Erik Stromberg, President
American Association of Port Authorities

Ports are an integral part of our intermodal transportation and national defense systems. However, despite the enormous economic benefits resulting from their operations, too often ports are forgotten in the debate over national transportation infrastructure priorities. U.S. port infrastructure needs fall into three general categories: port cargo handling facilities, and waterside and landside access to those facilities.

For ports, there has long been an obvious linkage between intermodal infrastructure needs.

However, federal policy has been slower to recognize that relationship. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) was an important step, but has not lived up to its promise of making funding for freight projects a priority. The federal government needs to coordinate its programs and policies affecting intermodal freight transportation. Secretary of Transportation **Federico Peña** has provided inspired leadership and made progress at the Department of Transportation (DOT). But institutional gridlock in Congress, and other political and economic priorities at the federal, state and local levels present severe constraints.

It is important to note that no matter how productive marine terminal facilities are, the U.S. port and intermodal transportation system cannot operate to maximum efficiency unless ports are accessible by ships on the waterside and cargo can move quickly and easily

in or out of ports from the landside.

Port Funding of Cargo Facilities

Ports are, and historically have been, responsible for the development of cargo handling and related terminal facilities. According to the DOT, U.S. ports invested more than \$12.5 billion from 1946 - 1992 on port and related shoreside transportation infrastructure and are expected to invest over \$5.5 billion more by 1997. This reflects the continued commitment of the ports to modernize facilities in order to meet the growing demands of waterborne commerce in the highly competitive port industry.

During the 1990-92 time period, the financing methods used most often by ports for capital expenditures were port revenues, or retained earnings (39 percent of total expenditures); bonding authority using general obligation bonds (12.5 percent) and revenue bonds (28.9 percent); and state and local government grants, appropriations, etc. (19.6 percent). Specialized general cargo facilities continue to account for nearly one-third of the current and projected expenditures. These statistics are based on a survey of AAPA members and are contained in the *United States Port Development Expenditure Report*, published in early 1994 by the Maritime Administration (MarAd), U.S. Department of Transportation.

According to the MarAd study, port revenues and revenue bonds

are expected to be the predominant method of financing port infrastructure projects in the future. The growing dependence on port revenues for capital improvements intensifies the need for ports to be able to control their own financial future, minimizing the interference of cash-starved local and state gov-

ernments.

Waterside Access: The Need for a National Dredging Policy

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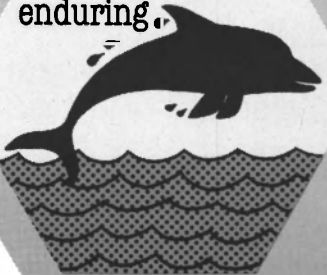
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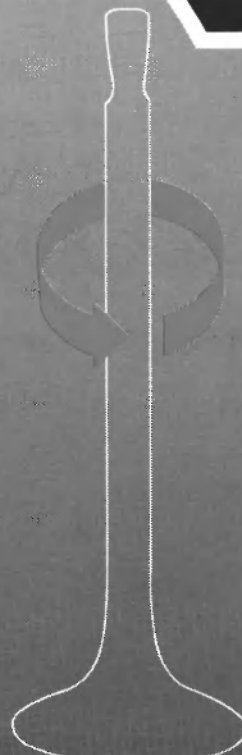
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The Port of Miami.

Editorial: U.S. Ports' Agenda

1986, non-federal sponsors have cost-shared new project costs. Since 1990 maintenance dredging has been 100 percent funded by an *ad valorem* tax on cargo paid by shippers out of the Harbor Maintenance Trust Fund. Ports also pay for dredging their own access channels and berths as well as for lands,

easements, rights-of-way, and the increasing costs entailed by the construction of dredged material disposal sites.

Dredging is a central element of the development and operations of nearly every port in the U.S.; even ports with naturally deep federal channels often require some access

channel maintenance dredging. Over 400 million cubic yards of sediment are dredged every year, with three quarters of that total coming out of federal channels and the balance from access channels or berth-side.

Oceangoing vessels move over 95 percent of U.S. international trade

tonnage. If four harbors are to handle the increased trade volumes expected in the coming decades, ports need adequate depth in federal channels and berthing areas.

President Clinton recently expressed his support for ports and dredging in a letter to AAPA: "I am calling on federal agencies to redouble their efforts, and urge the state, local, port, environmental and other interested groups to continue their joint efforts to find solutions to these [dredging] problems. Our nation's ports are a key link in the nation's intermodal transportation chain, and your continued success and support will be crucial to achieving our goals."

The President also acknowledged the significant economic contribution of ports, stating that, "The public port community will play a pivotal role as we expand export trading opportunities and create a truly global marketplace."

However, dredging our nation's navigation channels to keep them open for trade is too often frustrated by inconsistent, complex and duplicative laws and regulations. One response to the ports' pleas for relief from the regulatory maze was from Transportation Secretary Federico Peña, who established an Interagency Working Group on the Dredging Process composed of all federal agencies that have a regulatory role in the dredging process.

Led by the Maritime Administration, the Working Group includes: the Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers, the Department of Commerce's National Marine Fisheries Service and the Department of the Interior's Fish and Wildlife Service. The Working Group has been in place since October 1993, and has held outreach sessions around the country to review problems with the dredging process. An options paper is now being finalized that will propose some solutions. The Working Group plans a second series of outreach meetings in May to review the options paper. The Working Group will report back to Secretary Peña this summer.

AAPA has developed a Proposal for a National Dredging Policy that goes well beyond the scope of the Interagency Working Group. AAPA is calling for adoption of a uniform national policy that recognizes the importance of efficient dredging operations to the nation's economy and security interests. Our proposal is intended to facilitate dredging the nation's harbors in a timely and cost-effective manner, consistent with environmental regulations. More specifically, AAPA's National Dredging Policy calls on the Administration and Congress to direct that federal agencies work together to facilitate dredging projects and to amend the Clean Water Act (CWA) and Water Resources Development Act (WRDA) to provide for consistent management and disposal of dredged mate-

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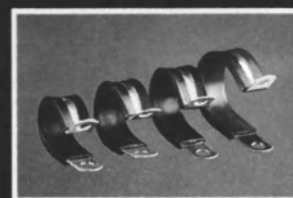
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rial, to streamline the federal permit process and establish a federal program for construction of disposal areas. In order to provide for implementation of the National Dredging Policy objectives, AAPA advocates the following legislative changes:

- Establish a new section of the Clean Water Act, separate from the 404 wetlands provisions, for permitting of the discharge of dredged material from navigational dredging to EPA approved disposal areas,
- Amend other provisions of the CWA to emphasize the prevention of pollution that may contaminate sediments and to require consideration of the use and value of the waters and channels to navigation in establishing appropriate criteria and standards, and
- Establish a comprehensive program under WRDA, clarifying a federal responsibility for siting, construction and funding of confined and land-based disposal facilities for dredged material, in connection with construction of authorized federal navigation projects, that does not meet criteria for open water disposal.

Port Landside Access Needs

In addition to ensuring that navigation channels are clear and open for trade, there must be adequate access to the ports' cargo handling and terminal facilities from the landside. However, to assure adequate landside access, ports depend largely on federal government funding, funnelled through state and local government under the provisions of ISTEA.

ISTEA not only completely revamped our federal aid highway

program, placing a new emphasis on intermodalism and freight transportation, but also specifically recognized the importance of access to seaports. The Act provided more authority for decision-making at the local level and added some flexibility in transferring funds between programs. Importantly, the language in ISTEA clearly recognized the national interest in an efficient freight transportation system as a critical factor in our country's ability to compete in the international marketplace, and assure competitive prices for U.S. consumers.

However, after two years it is clear that ISTEA is not living up to its promise to expand transportation planning and funding to meet national intermodal needs. Freight projects meeting national transportation needs are not receiving a fair allocation of funding through the local decision-making process. The expression "freight doesn't vote" sums up the political reality at the local level—the needs of passenger traffic are considered first, and there is little or no thought to providing access to intermodal facilities handling freight. During recent outreach meetings on ISTEA held by the Department of Transportation, participants clearly voiced the need to increase the focus on freight and afford it the priority it deserved.

Following up those meetings, DOT included freight needs in its action plan. However, freight projects meeting national needs will not likely receive their fair share of federal aid unless and until the federal government directs state and local governments to do so.

Secretary Peña's efforts to ex-

pand the National Highway System (NHS) into a National Transportation System (NTS) is a good step. However, in addition to that, AAPA recommends that Congress consider the following changes:

- ISTEA should be made truly intermodal by allowing the use of all program funds for rail freight projects (currently, only Congestion Mitigation and Air Quality funds, which are limited, can be used for rail freight). Many worthwhile port rail freight access projects, for both rail bridges and double stack train access, have been rejected for funding because of current limitations.
- ISTEA should create a financial incentive to fund national need projects (particularly access to intermodal facilities) either through a separate funding source or a higher federal cost share for projects meeting certain criteria.
- The Administration should develop and support innovative financing ideas for transportation infrastructure projects.

Conclusion

The federal/local port partnership that has, since our country's very beginning, successfully developed the nation's infrastructure in order to accommodate our waterborne commerce needs must now be reviewed and realigned. In an age of intermodalism and expanding global trading opportunities, there are significant pressures to successfully modernize and efficiently operate a truly seamless intermodal transportation system. Yet we also operate in a climate of environmental activism, increased political oversight at the local level,

and fiscal austerity at all levels of government, each of which presents challenges at every turn, with the potential to derail our best efforts. For the ports and all who depend on them, our fundamental and long-term goal is to generate broad-based public awareness of, and support for, investment in freight-related transportation infrastructure.

Ports, Corps Of Engineers Plan To Improve Partnership

Senior representatives from U.S. public port authorities and the U.S. Army Corps of Engineers agreed on an action plan to strengthen their partnership.

The group identified future priorities, as well as ongoing activities that will contribute to a better working relationship between the ports and Corps.

During a meeting in April in Alexandria, Va., more than 30 senior port and Corps of Engineers representatives discussed ways to enhance communication and mutual understanding, according to the American Association of Port Authorities (AAPA).

The meeting was a culmination of six regional workshops and one sub-regional workshop held over the past year between ports and representatives of the Corps.

AAPA President **Erik Stromberg** said, "The Action Plan will enable the ports and Corps to work together on specific objectives to

keep our navigation channels dredged and open for trade, consistent with environmental objectives."

The group agreed to address the following priority issues in the Action Plan:

- Revise testing protocols for dredged material to eliminate outdated testing requirements, assure reliability of tests and reflect risks to human health and the environment.
- Establish a high level forum to review policy issues, address conflicts and resolve project disputes.
- Improve federal, state and local coordination, including more frequent regional meetings between the ports and Corps and other agencies; and establish a common agenda and outreach programs.
- Establish more predictability in the planning and construction of deep-draft channel navigation projects, including disposal of dredged material.

Specifically, it was agreed to move forward with the final revisions to navigation project cooperation agreements and to work to achieve a "powering-down" of the decision-making process, i.e., moving decisions down to the district and local level from the national level.

- Support establishment of a national dredging policy which: recognizes waterways as an important part of the national intermodal transportation system; identifies the expanded appropriate federal role in funding construction of confined disposal facilities; and considers the full range of benefits resulting from dredging projects.

AAPA members are calling on Congress to amend the Clean Water Act (CWA) and to pass a 1994 reauthorization of the Water Resources Development Act (WRDA), to address the dredging problems ports around the country face to keep their navigation channels open for trade.

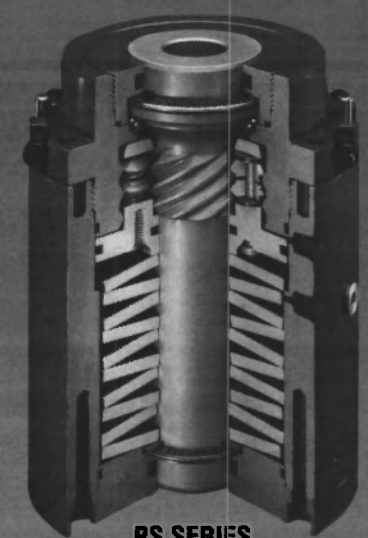
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Lloyd's Register Touts ShipRight Procedures, Rulefinder Database

Lloyd's Register recently held a briefing in New York City to present the safety benefits of its ShipRight design, construction and lifetime ship care procedures, and the advantages of its Rulefinder interactive database system, for shipping

executives. Speaking on the ShipRight comprehensive measures for ensuring safety throughout a vessel's life, **John Ferguson**, manager, technical planning and development department, said: "These procedures supplement and support our classification service...they extend well beyond the normal mandatory requirements for hull classification." He continued: "ShipRight takes into account factors such as the widespread use of high tensile

steels, optimization of hull structures and the need to ensure adequate general and fatigue strength in the new generation of double hull oil tankers and other large, complex ships."

Rulefinder is an interactive CD-ROM database system which makes finding relevant classification and statutory requirements a quick and easy task. "This system also contributes towards greater vigilance and safety," said **John Rugg**, manager,

marine marketing and business group. "By guiding the users through the vast volume of marine regulations, it will help to increase the effectiveness and efficiency of surveys." For more information on ShipRight or Rulefinder,

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PDT Specializes In Circuit Breakers, Controllers And Switchgear

Power Distribution Technology (PDT), serving the U.S. Navy and commercial shipping customers since 1984, is an engineering, repair and overhaul company specializing in high, medium and low voltage circuit breakers; motor controllers; and switchgear. PDT was formed in response to rising costs of replacement equipment, as well as the emphasis on improving the reliability of power distribution equipment. PDT's Quality Assurance Program has been audited and approved annually for the past eight years by the South Tidewater Association of Ship Repairers (STASR) for providing electrical maintenance services in accordance with MIL-I-45208A, MIL-STD-456622 and NAVSEA Standard Item 009-04 to the area ship repairers. For more information on PDT,

Circle 52 on Reader Service Card

Bill Munson Heads Up New Boat Company

Bill Munson, founder and past president of Munson Mfg., Inc., has left Munson Mfg. to pursue his goal of operating a tightly held, competitive aluminum boat design and manufacturing company.

Mr. **Munson** has designed and produced hundreds of aluminum vessels since he first entered the business in 1975. In 1986, he sold Munson Mfg. to an investor, and until the end of 1993, ran the company as president. "My goal in the boat design and construction business is to have an operation that will allow me to stay totally involved in a project from concept through delivery," said Mr. **Munson**. "My position as president of Munson Mfg. made it increasingly difficult to maintain close contact with the project and the customer throughout the process." He now operates the William E. Munson Co. and has contracts for several high performance aluminum vessels. The new company specializes in custom power boat design and construction to 72 ft. (22 m) and is also introducing several lines of utility craft. "Our new techniques, new designs and new operations will allow more people to own a Bill Munson boat." For more information, contact: William E. Munson Co., 18130 Sunset Way, Edmonds, Wa. 98026; tel: (206) 672-4634; fax: (206) 774-2408; or,

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Barataria Lofting Reports Success In Varied Markets

Barataria Lofting Company, Inc. reports it has delivered services to a variety of vessels over the past year. In the gaming sector, Barataria made contributions to one Service Marine-built and one Avondale Industries, Boat Div.-built casino vessel.

Both gaming vessels entailed lines fairing, offset generation, shell plate development, NC code generation and production-related data.

Barataria also delivered lines fairings and offsets to Breaux's Bay Craft on a 135-ft. (41-m) luxury yacht.

In the area of specialized construction, Ocean Technical Services Inc. (OTECH) was delivered lines fairing and offsets, along with a set of full scale lines, for a 20-ft. (6-m) data buoy built for the National Data Buoy Center. Also delivered to OTECH, for another project, were templates for the bilge blocks on a lifting cradle for the 110-ft. (34-m) Island Class U.S. Coast Guard Cutter.

On the offshore front, a delivery was made to NAMASCO, New Orleans, consisting of part nesting and NC code generation in support of steel processing on a floating production facility. For free information on the services rendered by Barataria Lofting Co.,

Circle 54 on Reader Service Card

Tri Tool Debuts New Single Point Module For Maximum Versatility

Tri Tool Inc. has released its new single point bevel and counterbore module for use with either the RBL series or SB series clamshell pipe cutting machines.

The module reportedly permits any bevel (including narrow gap preps) to be generated on standard to extra heavy wall pipe, with standard tooling.

Counterbores of up to nine inches deep can also be accomplished with this unit.

Pipe diameter of one to five ft. and wall thicknesses of up to six inches are within its optimum design range. For more information on the new product from Tri Tool,

Circle 55 on Reader Service Card

PECC Supplies Digital Turbine Control System On Turbine Engines

Allison Gas Turbine Div. of General Motors and Precision Engine Controls Corp. (PECC) signed an agreement for PECC to supply its digital turbine control system (TCS) as an OEM supplier for AGTD's line of 570/571 industrial turbine engines.

More recently, PECC developed a new microprocessor-based air/fuel

ratio controller for carbureted stationary natural gas engines. The new AccuNO₂ controller is available for OEM and retrofits.

According to the manufacturer, the microprocessor-based controller is designed for ease of installation, is designed to be simple to learn and operate, and to be low in cost. Precision Engine Controls Corp. is located in San Diego and manufactures a complete line of industrial engine ignition controls and

accessories for both turbine and reciprocating engines. For more information,

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All Alpha Intl. Exclusive Agent For Windows-Based Ship Loading Program

All Alpha International Inc. of

Cincinnati is the exclusive agent in North America for the sales and promotion of Microsoft Windows-based ship loading computer systems developed by SEACOS Computersysteme & Software GmbH.

For additional information on the program from All Alpha International,

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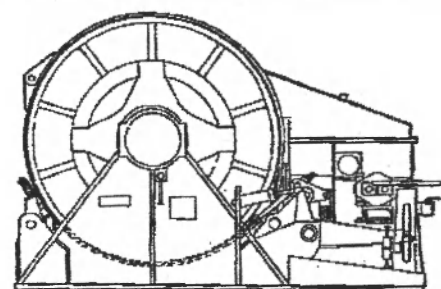
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Bisso Towboat Co. Christens Tugboat *Allison S.*

Bisso Towboat Co., Inc. christened the *Allison S.* at the Delta Queen Steamboat Terminal on the Mississippi River.

Allison S. is a 3,600 bhp class twin-screw tugboat. The vessel is 105 feet (32 m) long, with a breadth of 30.5 feet (9 m) and a depth of 12.5 feet (4 m). *Allison S.* was constructed by Main Iron Works, Inc. of Houma, La. in nine months and carries an ABS International Loadline.

The *Allison S.* will be positioned on the Mississippi River near St. Rose, La. to provide ship assistance to the large tankers and grain ships which call in the area. The tugboat will also be available for emergency towage and salvage assignments in the U.S. Gulf area.

Main propulsion is provided by two Detroit Diesel 16V-149TIs driving two Twin Disc MG



540 reduction gears with 7:1 ratio, which in turn drive two four-blade stainless steel propellers, set in stainless steel Kort nozzles.

Electrical power is provided by two Delco 60 kW generators driven by two Detroit Diesel 4-71s.

Auxiliary equipment includes one SKUM 2000

gpm foam/fire monitor powered by one Detroit Diesel 8V-71 driving one 8-inch Peerless pump; one 150-hp Thrustmaster of Texas bow thruster powered by one Detroit Diesel 8V-71; and Skipper electric over hydraulic steering.

The addition of *Allison S.* brings the total number of tugs in Bisso Towboat Co.'s fleet to 19, ranging in horsepower from 1,800 to 4,600.

For more information on Bisso Towboat Co., Inc.,

Circle 89 on Reader Service Card

Allison S. Equipment List

Main engines	GM
Reduction gears	Twin Disc
Generators	Delco
Bow thruster	Hydraulic
Capstan	Skagit
Fire fighting	SKUM
Steering	Skipper Electric
Engine controls	Schrader Bellows

Wartsila Vasa 46 Engines Pass U.S. MIL-SPEC Engine Testing

Wartsila Diesel North America Inc. announced its successful completion of U.S. military (MIL-E-23457) testing on its Vasa 46 diesel engine. The 12-cylinder medium-speed diesel engine completed the 1,000-plus hour test at varying power levels, up to 110 percent of the 15,900 rated bhp.

The test involved quick accelerations and extremely high power levels, requiring the burning of one truckload of fuel every eight hours.

Wartsila conducted the test at its own expense in order to qualify for participation in such projects as the U.S. Navy's Strategic Sealift and LPD (amphibious ship) projects. With the completion of this test, the entire Vasa 46 series of seven engine models ranging from 5,200 bhp to 23,500 bhp is now qualified to MIL-E-23457.

The Vasa 46 will be manufactured at Wartsila Diesel's new production facility in Mount Vernon, Ind. The existing site, originally built by Wartsila Diesel's manufacturing partner Babcock & Wilcox, is undergoing modifications in order to perform the necessary fabrication and testing functions for the Vasa 46. According to **Thomas M. Carbone**, vice president of manufacturing and general manager of the Mt. Vernon plant, Wartsila Diesel's venture is unique to U.S. shipbuilding in that a leading international supplier will manufacture its top product line in the U.S.

For more information on the products and services offered by Wartsila Diesel North America.

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Riverside Marine Introduces "Bilge Bugs"

Riverside Marine Products offers Bilge Bugs™ a two-part clean-up deodorizing agent engineered for a wide range of fuels and lubricants normally found in the bilge. According to **Matt Smith**, a company spokesman, the product works like this: leakages or spills of fuel and lubricants into a boat's bilge shape into large globules or a slick. Bacteria, either naturally occurring or induced will break down and consume these bilge oils and their odors. Bilge Bugs Part A speeds up this process by emulsifying the spill, breaking it down into microscopic particles, and then encapsulating each of these particles with a nutrient-bearing surface. The process, called emulsification encapsulation, reportedly provides more surface area for accelerated biodegradation.

For more information on Bilge Bugs from Riverside Marine Products,

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Maritime Reporter/Engineering News

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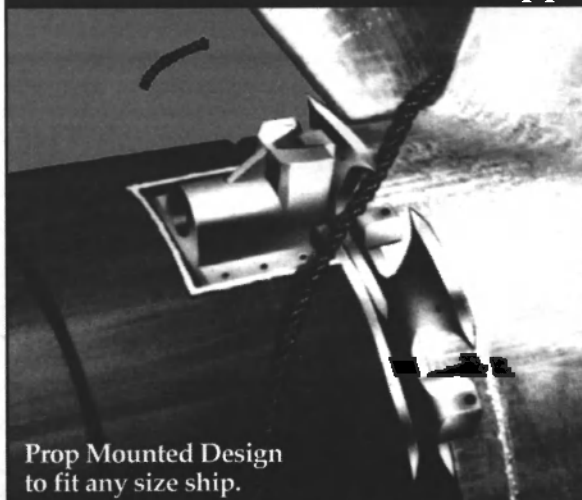
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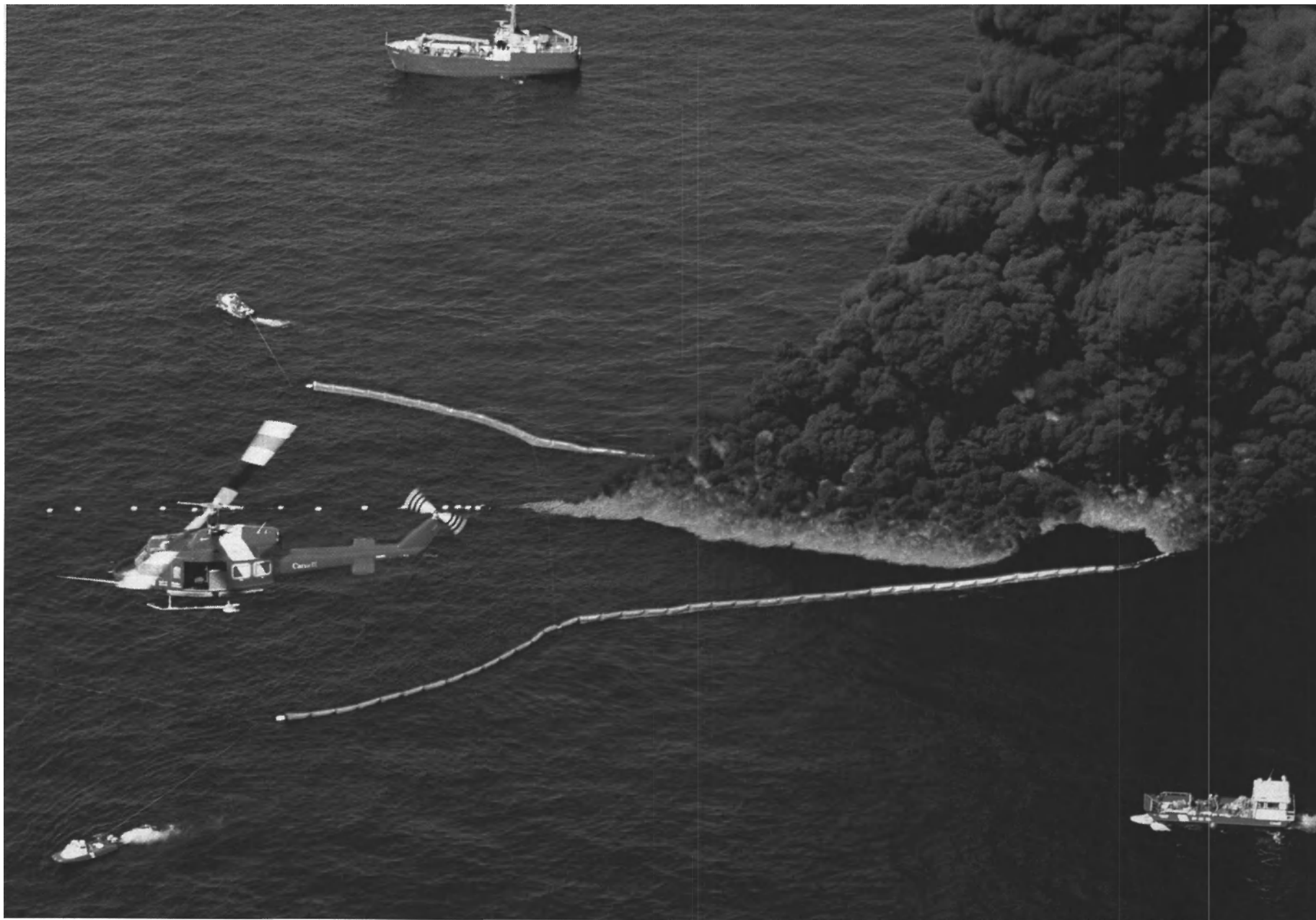
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The Newfoundland Offshore Burn Experiment (NOBE) was a collaboration of 25 agencies from Canada and the U.S. which sought additional information on the advantages of burning as a means to clean up oil spills. Photo Credit: NOBE/Joseph B.H. Smith, 1993

O BURN OR NOT TO BURN: That Is The Ecological Question

As many debates and questions surround the measures needed to prevent an oil spill, similar debates and questions surround the methods used to remove a pollutant once it is in the water. To help answer some questions a consortium of more than 25 agencies (see list) from Canada and the U.S. conducted a burn offshore Newfoundland under the auspices of NOBE, the Newfoundland Offshore Burn Experiment. According to **Joe Smith**, special projects, Foss Environmental, the project has proven that burning is a viable solution to oil spill clean-up, and that it is also economical, saving the costs of recovery, transport and disposal. Foss Environmental was involved in the early development of fireproof boom development, which has helped make burning a tool for oil spill clean-up.

THE RESULTS

The burn involved the release of two oil spills of about 50 tons each into a fireproof boom. Each burn lasted more than an hour and was monitored for emissions and physical parameters. More than 200 sensors and samplers were employed,

yielding more than 2,000 parameters and substances. In total, the operation included more than 20 vessels, seven aircraft and 230 people. From this trial, several important findings resulted:

- The scaling up of results from burns conducted in test tanks to the full-scale offshore environment is not always appropriate.
- Burning at sea is a feasible and practical oil spill countermeasure.

The analytical data to date show that the emissions from the experiment were less than expected. Pollutants generated in the Newfoundland offshore burn were found to be at lower values than in previous pan tests, and while the reasoning is not yet fully understood, it appears that the offshore test resulted in more efficient combustion.

Particles in the air were measured by several means, and found to be of concern only up to 490 ft. (150 m) downwind at sea level. Combustion gases, including carbon dioxide, sulfur dioxide and carbon monoxide, reportedly did not reach levels of concern. Volatile organic compounds (VOCs) which were detected in high concentrations, however, were reportedly less than VOCs

emitted from the non-burning spill.

THE OPERATION

The oil was released into a fire-resistant boom, ignited with a Helitorch and burned. Air emissions were monitored down-wind from two remote-control boats, a research vessel and an airplane. The plume itself was sampled via remote-controlled helicopters and a tethered blimp. The fire-resistant boom was equipped with thermocouples to monitor temperatures of the flames and water temperatures directly underneath the fire. A remote-controlled submersible was deployed under the burning slick to monitor temperatures and take video footage.

A supply-type ship was used to release the oil, through a skimmer, so that in the event of a problem, the flow could be reversed and the oil recovered. In total, each spill encompassed about 50-cu.-m. (10,000 Imperial gallons) of oil.

The fire-resistant boom incorporated in the project was a commercial type, which included some experimental sections. An offshore back-up boom, loaded with sorbent, was deployed about one kilometer down current, to ensure any sheen was recovered. The fire-resistant boom was inspected after the first burn, and some signs of fatigue in the stainless steel core were observed, yet it was determined fit for the second burn. Following the second burn, the fire-resistant boom

was again inspected and it was found that the prototype section with a middle tension member had lost three of its float logs. Inspection of this section at the factory showed it had not been properly constructed. The boom was in fair condition, but could not have been safely used as the apex for another burn. The temperature at the top of the fire boom often reached about 1,000°C and the temperatures below were substantially lower. The water showed no increase in water temperatures. For more information,

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PERD-Program for Energy Research & Development

Tonnage Losses Up Substantially 1st Qtr.

According to figures released by the Institute of London Underwriters (ILU), the underlying improvement in merchant ship casualty experience seen in 1993 did not hold up during the first quarter of the year. Statistics, taking into account ships of 500 gt and over, show that in the January to March 1994 time period a total of 24 ships were recorded as total losses or constructive total losses (CTLs). While the number of ships lost represents a 40 percent decrease from the same time period of a year before (40 vs. 24); the tonnage total lost in the first quarter of 1994 (384,874 gt) was much higher—59.5 percent—than the total of 218,794 gt lost in the first quarter of 1993.

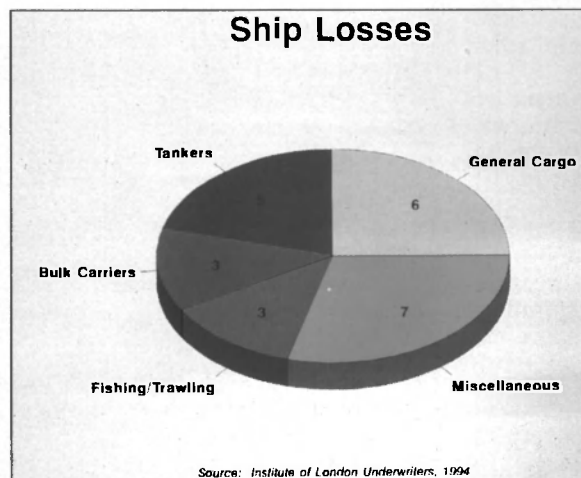
The 348,874 gt lost in the first quarter of 1994 is about half of the total tonnage lost in the whole of 1993 (which was 129 ships totaling 739,483 gt). The figures also do not include three vessels in January which were all lost as a result of breaking their tow, and 14 other vessels which were confirmed as total losses occurring the previous year. The largest individual loss in the first quarter of 1994 was the Maltese-flag *Stolidi*, a 138,765-gt tanker built in 1976. The vessel was extensively damaged after an explosion and fire, and the vessel was sold for breaking up.

Two of the most expensive hull total losses (for underwriters), according to ILU, were the Italian-flag liquefied gas carrier *Red Star* and the Liberian-flag ore/oil carrier *Marika*, insured for \$14 million and \$12.5 million respectively.

A spectacular casualty, although not total loss, was the Finnish-flag passenger ferry *Sally Albatross*, which grounded and was holed west of Helsinki in March. A successful rescue operation accounted for 1,100 passengers and 158 crew.

Loss Of Life

According to ILU casualty reports (which the organization admits are difficult to collate accurately), 179 people were either killed or reported missing as a result of losses (both total and partial) during the first quarter of 1994. By contrast, a total of 613 were reported for all of 1993; 386 for all of 1992. Additionally, the figures do not tell the whole story, as ILU statistics cover only vessels 500 gt and higher, excluding fishing vessels and other craft.



By vessel type, there were a total of 24 total losses in the first quarter of this year. There were seven "miscellaneous" losses, which count for one of each of the following types of ship: ore/oil carrier; liquid gas carrier; cement carrier; refrigerated cargo; RoRo cargo; passenger/RoRo cargo; and tug/salvage.



The cruise ship *Sally Albatross*, 25,076-grt, grounded in an ice field west of Helsinki.

Salvage Teams Refloat Cruise Ship *Sally Albatross*

More than a month of round-the-clock work by a large salvage team has been rewarded with the refloating of the passenger vessel *Sally Albatross*. Salvage tugs towed the vessel 40 miles to the safety of a drydock in Helsinki for emergency repairs.

The *Sally Albatross* was nearing the end of a 24-hour cruise in the Gulf of Finland on March 4 when she grounded on Savin Shallow, west of Helsinki. The vessel was badly holed and many internal spaces were flooded. The ship freed itself but then developed a 13° list.

Finnish salvor Alfons Hakans responded to the emergency. The Alfons Hakans tug *Kraft* took the vessel in tow and deliberately grounded her in a safe position.

Alfons Hakans Salvage Master **Perttii**

Kervinen said, "An initial inspection revealed extensive flooding of the *Sally Albatross*' engine room, together with some public spaces and cabin areas. It was obvious from the first that refloating the cruise ship would demand a major salvage effort."

Smit Tak was invited by Alfons Hakans to participate as co-salvor. The operation called for the deployment of extensive salvage resources, including tugs, pontoons and a heavy lift crane. Working conditions were poor and progress was hindered by ice that continued to build and move throughout the operation.

Early diving inspections revealed that the *Sally Albatross* was resting mainly on her starboard side, on a rock and gravel seabed. Diving teams worked day and night to clear gravel, in order to obtain a clearer appreciation of the bottom damage. Other divers commenced the task of sealing submerged portholes and windows.

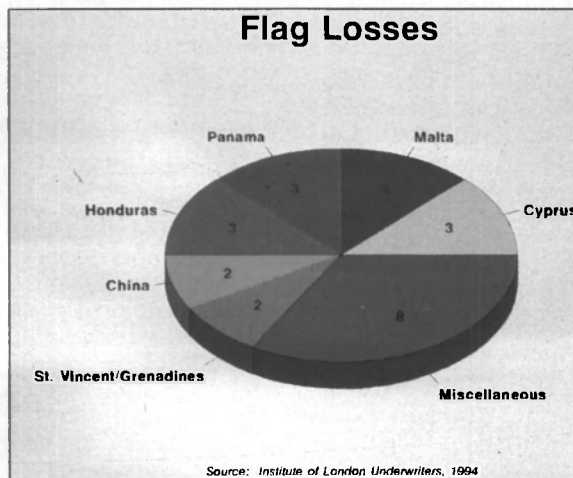
Smit Tak Manager **Geert Koffeman** said "This salvage was a real challenge, given the number of openings which had to be patched or sealed and protected."

The work was hampered by damage from passing ice. The large iceflows have tremendous power—tearing out portholes as though made of tissue paper."

The refloating plan involved two heavy barges positioned alongside the *Sally Albatross*. Lifting slings attached to the barges were placed beneath the vessel in readiness for the lift.

A first attempt to raise the *Sally Albatross* was canceled following concern about her stability due to heavy ice movement during the critical first hour of the lift.

The salvors reacted by calling in a sheerleg crane barge for additional stabilizing capacity. More pumps were also brought to the site, to increase the rate of dewatering immediately following the lift.



By flag of registry, there were a total of 24 losses. There were eight "miscellaneous" losses, which count for one ship each under the following flags: Philippines; Norway; Liberia; France; Italy; Bahamas; S. Korea; and Romania.

USCG Port State Control Initiative:

A Program To Eliminate Substandard Foreign Vessels

The U.S. Coast Guard (USCG) submitted a report to Congress detailing its Port State Control Initiative — a system designed, according to the report itself, “to identify and eliminate substandard foreign vessels from U.S. waters.” To do this, the system will assign risk factors to vessels, and target those vessels with high risk factors for boarding and inspection.

The program is as expansive as it is aggressive: once a vessel is found to be substandard, all other vessels belonging to its owner/operator are automatically targeted. Classification societies and flag states will also be targeted if the ratio of USCG “interventions” on its vessels exceeds the mean intervention level for all other bodies of its kind. The USCG is updating the Marine Safety Information System (MSIS) to identify automatically all ships associated with targeted owners, classification societies and flag states. The intervention rate of a flag state or classification society will be compared to the mean intervention rate for all such entities, and if it is higher than the mean, it will be targeted. Information on which bodies are targeted will be distributed to field units by message as well as in list form. Any vessel suspected of presenting an imminent threat to life, the port or the environment, will be targeted for boarding prior to entry into port.

The USCG is also updating guidance on specific documents, systems and equipment to be checked during vessel examination. Upgraded boarding teams will include marine inspectors, as only teams specifically intended to examine high-risk vessels have in the past. Targetings will be arrived at using a point system that assigns a risk factor to a vessel, known as the targeting matrix.

The USCG's program also includes penalties for “port-state control deficiencies” found during boardings—including barring faulted vessels from entry into U.S. ports until those deficiencies are corrected.

Identifying A Substandard Vessel

A vessel will be deemed substandard if the hull, crew, machinery or equipment is below standards required by U.S. law or international conventions, because:

- It is missing principal equipment or arrangements specified by such laws or conventions,
- It is grossly noncompliant with the standard

of those laws,

- Its structure or equipment has deteriorated substantially,
- It is noncompliant with the operational/crewing standards of U.S. laws or international conventions, or
- It is clearly lacking appropriate certification or its crew demonstrates incompetence.

Owners And Operators

Targeted owner/operators include owners, operators or managing operators. Once targeted, they remain so until a 12-month period elapses during which none of the vessels associated with them are the object of an “intervention.”

Classification Societies

Classification societies are targeted if they do not demonstrate compliance with IMO Resolution A.739(18). All societies deemed not to meet those criteria will be targeted.

Those societies that comply with the resolution will be further screened by comparing their intervention ratios to the average intervention ratio of all classification societies.

MSIS, which currently does not require classification society data, is being modified to include such data. The USCG will also require that the Advance Notice of Arrival at Port note the classification society of the arriving vessel; the information will be incorporated into the MSIS database for more reliable identification of a vessel's classification society.


Flag States

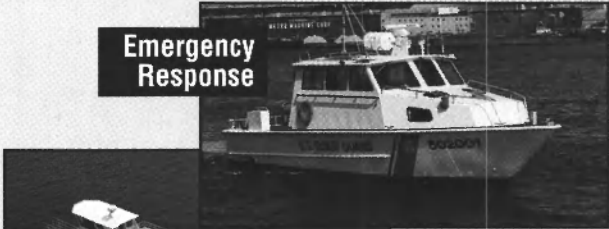
In this case, the number of interventions for flag states will be compared with the total number of vessels from those states which enter U.S. waters. If the ratio of interventions versus total ships entering U.S. ports exceeds the mean, the flag state becomes targeted.

The Targeting Matrix


Vessels will be assigned priorities based on a point system. Those priorities range

from **Priority I** to **Priority IV** — the first of which will be boarded before entry into a U.S. port if at all possible, and the last of which will be boarded only at the discretion of the Officer in Charge of Marine Inspection or Captain of the







Emergency Response



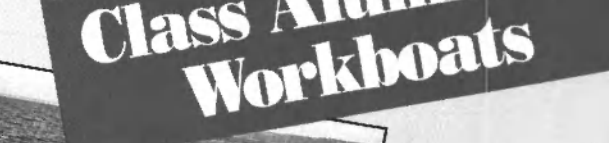
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Port (OCMI/COTP).

Priority I vessels are either stateless, or suspected of involvement in a marine casualty that may have affected its seaworthiness, or of endangering the port or environment by way of a hazardous materials release. A vessel will also be targeted as **Priority I** if it scores 17 or more points on the targeting matrix (see chart, pg. 93), or if the USCG Commandant or the OCMI/COTP so directs. (The Comman-

dant can also target a vessel as **Priority II** or **Priority III** vessels.) Vessels of this priority will be boarded by a team including a qualified marine inspector, except under exceptional circumstances such as risk to the boarding party — and should those circumstances arise, the vessel will be inspected prior to cargo transfer.

If the vessel has been targeted solely because it has scored 17 points or greater on the targeting matrix,

and if it has been boarded within the last six months and found free of serious deficiencies, it may be reduced to **Priority III** status.

Priority II vessels either do not have or are past due for an Annual Tank Examination, Biennial Certificate of Compliance Examination, or Annual Control Verification Examination; have overdue outstanding requirements issued at previous examinations; lack a record of previous USCG examination; have not

been examined since being released from a port state intervention by the U.S. or any other party to the relevant convention; or have score between seven and 17 points on the targeting matrix.

Vessels of this priority will be targeted for examination prior to cargo transfer.

Exemptions may be granted based on a general exam or other evidence of substantial compliance with applicable standards. If targeted solely because of its targeting matrix score and a boarding in the last six months revealed no serious deficiencies, the vessel may be reduced to **Priority III**.

Priority III vessels either do not have or are past due for an Annual Freight Vessel Examination or Quarterly Passenger Vessel Reexamination; are alleged to be substandard by a vessel crewmember professional or other association trade union or other interested person; or have scored between four and six on the targeting matrix. These vessels may be targeted for examination after entry into port without restrictions at the start of cargo operations or passenger embarkation. Discrepancies must be corrected prior to departure unless the OCMI/COTP permits an exception — in which case noted discrepancies must be corrected before the next entry into a U.S. port.

Priority IV vessels possess none of the critical criteria under the

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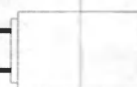
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USCG Making A List And Checking It Twice

*U.S. Coast Guard
Cites 15 Countries In Move To
Reduce Substandard Vessels*

The U.S. Coast Guard (USCG) released the names of 15 countries whose ships will be targeted for increased safety inspection when in U.S. waters. The list was developed at the direction of Congress.

The countries listed are: Paraguay, Dominican Republic, Belize, Peru, St. Vincent and the Grenadines, Ecuador, Venezuela, Honduras, Argentina, United Arab Emirates, Malta, Vanuatu, Cyprus, India and the Bahamas.

The action is part of the USCG's widely publicized initiative to help eliminate substandard ships from U.S. waters. The initiative grew out of a concern of the threat posed to U.S. ports and the environment by substandard foreign-flag ships.

Boarding priorities are based on the performance records of ship owners, classification societies and flag states. The countries listed were found to have higher than average rates of substandard ships. The increased focus directed to substandard ships by the USCG has resulted in more foreign-flag ships being detained in the U.S. under authority of international conventions. In the first six months of 1994 the U.S. reportedly exceeded the number of interventions carried out in all of fiscal year 1993.

Maritime Reporter/Engineering News

higher priorities, and score between zero and three on the targeting matrix. They will not be targeted for boarding except at the discretion of the OCMI/COTP.

Implementation

The targeting matrix has been distributed to USCG field units for immediate implementation. Systematic identification of targeted entities commenced in the first quarter of FY '94 and will be completed by the third quarter of FY '94. Full implementation, including the development of guidance and training of personnel, will be achieved by the completion of FY '95.

At press time, targeted entities were being notified of their status as a precursor to making their names and status public knowledge, a step taken in accordance with the words of RAdm. A.E. Henn of the USCG, who wrote in the October 1994 issue of *Maritime Reporter/Engineering News* that "from now on, the bad guys will be posted."

Overview

Even then, RAdm. Henn spoke out against "tinker-toy" classification societies "that consist of two men and a dog in a room with a telephone ... that would 'stamp a ham sandwich' if they could make a dollar doing so." Referring to owner/operators, classification societies and flag states as "safety nets," he lamented that the U.S. control verification program finds too many deficient vessels that have passed through the first safety nets undetected. In 1992, according to RAdm. Henn, 36 percent of 6,600 foreign vessel boardings were found to exhibit violations. "Port states can no longer allow owners, operators, classification societies and flag state to ignore substandard ships," wrote RAdm. Henn. Living up to those words, the USCG has created what many are calling the most stringent port state control system in the world, an outgrowth of the increasing trend toward quality shipping.

Foreign Vessel Targeting Criteria (Point System)

COLUMN I - OWNER - MAX 7 pts.

5 pts. if owner/operator targeted and/or
2 pts. if ship en route to facility identified by COTP as frequently receiving substandard ships

COLUMN II - FLAG - MAX 7 pts.

7 pts. if ship's flag state targeted or
7 pts. if no flag state performance record available

COLUMN III - CLASS SOCIETY - MAX 5 pts.

5 pts. if unlisted as recognized class society or class unknown, or
3 pts. if class intervention ratio above mean

COLUMN IV - BOARDING HISTORY - UNUMITED pts.

1 pt. each ship violation reported in past 12 months, and/or
1 pt. each time ship subject to operational control, intervention or detention in past 12 months, and/or
1 pt. each time ship involved in marine casualty or oil/hazardous materials incident in past 12 months, and/or
1 pt. if ship has not been boarded in last six months

COLUMN V - VESSEL TYPE - MAX 2 pts.

1 pt. if Bulk Chemical Tanker, or
1 pt. if Oil Tanker, or
1 pt. if Gas Carrier, or
1 pt. if Bulk Freighter 10+ yrs. old, or
1 pt. if Passenger Ship, and/or
1 pt. if ship carries low value commodities (tallow, scrap metal, asphalt, paper, etc.)

Points from all columns are then totaled to determine ship's point score.

Uni-Safe Expands Activities

Dansk Radio AS, owned by Terma Elektronik AS, has assigned the worldwide sales and marketing of its Salinometer program to Uni-Safe Electronics. Uni-Safe has also taken over the sales in Denmark of Jotron's total product program, consisting of three principal groups: flight radios; emergency radios; and their light program. The company's new address is: Uni-Safe Electronics ApS, Amager Strandvej 124, DK-2300 Copenhagen S., Denmark; tel: +45 31 58 16 15; fax: +45 31 58 13 30.

Uni-Safe's main product is the Terma Elektronik-manufactured Salinometer program, which includes two widely distributed salinometers, type SL3005 and SL3000, with accessories. For free information on Uni-Safe's line of products,

Circle 59 on Reader Service Card

Perry Trittech Gets "Gator" Order

General Offshore Corp. placed an order with Perry Trittech for the design and construction of a shallow water trencher for burial of submarine telecommunication and power cables. The system, dubbed "Gator," will become a part of General Offshore's telecommunications operations based in the U.S., Singapore, the U.K. and Germany.

The Gator is a modular, lightweight subsea tractor system, designed to bury submarine cables and pipes from dry land to 164 ft. (50 m) of water depth without the use of sophisticated support vessels. Perry Trittech is a supplier of Remotely Operated Vehicles for the offshore industry.

For more information on the company's products or services,

Circle 50 on Reader Service Card

Archon Offers Lines Of Observation Equipment, Piping Accessories

Archon Industries, Inc. manufactures a complete line of tank and vessel observation equipment, including light/sightglasses, liquid level gauges and sight flow indicators.

The company also offers piping accessories, including metallic and rubber pipe expansion joints. Metallic expansion joints are available with fixed or vanstone flanges and with weld end connections. Multi-

ple exhaust expansion joints for the marine industry are part of the product line. Rubber expansion joints are available in single and double sphere, with NPT connections and flanged spool type.

For free product literature on the complete Archon line,

Circle 61 on Reader Service Card

ABB Turbocharger Opens New Service Center

ABB Turbocharger Inc. announced the opening of its new ser-

vice center, located in the Houston area. The facility's address is: ABB Turbocharger, Inc., 4111 Cedar Blvd., Baytown, Texas 77520; tel: (713) 383-7145; fax: (713) 383-7142.

The new center offers complete repairs, shop and 24-hour field service for ships calling on the Houston area. Services include computerized rotor balancing, blast cleaning, machining and shaft repairs, and are all performed by factory-trained service technicians. Original new and reconditioned ABB parts are available, many on an exchange basis. For more information,

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Hong Kong & Ynumati Ferry Co. Specify Sisradar To Train Officers

The Hong Kong & Ynumati Ferry Co. Ltd. (HYF), reportedly one of the world's largest ferry operators, has specified Sea Information Systems Ltd.'s Sisradar PC-based radar and navigation simulator for the training of its officers.

Aberdeen, U.K.-based Sea Information Systems claims Sisradar is the world's only type approved IBM compatible PC-based radar and navigation simulator suitable for courses up to the highest level of marine training.

Sisradar can be used for "skills and drills" type training and provides full Automatic Radar Plotting Aid (ARPA) plotting facilities as laid down by IMO.

Sea Information Systems is providing HYF with its Sisradar Version 3+ and six work sta-



HYF has ordered Sea Information Systems' PC-based radar and navigation simulator, Sisradar, for the training of its fast ferry crews.

tions at the company's head office in Hong Kong, where training will take place.

Ingalls' Computer-Aided Design Group Earns Navy Recognition

The Computer-Aided Design (CAD) and Digital Data Transfer team at Ingalls Shipbuilding division of Litton Industries has earned special U.S. Navy recognition for its efforts in the development and application of three-dimensional CAD technology. Specifically noted was Ingalls' work in 3-D modeling and data model translator efforts in the Navy's *Arleigh Burke* (DDG 51) Aegis destroyer program.

RAAdm. **George A. Huchting**, USN, Aegis Program Manager, presented Ingalls' CAD team an Aegis Excellence Award.



CAD briefing at Ingalls Shipbuilding: Rear Admiral **George A. Huchting**, USN, right, listens to CAD design specialist **Patti Reed** give an update on the operation of the CAD system of the Flight 2A Aegis destroyers. Also involved in the briefing are **Joanne J. Ouillette**, DDG 51 CAD project manager, U.S. Navy Aegis Program (PMS 400) and Ingalls CAD design specialist **D.L. Webb**.



Sun State Marine, Inc., Green Cove Springs, Fla. completed construction of a new towboat which was christened *Sun River City*. The 1,000-hp towboat is powered by two Caterpillar 3412DITA engines driving MG 521 reduction gears. The main engines were provided by Ring Power Corp. of Jacksonville, Fla. Main and auxiliary electrical power is furnished by two Perkins 40-kW generators. The design drawings were provided by Rodney E. Lay & Associates.

Unitor Invests In Two New Workboats For Far East Operation



Unitor Singapore's new Ranger class catamaran workboat *Seacat* alongside the company's Jurong warehouse. A sistership, *Locator*, has entered service in Hong Kong.

Unitor, Norway's international ship supply company, has invested \$700,000 in two purpose-built workboats for its operations in the Far East, following the successful introduction of a sistership two years ago in Singapore.

Designed specifically to meet the requirements of Unitor's equipment supply, the arrival of these two 10-knot vessels allows Unitor to enhance its level of support service to shipowners in the ports of Singapore and Hong Kong, reportedly among the busiest in the world.

The *Seacat* was delivered to Singapore at the end of January, while its sistership *Locator* was delivered to Hong Kong in mid-March.

The two new steel-hulled workboats are of the "Ranger Class" of, designed by Australia's Asdmar of Queensland and built by Malaysia's Port Shipyard & Engineering, Port Klang.

Seacat and *Locator* have a light displacement of 27 tons and a dwt of 20. They are capable of carrying a deck load of 20 tons.

The vessels are designed with the ability to load 15 tons off-center on the aft deck and still be within stability regulations. Propulsion for the 49-foot (15-m) long, 19-foot (5.8-m) wide, four-foot (1.2-m) draft design (the *Locator* is 56 feet [17 m] long) is provided by two six-cylinder diesel engines — GMs for the *Seacat* and Volvos for the *Locator* — each developing 150 bhp and driving a four-bladed, fixed-pitch propeller. Service speed is 10 knots.

The new workboats have reduced the round-trip to the furthest point in Singapore's deepwater anchorage to just four hours, half the time it takes one of Singapore's traditional "kwatongs" (bum boats) to make the trip.

For more information on Unitor,

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Source: Maritime Reporter/Engineering News (June, 1994). Publisher not responsible for errors or omissions.

CRUISE FLEET DIRECTORY

Owner-Oper. Vessel Name	Length (feet)	GT	# of Pass.	Year Built	Yard Built	Cruise Area(s)	Owner-Oper. Vessel Name	Length (feet)	GT	# of Pass.	Year Built	Yard Built	Cruise Area(s)
American Canadian Caribbean — Warren, R.I.							Discovery Cruise Line — Fort Lauderdale, Fla.						
Caribbean Prince	156	89	80	1983	Blount Marine	E. Canada, Carib., Cen. & S. America	Discovery I	491	13,000	1,200	70/85	na/UNL	Pt. Everglades-Baham.
Mayan Prince	169	98	96	1992	Blount Industries	Same	* Discovery I underwent extensive interior refurbishment work in 1992.						
American Hawaii Cruises — San Francisco, Calif. (moving to Chicago, Ill.)							Dolphin Cruise Line — Miami, Fla.						
Independence	682	30,090	798	1951	Quincy Shipyard	Hawaiian Islands	Ocean Breeze	604	21,486	768	1955	—	S. Carib. & Panama Canal
Constitution	682	30,090	798	1951	Quincy Shipyard	Hawaiian Islands	Dolphin IV	501	13,007	588	1956	—	Bahamas & Key West
Carnival Cruise Lines — Miami, Fla.							Seabreeze	605	21,000	840	1958	—	E. & W. Caribbean
Festive	760	38,175	1,146	1961	—	San Juan-S. Carib.	Fantasy Cruises — Miami, Fla.						
Tropicale	660	36,674	1,022	1982	Aalborg Vaerft	Tampa/N. Orleans - W. Caribbean	Amerikanis	576	20,000	617	52/88	—	Eur., Carib., Medit.
Holiday	727	46,052	1,452	1985	Aalborg Vaerft	Miami - W. Carib.	Britanis	638	26,000	926	32/87	—	Mex. Carib., Nassau, S. America
Jubilee	733	47,262	1,486	1986	Kockums AB	L.A. - Mexican Riviera	Holland America Line — Seattle, Wash.						
Celebration	733	47,262	1,486	1987	Kockums AB	Miami - E. Carib.	Rotterdam	748	38,645	1,075	1959	Rotterdamsche Dry Dock	Alaska/Carib./ Special
Fantasy	855	70,367	2,044	1990	Kvaerner Masa	Pt. Canaveral-Baham.	Nieuw Amsterdam	704	33,930	1,214	1983	Chantiers de l'Atl.	Alaska/Carib.
Ecstasy	855	70,367	2,040	1991	Kvaerner Masa	Miami-Baham., Key West, Cozumel	Noordam	704	33,930	1,214	1984	Chantiers de l'Atl.	Alaska/Carib.
Sensation	855	70,367	2,040	1993	Kvaerner Masa	Miami-Caribbean	Westerdam	798	53,872	1,496	1986	Meyer Werft	Alaska/Carib.
Celebrity Cruise Lines — Miami, Fla.							Statendam	720	55,431	1,266	1993	Fincantieri	Alaska/Carib.
Horizon	682	46,811	1,354	1990	Meyer Werft	Bermuda, Caribbean	Maasdam	720	55,431	1,266	1993	Fincantieri	Alaska/Carib.
Meridian	700	30,440	1,106	63/90	Lloyd Werft	Bermuda, Caribbean	Majesty Cruise Line — Miami, Fla.						
Zenith	682	47,255	1,374	1992	Meyer Werft	E. & W. Carib.	Royal Majesty	568	32,400	1,056	1992	Kvaerner Masa	Carib./Mex./Berm.
Clipper Cruise Line — St. Louis, Mo.							Nippon Yusen Kabushiki Kaisha Line — Tokyo, Japan						
Nantucket Clipper	207	99.5	100	1984	Jeffboat	Carib., U.S./E. Can.	Asuka	633	28,717	584	1991	Mitsubishi	Japan, SE Asia, N. Zealand
Yorktown Clipper	254	99.5	138	1988	First Coast	Carib., Costa Rica/ Panama, Sea of Cor- tez, Pac. NW, Alaska	Norwegian Cruise Line — Coral Gables, Fla.						
World Discoverer	285	3,153	138	1974	Schichau Unterweser	Antarctica, S. Amer., S. Pacific, Alaska, Russian Far East	Norway	1,035	76,049	2,032	1960	Chantiers de l'Atl.	E. Caribbean
Commodore Cruise Line — Coral Gables, Fla.							Seaward	700	42,000	1,504	1988	Wartsila	Bahamas, Mexico
Enchanted Seas	617	23,500	728	1957	Ingalls	W. Caribbean	Dreamward	624	41,000	1,242	1992	Chantiers de l'Atl.	Carib., Berm.
Coral Princess Cruises — Townsville, Australia							Windward	624	41,000	1,246	1993	Chantiers de l'Atl.	Carib., Alaska
Coral Princess	120	750	54	1988	Carringtons	Great Barrier, Cairns	Starward	525	16,107	754	1968	Seebeckwerft	S. Caribbean
Costa Cruise Line — Miami, Fla.							Southward	536	16,607	727	1971	Fincantieri	West Coast
Eugenio Costa	579	30,000	772	—	—	—	P&O Cruises — London, U.K.						
Enrico Costa	579	16,000	700	51/90	Swan Hunter	—	Canberra	818.5	45,000	1,641	1961	Harland & Wolff	Medit., Carib., Norway, World Same
Daphne	532	17,000	422	56/86	Swan Hunter	—	Sea Princess	740	28,000	714	1966	John Brown	Same
Costa Marina	572	25,000	770	1990	Mariotti	Eur./Medit./S. Amer.	Premier Cruise Line — Cape Canaveral, Fla.						
Costa Allegra	615	30,000	800	1992	Mariotti	Carib./Eur./Medit.	Star/Ship Oceanic	782	40,000	1,809	1965	—	Port Canav., Nassau, Pt. Lucas
Costa Classica	718	53,700	1,300	1992	Fincantieri	Caribbean/Medit.	Star/Ship Atlantic	671	36,500	1,550	1982	—	Same
Costa Romantica	718	54,000	1,350	1993	Fincantieri	Caribbean/Medit.	Star/Ship Majestic	535	17,750	1,006	1972	—	Tampa, Key W., Mex.
Crystal Cruises — Los Angeles, Calif.							Princess Cruises — Los Angeles, Calif.						
Crystal Harmony	791	49,400	960	1990	Mitsubishi	Worldwide	Regal Princess	811	70,000	1,590	1991	Fincantieri	Carib., Alaska, Transcanal
Cunard — New York, N.Y.							Crown Princess	811	70,000	1,590	1992	Fincantieri	Same
Queen Elizabeth II	963	67,139	1,850	1969	John Brown	Worldwide	Sky Princess	789	46,000	1,200	1984	CNIM	Same
lagafjord	620	25,147	589	1965	Societe des Forges et Chantiers de la Med.	Alaska/Worldwide	Star Princess	805	63,500	1,470	1989	Chantiers de l'Atlantique	Carib., Alaska, Europe, Transcanal
ristafjord	628	24,492	736	1973	Swan Hunter	Carib./Europe	Royal Princess	757	45,000	1,200	1984	Wartsila	Transcanal, Baltic, Canada, U.S.
russian Princess	363	2,600	144	1991	—	Rhine /Main Rivers	Island Princess	550	20,000	640	71/93	Rheinstahl	Hawaii/Tahiti, S. Pac.
rincesse de	363	2,600	144	1992	—	Rhone River	Pacific Princess	550	20,000	640	71/92	Rheinstahl	India/Asia, Eur.
rovence	304	—	110	1991	—	Elbe River	Fair Princess	608	25,000	890	59/89	J. Brown	Hawaii/Tahiti, S. Pac.
resden	396	—	212	1987	—	Danube River	Golden Princess	674	28,000	890	73/93	Wartsila	S. Amer., Asia, Eur.
lozart	364	3,400	200	1983	—	Danube River	Renaissance Cruises — Fort Lauderdale, Fla.						
anube Princess	350	4,250	116	1984	Wartsila	Caribbean/ Mediterranean	Renaissance I	290	4,077	100	1990	—	On long-term charter
ea Goddess I	350	4,250	116	1985	Wartsila	Orient/Mediterranean	Renaissance II	290	4,077	100	1991	—	On long-term charter
ea Goddess II	537	17,593	750	1976	—	Caribbean	Renaissance III	290	4,077	100	1991	—	W. Indies, Mex., Carib.
unard Countess	537	17,593	750	1976	—	Canary Isl./Medit.	Renaissance IV	290	4,077	100	1991	—	West Indies
unard Princess	537	20,000	800	1992	UNL	Caribbean	Renaissance V	297	4,280	114	1991	—	—
Crown Jewel	537	20,000	800	1993	UNL	Pan. Canal/Alaska	Renaissance VI	297	4,280	114	1991	—	—
Crown Dynasty	500	15,270	530	1990	UNL	Australia	Renaissance VII	297	4,280	114	1991	—	—
Crown Monarch	420	20,294	350	1992	Finnyards	Various	Renaissance VIII	297	4,280	114	1991	—	—
Diamond Cruises — Fort Lauderdale, Fla.													
disson Diamond	420	20,294	350	1992	Finnyards	Various							

CRUISE FLEET DIRECTORY

Source: Maritime Reporter/Engineering News (June, 1994). Publisher not responsible for errors or omissions.

Owner-Oper. Vessel Name	Length (feet)	GT	# of Pass.	Year Built	Yard Built	Cruise Area(s)	Owner-Oper. Vessel Name	Length (feet)	GT	# of Pass.	Year Built	Yard Built	Cruise Area(s)
Royal Caribbean Cruise Line — Miami, Fla.							Seabourn Spirit	439	10,000	204	1989	Seebeckwerft	Same
Monarch of the Seas	880	73,941	2,354	1991	Chantiers de l'Atl.	Caribbean	Seven Seas Cruise Line — San Francisco, Calif.						
Majesty of the Seas	880	73,941	2,354	1992	Chantiers de l'Atl.	Caribbean	Song of Flower	409	8,282	172	1986	Lloyd Werft	Various
Sovereign of the Seas	880	73,192	2,276	1987	Chantiers de l'Atl.	Caribbean	Silversea Cruises — Fort Lauderdale, Fla.						
Nordic Empress	692	48,546	1,600	1990	Chantiers de l'Atl.	Bahamas	Silver Cloud	514	16,500	296	1994	T. Mariotti	Worldwide
Viking Serenade	620	40,132	1,512	1982	Dobigeon-Normandie	Mexico	* Two more similar vessels are currently under option for Silversea.						
Song of America	705	37,584	1,402	1982	Wartsila	Caribbean/Bermuda	Sun Line Cruises — New York, N.Y.						
Song of Norway	637	23,005	1,004	1970	Wartsila	Europe/Pan. Canal	Stella Solaris	540	10,595	700	1953	Chantiers Ateliers de France	Aegean-Medit., Carib.
Nordic Prince	637	23,300	1,012	1971	Wartsila	Alaska/Mexico	Stella Oceanis	344	3,963	350	1965	Navale Riunite	Aegean-Medit.
Sun Viking	563	18,556	714	1972	Wartsila	Alaska/Caribbean	Stella Maris	289	2,682	200	1960	—	Aegean-Medit.
Royal Cruise Line — San Francisco, Calif.							Windjammer Barefoot Cruises — Miami Beach, Fla.						
Crown Odyssey	614	34,250	1,052	1988	Meyer Werft	Worldwide	Mandalay	236	420	72	1923	Burmeister & Wain	Antigua - Grenada
Royal Odyssey	676	28,000	750	73/91	Wartsila/Weser	Worldwide	Fantome	282	676	128	1927	na/Italy	Grenada, N. Venez.
Star Odyssey	674	28,000	750	72/94	Wartsila/Weser	Worldwide	Yankee Clipper	197	327	64	1927	na/Germany	Grenadine Islands
Royal Viking Line — Coral Gables, Fla.							Flying Cloud	208	400	78	1935	na/France	British Virgin Islands
Royal Viking Sun	673	36,000	756	1988	Wartsila	Worldwide	Polynesia	248	248	126	1938	na/Holland	Leeward Islands
" " Queen	438	10,000	212	1992	Schichau Seebeck.	Worldwide	Amazing Grace	242	1,526	96	1955	Caledon Shipyards	Freeport - Grenada
Sea Cloud Cruises — Hamburg, Germany							Wind Star Cruises — Seattle, Wash.						
Sea Cloud	360	2,492	67	31/79	Germania Yard	Worldwide charter	Wind Star	440	5,350	148	1986	—	—
Seabourn Cruise Line — San Francisco, Calif.							Wind Song	440	5,350	148	1987	—	—
Seabourn Pride	439	10,000	204	1988	Seebeckwerft	Americas, Eur., Asia, Scandin., Medit.	Wind Spirit	440	5,350	148	1988	—	—

CRUISE SHIP NEWBUILDING

NAME	Length	GT	# of Pass.	Del. Date	Yard Building	Cruise Area
American Canadian Caribbean						
Niagara Prince	173	80	84	1994	Blount Ind.	Can, Carib., C. & S. Amer.
Carnival Cruise Line						
Fascination	855	70,367	2,040	1994	Kvaerner Masa	Can., S. Carib.-San Juan
Imagination	855	70,367	2,040	1995	Kvaerner Masa	Unannounced
Inspiration	855	70,367	2,040	1995	Kvaerner Masa	Unannounced
Unnamed	—	95,000	2,600	1996	Fincantieri	Unannounced
Celebrity Cruise Lines						
Century	—	70,000	1,740	1995	Meyer Werft	Unannounced
Unnamed	—	70,000	1,740	1996	Meyer Werft	Unannounced
Costa Cruise Line						
Unnamed	—	70,000	1,900	1996	—	Unannounced
Holland America Line						
Ryndam	720	55,431	1,266	1994	Fincantieri	Alaska/Caribbean
Veendam	720 ft.	55,431	1,266	1996	Fincantieri	Worldwide
NYK Line/Crystal Cruises						
Crystal Symphony	778	49,500	960	1995	Kvaerner Masa	Worldwide
P & O Cruises						
Oriana	850	67,000	1,975	1995	Meyer Werft	Medit., Carib., Norway, World
Princess Cruises						
Sun Princess	856	77,000	1,950	1996	Fincantieri	Carib., Alaska
Unnamed	—	100,000	2,600	—	—	—
Royal Caribbean Cruise Line						
Legend of the Seas	867	70,000	1,808	1995	Chantiers de l'Atl.	Unannounced
Splendor " " Seas	867	70,000	1,808	1996	Chantiers de l'Atl.	Unannounced
Unnamed	913	74,000	1,950	1996	Kvaerner Masa	Unannounced
Silversea Cruises						
Silver Wind	514	16,500	296	1995	T. Mariotti	Worldwide
Windjammer Barefoot Cruises (Reconstructions)						
France II	294	1,121	134	1963	Forges et Chantiers de la Mediterranee	Bahamas
(to be renamed)	—	—	—	—	—	—
Rogue	240	1,327	104	1960	Caledon Shipyard	n/a

Source: Maritime Reporter/Engineering News (June, 1994). Publisher not responsible for errors or omissions.

CRUISE INDUSTRY GROWTH

YEAR	Passengers (millions)	Percentage Growth	YEAR	Passengers (millions)	Percentage Growth
1980	1.4	+ 13.5	1987	2.9	+ 11.0
1981	1.5	+ 1.7	1988	3.2	+ 9.5
1982	1.5	+ 1.2	1989	3.3	+ 2.4
1983	1.8	+ 15.2	1990	3.6	+ 13.5
1984	1.9	+ 9.9	1991	4.0	+ 9.5
1985	2.2	+ 13.4	1992	4.1	+ 4.6
1986	2.6	+ 13.8	1993	4.5	+ 8.8

AVERAGE GROWTH RATE 1980 - 1993: + 10.0 %

Source: "The Cruise Industry: An Overview" Jan. 1994 report published by Cruise Line International Association (CLIA).

CRUISE MARKET POTENTIAL

Based on likelihood to cruise, CLIA estimates over \$50 billion in market potential over the next five years:

SAMPLED Profile Study Sample (HH Income \$20K +, Aged 25 +)	Total Population (000's)	% Likely To Cruise	Likely Prospects (Millions)	Revenue Opportunity (Billions of dollars)
Aged 25 - 39	45,080	22.9	10.3	14.1
Aged 40 - 59	37,867	20.5	7.7	10.6
Aged 60 +	29,753	19.6	5.8	8.0
TOTAL	112,700	21.4	23.8	32.7
NOT SAMPLED				
Children Under 18	—	—	8.1	11.1
18 - 24 Years	—	—	3.9	5.4
Retirees	—	—	3.0	4.1
BEST ESTIMATE	—	—	38.8	53.3

Source: "The Cruise Industry: An Overview" Jan. 1994 report published by Cruise Line International Association (CLIA).

"BWT" Converts Fuel Spillage In Bilge To Biodegradable Components

Neozyme International, Inc. has introduced Bilge Water Treatment (BWT), an enzyme-based product which converts organic hydrocarbon contamination (such as an accidental fuel oil spill into bilge water) into its original biodegradable components. BWT is distributed nationwide by Northstar of Farmingdale, N.Y.

BWT is a biocatalytic system designed to safely, effectively and inexpensively solve contaminated bilge and ballast water problems, helping to reduce or eliminate burdensome fees and penalties.

Advantages Of BWT

Decomposes Organic Fuels. When combined with fresh or salt water and oxygen, the product will cause crude oil, jet fuel, diesel oil and other organic substances to rapidly decompose, eventually biodegrading them to carbon dioxide and water as end products. The product is reportedly stable and non-toxic to humans, animals, marine and plant life, as well as 100 percent biodegradable.

Reduces Fire Risk. According to the company, the product is also designed to help reduce the risk of shipboard fire, as hydrocarbon contaminated bilge and ballast water represents a serious fire hazard. Also, the product will reportedly reduce fire hazard by increasing flashpoints and auto-ignition threshold points in substances such as gasoline or fuel oil.

Non-Bacterial. BWT is a non-bacterial enzyme, not a bio-engineered biological, and has no potential mutations.

It works by increasing the number of hydrocarbon-consuming microbes until the hydrocarbon content is reduced to desired levels.

No Noxious Odor. Neozyme's BWT reportedly eliminates noxious odors associated with crude oil, petroleum derivatives and other organic molecules that are proceeding through the natural decomposing process.

Chemically Speaking

BWT accelerates the natural degradation process by breaking down different molecular structures, such as hydrocarbons, so that the resultant fatty acids are presented to microbes in a more easily digestible form.

Those microbes more disposed to eating hydrocarbons will become dominant and spread until the hydrocarbon contaminants are reduced to non-hazardous levels. Then the large numbers of hydrocarbon-digesting microbes deplete for lack of nutrition.

The enzyme quotient of the formula accomplishes its objective through catalyzing, hydrolyzing, cleaving, oxidizing, molecular rearranging or oxidative coupling — depending on the mechanism required.

The fat, oil and grease elements of the hydrocarbon molecules are hydrolyzed initially by the lipase esterase class of enzymes in the product into fatty acids and glycerol.

Glycerol is further broken down by other enzymes, and the end point of the reactions are carbon dioxide, water and simple salts.

Independent laboratory studies reportedly demonstrated the ability of BWT to achieve a 96 percent re-

duction in Jet-A, Diesel-2, and heavy duty lube oil within 96 hours.

Generally, one gallon of BWT is used for each gallon of petroleum contaminant for lightly contaminated bilges, with more BWT required per gallon of more highly contaminated bilge.

For more information on BWT from Northstar,

Circle 95 on Reader Service Card

Don't Miss MR/EN's "Cruise Industry Annual" In July...

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CRUISE SHIP INDUSTRY

The U.S. Cruise Market

A Growing Industry Equals A Rush Of Newbuilds

According to the January 1994 edition of *The Cruise Industry: An Overview* — a biannual report released by the Cruise Line International Association (CLIA), the cruise industry grew at the impressive average annual rate of 10 percent from 1980 - 1993, and from average annual passengers of 1.4 million to an estimated 4.5 million. The cruise industry, in other words, is experiencing a period of extended prosperity that seems to bode well for not only ship owner/operators, but for ship builders, repairers and suppliers as well.

"I think on an overall basis the industry is extremely healthy," said **Jim Godsmann**, president of CLIA — and he expects the trend to continue into the near- and long-term future.

"Demand opportunity is incredible," he said, noting that taking a cruise is a dream of 60 percent of people 25 and older with an income of \$20,000 a year or more.

Some other facts about the industry's potential, according to the report:

- In the next five years, CLIA's best estimate indicates a potential \$50 billion opportunity in the cruise industry,
- An estimated 40 million people have taken deep-water cruises of two or more days since 1970 — with 70 percent of that number generated in the past ten years, and
- Almost 40 percent of those 40 million cruised in the past five years, and of those, the average number of cruises per person has been 2.4 — amounting to an average of one cruise every two years.

A major factor cited in the report as favoring further cruise industry growth is the high degree of satisfaction with cruises as a vacation option — with 92 percent of frequent cruisers and 94 percent of first-time cruisers sampled rating the cruise experience to be as good or better than other vacations, and more specific samples revealing that a majority of cruisers feel that cruising is a better vacation option with regard to relaxation, being pampered, sampling several geographical locations, value, activities, comfort, fun, entertainment, accommodations, and more. According to CLIA's figures, not only are there more first-time cruisers, but there is tremendous repeat business — and an untapped wellspring of new business that is slowly but surely being reached.

So the growth of the cruise industry is a foregone conclusion in the opinion of many. Obviously, more people taking cruises means increasing demand for new ships.

Ship Orders

According to Mr. **Godsmann**, the immense

demand for cruises is what's fueling the recent spate of newbuilding orders. The information in the CLIA report published in January 1994 indicates 23 new ships were contracted or planned to join the North American cruise ship fleet between the report's publication and 1998. Several major new orders have been placed since the report's publication — including one for the largest cruise ship in the world, a 100,000-gt vessel, for Princess Cruises, closely following the order for the previous title-holder, a 95,000-gt vessel for Carnival Cruise Line being built at Fincantieri.

Also, CLIA reported that average capacity based on number of lower berths rose 8.1 percent annually from 1980 to 1993, and projected capacity increases of between 4.6 percent (contractual additions) and 5.3 percent (contractual and planned additions) for the next five years, based on information available at the time.

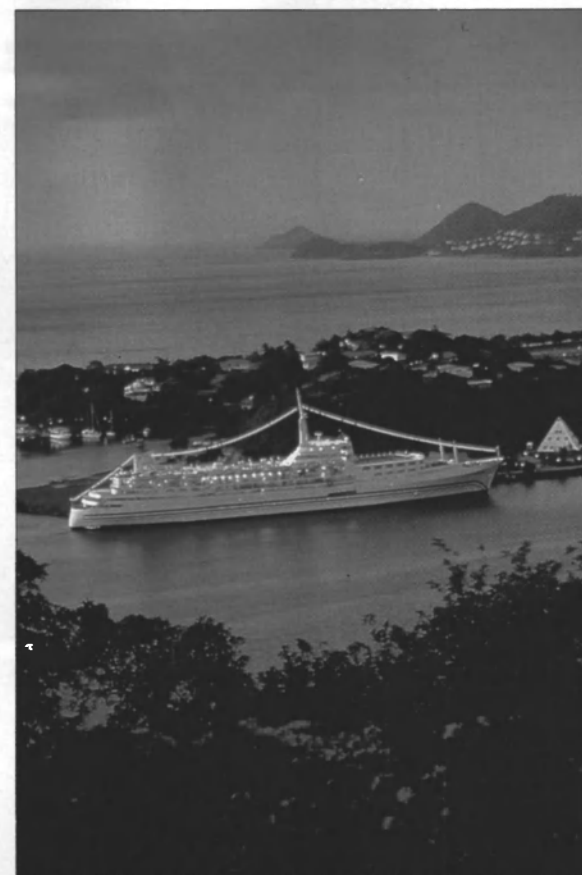
Ship additions in the coming years include four for Royal Caribbean Cruise Line; three for Celebrity Cruises; three for Silversea Cruises; four for Carnival, and two for the Carnival subsidiary Holland America Line; and at least three for Princess Cruises. Princess will reportedly option a second 100,000-gt ship, for a possible total of four newbuilds in the next few years. Carnival's newbuilding program, including that of its Holland America subsidiary, has swelled to \$3 billion. Princess' parent company P&O Cruises says the Princess newbuilds will make it the second largest cruise line in the world. Celebrity will build its *Century* series of cruise vessels in partnership with Overseas Shipping Group (OSG) at Meyer Werft in Germany.

Also, Disney recently entered the cruise business when former Crystal Cruises President **Arthur Rodney** agreed to oversee Disney's upcoming cruise venture, preliminary plans for which call for one 2,400-passenger vessel to launch in 1998, and a second ship soon after.

The report also indicated notable activity by Delta Queen Steamboat Co., which ordered a vessel for 1995 delivery, and which more recently acquired American Hawaii Cruises — reportedly the only major U.S.-flag cruise line — and plans to upgrade American Hawaii's two vessels at U.S. yards (Newport News Shipbuilding has been selected for contract management on the first vessel, *SS Independence*. For the full story, see p. 7 of this issue).

Trends

According to Mr. **Godsmann**, the recent orders for large cruise ships don't necessarily indicate any kind of marketing or other trend toward bigger ships. "The largest ships tend to get a lot of ink, but the average number of berths is about



Dolphin Cruise Line's *Ocean Breeze*.

1,350," he said.

To put that figure in perspective, Carnival's newbuilds *Fascination* and *Imagination* have 2,021 berths each and Holland America's *Ryndam* has 1,266, whereas Crystal Cruises' *Crystal Symphony* has 960 and Diamond Cruise's projected *Radisson Ruby* will have 378. So if the industry is showing any kind of trend toward greater size, it seems to be only among two or three lines, and not very pervasive there.

However, Mr. **Godsmann** acknowledged, "The larger ships are destinations in themselves."

The two- to five-day cruises was the fastest-growing cruise category, having experienced 373 percent growth since 1980. "The shorter cruise market directly appeals to younger people, many of whom take mini-vacations," Mr. **Godsmann** said — and many of them take several of those mini-vacations a year. "Many of them are also first-time cruisers," Mr. **Godsmann** noted, indicating opportunity for repeat business.

Proposed legislation to create a U.S. cruise industry by bartering U.S. port-to-U.S. port rights to foreign cruise lines in exchange for newbuilding contracts placed in U.S. yards may constitute the seeds of cruise ships being built in the U.S. — a "trend" that could prove extremely profitable for U.S. shipbuilders.

The greatest trend in the cruise industry may be steady growth. "We don't see any upside limitation in terms of growth," Mr. **Godsmann** said. "We expect eight million passengers by the turn of the century."

CLIA is a cruise industry organization representing 95 percent of all North American-marketed berths.



Majesty Cruise Line's *Royal Majesty*.



Holland America's *Westerdam* and *Rotterdam*.



Princess Cruise's *Regal Princess*.

Marine Accommodations Inc. Celebrates Past, Looks To Successful Future

Marine Accommodations, Inc. (MAI), of Jacksonville, Fla., which celebrated its third year of success in servicing the cruise ship and commercial vessel industry this past January, is the exclusive distributor/agent for BU-IL Industries BIP Accommodation Package.

The BIP Accommodation package consists of Rockwool Core (thermal, noise and fire insulated); bulkhead linings and partitions; continuous ceilings; floating floors; A, B & C class doors; pre-fab bathroom units; furnishings and accessories; CAD engineering; and supervision and/or turnkey installation for North and South America and Europe.

MAI has been involved with several high-profile projects lately, including:

- A contract with Halifax Dartmouth Industries to supply complete BIP joiner packages for 12 ship sets on the Maritime Coastal Defense Vessels (MCDVs). The contract was the result of MAI's success in supplying the 300-foot (91.5-m) M/V *Northumberland* ferry vessel, which was built by Pictou Industries.

- A contract for the supply of the complete joiner package for the M/V *Sankaty* from the Wood's Hole Steamship Authority. This contract follows the successful work on the Atlantic Marine-built sistership, the M/V *Martha's Vineyard*, a 230-foot (70.1-m) passenger/auto ferry delivered last November.

- A turnkey contract to design, supply and install the BIP Rockwool core joiner (thermal, noise and fire insulated) system including complete galley equipment and furnishing for MarAd's M/V *Cape Trinity* at Houston Ship Repair.

MAI points to many factors contributing to its success, including BU-IL Industries' commitment and dedication to supporting MAI's sales objectives of providing quality products and services in a timely manner. MAI is also greatly aided by its network of strategically located sub agents providing on-site engineering, sales, service and installation.

To date MAI has worked with many prominent companies, such as the State of Maine Port Authority, MARITRANS, Norfolk Shipbuilding Co., Bender Shipyard, Atlantic Marine, Premier Cruise Lines, Cunard and P&O Cruise Lines.

For more information on the products and services of Marine Accommodations Inc.,

Circle 72 on Reader Service Card

CCL Unveils Details Of Chantiers-Built *Legend of The Seas*

Royal Caribbean Cruise Line (RCCL) has released details for the


first time on its newest ship, the 70,000-ton, 1,808-passenger *Legend of the Seas*, which is currently under construction at Chantiers de l'Atlantique in France. The vessel is scheduled for delivery in April 1995, and its twin, *Splendor of the Seas*, is due for delivery in March 1996.

The vessel design incorporates an extraordinary amount of open deck space. The top level Sun Deck, which encompasses an outdoor swimming pool, will stretch more than 118 feet

(36 m) from one side to the other, extending nearly seven feet (two m) beyond either side of the ship's 105-foot (32-m) wide hull. The vessel will have accommodations for a variety of budgets, ranging from economical inside cabins to the 1,148-sq.-ft. Royal Suite which features a baby grand piano and veranda. *Legend of the Seas* will be the first ship to unite two of RCCL's hall-mark design features: a multi-deck atrium called The Centrum and the

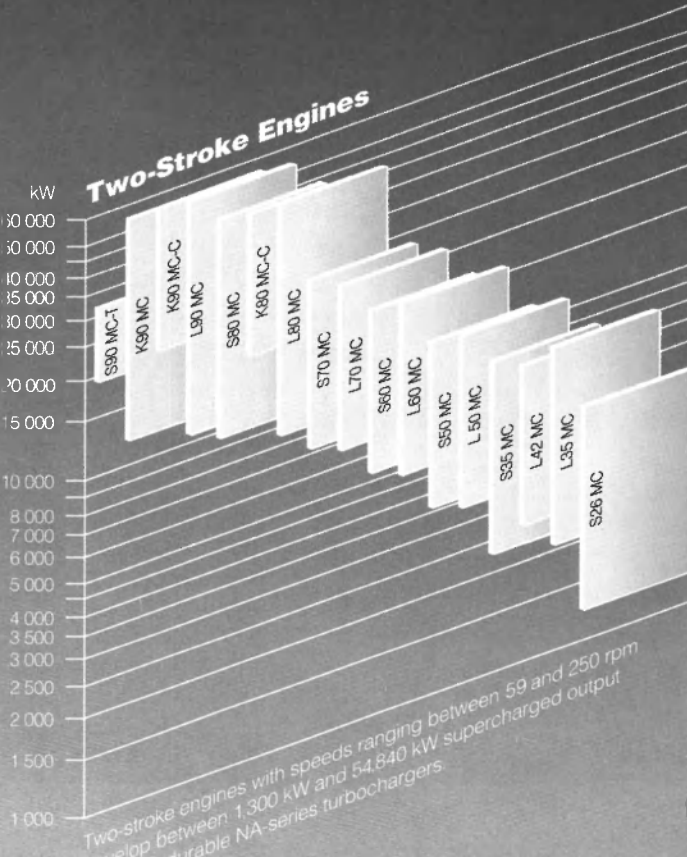
distinctive Viking Crown Lounge. The Centrum extends through the center of the ship and up to the Viking Crown Lounge projecting from the ship's funnel. The vessel will feature a high cruising speed in excess of 24 knots. Designers from two continents, including Njal Eide, Lars Iwdal, Howard Snoweiss, Paula Rees, P.B. Wilday, Per Hydahl, Tom Graboski and Petter Yran have worked on the vessel's interior and exterior design.

THE DIESEL



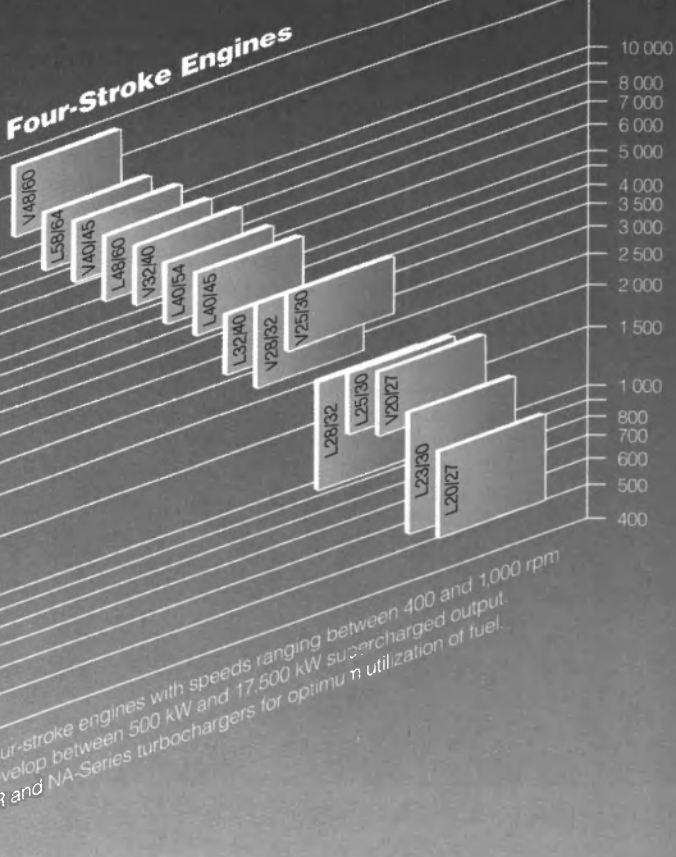
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Spanish company E.N. Bazan, owned by National Holdings, recently completed the conversion of the cruise ship *Crown del Mar*. The photo on the left shows the vessel before the conversion, while the one on the right illustrates the completed conversion. The vessel was renamed *Don Juan*.

Spanish Company Completes Work On Cruise Ship *Don Juan*

Spanish company E.N. Bazan, owned by the National Industry Holdings, has completed the preparation and conversion of Spanish agency Schembri's cruise ship *Crown del Mar*. The vessel, built at Union Naval de Levante (Valencia) shipyard, was renamed *Don Juan*.

Work on the ship included normal docking works, hull work, main and auxiliary engine control, electrical plant work, and modernization and suitability work on the passenger accommodation spaces. The main hall will be painted and the carpet will be renewed, as well as the lighting, tapestries, and bulkhead. The casino, shopping area, night club, dance hall, pool bar and restaurants will also be renovated.

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Don Juan Specifics

Length o	430 ft. (131 m)
Breadth	62 ft. (19 m)
Depth to upper deck	36 ft. (11 m)
Maximum draft	16 (5 m)
GRT	10
Passengers	487
Crew	163

Hike Builds Customized Research Vessels



Hike Metal of Wheatley, Ontario recently manufactured a 26-foot research vessel to help monitor the water quality of the Great Lakes. Delivery of this vessel type has been taken by a variety of private companies and government organizations, including Canada's Ministries of the Environment and Natural Resources. The vessels are powered by a single Volvo Penta AD41/DP marine diesel engine with stern drive, giving the vessel a top speed of 35 mph. The deep-V hull helps the boat run smoothly through the rough waters of the Great Lakes.

Hike custom-built the craft to facilitate their scientific mission. The enclosed wheelhouse doubles as a mobile laboratory, the helm is on the starboard side and a large counter-top working area is on the port side. Two hinged, watertight aluminum doors allow full access to the rear work deck. The doors can be closed when lab work is being done. Other features helpful to research personnel include a removable davit which allows easy sampling of water.

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Meyer Werft Delivers Binaiya To Indonesia



On April 30, 1994, Meyer Werft shipyard of Papenburg, Germany delivered another 6,000 grt passenger ship to the Indonesian Ministry of Communications/Directorate General of Sea Communication, Jakarta. Before delivery, the newbuilding — with a length of 327 ft. (99.8 m) and a breadth of 59 ft. (18 m) — was named *Binaiya* (after a mountain on the island of Seram, province of Maluku) by the Indonesian Minister for Social Affairs, Dr. Endang Kusuma Inten Soeweno.

This newbuilding has a capacity for 970 passengers and is already the 14th passenger ship for Indonesia. Delivery of ship No. 15 will also take place during this year, and in 1995 the yard will deliver another vessel of this type to Indonesia. Meyer Werft will then have built a total of 22 ships (16 passenger vessels, five cargo/passenger ships and one gas tanker) for Indonesia.

Two main engines with an output of 1,600 kW each provide *Binaiya* with a service speed of 15 knots. The *Binaiya* will be employed on the inter-island route of Parepare - Surabaya - Batulicin - Balikpapan - Sangkurilang - Tolitoli - Kwandang - Bitung. According to Meyer Werft, 16 passenger ships from Germany are the basis for a tailor-made infrastructure of the Indonesian inter-island shipping traffic. For more information on Meyer Werft,

Circle 83 on Reader Service Card

APL and TMM To Offer Joint Trans-Pacific Service

American President Lines (APL) and Transportacion Maritima Mexicana (TMM) said that as of May they now offer a joint weekly, fixed-day, all-water container service between Asia and ports on the Pacific coast of Mexico. It will reportedly be the first service of its kind linking the two markets.

While APL offers an intermodal option that combines trans-Pacific ocean carriage to the U.S. West coast with rail or truck connections into Mexico, the new, direct service will eliminate the need for double customs entries.

Also in May, TMM — under its Mexican Line operation — will improve its regular container service between Asia and the U.S., through its alliance with APL. By using its APL's trans-Pacific vessels, the TMM service will extend to

Oakland and Seattle, in addition to Southern California, which is presently served by TMM, and as far south as Singapore and Port Klang, in Asia. Also the TMM service will be upgraded to a fixed-day, weekly schedule from its 8.5-day rotation.

The alliance — and resulting service improvements — have been made possible through a slot charter agreement that will allow APL and TMM to utilize space aboard each other's trans-Pacific containerships.

The first sailing of the joint Mexico service was scheduled to arrive at Manzanillo, Mexico on June 7 from Asia.

Under the new service for Mexico, cargo originating in Japan, Korea, Hong Kong or Taiwan will ride on one of seven containerships bound directly for the modern Mexican ports of Manzanillo and Lazaro Cardenas. The vessels will utilize APL terminal facilities in Kobe and Kaohsiung.

Cargo originating at outlying Asian ports will be relayed to TMM vessels at Taiwan or Japan via APL containerships.

Both carriers will offer "store-door" (doorstep) service to and from key interior points in Mexico, including Mexico City, Guadalajara, Leon, Aguascalientes, Cuernavaca, Puebla, Queretaro and Toluca. They will market their services separately and coordinate their own customers' cargo moves.

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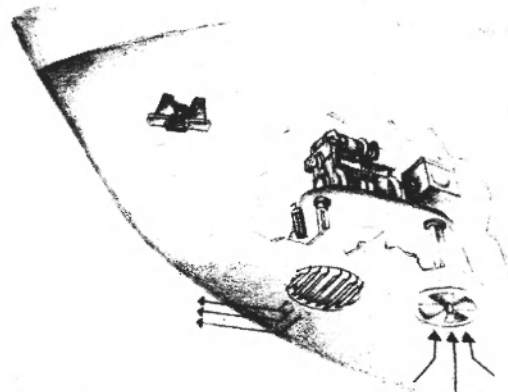
We regret any inconvenience this may cause you, but your safety is our primary concern. If you have any questions or need the name of your nearest authorized Elliot service facility, please call 1-800-531-7238 on the East Coast or 1-206-575-2660 on the West Coast. We urge you to contact your service station as soon as possible.

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Circle 116 on Reader Service Card

Maritime Administration News

Proposal Would Allow Foreign Vessels To Carry Preference Cargoes From Great Lakes

Great Lakes ports will be able to compete for government-generated agricultural community cargoes under a trial program being proposed by the Maritime Administration (MarAd).

U.S. cargo preference laws require the use of U.S.-flag vessels for a portion of cargoes generated by the government, but no U.S.-flag ships currently provide service from the Great Lakes to foreign destinations.

For a one-season trial period to coincide with the current Great Lakes shipping season, MarAd proposes allowing agricultural commodity cargoes subject to preference requirements to be carried by either U.S. or foreign-flagged ships from Great Lakes ports along the St. Lawrence Seaway. The cargoes would then be transferred to U.S.-

flag ships for the ocean portion of the shipment. The proposed rule would not establish a preference or set aside for the Great Lakes, and availability of U.S.-flag service would continue to be determined on a national basis. Determination of fair and reasonable rates for U.S.-flag vessels would include through bills of lading for the transportation service. For more information on the proposed rule, contact: **John Graykowski**, Deputy Maritime Administrator for Inland Waterways and Great Lakes, Room 7206, 400 7th Street SW, Washington, D.C., tel: (202) 366-1718.

New Toll-Free Importer/Exporter Help Line

MarAd has a new toll-free help line number to assist exporters and importers with information on domestic or international cargo shipments, including cargo preference requirements.

Assistance is available to anyone dealing with the waterborne shipment of goods, including shippers and ocean carriers. The number is 1-800-9US-FLAG.

MarAd: *Golden Monarch* Ineligible For U.S. Cargo Preference Trade

MarAd has issued a final opinion and order in conjunction with an application filed by Aquarius Marine Co. for a ruling regarding the eligibility of the tanker *Golden Monarch* to carry preference cargoes if converted in a Korean shipyard to a dry bulk carrier. The tanker was constructed with the aid of a construction-differential subsidy and delivered in 1975 to Aeron Marine Shipping Co., which bareboat chartered the vessel to Aquarius. It was reconstructed in 1981, also with the aid of subsidy. According to Aquarius, the vessel arrived in a South Korean shipyard Feb. 1, the date of its request to MarAd. In its opinion, the agency found that the proposed conversion constitutes a rebuilding within the meaning of the Cargo Preference Act of 1954, and that the vessel's rebuilding in a foreign shipyard triggers a three-year waiting period for cargo preference eligibility.

MarAd Approves Vessel Sales

MarAd has approved three applications filed under section 9 of the Merchant Marine Act of 1936, as amended. Atlantic Pacific Marine Corp. of Houston, Texas, received approval to sell the barges *Nicor Drilling Co. No. 202* and *APMC Rig 12*. The purchaser of barge No. 202 is Jupiter Drilling Corp. SA, a Panamanian corporation. The barge was built in 1981 in New Iberia, La. The purchaser of *APMC Rig 12*, built in 1982 in Orange, Texas, is Mercury Drilling Corp. SA, also of Panama. Both barges will be transferred to Panamanian or Venezuelan registry.

Neptune International received approval to sell the tanker *Falcon Countess* to Neter Navigation SA, a Panamanian corporation, for resale to M/S Lalchand Jain & Sons, an Indian corporation, for scrapping in India. The tanker was built in 1972 in Pascagoula, Miss.

Penn Barge Seeks Tugs & Barge Loan Guarantee

MarAd has received an application from Penn Barge, Inc. of Stamford, Conn., for a Title XI loan guarantee to help finance the construction of two integrated double-hull tank barges and tugs that will meet OPA '90 requirements. The two 122,000-barrel, double-hull barges would be built by Alabama Shipyard, Inc., and the tugs would be built by Halter Marine, Inc., a Trinity Group yard.

The loan guarantee is for \$26.25 million on a total cost of \$35 million, with a term of 20 years. The scheduled delivery dates on the barges are Jan. 21 and June 21, 1995; for the tugs, the dates are Feb. 24 and April 24, 1995.

Kinsman Lines Applies To Sell Bulk Cargo Ship

MarAd has received an application from Kinsman Lines, Inc. of Cleveland, Ohio for permission to sell the bulk cargo vessel *Henry Steinbrenner* for scrapping in Canada. The proposed purchaser is International Marine Salvage, Inc., Port Colborne, Canada. The 7,051-gt vessel was built in 1925 in River Rouge, Mich.

MarAd Updates Brochure On U.S.-Flag Shippers

MarAd has updated its brochure, *Vessel Service Guide — Support American Ship U.S.-Flag*. The 11-page brochure, previously titled *Ship Your Cargo on U.S.-Flag Ships*, lists U.S.-flag liner companies serving ocean trade, the areas they serve and the types of service provided. Copies are available from the office of Market Promotion, Room 7209, 400 Seventh St. SW, Washington, D.C. 20590. Tel: (202) 366-5508.

MarAd Extends Subsidies For *Stella Lykes*

MarAd and the Maritime Subsidy Board have approved a request from Lykes Bros. Steamship Lines to extend the subsidizable life of the *Stella Lykes* beyond its 25-year statutory life for approximately 2.5 years until November 25, 1996.

To approve the application, the board required a reduction in the previously extended subsidizable lives of seven Lykes vessels, and applied the reduced amounts to the extension of the *Stella Lykes*.

Therefore, the approval is budget neutral.

The board determined that pursuant to section 605 (b) of the Merchant Marine Act, it is in the public interest to grant financial aid for the vessel beyond its 25-year life or until otherwise withdrawn from the contract, whichever is earlier.

Vessel	Previously Subsidized Until	Now Subsidized Until
Thompson Lykes	8/17/94	2/1/94
Velma Lykes	2/1/95	5/30/94
Genevieve Lykes	3/8/95	1/8/95
James Lykes	5/26/95	2/28/95
Leslie Lykes	8/11/95	4/30/95
Louise Lykes	8/20/95	5/30/95
Elizabeth Lykes	1/29/96	7/30/95

MarAd Receives Application To Refinance Title XI Debt

MarAd has received an application from First Tug/Barge Corporation, on behalf of Shawmut Bank Connecticut, National Association Hartford, Conn. (as successor owner trustee) for refinancing the existing Title XI guaranteed debt on the integrated tug/barge vessel *Groton*.

The existing period of guarantee would remain the same as under the current financing; the obligation mature on December 31, 2006. The vessel operates in the St. Croix, U.S. Virgin Islands and ports on the U.S. Atlantic and Gulf Coasts.



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Chevron Replaces Copper Ion Systems With Electrocatlytic's Chloropac[®]



Electrocatalytic, Inc. was chosen to replace copper ion systems with its Chloropac electrochlorination systems on eight Chevron tankers. Pictured is the *Chevron Nagasaki*.

Electrocatalytic, Inc. (Elcat) has been contracted to supply eight Chloropac[®] electrochlorination systems to Chevron shipping company of San Francisco for their VLCCs. Chloropac protects seawater condensers, heat exchangers, sea chests and piping against biological fouling and marine growth that causes excessive fuel consumption and corrosion.

Fully automated and self-cleaning, Chloropac converts seawater sodium chloride into sodium hypochlorite, the active ingredient for fouling control. The Chevron installations commenced in January and are expected to be completed in August.

Headquartered in Warren, N.J., Elcat is a leader in water treatment and corrosion control installations worldwide, backed by an engineering and technical service network.

Textron Chosen For Japan's Amphibious Craft Program

Textron Marine & Land Systems (TM&LS), has been chosen for a new amphibious craft program of the Japanese Defense Agency (JDA).

The program commences with the award of a \$50 million contract. This first contract includes one Landing Craft Air-Cushion (LCAC), engineering documentation, training manuals, reserve subsystems, spare parts and support test equipment. Additional craft are expected over a period of several years. Initial delivery will take place in October, 1997.

The design of the large air cushion vehicles is based on the U.S. Navy's highly successful LCAC vehicle for which TM&LS is the prime contractor. The hovercraft will be built at the TM&LS manufacturing facility, located in Eastern New Orleans.

Japan has committed to expanding its maritime capabilities with the acquisition of hovercraft which will operate from the well decks of the 8,900-ton Landing Ship Transport (LST) class ships. The LSTs will be built in Japan. As part of Japan's increasing role in United Nations peacekeeping operations, the LST/LCAC combination will be

utilized specifically for U.N. Peacekeeping Operations (PKO).

For more information on Textron,

Circle 73 on Reader Service Card

Texaco, Chevron To Train Indonesian Professionals In Safety & Environment

Texaco Inc., and Chevron Corp.

will provide advanced environmental, health and safety training for 80 Indonesian oil and gas professionals over the next two years, the two companies announced.

Four months of coursework similar to an accelerated master's program will be undertaken by employees from the exploration and production divisions of Pertamina (the Indonesian state oil company), Caltex Pacific Indonesia or CPI, (an Indonesian company owned jointly

by Chevron and Texaco), and officials of Indonesian government agencies responsible for environmental and related areas. The course, developed at the request of Pertamina, includes field trips, workshops, homework and group projects. Participants will take more than 20 courses covering safety practices, risk management, workplace health management, water and air quality, ground water protection and emergency preparedness.

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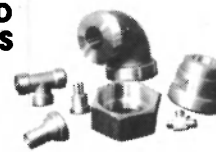
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Industry Source Says Drug Testing Gaining Acceptance

The rumblings of discontent from offices, terminals and unions when the federal Department of Transportation implemented drug testing regulations for all employees in safety-related roles have quieted down, according to National MRO, a firm which deals in compliance and voluntary drug testing pro-

grams for industry. The firm also said that what seemed to many to be a major threat to privacy a few years back has given way to a realization of a marked benefit for those marine companies who advertise "We Drug Test" and "This Is A Drug-Free Workplace."

According to Dr. **Michael I. Ruxin**, National MRO president, the benefits projected for quality drug testing programs are as demonstrated:

higher morale, greater trust, fewer accidents and thefts, increased production, fewer claims and finally the potential for decreased premiums for liability insurance coverage, especially workmen's compensation.

National MRO's exceptional growth, according to Dr. **Ruxin**, was the result of an early decision on quality that has paid off — National MRO clients have remained litigation-free. National MRO has

sites in all 50 states plus four hundred overseas areas. Client company sizes range from petroleum and shipping companies to small operators with just one covered employee. As National MRO sees it, the latest issue is whether the law should now treat alcohol as it would other drugs of abuse. Occasions when alcohol testing can be required are pre-employment, random selection, for cause, and serious accidents. Gas and oil pipeline companies and the maritime industry are so far excepted, the former by omission in the law, and the latter by determination of the Coast Guard Commandant. For more information on National MRO,

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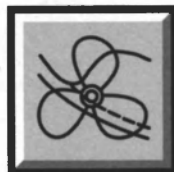
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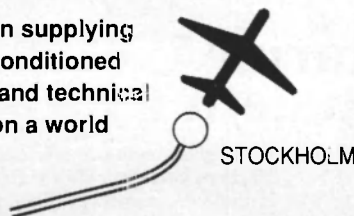
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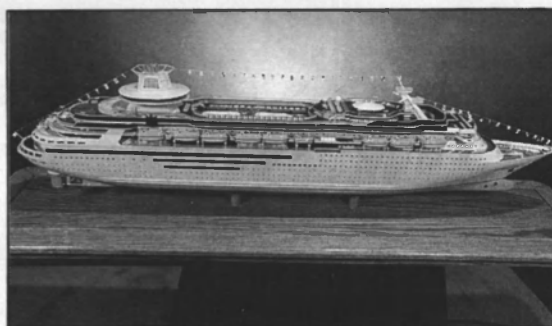


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IGF Metals Acquires Ferry Business For Approx. \$100 Million

IGF Metals Inc. has entered into an agreement to purchase Hongkong Macao Hydrofoil Co. Ltd., one of the largest passenger ferry service companies operated between Hong Kong and Macao, through its recently-acquired subsidiary, Marinteknik Shipbuilders Pte. Ltd. The purchase price is approximately \$74.4 million, subject to adjustment upon completion of IGF's due diligence, and includes the acquisition of all the issued and outstanding shares of Hongkong Macao Hydrofoil.

A portion of the purchase price may be paid for by the issuance of IGF's common shares, but the number of such shares is not determined at this time. The agreement is subject to a number of conditions, including satisfactory due diligence by IGF, the raising of additional equity or other satisfactory financing to fund the purchase price, stock exchange approval, approval by IGF's board of directors, and Sailing Star Limited acquiring ownership or control of at least 90 percent of the passenger service prior to closing.

Envirovac Receives New Orders

Envirovac Inc. of Rockford, Ill. received orders from NASSCO, Newport News Shipbuilding, Halter Marine and Trinity Marine for multiple shipsets of the EVAC Vacuum Collection Holding & Transfer (VCHT) sewage powered ejector systems for sewage collection. The contracts call for the manufacture and delivery of the EVAC (VCHT) systems.

The orders with NASSCO and Newport News encompass units for five Military Sealift T-AKR vessels with NASSCO building three and NNS building two. Halter Marine will install Envirovac products on the U.S. Navy's AGOR-24, while Trinity Marine will install the products on each of three U.S. Navy T-AGS vessels.

EVAC VCHT systems create vacuum via a sewage powered ejector installed inside an atmospheric

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tank. Installation of the ejector inside the tank allows discharge from the EVAC sewage collection system while in operation.

Envirovac is a leading supplier of the EVAC vacuum sewage collection systems for the marine industry. For free information on the systems from Envirovac,

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Delta Marine Consulting Helps Minimize Holding Tank Smells



Delta Marine Consulting's "Triatomic" model 3500 compressor-serviced ozone generators were installed recently on two yachts in order to allow the vessels to operate without malodorous emissions from the holding tanks. On one of the yachts, ozone was also introduced into the grey water tanks, and reportedly the system effectively and completely eliminated odors from the tanks.

The Triatomic model 3500 and 1000 both have small air compressors supplying the "corona discharge" ozone generators. The ozone is delivered to where it is needed through small diameter hoses. A few of the model sizes and specs offered are:

- Model 3500, compressor — equipped for applications that need ozone delivered under pressure to various areas including holding tanks for black and grey water, fresh water tanks, bilges, coolers/refrigerators and air handlers.
- Model 1000, compressor — equipped and for similar applications as the 3500 model, but with approximately 50 percent of the output.
- Model 4000 Squirrel-cage blower equipped system for delivery of ozone into free air at less than 1.5 inches of static head pressure. Generates large amounts of ozone, and is designed for applications such as garbage holding areas, and areas with heavy amounts of tobacco smoke. Also designed for areas where mold or mildew is a problem.

Delta Marine Consulting is the exclusive agent for all marine applications of "Triatomic" air and water ozonation systems and devices. For more information on the systems,

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Handon Diving Services The East Coast

Handon Diving Service, Inc. primarily serves the East Coast, yet is

available for assignments in other geographical regions. Utilizing the latest equipment in marine salvage, marine restoration, underwater inspection and repair, the company offers services such as: underwater photography (still and video), underwater and/or surface arc welding, mussel removal and more. For more information,

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Along with its supply of anchor windlasses, mooring winches, boat davits, capstans and cranes, the company also designs and manufactures

specialty equipment such as linear winches and aircraft arresting gear. All of Lake Shore's manufacturing is done within its facilities located in Rhinelander, Wis. and Iron River and Ontonagon, Mich.

For free information from Lake Shore Inc. on any of its products and services,

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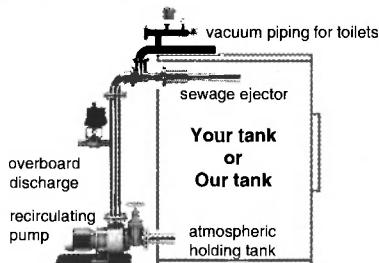
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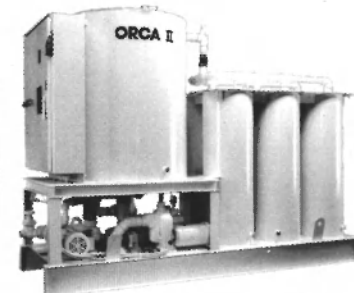
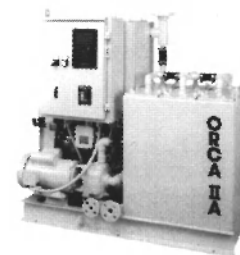
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Ultra Poly Wins Order For Anchorage, Alaska Dock

An order was recently received by Ultra Poly, Inc. of Tacoma, Wash. (UHMW PE manufacturer) and Trellex Morse of Keokuk, Iowa (rubber fendering component manufacturer) to manufacture and supply the Port of Anchorage Dock in Alaska.

The fender system is believed to be the single largest order of U.V. stabilized Ultra High Molecular Weight (UHMW) Polyethylene ever placed.

The Port of Anchorage fender design consists of more than 38,000-sq.-ft. of UV high visibility yellow and black UHMW PE fendering attached to steel sheets, manufactured by Jesse Engineering of Tacoma, Wash. and Trellex Morse MV 500 X

1500A rubber elements. For more information on Ultra Poly, call (800) 872-8469.

Patricia Hayes And Assoc. Offers Vast Experience In Interior Design

Patricia Hayes and Associates, Inc. is an interior design firm situ-



Patricia Hayes and Associates has vast experience in the cruise ship and riverboat interior design field, including the firm's work on Delta Queen Steamboat Co.'s Mississippi Queen.

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A New Departure From The RIB Industry By Boston Whaler.

A departure into a world where the new Impact 21' soft-sided workboat is the only acceptable platform for operations which demand soft-sides but cannot afford the downtime associated with traditional inflatable collars.

A world where Boston Whaler's new soft-sided workboat is clearly the best choice for hard work and hard use with a fendering system that sustains incredible abuse but never deflates.



Impact 21' combines the unsinkable, virtually indestructible Boston Whaler foam cored hull with a fully fitted foam collar. This unique fendering system provides full time protection against punctures and abuse of all kinds, and will not deflate. Step into the new world of soft-sided boats. Impact 21' by Boston Whaler.

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ated close to the Port of Miami. The firm specializes in cruise ship/riverboat interiors on both newbuildings and refurbishings, and services clients based in the U.S. and abroad.

Passenger safety, combined with an aesthetically pleasing and functional space, is the goal for each of the firm's projects.

The firm's designs conform to the stringent codes enforced by the U.S. Coast Guard and international classification societies.

Patricia Hayes and Associates also maintains a resource library of products and materials which have the appropriate certificates and fire ratings for use onboard passenger vessels. In the past, the firm has worked with many top owner/operators, including:

Royal Viking Line; Norwegian Cruise Lines; Chandris Celebrity Cruises; Premier Cruise Lines; Regency Cruise Lines; and Delta Queen Steamboat Co.

For free information on the services of Patricia Hayes and Associates, Inc.,

Circle 68 on Reader Service Card

Del Gavio Announces Expansion Of N.J. Services

Del Gavio Marine Hydraulics, Inc. announced the expansion of its electrical services division of its New Jersey facility.

Improved facilities allow Del Gavio Marine Hydraulics to handle jobs of all complexity involving marine electrical systems.

The shop services include motor rewinding, motor balancing and motor mechanical repairs. All related machine shop services are available and performed at the facility.

The company operates a UL listed electrical shop and is experienced with applications requiring special ABS and U.S. Coast Guard standards for equipment and system specifications.

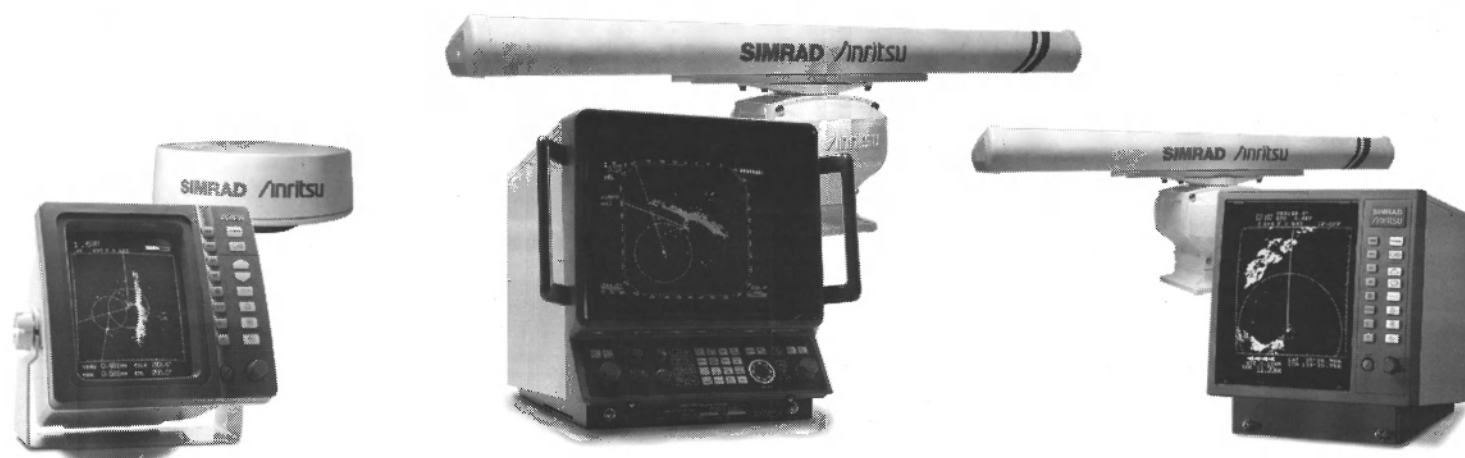
For additional information on Del Gavio Marine Hydraulics,

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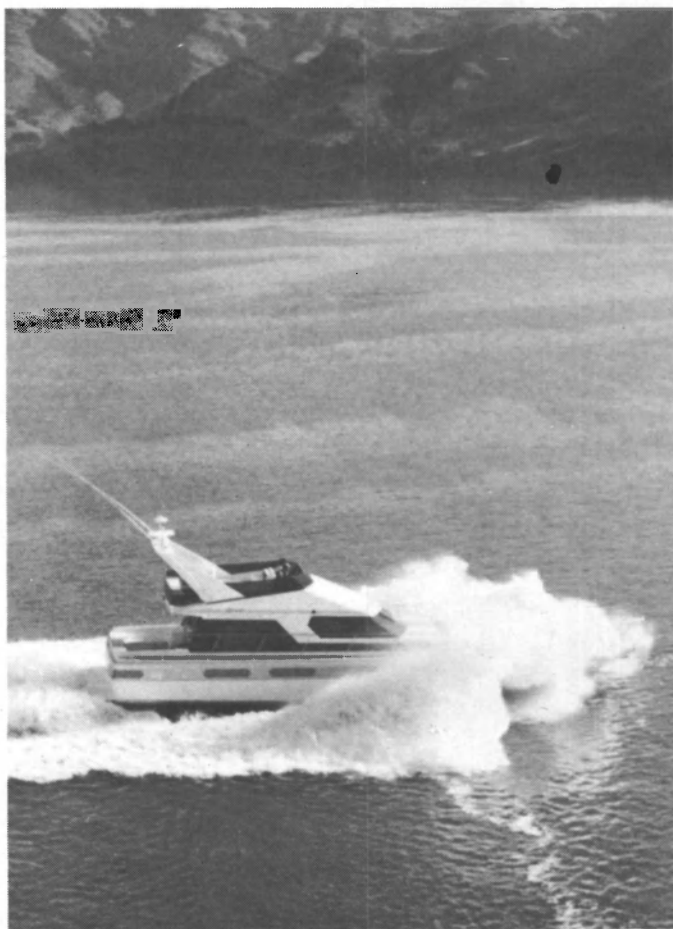
First Northern Environmental Offers New High Efficiency Absorbent

First Northern Environmental Inc. (FNE) provides Safe Harbor™ to the maritime industry, a new capillary absorbent designed to absorb all hydrocarbons, petroleum-based liquids and most water soluble fluids. Its capillary/cell structure is

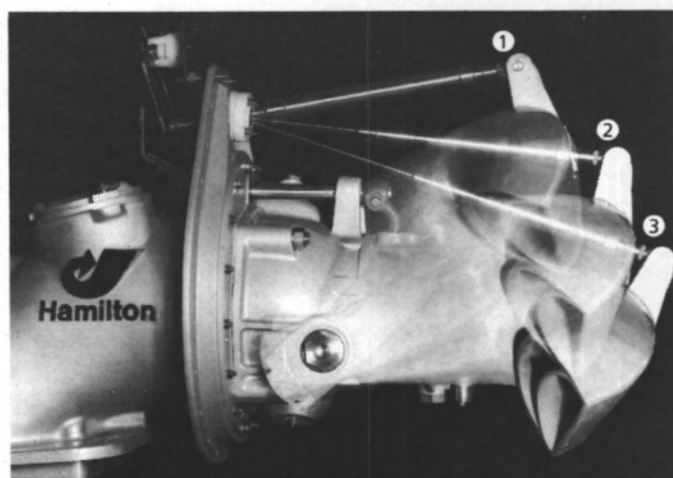


designed to enable it to mechanically absorb and retain target liquids in microscopic cells. The product reportedly absorbs up to 60 times its own weight, ultimately helping to lower clean-up costs. Safe Harbor is also available in varied configurations and spill kits for on-deck, bunkering, below-deck maintenance and terminal operations. For free information,

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We've just taken another step ahead by going astern.



- ① AHEAD.
- ② ZERO-SPEED. Full steering effect in this mode.
- ③ ASTERN.

When you're firmly established as a world leader, it can be easy to become complacent.

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As the first to introduce the split duct deflector for superior astern thrust and vessel manoeuvrability, HamiltonJet has just advanced this concept another step.

The result is the patented HSRX servo-hydraulic follow-up control system. This major advance in applied hydraulics features a unique rotary valve integral with the deflector actuating cylinder.

The new HSRX gives full follow-up movement with enhanced reaction time and precision at the zero-speed position... simply. And all with inboard hydraulics for long life and easy maintenance.

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CWF 005

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New USCG Safety Award Bestowed To Four Honorees

Commandant of the U.S. Coast Guard (USCG), Adm. **J. William Kime**, recently bestowed a newly-established award for sustained contribution to national and international marine safety and pollution prevention to four honorees.

The RAdm. Charles P. Murphy Award, named in honor of the late RAdm. **Charles P. Murphy**, former Chief of the Office of Marine Safety and former chairman of the IMO Maritime Safety Committee, were presented to Capt. **James B. McCarty, Jr.**, USCG (Ret.), Capt. **Archibald K. McComb, Jr.**, USCG (Ret.), **Edward M. MacCutcheon**, and **James B. Robertson, Jr.** All are Intergovernmental Maritime Consultative Organization (IMCO) and International Maritime Organization (IMO) hands and major contributors to the technical labors that are the underpinnings of the SOLAS and Loadline Conventions.

Capt. **McCarty** spent four years with Newport News Shipbuilding & Dry Dock Co. before taking a position at the Bureau of Marine Inspection and Navigation (BMIN) in 1940. He retired as the executive secretary of the Merchant Marine Council.

Capt. **McComb** served as chief, International Maritime Safety Coordinating Staff, and was responsible for coordination between the various governmental and industrial groups in their development and preparation of the U.S.'s positions.

Mr. **Robertson** helped solve hull failure problems of early Liberty ships in World War II and T-2 tankers, was a member of the U.S. delegation to the 1948 SOLAS Convention and a technical advisor to the 1960 and 1974 SOLAS conferences.

Mr. **MacCutcheon** is former chief of the Office of Research and Development of the Maritime Administration, and was in charge of R & D and the operation of the nuclear merchant ship *Savannah*.

N.Y. Canal Revitalization Addressed At Luncheon



New York State Thruway Authority and Canal Corporation Chairman **Peter Tufo** briefed the press at the N.Y. Yacht Club, April 27, on improvements along the New York State Canal System from Albany to Buffalo. Plans include developing harborfront areas complete with parks, marinas, restaurants and retail shops. The first such development will be Syracuse's Inner Harbor.

Maritime Reporter/Engineering News

Bertlin Appointed Wartsila Diesel President



Sven Bertlin

Sven Bertlin, former president of Imatra Steel Oy Ab, has been appointed president of Wartsila Diesel Oy, effective June 1. Upon beginning his new position, he relinquishes his position as president of Imatra and his position on Imatra's management board.

The Wartsila Diesel Group, a division of Metra Corporation, has annual net sales of approximately \$1.29 billion, of which the Finnish company Wartsila Diesel Oy contributes approximately \$550.5 million. The entire group has 5,600 employees and the Finnish company, 1,780 employees. The Finnish company has factories in Vaasa and Turku.

New Trademark Signifies New Era For Sperry



Sperry Marine's new trademark was considered appropriate to the company's new ownership and direction.

Sperry Marine Inc., international developer and manufacturer of marine navigation, control, communication and stabilization equipment, displayed its new trademark to the press recently. The new mark incorporates a shining star and a sine wave into the previous trademark.

In November 1993, Sperry was purchased from Newport News Shipbuilding by a partnership formed by J.F. Lehman & Company, and the new trademark is designed to reflect the beginning of a new era for Sperry.

Werner Returns To Post Of VP - Midcontinent Of AWO

Paul J. Werner, former vice president - midcontinent of the American Waterways Operators (AWO), was chosen to return to the position, effective April 14. Mr. **Werner** is responsible for managing the association's Midcontinent Office, which represents more than 60 barge and towing companies in the Ohio Valley and Midwest regions of the U.S. He also manages state regulatory and legislative issues affecting the midcontinent region, working to integrate them into AWO's national agenda.

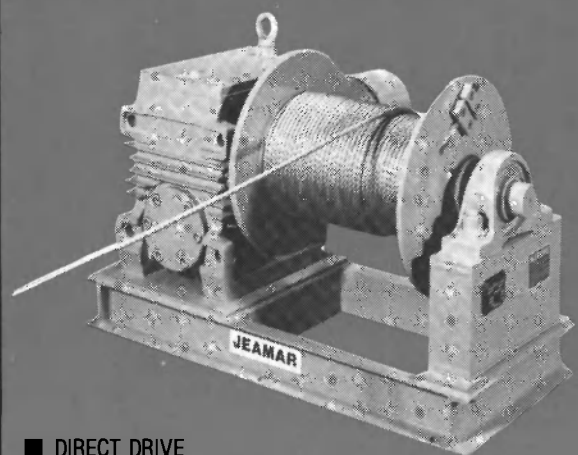
Scana Skarpenord Achieves ISO 9001

Scana Skarpenord of Norway received its ISO 9001 Certificate of Approval on May 9, 1994 from Det Norske Veritas (DNV), thereby achieving recognition of its adherence to the most comprehensive of the ISO 9001 series of standards — covering product development through production, to installation and service of level gauging and cargo monitoring systems, as well as marketing marine-related equipment. Scana Skarpenord is part of the Norwegian industry group

Scana Industrier, which has 1,350 employees and revenues of \$130 million.

A member of the Peder Smedvig group, Scana Industrier is headquartered in Stavanger. The company supplies level gauging systems based on pressure sensor and microwave technologies.

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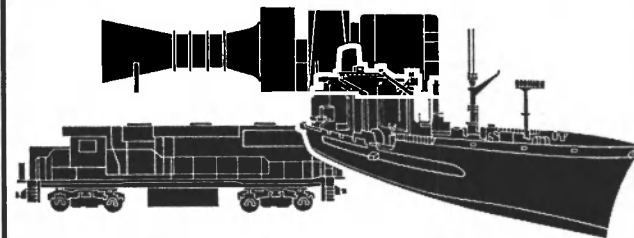


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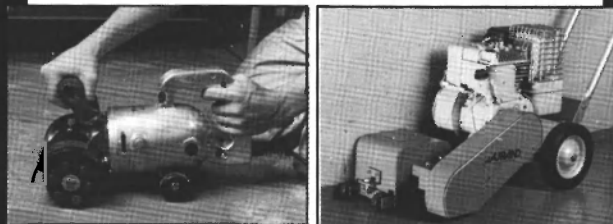


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Frank Appointed ACR President; Hardin Joins As Sales/Marketing VP

Paul M. Frank, formerly executive vice president and chief operating officer at ACR Electronics, has been appointed president of the company. Having served the company in various capacities since he joined ACR in 1980 — including



Paul M. Frank

vice president and chief financial officer — Mr. **Frank** directs the company's 200-plus-employee operations, which are headquartered in Fort Lauderdale, Fla.

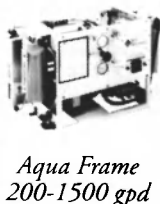
Joining ACR Electronics as vice president, sales and marketing is **Paul D. Hardin**, formerly director of marketing, PEAK 1 - Textile Products of Coleman Outdoor Products, Inc. The appointment was made by Mr. **Frank**, the new president. Mr. **Hardin** brings extensive sales and



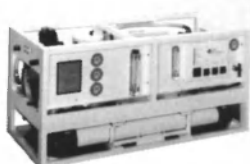
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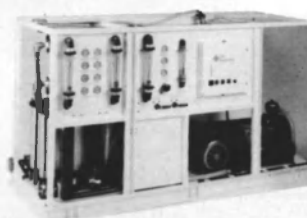
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marketing management experience to ACR.

Since 1956, ACR Electronics has supplied millions of products to users in the marine and aviation industries as well as the military.

Peterson Builders Names Hunt VP, Logistics



Paul D. Hunt

Peterson Builders, Inc. (PBI) of Sturgeon Bay, Wis. has appointed **Paul D. Hunt** to the position of vice president, logistics. Mr. **Hunt** will be responsible for integrated logistics support products plus the marketing and oversight of the procurement services division. This PBI division provides equipment, spare and repair parts for the U.S. armed forces, foreign military customers, and commercial activities both domestic and foreign.

Mr. **Hunt** joined PBI in 1989 as manager, logistics support. He completed 22 years commissioned naval service, his last assignment having been on the staff of the Chief of Naval Operations, the Pentagon. Mr. **Hunt** is a member of the American Society of Naval Engineers and the Navy League of the U.S., among other industry organizations.

Doll Named Falk's Product Marketing Manager

Ronald J. Doll has been appointed manager of standard product marketing for The Falk Corporation, Milwaukee-based subsidiary of Sundstrand Corporation.

Mr. **Doll**, a graduate of the University of Wisconsin - Stout, joined Falk in June 1981. After a series of promotions, he was appointed product manager, standard gear products, in January 1991 — a position he held until this appointment.

Falk is a manufacturer of industrial power transmission machinery including standard and custom gear drives, flexible shaft couplings, backstops, fluid power drives and fluid couplings.

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GENERAL BUSINESS SETTING

Analysts' Views on Future Ship Construction
The Competitive Situation
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INTERNATIONAL MARKET

Outlook for Four Tanker Sectors
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Demand for Floating Plants
Forecast of Available Construction Revenues
Openness of Competition

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Future Coastal Tanker Requirements
Outlook for Offshore Support Vessels
Demand for Ferries
Role for Escort Tugs
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This new 200+ page report ■ assesses the underlying requirements driving future petroleum product flows ■ translates these flows to future tanker requirements ■ analyzes impact of OPA 90 and MARPOL 73/78 regulations on ship replacement ■ projects product tanker construction demand through the remainder of the decade ■ examines competition for future orders ■ and describes new designs and technologies for product tankers.

BUSINESS DRIVERS

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Impact of Rising U.S. Product Imports
Impact of OPA 90 and MARPOL 73/78
Replacement of Aging Ships

CONSTRUCTION FORECAST

How Many Ships?
Timing of the Orders

KEY PLAYERS

Who are the Likely Customers?
What Drives Their Decisions?
Role of the Oil Companies
Who are the Likely Builders?
What is the potential U.S. Role?

NEW DESIGNS AND TECHNOLOGY

Available Product Tanker Designs
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Orkot Helps Repair Iceberg Damage To Tanker, *Overseas Ohio*

Orkot was involved in one of the most unusual repairs recently performed at Western States Industries (WSI) of Portland, Ore. on the 894-ft. (272.5-m) tanker *Overseas Ohio*.

The *Overseas Ohio* had been en route to a take on a shipment when it had a head-on collision with an iceberg off Alaska. The ship, which is capable of carrying 26 million gallons of oil, was carrying salt water as ballast at the time and so no potentially damaging spillage occurred. The gaping 17- by 20-ft. (5.2- by 6.1-m) hole was secured and the tanker safely arrived at Portland.

Part of the \$1 million repair work

involved replacement of rudder bearings. Orkot was chosen to replace the bearing material. The bearing was supplied within hours from the Orkot facility in Eugene, Ore.

Other vessels Orkot has contributed to include the U.S. Coast Guard cutter *Hamilton*, the U.S. Navy guided missile frigate *Rentz*, the Washington State ferry *Walla Walla*, the French aircraft carrier *Charles de Gaulle*, Conoco's 275,000-ton bulk carrier *Independence*, and P&O cross channel ferry *Pride of Calais*.

For more information on Orkot's products and services,

Circle 81 on Reader Service Card



Orkot replaced rudder bearing material on the *Overseas Ohio* after the tanker was damaged in an iceberg collision.

Port Everglades And Kings Ocean In Preliminary Agreement For Increased Service

A memorandum of understanding was signed between Port Everglades and carrier King Ocean, which will form the basis for a lease and operating agreement. The agreement was presented to the Port Authority Commission at two public hearings, May 19 and June 2, for review and recommended approval.

King Ocean de Venezuela and King Ocean Central America will provide greater weekly service from the port to Central and South

America, bringing more than 200 ship calls per year and a projected 635,000 new tons of cargo to the seaport — making King Ocean the third largest carrier at Port Everglades, behind only Crowley Maritime and Sea-Land Service, Inc.

The carrier will move to Port Everglades and operate from 18 acres in the port's Midport Container Terminal. The Midport acreage has become available due to the relocation of Sea-Land to Port Everglades' Southport Container Terminal. Over the agreement's five-year term, King Ocean will bring \$11 million in revenue to the seaport and a total economic impact to the Broward County economy in excess of \$1.2 billion. During FY '93, Port Everglades posted a 31

percent increase in container tonnage over the previous year, with 2.1 million tons passing over the seaport's docks.

Generon Installs Nitrogen System On Tanker

Generon Systems of Houston, owned by Dow Chemical Company, has sold and installed a nitrogen-generating Generon membrane skid aboard the *Marine Chemist*, a chemical tanker owned by Marine Transport Lines (MTL) Ship Management of Secaucus, N.J. The membrane will supply 2,000 standard cu.-ft. of 95 percent oxygen-free gaseous nitrogen per hour. The Generon unit was installed at the Port of Houston in early April, 1994.

Nitrogen is chemically inert and protects the chemicals aboard the ship from any adverse reactions caused by atmospheric oxygen and moisture. Some of these effects include fire, explosions, oxidation, discoloration or product degradation. Gaseous nitrogen is used to inert the space between the chemical liquids and the ship's internal tank hatches, a process known as "headspace inserting." The *Marine Chemist* carries liquid chemical cargoes between the U.S. Gulf Coast and the Eastern Seaboard.

Crowley Names President & CEO Of Operating Company


Crowley Maritime Corp. has elected **Thomas B. Crowley, Jr.** to the position of president and CEO. Mr. Crowley is the grandson of the founder, as well as the son of **Thomas B. Crowley, Sr.**, who continues and chairman and CEO of Crowley Maritime Corp. Mr. Crowley, Jr. holds a degree in accounting and finance from the University of Washington and has held key managerial positions for passenger and harbor services in Northern California and has served as a member of the board of directors vice chairman and assistant to the president in the past year. Founded in 1892, Crowley Maritime Corporation is headquartered in Oakland Calif. and operates as a holding (parent) company with two primary operating subsidiaries: Crowley American Transport, Inc. and Crowley Marine Services.




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Avondale: Riding A Wave Of Profit With An Eye To The Future

Things are looking up for Avondale Shipyards, the shipbuilder headquartered in metro New Orleans, which amassed greater profits in the first quarter of FY 1994 than in any quarter since the 1980s. Avondale's \$2.03 million first quarter 1994 profit is almost six times greater than the previous year's \$348,000 — and it establishes more firmly the reversal of a trend of loss that the end of the 1980s' defense contracting boom and the setting in of the recession imposed.

Add to this a first installment Navy contract settlement that amounted to \$85 million on a total \$145 million, the winning of a \$262 million contract for a Navy Sealift Ship (with options for five more), and a design contract to develop the next generation of Navy amphibious ships — not to mention a slew of commercial victories in the gaming vessel market — and what you have is a U.S. shipyard channeling as much energy into maintaining its current base of Navy work as it does into capturing new commercial opportunities.

A Commercially Viable Yard

"We are one of the five largest shipyards in the U.S., and one of the most commercially viable — we receive our share of the government contracts but we're still commercially active," said **Ron McAlear**, Vice President of Advanced Programs and Marketing at Avondale's Shipyards Division.

Avondale, which now employs 5,300 in its 268-acre main yard alone, has facilities which include three outfitting docks and supporting shops. The upper shipbuilding area allows the construction of ships as large as 250,000-dwt, or three ships

of more conventional size all at once — which are eventually launched from the yard's 81,000-ton drydock. The lower shipbuilding area allows the construction of five ships simultaneously.

1993: The Year In Review

Avondale filed a Request for Equitable Adjustment (REA) in 1992 with the Navy, seeking reimbursement for complications stemming from design changes the Navy made to contracts in progress. The company anticipated (and recorded) an estimated minimum recoverable amount of \$91.0 million. The settlement of \$145 million allowed Avondale to comfortably pay off \$44 million in debt, thus lopping off \$6 million in interest payments. The company did take a loss of \$8.8 million for the year — but the loss was an expected result of the winding down of several major contracts.

Asked about the past year's deliveries, Mr. **McAlear** said that while all the vessels they deliver are important to the yard, "The delivery of T-AGS 45 (the oceanographic survey ship *Waters*) was especially rewarding, because we were dealing with an accelerated program, and the vessel had to be delivered in three years or less."

"We're proud of our T-AOs," Mr. **McAlear** continued, noting that the yard has built 16 of the vessels — the last three of which had to be altered with double-hulls to conform to OPA '90 mandates on very short notice. The past year was also the one that saw Avondale win a major contract for a newbuilding Strategic Sealift ship, which since contract award has been dubbed the USNS *Bob Hope* (T-AKR 300). The contract comes with options for five



The Noordam was repaired at Avondale in just 10 days after a collision with a Greek cargo ship.

additional vessels — options which, if exercised, boosts the Avondale orderbook to over \$2 billion — enough to keep the yard going until FY '96.

A Look Ahead

Avondale's Boat Division is aggressively pursuing the riverboat gaming market — it is currently building two paddle-wheelers and plans to deliver the *Belle of Baton Rouge* in July 1994 — while the Shipyards Division plans to deliver another cargo-variant dock landing ship, the *Harper's Ferry* (LSD 49 - CV), in the beginning of November.

Avondale has been chosen as one of five yards to develop a preliminary design for the Navy's new class of amphibious ships — the LX, a multipurpose vessel that will replace the 30 amphibious vessels the Navy plans to retire in the next decade. The contract for the lead ship in the series, Navy number LPD-17, is expected to total approximately \$833 million — a contract Avondale intends to pursue vigorously.

In early 1995, Avondale will deliver the minehunter *Pelican* (MHC 53), and later in '95, *Robin* (MHC 54) will be delivered. Avondale will deliver the *Patuxent* (T-AO 201) in 1995 (June), as well as the *Rappahannock* (T-AO 204) in November and the dock landing ship *Carter Hall* (LSD 50 - CV) in July. (See chart, page 42, for full details on Avondale's orderbook).

Shiprepair

"Obviously if we can build a ship we can do anything to fix one," said Mr. **McAlear**. He emphasized that shiprepair will be more of a focus for Avondale, and that Avondale's Algiers facility is able to accommodate topside repair in the main yard's huge floating drydock, which is often used for repair work. But the effort to capture more repair contracts requires more than just

the ability to perform the contracts. "We're making ourselves more visible to those who trade on the river, Gulf Coast and East Coast," said Mr. **McAlear**. Overall, he said, the yard is "taking more of a pro-active position" in getting shiprepair business.

Mr. **McAlear** noted that the Port of New Orleans is one of the nation's busiest. This, says Mr. **McAlear**, combined with the second largest drydock in North America at 81,000 tons, gives the yard a pretty fair position with regard to the shiprepair market. In fact, when Holland America's 654-ft. (199.4-m.) luxury liner *Noordam* was damaged in a collision with a Greek cargo ship in the Gulf of Mexico, Avondale was chosen to repair the gaping 85-foot by 60-foot (25.9-m by 18.2-m) hole in her aft starboard side, which covered nearly four decks. After 10 days of round-the-clock repairs, Avondale released the *Noordam* to resume her regular cruising schedule.

New Balance

Avondale is confident about its future, but Mr. **McAlear** believes that the government's role is to balance out unfair competition — much as the shipyard's role is to strike a balance between military and commercial work to prepare for a future of dual-use marine technology.

In an effort to balance the commercial end of the scale to match its impressive Navy orderbook, Avondale is currently seeking certification to the ISO 9001 standard, a certification the yard believes will further enhance its commercial viability.

The standard recognizes excellence in organizational efficiency, and has become increasingly recognized as a mark of quality in the commercial sector. For more information on Avondale,

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Launching of the Carter Hall (LSD 50).

Parker Hannafin Offers Portable Hose Assembly Unit



Parker Hannafin's Hose Products Division offers the battery-powered Karrykrimp hose assembly unit, allowing users to make hose assemblies for a variety of hose types (through 1.25 inches) virtually anywhere. Weighing 50 lb. and fitted with a built-in handle, the Karrykrimp is designed to be portable. The battery pack requires 18 - 24 hours to charge on standard 120V AC current, and when fully charged supplies power for approximately 45 minutes. The unit can also be powered by a 12V DC automotive battery using special clips that come with the unit.

Ametek Monitor Detects 0-1% Water In Oil

The Mansfield and Green division of Ametek, Inc., Largo, Fla. offers the MK.3 Water in Oil Monitor, which monitors the amount of water in and temperature of lubricating oil and hydraulic systems for engines, turbines, gears and compressors. Designed to sample the oil, heat it, and boil off the water, the system detects a range of zero to one percent water with an accuracy of +/- .5 percent. Steam pressure is measured and converted to a digital readout as a percentage or ppm of water in the oil. Fully automatic and microprocessor controlled, the system measures water content up to 10 times per hour and has two alarm levels: the first an early warn-

ing, and the second an automatic shutdown function.

FirstMate Filters Contaminants From Fuel

FirstMate, a computer-controlled fuel filtering/monitoring system by Fuel Technologies, Inc. (FTI) of Atascadero, Calif., reportedly helps prevent engine failure from contaminated diesel fuel by continuously filtering fuel in storage tanks. A coalescence technique removes water and condensation as well as contaminants, retarding bacteria and fungi that threaten engines. FirstMate is a one-tank system, with options allowing it to handle up to four tanks. The system constantly monitors operation and reports on a digital display. The remote terminal unit or indicator light may be installed on the bridge to alert the captain of situations that require attention — or even if filters should be changed or routine maintenance performed.

New Marine Crewing Company Formed

A new marine crewing company, Sawgrass Marine Crewing, Inc., was established to serve as a complete crewing and personnel administrative resource for both U.S.- and foreign-flag vessels. Headquartered in Jacksonville, Fla., Sawgrass will provide turnkey services to ship owners, operators and charterers of cargo, cruise, riverboat/gaming and government-contracted vessels.

Sawgrass' services are offered for both union and non-union environments. Contact Sawgrass at 3326 Talleyrand Ave., Jacksonville, Fla. 32206, tel: (904) 355-8007; fax: (904) 355-3007.

Furuno's New 8-Channel, 7-Color Display GPS Plotter

The new GP-3100 GPS and seven-color video plotter from Furuno of San Francisco, Calif. has an eight-channel GPS receiver that simultaneously tracks up to eight satellites, stores 100 waypoints and 10 routes, and provides position in longitude/latitude or TDs. The unit also ac-

\$5 Billion CVN-76 Gains Support

At press time it appeared that CVN-76, the nuclear-powered aircraft carrier which would be built at Newport News Shipbuilding, was gaining support in Washington.

On May 5 the House Armed Services Committee approved full funding for the carrier in the fiscal 1995 defense authorization bill (HR4301) that the House began debating in mid-May. (The Clinton Administration has requested \$3.6 billion in the FY '95 budget for the project.)

President Clinton's initial sup-

port for CVN-76 came via the bottom-up review — a statement of the country's post-Cold War military needs, which expressed a need for a 12-carrier fleet — released last September by then Defense Secretary Les Aspin.

Of course the building of CVN-76 would have an economic ripple effect far beyond the Virginia-based Newport News Shipbuilding, and would come as a big boost for many suppliers affected by the Navy's current downsizing plans.

cepts DGPS data in RTCM SC104 format using the optional DGPS interface kit.

The unit displays navigational and plotter data on a 10-inch, high-resolution CRT screen: position, speed, intended course and past track.

MAN B&W Publishes Guide To S35MC Engine

MAN B&W of Copenhagen, Denmark published the first edition of the product guide for its S35MC Mk VI two-stroke engine in February, 1994. The book describes in detail the general technical features of the S35MC engine, including some optional features and equipment. Divided into 11 sections, the book covers Engine Design; Engine Layout and Load Diagrams, SFOC; Turbocharger Choice; Power Take Off; Installation Aspects; Auxiliary Systems; Vibration Aspects; Instrumentation; Dispatch Pattern, Testing, Spares and Tools; Documentation; and Scaled Engine Outline. The guide contains a multitude of technical drawings and specifications of the engine. For a copy,

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AlliedSignal Offers New Brochure On SeaGard® Rope/Cordage

AlliedSignal Inc. of Morristown, N.J. has just released a new brochure to answer the growing number of inquiries about its propri-

etary SeaGard® products. The four-page, full-color piece highlights the physical properties of SeaGard nylon and polyester for use in marine rope and cordage applications.

The SeaGard marine overfinish for nylon and polyester lubricates the fiber bundle, thus minimizing the yarn-to-yarn friction that naturally occurs when nylon and polyester fibers get wet.

By reducing this friction, SeaGard fibers reportedly enable ropes to retain virtually all of their "dry" strength and abrasion resistance. The SeaGard treatment is engineered to last for improved durability even under the most severe wet abrasion conditions. For more information, contact Earl B. Clark, AlliedSignal Fibers, tel: (908) 713-1722.

BoatLIFE Offers Adhesive Sealant In Aluminum Finish

BoatLIFE, Old Bethpage, N.Y., offers a newly formulated version of its popular Life Seal® product in a special aluminum finish. Multi-purpose Life Seal® is a fast-curing combination of marine silicone and polyurethane that serves as a sealant, adhesive, caulking or bedding compound, and adheres to fiberglass, aluminum, glass, plastic and wood.

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Orkot Changes Ownership

Marine bearing manufacturer Orkot Limited has changed ownership. A newly-formed engineering group, Vector Industries, has purchased Orkot and four other niche engineering companies from the Bridon Group.

The current Orkot management will form part of the team overseeing the new operation. Orkot Managing Director **Graham Tooke** spoke favorably of the takeover. "By acquiring the nest in composite manufacturing technology, we will be in a better position to develop new grades of Orkot, satisfying both existing and future customers worldwide," he said.

Orkot composites for marine applications have full classification approvals and are available worldwide and manufactured both in the U.S. and the U.K.

Tidewater Reports Stronger First Quarter, Year End Revenues

Tidewater Inc. reported stronger fourth quarter and 12-month 1994 fiscal revenues and earnings from continuing operations as compared with the same periods a year ago — a result of higher levels of marine activity in the Gulf of Mexico, according to the company.

John P. Laborde, Tidewater chairman, president and CEO, said the growth in earnings is directly attributable to higher utilization of Tidewater's U.S. vessels and gas compressors, as well as significant increases in day rates for the domestic marine fleet.

Revenues for FY '94 were \$522.1 million, as compared with FY '93 revenues of \$475.5 million, and FY '94 fourth quarter revenues of \$125.8 million compared favorably with fourth quarter 1993 revenues of \$120.1 million. For the year ended March 31, 1994, Tidewater posted earnings from continuing operations of \$36.1 million, compared with \$27.8 million for FY '93. Fourth quarter FY '94 earnings from continuing operations were \$5.2 million, compared with \$2.5 million for fourth quarter FY '93.

AMSC Elects New Chairman, Director

The American Mobile Satellite Corp. (AMSC) announced the election of **Anthony J. Iorillo** to the position of chairman of the board of directors, and of **Dr. Chia Choon Wei** as director.

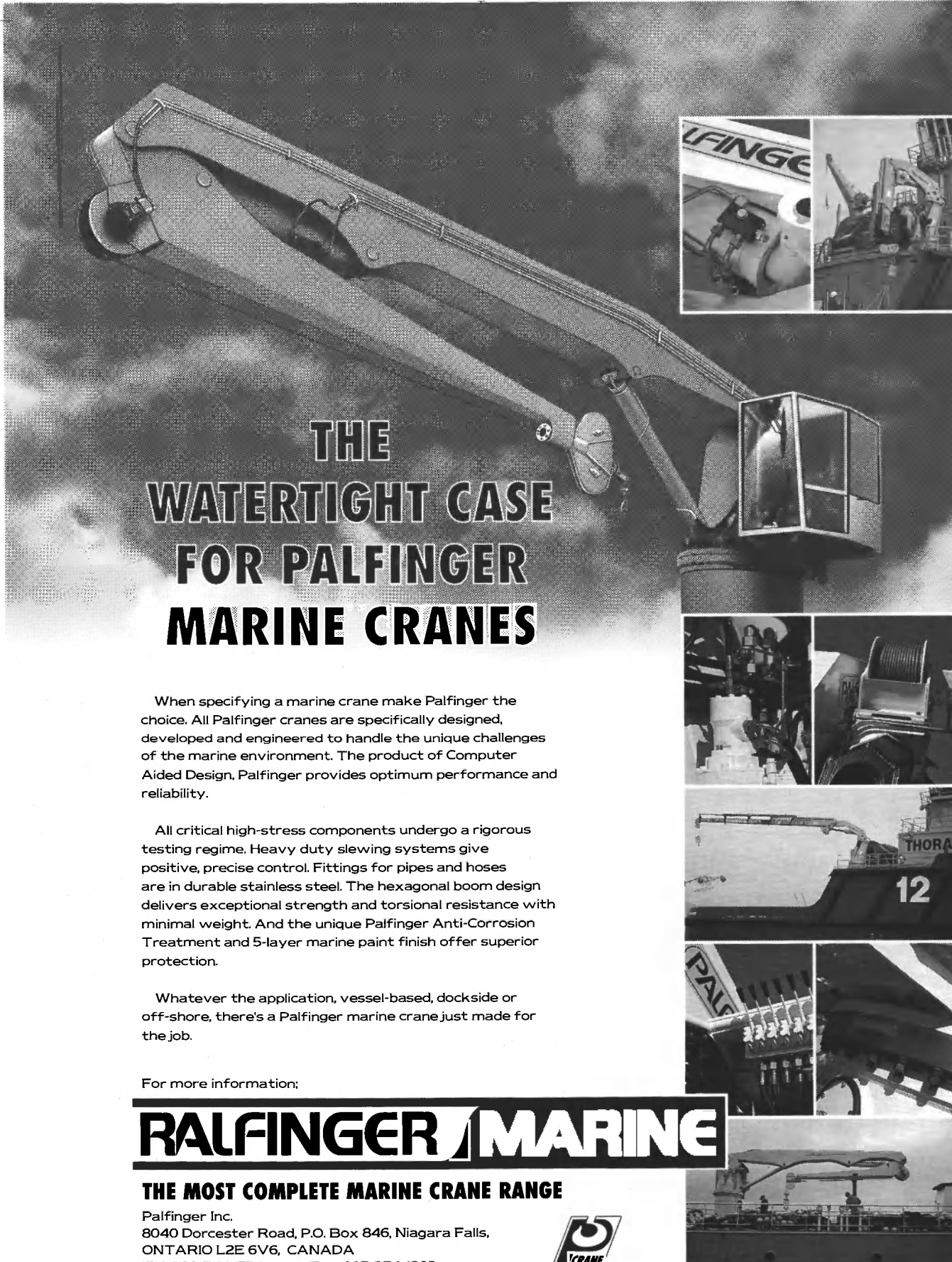
Mr. **Iorillo**, who replaces **Kevin McGrath** as chairman of AMSC, recently retired as senior vice president of Hughes Aircraft Company. Prior to his retirement, he was a member of the office of the chairman and president of Hughes' Telecommunications Sector. With 34 years of experience at Hughes, Mr. **Iorillo** has been involved in all phases of space systems development and management, and is a Fullbright scholar. Dr. **Chia** is man-

aging director/vice president, ventures, of Singapore Telecom International. His 23 years of experience has given him a broad knowledge of telecommunications. He is currently responsible for the development of investment opportunities for Singapore Telecom.

Others re-elected to the AMSC Board of Directors include: **Carlson E. Agnew**, vice president, mobile satellite programs, Hughes Communications, Inc.; **John C. Baker**,

senior vice president and general partner, Patricof & Co. Ventures, Inc.; **Jai P. Bhagat**, exec. vice president and director, Mobile Telecommunications Technologies Corporation (MTEL); **Jerald F. Farrell**, exec. vice president, Hughes Communications and president, Hughes Communications Galaxy; **Emmet B. Hume**, senior vice president, MTEL Technologies; **Lim Toon**, exec. vice president, network services, Singapore Telecommunica-

tions; **Kevin McGrath**, president and CEO, Hughes Communications, Inc.; **Billy J. Parrott**, president, Satellite Mobile Telephone; **Brian B. Pemberton**, president, American Mobile Satellite Corp.; **Andrew A. Quartner**, senior vice president, law, McCaw Cellular Communications, Inc.; **Jordan Roderick**, vice president, product development, McCaw Cellular Communications, Inc.; and **Albert Zesiger**, managing director, BEA Associates.



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Carrier Transicold Earns ISO 9001 Certification

Carrier Transicold's container refrigeration unit manufacturing operations in Singapore and in Syracuse, N.Y. have been certified to ISO 9001, the most comprehensive of the International Standards Organization's quality system registration levels.

ISO 9001 covers 20 distinct qual-

ity system areas, ranging from management commitment to statistical methods. It includes not only manufacturing processes but registration of the design engineering function, and the standard is increasingly seen as an important credential for globally operating manufacturers.

Carrier Transicold is a division of Carrier Corporation, reportedly the world's largest manufacturer of air conditioning and heating systems and equipment. Carrier is a subsid-

iary of United Technologies Corporation.

Donovan Becomes First Chairwoman Of NY/NJ Port

The Commissioners of the Port Authority of New York and New Jersey elected **Kathleen A. Donovan** of Rutherford, N.J. to the position of chairwoman of the bistate agency's board. Chairwoman

Donovan was appointed to the board by N.J. Governor **Christine Todd Whitman** and became a commissioner on Feb. 16, 1994. She succeeds **Richard C. Leone** of Princeton, N.J. who served as chair-



man from April 12, 1990 until his resignation on March 21, 1994.

The chairwoman serves as CEO and principal policy spokeswoman for the 12-member Board of Commissioners, whose members, six from each state, are appointed by the governors of the respective states. Chairwoman **Donovan**, an attorney and a former member of the New Jersey Assembly, is currently Bergen County Clerk. She has served as Republican chairwoman of 1991 New Jersey Legislative Reappointment Commission, chair of the New Jersey Republican State Committee, and as vice-chair of the Bergen County Charter Study Commission.

Gamajet Equip. Division Sold By Sybron Chemicals

The Gamajet tank cleaning equipment business of Sybron Chemicals, Inc., has been purchased by a group headed by **Robert E. Delaney** (chairman) and **Victor F. Sheronas** (president). The new company is headquartered in Wayne, Pa., retaining existing manufacturing and warehouse facilities in Hayward, Calif. and Anniston, Ala. Terms of the sale and purchase price were not disclosed.

Mr. **Sheronas** has headed his own company, Vicjet, since 1979, where he served as a key distributor for Gamajet in the eastern U.S. Mr. **Delaney** brings 30 years of manufacturing and managerial background to the company. Renamed Gamajet[®] Cleaning Systems Inc., the business will continue to manufacture and market the Gamajet IV tank cleaning machine and provide spare parts for all Gamajet models, and plans additions to the product line in the near future.

Elomatic Names Nevala Division Manager

Elomatic, a Finnish consultancy, named **Jouko Nevala**, M. Sc., manager of the shipbuilding division and also managing director of Oy Elomatic Group, Ltd.

Mr. **Nevala** has 20 years of experience in shipbuilding, and has served as managing director of Rauma-Yards Oy.

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gloves. The LCD display is oversized and backlit. And options like the external speaker/microphone which allows hands-free operation make it ideal for tankers, tenders and oil rigs.

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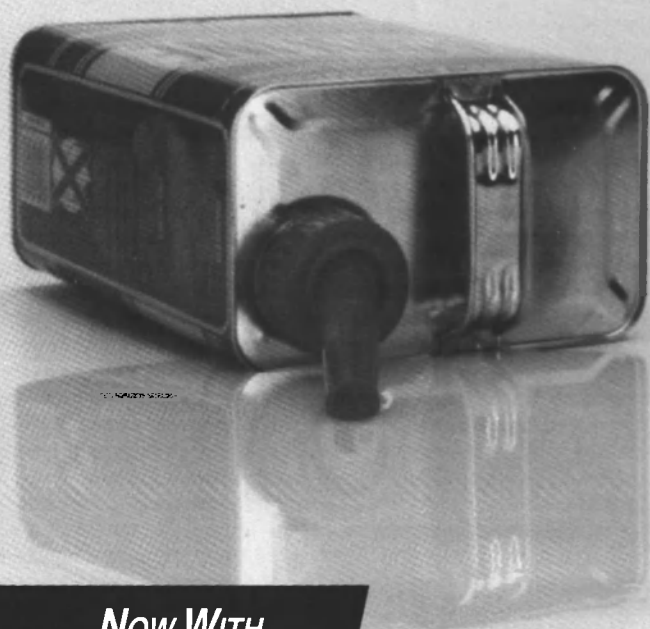
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Mjøllem & Karlsen Expands Bergen Dock Facilities

Mjøllem & Karlsen (M&K), the Bergen, Norway shipyard group, purchased a Panamax dock for its Laksevåg Yard in Bergen.

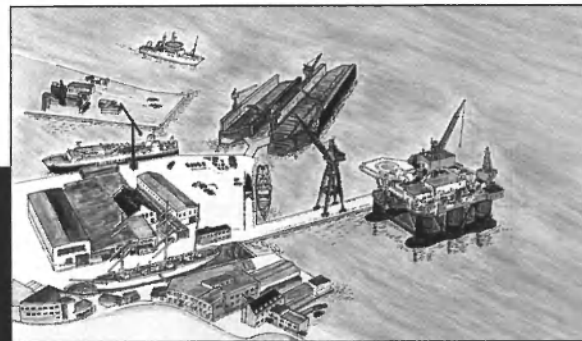
The 679-foot (207-m) floating dock will be able to accommodate vessels with a width of 106 feet (32.5 m) and a draft of 29 feet (8.75 m). Lifting

capacity is 28,000 tons.

The Port of Bergen is now reportedly the second largest port in Europe; both oil transport and cruise traffic have increased recently.

M&K offers a full range of services to support drydocking, repairs, maintenance and conversions.

The new floating dock shown at the Laksevåg yard in the Port of Bergen, reportedly the second busiest harbor in Europe with an increase in both oil tankers and cruise ship callings.



Canadian Coast Guard Deems Carp River Not Navigable

The Canadian Coast Guard determined that the Carp River, in the vicinity of the proposed Palladium Development, is not a navigable waterway. The determination was based on measurements of water depth and flow and on consultations with the Ontario Ministry of Natural Resources and the Mississippi Valley Conservative Authority. As a result, the permission of the Canadian Coast Guard is required to allow the proposed development to continue.

Electronics Manufacturer Opens U.S. Office

Transas Marine, a manufacturer of a variety of marine electronics products with its headquarters in Southampton, U.K., has opened a U.S. office. The company mainly focuses on Electronic Chart Display and Information Systems (ECDIS) and Electronic Chart Systems (ECS).

Additionally, Transas Marine is known for its PC-based ship's simulators. The following are some specifics on the company's product offerings:

- The NAVI-Traffic vessel traffic service is a VTS for smaller ports. The full system comprises the control center equipment, the radar site equipment (for both main and remote sites), the remote radar control and monitoring equipment, wide band radio link equipment and the most advanced Transas software technology.

- The NAVI-Saver is a software package designed to monitor the fuel consumption of main and auxiliary engines and steam generating plant. It will then report on optimum speed and power outputs for any given combination of weather (actual and forecast), state of loading, and sea state (including tides and surface currents) based on the performance characteristics of the vessel. The system can be purchased as stand-alone software or as a module for integration into the NAVI-Sailor system.

The new office of Transas Marine is based in Everett, Wash., and is managed by **Peter Mantel**. For additional information, call (206) 334-2037 or fax: (206) 334-1637.

For free literature on Transas Marine products,

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Austal Enters Japanese Market With \$7.8 Million Sale

Austal Ships of Western Australia has penetrated the Japanese market with the sale of a 141-foot (43-m), \$7.8 million passenger catamaran to Japanese shipping operator, Diamond Ferry, which is a subsidiary of Mitsui OSK Lines.

"Our vessel will be an ambassador to Japan and we're confident it will be the first of many more," said Austal Ships President **John Rothwell**.

Diamond Ferry is diversifying

its fleet of steel car/passenger ferries to include Austal's ultra-fast 331-passenger aluminum catamaran.

The vessel, which is scheduled for delivery in May 1995, will operate on a prestigious new route which connects Matsuyama on Shikoku Island and Oita on Kyushu island.

Driven by four MTU diesel engines, which will drive the vessel to an operating speed of 42 knots, the vessel will complete the journey in two hours.

Atlas Elektronik Wins VTS Order From Qingdao Port

Atlas Elektronik won an order from the Port of Qingdao for its new 9730 radar-based vessel traffic service system. It follows the recent installation of a similar system at the port of Shanghai, enabling coverage of all traffic on the Yangtze River up to the Huang Po River.

Recently developed by Atlas Elektronik, the 9730 VTS incorporates advanced radar processing scan converter and tracking functions using a multi-function digital signal processor board.

The new Qingdao Atlas VTS comprises a main control center with

two operator workstations, each equipped with two traffic displays and a ship data display. Associated processing facilities are connected via a digital microwave link to a proprietary X-band Atlas radar sited at nearby Huangdao.

SeaArk Delivers Crewboat To Panama Canal

The Dredging Division of the Panama Canal Commission recently accepted delivery of a 36-ft. (11-m) Dauntless crewboat from Sea Ark Marine of Monticello, Ark.

The all-welded, aluminum boat replaces two older boats from the Commission's fleet and will be used

to transport employees to and from dredges working along the canal. Depending on the location of the dredges, the new boat will make one-way trips up to almost 20 miles (32 km) in length.

Speed was an important requirement of the new SeaArk, which is powered by three Volvo diesel engines, coupled to triple Hamilton waterjets — helping the Dauntless achieve a speed of over 36 mph during trials. The deep-vee hull was designed by C. Raymond Hunt Associates of Boston, Mass.

Company Wins OTC Award For Fluid Technology

Single Buoy Moorings, Inc. (SBM), Monaco, a designer and supplier of single-point mooring systems and tanker-based floating storage and floating production systems, was awarded the Best Mechanical Engineering Achievement Award at the Offshore Technology Conference in Houston, Texas.

The award, sponsored by the American Society of Mechanical Engineers (ASME) Petroleum Division, was presented to SBM, which with its sister company IMODCO developed a high-pressure fluid swivel — a key component of tanker-based Floating Production Storage and Offloading (FPSO) systems worldwide.

Single-point moored FPSO systems have been used to develop

marginal offshore oil fields in many parts of the world, including the North Sea and the South China Sea for the past 20 years.

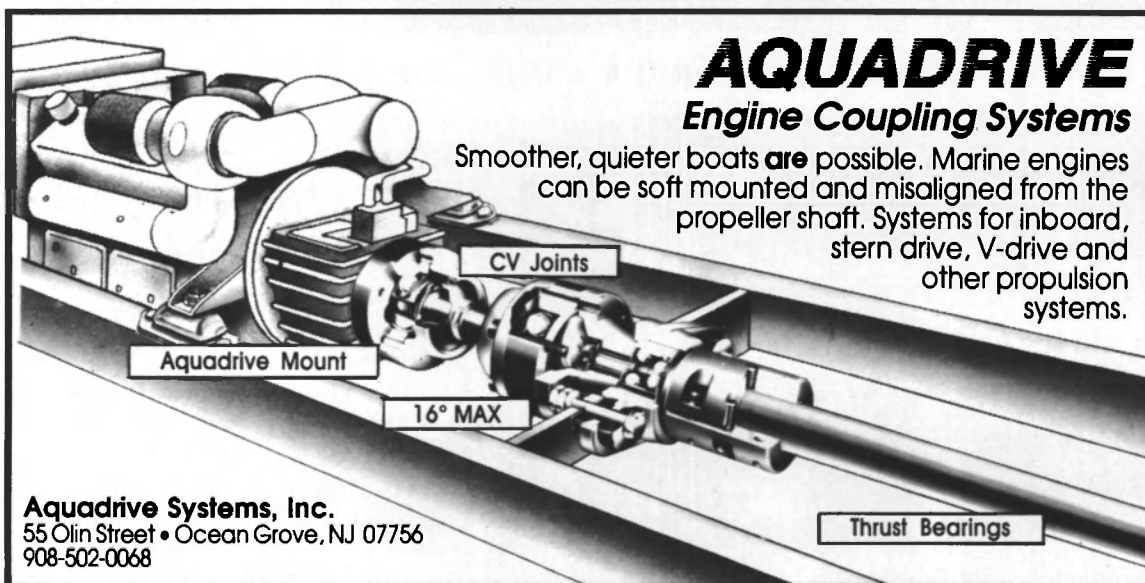
But the use of FPSO systems has been restricted by the pressure and size limitations of fluid swivel assemblies, according to SBM, which says its new swivel advances the use of FPSO systems to handle several high-pressure multi-product flowpaths.

MSRC Recognized By Computerworld Smithsonian

The Marine Spill Response Corporation (MSRC) was named a finalist by the 1994 Computerworld Smithsonian Awards (CWSA) program for some of the year's most innovative uses of information technology.

MSRC's Spill Operations System (SOS) is a highly-complex decision support system based on a client-server architecture. The SOS provides information systems support for critical spill response functions.

The SOS system provides command/control/communication capabilities for more effective management of response operations; allows for centralized management of data with decentralized access and decision-making; provides real-time tracking of the availability and location of critical resources; and provides cost-accounting data and spill events tracking information.



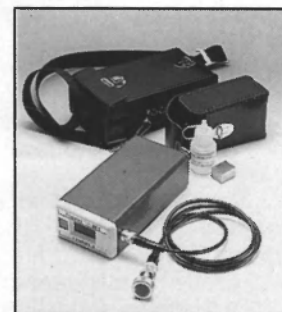
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Marino Inland Fabricators Builds Live-Aboard Towboat For TLC Marino Services

As a continuation of its expansion into new markets, Marine Inland Fabricators has built a live-aboard towboat at its Panama City, Fla. yard. Delivery was made to TLC Marino Services, Inc. of Lockport, La.

The largest boat Marine Inland Fabricators has built to date, *Chad D* has 55' x 18' x 6' molded dimensions and is powered by two rebuilt Detroit Diesel 8V-71 naturally aspirated diesel engines with Twin Disc MG-509 gears at 2.95:1 reduction. Propellers are 36" x 26" four-blade "workhorse" wheels by Michigan Wheel Corp.

The steering system, designed by Bollinger Shipyards, consists of Kobelt electric jog controls over a hydraulic system and dual steering cylinders. Living accommodations consist of a galley, bunk room for two crew, bathroom and shower. A Humphrey sanitation system processes effluent.

The boat will be used as a service vessel for the oil and gas rigs in "oil patch" of southern Louisiana and Texas. The boat is capable of carry-

ing tankage of 5,600 gallons of fuel and 5,600 gallons of potable water.

A John Deere diesel 4039DM genset supplies 25 kW three-phase electric power to the boat's transfer pumps, steering, lighting, navigation equipment and the central air

conditioning installed by Complete Air Conditioning & Refrigeration.

For more information on Marine Inland Fabricators,

Circle 76 on Reader Service Card



RTK Marine Builds River Survey Seatruck Destined For Bangladesh



Poole (U.K.)-based boat builder RTK Marine has recently completed trials on a 39-ft. (12-m) Seatruck for delivery to an owner in Bangladesh.

The Seatruck was purchased by a consortium of the Dutch company Delft Hydraulics and the Danish Hydraulic Institute for use as a river survey craft on the Bangladesh Government Flood Action Plan.

The vessel is propelled by twin Volvo Penta 130-hp diesel engines, propulsion units which provide a fully laden speed of 18 knots. A total of 160 gallons of fuel can be carried on-board, essential for the extensive distances involved in the survey.

A pair of diesel generators are installed to provide power for the galley, survey equipment and airconditioning units.

The vessel is designed to carry out hydrographic surveys away from its base resulting in trips of several days duration. The air-conditioned cabin is equipped with bunks, galley, refrigerator and toilet.

A unique feature of this craft is the requirement for a Moonpool, i.e. a hole through the bottom of the boat to deploy sophisticated survey equipment directly into the river.

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count on highly trained COMSAT operators such as Suzanne Loetz of our Santa Paula facility. Suzanne recently sprang into action to get quick rescue assistance to a cargo ship sailing near Indonesia after she received an urgent distress call saying the ship had been boarded by armed pirates.

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OceanQuest International's concept design for a casino barge.

Maritime Reporter & Engineering News'

CASINO RIVERBOAT QUARTERLY

Site Selection Key To Long Term Success In Growing Market

by Erin M. O'Driscoll, assistant editor

Location, location, location...the axiom to describe the key to success in the real estate market can also be applied to the riverboat casino industry. Securing a prime location which offers the potential of long-term success is more crucial today, as casino riverboat owner/operators face increasingly stiff competition in the handful of states which allow riverboat gaming, and the numerous states which are close to legalization.

The Search Begins

As only five states to date have legalized riverboat gaming, legislation is the initial determinant when searching for a new location to de-

velop a riverboat casino site. As more states legalize this mode of entertainment, site selection—by state and within a state—takes on an expanded importance. Inter- and intra-state rivalries will become more heated, as additional vessels vie for a finite number of dollars. Bad news for owner/operators, good news for boat owners and suppliers.

With Texas, Ohio and several other states reportedly close to legalization, riverboat gaming operators in the future will be able to choose a site for what the area has to offer rather than just because gaming is legalized there.

When considering a location for a site, owner/operators research the

area extensively. Much money goes into the project at its early stages. Competition is studied—competition that exists in the area already and competition there is likely to be in the future.

Companies must also hire researchers to investigate the area's market feasibility, as well as conduct demographic analyses of the area's population, tourism, transportation, and accessibility to highways and airports. When an area meets a company's satisfaction, the company must then go through the sometimes arduous process of obtaining a license to operate in that area.

States: Looking For Stability

Just as each state differs in its legislation, each state differs in what owner/operators must do to prove the casino will be economically and sociologically sound, and none of the owner/operators feel that the licensing process is getting any easier.

A company must prove that it is

more capable of delivering than its competitors. The company also needs to prove that it will be financially stable through both periods of ups and downs. The support of local businesses and political people is vital.

According to **Mark Bradley** of Jazz Enterprises, Jazz—when pursuing its Catfish Town Project site—had to spend close to nine months convincing the City of Baton Rouge that the company would have a posi-

OceanQuest International, Providence, R.I., an industrial, commercial and marine consulting firm, presented its newest casino barge design at the Intl. Gaming Show in Las Vegas in May. The vessel has 76,298-sq.-ft. of gaming space and cost about \$80 million to build. OceanQuest is planning two more, bigger vessels in the future. The vessel is 480 feet (146 m) long with a breadth of 118 feet (36 m). OceanQuest was the architect for the vessel. Interior designs were by Directions in Design.

tive impact on the city. Mr. **Bradley** said that in Louisiana, a company must prove that it is financially sound, it must own the berthing site of the riverboat, it is obligated to choose a competent operator for the venture, and it is encouraged to consider the area's shipyards when ready to choose a builder. Jazz complied with all of the state of Louisiana's wishes, and contracted to build the 266-foot *Catfish Queen* with Avondale Boat Division for the Catfish Town site.

Boomtown Hotel & Casino's **Rich Irvine** views Indiana as the most stringent state in terms of proving a company's capabilities. Indiana requires a company to submit a detailed analysis containing the specifics on what the company is going to do at the proposed site.

According to **Suzanne Seifert** of Hollywood Casinos, often what the granting of a license boils down to is who can bring the most economical impact to the area. States want to be assured that the venture is going to be economically helpful to them. That translates to employing their people, utilizing their busi-

nesses and building your vessel in their yards. In fact, some states may even take this a step further. According to **Marc Grossman** of Hilton, Texas riverboat gaming legislation is calling for 33 percent local ownership.

although Mr. **Aranow** says there will not be a hearing for this site until 1995. Ms. **Seifert** said Hollywood Casino does not start actually building anything on or for the site, but they do start plans for the site before getting licensed. Hollywood has secured sites in Bristol, Pa. and is pursuing a Michigan City site. Under option for the company are two sites in Dallas; two sites in Houston; and one site each in Hampton,

Va. and Myrtle Beach, S.C.

Jazz Enterprises claims to have spent \$21 million in Louisiana before getting licensed for Catfish Town. Mr. **Bradley** admits this is risky, but he likens the risk to sending a child to college. "You invest a lot of money in the student with the hope that they'll get a diploma."

Mr. **Irvine** said Boomtown felt confident enough that they would get licensed when they were looking into Louisiana and Mississippi,

so the company forged ahead with plans for sites there.

Casino America's **Allan Solomon** said that there's almost no way around spending money on the project before licensing, with the hiring of architects, designers, researchers, etc. Casino America's most recent project, *Isle of Capri* Casino in Bossier City, La., opened on May 20, after a delay due to low water levels in the Red River.

Mr. **Grossman** says that Hilton

States want to be assured that the venture is going to be economically helpful to them. That translates to employing their people, utilizing their businesses and building your vessel in their yards.

nesses and building your vessel in their yards. In fact, some states may even take this a step further. According to **Marc Grossman** of Hilton, Texas riverboat gaming legislation is calling for 33 percent local ownership.

To Build Or Not To Build

Once a site is selected, some companies may elect to order a vessel and begin site construction, in essence committing millions to the project even before obtaining a license. Other companies, however, may opt for a more conservative approach. **Peter Aranow** of Players Riverboat Casinos claims that Players does not take any steps before gaining a license, mainly because the company has only gotten involved in riverboat gaming in states that have limited jurisdictions. Players has identified three new sites for the future: Maryland Heights, St. Louis; Evansville, Ind., where Players is a finalist for a license; and Michigan City, Ind.,

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never takes it for granted they will get a license, but a lot of planning goes into the site before licensing. Rarely will Hilton invest in building until licensed. Mr. Grossman used Hilton's plans for its Kansas City, Mo. riverboat casino as an example of how its caution paid off. Hilton carried out the usual environmental and site work they do for every project. They, as usual, did not invest in boats or land, and that helped them in the long run when the Missouri referendum was defeated. Hilton is continuing talks

with Kansas City, and also has a proposal in Michigan City, where they are already in a partnership with Caesars and Circus Circus.

Most companies feel that not only is the licensing process not getting any easier, but competition for the sites is getting, as Mr. Bradley says, "fierce." Seasoned operators are entering the market now, operators who are comfortable with land-based casinos. When vying for a site, states may feel more confident in granting a license to a long time gaming operator versus "newer" operators.

Hollywood Acquires Land In Pennsylvania & Texas

Hollywood Casino Corp. was informed recently by the Bucks County Redevelopment Authority that it won its bid to purchase 32 acres of land at the River North Development in Bristol, Pa.

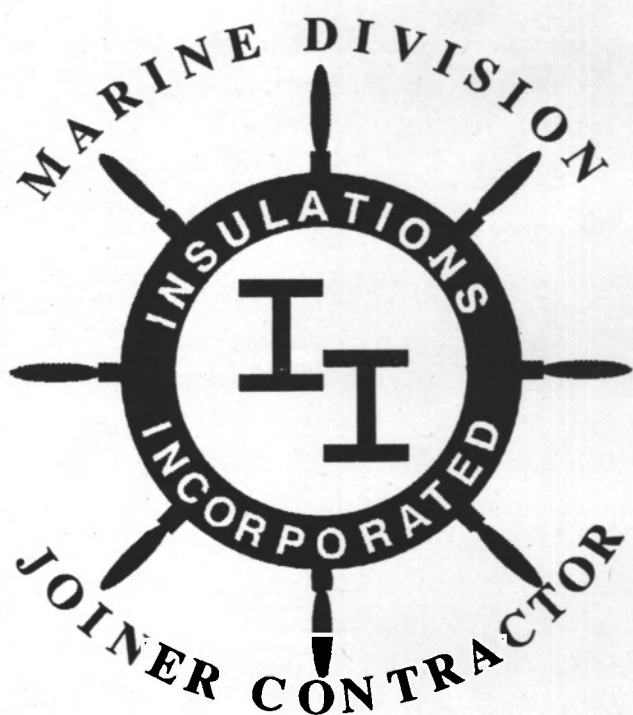
While there is still no legalized gaming in Pennsylvania, Hollywood Casinos is counting on legalization. "Obviously we are still a year or more away from legalized gaming in Pennsylvania, but the wheels

already are in motion," said Jack Pratt, chairman and CEO.

Once gaming is legalized and the company wins a license, Hollywood Casino Corp. would build an entire gaming and entertainment complex, including a riverboat casino.

Hollywood also announced it purchased approximately 45 acres of land in Farmers Branch, Texas from Prentiss Properties.

The site was purchased in anticipation of the state legislature passing a gaming bill and further approval by local referendum in 1995.



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Missouri Ruling Causes Temporary Lull

With Missouri's recent decision, which effectively bars slot machines from riverboats, many owners' and builders' confidence in the market was shaken.

However, the promise of a revote, combined with the prospect of a number of new states reportedly ready to legalize, casino vessel builders are still confident that the

riverboat gaming trend will remain a strong business segment.

Both Charles Burrell of Leevac Shipyards and Ed Doherty of Atlantic Marine think the Missouri vote caused a temporary lull in the newbuilding market, while Trinity Marine Group's Gary Lipely saw a lot of reshuffling of boats and owners after the Missouri vote.

But Mr. Doherty, Mr. Burrell, Mr. Lipely, as well as Avondale Industries Boat Div.'s Ronny Babbins, all think that when Missouri resolves the issue, there will be a surge of newbuilding activity.

Atlantic Marina Delivers Par-A-Dice Riverboat Casino



Par-A-Dice Riverboat Casino.

Atlantic Marine, Inc., Jacksonville, Fla. delivered the *Par-A-Dice Riverboat Casino*, five weeks early, to Par-A-Dice Gaming Corp., East Peoria, Ill. The \$20 million vessel will replace the existing sternwheel casino vessel, *Par-A-Dice*, built by Atlantic Marine in 1991.

Designed by Rodney E. Lay & Associates, Inc., the 240-foot by 66-foot Casino Cat™ has four decks with 1,600-passenger capacity. The 33,000-sq.-ft. casino area will operate 1,200 gaming positions on the main, second and third decks of the boat.

The fourth deck is open and includes a raised pilot house.

The *Par-A-Dice Riverboat Casino* is powered by two Caterpillar 3412TA, 764-hp marine engines with Twin Disc reduction gears.

Caterpillar also supplied two 3508TA, 715 kW generator sets for shipboard electrical service; a 3208T, 160-hp generator set for emergency

power and a 3208TA, 340-hp bow thruster engine.

The interiors of the casino vessel were designed by Ultimate Interiors, Inc. The design was based on the Art Deco style of the 1930s.

Besides the *Par-A-Dice Riverboat Casino*, Atlantic has built six other casino vessels: three paddlewheel vessels (*Diamond Lady*, *Emerald Lady* and *Par-A-Dice*); and three Casino Cat design vessels (*Empress*, *Alton Belle* and *Empress II*). The *Empress III* is under construction and scheduled for delivery in late October 1994.

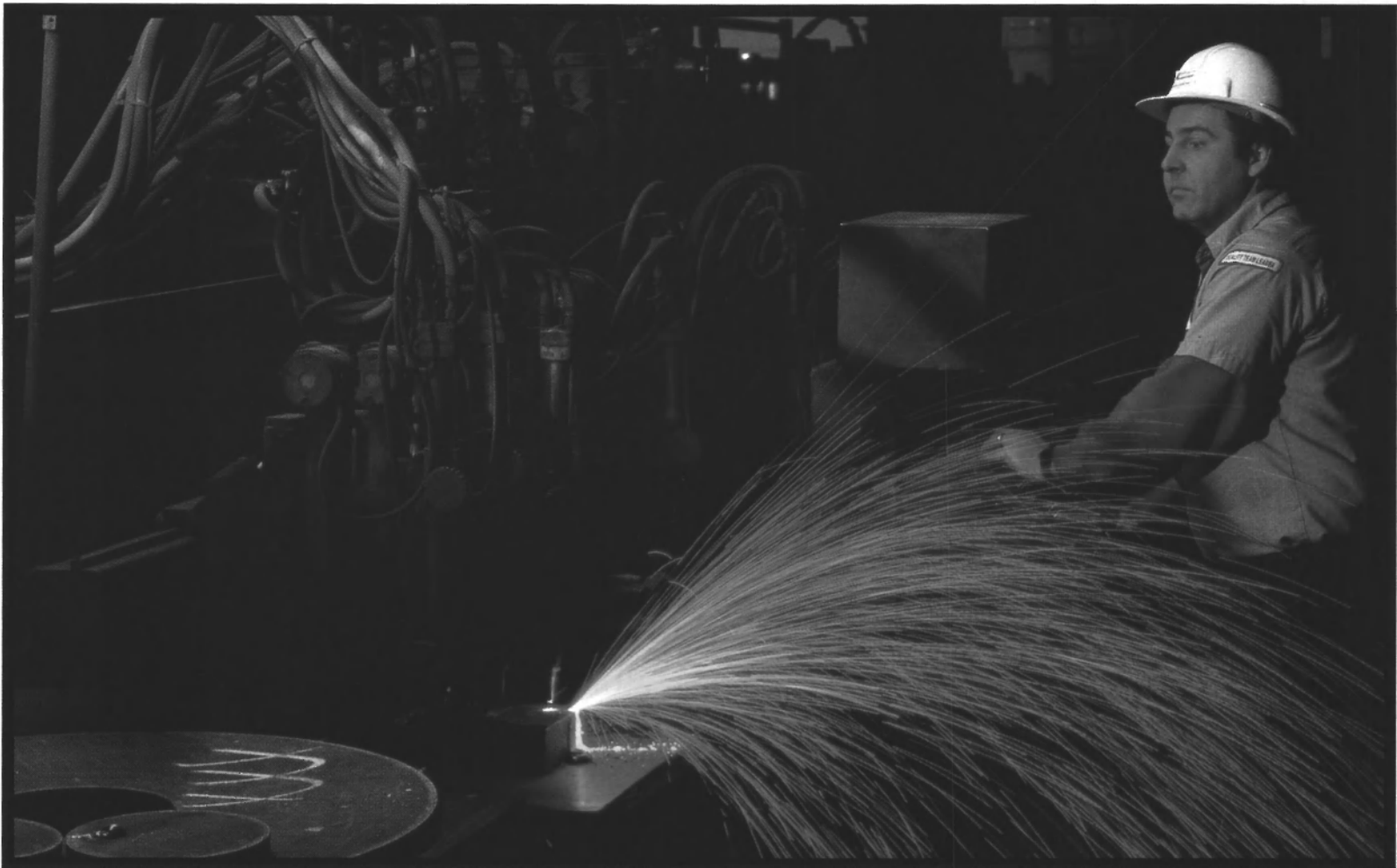
Established in 1964, Atlantic constructs all types of vessels including dinner boats, ferry boats, research vessels, tugs, barges and fishing vessels for the American and international markets. For more information on Atlantic Marine,

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Casino America Opens Isle Of Capri In Vicksburg

Casino America, Inc. opened its new floating *Isle of Capri* casino in Vicksburg, Miss. The new floating pavilion has 25,000-sq.-ft. of casino space with 716 slot machines and 47 tables replacing the existing riverboat and pavilion which had 670 slot machines and 34 tables. This new pavilion will be situated next to the 12,000-sq.-ft. land-based facility that accommodates the res-

taurants, entertainment, lounge and reception area. "The new, state-of-the-art dockside pavilion is designed to accommodate the increasing number of visitors to our *Isle of Capri* Vicksburg casino," said Allan Solomon, secretary of Casino America. Casino America owns and operates riverboat and dockside casinos. The company currently operates two casinos in Mississippi — the *Isle of Capri* casino in Biloxi and the *Isle of Capri* casino in Vicksburg — and opened its third facility, along with its partner Louisiana Downs.



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Gage Creates Dramatic Custom Ceilings For Casino Vessels

Gage Corporation International shipped two creative custom designs for installation aboard the *Treasure Chest Casino*, which was built by Bender Shipyard.

The design is a concept by Paul

Steelman Ltd. and was crafted by the Gage Corporation.

The lower deck features an underwater theme, with the panels featuring a multi-layered textured solution of blues and greens.

The main deck highlights a faceted jewel in the panel center surrounded by a field of gold. The designs on the *Treasure Chest Casino* exemplify Gage's ability to mechanically enhance "honest alu-

minum" surfaces. Gage also shipped a thematic ceiling design to Avondale Shipyard for installation by Jamestown Marine.

Gage Corporation's services were used by Kuhlman Design Group to creatively solve a design dilemma for the *Isle of Capri* (Bossier City) vessel being built by Service Marine.

When the original idea of a custom blue mirrored ceiling was

scuttled due to weight, cost and liability factors, Gage was able to create a custom "specular" blue panel essentially replicating the required reflectance and color of the original intent, but without the weight or liability factors.

Gage claims its panels are environmentally-sensitive (being composed of over 50 percent recycled aluminum), are lightweight (.5 lb./SF), are non-corrosive and fire resistant. Gage features more than 300 standard designs, one of which (an honest aluminum design) was used extensively on the dockside portion of this project. For more information on Gage products,

Circle 97 on Reader Service Card

U.S. Games Designs Video Games For Casino Industry

U.S. Games, Inc. is an Atlanta-based designer and manufacturer of video games and systems for the coin-operated amusements, VLT and casino industry. U.S. Games has distributed more than 40,000 games in the U.S., as well as throughout Europe, Canada, the Caribbean and South America.

According to the company, customer's response to its products has increased sales at a 30 percent rate for the last five years.

U.S. Games provides Pot-O-Gold gaming machines. Some of the features of the Pot-O-Gold machines are touch screen technology, multiple games, one-line linked intermachine communications, integrated progressive central site data collection, and customization capabilities. The core coin-operated, amusement-only product for U.S. Games is Countertop Champion.

Initially manufactured as Little Casino, and then as Bar Brain Bar Top, today's models offer up to 50 operator and player-selectable amusement games in a countertop cabinet particularly suited for bar top placement. U.S. Games' goals are to: design and manufacture video gaming equipment and proprietary software for computerized wide-area game monitoring systems; offer a broad line of gaming equipment; offer high player appeal through innovative engineering; and invest in research and development to maintain innovative products. For more information on U.S. Games,

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Cummins Offers Brochure On Power For Casino Vessels

Cummins Marine offers a brochure detailing the company's extensive diesel engine product range and its uses in the ever-growing casino vessel industry.

The Cummins Marine engines run from 64- to 1385-hp (46- to 1033-kW). Cummins Marine will work with its customers from design through installation, and beyond.

To obtain a copy of the brochure from Cummins, call tel: 1-800-DIESELS or fax: (803) 745-1549.

Maritime Reporter/Engineering News

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Gaming Referendums Defeated In Missouri

By a narrow margin, Missouri residents voted down an amendment to the state constitution which would have allowed the operation of games of chance within the state. Riverboat owners may still get a state license for so-called games of skill, such as poker and blackjack.

In real terms, this means that slot machines, which reportedly are responsible for about 80 percent of casino profits, will not be allowed in casino developments, as they are considered games of chance.

In November 1992, voters in Missouri overwhelmingly approved riverboat casino entertainment on selected sites in the state, making the recent referendum even more upsetting to operators. This was followed by successful local referendums. However, the legality of the games of chance was challenged as counter to the Missouri Constitution.

Harrah's, a unit of Promus Companies, is re-evaluating its two casino developments under way in the state—North Kansas City and Maryland Heights.

Sahara Gaming Corp. has a contract with the city of Parkville, Mo. to develop a dockside casino entertainment complex.

Operators Respond

Sahara Gaming Corp. announced it would study its options to determine how it will proceed. Sahara currently has a contract with the city of Parkville to develop a dockside casino entertainment complex. "Naturally, we're disappointed with the vote," said **Paul W. Lowden**, chairman and CEO. "We have begun a study of our alternatives and will announce a decision when we conclude our review."

Sahara Gaming, along with numerous hotel properties, has a 20 percent interest in Treasure Bay Gaming & Resorts, which just opened a 56,000-sq.-ft. casino in Biloxi, Miss., and has a 63,000-sq.-ft. casino in Tunica, Miss. pending Mississippi Gaming Authority approval.

Harrah's, the casino entertainment division of The Promus Companies, said it was reevaluating its position in the state. "We are disappointed that the opportunities in Missouri continue to be clouded by the confusion over what games are and are not legal in the state," said **Phil Satre**, president of The Promus Companies. "We still have two excellent facilities under development in Missouri and will be discussing our options as far as gaming and entertainment with the state regulators." As of the ruling, construction for Harrah's North Kansas City has proceeded on schedule, and will be ready to open in July. Construction on the boat for Harrah's St. Louis Riverport in Maryland Heights has also proceeded on schedule for a late third quarter or early fourth quarter opening.

Lady Luck Chosen As Sole Operator In Scott City, Mo.

Lady Luck Gaming Corp. has been selected by the City Council of Scott City, Mo. to be the sole riverboat gaming operator for three years. Lady Luck Scott City will be a \$63 million phased project. Upon receiving required regulatory approvals,

the company plans to develop a riverboat casino, entertainment center and hotel along with a library/community center. Future plans even include an 18-hole golf course, an athletic complex and an outlet mall. "We continue to be very bullish on Missouri despite the failure of the constitutional amendment," said **Andrew Tompkins**, chairman of the board. Lady Luck is also moving ahead on its Jefferson

County, Mo. project, as well as the Scott City one, according to Mr. **Tompkins**. Lady Luck Gaming Corp. develops, owns and operates casinos in Natchez, Tunica, Coahoma County and Biloxi, Miss., and in Central City, Colo. The company is currently exploring and developing several sites in emerging gaming jurisdictions which include Indiana, Louisiana, Missouri and Mississippi.

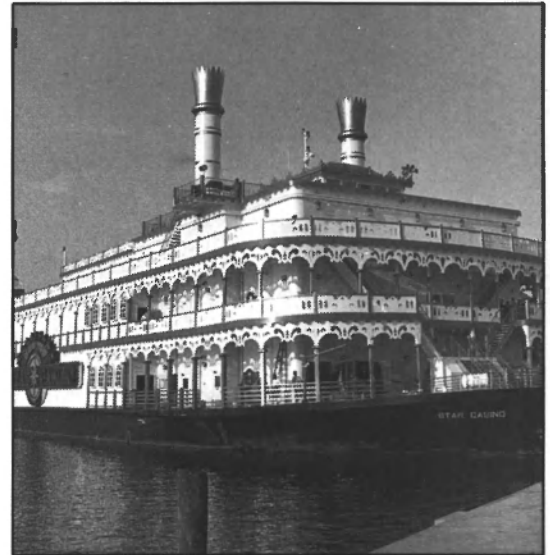
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Caterpillar Financial Services Offers Vessel Financing

Caterpillar Financial Services Corp., a wholly-owned subsidiary of Caterpillar, Inc. and headquartered in Nashville, Tenn., began marine-related financing in 1986 as a natural evolution of Caterpillar's engine sales business. Today the maritime

market is considered a valuable portion of Caterpillar Financial's portfolio, and in 1993 it provided approximately \$50 million of financing to the marine industry. As Caterpillar engines for main propulsion and auxiliary engines have proven popular within the casino vessel market, the company naturally touts this area as a growth spot.

Other than gaming vessels, other

common areas the marine portfolio is diversified in include fishing, high-speed ferry operations, oil supply, work boats/tug boats and passenger excursion vessels. In addition to providing financing on new vessels, Caterpillar Financial also provides financing for main engine repower requirements.

For newbuilds, lending requirements vary depending on the customer, but a few policies closely

adhered to are:

- the vessel's main and auxiliary engines must be Caterpillar,
- the vessel must be flagged in a country satisfactory to Caterpillar Financial, and
- Caterpillar Financial must be able to secure a first preferred ship mortgage.

Some of the other requirements are summarized below and are typical of Caterpillar Financial's lending transactions:

- term financing up to 80 percent of the vessel's hard costs (typically in the 70 to 75 percent range),
- financing terms up to 10 years,
- fixed rate loans at fixed spread over the comparable term U.S. Treasury Note, fixed at the time of funding. The spread depends on credit history, country risk, etc.). For free information on financing your next casino vessel with Caterpillar,

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Administration Drops Proposed 4% Gaming Tax

The Clinton Administration dropped a proposal that singled out the travel and tourism industry for a tax to finance welfare reform. Many in the industry were relieved, viewing the development as a positive signal that the industry's impact is being noticed, according to the Campaign to Keep Travel Competitive (KTC). KTC initially responded to the proposal to levy a four percent tax on gaming revenue to finance welfare reform by sending letters to the President and key members of the administration imploring them to look beyond this method of financing the program. "It is bad public policy to single out one part of travel and tourism—gaming—especially when thousands and thousands of hotel and casino workers could lose their jobs as a result," said campaign co-chair **Jim Santini**, Washington representative, National Tour Association.

Players Intl. Selected As Applicant In Indiana

Players International Inc. was informed by the city of Evansville, Ind. that it is one of three applicants selected by the city to continue negotiations for a riverboat casino in Evansville.

Bally Gaming Announces New Contracts

Bally Gaming International, Inc. announced that its Bally Systems Division entered into contracts with the San Carlos Apache Tribe of Arizona and The Greater Dubuque Riverboat, Inc. of Dubuque, Iowa. Under terms of the agreements, Bally Systems will supply its new generation SDS/6000 system to each of the new customers. SDS/6000 is a state-of-the-art computerized player tracking, cash monitoring, accounting and security data system for slot

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and video machines. Bally Systems has installed its products in 39 casinos and monitors more than 42,000 gaming machines throughout the U.S. and the Caribbean.

Grand Casinos Begins Trading On NYSE

Grand Casinos Inc. began trading on the New York Stock Exchange. The common stock was previously traded on the NASDAQ National Market System. Grand Casinos currently has 22.3 million shares outstanding.

In addition to four operating casinos, Grand Casinos and affiliates currently have six additional properties under construction or in development. These include Tunica County, Miss.; two in Louisiana; one in California; the Stratosphere Tower in Las Vegas; and one in Montreal. Grand Casinos develops and manages casino gaming facilities in emerging gaming markets on both Indian and company-owned sites.

Casino Data Systems Reports Earnings

Casino Data Systems (CDS), a Las Vegas-based company which designs, manufactures and distributes electronic slot machine accounting and player tracking systems to the gaming industry, announced its earnings for the year ended December 31, 1993.

CDS reports net revenues of \$11 million, compared with \$2 million in 1992. Net income was \$3 million, up from about \$500,000 last year.

Earnings per share for the year ended Dec. 31, 1993 were \$.75, compared with earnings of \$.17 in 1992 based upon weighted average shares outstanding of 4,359,000 and 3,525,000, respectively.

The company also announced two new contracts signed with Argosy Gaming Company for the installation of CDS' OASIS™ System II slot accounting and player tracking system in 1,800 slot machines on riverboat casinos in Louisiana and Missouri, depending upon the proposed casinos obtaining licenses and approval for operation.

Additionally, CDS has been granted approval to manufacture and distribute its OASIS System II in Mississippi.

Hollywood Casino: Financial Move To Build Bigger Boat

Hollywood Casino Corp. announced the filing of a registration statement with the Securities and Exchange Commission for a public offering of units consisting of First Mortgage Notes and Warrants to purchase Class A Common Stock for an aggregate amount of \$225 million. Proceeds will be used principally to construct a larger riverboat casino for the Hollywood Casino in Aurora, Ill., subject to the

necessary approvals; to complete construction of the Hollywood Casino in Tunica County, Miss.; to pursue future gaming ventures; to repay outstanding indebtedness; and for general working capital purposes.

Players Intl. Announces \$9.3 Million Revenue For Lake Charles Facility

Players International Inc. announced that its riverboat casino in Lake Charles, La. generated gaming revenues of \$9,349,626 in March, versus \$8,376,859 in February. For the month of March, passenger count was 95,529, up from 89,842 in February.

Gaming revenues at the company's Metropolis, Ill. riverboat casino was \$4,141,909 for March, versus \$5,835,484 for March 1993, the facilities' first full month of operation.

Players International Inc. is a developer and operator of riverboat casinos, owning and operating facilities on the Ohio River in Metropolis, Ill. and in Lake Charles, La.

Crawford County, Ind. OKs Riverboat Gaming Referendum

Casino Magic Corp. announced that voters in Crawford County, Ind. approved a referendum to allow the development of riverboat gaming on the Ohio River in Crawford County. Casino Magic has an option to lease a site on the Ohio River in Crawford County, approximately 35 miles west of Louisville, Ky. The referendum was triggered by Casino Magic's application for a license in February. Under the Indiana Gaming Act, local voter approval is required prior to the Indiana Gaming Commission's consideration of a gaming operator's license. The Indiana Gaming Commission is permitted to issue five gaming licenses on the Ohio River.

The company plans to file the second part of its gaming license application as soon as the Indiana Gaming Commission sets a date for the filing. Gaming license approvals in south central Indiana are expected in 1995, although there is no assurance the company will receive a license.

Treasure Bay Casino Grand Opening Surpasses Projections

Biloxi's 12th casino, Treasure Bay, was extremely successful by the account of Sahara Gaming Corp. President **Jeff Dahl**. The 400-foot (122-m) long casino is an authentic replica of an 18th century pirate ship, featuring 66,000-sq.-ft. of gaming space, with 1,600 slot machines.

Isle Of Capri Casino Riverboat Opens In La.

Casino America, Inc. opened its

Fenco Wins Horseshoe Riverboat Casino Award

Fenco, which designs and manufactures steel cash handling pedestals for riverboat casino cashier cages and redemption centers, was awarded the cashier/redemption center casework for the *Horseshoe* casino vessel in Louisiana.

With installation scheduled for mid-June, this job represents the third Fenco has gotten in the last six months.

Primarily a supplier of financial institution undercounter (teller line) equipment, Fenco was also selected for Argosy's *Alton Belle II* and the *MV Scandinavian Dawn*.

"Designing and building teller line casework for several of the nation's largest banks and holding companies for the last 40 years offers a strong sense of security to casino industry buyers," said **Matt Lyons**, Fenco's president.

Fenco is currently bidding on two other Argosy Corp. riverboat

projects, and at press time was expecting to hear the decision on the projects.

Some product line features include heavy gauge construction, a full unibody welded design where corners and butting seams are welded and ground flush, and a three-step powder coat finish available in 20 colors.

According to Mr. **Lyons**, individual designs are capable of being manufactured in 45 days from ordering time. But there have been times when Fenco has delivered on shorter notice.

"We were given 30 days to produce the *Alton Belle II* and 40 days to produce the *Horseshoe*, both of which were custom unit orders," said Mr. **Lyons**.

For additional information on Fenco products,

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Iowa Referendum Gives Harveys Casino Go-Ahead

A successful referendum that approved riverboat gaming in Pottawattamie County, Iowa has paved the way for Harveys Casino Resorts to continue its development of its \$45 million Council Bluffs, Iowa riverboat gaming project.

Harveys will now begin negotiating with Council Bluff on land sale terms and identifying a sponsoring organization to assist them in the licensing process for their casino vessel operation — applications for which will immediately be filed.



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Grand Casinos Starts Search For New President After Brosig Announces Resignation

Grand Casinos Inc. announced that its president **Tom Brosig** plans to reduce his responsibilities for the day-to-day operation of the gaming company for personal reasons.

Both Mr. **Brosig** and CEO **Lyle Berman** stressed that the decision is not linked to disagreements regarding the firm or its management.

Mr. **Berman** said he understands and supports his decision, with regret, and that a search for a replacement will begin immediately.

In addition to four operating casinos in Minnesota and Mississippi, Grand Casinos and af-

filates have five additional properties under construction or in development, including one in Tunica County, Miss.; two in Louisiana; one in California and one in Las Vegas.

Avondale To Build \$27.2 Million Paddlewheel Gaming Vessel; Shipyard Also Wins Repair Job

Avondale Industries announced that it has been awarded a \$27.2 million contract with Belle of Orleans, in partnership with Bally's Casino Holdings, Inc., to design and build a 350-foot (107-m) 19th century style paddlewheel gaming vessel for operation on the Mississippi River. The vessel will be designed and built at

Avondale's Boat Div. in Westwego, La. The project will be completed in early 1995, and employ 300 at the peak of construction.

Avondale Wins \$13.7M Contract For Drydock & Repairs

Avondale also announced the award of a \$13.7 million contract for the drydock and repairs to two SL-7 Class ships for Bay Ship Management Inc. This work will be performed at the company's main yard, and will be complete by year's end.

Boyd Gaming Awarded Louisiana License

Boyd Gaming Corp. announced that Treasure Chest Casino, Limited Liability Co. was awarded a gaming license by the Riverboat Gaming Div. of the Louisiana State Police to operate its casino riverboat in Kennar, La. Boyd Gaming has entered into a management agreement with Treasure Chest to operate the facility. The Caribbean-themed *Treasure Chest Casino* is projected to begin operations in September 1994.

Hull Completed On Showboat Branson Belle



John Dismar, ship builder, explains the four-tier decking of *Showboat Branson Belle* to entertainer and co-owner **Kenny Rogers**.

The *Showboat Branson Belle*, an \$8 million replica of an 1890's sternwheeler riverboat, is under construction on the shores of Table Rock Lake near Table Rock Dam and is reportedly the largest vessel of its kind being built on a landlocked lake. Entertainer **Kenny Rogers** is a partner in the venture with Silver Dollar City, Inc.

Reaching 56 feet (17 m) high from the keel to the main deck, the skeletal framework of the 265-foot (80.8 m) long hull was recently covered. Plans call for the boat to be launched in August, with an additional three decks added to finish the project. Upon completion, *Showboat Branson Belle* will be the height of a six story building and will weigh approximately two million pounds. "It will be the largest ship on any of the 642 lakes administered by the Corps of Engineers," said **Richard Groves**, resident engineer on Table Rock.

The vessel is equipped with three 1,200-hp diesel engines which turn the paddlewheels. The engines, which are contained in the hull, are designed to run more quietly than a large motor yacht and dispense no waste in the lake.

The launch of the 700-passenger *Showboat Branson Belle* is scheduled for April 1995.

Maritime Reporter/Engineering News

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Premier Steel: Helping Shipyards Cut Costs

In the drive for U.S. shipbuilders to be competitive on an international level, product and service suppliers will play a big role in the transition of the U.S. industry to a commercial mode. Premier Steel of Englewood Cliffs, N.J. is a firm which believes it offers the product and experience to help yards cut costs.

"We firmly believe that the U.S. shipbuilding industry is capable of being competitive in the international market," said **Norman Cantor**, Premier's executive vice president. "In the last two years there has been a dynamic attempt on behalf of the shipyards to change to compete," he continued, citing a change in internal structures and the adoption of more of a team approach. Mr. **Cantor** foresees 1995 as a very active year for commercial work in U.S. yards, and "right through the year 2000 the U.S. will be fairly active in the commercial market."

Premier Steel is the U.S. agent of Fundia Norsk Jernverk AS, a leading producer of shipbuilding profiles. The steel manufacturer claims a 40 percent share of the European shipbuilding profile market, and its mill located on the Atlantic coast of Norway is reportedly the only one in Europe concentrating on the production of shipbuilding profiles.

Premier Steel is a carbon steel

distributor and coordinator of Fundia's North American bulb flat stocking program situated in Houston, Texas. Mr. **Cantor** and his partner **Steve Bergman** brought a cumulative 38 years of experience in the steel industry when Premier Steel was formed. In addition to steel product expertise, Premier blends steel import knowledge and project financing capabilities in order to present a package approach to the yards. Regarding technical support, the firm works with Fundia's technical consultant **K.K. Christensen** of OMCI. Based in San Diego, Mr. **Christensen** offers more than 50 years experience in the U.S. and European market, and is available as a consultant to shipyards and engineers.

Fundia Norsk Jernverk AS offers a wide range of products including bulb flats (ranging from 100 to 430mm); L-sections and angles; and universal flats. The mill delivers the profiles in steels of all major grades of shipbuilding qualities and is certified by all leading classification societies. The quality assurance system in Fundia Norsk Jernverk AS is approved in accordance with the ISO 9002 and equivalent standards.

For more information on Premier Steel,

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Ameron PSX™ 738 Resists 2,000° F Of Heat

The patented coatings line PSX Siloxane™ from Ameron of Brea, Calif. is based on technology that reportedly incorporates multiple performance characteristics for any given coat, and Ameron says the technology will spur on a line of new coatings.

PSX 700 is reportedly suited for offshore oil and gas applications such as platform superstructures, barges (topside), under insulation on equipment and pipe exteriors, and more. Reportedly, PSX 700 provides long UV and corrosion resistance, gloss and appearance retention, cures under ambient conditions does not require a high temperature bake — and PSX 738 can resist heat of up to 2,000° F. PSX 700 is 92 percent solids and can be applied by brush, roller or spray at packaged consistency without thinning.

Ingalls Chooses MagneTek For LHD 6's Transformers

Ingalls Shipbuilding, a division of Litton Industries, Inc. of Pascagoula, Miss., has chosen U.S. Navy QPL (Qualified Products List)-approved transformers from MagneTek, a power technology development leader in Gardena, Calif., for installation on board the

latest LHD amphibious assault ship, LHD 6. MagneTek QPL transformers are also currently installed on LHD 1 through LHD 5. Under the terms of the new contract, shipments of the transformers will begin in November 1994. MagneTek currently supplies QPL transformers to the U.S. Navy for DDG Aegis destroyers; CVN aircraft carriers; AOE fast combat support ships; MHC coastal minehunters; as well as Trident-class, 688-class, and Seawolf submarines.

Barber Chosen By USCG For Reported Largest Spill Simulation Ever

Barber International, under a national Preparedness Response Exercise Program, has become the first major shipmanagement company to coordinate with the U.S. Coast Guard (USCG) in an emergency oil spill drill. One of the USCG objectives was participation by one domestic and one foreign shipowner/manager. The exercise took months to plan and was designed to test the emergency plans of private industry, the USCG and spill contractors. The drill commenced at 5:53 a.m. New York time on April 14, as the Barber ship MT *Advance* approached the entrance of New York Harbor. Shortly after, the ship was involved in a mock

Tidewater Wins Nine-Vessel Contract In Venezuela

Tidewater Inc.'s Venezuelan subsidiary, Tidewater Marine Services, C.A. has signed a five-year contract for nine of its vessels to service oil and gas operations on Lake Maracaibo in Venezuela. With this new agreement, Tidewater will be operating 31 vessels on the lake.

The contract, signed with Venezuelan company Lagoven, S.A., a subsidiary of Petroleos de Venezuela, S.A., calls for Tidewater to provide five 3,000- to 3,200-hp towing supply vessels and four 1,500- to 2,250-hp tugs. Three of the Maracaibo-bound towing supply vessels are being redeployed from West Africa, and two will come from

Mexico. Three of the tugs are already on Lake Maracaibo, and the fourth will mobilize from West Africa. Tidewater Inc. owns and operates a fleet of vessels serving the international offshore energy industry, owns and operates one of the largest fleets of natural gas and air compressors in the U.S., and also owns a shipyard in South Louisiana.

collision with the tug *Heidi Moran* and the barge *Texas*. The scenario included spillage of 750,000 gallons of oil from the two vessels, which both grounded after the collision.

The results of the drill are to be analyzed and discussed, but initial reaction indicates all procedures during the 14-hour drill fully complied with Barber's Vessel Response Plan. As the first international participant in a drill this size, Barber received not only the USCG's thanks, but also confirmation of its official preparedness and the effectiveness of its Vessel Response Plan.

Alfa Laval Hong Kong Unit Wins Contract

Alfa Laval Hong Kong won an order to supply replacement fuel treatment components for the offshore supply vessel *Nan Hai 212*, owned by China Offshore Oil Nanhai West Shipping Co., the engine room of which was damaged by fire during preparations for drydocking in Hong Kong. Alfa Laval supplied two manual MOPX 205 units with Heatpac EHS heaters and one with automatic controls. The *Nan Hai 212* has a Wartsila Wichmann 6AXAG main engine and was originally equipped with three purifiers, two of which suffered major fire damage.

New England Trawler Becomes Exclusive Agent Of Seattle Crane & Equipment

New England Trawler Equipment Co. is now the exclusive East Coast dealer for Seattle Crane & Equipment Co.'s line of hydraulic marine cranes.

Seattle Crane designs and manufactures hydraulic box boom type cranes (knuckle, telescopic or fixed) for the general marine, fishing and petroleum industries. Seattle Crane also markets under the trade name of Alaska Marine Crane, and can reportedly obtain American Bureau of Shipping or American Petroleum Institute Certification for many of its crane models. New England Trawler is also an Ingersoll Rand/Beebe distributor.

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Hudson Steamship Completes ISM Audit

Hudson Steamship Co. Ltd. has successfully completed the final audit for the International Safety Management (ISM) Code for the safe operation of ships and for pollution management.

Brighton, U.K.-based Hudson claims to be one of the world's first shipmanagement companies to achieve full compliance with the terms of the Code, which was passed for adoption by the IMO Assembly last November. Capt. **Frank Davies**, Hudson's managing director, was presented with the Document of Compliance by executives of the auditing body Bureau Veritas Classification Society, at a recent reception. At last report, Bureau Veritas was inspecting the managed fleet prior to issuing Safety Management Certificates to each vessel, in recognition of meeting the international standards for systems underlying the safe management and operation of ships and for

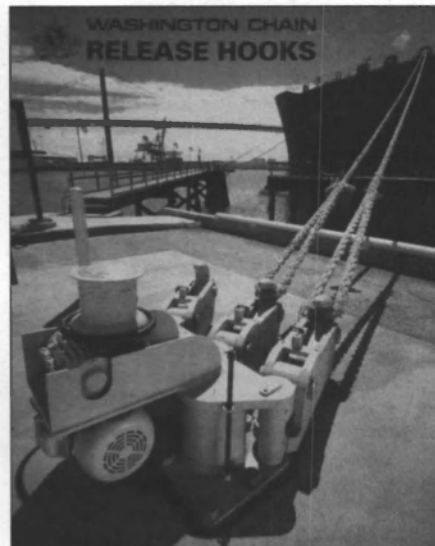


Hudson's Technical Manager **Mike Penfold** and Managing Director Capt. **Frank Davies**; Bureau Veritas' Chief Executive **Barry May** and U.K. Ships in Service Manager **Fred Hardy**.

pollution prevention. In 1991, Hudson, a member of the Norwegian Mosvold Shipping AS Group, became one of the world's first shipmanagement companies to achieve ISO 9002 and BS5750 certification for ship management and operation.

tual in-situ burn conditions, allowing American Marine to refine and improve the product. The new Skorboom is a skirted sorbent boom that combines the advantages of both conventional containment boom and sorbent boom into a single product that is reportedly lightweight and quick to deploy. Each 50-ft. (15.2-M) length can absorb or recover up to 25 gallons.

Washington Chain Catalog Depicts Expanded Line



Washington Chain & Supply offers a new free catalog for its expanded line of patented release hooks, which are in use worldwide by ports, terminal operators, ship-ping and petroleum companies.

The catalog describes a wide range of single and multiple-hook models available in both standard and rotary-release configurations, with capacities from 10 to 200 tons — which can release under full load with either manual or remote re-

lease. Each hook includes an integral safety latch, and any motors required are explosion-proof and approved by Underwriters Laboratories and the Canadian Standards Association.

Omega's Stainless Doors & Shower Stalls Won't Rust

Omega Products of Waterloo, Ill., has engineered a line of stainless steel shower stalls to give the marine industry a solution to the problem of rust. Jeffboat installed Omega stainless steel showers and doors on all three boats built for Crounse Corporation in 1993, and Luhr Brothers installed Omega stainless steel doors on five of their vessels. Shower stalls are available in corner or square models; doors come in sliding or hinged models, single or double, and with interior or exterior swing.

Westfalia To Supply Troll Platform With Modules

Westfalia Separator will supply the floating Troll Olje platform with two centrifugal treatment modules — one to handle drain water treatment, the other for dewatering and desalting diesel oil. Abrasives, dust, condensate, decomposition and combustion residues lead to premature aging of lube oil, which in turn results in premature destruction of bearing points, pistons and cylinders. Westfalia supplies centrifugal separator systems to existing and new oil conveying plants for all applications in the area of liquid - liquid - solid separation. Field applications for separators and decanters are clarification of drilling fluids, e.g., removal of fine solids and recovery of weight material; dewatering crude oil; purifying fuel, lube and hydraulic oils.

Servomex System Monitors Recovered Vapors

U.S. Coast Guard (USCG) regulations (33CFR154) require marine vapor recovery systems for all marine transfer facilities handling flammable and combustible materials, and the Clean Air Act of 1990 limits the emission of all Volatile Organic Compounds (VOCs). Servomex Company, Inc. of Norwood, Mass. offers vapor recovery monitoring systems to measure oxygen and hydrocarbons in "blanket" gas streams. The Servomex systems continuously monitor the recovered gas stream with inerting,

enriching, or dilution methods, verifying the recovered vapors are kept at safe limits, reportedly satisfying the monitoring requirements of the USCG regulations for Marine Vapor Control Systems.

Foss Signs Oil Spill Product Pact With American Marine

Foss Environmental Services Co. of Seattle, Wash., recently completed arrangements with American Marine, Inc. of Cocoa, Fla. to distribute two technologically advanced oil spill containment and cleanup products: The American Fireboom has been tested under realistic at-sea and ac-

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Sea Ray Signs Agreement With Stewart & Stevenson For Detroit Diesels

Sea Ray Boats, a Brunswick marine company, has signed a three-year operating agreement with Stewart & Stevenson Services, Inc. Detroit Diesel Corporation is a participant in the arrangement and will supply Detroit Diesel marine engines during the term of the agreement. The operating agreement covers supplying engine power packages, parts and service. Detroit Diesel supplies the engines and other parts, while Stewart & Stevenson Services, Inc. designs and builds the complete power packages, distributes parts and provides round-the-clock service. Stewart & Stevenson has supplied Detroit Diesel engines for Sea Ray Sport Yacht and Yacht Division for more than 12 years. Stewart & Stevenson supplies some \$7 million a year in products and services to Sea Ray's Sykes Creek and Palm Coast plants both in Florida.

Texas Drydock To Build Two Drilling/Workover Rigs

Texas Drydock, Inc. (TDI) signed contracts with Pride Petroleum Services, Inc. for the construction of two new cantilevered drilling/workover rigs. Pride Petroleum Services, Inc. provides services in the U.S., Argentina, Venezuela and Russia.

The two rigs, to be named *Pride I* and *Pride II*, will operate on Lake Maracaibo in Venezuela. These vessels are of the same type as the four rigs currently being constructed by Texas Drydock for Ensco Drilling Co. The new vessels will be the seventh and eighth of this class to be constructed at TDI. Completion of these latest contracts will occur in December of this year.

Containership Agency Inc. Renamed Mediterranean Shipping Co.

Containership Agency, Inc. has changed its name to Mediterranean Shipping Co. The company has its headquarters in New York City with additional offices in Atlanta; Boston; Baltimore; Chicago; Charleston; Houston; Miami; Norfolk; Charlotte; Wilmington, N.C. and several subagents which cover the rest of North America.

Drew's Amerstat® 10 Wipes Out Fuel Infestations

Engine malfunctions and energy loss due to blockages and flow restrictions from microbial infestation in tanks, fuel lines, filters and injectors, major cleaning operations that require fuel offloading and demurrage, and corrosion from microbial growth can reportedly be avoided through Amerstat® 10 fuel microbiocide from Drew Ameroid Marine Division of Ashland Chemical, Boonton, N.J. Just a little water in fuel can reportedly set off rapid growth of bacteria, fungi and yeasts, and hot weather reportedly worsens the problem.

Soluble in water, Amerstat 10 is formulated to seek the water phase where the microbial populations live and reproduce, reportedly eliminating a wide variety of organisms and suppressing reinoculation. A clear, concentrated liquid available in 25-liter pails, Amerstat 10 can be used as each bunker is loaded or kept on hand to use as needed.

H.M.S Marine Services Agent For Singapore, Polish Outfits

H.M.S. Marine Services, Inc. has been appointed the U.S. agent for both Anchor Marine Supplies Pte. Ltd. of Singapore and Centromor S.A. of Gdansk Poland.

Anchor Marine Services is a ship chandler, government contractor

and general exporter. The company currently services up to 200 vessels a month excluding initial storings to newbuildings in Korea and Japan.

Centromor S.A., a trading house for the entire Polish shipbuilding industry and its sole trading representative, has during the period of 1950 to 1993 exported about 1,600 vessels of various types and sizes totaling about 13 million dwt. Centromor is divided up into four

main operating divisions: ships division, equipment export division, international transport and forwarding division and equipment import division.

Attransco Appoints Goldberg Vice President

Attransco appointed Captain Victor Y. Goldberg to the newly

created position of vice president of chartering and operations.

Captain Goldberg is a graduate of the U.S. Merchant Marine Academy and sailed for 11 years aboard tankers in various licensed positions including master.

He joined Attransco in 1984 as port captain managing vessel operations.

In 1986 he was promoted to the position of chartering manager.

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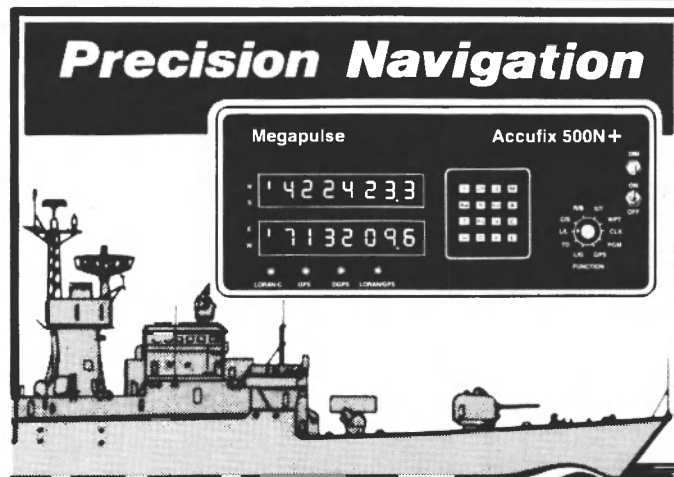
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Inland Issues

Safety Of Towing Vessels, Environment, And Efficient Intermodal Shipping Top Agendas

by
Dan Maniotis, assistant editor

The issues confronting the inland waterways/Great Lakes community largely deal with safety on the waterways — whether it be navigational safety issues or the safety of the environment. But efficiency is also a paramount issue, especially since an era of increased trade with neighboring countries may be heralded by the passage of NAFTA.

Inland Waterway Infrastructure Corps of Engineers Projects

A hearing of the House Public Works Subcommittee on Oversight and Investigations on May 4 explored the issues of inland waterway infrastructure, port development, and related issues. Inland Waterways User Board (IWUB) Chairman **Berdon Lawrence** reportedly urged the U.S. Army Corps of Engineers to devise innovative and inexpensive construction techniques for pending projects, saying that without such innovation, only one project would be authorized in the next decade.

"Maritime System of the Americas"

At a recent SNAME Symposium at the Merchant Marine Academy in Kings Point, N.Y., Deputy Maritime Administrator for Inland Waterways and Great Lakes **John Graykowski** spoke of a MarAd study of a "Maritime System of the Americas" that attempts to identify more efficient means of transporting goods between the U.S. and Mexico, the U.S.'s third largest trad-

ing partner, as well as Canada, Central America, the Caribbean, and the northern rim of South America. The *per se* Maritime System of the Americas refers to the Great Lakes, the Mississippi and its navigable tributaries, the Tennessee Tombigbee Waterway and its tributaries, the Gulf Intracoastal Waterway, the Gulf of Mexico and the Caribbean Sea.

Mr. **Graykowski** noted that 60 percent of U.S. agricultural goods come from the "heartland" of the U.S., so it has become increasingly important to find efficient methods of transporting heartland goods to these areas.

The Maritime System of the Americas study began in 1992, according to Project Manager **Doris Bautch** of the Maritime Administration, predating the passage of NAFTA. However: "Now that NAFTA has passed," she said, "we expect that there will be more trade moving by water," noting that she has received a lot more inquiries about the study since NAFTA.

The study has three phases, one of which is complete: it studied small vessels on the waterways and rivers that link the central U.S. to various neighboring countries — with heavy focus on the Mississippi — and discovered a niche market for such ships there. The phase one study also found that vessels or vessel systems which are capable of safe navigation both on inland and ocean waters have sufficient economies to serve small volumes of general cargoes, containers, and minor bulk commodities. According to the study, the advantage of such river/



Crowley tug *Bulwark* towing a module on route to Alaska, as part of the annual sealift.

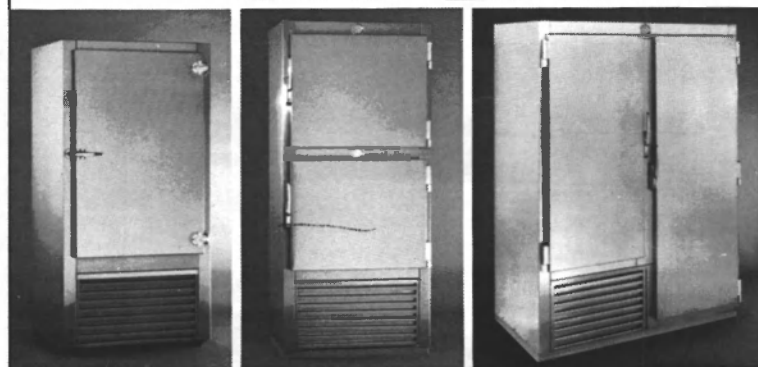
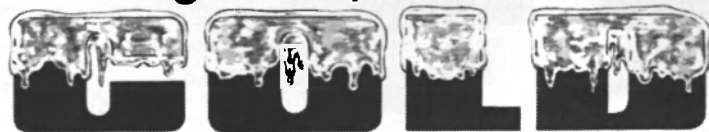
ocean service is that it only has to capture a relatively small portion of a large and rapidly growing market for general cargo movements to Mexico and South America.

Phases two and three are being conducted concurrently, and Ms. **Bautch** said she hoped a final report would be completed by the end of the year. Phase two will study short sea shipping, covering vessels in the Gulf of Mexico and the Caribbean, with transshipment at coastal ports for trade among Canada, the

U.S., Mexico and other neighboring countries. Phase three will examine intermodal connections of deep-draft oceangoing vessels, with considerations for alternatives.

A scrapped possible phase four of the study would have examined the possibility of lengthening the Gulf Intracoastal Waterway to connect the "heartland" of the U.S. with Mexico. It was decided, said Ms. **Bautch**, that the possibility of that extension would not be explored at this time.

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Maritime Reporter/Engineering News

Deputy Maritime Administrator **Joan Yim** said on March 10 at the Transporte International '94 Conference and Exhibit: "At the Maritime Administration, we intend to adjust our objectives to meet Secretary of Transportation **Federico Pena's** vision for a seamless intermodal transportation system — one that effectively ties America together and efficiently moves the nation's trade through port gateways into the global marketplace via waterborne transportation."

Towing Safety: HR 3282 & HR 4058

Currently two bills are on the table which deal with towing safety: HR 3282 (The Towing Vessel Safety Act) sponsored by Congressman **Billy Tauzin**, and the Towing Safety Act (HR 4058) sponsored by Congressman **Gerry Studds**. The principal difference between the bills is that Mr. **Studds'** bill contains provisions for crewing, inspection and deep-sea licensing that Mr. **Tauzin's** bill does not. Mr. **Studds** reportedly feels the first bill does not go far enough on those issues, whereas Mr. **Tauzin** believes the issues require further study before they can be legislated properly. Mr. **Tauzin's** bill reportedly has the support of Secretary of Transportation **Federico Pena**, as well as Adm. **J. William Kime**, Commandant of the U.S. Coast Guard (USCG), who reportedly contend that the issues Rep. **Studds'** bill raises and HR 3282 does not are valid ones which beg discussion, but safety measures should be taken immediately and time for those discussions should not delay immediate attention to safety.

At press time, a hearing had already been held by the House Subcommittee on Merchant Marine and Fisheries, but no date had apparently been set for mark-up of the bill by the full Committee, which Mr. **Studds** chairs. A recent interview with Mr. **Tauzin** on the subject published in the AWO newsletter indicated that Secretary **Pena's** recommendations on the issues Mr. **Studds** has raised will not be available until August, but Secretary **Pena** wishes the towing safety provisions of the legislation to pass by September — the anniversary of the Amtrak accident — making the timing problematic.

Clean Water

According to Mr. **Studds'** spokeswoman **Sue Waldron**, HR 2199 — the Clean Water Funding Act that has come to be known as the "Polluter Pays" bill — has been the subject of several hearings, and Mr. **Studds** had testified before the House Appropriations Committee on the bill. More hearings were scheduled for the end of May, making a June mark-up possible. Revisions to the Clean Water Act are also the focus of some debate. A newly released report from the Izaak Walton League of America (IWL) and the Natural Resources Defense Council (NRDC), entitled *Restoring the Big River: A Clean Water Act Blueprint for the Mississippi*, makes multiple recommendations to counter what the organizations call threats to the river. According to the report, toxic chemicals and wastes have combined with wetlands loss and the maintenance and development of the river's navigation system to eliminate wildlife habitats rapidly, and levees and artificial banks have not only eliminated habitats but hindered the river's natural flooding/cleansing process.

Maritime Security Trade Act

Congressman **William O. Lipinski** (D-Ill.) proposed Maritime Security and Trade Act (HR 4003), which was reportedly widely approved of in an April 28 meeting of the Merchant Marine Subcommittee of the House Merchant Marine and Fisheries Committee — with the exception of the funding mechanism, a 150 percent increase in the vessel tonnage tax. Although the major outcry against the funding mechanism has come from foreign owner/operators who say they will derive no ben-

efit from the legislation, the majority of U.S. owner/operators at the meeting reportedly said it would negatively impact their interests as well. The Shipbuilders Council of America (SCA) voiced its opinion that the legislation should include a shipbuilding component, an opinion shared by members of the Committee including Mr. **Lipinski**, who reportedly indicated such a component may be added in the future.

Witnesses present included representatives of U.S.-flag liner companies, the SCA, the National Industrial Transportation League (which disapproved of the bill), the Liberty Maritime Corporation, and the Seafarers International Union.

Proposal On Cargo Preference Changes In Great Lakes

A proposed MarAd program would allow Great

Lakes ports to compete for government-generated agricultural commodity cargoes, a certain portion of which are set aside for U.S.-flag vessels.

No U.S.-flag ships currently provide service between the Great Lakes and foreign destinations.

The proposal's one-season trial period would be for the current season, and would entail allowing cargoes subject to cargo preference requirements to be transported from the Great Lakes by either U.S.-flag or foreign-flag ships and taken along the St. Lawrence Seaway for eventual transfer to U.S.-flag vessels for ocean transport.

Additional information on this proposal can be obtained from **John Graykowski**, Deputy Maritime Administrator for Inland Waterways and Great Lakes, tel: (202) 366-1718.

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Sperry Marine Expands Tokyo Office

Sperry Marine Inc. is expanding its sales and customer service operations in Japan and Korea. The new quarters, telephone and fax of Sperry Marine-Asia Inc. are: KUGA Building, 11-6 Kuramae 4-chome, Taito-ku, Tokyo 111, tel: +011 81 03 3863 7401; fax: +011 81 03 3863

7455. The new quarters are two and a half times larger than the company's previous location.

Sperry Gyrofin Ship Stabilizer For New Algerian Ferry

The Union Naval de Levante Shipyard (UNL) in Valencia, Spain has ordered a Sperry Marine Gyrofin "Lift Control" Ship Stabilization System for a new ferry it is building for Algerie Ferries. The 13,000-dwt

vessel is expected to be employed on the Algeria to France route in the Mediterranean.

Sperry Integrated Bridge For Chinese Forestry Vessels, Seven Brazilian Vessels

Dalian New Shipyard, China, has ordered a Sperry Marine integrated bridge for each of the four new 46,500-dwt forestry vessels it is constructing for Vestfleet Management

A/S, a Norwegian company in partnership with Mitsui OSK Lines Ltd.

Each new integrated bridge for the Chinese vessels consists of a Sperry Marine VMS-4002 Voyage Management System, ADG-3000 Adaptive Digital Gyropilot, dual MK-37 Gyrocompasses, dual RASCAR Radar/ARPA's, SRD 421/S Dual Axis Doppler Speed Log, and other equipment.

Brazilian shipowners Frota Oceanica, Frota Amazonia, Alianca and Neptunia ordered a total of seven Sperry VMS Integrated Bridge sets for new Brazilian-built containerships. Frota Oceanica, Frota Amazonia and Alianca have each bought two bridge sets and Neptunia has bought one.

Included in each Sperry Marine Integrated Bridge is a Voyage Management Station, Conning Information Display, dual RASCAR 3400M Radar/ARPA's, ADG-6000 Autopilot, MK-37 Gyrocompass, SRD-421/S Speed Log, SeaNET network, gyro repeaters and other navigation sensors.

Japan Shipping Houses Report Sales, Profits Down



Nippon Yusen K.K., Mitsui O.S.K. Lines Ltd., Kawaskai Kisen Kaisha Ltd., Navix Line Ltd. and Showa Line Ltd., Japan's five major shipping companies, reported sales and profits down in fiscal year 1993 due to slowing demand, stepped-up competition and the yen's surge. Declines in operating revenues were less than 10 percent for all five companies. However, their pretax profits dropped by 56 percent or more.

The leading shipping house, Nippon Yusen, blamed its pretax profit of \$55 million on operating revenues of \$5 billion (down 7.7 percent from last year) and lower revenues from tramper and vehicle carrier services. Showa Line posted an \$18 million unconsolidated pretax loss in the year ended March 31, a turnaround from the \$5 million pretax profit the previous year. Showa blamed the drastic profit drop on the yen's sharp rise.

Mitsui's pretax profit declined 79 percent to \$1.5 million on operating revenues of \$4 billion, down nine percent. Kawasaki Kisen showed a \$5 million pretax loss against \$9 million pretax profit the previous year. Kawasaki's operating revenue was down 10 percent (\$3 billion). Navix Line declined 72 percent in pretax profit, to \$776,000. Its operating revenues dropped 9 percent to \$1.2 billion.

Captain Astad Co. Closes Florida Office

Captain Astad Company, Inc. closed its operation in Fort Lauderdale, Fla. as of May 1st in order to concentrate fully on its sale and purchase of all types of vessels and marine equipment from its headquarters in New Orleans, La. The address of the headquarters is 2900 Energy Centre, 1100 Poydras St., New Orleans, La. 70163-2900, tel: (504) 585-7317; fax: (504) 585-7301.

Dunlop-Beaufort's MEC Evacuation System installed on six newly built Canadian Car Ferries

This compact and simple system allows efficient and controlled evacuation of large numbers of passengers off vessels (particularly off those with high freeboard). The chutes have been installed on six new Canadian-built ferries, including the two new British Columbia Super Ferries, and are operational in the Ontario Northland and east coast Northumberland ferry fleets. The MEC is currently specified on several new American vessels to be built in 1993-1994.

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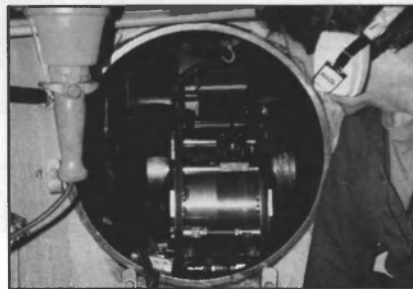
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Cat Pumps Names Stelzner Product Manager

Cat Pumps named **Scott Stelzner** product manager. Mr. Stelzner holds a bachelor's in Aerospace Engineering from the University of Minnesota and is currently pursuing an MBA in marketing at the University of St. Thomas.

Mr. Stelzner's previous experience as a district sales manager for a high pressure pump manufacturer and his formal training as an applications and design engineer provide him with the insight and knowledge to expand further the industrial products and markets for Cat Pumps. He will be in constant communication with Cat Pumps' distributor base regarding industry needs and trends.

Surovik Named Interim Galveston Port Director

The board of trustees of the Port of Galveston appointed **Ron R. Surovik** interim port director at the March meeting of the board.

Through Mr. Surovik's tenure at the port, he has been involved in all aspects of the business and knows all the intricacies of port operations. A 22-year employee, he is now serving as director of port facilities and a member of the senior staff, and has worked in several engineering department capacities during his work career at the port.

Mr. Surovik replaces **Doug J. Marchand**, who is now with the Georgia Ports Authority.

Hartung Named President Of Toledo-Lucas County Port Authority

James H. Hartung became president of the Toledo-Lucas County Port Authority on May 2, 1994. Since 1983 he has been port director of Burns International Harbor in Portage, Ind., the state's largest port.

Mr. Hartung has served three terms as president of the International Association of Great Lakes Ports, the organization representing U.S. and Canadian Great Lakes Ports. He was a principal author of the Declaration of Indiana, the first Great Lakes agreement to unify the system's maritime industry. In 1992, he was elected president of the Northwest Indiana World Trade Council.

Trimble Hires New Group Heads For OEM & Tracking Systems

Trimble Navigation Ltd. announced that **David M. Hall**, formerly of Raychem Corp., has joined Trimble to lead the OEM Group, and that **Thomas W. Ellis**, formerly of Rockwell International, has joined Trimble to lead the Tracking Systems Group.

Mr. Hall's entire business career has been with Raychem Corp. of

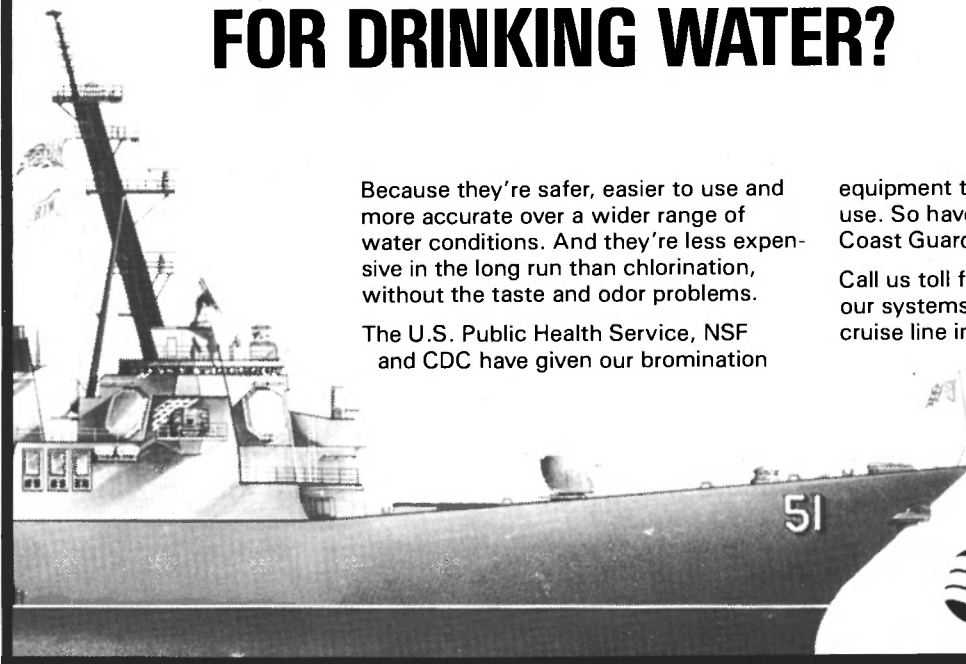
Menlo Park, Calif., where he served in numerous management positions, the most recent being director of sales and marketing, Automotive Division. Mr. Ellis joined Trimble from Rockwell International of Santa Barbara, Calif., where he was vice president and general manager, CMC Network Products. Trimble Navigation is a manufacturer of products relating to satellite-based navigation, positioning and communication data products.

Crowley Unit Makes Appointments

Crowley American Transport, Inc. announced three executive appointments. **Lew Notaro** has been named vice president and general manager, South American services. He is responsible for line and staff management for all land operation functions. **John Hourihan** has been appointed vice president and

general manager, South American services, with overall responsibilities for Crowley's liner activities in Argentina, Brazil, Uruguay, Paraguay, Venezuela, Colombia, Ecuador and Peru. **Dennis Derby** has been appointed vice president and general manager, sales and marketing. His responsibilities encompass the management of all sales and marketing functions. All three are located at the operating headquarters in Jacksonville, Fla.

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Sailor's Compact GMDSS Station.

integrated station which fulfills GMDSS communication requirements for all areas of operation — A1, A2, A3, and A4. Designed for desktop or bulkhead mounting, the unit is designed for installation on newbuilds and retrofits.

Radio Holland U.S.A. also offers the Sailor SP3110 portable VHF transceiver for GMDSS. The unit is approved to fulfill the GMDSS requirement for portable VHF-transceivers, and forms part of the com-



Kelvin Hughes' Nucleus Series Radar.

plete GMDSS program from Sailor. The waterproof SP3110 is designed to withstand harsh conditions. With a frequency range of 138 to 174 MHz, the unit is made for safety, but is also a convenient transceiver for ordinary short range communication.

The Houston-based company also offers the Nucleus line of radar from Kelvin Hughes. With the new range of radar displays, keyboards are replaced by a simple tracker ball and three push buttons. Banks of circuit boards are replaced by a single dedicated electronic module. The Nucleus 6000 deck mounted displays are suitable for fitting in large vessels as primary and secondary radars. They have a 660mm display, giving a 340mm radar picture.

The Nucleus 5000 displays are compact designed and suitable for second radars or in small vessels where space is minimum. The deck-mounted displays offer the option of a pedestal mount. The 5000 offer a 500mm display giving a 250mm radar picture.

In addition to these, Radio Holland U.S.A. offers other Kelvin Hughes products, including electronic charts and the Nucleus Integrated Navigation System (NINAS). For free information on all of the products offered by Radio Holland U.S.A.,

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BT Maritime Announces Volume Discount Pricing

BT announced a new volume discount scheme designed to reduce monthly Inmarsat-C satellite message charges by between five and 20 percent. Designed for users of BT's digital C-Sat store-and-forward system, the discount plan covers from-mobile messages.

C-Sat customers who use BT's Goonhilly earth station enter the plan when their from-mobile message charges hit \$1,500 per month, a level which qualifies for the five percent discount. The following are the other discount levels: charge - \$10,500, 10 percent discount; charge - \$19,500, 12.5 percent; charge - \$27,000, 15 percent; and, charge - \$52,550, 20 percent discount.

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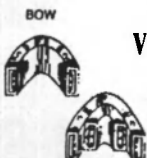
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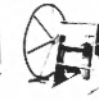
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Circle 318 on Reader Service Card

FAST FERRIES

Austal Ships Delivers Three Fast Ferries To Chinese Owner

Three of the fastest ferries ever built in Australia have been delivered by Austal Ships to their owners in the People's Republic of China. Each of the vessels was constructed at a capital value of approximately \$7.15 million. They are the first catamarans built by the West Australian aluminum shipbuilder to be powered by gas turbines, and are also the shipyard's fastest vessels, with a speed of 39.5 knots when fully loaded and carrying 355 passengers. The identical 131.2-ft. ferries *Shun Jing*, *Lian Gang Hu* and *Yi Xian Hu* were built respectively

for the Shun Gang Passenger Transportation Corporation, the Panyu (Hong Kong) Passenger Cargo Transportation Jointly Owned Co. Ltd. and the Zhong Shan-Hong Kong Passenger Shipping Co-op Co. Ltd. They will operate regular services from Hong Kong to the mainland China ports of Rong Qi (*Shun Jing*), Guang Zhou (*Lian Gang Hu*) and Zhong Shan (*Yi Xian Hu*).

The vessels are powered by Textron Lycoming TF40 gas turbines, similar to engines used on jet aircraft.

Since Austal commenced opera-



The identical ferries *Shun Jing*, *Lian Gang Hu* and *Yi Xian Hu* were recently delivered by Austal Ships to their respective owners in the People's Republic of China.

tions in August 1988, it has sold 28 large vessels, including 22 catamaran ferries to owners in mainland

China. For more information on Austal Ships, Circle 80 on Reader Service Card

POLY RUBBER BUGGY BUMPERS

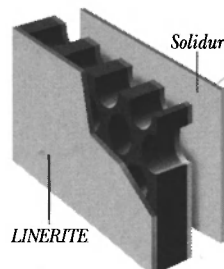
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Circle 265 on Reader Service Card

Eletson Signs Letter Of Intent To Build Tankers At Newport News

Newport News Shipbuilding (NNS) and Eletson Corporation announced that they have signed a letter of intent on four 46,000-ton double hulled product tankers designed by Newport News and designated Double Eagle.

The order, which carries major significance for the U.S. commercial shipbuilding industry far beyond four ships, is the first time since 1957 that an international ship owner will purchase commercial ships from a U.S. shipyard.

The Double Eagle design is the first to be found acceptable by the U.S. Maritime Administration for Title XI financing guarantees. The letter of intent calls for the building of two tankers with an option for two more. Eletson corp. is a leading product tanker operator, headquartered in Piraeus, Greece. The ships will be owned by Eletson affiliates and managed by Eletson Corp.

Completion of the contract between the two companies is subject to the approval of financing guarantees from the U.S. Maritime Administration (MarAd) under a new provision of Title XI, recently passed by Congress, to assist the transition of U.S. shipyards into the commercial shipbuilding business.

MarAd informed NNS in a letter dated May 17, 1994 that the Double Eagle design was acceptable for Title XI financing for both domestic and export sales. MarAd's Title XI program will be available after its review of Eletson's application. U.S. Maritime Administrator **A.J. Herberger** said, in his letter of acceptance of the Double Eagle design, that "MarAd looks forward to working with Newport News on this exciting project."

The Double Eagle design incorporates all of the latest international and domestic regulations and has been engineered for series production. **Gregory Hadjieleftheriadis**, vice president of Eletson, said, "We are very pleased to be contracting for these ships with Newport News Shipbuilding. We have worked extensively with Newport News to incorporate special Eletson features, which are normally found in the company's international fleet of ships. Newport News has a reputation as a world class builder of Navy ships. We look forward to working with them on these Double Eagle commercial tankers."

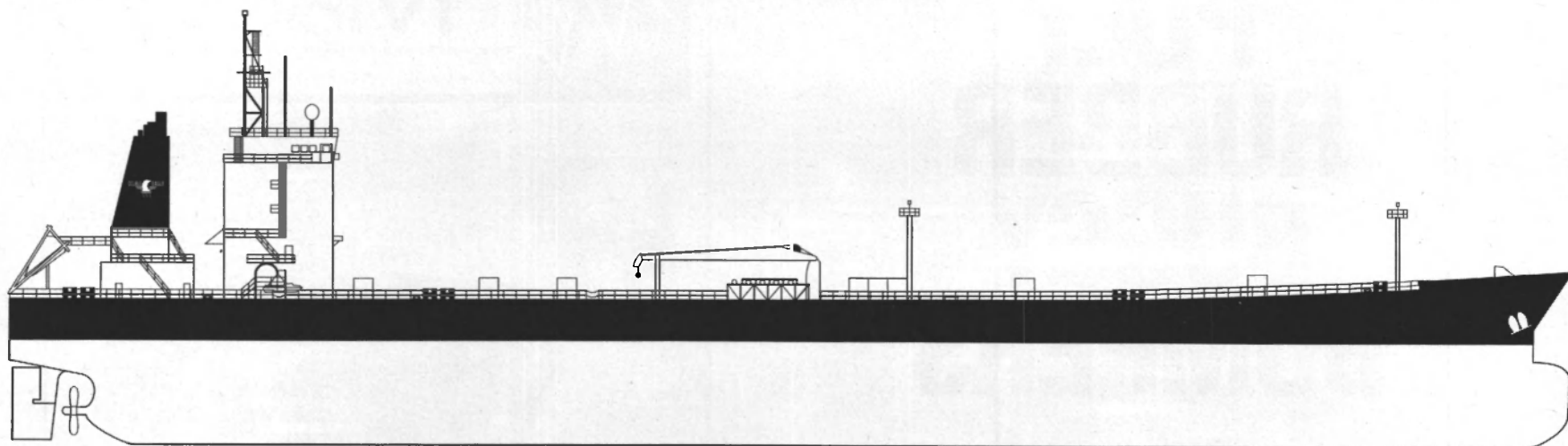
Greg Cridlin, vice president, commercial, Newport News Shipbuilding, said, "We are particularly pleased to have signed this letter of intent with such a fine company as Eletson. We very much look forward to building their ships. We believe the Double Eagle design will lead many other international operators to Newport News. Newport News intends to be a competitor in the international commercial ship market."

Edward A. Waryas, director, commercial marketing at Newport News, who has been

leading the team to introduce the Double Eagle to the international market, said, "We are honored to be selected to work with Eletson, one of the finest ship operators in the world. Based on the overwhelming response we have received since the Double Eagle design was introduced to the world market in March, we are confident that many other international ship owners will follow Eletson's lead."

Initial details of the Double Eagle design were reported in the April, 1994 edition of *Maritime Reporter & Engineering News*. The vessel, as originally designed and presented by NNS, measures 649 ft. (197.8 m) long and 102 ft. (31 m) wide, with a deadweight design draft of 41,675 M.T. Newport News Shipbuilding is a division of Tenneco, Inc., a Houston-based diversified industrial company with major business interests in natural gas transportation and marketing, farm and construction equipment, automotive parts, ship design, ship construction, ship repair, packaging and chemicals.

According to a recent IMA Associates, Inc. (Washington, D.C.) report, NNS has tapped a market which looks positive for near- to mid-term growth. IMA forecasts orders for 667 to 845 new product tankers between now and the end of 1998. IMA said that while U.S. shipbuilders will need to compete with foreign yards, its analysis indicates that 400 to 510 of the projected orders will be available on the open world market. (For information on obtaining IMA's report, call **Jim McCaul** at (202) 333-8501.)



Kraissl Co. Manufactures Simplex And Duplex Strainers And Filters

The Kraissl Company is a manufacturer of heavy duty simplex and duplex strainers and filters for protecting equipment in pipeline service.

The company, a long-time manufacturer, creates the products in cast iron, bronze, aluminum, steel, stainless steel and other special alloys. The complete line of duplex three-way (six-port) transfer valves was developed specifically for use with two filters, two heat exchangers, two supply tanks or with other dual systems.

Kraissl also specializes in positive displacement oil transfer pumps and rotary air pumps. The following is a sampling of Kraissl products:

- **Model 72 Simplex and Duplex Strainers and Filters:** Designed for minimum pressure loss and easy basket accessibility. Duplex models include a tapered plug valve with metal-to-metal seat for long life in rough service. Simple one-stroke valve operation allows for continuous flow transfer from one side to the other without interruptions. Duplex types range from .75- to eight-in. in pipe size, and simplex up to 12

inches. Units can be furnished to meet military, U.S. Coast Guard and other specifications. All Kraissl strainers are made in accordance with the international standard ASTM F1199.

- **Model 72AA Series Transfer Valves:** Transfer (or Diverter) Valves are used to cost effectively duplex two external pieces of flow equipment with the least amount of associated piping space. Simple one-stroke valve operation allows for continuous transfer of flow without interruption. Sizes from .75-in. to eight-in. are commonly available in cast iron, cast steel and stainless steel.

- **Rotary Air Pumps, Model 25:** Cast iron vane-type air pumps are available for both vacuum and low pressure air service. Free displacement capacities range from 2 to 70 CFM, for vacuums to 28 in. of mercury and pressures to 50 psig. A built-in, positive lubrication system with oil supply sump is included.

All Kraissl products are manufactured in the U.S., and authorized sales representatives and distributors are located throughout North America. For free information on all Kraissl products,

Circle 98 on Reader Service Card

Ukraine Joins IMO

The International Maritime Organization (IMO), the United Nations agency concerned with maritime safety and the prevention of pollution from ships, now has 149 member states. Ukraine accepted the IMO Convention on March 28.

Global Ocean Carriers Buys Two Container Vessels

Global Ocean Carriers has purchased two feeder container vessels for \$12 million. *Global Song*, built in 1975, and *Tiger Island*, built in 1978, are both on time charter at about \$8,000 a day until November 1995 and January 1996, respectively.

Global Ocean Carriers currently has a fleet of eight vessels. Including these two new container vessels, Global Ocean Carriers operates one capesize combination carrier, three panamax and one handysize bulk carrier and a product tanker.

CALENDAR

JUNE

Intelligent Ships Symposium: "Intelligent Ship Technologies in the 21st Century": June 1-2, Wyndham Franklin Plaza Hotel, Philadelphia, Pa.
Contact: **Donald J. Collins**, tel: (215) 897-7321; fax: (215) 897-1675.

Posidonia '94: June 6-10, Piraeus, Greece
Contact: **Kaki Dessipri**, Posidonia Exhibitions, tel: +30 1 4283 608/609.

Commercial Fishing, Sport Fishing and Seafood Exhibition, International Aquaculture Exhibition & Conference: June 8-12, EXPOVER, Veracruz, Mexico
Contact: **EXPOAVANCE (USA)**, Inc., One Liberty Square, Boston, Mass. 02109, tel: (617) 426-6440; fax: (617) 426-6441.

Turbo Expo '94 - The 39th American Society of Mechanical Engineers (ASME) International Gas Turbine & Aeroengine Congress, Exposition & Users Symposium: June 13-16, The Netherlands Congress Center, The Hague, The Netherlands
Contact: **International Gas Turbine Institute**, 5801 Peachtree Dunwoody Rd., Suite 100, Atlanta, Ga. 30342, tel: (404) 847-0072; fax: (404) 847-0151.

Vision Eureka: New Technology For Concrete Structures Offshore: June 13-17, Lillehammer, Norway
Contact: **Dr. Frank Henning Holm & Co.**, coordinator, P.O. Box 3242 Elisenberg, N-0208 Oslo, Norway, Madserud Alle 27, N-0268 Oslo, tel: +47 22 56 09 09; fax: +47 22 56 16 88.

American Petroleum Institute (API) 1994 Tanker Conference: June 19-22, The Inn at Spanish Bay, Pebble Beach, Calif.

Contact: **API**, Department 5160, Washington, D.C. 20061-5160, fax: (202) 682-8222/8051.

The Seamen's Church Institute 17th Annual Awards Dinner: June 20, Bridgewater, 11 Fulton St., N.Y., N.Y.
Contact: **Andrea Lane**, The Seamen's Church Institute, 241 Water St., N.Y., N.Y. 10038, tel: (212) 349-9090, ext. 244; fax: (212) 349-8342.

Implementing ISO 9000 in the Defense and Aerospace Industry: June 21-22, Crystal City, Arlington, Va.
Contact: **Stat-A-Matrix Institute**, 2124 Oak Tree Road, Edison, N.J. 08820-1059, tel: 1-800-726-2336 or tel: (908) 548-0600; fax: (908) 548-0409.

JULY

"Fundamentals of Corrosion and its Control" Course: July 12-14
Contact: **Sherree Darden**, LaQue Center for Corrosion Technology, P.O. Box 656, Wrightsville Beach, N.C. 28480, tel: (910) 256-2271; fax: (910) 256-9816.

Henniker '94: Strategic Vision For Material Joining: July 26-29, New England College, Henniker, New Hampshire
Contact: **Tricia Irving**, AWS conference manager, American Welding Society, 550 N.W. LeJeune Rd., Miami, Fla. 33126, tel: (800) 443-WELD, ext. 278 or tel: (305) 443-WELD, ext. 278.

AUGUST

49th Sea Horse Institute Meeting On Corrosion Control: August 8-11, Wrightsville Beach, N.C.
Contact: **LaQue Center for Corrosion Technology**, P.O. Box 656,

Wrightsville Beach, N.C. 28480, tel: (910) 256-2271; fax: (910) 256-9816.

NorFishing '94 Exhibition and Seminars: August 9-13, Trondheim, Norway
Contact: **The NorFishing Foundation**, Nidarohallene, N-7030 Trondheim, Norway, tel: +47 73 92 93 40; fax: +47 73 51 61 35.

Offshore Northern Seas (ONS) '94: August 23-26, Stavanger, Norway
Contact: **ONS**, P.O. Box 410, N-4001 Stavanger, Norway, tel: +47 51 55 81 00; fax: +47 51 55 10 15.

SEPTEMBER

AWO Fall Convention: September 8-9, Fairmont Hotel, San Francisco, Calif.
Contact: **The American Waterways Operators**, 1600 Wilson Boulevard, Arlington, Va. 22209, tel: (703) 841-9300; fax: (703) 841-0389.

International Survival and Safety At Sea Exposition & Symposium: September 8-10, Renaissance Center's Westin Hotel, 403 Midland St., Detroit, Mich. 48243.
Contact: **Irwin I. Chaitin**, managing director, International Survival and Safety at Sea Exposition and Symposium, tel: (313) 865-1000; fax: (313) 865-7030.

International Ship and Offshore Structures Congress (ISSC), 1994: September 12-16, St. Johns, Newfoundland, Canada
Contact: **Institute of Marine Dynamics**, P.O. Box 12093, Station A, St. Johns, Newfoundland A1B 3T5, Canada; tel: (709) 772-2469; fax: (709) 772-2462.

Conference on Computer Aided Design, Manufacture and Operation (CADMO) in the Marine and Offshore Industries: Septem-

ber 13-15, Novotel, Southampton, England.

Contact: **Sue Owen**, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA, U.K., tel: +44 703 293 223; fax: +44 703 292 853.

Propellers/Shafting '94 Symposium: September 20-21, Cavalier Hotel, Virginia Beach, Va.
Contact: **J.E. Ancarrow, Jr.**, tel: (804) 688-1070.

World Gaming Congress & Expo: September 26-28, Las Vegas Convention Center, Las Vegas.
Contact: **World Gaming Congress & Expo**, Gaming & Wagering Business, Seven Penn Plaza, New York, N.Y. 10001-3900, tel: (212) 594-4120 or (800) 223-9638; fax: (212) 714-0514.

Shipbuilding Machinery & Marine (SMM) Technology Exhibition & Conference: Sept. 27-Oct. 1, Hamburg, Germany
Contact: tel: +49 40 3569 2146; fax: +49 40 35 69 2149.

OCTOBER

"The Impact of Port Services on Safety and the Environment:" October 10-12, Bremen, Germany
Contact: **Port and Transport Consulting Bremen GmbH**, P.O. Box 10 79 65, 28079 Bremen/Germany, tel: +49 421 3983805; fax: +49 421 3983698.

Fish Expo '94: October 13-15, World Trade Center, Boston, Mass.
Contact: **Diversified Expositions**, 5 Milk Street, Portland, Me. 04112, tel: (207) 772-3005; fax: (207) 772-5059.

CINAVAL (Congress of Naval and Marine Engineering and Oceanic Sciences)/SYMM-RE-

(Calendar: Continued on page 142)

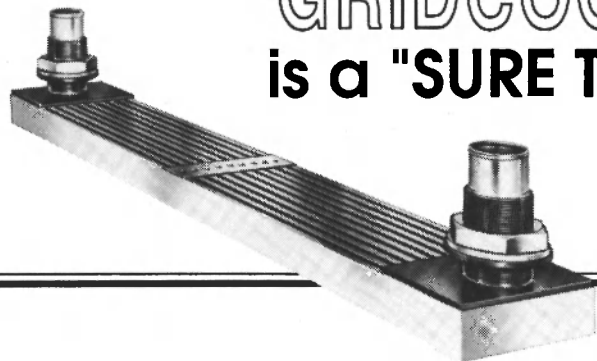
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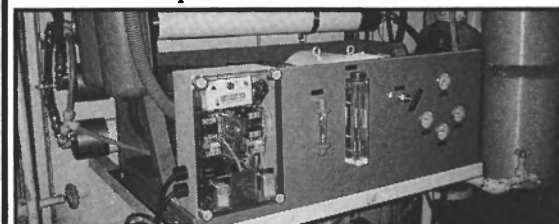


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Calendar (cont.)

PAIR (Symposium on Maintenance and Repair)/EXPONAVAL (Shipping and Off-shore Exhibition): October 17-20, Veracruz, Mexico

Combined CINAVAL/SYMMREPAIR/EXPO-NAVAL conference and exhibition

Contact: **Ing. Fernando Olavarrieta**, tel: +52 29 34 9962 34 6561; fax: +52 29 34 5910 34 5089.

International Tug, Towage & Salvage Convention & Exhibition (ITS '94): October 17-21, Grand Harbour Hotel, Southampton, U.K.

Contact: **Allan Brunton-Reed**, managing director, The ABR Company Limited, Dunelm, Church Road, Claygate, Esher, Surrey KT100JP, U.K., tel: +44 372 468 387; fax: +44 372 468 388.

Techno-Ocean '94 Exhibition & Conference on the Exploration, Development & Management of Oceans and Coastal Zones: October 26-29, Kobe International Exhibition Hall, Port Island, Kobe, Japan

Contact: Secretariat, Techno-Ocean '94, c/o International Communications Specialists, Inc., fax: +81 3 3273 2445, attn: Ms. Kokubo, Mr. Kito or Ms. Miyashi.

Society of Environmental Toxicology and Chemistry (SETAC) Annual Meeting: October 30-November 3, Colorado Convention Center, Denver, Col.

Contact: **Rod Parrish**, SETAC, tel: (904) 469-1500

NOVEMBER

"Fundamentals of Corrosion and its Control" Course: November 1-3

Contact: **Sherree Darden**, LaQue Center for Corrosion Technology, P.O. Box 656, Wrightsville, Beach, N.C. 28480, tel: (910) 256-2271; fax: (910) 256-9816.

The International WorkBoat Show: November 3-5, Ernest N. Morial Convention Center, New Orleans, La.

Contact: Diversified Expositions, 5 Milk Street, Portland, Me. 04112, tel: (207) 772-3005; fax: (207) 772-5059.

SPE Asia Pacific Oil & Gas Conference (APOG): November 7-10, Grand Hyatt, Melbourne, Australia

Contact: **Fred Herbst**, Public Relations Manager, Society of Petroleum Engineers, P.O. Box 833836, Richardson, Texas 75083-3836, tel: (214) 952-9393.

Ship Repair & Conversion '94: November 8-9, Olympia 2, London

Contact: **John Gwynn-Jones** or **Jon Chaplin**, tel: +44 923 776363; fax: +44 923 777206.

Dredging '94 - The Second International Conference On Dredging And Dredged Material Placement: November 13-16, Buena Vista Palace at the Walt Disney World Village, Lake Buena Vista, Fla.

Contact: **Russell K. Tillman**, Dredging '94 Management Chair, Attn.: CEWES-EP-L, 3909 Halls Ferry Road, Vicksburg, Miss. 39180-6199, tel: (601) 634-4201; fax: (601) 634-3528.

SNAME 1994 Annual Meeting and International Maritime Exposition: November 16-19, New Orleans, La.

Contact: Tel: (201) 798-4800.

Ausmarine '94: November 22-24, Fremantle, Western Australia

International Maritime Industry Exhibition
Contact: 4A Carmelite Street, London, EC4Y 0BN, England, tel: +44 71 353 1085; fax: +44 71 353 1084 or 10 Oxford St., South Yarra, 3141, Australia, tel: +613 826 8741; fax: +613 827 0704.

DECEMBER

AWO Winter Convention: December 6-7, Madison Hotel, Washington, D.C.

Contact: The American Waterways Operators, 1600 Wilson Boulevard, Arlington, Va. 22209, tel: (703) 841-9300; fax: (703) 841-0389.

China Portex '94: 4th International Trade Exhibition for Port and Waterway Construction, Shipbuilding Industry, Marine and Offshore Technology: December 6-10, Shanghai, People's Republic of China

Contact: **Martin Greve** or **Wolfram Diener**, Hamburg Messe und Congress GmbH, tel: +49 40 3569 2140 or +49 40 3569 2190.

Underwater Welding of Marine Structures Workshop: December 7-9, New Orleans, La.

Contact: **Dr. David L. Olson**, Colorado School of Mines, tel: (303) 273-3955 or **Dr. Stephen Liu**, Colorado School of Mines, tel: (303) 273-3796.

JANUARY 1995

1995 Ship Production Symposium & Exhibition: Week of January 23, San Diego

Contact: National Shipbuilding Research Program (NSRP) Symposium Coordinator, UMTRI, Marine Systems Division, 2901 Baxter Road, Ann Arbor, Mich. 48109-2150; tel: (313) 763-2465; fax: (313) 936-1081.

Energy & Environmental Expo '95: January 29-February 1, Houston

Contact: American Society of Mechanical Engineers Petroleum Division, 1950 Stemmons Freeway, Suite 5037C, Dallas, Texas 75207-3109, tel: (214) 746-4901; fax: (214) 746-4902.

Pipelines, Terminal & Storage Conference & Exhibition: January 31-February 2, George R. Brown Convention Center, Houston, Texas.

Contact: **Sean Guerre**, Sales Manager, PennWell Conferences and Exhibitions Co., 3050 Post Oak Boulevard, Suite 205, Houston, Texas 77056, tel: (713) 621-8833; fax: (713) 963-6284.

FEBRUARY 1995

1995 International Oil Spill Conference: Prevention, Behavior, Control and Cleanup of Oil Spills: February 27-March 2, 1995, Long Beach Convention Center, Long Beach, Calif.

Contact: **CDR Bob Pond**, U.S. Coast Guard, (G-MEP), Room 2100, 2100 Second Street, S.W., Washington, D.C. 20593, tel: (202) 267-6860; fax: (202) 267-4065.

MARCH 1995

Ports '95 Conference: March 12-15, Tampa, Fla.

Contact: **James E. Sawyer**, Ports '95 Conference chairman, Greiner, Inc., 7650 West Courtney Campbell Causeway, Tampa, Fla. 33607-1462, tel: (813) 286-1711.

MAY 1995

Institute of Electrical and Electronic Engineers (IEEE) International Radar Conference: May 8-11, Radisson Hotel, Washington, D.C.

Contact: Radar 95, 1000 Wilson Blvd., 30th Floor, Arlington, Va. 22209-3905, tel: (703) 247-2988.

JUNE 1995

1995 International Offshore and Polar Engineering Conference: June 11-16, The Hague, The Netherlands

Contact: The International Society of Offshore and Polar Engineers (ISOPE) 95, The Hague TPC, P.O. Box 1107, Golden, Colorado 80402-1107, fax: (303) 420-3760

Nor-Shipping '95: June 13-16, 1995, Sjolyst Exhibition Center, Oslo, Norway

Contact: Norwegian Trade Fair Foundation, P.O. Box 130 Skoyen, N-0212 Oslo, Norway, tel: +47 22 43 91 00; fax: +47 22 43 19 14.

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Maritime Reporter/Engineering News

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(5) New Ingersoll Rand Deepwell Ballast Pumps 900 GPM at 50' with 25hp 460V watertight Vertical Motor. New Price: \$6,900 **OUR PRICE: \$1,950/ea.**

(2) New Vertical Turbine-Driven DeLaval Lube Oil Pumps 500 GPM at 50psi with 26hp Turbines. New Price: \$24,000. **OUR PRICE: \$6,900/ea.**

(1) New Liestritz Vertical Lube Oil Pump capacity 2250 liters per minute 1150 rpm fits most large tankers. New Price: \$18,000. **OUR PRICE: \$6,900.**

(4) New Weil Centrifugal All Bronze Pumps 500 GPM at 125# 3600 rpm New Price: \$8,000/ea. **OUR PRICE: \$1,495/ea.**

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New Joy Axial Flow Fans Type A1 1000 CFM with 1hp 230V DC Motors. SPECIAL BARGAIN PRICE OF \$95/ea.

New American Blower Forced Draft Fan 10,000 CFM at 13", complete with G.E. 75hp 440V AC Motor. New Price: \$15,000. **OUR PRICE: \$3,500.**

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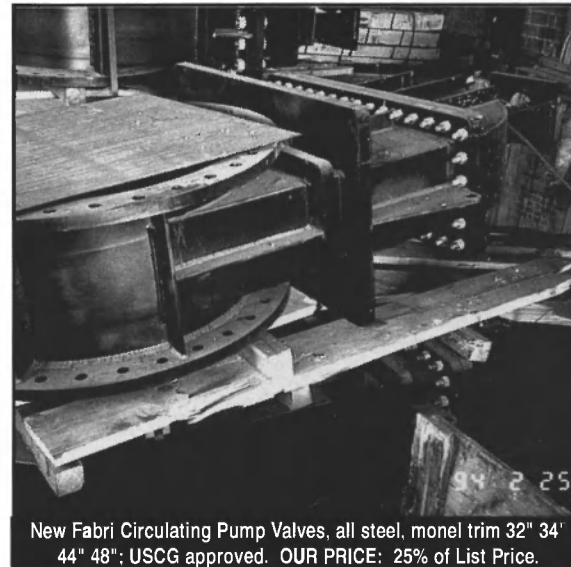
New Fairbanks Morse Diesel Engine Type 38F5 1/4 600 hp 1200 rpm heat-exchanger cooled with all accessories, driving 350KW DC Generator or 400 KW AC Generator. New Price: \$150,000. **OUR PRICE: \$39,000.**

New General Motors Model 8-268A Diesel Generator Set, heat-exchanger cooled with 300 KW 1200 rpm 230V DC Generator or could be furnished with 300 KW 440V AC Generator. New Price: \$122,000. **OUR PRICE: \$22,000.**

New Turbodyne Reduction Gear 1000hp 5100/1750 RPM. Can be used for cargo pump or ballast pump. New Price: \$15,000. **OUR PRICE: \$5,500.**

New U.S. Vertical totally enclosed fan cooled Motors 30hp 1750 RPM. New Price: \$1500/ea. **OUR PRICE: \$500/ea.**

New General Electric 25,000hp High Pressure Turbine, 1250#, 80# discharge, main propulsion. New Price: \$1,000.00. **OUR PRICE: \$25,000.**



New Fabri Circulating Pump Valves, all steel, monel trim 32" 34" 44" 48"; USCG approved. **OUR PRICE: 25% of List Price.**

(2) New PRatt 36" Steel Butterfly Valves with rubber seat and bronze disc, complete with motor-driven actuators. New Price: \$18,000/ea. **OUR PRICE: \$6,900/ea.**

(3) New WARREN 16DLV20 all bronze Vertical or Horizontal Ballast Pumps, capacity 10,000 GPM at 90' head. New Price: \$75,000/ea. **OUR PRICE: \$14,950/ea.**

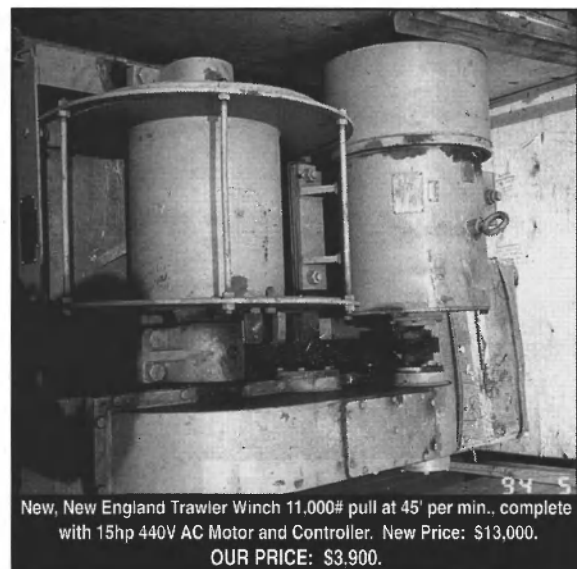
(1) New MECO Towing Winch 40,000# pull at 50'/min., triple-gear, driven by 60hp 440V AC Watertight Motor. New Price: \$75,000. **OUR PRICE: \$12,500.**

(2) New C.H. WHEELER 700 Sq. Ft. Condensers with bronze heads and CuNi Tubes. New Price: \$60,000/ea. **OUR PRICE: \$7,500/ea.**

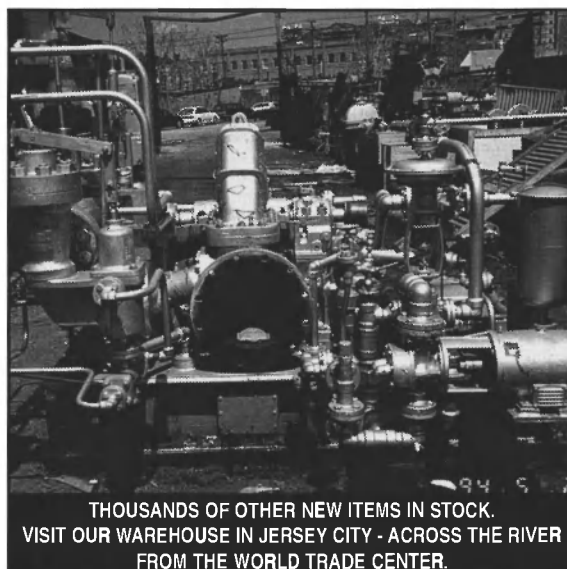
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(1) Set of Economiser Elements for 150,000# per hour High Pressure Combustion Engineering, Babcock-Wilcox or Foster Wheeler Boilers. Brand New. New Price of Each Section: \$11,000. **OUR PRICE: \$1,495/ea.**

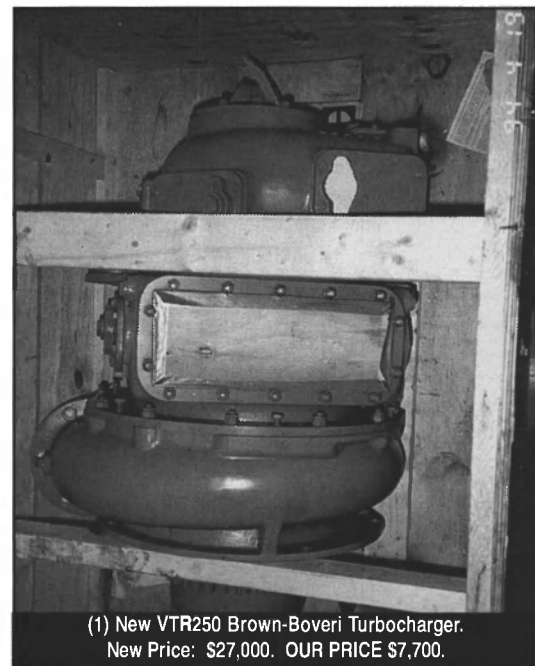
New 44,000# Baldt Snug-Stowing Anchor with ABS Certificate. New Price: \$54,000. **OUR PRICE: \$27,000.**



New, New England Trawler Winch 11,000# pull at 45' per min., complete with 15hp 440V AC Motor and Controller. New Price: \$13,000. **OUR PRICE: \$3,900.**



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(1) New VTR250 Brown-Boveri Turbocharger. New Price: \$27,000. **OUR PRICE \$7,700.**

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20 MARITECH Awards Granted

From ferries to cruise ships to tankers, 20 focused project ideas from U.S. maritime companies have gained Federal government support — and funding — through the Advanced Research Projects Agency MARITECH Program. Read up on how yards and suppliers plan to turn today's innovative ideas into tomorrow's U.S.-built ships. (The dollar amounts following each are approximate for FY '94 and subject to negotiation).

Project Category: Tanker

Focused Technology Development 40,000-dwt Double Hull Product Carriers, 85,000-dwt Double Hull Oil, Bulk or Ore (OBO) Carriers

Alabama Shipyard of Mobile, Ala. proposes a 36-month project to develop 40,000-dwt double hull product carriers and 85,000-dwt double hull oil, bulk or ore (OBO) carriers. The project consortium includes American Automar Inc.; American Petrobulk, Inc.; and Burmeister & Wain. (Funding = \$3 million)

Focused Technology Development

Avondale Industries, Inc. of New Orleans, La. proposes a 24-month project to develop a world-class design for a 40,000-dwt product carrier. This project proposes a detailed market analysis and financial planning; and the purchase of a design from an internationally competitive foreign yard, which will be further modified to meet the requirements of the market analysis. The project consortium includes Dyer, Ellis Joseph & Mills; Chemical Bank; Canadian Imperial Bank of Commerce of Canada; MCA Associates; Naval Surface Warfare Center, Carderock Division; John J. McMullen Associates, Inc.; Kirby Corp.; American Heavy Lift Shipping Company; Mitsubishi Heavy Industries; and Mitsubishi Intl. Corp. (Funding = \$2.3 million)

Petroleum Product Tanker Technology Development

Gibbs & Cox, Inc. of Arlington, Va. proposes a project to develop petroleum product tankers for the domestic market. Information will be exchanged throughout the consortium through a sophisticated electronic data exchange system. Team members include Ingalls Shipbuilding; Trinity Marine Group; Marine Transport Lines, Inc.; Sabine Towing & Transportation Co.; Chevron Shipping Co.; ARCO Marine, Inc.; American Bureau of Shipping; University of Michigan; Sperry Marine; Booz, Allen and Hamilton; Ishikawajima-Harima Heavy Industries; Aquamaster-Rauma Inc.; and ABB Industrial Systems. (Funding = \$800,000)

Focused Technology Development for a Family of Double Hull Tankers

Marinex Intl. of Hoboken, N.J. proposes an 18-month project to develop the designs and marketing and finance plans for 324,000- and 125,000-dwt double hull tankers. These tankers would be based on the Marc Guardian concept, which has been developed jointly by Marinex and Metro Machine. The consortium includes Metro Machine Corp.; Ingalls Shipbuilding; CG Intl., Inc.; Ross/McNatt Naval Architects; Naval Surface Warfare Center; the American Bureau of Shipping; Webb Institute of Naval Architecture; Crandall Dry Dock Engineers; General Electric; Exxon Co., Intl.; ARCO Marine Inc.; Texaco, Inc.; Coastal Marine Corp.; Overseas Shipbuilding Group; Marine Engineers Beneficial Association; and Papachristidis (U.K.) Ltd. (Funding = \$1.8 million)

Internationally Competitive, High Technology Tanker Vessels

Modular Tanker Consortium of Annapolis, Md.

proposes an 18-month project for the development of innovative world-class designs for 40,000- and 125,000-dwt tankers. The consortium includes McDermott, Inc.; BethShip Sparrows Point; Wartsila Diesel; Bird-Johnson Co.; Seaworthy Systems; Kvaerner Masa Marine; SPAR; Intl. Marine Software Associates; Wilson, Gillette & Co.; and ABB Industrial Systems. (Funding = \$1 million)

Market- and Producibility-Driven Shuttle Tanker Design for the World Market

National Steel and Shipbuilding Co. (NASSCO) of San Diego, Calif. proposes a 24-month project to develop state-of-the-art designs for a range of shuttle tankers of about 70,000-125,000-dwt cargo carrying capacity. The project consortium includes ARCO Marine, Inc.; Wartsila Diesel; Raytheon Co. Submarine Signal Division; IMODCO, Inc.; First International Finance Corp.; KaMeWa AB; Ugland Group; Braemer; and Kawasaki Heavy Industries, Ltd. (Funding = \$200,000)

Conversion To World-Class Commercial Shipbuilder

Newport News Shipbuilding of Newport News, Va. proposes a 24-month project to re-enter the commercial shipbuilding market. This project comprises five complementary elements, including market analysis, applied state-of-the-art technologies, world-class production processes, innovative financial arrangements, and revised project management leading to construction of 40,000-dwt tanker. The project consortium includes Sabine Towing & Transportation; Texaco, Inc.; Science Applications Intl. Corp.; Maritime Overseas Corp.; the American Bureau of Shipping; Total Transportation Systems A/S; IHI; and MAN B&W Diesel. (Funding = \$3 million)

Design of the Virtual Shipyard

The U.S. Shipbuilding Consortium of Greenwich, Conn. proposes a project to create and utilize the development of a "virtual shipyard" to support the building of 40,000-dwt product carriers. The consortium consists of participants from McDermott Inc.; IBM Federal Systems; Westinghouse; Microelectronics and Computer Technology Corp.; the George Washington University; the Naval Surface Warfare Center, Carderock Division; Kvaerner Masa Marine; and ARCO Marine. (Funding = \$1.6 million)

Project Category: Passenger

Cruise Ship Preliminary Design, Manufacturing Plan and Market Analysis

Ingalls Shipbuilding, Inc. of Pascagoula, Miss. proposes a 16-month project to develop a cruise ship preliminary design and shipyard manufacturing plan. The project consortium includes Hopeman Brothers, Inc.; Jamestown Metal Marine Sales, Inc.; Cruise Lines Intl. Assoc.; Deltamarin of Finland; Finnyards of Finland; and Aeromarine, Ltd. of Greece. (Funding = \$1.1 million)

U.S.-Built Cruise Ships: Market- and Producibility-Driven Design

NASSCO of San Diego, Calif. proposes a 24-month project for development of an advanced cruise ship design. Specific objectives for the project include capturing an appropriate share of

the cruise ship newbuilding market by the year 2000, and re-establishing the U.S. as a major player in the worldwide cruise/passenger shipbuilding industry. The project consortium includes Delta Queen Steamship Co.; General Electric; Hopeman Brothers; Mercer Management Consulting; Argent Group, Ltd.; and Kawasaki Heavy Industries. (Funding = \$400,000)

Project Category: Ferry

Commercialization of Planing SWATH Technology

Halter Marine, Inc. of Gulfport, Miss., part of the Trinity Marine Group, proposes a 24-month project for commercialization of planing SWATH technology. This innovative vessel design concept (planing SWATH), in combination with associated advanced construction technology, has the potential for global sales on a large scale. The project consortium includes Semi-Submerged Ship Corp.; Connell Finance Co., Inc.; and Hornblower Development Corp. (Funding = \$300,000)

Development of SLICE Fast Passenger Ferry Design and Comprehensive Marketing Plan

Pacific Marine & Supply Company, Ltd. of Honolulu, Hawaii proposes a 36-month project to develop the design of a commercial high-speed ferry based on U.S. Navy-developed SLICE hull form technology. This hull form offers a combination of high speed and excellent stability in heavy seas. The construction of these vessels will use advanced aluminum extrusion techniques to reduce construction time and cost. The team includes Lockheed Missiles & Space Co.; Textron Lycoming; MacKinnon Searle Consortium; KaMeWa; and Schichau Seebeckwerft. (Funding = \$400,000)

Integration of Modern Manufacturing Methods and Modern Information Systems

Todd Pacific Shipyards Corp. of Seattle, Wash. proposes a 36-month project for the integration of modern manufacturing and information methods in the revitalization of a state-of-the-market, medium-sized shipyard. The objective of the project will be to apply modern managerial design, material marshaling, and production techniques to the construction of jumbo-class ferries for the West Coast market. In this project, Todd Pacific Shipyards Corp. will be assisted in technology transfer of ship design and production technologies by Kvaerner Masa Marine, Inc. and the Maritech Engineering Japan Co. (Funding = \$1.6 million)

Project Category: Cargo

High Speed Monohull Focused Technology Development Project

Bath Iron Works Corp. of Bath, Me. proposes a 24-month project for the development of a high-speed, monohull ship. The project objectives are to develop innovative designs for fast commercial cargo and passenger ships, to enhance worldwide U.S. commercial shipbuilding competitiveness, and to integrate commercial shipbuilding capability and secure contracts for these new ship types at Bath. The project consortium includes General Electric; Kvaerner Masa Marine; and American Automar. (Funding = \$600,000)

Medium Sized Multipurpose Ship

Halter Marine, Inc. of Gulfport, Miss., part of the Trinity Marine Group, proposes a 24-month project for the development of a medium-sized, multipurpose ship. This wide beam, shallow draft vessel is intended to service the short and medium length ocean routes and smaller ports of the current ocean trade. Its high beam/draft ratio,

cargo self-unloading, and high maneuverability capabilities make it ideal for this purpose. The project consortium includes Pacific Marine Leasing, Inc.; Connell Finance Co.; and Fisker-Andersen and Whalen. (Funding = \$400,000)

23,000 DWT Container/Bulk Carrier

Halter Marine, Inc. of Gulfport, Miss., part of the Trinity Marine Group, proposes a 24-month project to develop a state-of-the-art, self-sustaining, 23,000-dwt multipurpose carrier for the dry-cargo market.

This design will include maximum cubic capacity of the cargo holds for grains; structural design enabling alternate loading of ores; wide hatch openings for container and unitized cargo; and an advanced bridge featuring an integrated navigation and advanced communication system. The project consortium includes Connell Finance Co. and IHI. (Funding = \$1 million)

Multi-Purpose Dry Cargo Ship Design/Process Development

McDermott Inc. of Morgan City, La. proposes an 18-month project to develop a commercially competitive contract design for a multipurpose dry cargo ship. This offers penetration of a U.S. shipyard into the international commercial dry cargo market sector, building of strategic alliances with overseas shipyards and suppliers, and implementation of state-of-the-art design and production tools at a U.S. shipyard. Team members include McDermott Operations Research; McDermott/B&W; the University of New Orleans; Ishikawajima-Harima Heavy Industries; and MAN B&W Diesel. (Funding = \$3.9 million)

Project Category: Vehicle Carrier

From Sealift Ships to Vehicle Carriers: Internationally Competitive Ships for the 1990s

National Steel and Shipbuilding Co. (NASSCO) of San Diego, Calif. proposes a 24-month project to develop a contract design, a build strategy, and marketing and finance plans for a vehicle carrier vessel. The shipbuilding process will use advances in modular construction and computer integrated manufacturing (CIM). The project consortium includes Argent Group; Kawasaki Heavy Industries; and Kawasaki Kisen Kaisha. (Funding = \$200,000)

Project Category: Special

Penetrating the Intl. Market for Small Ships

The American Waterways Shipyard Conference (AWSC) of Arlington, Va., in conjunction with six of its members, proposes a 24-month project to conduct a market analysis and to develop innovative designs for the international market for small vessels. Assistance in accomplishing these goals will be provided by Kvaerner-Masa Marine (KMM); SPAR; and the National Ports and Waterways Institute as subcontractors to AWSC. The AWSC team includes Bender Shipbuilding; Bird-Johnson; McDermott Marine; Steiner Shipyard; Trinity Marine Group; and Wartsila Diesel, Inc. (Funding = \$600,000)

Sea Horse Self Elevating Offshore Support Platform for the International Markets

Bollinger Machine Shop and Shipyard, Inc. of Lockport, La. proposes a 24-month project to develop designs for self-elevating offshore support platforms for the international market. The design will meet international requirements for permanent offshore structures, and the resulting platforms will be classified as oceangoing vessels. The project consortium includes Halliburton Energy Services, Inc.; and Brown & Root. (Funding = \$1.5 million)

Maritime Reporter/Engineering News

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
San Pedro Mining, La Pradera, Hwy 82, P.O. Box 986, Sonoita, AZ 85637
Stan-Blast Abrasives, 3300 River Rd., P.O. Box 968, Harvey, LA 70059

ABSORBENT PRODUCTS

Haz-Mat Response Technologies, 5841 Box Canyon Rd., La Jolla, CA 92307
Sorbent Products, 645 Howard Ave., Somerset, N.J. 08873

ACOUSTICAL INSULATION

The Claremont Co., Inc., 174 State St., Meriden, CT 06450

ADHESIVES

Life Industries, Corp., 205 Sweet Hollow Rd., Old Bethpage, NY 11804

AIR CONDITIONING AND REFRIGERATION—Repair & Installation

ABB Flakt Marine, Box 1043, 436 21 ASKIM, SWEDEN
Adrick Marine, 141D Central Ave., Farmingdale, NY 11735
Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001
Carrier Transicold, P.O. Box 4805, Syracuse, NY 13221
Johnston Brothers, 180 Enterprises Avenue, Patterson, LA 70392

ANODES/CATHODIC PROTECTION

American Corrosion Services, 218 Rue Beaugerd, Ste. B., Lafayette, LA 70508

ANTENNAS—Rate of Turn Indicator

Rivertronics, 2624 East Broadway, Alton, IL 62002

AUCTIONEER

Forke Bros., 3901 Faulkner Drive, Lincoln, NE 68516

BALLAST

Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031
Mineral Research & Recovery Inc., 4565 S. Palo Verde, Ste. 203 Tucson, AZ 85714
San Pedro Mining, La Pradera, Hwy 82, P.O. Box 986, Sonoita, AZ 85637

BARGE BUILDING

Conrad Industries, P.O. Box 790, Morgan City LA 70381

BASKET STRAINERS

Beaird Industries, P.O. Box 31115, Shreveport, LA 71130

BEARING—Rubber, Metallic, Non-Metallic

B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401
Blohm & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY
U.S.A. Reps: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Orkot Engineering, 2535 Prairie Road-Unit D, Eugene, OR 97402
Tenmat Inc., 511 Interchange Blvd., Newark, DE 19711
Thordon Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6

BERYLCO SAFETY TOOLS

NGK Metals Corporation, P.O. Box 13367, Reading, PA 19612

BILGE OIL/FUEL ABSORBER

The Bilge Rat, P.O. Box 4244, Fort Walton, FL 32549

BOILER CONTROL SYSTEMS

G.R. Bowler Co., 2701 Culver Rd., Ste. 200, Rochester, NY 14622

BOILER—Manufacturers

Aalborg Ciser (Miami) Inc., 2449 Northeast 13th Avenue, Ft. Lauderdale, FL 33305

BROKERS

151 Maritime Services, 34062 El Encanto/B, Dana Pt. CA 92629
Captain Astad Company, Inc., P.O. Box 350486, Ft. Lauderdale, FL 33335
Emerald Yacht & Ship Brokers, 759 N. Milwaukee St., # 552, Milwaukee, WI 53202
Jack Faulkner, 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960

BULKHEAD SEALS

Blohm & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY
U.S.A. Reps: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
John Crane Marine USA, 1536 Barclay Blvd., Buffalo Grove, IL 60089

BUNKERING

Crowley Maritime, 155 Grand Ave., Oakland, CA 94612

CABINETRY

Fenco, 1901 Route 130, Burlington, NJ 08016

CELLULAR TELEPHONE SERVICE

Cellnet Corp., 400 Main St., Ste. 800, Stamford, CT 06901-3004

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Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026
Milligan Marine Supply, 5832 Harvey Wilson, Houston, TX 77020
Washington Chain & Supply Inc., Box 3645, Seattle, WA 98124
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748

CHAIRS

Gasser Chair Co., 4136 Loganway, Youngstown, OH 44505
Infanti Chair Mfg. Corp., 3075 Richmond Terrace, Staten Island, NY 10303
Shelby Williams Industries, Inc. 150 Shelby Williams Dr., Morristown, TN 37813
Tumbull, Inc., 3818 134th St. N.E., Marysville, WA 98271

CHEMICALS

Drew Ameroid Marine, One Drew Plaza, Boonton, NJ 07005
Vecom USA, Inc., 236 St. George Avenue, Jefferson, LA 70121

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Autoship Systems Corp., #403, 611 Alexander St., Vancouver, BC, Canada V6A1E
Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368
Intergraph Corporation, 2051 Mercator Drive, Reston, VA 22091-3413
Kockums Computer Systems AB, PO Box 50555, s-202 15 Malmö, SWEDEN
Kocum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
TIMSCO, P.O. Box 91360, Mobile AL 36691

CONDENSERS/SEPARATORS

Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130

CONTROL SYSTEM—Monitoring

Autronica Marine A/S, Drammensveien 126, N-0277 Oslo 2, NORWAY
Electronic Design inc., 3020 20th St., Metairie, LA 70002
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062
Kobelt Manufacturing Co., Ltd., 11720 Horseshoe Way, Richmond, BC, Canada
MMC International, 60 Inip Dr, Inwood NY 11696
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Teleflex Naval technologies, 205 Church Rd., North Wales, PA 19454

CONTROL SYSTEM—Steering

KGW Schweriner, Wismarsche Strasse 380, 19055 Schwerin, GERMANY
Kobelt Manufacturing, 11720 Horseshoe Way, Richmond, BC, CANADA, V74 4V5
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

CONVERSIONS & REPAIRS

Gulf Coast Fabrication, Inc., P.O. Box 539, Lakeshore, MS 39558

Vancouver Shipyards, 50 Pemberton Ave., N. Vancouver, B.C. CANADA V7P 2R2

CONVEYOR BELT REPAIR

Klehma Rubber Engineering, GERMANY
U.S. Rep: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168

CORROSION CONSULTANTS

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Aquadrive Systems, Inc., 55 Olin St., Ocean Grove, NJ 07756
Lo-Rez Vibration Control Ltd., 156 West 8th Avenue, Vancouver, BC
CANADA V5Y1N2
Mapeco Products, 90 Forest Avenue, P.O. Box 382, Locust Valley, NY 11580

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The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101
Del Gaudio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072
Hagglunds Inc, Marine Div. Headq., 50 Chestnut Ridge Rd, Montvale, NJ 07645
Liebherr-Werk Nenzing GES.mbh, P.O. Box 10, A-6710 Nenzing, AUSTRIA
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
J.D. Neuhaus Hebezeugue GmbH, D-5810 Witten, GERMANY
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA L6M 2G2
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883
Smatco Industries, P.O. Box 4036, Houma, LA 70361

CRANES

Morgan Marine, 1300 Nomandy Place, Santa Ana, CA 92705
Pallinger Inc., 8040 Dorchester Rd., Niagara Falls, Ontario, CANADA L2E 6V6
Tech Crane Int'l., Inc., 61130 Timberbend Dr., Lacombe, LA 70445

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Life Industries, Corp., 205 Sweet Hollow Rd., Old Bethpage, NY 11804

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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
Skookum/Rope Master, P.O. Box 280, Hubbard, OR 97032
Smatco Industries, P.O. Box 4036, Houma, LA 70361
Smith Berger Marine Inc., 516 South Chicago Street, Seattle, WA 98108
Willem Pot b.v., P.O. Box 29102, 3001 GC Rotterdam, The Netherlands

DECK MACHINERY

Loeffler Corp., US #1 & Robbins Ave., Penndel, PA 10947
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA L6M 2G2
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Pusnes, PO Box 102, N-4818, Faervik, NORWAY
Skookum/Rope Master, P.O. Box 280, Hubbard, OR 97032
Smith Berger Marine Inc., 516 South Chicago St., Seattle, WA 98108
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748

DESALINATION - REVERSE OSMOSIS

NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA L6M 2G2
Rochem Separation Systems, Inc., 3904 Del Amo Blvd., Ste. 801, Torrance, CA 90503
Rochem Separation Systems, P.O. Box 156, 54 Rue Agasse, 1211 Geneve 17, SWITZERLAND

DEPTH SOUNDING EQUIPMENT

Innerspace Technology, Inc., 36 Industrial Dr., Waldwick, NJ 07463

DIESEL ACCESSORIES

Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
General Thermodynamics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02360
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101

DIESEL ENGINE — Spare Parts & Repair

Aalborg Ciser (Miami) Inc., 2449 Northeast 13th Avenue., Ft. Lauderdale, 33305
Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107
Atlantic Yacht Sales, P.O. Box 4010, Middletown, NJ 07748
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610
Coltec Industries, Parts & Service Div., 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Co., 4500 Leeds Ave., Ste. 301, Charleston, SC 29405-8521
Cummins Mid-South, Inc., 110 E. Airline Highway, Kenner, LA 70062
John Deere, John Deere Rd., Moline, IL 61265
Diesel Engine & Parts Co., 6123 Hillsboro Ave., Houston, TX 77029
Geiger Truck Parts, P.O. Box 365, Watseka, IL 60970
Giro Engineering Ltd, Talisman, Duncan Road, Park Gate, South Hampton, SO3 7BX ENGLAND

Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231

Hall-Toledo, Inc., 525 West Sophia St., Maumee, OH 43437

Klattenberg Marine, 17 Grandview Ave., W. Orange, NJ 07052

MAN B&W Diesel AG, Stadtbachstrasse 1, D-86153 Augsburg 1, GERMANY

MAN B&W Diesel A/S, Center Syd, Stamholmen 161, DK-2650 Hvidovre, DENMARK

MAN B&W Diesel, 17 State St., New York, NY 10004

MTU of North America, 10450 Corporate Dr., Houston, TX 77478

Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, GERMANY

Motor-Service AB, Box 2115, S-144 04 Ronninge, SWEDEN

New Sulzer Diesel, Inc, 200 Park Ave, New York, NY 10166

Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND

Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15950 Park Row, Houston, TX 77084

Posi-Clean Corp., 3301 Chapline St., Wheeling, WV 26003

Textron Lycoming, 550 Main St., Stratford, CT 06497

Ulstien Bergen AS, PO Box 924, N5002 Bergen, NORWAY

Wartsila Diesel, 201 Defense Highway, Annapolis, MD 21401

DIVING & SALVAGE

Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178
H.J. Merrihue, P.O. Box 23123, New Orleans LA 70183
Muldoon Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731

DOORS - MARINE & INDUSTRIAL

Mapeco Walz & Krenzer, Inc., 90 Forest Ave., Locust Valley, NY 11560
Trenomat GmbH & KG, 5600 Wuppertal 11, Dornap, GERMANY

DRILLING & BLASTING

Marine Drilling & Blasting, PO Box 10455, Jacksonville, FL 32247-0455

DRY DOCKS—Design

Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Curacao Drydock (USA), PO Box 3012, Curacao, Netherlands Antilles
North Florida Shipyards, P.O. Box 3255, Jacksonville, FL 32206

ELECTRICAL EQUIPMENT

Bender Inc, 400 Gordon Dr, Bldg 501, Exton, PA 19341
L. F. Gaubert & Co., Inc., P.O. Box 50500, New Orleans LA 70150
MMC International, 60 Inip Dr, Inwood NY 11696

SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116

ELECTRONIC CONTROLS

MCR Engineering, 206 Dedham St., Norfolk, MA 02056

ELECTRONIC DISPLAY

High Seas Technology, Inc., 2965 West State Rd., Fort Lauderdale, FL 33312
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY

ELECTRONIC INFORMATION SUPPORT

Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY

ELECTRONIC RACKS

A & J Manufacturing Co., 14131 Franklin Ave., Tustin, CA 92680

ELECTRONIC SALES & SERVICE

Fishermans Wholesale Marine Supply Co., Inc., 4540 B. Downman Road
New Orleans, LA 70126

GMT Electronics, Inc. 171 Main St., South River, NJ 08882

EMERGENCY MEDICAL ASSISTANCE

International SOS Assistance, 8 Neshaminy Interplex, Ste., 207, Trevose, PA 19053

EMISSION CONTROLS

ABB Flakt Marine, Box 1043, 436 21 ASKIM, SWEDEN

Haldor Topsoe Nymollevel 55, DK-2800, Lyngby, Denmark

ENGINEERING SERVICES

MCR Engineering Co., Inc. 206 Dedham St., Norfolk, MA 02056

ENGINE CONTROLS - SHIFT AND THROTTLE

Marine Systems, Inc., 1000 NW First Avenue, Bldg. 20, Boca Raton, FL 33432

ENGINE ROOM LIGHTING

Pauluhn Electric Mfg. Co., Inc. 1616 N. Main, P.O. Box 53, Pearland, TX 77581

ENGINE TEST EQUIPMENT

General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Rd., Plymouth, MA 02360

Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy, TX 77449

ENVIRONMENTAL SYSTEMS

NWR, Inc.,-Environmental Systems Division, Box 58626, Salt Lake City, UT 84158

EPIRBs

ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale FL 33310-5247

Alden Electronics, 40 Washington St., Westborough, MA 01581

Litton Special Devices, 750 W. Sprout Road, Springfield, PA 19064

EQUIPMENT - Marine

Bohnet & Associates, 1150 Rue Rochelle, Slidell, VA 70458
Fisherman's Wholesale Marine Supply Co., 4540 B Downman Rd., New Orleans, LA 70126
Ocean Technical Services, Inc., 634 Peters Road, Harvey, LA 70058

EVAPORATORS

Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974

Beaird Industries Inc., P.O. Box 31115, Shreveport, LA 71130

NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA L6M 2G2

EXPANSION JOINTS (RUBBER, METALLIC)

Archon Industries, 200 Williams Street, Portchester, NY 10573

FANS - VENTILATORS - BLOWERS

Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402

FASTENERS

Ferry Industrial Fastener Co., 1470 St. Charles Ave., Lakewood, Ohio 44107
Hardware Specialties, 48-75 36th St., L.I.C., NY 11101
Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835
Okabe Co., Inc. 645 Forest Edge Drive, Vernon Hills IL 60061

FENDERING SYSTEMS/BUOYS - Dock & Vessel

B.F. Goodrich, 150 Division Drive, Wilmington, NC 28401
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Milligan Marine Supply, 5832 Harvey Wilson, Houston, TX 77020
Schuyler Mfg. Co., Inc., 16901 Woodinville-Redmond Rd., Woodinville, WA 98072
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook, VA 22624

Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409

Viking Fender Co., 50 Church Street, Sea Bright, NJ 07760

FIBERGLASS PIPE & FITTINGS

Ameron Fiberglass & Pipe, 61 Executive Ave., Edison, NJ 08817

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Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97301

INTERIOR DESIGN
Directions in Design, 633 Emerson Suite 100, St. Louis, MO 63141
Interior Design Intl, 701 Dexter Ave. N., Ste. 307, Seattle, WA 98109

INTERIORS
Hopeman Brothers, 435 Essex Ave., Waynesboro, VA 22980
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97301

JOINER—Watertight Door—Paneling—Ceiling System—Decking
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Rd., Se 140, Jacksonville, FL 32256
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031
Walz & Krenzer, Inc., 90 Forest Ave. Locust Valley N.Y. 11560

KEEL COOLERS
R.W. Femstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

LIFEBOATS/RAFTS
Boston Whaler, Inc. Commercial Products Div., 1149 Hingham St., Rockland, MA 02370
Caley Ocean Systems, Mayor Avenue, East Kilbride, Scotland, G74 4PU
Fr. Fassmer GMBH & Co., D-2876 Berne 2, Wese, GERMANY
Norsafe AS, P.O. Box 115, N-4818 Faerвик, Norway
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

LIFESAVER EQUIPMENT
Stearns Manufacturing, P.O. Box 1498, St. Cloud, MN 56302

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247
Fishermans Wholesale Marine Supply Co., Inc. 4540 B Downman Road New Orleans, LA 70126
Giamox, 44 Austin Street, P.O. Box 13522, St. John's, NF CANADA A1B 4B8
Goltan Marine, 160 Van Brunt St., Brooklyn, NY 11231
The L.C. Doane Co., P.O. Box 975, Essex, CT 06426
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Julian A. McDermott, 1639 Stephen St., Ridgewood, NY 11385
Pauluhn Electric Mfg. Co., Inc. 1616 N. Main, P.O. Box 53, Pearland, TX 77581
Phoenix Products, 6161 N 64th St., Milwaukee WI 53218
Francis Searchlights/Stam Supply Co., 4415 6th N.W., Seattle, WA 98107

LINE BLINDS
Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474

LIQUID LEVEL INDICATORS
Metritape, P.O. Box 2366, Littleton, MA 01460
Setcor, 2 Dean St., Tenafly, NJ 07670

LIQUID OVERFILL PROTECTION SYSTEMS
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026
Metritape, P.O. Box 2366, Littleton, MA 01460
Setcor, 2 Dean St., Tenafly, NJ 07670

LOCK SETS
HMS Marine Hardware, 333 W. Merrick Road, Valley Stream, NY 11580

LOGISTICS
Chand Corporation, 157 Hwy 654, Mathews, LA 70375
QED, 4646 N. Witchduck Road, Virginia Beach, VA 23455
VL Logistics Consultants, Inc., 3420 Bellville Blvd., Ocean Springs, MS 39564

LUBRICANTS
Jet-Lube, Inc., 4849 Homestead Road, Houston, TX 77226
B P Marine Americas, 200 Westlake Park Blvd., Houston, TX 77079-2682

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072
Goltan Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

MACHINERY MONITOR AND CONTROL SYSTEMS
Electronic Marine Systems, 800 Femdale Pl., Eahway, NJ 07065

MARINE ACCOMMODATIONS
Directions in Design Inc, 633 Emerson, Suite 100, St. Louis, MO 63141
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave, Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Rd, Ste 140, Jacksonville, FL 32256
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE BATTERIES
Rae Storage Battery Mfg. Co. Inc., 51 Deming Rd., Berlin, CT 06037

MARINE BOILERS
NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA L6M 2G2

MARINE CEILING
The Gage Corp., 803 S. Black River St., Sparta, WI 54656
Hydro-Aluminium, Vik Verk, N-5880 Vik I SOGN, Norway

MARINE ELECTRONICS
High Seas Technology, Inc., 2965 West State Rd., Fort Lauderdale, FL 33312
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Saab Marine Electronics AB, Box 13045, 402 51 Goteborg, SWEDEN

MARINE FIRE PROTECTION
Hiller Systems, 3710 Lakeside Court, Mobile, AL 36693

MARINE FURNITURE
Directions In Design, 633 Emerson, Ste. 100, St. Louis MO 63141
Engineered Data Products, P.O. Box 565, Woodbury, NJ 08906-7565
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave, Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Rd, Ste 140, Jacksonville, FL 32256
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE GEARS
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227

MARINE HARDWARE
HMS Hardware, 333 W. Merrick Rd., Valley Stream, NY 11580

MARINE RADAR COMPONENTS
EEV, Inc., 4 Westchester Plaza, Elmsford, NY 10523

MARINE SHIP MAINTENANCE
BarbaArkhn, 1810 Chapel Ave. West, Cherry Hill, NJ 08002

MARINE SURPLUS SALES
Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114

METAL PRODUCTS
Engineered Data Products, P.O. Box 565, Woodbury, NJ 08906-7565
Jamestown Metal Marine Sales, Inc., 4710 N.W. Second Ave., Boca Raton, FL

MONITOR CONTROL ALARM
Tracor Marcon, 800 Femdale Pl., Rahway, NJ 07065

MULTI-CABLE PENETRATION DEVICE
NMP, 12437 E. 60th St., Tulsa, OK 74153

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202
CDI Marine Co., 4040 Woodcock Dr., Suite 200, Jacksonville, FL 32207
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Ln., Dedham, MA 02026
Crane Consultants, 15301 First Ave S., Seattle WA 98148
C.R. Cushing, 18 Vessey St, New York, NY 10007
Arthur D. Darden, 3200 Ridgelande Dr., Suite 403, Metairie LA 70002
DeJong & Lebet, Inc., 1734 Emerson Street, Jacksonville, FL 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Diversified Technologies, 812 Live Oak Dr., Chesapeake VA 23320
Encon Mgmt & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
GHM Inc. (Ind. 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., 66 Long Wharf, Boston, MA 02110
The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104
Guido Perla & Assoc., 4039 21st Ave., Ste. 300, Seattle, WA 98199
Morris Guralnick Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110
Hydrocomp, Inc., 45 James Farm-Lee, P.O. Box 865, Durham, NH 03824
J.J.H. Inc., No. 4 Executive Campus, Culbert Blvd. & Route 70, P.O. Box 5031, Cherry Hill, NJ 08034
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
James S. Kroger, 1515 NW 7th St., Ste. 124, Miami FL 33125
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
John J. McMullen Associates, Inc., 1 World Trade Ctr, Ste 3000, N.Y., NY 10048

Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07204
Marine Management Systems Inc., 102 Hamilton Ave., Stamford CT 06902
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109
Maritech, Seadiff, Bay Road, Newmarket, NJ 03857
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257
R.J. Mellusi & Co., 71 Hudson St, New York, NY 10013
Nautical Designs, Inc. 2101 S. Andrews Ave, Suite 202, Ft Lauderdale FL 33316
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777
QED Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulson St., Ste. 301, San Francisco, CA 94107
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112
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; 2 Skyline Pl., 5203 Leesburg Pike, Suite 700, Falls Church, VA 22041;
50 Vashell Way, Orinda, CA 94563
George G. Sharp, Inc., 100 Church St., New York, NY 10007
R.A. Steam, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
TIMSCO, P.O. Box 91360, Mobile AL 36691

NAVAL BOAT BUILDERS
Atlantic Boat Group, Inc., 1850 Lake Park Dr., Ste. 216 Smyrna, GA 30080

NAVIGATION & COMMUNICATIONS EQUIPMENT
AT&T, High Seas Dept., 412 Kemble Ave., Room C380, Morristown, NJ 07960
Autonica Marine A/S, Drammensveien 126, N-0277 Oslo 2, NORWAY
CAST, Inc., 5450 Katella Ave., Los Alamitos, CA 90720
Cellnet Corp, 400 Main St, Stamford, CT 06901-3004
Comsat Maritime Services, 950 L'Enfant Plaza SW, Washington DC 20024
C. Plath, 222 Severn Ave., Annapolis, MD 21403
CruisePhone, Inc. 2100 Park Central N., Pompano Beach, FL 33064
Electronic Marine Systems, 800 Femdale Pl., Rahway, NJ 07065
Furuno U.S.A., 271 Harbor Way, San Francisco, CA 94080
Hose-McCann, 1241 W. Newport Center Dr., Deerfield Beach, FL 33442
IDB Mobile Communications, 1828 L Street NW, Suite 660, Washington, D.C. 20036
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135
Megapulse, Inc., 8 Preston Court, Bedford MA 01730-2380
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY
Offshore Systems Intl., 19015 36th Ave., W., Ste. BC, Bldg. F, Lynwood, WA 98036
Pauluhn Electric Mfg. Co., Inc. 1616 N. Main, P.O. Box 53, Pearland, TX 77581
Portland Ship Repair Yard, 5555 N. Channel Ave., Bldg. 50, Portland, OR 97217
RD Instruments, 9855 Businesspark Ave., San Diego, CA 92131
Raytheon Marine Co, 46 River Road, Hudson, NH 03051
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia, PA 19116
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboten, NORWAY
Simrad, 19210 33rd Avenue West, Lynwood, WA 98036
Simrad Robertson, 10801 Hammerly, Suite 100, Houston, TX 77043-1923
Sound Propeller, 1608 Fairview Ave. E., Seattle, WA 98102
Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Summer Equipment Ltd., 24 West 4th Ave., Vancouver V5Y 1G3, CANADA
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086
Waterway Communications System, Inc. 453 E. Park Pl., Jeffersonville, IN 47130

OIL—Marine—Additives
Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650

OIL SPILL CONTAINMENT
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141

OIL/WATER SEPARATORS
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556
Blohm & Voss AG, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY;
U.S.A. Reps: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale NJ 07647
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
MMC International, 60 Inip Dr, Inwood NY 11696
National Fluid Separators, 827 Hanley Industrial Ct., St. Louis, MO 63144
Nelson Industries, Highway 51 West, Stoughton, WI 53589

PAINT—COATING—CORROSION CONTROL
Allied Signal, Inc., A-C Performance Additives, P.O. Box 1039, Morristown, NJ 07962
Amclean Coating Removal, 12920 S.W. 99 N. Ave., Miami, FL 33176
The Amessen Corp., Corrosion Dynamics Div., 1100 Walnut St., Rosell, NJ 07203
Corroscel, Inc., 1045 12th Ave. NW-F5A, Issaquah, WA 98027
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502
Jamestown Distrib., 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835
Hempel Coatings, Foot of Cune Avenue, Wallington, NJ 07057
International Paint, 6001 Antoine, Houston, TX 77292
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70037
Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Rd., Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030
UT Technologies Ltd., Box 31114, Robie St. RPO, Halifax Nova Scotia Canada B3K5T9
Vecom USA, 236 St. George Avenue, Jefferson, LA 70121

PAINT REMOVAL
Robert C. Collins & Co., 6772 N.E. 4th Ave., Miami, FL 33138
LTC Americas, 101 G. Executive Dr., Sterling, VA 22170
White Metals, Inc., 6300 Midvale, Houston, TX 77087

PIPE FITTINGS/CONNECTING SYSTEMS
Lokring Corp., 396 Hatch Drive, Foster City, CA 94404
Stanley G. Flagg Co., 1020 W. High St., Stowe, PA 19464

POLLUTION CONTROL PRODUCTS (Marine)
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141

POLLUTION PACKER COMPACTORS
TFC Corporation, 77415 Cahill Rd., Minneapolis, MN 55439

PORT SERVICES
Port of Portland, 5555 N. Channel Ave., Portland, OR 97217

PROJECT TRACKING, PLANNING & MANAGEMENT
Tracking Systems of America, 8789 San Jose Blvd., Jacksonville, FL 32217

PROPELLER POLISHING SYSTEMS
Robert C. Collins & Co., 6772 N.E. 4th Ave., Miami, FL 33138

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058
American Air Filter, P.O. Box 35690, Louisville, KY 40432
ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372, USA
ABB Industry Oy, P.O. Box 185, 00381 Helsinki, FINLAND
ABB TURBOCHARGER, INC., 1460 Livingston Avenue, N. Brunswick, NJ 08902
Aquamaster-Rauma Ltd., Box 220, SF-26101, Rauma, FINLAND
Bird Johnson Company, P.O. Box 1528, Pascagoula, MS 39567
Brunvoll A/S, P.O. Box 370, N-6401, Molde, Norway
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320
Coltec Industries (Fairbanks Morse Engine Div.), 701 Lawton Ave, Beloit, WI 53511
Fincantieri, Diesel Engines Div.—GMT, Bagnoli della Rosandra 334, Trieste, ITALY
GE Naval & Drive Turbine Systems, 166 Boulder Dr., Fitchburg MA 01420
Harbormaster Marine, Inc., 3177 Industrial Road, Livonia, MI 48150
Holset Engineering, Inc., 1320 Kemper Meadow, Ste. 500, Cincinnati, OH 45240
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Krupp MaK, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9
Kobelt Manufacturing, 11720 Horseshoe Way, Richmond, BC Canada V7A 4V5
Lohmann & Stolterfoht, P.O. Box 1860, D-58408 Witten, Germany
Mapeco Products Inc., 90 Forest Ave., Locust Valley, N.Y. 11560
Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY
MAN B&W Diesel, 17 State St., New York, NY 10004
MAN B&W Diesel A/S, Ostervel 2, DK-4960 Høleby, DENMARK
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15, DK-9300 Frederikshavn, DENMARK
MAN B&W Diesel GmbH, Stadtbuchstrasse 1, D-86153 Augsburg 1 GERMANY
Mathers Controls, 675 Pease Rd., Burlington, MA 08107
Mitsubishi Heavy Industries America, Inc., 630 Fifth Ave., Ste. 3450, NY, NY 10011
MTU of N.A., 10450 Corporate Dr., Sugar Land, TX 77478
New Sulzer Diesel, Ltd., CH-8401, Winterthur, SWITZERLAND
Ornithuster Inc., 9515 Sorensen Ave., P.O. Box 2144, Santa Fe Springs, CA 90670
Rolla SP Propellers USA, Via Silva 5, P.O. Box 251, 6828 Balerna SWITZERLAND
Rolla SP Propellers USA, 4030 Mustang Road, Melbourne, FL 32934, USA
Karl Senner Inc., 25 W Third, Kenner LA 70062
Schottel-Werft, D-5401 Spay, GERMANY
Shipwrights, Inc., 855 Worcester Rd., Farmingham, MA 01701
Siemens Energy & Automation, Inc., Systems Div., Marine Systems no. America (A23N), 100 Technology Dr., Alpharetta, GA 30202

Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey LA 70059-0008
Textron Lycoming, 550 Main St., Stratford, CT 06497
Thrustmaster of Texas, 12227-K FM 529, Houston, TX 77041
Ulstien Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY
J. M. Voith GmbH, Marine Division, Postfach 1940, D-7920, Heidenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND

PROTECTION MATERIALS
Megafilm, Done Lane Industrial Estate, Newbury, Berkshire RG14 5SH ENGLAND

PROTECTIVE WRAPS
FANA (Film Applicators of North America), 1260 E Woodland Ave., Springfield PA 19064

PUMP—Repair—Drives
Coffin Turbo Pump, Inc., 326 S. Dean Street, Englewood, NJ 07631
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072
Frank Mohn Houston, Inc., P.O. Box 1586, La Porte, TX 77572-1586
Gilkes, Inc., PO Box 628, Seabrook, TX 77586
Jim's Pump Repair, 48-55 36th St., Long Island City NY 11101
Leistriz Corporation, 165 Chestnut Street, Allendale, NJ 07401
Vita Motivator, 99 W Hawthorne Ave., Suite 622, Valley Stream NY 11580

REMOTE VALVE OPERATORS
ELLIOTT MANUFACTURING, P.O. BOX 773, BINGHAMTON, NY 13902

RESISTANCE TAPE
Metritape, P.O. Box 2366, Littleton, MA 01460

REFRIGERATION EQUIPMENT/SERVICES
Adrick Marine, 141D, Central Ave., Farmingdale, NY 11735
Bailey Refrigeration Co., 2323 Randolph Ave., Avenel, NJ 07001

REMOTE VALVE OPERATORS
American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906
Teleflex, Inc., 771 First Ave., King of Prussia, PA 19406

ROPE—Manila—Nylon—Hawser—Fibers
Allied Signal Inc., Fibers Division, 1411 Broadway, New York, NY 10018
Dupont, Montgomery 403, 1011 Centre Road, Wilmington, DE 19805

RUDDER STOCK SEALS
Blohm & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY
U.S.A. Reps: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
John Crane Marine USA, 1536 Barclay Blvd., Buffalo Grove, IL 60089

RUST REMOVAL
Robert C. Collins & Co., 6772 N.E. 4th Ave., Miami, FL 33138

SAFETY LIGHTING
Datex, Inc., P.O. Box 1150, Kinder, LA 70648-1150
Locite Luminescent Corp., Etna Road, Lebanon, NH 03766

SAFETY TOOLS
NGK Metals Corp., P.O. Box 13367, Reading, PA 1961

SANITATION DEVICE—Pollution Control
Eltech International Corp, 12850 Bouemwood Dr, Sugarland TX 77478
Jered Brown Brothers, 56 South Squirrel Rd., Auburn Hills, MI 48326
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490

SATELLITE COMMUNICATIONS
IDB Mobile, 10525 W. Washington Blvd., Culver City, CA 90232

SCALE MODELS
Markitect, PO Box 225, Oconomowoc, WI 53066
Scale Reproductions, 16346 County Road 13, Fairhope, AL 36532
Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay WI 54235

SCUTTLES/MANHOLES
L.S. Baier & Assoc., 7527 NE 33rd Dr., Portland, OR 97211

SEALANTS
Boatlife, Inc., Div. of Life Ind., 205 Sweet Hollow Rd., Old Bethpage, NY 11804

SELF UNLOADING SYSTEM REPAIR
Klehma Rubber Engineering, GERMANY
U.S. Rep: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168

SHIPBOARD COMMUNICATIONS
Hose-McCann, 1241 West New Newport Center, Deerfield Beach, FL 33442

SHIPBUILDING EQUIPMENT
NEI Syncrolift, Inc., 8970 S W 87th Ct., Miami FL 33176

SHIPBUILDING—Repairs, Maintenance, Drydocking
Astilleros Espanoles S.A., Padilla 17, 28006 Madrid, SPAIN
Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652
Atlantic Marine, Inc., 8500 Heckscher Dr., Jacksonville, FL 32226
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601
Bender Inc., 400 Gordon Drive, Bldg. 501, Exton, PA 19341
BethShip, Sparrows Point Yard, Sparrows Point MD 21219
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250
Boston Whaler, Inc. Commercial Products Div., 1149 Hingham St., Rockland, MA 02370
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmö, SWEDEN
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Curacao Drydock Inc., P.O. Box 3012, Curacao, Netherlands Antilles
European Ship Repair, 120 NE 20th St., Miami, FL 33137
Fincantieri SpA Cantieri Navali Italiani, Via Cipro 11, 16129 Genoa ITALY
G.M.D. Shipyard, PO Box 050221, Brooklyn, NY 11205
Gold Coast Yachts, Inc., Box 1980 Kingshill, St. Croix, U.S.V.I. 00851
Gulf Coast Fabrication, Inc., P.O. Box 539, Lakeshore, MS 39558
HDW, Kiel, Germany USA Rep.: Roland Marine Inc., 90 Broad St., NY, NY 10004
Hall Buck Marine, P.O. Box 35, Baton Rouge, LA 70816
Hitachi Zosen, Hitachi Shipbuilding & Engineering Co., 1-1-1 Hitotsubashi Chiyoda-Ku Tokyo 100 Japan
Hike Metal Products & Shipbuilding, Box 698, Wheatly, Ont., Canada N0P 2P0
Hyundai Heavy Ind., 1 Cheonha-dong, Dong Ku, Ulsan, Korea
IHI, Tokyo Chuo Bldg., 6-2, Chiyoda Tokyo 100 Japan
Intermarine (USA), Inc., 301 N. Lathrop Ave., Savannah, GA 31402
Jacksonville, Shipyards, 750 E. Bay St., Jacksonville, FL 32202
Jeffboat, Inc., P.O. Box 610, Jeffersonville IN 47130
Kamaq Transporttechnik GmbH, Daimlerstrasse 14, D-89079 U1M, Germany
Kvaerner Masa-Yards Oy, Box 132, SF-00151, Helsinki, FINLAND
Kvichak Marine, 615 N 34th St, Seattle, WA 98103
Leevac Shipyards, P.O. Box 1190, HWY 90 East, Jennings, LA 70546
Lisnave, Apartado 2138, 1103 Lisbon, Codex PORTUGAL
Marco, inc., 2300 W Commodore Way, Seattle, WA 98199
Motor-Service AB, Box 2115, 144 04 Ronninge, SWEDEN
Munson Manufacturing, 150 West Dayton, Edmonds WA 98020
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Nichols Brothers Boat Builders, 5400 South Cameron Rd., Freeland, WA 98249
Norconsult Engineering Co., Inc., P.O. Box 529, 5785 Plantation Rd., Theodore, AL 36582
North Florida Shipyard, Inc., P.O. Box 3255, Jacksonville, FL 32206
Peterson Builders, Inc., 101 Pennsylvania Ave., Sturgeon Bay, WI 54235-0650
Thomas Marine, 37 Bransford Street, Patchogue, NY 11772
Samsung Heavy Ind., 25, 1-ka, Bongrae-dong, Chung-ku, Seoul, Korea
SeaArk, P.O. Box 210, Monticello AR 71655
SeaFab, P.O. Box 1651, 4111 Cedar St, Pascagoula, MS 39567
Service Marine Industries, P.O. Box 3606, Morgan City LA 70381
Skipperliner Shipyards, 621 Park Plaza Dr, Dept 21, LaCrosse WI 54601
Steiner Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509
Swath Ocean, 979 G Street, Chula Vista, CA 92011
Textron Marine Systems, 6600 Plaza Drive, New Orleans, LA 70127-2584
Trinity Marine Group, Box 3029, Gulfport, MS 39505-3029
Triplex Marine, 6200 Procter St., Port Arthur, TX 77642
Willard Marine, inc., 1250 N. Grove St., Anaheim, CA 92806
Zidell Marine Corp., 3121 S.W. Moody Street, Portland, OR 97201
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevensville, MD 21666

SHIPYARD CABLES
Amicable, 350 Bailey Road, El Dorado, AR

SIGHTGLASSES
Archon Industries, 200 Williams Street, Portchester, NY 10573

SIMULATOR TRAINING
Marine Safety International, Caorl Building, Kingspoint, N.Y. 11024
Ship Analytics, P.O. Box 410, North Stonington, CT 06359

SILENCERS
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

SKILLED LABOR
Craft America, 1302 Ingleside Rd., Norfolk, VA 23502

SPILL RESPONSE/ENGINE ROOM MAINTENANCE
Haz-Mat Response Technologies, 5841 Box Canyon Rd., La Jolla, CA 92037

STAIRMASTER SAFETY TREADS

PROFESSIONAL

Wooster Products, Inc., P.O. Box 896, Wooster, OH 44691

STERN TUBE SEALS

Blohm & Voss AG, P.O. Box 10 07 20, D-2000, Hamburg 1 Germany
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John Crane Marine USA, 1536 Barclay Cove, Buffalo Grove, IL 60089
Kobelco Marine Engineering Co., LTD., Tokyo, Japan
USA Reps: Roland Marine Inc., 90 Broad St., New York, NY 10004

STIFFNER WELDER

Bug - O - Systems, Inc., 3003 W. Carson St., Pittsburgh, PA 15204

STUFFING BOXES

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SURVIVAL EQUIPMENT

Schat Watercraft, P.O. Box 7008, Newark, DE 19714

Viking Life Saving Equipment, 1625 N Miami Ave., Miami FL 33136

TANK CLEANING EQUIPMENT

Setcor, 2 Dean St., Tenafly, NJ 07670

TANK LEVELING INDICATORS

American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906
Autronica Marine A/S, Drammensveien 126, N-0277 Oslo 2, NORWAY
Bergan Tank, 3409 Gulf Breeze Pkwy, Gulfbreeze, FL 32561
ERL Marine Products div, PO Box 1026, New Albany, IN 47151-1026
Ian-Conrad Bergan, 3409 Gulf Breeze Parkway, Gulf Breeze, FL 32561
IMO Industries, Gems Sensors Division, One Cowles Rd, Plainville CT 06062
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Meintape, PO Box 2366, Littleton, MA 01460-2366
MMC International, 60 Inip Dr, Inwood NY 11696
Saab Marine Electronics AB, P.O. Box 13045, S-402 51 Goteborg SWEDEN

TANK LIQUID LEVEL GAUGES

Archon Industries, 200 Williams Street, Portchester, NY 1073

TELECOMMUNICATIONS

Mitel, 11911 Freedom Dr., Suite 700, Reston, VA 22090

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TEMPORARY/PERMANENT SHELTERS

Universal Shelters, U.S. Hwy. 19 S., Pelham, GA 31779

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Wyle Laboratories, 7800 Govem's Dr. S.W., Huntsville, AL 35807

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The Claremont Co., Inc., 174 State St., Meriden, CT 06450

Vapor Corporation, 6420 West Howard, Niles, IL 60714

THICKNESS TESTING

Cygnus Instruments, P.O. Box 3127, Annapolis, MD 21403

M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

TOOLS

Tri Tool Inc., 3806 Security Park Drive, Rancho Cordova, CA 95742-6990

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Fast Systems, Inc., 3240 N. Broadway, St. Louis, MO 63147

Jared Brown Bros., 56 S. Squirrel Rd., Auburn Hills, MI 48326

Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, NORWAY.

VALVES AND FITTINGS

Cla-Vai Co., P.O. Box 1325, Newport Beach, CA 92663

Derbyshire Machine & Tool, 5100 Belfield Ave., Philadelphia, PA 19144-1788

ERL Marine Products Div., PO Box 1026, New Albany, IN 47151-1026

Hydra-Search Co Inc, 120 Admiral Cochrane Dr, Annapolis, MD 21401-7399

Leslie Controls, 1250 Telecom Dr., Tampa, FL 33637

Loeffler Machine, US #1 & Robbins Ave., Pennel PA 19047

MMC International, 60 Inip Dr, Inwood NY 11696

Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474

Stanley G. Flagg Co., 1020 West High St., Stowe, PA 19464

Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

VAPOR RECOVERY CONTROLS

E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026

VIBRATION ANALYSIS

DLI Engineering Corp., 253 Winslow Way West, Bainbridge Island, WA 98110

T. W. Spaetgens, 156 W 8th Ave., Vancouver BC CANADA V5Y 1N2

Vibranalysis Engineering Corp., 9300 Gamebird, Houston, TX 77034

VIDEO—Training

DNV Petroleum Services, Inc., 111 Galway Pl., Teaneck, NJ 07666

WASTE SERVICES

Browning-Ferris Industry, (Medical Waste Systems) 757 N. Eldridge, Houston, TX 77079

WASTE WATER TREATMENT

Envirovac, 1260 Turret Drive, Rockford, IL 61111

Exstar International Corp., 6502 Windmill Way, Wilmington, NC 28405

WATER PURIFIERS

Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK

Alfa-Laval Separation Inc., 955 Meams Rd., Warminster, PA 18974

Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559

Exstar International, 6502 Windmill Way, Wilmington, NC 28405

Lifestream Water Purification Equip., P. O. Box 634, Huntington Beach, CA 92648

NEI Clarke Chapman Canada, 1975 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA

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Sea Recovery Corp., P.O. Box 2560, Gardena, CA 90247-0560

WEATHER CHART RECORDERS

Alden Electronics, 40 Washington St., Westborough, MA 01581

WEATHER INSTRUMENTS

Aanderaa Instruments, Fanaveien 13B, 5050 Nesttun, Bergen, Norway

Belfort Instruments, 727 S. Wolfe St., Baltimore, MD 21231

WELDING

Aftek Corp., 1023 Pineville Road, Chattanooga, TN 37405

Bug-O-Systems, 3003 W. Carson St., Pittsburgh, PA 15204

Miller Electric Manufacturing, P. O. Box 1079, Appleton, WI 54912

Welding Consultants USA, 10399 Paradise Blvd. #101, St. Petersburg, FL 33706

WELDING AND REFRIGERANT PRODUCTS

Drew Ameroid Marine, One Drew Plaza, Boonton, NJ 07005

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MMC International, 60 Inip Dr, Inwood NY 11696

Markey Machinery Co., 79 South Horton St., Seattle, WA 98134

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, CANADA

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NIM Group Ltd., Hockley Way, Alfreton Trading Estate, Alfreton, Derbyshire DE55 7FA, ENGLAND

Skookum/RopeMaster, P.O. Box 280, Hubbard, OR 97032

Smatco Industries, P.O. Box 4036, Houma, LA 70361

Smith Berger Marine Inc., 516 S. Chicago St., Seattle, WA 98108

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Aanderaa Instruments, Fanaveueb 13B, 5051 Bergen, NORWAY

WINDOWS—Windshield Wipers

GEC-Marconi Electronic Systems Corp., 550 S. Fulton Ave., Mt. Vernon, NY 10550

Hepworth Marine Int'l. Hepworth House-Brook St., Reditch Worcestershire

Eng.B988NF

Marktec, Inc., P.O. Box 999, Pisgah Forest, NC 28768

WIRE AND CABLE

Seacoast Electric Company, 50 Broadway, Hawthorne, NY 10532

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Boston Whaler, 1149 Hingham St., Rockland, MA 02370-0611

Zodiac of N.A. Inc., Thompson Creek Rd., P.O. Box 400, Stevensville, MD 21666

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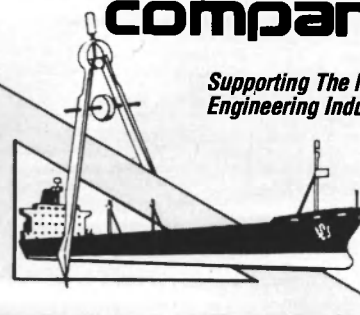
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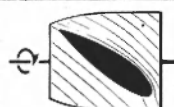
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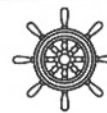
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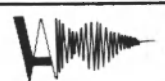
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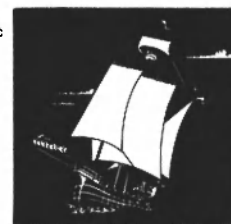
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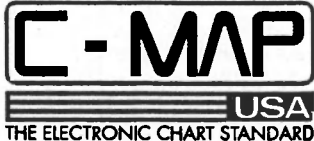
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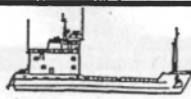
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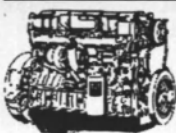
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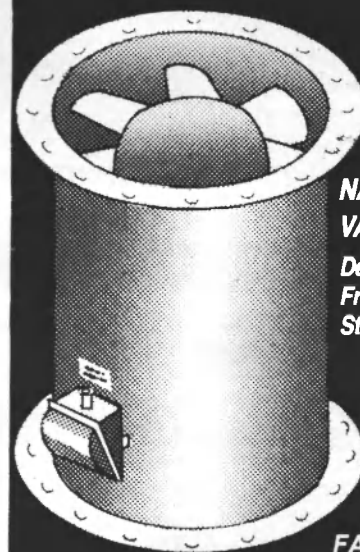


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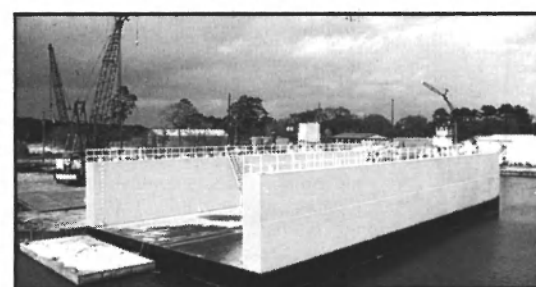
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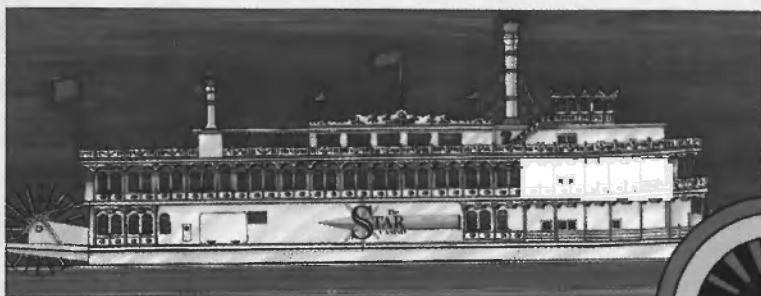
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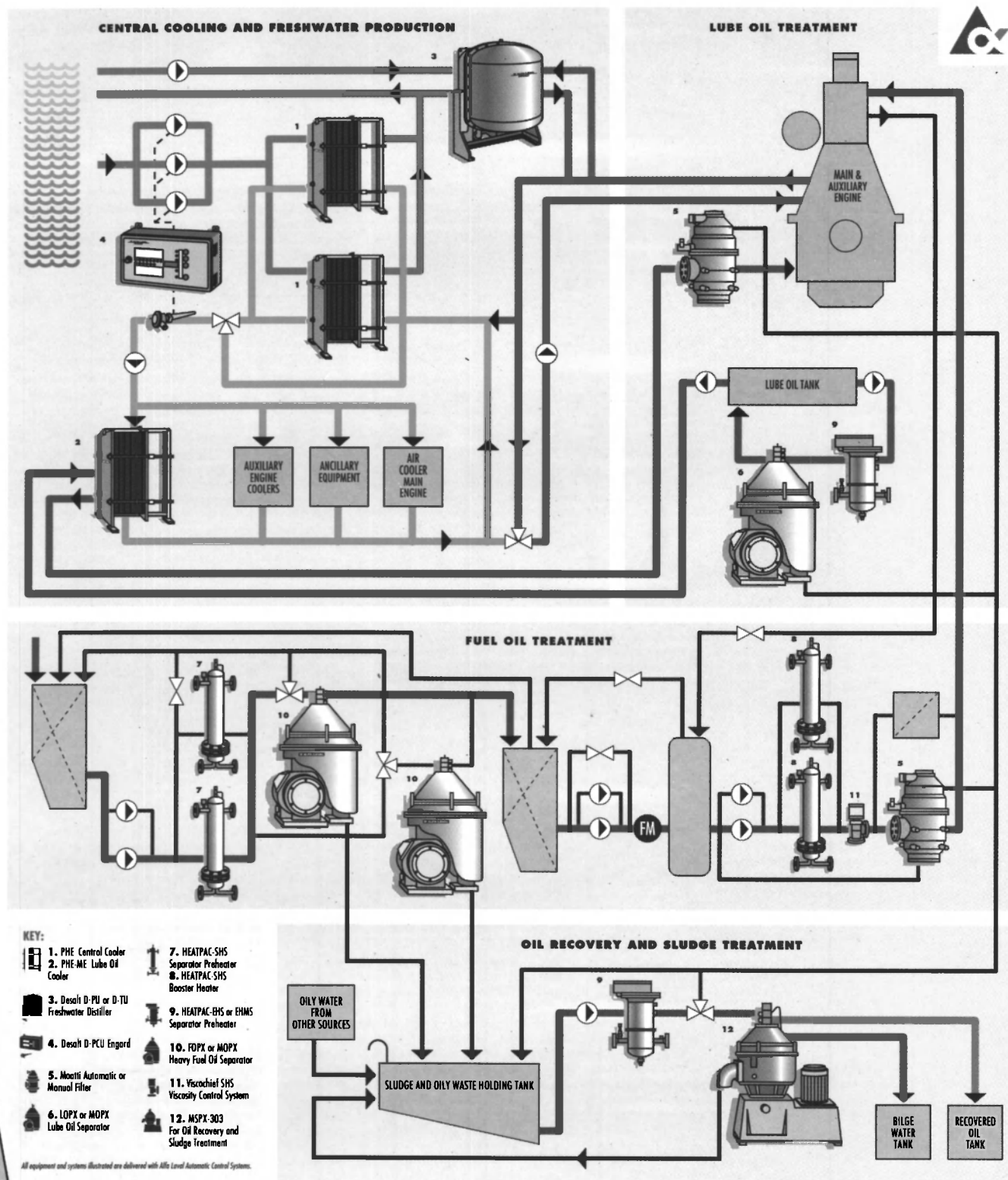
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