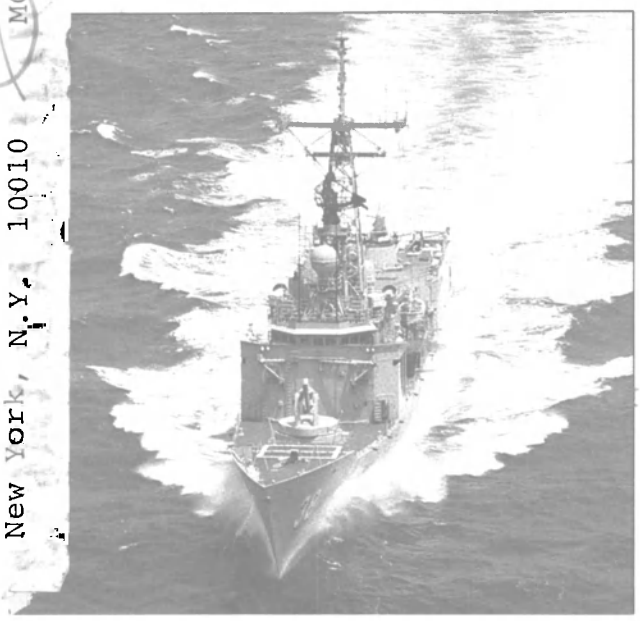
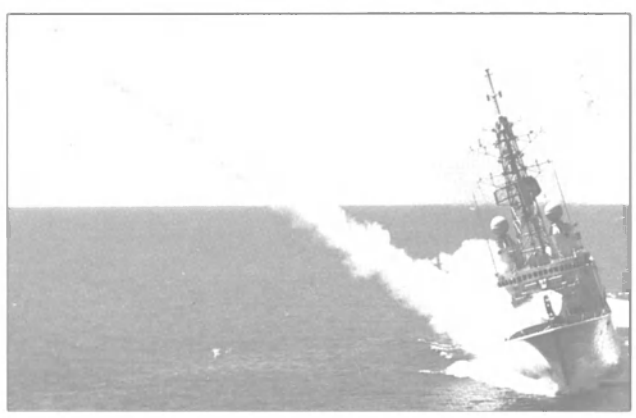
MARITIME REPORTER
AND ENGINEERING NEWS

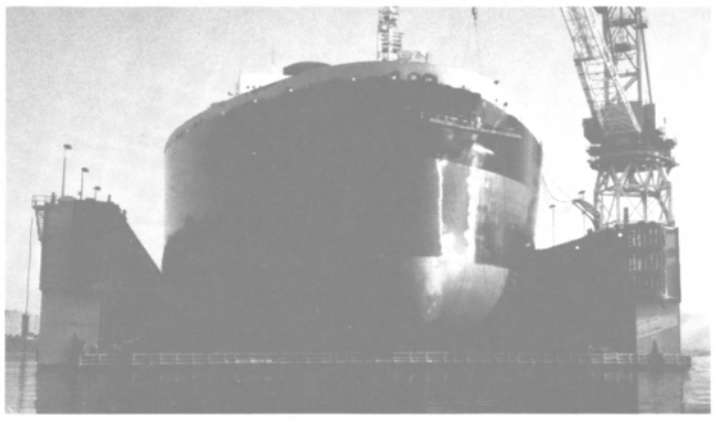




1986 NAVY ANNUAL

FEBRUARY 1, 1986 ISSUE

SPECIALIZING IN BODY-BUILDING, FROM SHRIMPS TO HULKS.

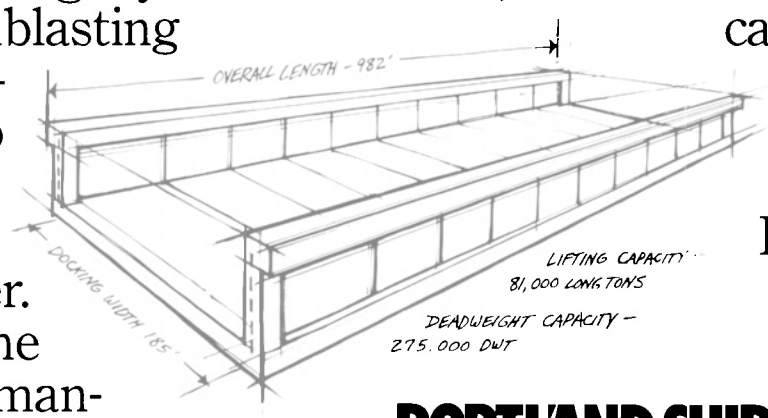


At the Port of Portland, we'll go to any length to get your business. From sandblasting the hull of a 100-ton workboat, to the complete overhaul of a 1,100-foot tanker.

We've got the muscle and the manpower. With four drydocks, and three major marine contractors who specialize in meeting tight schedules, and budgets.

And when it comes to engineering, we'll fabricate anything: barges, ships, massive oil modules you name it.

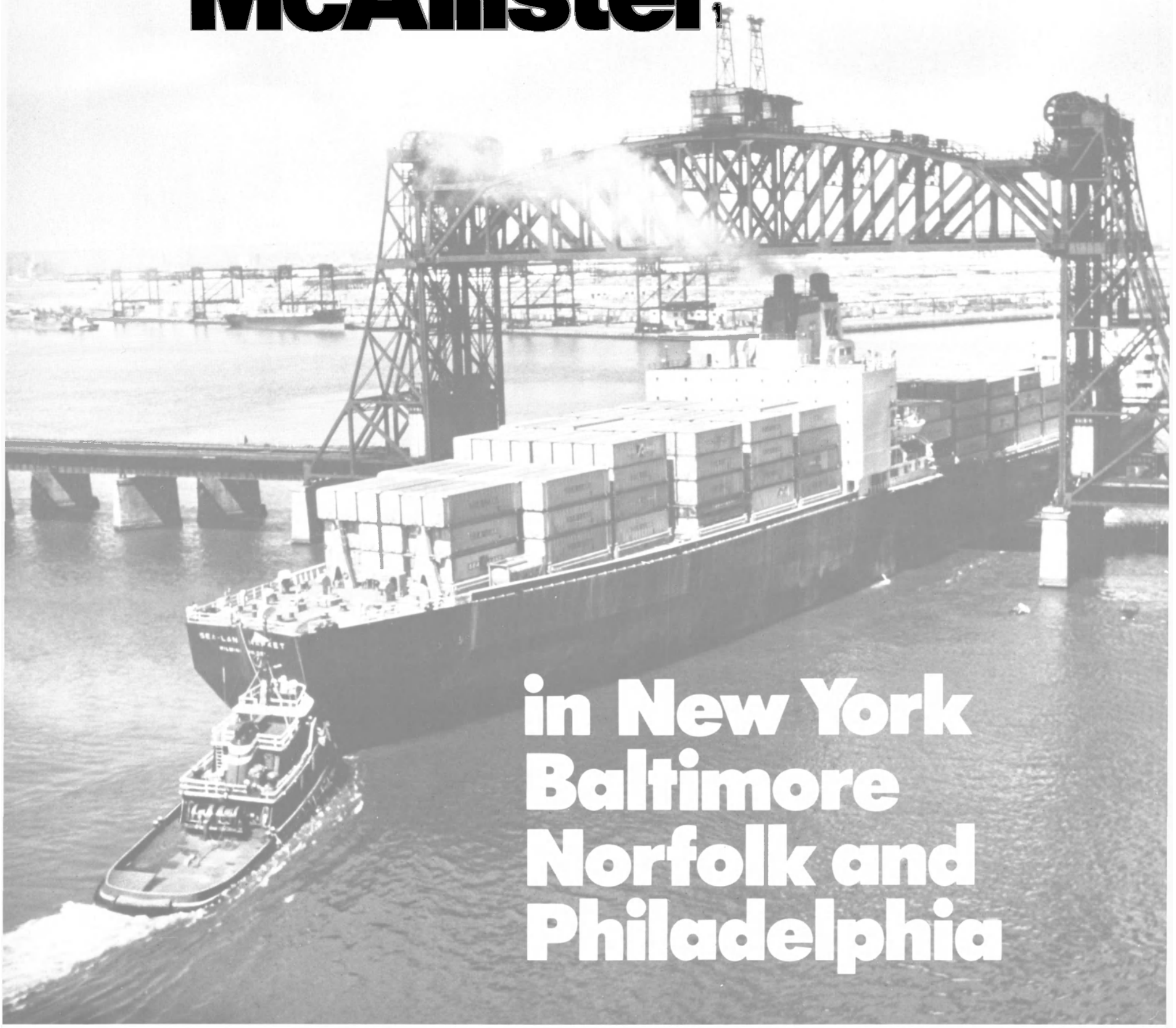
So whether you need emergency repairs, or sophisticated navy work, get a line on the world-class marine specialists here in Portland. For accurate bids and competitive rates, in the continental U.S. call us toll-free at 800-547-8411, extension 526, TELEX 269829 PORT UR.



PORTLAND SHIP REPAIR YARD

Port of Portland

The biggest call on McAllister



Circle 250 on Reader Service Card

McAllister Brothers, Inc. Towing and transportation. 17 Battery Place, **New York, N. Y.** 10004. (212) 269-3200.
Baltimore (301) 547-8678 • **Norfolk** (804) 627-3651
Philadelphia (215) 922-6200 • **San Juan (809) 724-2360**

McAllister

ON THE COVER

RAdm. Demars Nominated Deputy Chief of Naval Operations (Sub Warfare)

Secretary of Defense **Caspar W. Weinberger** has announced that the President has nominated Rear Adm. **Bruce Demars,** U.S. Navy, for appointment to the grade of vice admiral and assignment as Deputy Chief of Naval Operations (Submarine Warfare), OP-02, Office of the Chief of Naval Operations. Admiral **Demars** is presently serving as Assistant Deputy Chief of Naval Operations (Submarine Warfare), OP-02B, Office of the Chief of Naval Operations.

Bethlehem Steel Awarded MarAd Contract To Repair Auxiliary Crane Ship

Bethlehem Steel Corporation's Sparrows Point shipyard was recently awarded a contract for the repair of a Maritime Administration auxiliary crane ship, according to an announcement by the yard's general manager, **David Watson.**

According to Mr. **Watson,** the yard will drydock and repair the recently converted USNS Keystone State (T-ACS-1), a commercially-operated vessel.

A one-time Mariner class cargo ship, the Keystone State is 668 feet long and 76 feet wide. The vessel was previously operated as a containership by American President Lines, and known as the President Harrison.

The ship has been based at the Cheatam Annex naval installation in Virginia and recently completed testing for loading and off-loading capabilities.

The cost of the new work was not divulged.

MARITIME REPORTER and Engineering News

Editorial and Executive Offices
118 East 25th Street, New York, NY 10010
(212) 477-6700 • ITT Telex: 424768 MARINTI

Publishers: JOHN E. O'MALLEY, CHARLES P. O'MALLEY
Editorial Director: CHARLES P. O'MALLEY
Editor: ROBERT WARE
Senior Editor: THOMAS H. PHILLIPS
Associate Editor: JOHN SNYDER
Editorial Coordinator: LILIAN IRVINE
International Editor: ROBIN F. BURNETT, MRINA, MNI, London, England
Advertising Sales Director: JOHN C. O'MALLEY
Regional Sales Managers: LISA WILLIAMS, SHARI L. LINKER
Production Manager: MARGE SULLIVAN
Circulation Manager: M. SOTTILE

Advertising Circulation and Sales Offices
118 East 25th Street, New York, NY 10010
Telephone (212) 477-6700

REPRESENTATIVES

Italy — **MR. VITTORIO F. NEGRONE**
Ediconsult Internazionale
Piazza Fontane Marose, 3-16123 Genova, Italy
Telephone: (010) 543.659-268.334-268.513
Telex: 211197 EDINT I

Scandinavia — **MR. STEPHAN R G ORN**
AB Stephan R. G. Orn
Box 184, S-271 00 Ystad, Sweden
Telephone 0411-184 00
Telex: 33335 Orn S

West Germany — **MR. WOLF O. STORCK**
Schiffahrtswerbung Karl-Otto Storck
Stahlwiete 7, 2000 Hamburg 50,
Federal Republic of Germany
Telephone 040/850 0071

United Kingdom — **MR. MICHAEL J. DAMSELL**
Euromedia, Ltd.
P.O. Box 122, Haywards Heath
West Sussex RH16 1YF, England
Telephone: 0444-416845

Korea — **MR. CHRIS MAENG**
IPR Int'l PR, INC.
Yongsan
P.O. Box 100
Seoul, Korea
Telephone: 273-7765
Telex: MOCNDM K23231

Japan — **MR. TOSHIO EGUSA**
Publinetwork, Inc.
Room No. 206 Pegasus Mansion
21-7, Hakusan, Bunkyo-ku, Tokyo 112 Japan
Telephone: 03 (812) 2406
Telex: 02722469 EVERAD J

MARITIME REPORTER AND ENGINEERING NEWS

118 EAST 25th STREET
NEW YORK, N.Y. 10010
(212) 477-6700
Telex: MARINTI 424768
ESTABLISHED 1939

ISSN-0025-3448
No. 3 Volume 48

Maritime Reporter/Engineering News is published the 1st and 15th of each month except monthly in April, June, November and December by Maritime Activity Reports, Inc. Mailed at Second Class Postage Rates at Waterbury, CT 06701 and additional mailing offices.

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

Member BPA
Business Publications Audit of Circulation, Inc.

ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR.

Bremer Vulkan To Build 2 Bremen Class Frigates For Federal German Navy

A contract was recently signed between the Federal Republic of Germany and Bremer Vulkan Aktiengesellschaft for the construction of two type F 122 Bremen Class frigates. These two additional frigates will be identical to the six delivered during 1982-84.

Bremer Vulkan will construct one of the frigates completely, while the other will be built in cooperation with Thyssen Nordseewerke GmbH, Emden. As in the previous program of six frigates, Thyssen Nordseewerke will construct the hull and perform partial outfit. Final outfit, the integration of weapons and electronics, yard and acceptance trials will be done by Bremer Vulkan.

The vessels have a length of 426.4 feet, breadth of 47.6 feet and depth of 21.3 feet. Propulsion is of the CODOG type with General Electric gas turbines for sprinting and MTU main diesels for cruising. Speed is about 30 knots, and complement is 204.

By the end of the 1980s these two additional frigates will replace the aging F 120 class frigates Augsburg and Luebeck.

Key Appointments Announced By Kollmorgen

William H. Taylor was named vice president of engineering for Kollmorgen Corporation's Electro-Optical Division. During his 21 years with Kollmorgen, Mr. **Taylor** has played a major role in the design and development of submarine periscopes and vehicle sights, the Division's principal systems. He is the author of several technical papers and patents, and is active in the leadership of various professional societies including OSA, SPIE and IRIS.

Also announced by the division were the appointments of **Lawrence R. McPhee** as director program management, **Daniel F. Desmond** as vice president special programs, **John S. Toppin** as vice president operations, **H. Kenyon Bixby** as director quality assurance, **Charles R. Gregory** as director industrial relations and **Shanley J. Wilde** as vice president finance.

Study To Evaluate Tanker-Based FPSO For Gulf Of Mexico

Brain Watt Associates, Inc. (BWA) of Houston, Texas, in conjunction with H.O. Mohr & Associates, Inc., Coflexip & Services, Inc., and Noble, Denton & Associates, Inc. has announced the initiation of a joint industry study assessing a tanker-based floating production, storage, and offloading system (FPSO) for the Gulf of Mexico. The eight-month project is being sponsored by seven oil companies.

Primary focus of the study is the large number of deepwater leases that are remote from existing pipeline infrastructure. The study will address the development of an inexpensive production system in terms of initial costs, operation, and maintenance. Key technical issues are the risers, mooring system, fluid swivels, and the riser-tanker interface. Study criteria include system installation in water depths of 3,000 feet and production of 15,000 BOPD from eight wells.

BWA will utilize its new RISCOM/FREECOM time domain and frequency domain riser analysis program library in the design of the riser systems. BWA personnel with hands-on experience with tanker-based systems and projects in the Philippines, Brazil and the North Sea will be coordinating this effort.

This project follows the successful completion of a 10-month study involving the use of semisubmersible-based floating production systems for deepwater Gulf of Mexico leases.

Completion of the tanker FPSO project is targeted for July 1986, and will provide the operator with a data base from which FPSO systems can be evaluated for site specific application. The cost of the project is $43,000 per company.

Additional interested parties are welcome to join the program and should call **Rick Davis** at Brian Watt Associates, Inc. (713) 590-9955.

Marinette Marine Delivers Last Of 52 Workboats A Year Ahead Of Schedule

Marinette Marine Corporation's contract with the Naval Sea Systems Command for fifty-two 50-foot workboats was completed one year ahead of contract schedule when the last workboat departed the Wisconsin-based shipyard in December of 1985 for delivery to the West Coast. One vessel per week has been delivered to the East and West Coasts since November 2, 1984.

The original contract for 28 vessels was awarded to Marinette Marine in February 1984, and an option contract for 24 additional vessels was awarded in November 1984. The workboats are of steel construction with an overall length of 50 feet, a beam of 14 feet 4 inches, and a full load draft of 3 feet 6 inches. The twin-screw craft is powered by a pair of 8V-71 GM engines.

Marinette Marine Corporation, now in its 43rd year of operation, is a company of marine design engineers and shipbuilders specializing in the design and construction of defense related marine vessels, and high technology commercial craft.

For further information on Marinette Marine,

Circle 7 on Reader Service Card

Rambert Appointed Product Manager-Power Generation For Waukesha Engine

Fred J. Rambert

Fred J. Rambert has been appointed product manager-power generation for Waukesha Engine Division, Dresser Industries, Inc. In this capacity, he will be responsible for Waukesha's power generation marketing activities worldwide.

Mr. **Rambert** joined Waukesha Engine in 1977, and has served as senior application engineer. Prior to that, he was employed by Eaton Corporation and IBM.

Waukesha Engine Division manufactures heavy-duty diesel and gas engine for the petroleum, marine, off-highway equipment and power generation markets.

CACI Awarded Coast Guard Contract To Design And Build Hyperbaric Chambers

CACI, Inc.-Federal has been awarded a U.S. Coast Guard contract for the design and fabrication of two portable aluminum recompression chambers. The work will be performed at the firm's Alexandria, Va., facilities. The first unit will be deployed in May this year aboard the icebreaker Polar Star; the second will be assigned later.

Free Color Brochure From Armco Describes Aquamet Shafting Line

Armco Aquamet, a family of proprietary stainless steel boat shafting materials, is featured in a new, full-color brochure from Armco's Specialty Steels Division, Middletown, Ohio.

Descriptions of each shafting material—Aquamet 17, 18, 19 and 22—include each shaft's benefits and application ranges. The brochure describes how the division's precision rotary forge, melting facilities, and shaft-turning equipment produce shafts up to 38 feet in length and up to 15 inches in diameter.

A postage-paid reply card is included in the brochure for ordering complete boat shafting property, design, and application data. Also listed are Armco's Specialty Steels Division sales offices.

To obtain a free copy of this new brochure,

Circle 77 on Reader Service Card

Boston Fuel Acquire Assets Of Boston Towboat Co.

Boston Fuel Transportation, Inc. and Midland Enterprises, Inc. announced recently that Boston Fuel Transportation has entered into a contract to acquire the vessels, real estate, and other assets of Boston Towboat Company, a Midland subsidiary, for an undisclosed amount of cash. The agreement was reached after months of negotiations with several prospective purchasers.

Boston Fuel Transportation, an affiliate of the Reinauer Transportation Companies, was founded in 1932 and provides shiphandling services, petroleum transportation, as well as general and coastwise towing throughout the Northeast. Commenting on the transaction, **Harold A. Reinauer,** chairman, said that the addition of Boston Towboat's two 2,000-horsepower and two 3,000-horsepower tugs significantly enhances Boston Fuels capabilities, expanding its fleet to 15 tugs and enabling the company to handle any vessel which may call on the port.

Midland Enterprises, headquartered in Cincinnati, is one of the nation's largest barge carriers, operating primarily on the inland waterway. Midland is a subsidiary of Boston-based Eastern Gas Associates.

M.A.N.-GHH To Build Floating Drydock For Polish Shipyard

The recent order received by M.A.N.-GHH of Oberhausen, West Germany, for a 33,000-ton floating dock to be built for Gdanska Stocznia Remontowa shipyard in Gdansk, Poland, is a continuation of a long and and successful collaboration. The very first floating dock supplied by GHH was completed for a Gdansk customer in 1877. The Dock is still in service today, though it has been moved to Howaldtswerke-Deutsche Werft AG in West Germany.

Contract price of the new dock is about $20 million. It will have an overall length of 800.5 feet, length over keel blocks of 771 feet, inside width 148.3 feet, and depth to upper deck of 59 feet. Water depth over keel blocks with the dock immersed will by 31.8 feet

When launched in October this year at GHH's Blexen dockyard on the lower Weser River, the dock will be delivered to the Polish trading company Navimor.

British Broker Reports Surge In Tanker Rates, Fall In Laid-Up Tonnage

London shipbroker **E.A. Gibson** said that the tanker market closed 1985 "on the highest note for some time," with a surge in freight rates during the last two months of the year. As a result, some Greek shipowners are buying secondhand tonnage at a brisk rate. Laid-up tonnage is at a three-year low, orders for new tankers are very scarce, and scrapping continues to boom.

Some freight rates, in particular for tonnage in the 80,000 to 100,000-dwt range, doubled during December, producing a spinoff to other sectors including ULCCs and VLCCs. During the last few weeks of the year, Greek owners snapped up about a dozen of the huge crude carriers, making their total purchases during the second half of 1985 more than seven million dwt.

The ULCCs are going at bargain prices. Thassos Maritime Enterprises bought the 392,000-dwt Berlin, which cost $75 million to build 10 years ago, for about $5 million. The tanker has been laid up for the past two years in a Norwegian fjord.

Some 15 VLCCs have been taken out of lay-up along the Greek coast to capitalize on the rising frieght rates and lower operating costs. They will sail through the Suez Canal in ballast to load crude oil in the Arabian Gulf during the next two months.

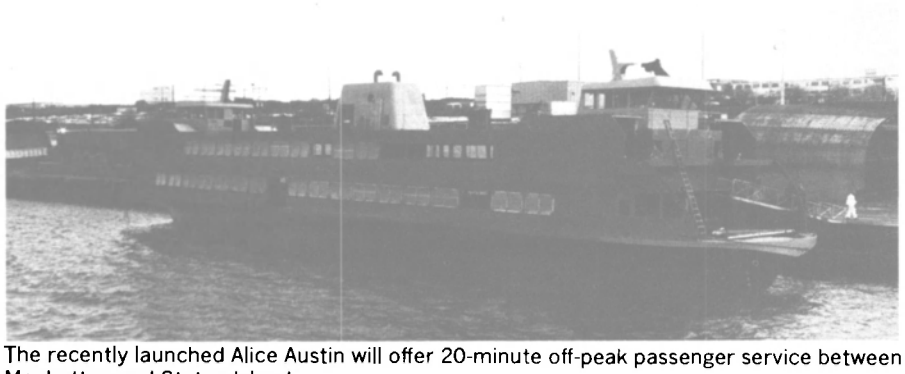
"We feel more confident of owners' fortunes in 1986 than we did at the beginning of 1985," Mr. **Gibson** said.

Hutchins Appointed Manager-Commercial Lubricants At BPNAP

BP North America Petroleum has announced the appointment of **Hill Hutchins** as manager, commercial lubricants. In his new position, Mr. **Hutchins** will be located at the company's headquarters in Houston, Texas.

Mr. **Hutchins** joined BP North America Petroleum in 1983. Prior to joining BPNAP, he had served for 17 years with Mobil in various marketing positions.

BP North America Petroleum Inc. is a subsidiary of BP North America Inc., and markets marine fuels, marine and industrial lubricants and aviation fuels throughout the United States.



The recently launched Alice Austin will offer 20-minute off-peak passenger service between Manhattan and Staten Island.

Robert E. Derecktor Launches First Of Two Staten Island Ferries

Robert E. Derecktor of Rhode Island, Inc., in Middletown, R.I., has launched the first of two passenger ferries for the City of New York Department of Transportation, Bureau of Ferry and General Aviation Operations. The $3.8-million Alice Austin has been designed for year-round operation in New York Harbor area, and its primary use will be for off-peak passenger travel between Manhattan and Staten Island.

The Alice Austin is an all-welded steel hull and superstructure double-ended ferry utilizing twin Voit Schneider Model VSP-24611/165 propulsor units, each driven by Caterpillar Model 3516TA engines rated at 1,410 bhp at 1,600 rpm. The 207-foot ferry has a beam of 40 feet, depth of 33 feet to the sundeck, molded draft of 8 feet, and will accommodate a maximum passenger load of 1,280 persons on two decks with fixed seating provided for 930 passengers. A small concession stand will be located on the upper deck.

A pilothouse with navigation, steering and propulsion controls are located at each end of the vessel.

The Alice Austin will be delivered in the spring of this year.

For further information on Robert E. Derecktor's facilities and services.

Circle 21 on Reader Service Card

Beth-Sparrows Point Yard Installs $1.1-Million Intermediate Gate For Building/Vessel Servicing Basin

The Sparrows Point shipyard of Bethlehem Steel Corporation has completed the construction and installation of a $1.1-million intermediate gate for its 1,200-foot-long building and vessel servicing basin. The gate, shown in one of two fixed locations in the basin, will provide a savings to the yard when working on the smaller vessels that are more prevalent in today's construction and repair market.

With the gate in place, one or both smaller sections can be used. Placed in one position, the gate will provide two sections of 300- and 900-foot lengths. In the other position, it divides the basin into sections of 685- and 515-foot lenghts. If a vessel is drydocked in the inboard section, for example, just the outboard section can be flooded while another vessel is floated in to be drydocked or floated out upon completion.

The gate was made in three sections—each weighing more than 70 tons—so that a section can easily be moved in a single crane lift. It was designed by Century Engineering, Inc. of Towson, Md., fabricated by Bethlehem craftsmen and put in place during the third week of December.

For further information on Bethlehem Steel's Sparrows Point shipyard,

Circle 19 on Reader Service Card

New Names Announced For Wärtsilä Diesel Units —Brochures Offered

In other to standardize the names of the Wärtsilä Diesel production units and sales companies, the following changes have been made:

The new official name of the Turku Diesel Works is Oy Wärtsilä Ab Turku Factory, and the new name of Nohab Diesel AB i Trollhattan, Sweden, is Wärtsilä Diesel AB.

Wärtsilä Diesel's other production units are Wärtsilä Vasa Factory in Vaasa, Finland, Wärtsilä Diesel Normed in France and Wärtsilä Power Singapore.

The names of Wärtsilä Diesel's sales companies in the U.S.A., the U.K. and the Federal Republic of Germany have also changed. The new names are: U.S.A.—Wärtsilä Diesel, Inc. (offices in) New York, New Orleans and Houston; U.K.—Wärtsilä Diesel, Ltd., and Federal Republic of Germany—Wärtsilä Diesel GmbH.

The changes do not affect the operations of these units, and there are no changes of address.

Wärtsilä Diesel is one of the world's leading manufacturers of medium-speed diesel engines. Its engine types include the Wärtsilä Vasa 32 and 22 developed at the Vasa Factory and the Wärtsilä Nohab 25 developed at the Trollhattan Factory. The Turku Factory makes medium-speed Sulzer and Pielstick engines and low-speed Sulzer and M.A.N.-B&W engines under license.

For further information,

Circle 96 on Reader Service Card

J. K. Markey Named Manager At BPNAP

BP North America Petroleum has announced the appointment of **J. K. (Kent) Markey** as manager, wholesale marketing, effective immediately. Mr. **Markey** will be located in Houston, Texas at the company's headquarters.

Mr. **Markey** joined BPNAP in May of 1985. Prior to joining BPNAP, he had served for 35 years with Conoco in various marketing positions in several southern states. For the past 12 years he was responsible for Conoco's unbranded sales in the 35-state marketing area.

BP North America Petroleum Inc. is a subsidiary of BP North America Inc., and markets gasoline, # 2 fuel/diesel, kerosene, marine fuels, marine and industrial lubricants and aviation fuels throughout the United States.

HIAB-FOCO Delivers Two Service Cranes To North Sea Oil Project

Two hydraulic service cranes have been supplied by HIAB-FOCO of Sweden to Norway's Gullfaks oilfield project in the North Sea. The cranes, both HIAB 180 Sea Crane units, were specially designed for use on tanker loading facilities in the North Sea. Both will work on the field's two single-point mooring (SPM) system.

The units offer the unusual combination of a two-ton crane winch for general lifting purposes and a 500-kg high-speed winch for load lifts from water level up to the rotating deck.

The Gullfaks SPM systems arearticulated column structures that comprise a steel tower fixed to the seabed by a universal joint and topped by a circular deck for crude oil transfer to tankers. On this type of installation, the HIAB-FOCO Sea Crane knuckle-boom principle provides the advantages of light weight and a compact foldaway configuration. Other benefits of the models include direct hook lift, load control, all-around slewing and a large working area.

The Sea Crane series is designed for offshore use in the rough North Sea, and reportedly is the only knuckle boom crane for marine use with Lloyd's Register approval.

In addition, the cranes delivered to Gullfaks are manufactured to Det norske Veritas standards and meet the requirements of the Norwegian Maritime and Petroleum Directorates.

For further information on HIAB Sea Cranes including a color brochure and technical data,

Circle 5 on Reader Service Card

ITT Awarded $14.5-Million Contract For Voice Terminal Unit

ITT Corporation, Defense Communications Division, Nutley, N.J., was awarded a $14,463,600 firm-fixed-price contract for the production of the Advanced Narrowband Digital Voice Terminal (ANDVT) including the basic terminal unit and accessories for ship, air and shore use.

The work will be performed in both Melbourne, Fla. (80 percent) and Nutley (20 percent), and is expected to be completed June 30, 1990. The Space and Naval Warfare Systems Command, Washington, D.C., is the contracting activity (N00039-86-C-0032).

Aegis cruiser Thomas S. Gates slides into the Kennebec River after recent christening. She is largest combatant ship built by BIW in its 101-year history.

Bath Iron Works Launches Its First Aegis Cruiser

A new era of Navy shipbuilding was ushered in at Maine's historic Bath Iron Works (BIW) yard recently with the launching of the Aegis guided missile cruiser Thomas S. Gates (CG-51), signalling BIW's entry into the Ticonderoga Class shipbuilding program.

The Maine shipyard currently has contracts for six Aegis cruisers, and will continue to bid for additional ships of the class. BIW also has been selected by the Navy to design and build the lead ship of the new Aegis guided missile destroyer class, the Arleigh Burke (DDG-51). This ship is scheduled for launching in 1988. The Aegis cruiser/destroyer program is expected to extend to the turn of the century and perhaps beyond.

Bath Iron Works, a builder of Navy and commercial ships since 1884, looks to the Aegis program to replace the construction activity and employment generated by the Navy's FFG-7 guided missile frigate program that the yard initiated in the early 1970s. After designing and building the lead ship of that class, the Oliver Hazard Perry, BIW secured contracts for 23 additional FFGs. The last of those ships will be delivered this year.

The principal speaker for the Gates launching ceremony was Adm. **Elmo R. Zumwalt Jr.,** who was Chief of Naval Operations when he retired from the Navy in 1974. Since his retirement, Adm. **Zumwalt** has remained in the public eye as a spokesman for the maintenance of proper balance of power between the United States and the Soviet Union.

Other participants in the program included Sen. **George J. Mitchell** (D-ME); Vice Adm. **William H. Rowden,** commander of the Naval Sea Systems Command; Vice Adm. **Joseph Metcalf III,** deputy naval operations for surface warfare; Rear Adm. **Donald P. Roane,** deputy commander for surface combatants; Rear Adm. **John F. Shaw,** Aegis shipbuilding manager; and Capt. **William A. Rehder,** supervisor of shipbuilding, conversion and repair, Bath.

The ship that was launched is named in honor of the late **Thomas Sovereign Gates, Jr.,** former Secretary of the Navy (1957) and Secretary of Defense (1959) under President Eisenhower. After 14 months as Secretary of Defense, Mr. **Gates** left the Pentagon and became president of Morgan Guaranty Trust. In 1965, he became the firm's chairman and chief executive officer. He died in 1983 at the age of 77.

His widow, Mrs. **Anne Gates,** served as the ship's sponsor. Her granddaughter, **Sarah C. Scott,** was maid of honor.

For complete information on all Bath Iron Works facilities and services,

Circle 24 on Reader Service Card

16-Page Catalog On Expansion Joints Offered By Unaflex

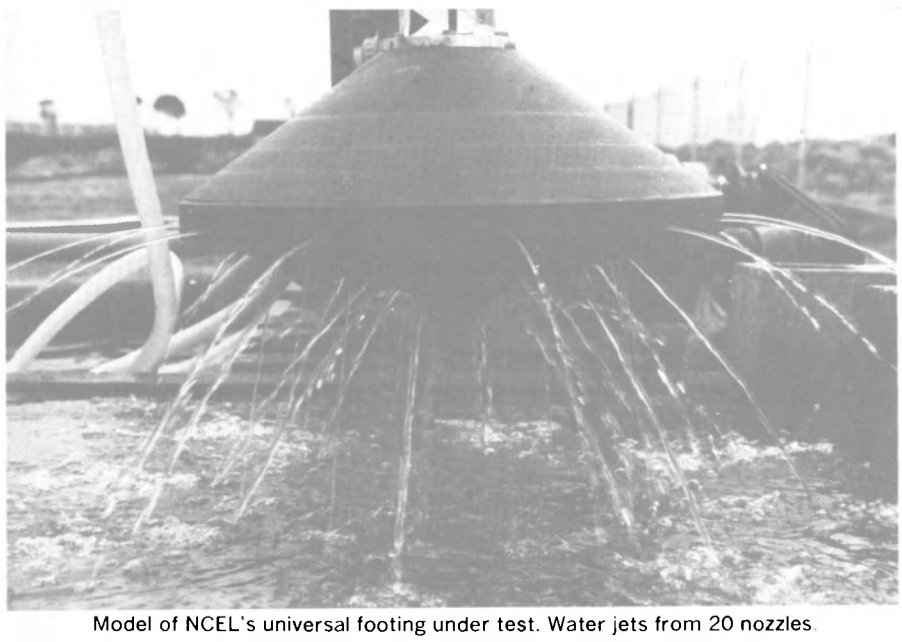
A new 16-page catalog describing design, application and selection of metal expansion joints and flexible connectors is available from Unaflex Rubber Corporation of Ft. Lauderdale, Fla.

Unaflex provides a complete line of both metal and rubber expansion joints for use in power generation, water and waste treatment, refining, food processing, pulp and paper production and heating, ventilating and air conditioning.

Unaflex is the only American manufacturer of both stainless steel and rubber bellows-type expansion joints.

The catalog is available at no charge. For your copy,

Circle 2 on Reader Service Card



Model of NCEL's universal footing under test. Water jets from 20 nozzles.

Water Jetting System To Install Steel Pilings Developed By Navy

The U.S. Navy is developing a unique universal footing that uses a novel internal water jetting system to install steel foundation pilings in all types of seafloors, more quickly and more economically than present methods.

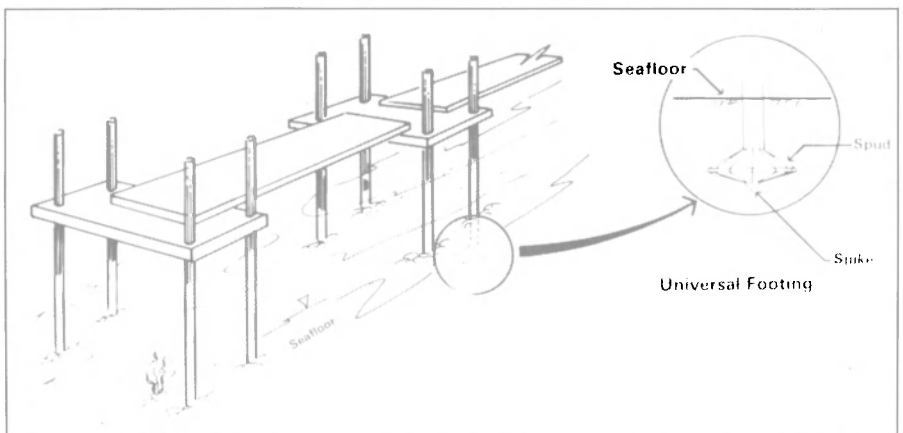
The Naval Civil Engineering Laboratory (NCEL) at Port Hueneme, Calif., designed the new concept primarily for the Navy's Advanced Cargo Transfer Facility (ACTF), under construction at the research and development center. Supported by a series of pilings placed into the seafloor, the ACTF will extend more than 2,500 feet from the shore into the ocean, to containerships berthed in water depths of 50-60 feet. Cargo will be unloaded directly for transfer across the facility to storage areas ashore.

The ACTF poses installation problems because installers did not have the luxury of changing or modifying footings. The NCEL universal footing system provides a one-foundation capability for all seafloors—clay, silt, sand, gravel, coral, and rock. The system consists of three parts: spike, spud can, and an internal jetting element. The cone-shaped spike supports the structural weight when the footing is deployed into the rock or coral seafloors. Made of high-strength steel, the spike also guards against sliding.

The spud can is an enlarged footing base that supports the piling in soft sediment (mud, silt, and sand) and reduces the required pile length. When embedded, the spud can provides major resistance against sliding, bearing failure, and pullout.

The internal jetting system fluidizes (suspends and hangs in water) the soil around the footing. This action allows the footing to move downward through the sediments until it is buried by its own weight. If the footing is placed on a sand or silt seafloor, the downward jetting of water will fluidize the sediments and induct footing penetration. Both upward and downward jets may be activated for retrieval of the footing.

Dr. **Sheng S. Lin,** a senior civil engineer at the NCEL and developer of the concept, said the system features 20 nozzles—16 holes in the bottom of the spud and four on the spike. Tests of a model footing (photo) reveal that the universal footing can be buried by its own weight. At a water pressure of 60 psi and flow rate of 60 gpm, the footing can penetrate soft sediments at two feet per minute. It takes 12 minutes to gain equal penetration with a jet flow rate of 35 gpm. Pullout forces of the footing decrease from 1,200 pounds without jetting to 200 pounds with 60 gpm.



Drawing of NCEL universal footing attached to piling on Navy's Cargo Transfer Facility.

Carlsen Appointed Product Manager At Amhoist

Wally Fisk, president of Marine/Energy Products Group, announced the appointment of **Jim Carlsen** as product manager-Lucker Products.

Mr. **Carlsen** will be responsible for coordinating marketing and engineering for the Lucker product line of continuous and intermittent pulling machines, reporting directly to **Dick Juelich,** vice president—Marine/Energy Products.

Mr. **Carlsen** comes to Amhoist after having served as an independent consultant to companies involved in the offshore industry and was formally president of the Marine/Energy Division for Conmaco, Inc., Kansas City.

USCG And ASNE Flagship Section Sponsor Patrol Boat Symposium

A Patrol Boat Symposium sponsored by the U.S. Coast Guard and the Flagship Section of the American Society of Naval Engineers will be held Thursday and Friday, March 13-14, at the Sheraton Crystal City Hotel, Arlington, Va.

Vice Adm. **Benedict L. Stabile,** vice commandant, U.S. Coast Guard, will deliver the symposium's keynote address on Thursday.

Technical areas to be addressed by government and industry experts from the U.S., U.K., and European continent include fast-attack-craft hull forms, hull-form hydrodynamics, special-warfare craft, combat-patrol-boat topside design, hydrofoil combatants, design and construction of Coast Guard 110-foot patrol boats, combat system tradeoffs, gas turbines and diesel engines for patrol boats, gun mounts, patrol boats for foreign military sales, 95-foot Coast Guard patrol boat, and operational performance of patrol craft.

For more information concerning the technical program, please contact Capt. **Richard A. Walsh,** USCG at (202) 426-1220; and for general information, Cdr. **David E. Prosser,** USCG at (202) 426-1291.

Webber Appointed Vice Admiral And U.S. Navy's Chief Engineer

James H. Webber has been promoted to vice admiral and assigned as chief engineer of the Navy. In making the announcement, chief of naval operations Adm. **James D. Watkins** said the appointment "sets a new tone for the Engineering Duty Officer Corps, and reaffirms the critical importance of technical excellence in the Navy." He described technical engineering as fundamental to the development and maintenance of an affordable, revitalized U.S. Navy fleet.

As chief engineer, Adm. **Webber** will have primary responsibility for maintaining technical engineering excellence throughout the Naval Sea Systems Command. He will also act as the principal advisor to the NAVSEA Commander, and point of contact with external activities, on the Command's engineering matters. He will also be responsible for setting engineering policy and standards, and insuring that they are met by the program managers for NAVSEA's various ship product lines.

Adm. **Webber** graduated from the U.S. Naval Academy in 1949, and received postgraduate degrees in mechanical engineering and naval architecture from Massachusetts Institute of Technology in 1955.

Automatic Power Offers 20-Page Color Brochure On Marine Signal Systems

Automatic Power, Inc., Houston, Texas, is offering a free 20-page color brochure, reprinted from their 1984-85 composite catalog, on obstruction lights, fog signals and alarm systems.

The brochure, with the use of schematic drawings, black-and-white photographs, charts, illustrations, and design drawings, describes some of the marine signal products produced by Automatic Power, which has more than 60 years of marine signal experience. The brochure contains information on sound signals, NAVAID platform systems, buoys, light systems, marine lanterns, solid state timers, solar power panels, batteries, battery chargers, etc.

The inside of the front cover of the brochure contains the requirements for obstruction lights and sound signals on U.S. offshore structures, as well as a similar chart for the British North Sea (all structures). Also included is a chart for the arrangement of obstruction lights.

The back cover of the publication contains a handy listing of Automatic Power, Inc. sales and service offices.

For a free copy of this brochure on obstruction lights, fog signals and alarm systems from Automatic Power, Inc.,

Circle 12 on Reader Service Card

Captain Hjelde Named VP And GM At Barber

Hans J. Hjelde

Capt. **Hans J. Hjelde** has been named vice president and general manager of Barber Steamship Lines' newly formed Atlantic region, it was announced by **Robert H. Pouch,** president of the steamship agency.

Captain **Hjelde** succeeds **Frank M. Cangemi,** who left Barber January 1 to assume his recently announced appointment as executive director of the Carriers' Container Council.

Associated with Barber Steamship Lines and its affiliates since 1969, Captain **Hjelde** most recently was vice president and general manager of the Mid-Atlantic Region, a position he held since he established the Baltimore office in 1979.

In his new position, he will be based in New York City and will be responsible for overseeing all Barber Steamship Lines' agency operations in New York, Philadelphia and Baltimore.

Johns Hopkins Awarded $24-Million Modification To Previous Contract

Johns Hopkins University, Applied Physics Laboratory, Laurel, Md., is being awarded a $24,066,125 modification to a previously awarded cost-plus-fixed-fee contract for research on tactical/strategic systems, space science, geophysics, biophysics, energy conversion, microelectronics and robotics. Work will be performed in Laurel. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-C-5301).

TeleSystems MCS-9100 Receives Japanese Type Acceptance —Literature Available

COMSAT TeleSystems, Inc. announced recently that its MCS-9100 maritime communications system has received Type Acceptance from the Japanese Ministry of Posts and Telecommunications. The MCS-9100 is one of the smallest, lightest, and most technologically advanced ship earth stations available today. It is also the only ship terminal produced by a United States manufacturer to be type accepted by the Japanese. All ship earth stations must receive Type Acceptance from the Ministry of Posts and Telecommunications before they can be used aboard Japanese-flag vessels.

Located in Northern Virginia, COMSAT TeleSystems, Inc. designs, manufacturers, markets, and provides worldwide support for satellite-based mobile communications and advanced signal processing equipment and systems.

For further literature containing full information,

Circle 25 on Reader Service Card

Williams Named Marketing Director For Bay And Delta Towing Company

Bay and Delta Towing Company of San Francisco has appointed **Rees B. Williams** as marketing director, according to an announcement by BDT president **Magdalena Hoffman.** Formerly president of Western Tug and Barge and California Launch in San Francisco, Mr. **Williams** has more than 30 years of experience in the tug and barge industry.

Bay and Delta Towing is engaged in ship-assisting in San Francisco Bay and Carquinez Strait, and operates the 2,000-bhp Domar Commander and the 2,500-bhp Sonja V., providing 24-hour dispatch service.

With

T
P

MAR

will receive E

Preview Article—T
Technology Confe

More than 50,000 e
of the worldwide
pipelining and sup
issue of MARITIM

AS

A premier Navy ev
neers. A prime con
and maintain and
leading Navy supp
Double issue of M

- **Lead**
- **Lead**

Gulf

This April Double iss
complete preview featur
conferences and shows.
reach MARITIME RE
qualified readership of
shore buyers weeks be
ences, and . . . April D
extra bonus distribution

RESERVE Y
IN THE BIG A

Advertising c

IE Advertisement . . . At ONE Cost

You can Be There

HE BIG APRIL
EVIEW ISSUE
OF
TIME REPORTER

TRA BONUS DISTRIBUTION at both . . .

OTC '86

Houston—May 5-8

pril Double Issue will feature a comprehensive preview of the Offshore ce in Houston, Texas, May 5-8.

neers, scientists and dignitaries are expected at OTC '86. These leaders ore industry will discuss all aspects of offshore drilling, production, . Thousands of exhibits have already been reserved. The April Double EPORTER will be there . . .

NE DAY '86

Washington, DC—May 1-2

sponsored by the highly respected American Society of Naval Engi- area for both civilian and Navy decision-makers who now design, build ir the world's most powerful Navy. Exhibits representing the world's s . . . attended by the world's most influential Navy buyers. The April IME REPORTER will be there . . .

and

Special Features On

ng U.S. Gulf Coast Yards
ng Inland Waterways &
oast Towing Fleets

will contain rticles on both ril Double will RTER's une- rine/Navy/off- e the confer- le will receive oth events.

MARITIME REPORTER has a circulation to marine industry buyers thousands larger than any other marine magazine in the entire world. Your April Double Issue advertisement will reach all these decision makers . . . plus . . . enjoy extra sales building distribution at two of the most important industry events of 1986.

UR ADVERTISING SPACE NOW
PRIL DOUBLE PREVIEW ISSUE

ing date for the April Double Issue is March 11.

ONLY MARITIME REPORTER GIVES YOUR ADVERTISING THESE POWERFUL SALES-BUILDING ADVANTAGES

- **WORLD'S LARGEST** circulation to buying-influence readers.
- **LARGEST U.S.** circulation to buyers
- **LARCEST INLAND/OFFSHORE** (Shallow-draft) circulation to buyers.
- **100% REQUESTED CIRCULATION** . . . in writing . . . by each individual reader.
- **MOST CURRENT CIRCULATION** . . . MR's total circulation is 100% qualified . . . currently . . . all in less than 1 year and 2 years.
- **CIRCULATION TO PEOPLE** Total Circulation Address Analysis . . . 100% addressed to individual people . . . by name and title.
- **CURRENT EDITORIAL** . . . TWICE each month . . . MR publishes latest information first.
- **BEST READ** because it is CURRENT . . . weeks ahead of slower monthlies.
- **UNEQUALLED PASS-ALONC READERSHIP** . . . 5 readers per single copy . . . over 200,000 monthly readership.
- **FREE READER SERVICE CARD**
- **EXCLUSIVE FREE LISTING** for regular advertisers in Buyers Directory section of all 20 issues for one entire year.
- **DIRECT MAIL SERVICE**
- **DIRECT RESPONSE CARD MAILINGS**
- **ANNUAL YEARBOOK ISSUE**
- **ANNUAL MARINE CATALOG**

MARITIME REPORTER AND ENGINEERING NEWS

MARITIME REPORTER/Engineering News
118 East 25th Street, New York, NY 10010
(212) 477-6700

THE ADVERTISING LEADER in 1985, a larger number of advertisers placed more pages of advertising in Maritime Reporter than in the No. 2 magazine.

Maritime Reporter carried more pages of advertising than the No. 2 magazine.

EDITORIAL

IS IT TIME TO TAKE THE PUBLIC SHIPYARDS PRIVATE?

Naval shipyards have been in operation in the U.S. for over 180 years and, with the private sector, share the mission of providing adequate naval and maritime resources to meet national defense requirements in times of peace and conflict. These shipyards both built and repaired naval ships until 1967, when, after it was estimated that naval shipyard building costs were about one-third higher than private yard costs, Congress mandated that all future construction be done by the private sector. Three years earlier, also for reasons of economy and to provide additional work to the private sector during a downturn period, Congress had directed that at least 30% of the Navy's ship overhaul and repair work be allocated to private yards. This combination of actions reduced government-owned facilities to the eight shipyards now in operation.

The status and prospects of the U.S. shipbuilding and ship repair industry, current political economics and the interests of national defense strongly suggest that it is now time to take the next important step in the evolution of the industry: privatization of the government-owned shipyards. Among the many strong arguments favoring this action, economy is still a major consideration. Naval shipyard operating costs are still well above those of the private sector (industry sources estimate they are about 30% higher), making the yards marginally productive in the performance of their mission. Equally important, however, the majority of private shipyards, although more innovative, technologically superior and cost efficient than ever before, are suffering from lack of work and many face closure, jeopardizing the shipbuilding mobilization base essential to national security.

Furthermore, privatization of government shipyards would be in keeping with the current political philosophy that any activity that government cannot do better than the private sector should be divested or contracted out to industry.

In assessing the merits of such an action, a good place to start is with the 1984 Annual Report of the Coordinator of Shipbuilding, Conversion and Repair, Department of Defense, which fully describes the status of the Shipbuilding and Ship Repair Industry of the United States.

Productivity and Efficiency Challenges Met

In a preface, the Coordinator, Vice Admiral **E. B. Fowler,** Commander, Naval Sea Systems Command, states that the Navy and industry have successfully met the challenges posed by the Navy's plan to build a 600-ship fleet by the 1990s:

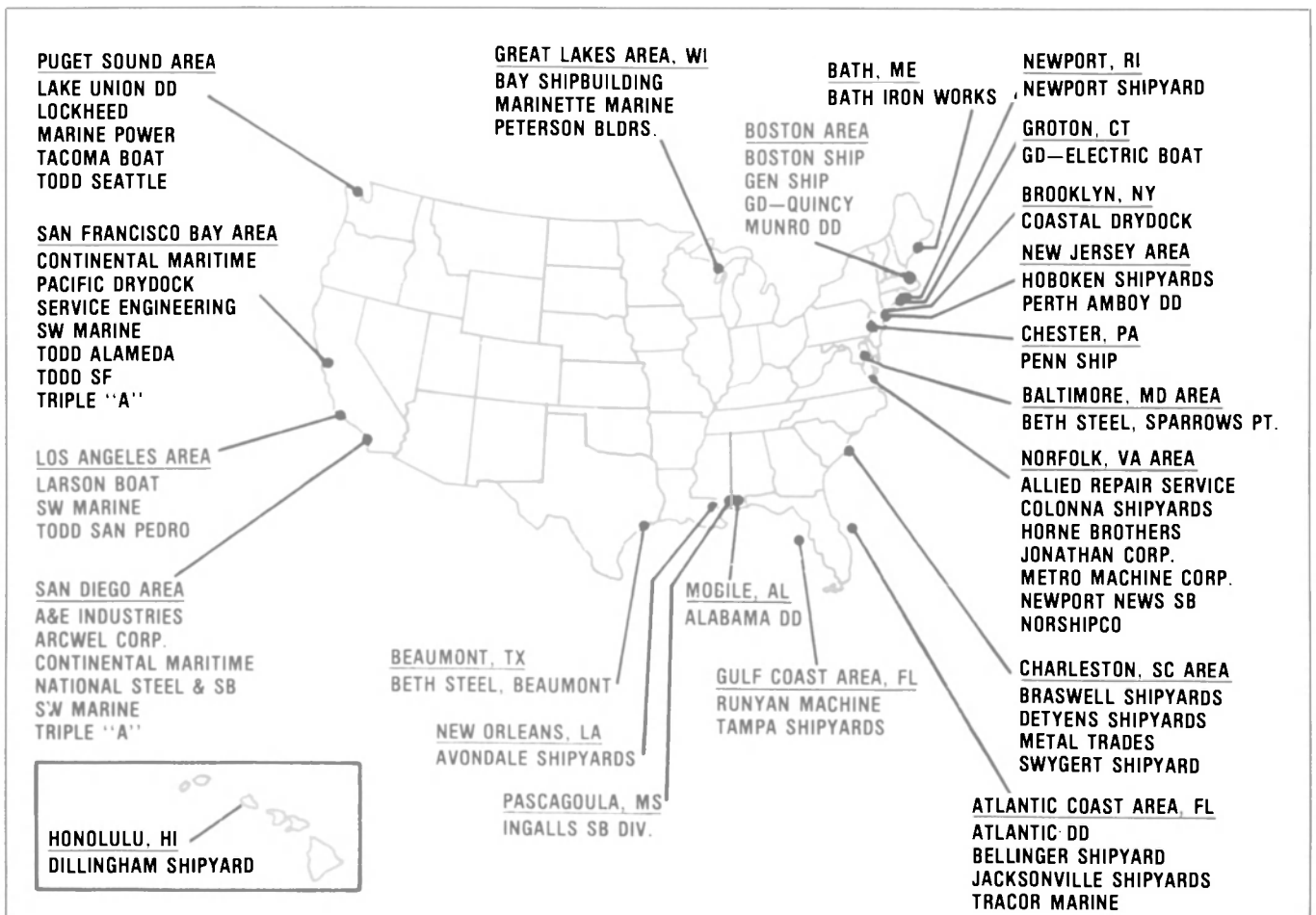
> "The Navy, as the manager of the program, was challenged to assure that proper quality and cost effective ships were delivered in a timely manner. The shipbuilders were challenged to increase productivity and efficiency through innovative planning, modernization and effective utilization of their assets.
>
> "The Navy and the industry have responded positively to these challenges. Progress in the areas of increased competition and improved Navy contractor understanding have been particularly noteworthy.
>
> "For its part, the industry is effectively executing the expanded naval construction program and responding to an increase in the numbers of complex naval ship overhauls and selected restricted availabilities. The industry has clearly demonstrated its capacity to support projected military ship construction and repair programs."

The scope of this challenge has been enormous, requiring extensive worker training, the application of modern engineering and production methods and large capital investments in facility modernization. During 1984, 58 private shipyards were engaged in Navy work: ten performing new construction and conversion, 39 performing overhaul and repair work, and nine providing all four services (Fig. 1). These operations were engaged in constructing 91 ships for the Navy and nine for the Coast Guard, as well as converting 13 ships to Navy use (Fig. 2). In addition, 348 service craft, special warfare craft and standard landing craft were delivered to the Navy, part of 37 separate programs to produce 597 craft and vessels for the Navy, Marines and foreign navies .

Increased Competition

The Navy annual report gives details on the benefits of increased competition for contract awards

(continued)



Source: NAVSEA

Fig. 1 PRIVATE SHIPYARD WITH NAVAL SHIPWORK DURING FY 1984 (Ship Construction, Overhaul, and Repair) (58 Shipyards)

Editorial

(continued)

which Adm. **Fowler** describes as "particularly noteworthy." Navy construction and conversion funding in the fiscal years 1983, 1984 and 1985 amounted to approximately $13.4, $10.2 and $10.9 billions, respectively (Fig. 3).

The improved productivity and efficiency of the private shipyards, motivated by rigorous contract award competition, has resulted in substantial savings on many construction programs. In 1984 and 1985, for instance, over $900 million was saved compared with budget requests for seven SSN688 Class submarines, three LSD auxiliaries and six CG47 Class cruisers. It is likely that aggregate savings on all prior awards have amounted to several $ billions, resulting from factors such as new technologies, modern facilities, series production, automation, steady workloads, and efficient allocation of resources.

Fig. 2 NAVY/COAST GUARD SHIPS UNDER CONSTRUCTION/CONVERSION
(as of 31 December 1984)

Navy/Coast Guard Ships Under Construction

Shipbuilder	Qty.	Class	1985	1986	1987	1988	1989	1990
Avondale Shipyards	4	T-AO-187						
	3	LSD-41						
Bath Iron Works	5	FFG-7						
	4	CG-47						
Bell Aerospace, Textron	1	MSH						
General Dynamics, Electric Boat Div.	9	SSN-688						
	6	SSBN-726						
General Dynamics, Quincy Shipbuilding Div.	5	T-AKX*						
Ingalls Shipbuilding Div.	10	CG-47						
	1	LHD-1						
Lockheed Shipbuilding	3	LSD-41						
Marinette Marine	2	MCM-1						
Newport News Shipbuilding	3	CVN-68						
	9	SSN-688						
Peterson Builders	4	ARS-50						
	3	MCM-1						
Robert E. Derecktor	9	WMEC						
Tacoma Boatbuilding	9	T-AGOS-1						
Tampa Shipyards	5	T-5*						
Todd Pacific, Los Angeles Div.	4	FFG-7						
Todd Pacific, Seattle Div.	1	FFG-7						

Navy Ships Under Conversion

Avondale Shipyards	2	T-AKR						
Bethlehem Steel, Sparrows Point	2	T-AKX*						
Bethlehem Steel, Beaumont	1	T-AKX*						
Continental Maritime (San Fran)	1	T-ACS						
Nat'l Steel & Shipbuilding	2	T-AKX*						
	1	T-AKR						
	2	T-AH						
Todd Shipyards, Galveston	1	T-AVB						
Pennsylvania Shipbuilding	1	T-AKR						

△ Estimated Delivery Date
▲ Actual

* For Charter to MSC, No Navy Construction Funds Involved

Source: NAVSEA/MSC

The same driving force towards improving cost effectiveness does not apply to $ multibillion overhaul and repair segment of the Navy's budget. Funding for Navy overhaul and repair work in fiscal years 1983 and 1984 amounted to $4.4 and $4.6 billions, respectively, of which private shipyards received $1.5 and $1.6 billions. Although private yards must compete for this work, Navy shipyards are allocated work regardless of cost. West Coast Navy yards, for example, receive sufficient work to keep them at the desirable operating level despite the fact that their labor rates (as of Jan. 1, 1984) on the Pacific Coast were 18.7% higher than those of the Navy yards on the Atlantic Coast.If the competitive conditions faced by the private sector had been imposed on these operations five years ago, all would be out of business today.

Lacking comparable cost data, the relative productivity of the public and private shipyards can only be estimated but scrutiny of employment levels in both sectors and of fiscal 1984 budget allocations for overhaul and repair work indicates there's lots of room for improvement. The Navy reported its 1984 employment level was 78,500 (Fig. 4) and the budget allocation $3.0 billion, indicating an output of $38,217 per employee. In the private sector, the Navy reported an employment level of 21,000 (Fig. 5) and a budget allocation of $1.6 billion, or an output of $76,190 per employee.

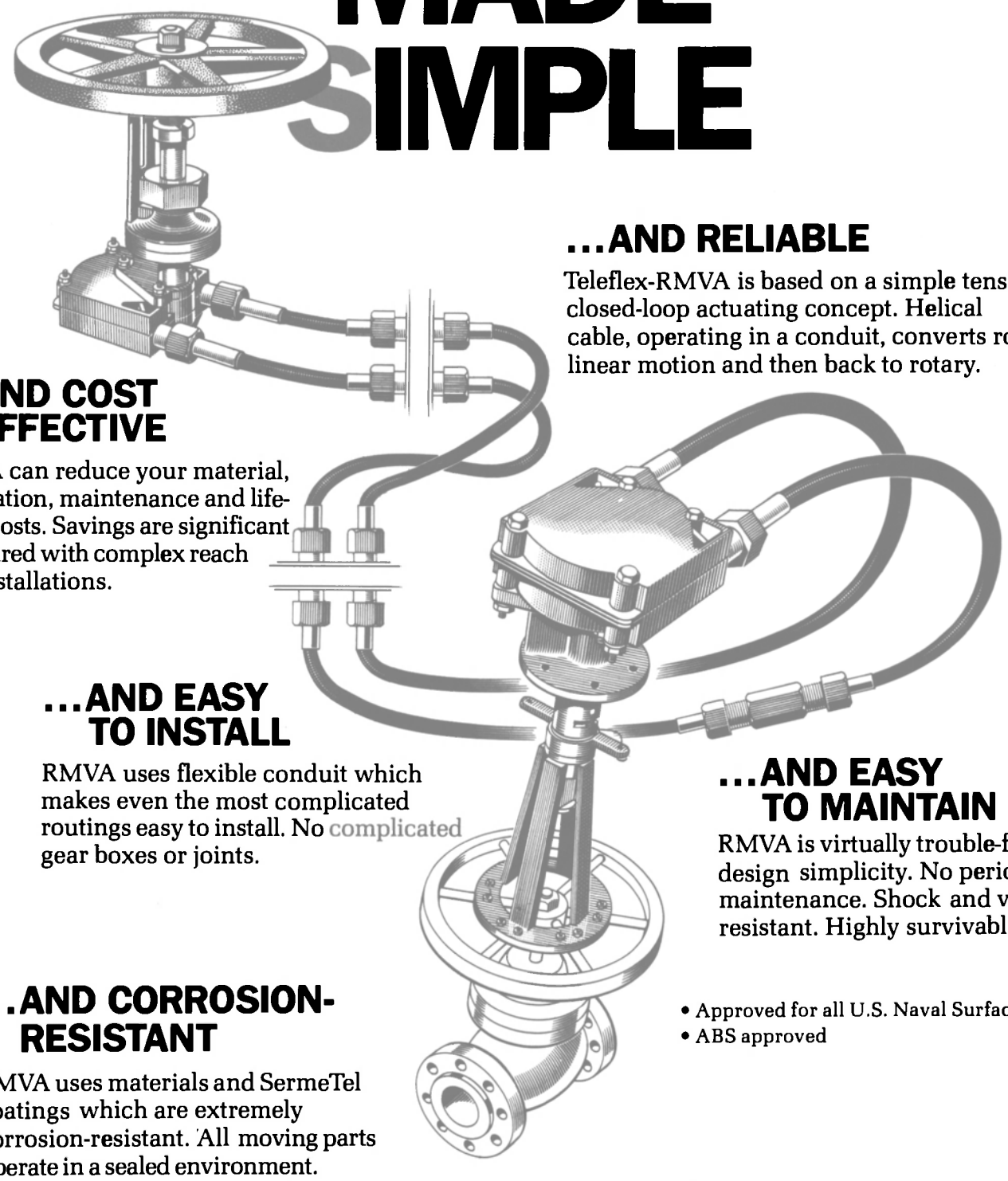
It must be recognized that this comparison exaggerates the true cost relationship between the private and public shipyards by ignoring many costs imposed by the latter's mission requirement to furnish standby surge capacity in case of emergency for all classes of ships. Whatever the true differential may be, however, it is significant enough to further exacerbate the government's budgetary and fiscal difficulties.

Ability to Respond to Emergency Defense Needs

Despite these large Navy workloads and budgets, the private sector had excess capacity during 1984 and all but a few major construction yards reduced their workforces. The projected decline in Navy construction in the 1990s (Fig. 2) and the poor prospects for a resurgence in ship construction for the U.S. merchant marine make the future look

(continued)

REMOTE VALVE ACTUATION MADE SIMPLE



...AND RELIABLE

Teleflex-RMVA is based on a simple tension-tension, closed-loop actuating concept. Helical cable, operating in a conduit, converts rotary to linear motion and then back to rotary.

...AND COST EFFECTIVE

RMVA can reduce your material, installation, maintenance and life-cycle costs. Savings are significant compared with complex reach rod installations.

...AND EASY TO INSTALL

RMVA uses flexible conduit which makes even the most complicated routings easy to install. No complicated gear boxes or joints.

...AND EASY TO MAINTAIN

RMVA is virtually trouble-free, due to design simplicity. No periodic maintenance. Shock and vibration resistant. Highly survivable.

...AND CORROSION-RESISTANT

RMVA uses materials and SermeTel coatings which are extremely corrosion-resistant. All moving parts operate in a sealed environment.

- Approved for all U.S. Naval Surface Ships
- ABS approved

The Teleflex Remote Mechanical Valve Actuator (RMVA) has proven its dependability in cruel environments aboard naval vessels.

Specify RMVA by Teleflex. It's simple. It works. It's proven. Call or write for your complete RMVA Design Manual.

T.M.
Teleflex INCORPORATED
remote actuation systems

771 First Avenue • King of Prussia, PA 19406–1401
(215) 265-0556 • Telex 90-2528 • TWX: 710-670-1122

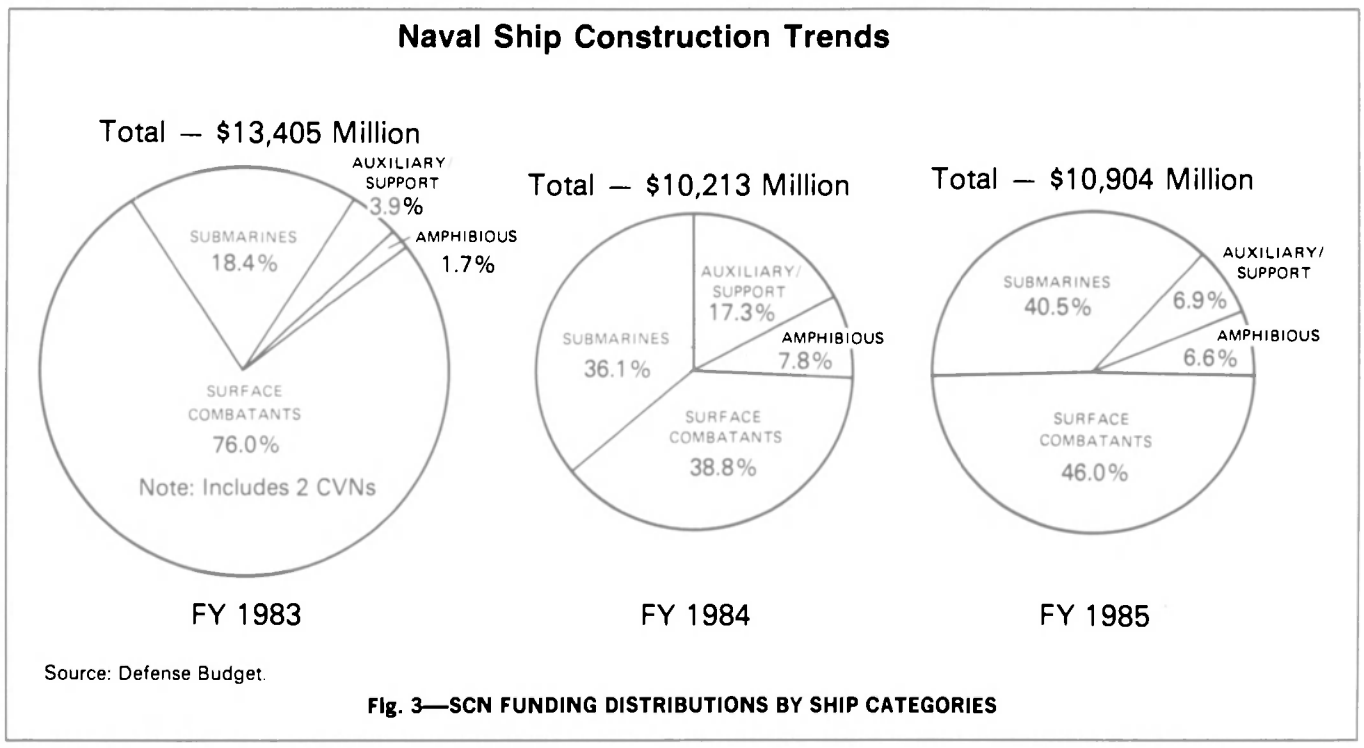


Fig. 3—SCN FUNDING DISTRIBUTIONS BY SHIP CATEGORIES

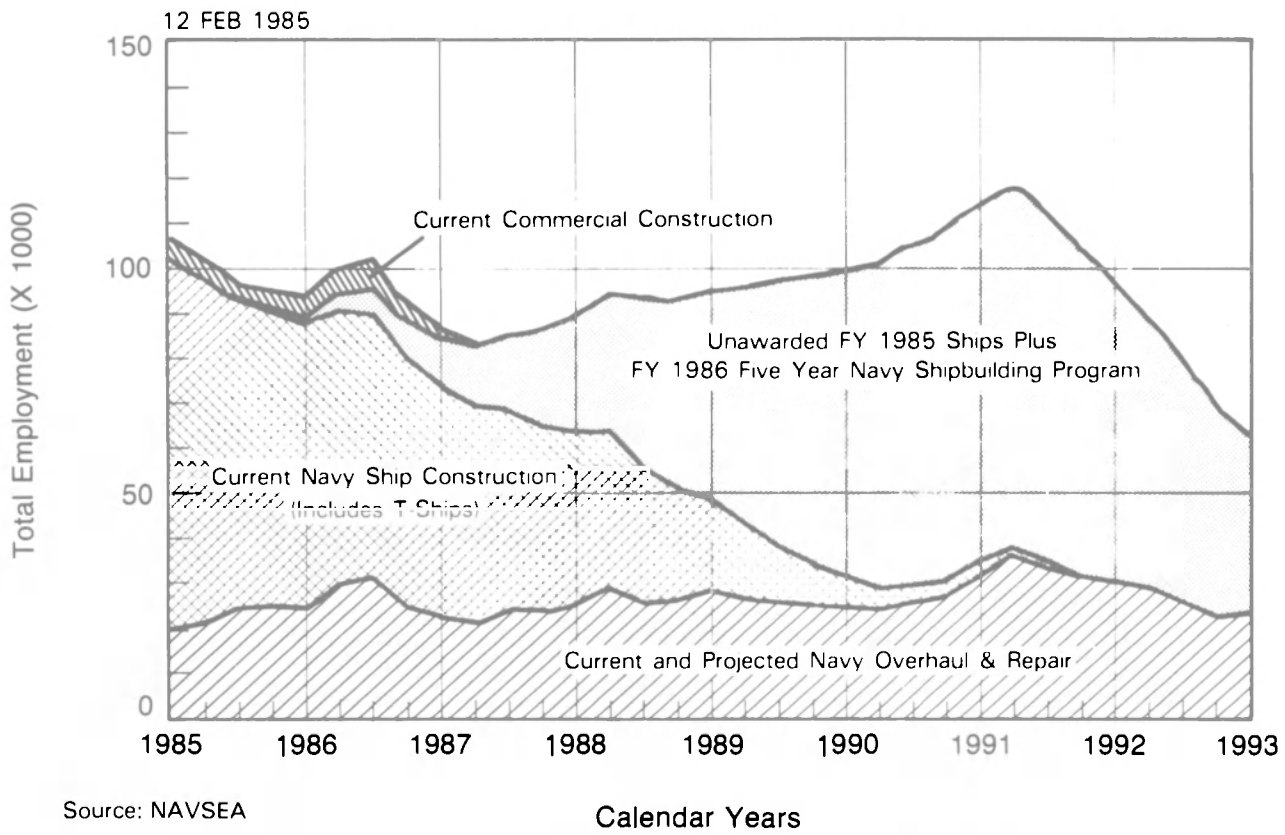


Fig. 5—PRIVATE SHIPBUILDING AND SHIP REPAIR INDUSTRY PROJECTED EMPLOYMENT

Editorial

(continued)

chant marine make the future look bleak for the industry and its ability to adequately meet national security needs. Admiral **Fowler** expressed this concern:

"Despite these positive aspects, I must note the Navy programs currently provide most of the workload of the shipbuilding and ship repair industry. The commercial shipbuilding market is providing little opportunity for U.S. shipbuilding business. There is evidence that the U.S. industry is trending towards that level required to support Navy programs.

"In this environment, the more competitive and efficient shipyards are continuing to win Navy business while the total number of yards is decreasing.

"With the number of facilities decreasing, I am concerned about the ability of the shipbuilding and repair industry to respond to an emergency requirement for a major and rapid maritime buildup. Legislative initiatives that are underway could provide the environment for the industry to achieve this capability. These efforts must be vigorously supported."

During 1984, ten of the shipyards having Master Repair Agreements with the Navy closed, leaving 141 active at year end. Since then, another three have closed, two have entered Chapter 11 and one merger has occurred. Some of these recent casualties have involved shipyards with both Navy construction and repair capabilities that were included in the Active U.S. Shipbuilding Base, which is considered to contain the minimum capacity needed to provide adequate mobilization capability for defense requirements. This base was comprised of 24 shipyards in 1984 (including one in Chapter 11 and one with no employees), compared with 26 in 1980 (Fig. 6). It should be pointed out that adequate mobilization capability means not only the construction and repair of naval combatants, auxiliaries and sealift ships, but greatly increased numbers of trans-

ports needed in a prolonged conflict but which no longer exist in the U.S. merchant marine fleet.

Declining shipyards correlate to declining workloads which emphasizes the current importance of Navy overhaul and repair work to the private sector. And as Navy construction work declines towards the end of this decade, its importance will become even greater.

Initiatives to Maintain Maritime Resources

Adm. **Fowler** suggests there are legislative initiatives under way that could provide the environment for private industry to achieve the ability to respond to an emergency requirement for a major and rapid maritime build-up, and that "these efforts must be vigorously supported." These include such actions as cargo preference laws, a maritime redevelopment bank, restoration of construction differential subsidies and provision of Title VII funds for passenger car shipping vessels.

Nothing presently before the Congress, however, could have as positive impact on the private sector's stability and well-being as the initiative of privatizing the public shipyards. It would almost immediately channel $ billions of additional work into these facilities and halt the dangerous trend now gaining momentum.

A practical approach would be to sell the two shipyards (Long Beach, CA and Philadelphia) that do not have a nuclear power servicing capability to private industry on a competitive bid basis. The remaining six facilities (Portsmouth, NH; Norfolk, VA; Charleston, SC; Mare Island, CA; Puget Sound, WA; and Pearl Harbor, HA) would remain under government ownership but be managed under government-owned/contractor-operated (GOCO) agreements. Private industry would compete for these GOCO contracts which could be written to contain profit incentive and revenue sharing provisions.

The Benefits of Privatization

There would be many advantages to this course of action:

1) Work performed by private yards generates taxes, whereas work performed by public yards is paid entirely by taxes on the general public.

2) The need to keep shipyard facilities and operating methods up to date technologically is fueled by the competitive market system. This dynamic does not prevail in government-owned operations which are protected from the rigors of price and demand interactions.

3) Savings realized by the Navy on repair work could be spent on alternate products and services, or used in other high priority government programs.

4) By eliminating government functions and facilities redundant to those of the U.S. Shipbuilding Industry, the prospects for balancing the federal budget would be enhanced.

5) The government's capital investment in the facilities could be partially recouped. In addition, pension and other liabilities could be phased out over a measurable period of time through normal attrition and transfer to the private sector.

6) By obtaining more and better naval and maritime products and

(continued)

Editorial

(continued)

services per dollar, the U.S. taxpayer would be better served.

7) The essential shipbuilding mobilization base, which has proven invaluable in past emergencies and conflicts, would be maintained at least cost to the taxpayer and at peak efficiency for the Navy.

Other Considerations

Privatization would, of course, require certain guarantees and agreements, between government and industry to cover sensitive areas. These would include:

1) The means whereby legal disputes over excess costs, such as occurred in the 1970s, could be minimized and quickly adjudicated.

2) Assurance that the Navy's needs would have priority over commercial work.

3) The negotiation of labor and management agreements that would be compatible with national security and defense requirements.

Privatization is an option that should be carefully considered and acted upon. Such an action need not be disruptive to the U.S. shipbuilding industry which, as a vital defense resource, must be allowed to meet its commitments without constraint or interruption. A well-planned, phased approach to the effort, combined with positive government/industry cooperation, could certainly overcome potential difficulties and, at the same time, minimize job losses, maintain Navy delivery and work completion schedules and result in a more cost effective operation, thereby creating a stronger defense posture. ■

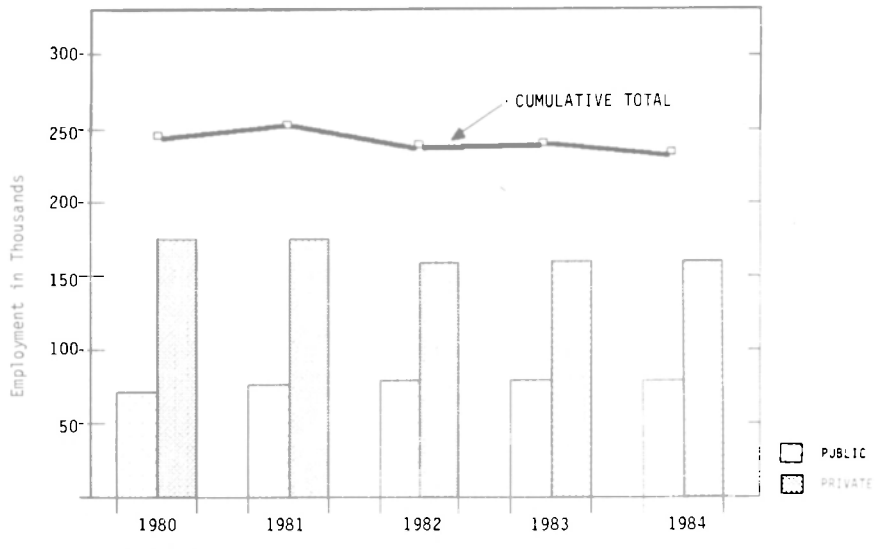


Fig. 4 U.S. SHIPBUILDING & SHIP REPAIR INDUSTRY EMPLOYMENT: Public and Private Shipyards (31 December Totals)

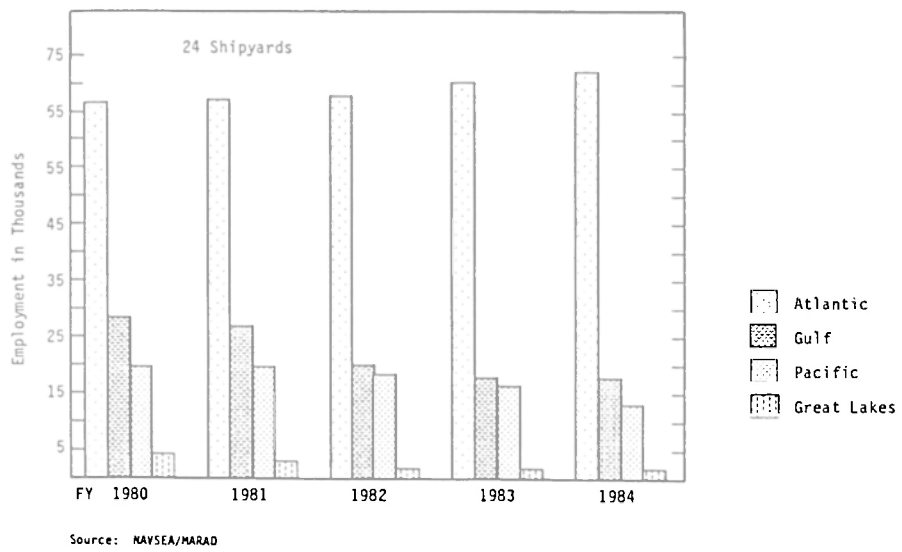


Fig. 6 THE ACTIVE U.S. SHIPBUILDING BASE: Employment Trends

FY 1986 NAVAL SHIPBUILDING—Appropriations

SHIP TYPE	FY 1985 Appropriation	FY 1986 Budget Request	FY 1986 Authorization	FY 1986 Appropriation	Changes From Budget	Compared to FY 1985
TRIDENT Qty	1	1	1	1	0	0
$	1331.30	1283.60	1233.60	1196.60	−87.00	−134.70
AP$	265.50	248.20	248.20	158.10	−90.10	−107.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	1596.80	1531.80	1481.80	1354.70	−177.10	−242.10
NBA	1596.80	1531.80	1481.80	1354.70	−177.10	−242.10
SSN-688 Qty	4	4	4	4	0	0
$	2102.20	2123.20	2113.20	2123.20	0.00	−21.00
AP$	562.80	585.20	585.20	486.40	−98.80	−76.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	2665.00	2708.40	2698.40	2609.60	−98.80	−55.40
NBA	2665.00	2708.40	2698.40	2609.60	−98.80	−55.40
CG-47 Qty	3	3	3	3	0	0
$	2882.90	2751.60	2751.60	2637.90	−113.70	−245.00
AP$	102.00	14.60	14.60	14.60	0.00	−87.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	2984.90	2766.20	2766.20	2652.50	−113.70	−332.40
NBA	2984.90	2766.20	2766.20	2652.50	−113.70	−332.40
DDG-51 Qty	1					−1
$	1050.00					−1050.00
AP$	0.00	164.30	164.30	74.00	−90.30	74.00
PYT$	0.00			0.00	0.00	0.00
Total	1050.00	164.30	164.30	74.00	−90.30	−976.00
NBA	1050.00	164.30	164.30	74.00	−90.30	−976.00
LSD-41 Qty	2	2	2	2	0	0
$	406.00	414.40	414.40	403.40	−11.00	−2.60
AP$	83.50	0.00	0.00	0.00	0.00	−83.50
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	489.50	414.40	414.40	403.40	−11.00	−86.10
NBA	489.50	414.40	414.40	403.40	−11.00	−86.10
LHD-1 Qty	0	1	1	1	0	1
$	0.00	1148.60	1148.60	1148.00	−.60	1148.00
AP$	39.20	358.60	165.60	165.60	−193.00	126.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	39.20	1507.20	1314.20	1313.60	−193.60	1274.40
NBA	39.20	1507.20	1314.20	1313.60	−193.60	1274.40
MCM Qty	4	4	2	2	−2	−2
$	344.50	334.10	167.10	197.20	−136.90	−147.30
AP$	0.00	0.00	0.00	0.00	0.00	0.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
CG	0.00	0.00	0.00	97.00	97.00	97.00
Total	344.50	334.10	167.10	294.20	−39.90	−50.30
NBA	344.50	334.10	167.10	294.20	−39.90	−50.30
MSH-1 Qty		4	4	4	0	4
$		184.50	184.50	184.50	0.00	184.50
AP$		0.00	0.00	0.00	0.00	0.00
PYT$		0.00	0.00	0.00	0.00	0.00
Total		184.50	184.50	185.50	0.00	184.50
NBA		184.40	184.50	184.50	0.00	184.50
TAO Qty	3	2	2	2	0	−1
$	522.60	328.50	328.50	278.50	−50.00	−244.10
AP$	0.00	0.00	0.00	0.00	0.00	0.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	522.60	328.50	328.50	278.50	−50.00	−244.10
NBA	522.60	328.50	328.50	278.50	−50.00	−244.10
TAGOS Qty	2	2	2	2	0	0
$	128.40	113.90	113.90	113.90	0.00	−14.50
AP$	0.00	1.20	1.20	1.20	0.00	1.20
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	128.40	115.10	115.10	115.10	0.00	−13.30
NBA	128.40	115.10	115.10	115.10	0.00	−13.30
TAGS Qty	2					−2
$	225.00					−225.00
AP$	0.00					0.00
PYT$	0.00					0.00
Total	225.00					−225.00
NBA	225.00					−225.00
NEW SHIPS Qty	22	23	21	21	−2	−1
$	8992.90	8682.40	8455.40	8283.20	−399.20	−709.70
AP$	1053.00	1372.10	1179.10	899.90	−472.20	−153.10
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
CG$	0.00	0.00	0.00	97.00	0.00	0.00
Total	10045.90	10054.50	9634.50	9280.10	−871.40	−862.80
NBA	10045.90	10054.50	9634.50	9280.10	−871.40	−862.80

FY 1986 NAVAL SHIPBUILDING—Appropriations

(continued)

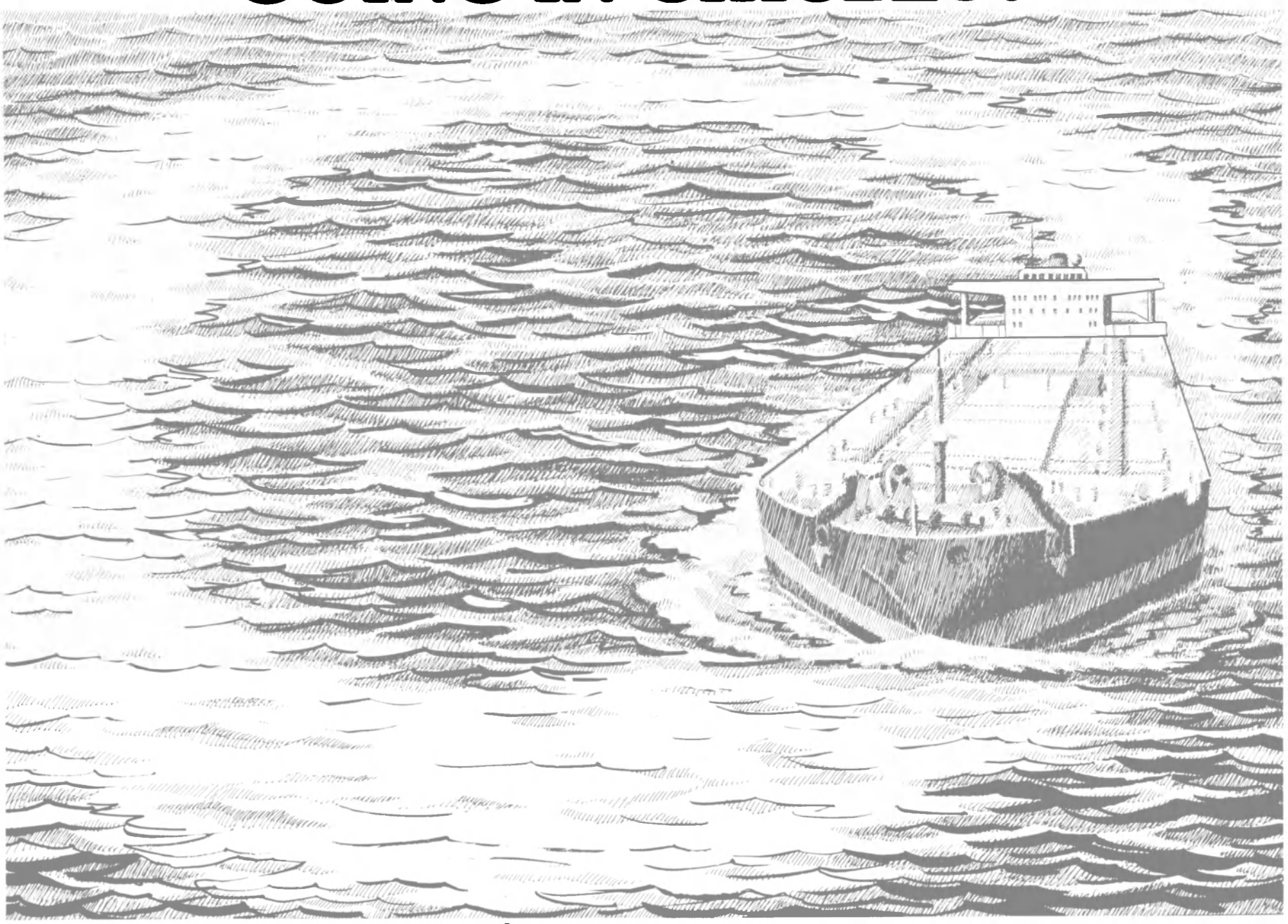
SHIP TYPE	FY 1985 Appropriation	FY 1986 Budget Request	FY 1986 Authorization	FY 1986 Appropriation	Changes From Budget	Compared to FY 1985
BB REACT Qty	0	0	0	1	1	1
$	0.00	0.00	0.00	469.00	469.00	469.00
AP$	0.00	53.50	53.50	0.00	−53.50	0.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	53.50	53.50	469.00	415.50	469.00
NBA	0.00	53.50	53.50	469.00	415.50	469.00
CV SLEP Qty	1	0	0	0	0	−1
$	714.50	0.00	0.00	0.00	0.00	−714.50
AP$	0.00	133.40	133.40	52.00	−81.40	52.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	714.50	133.40	133.40	52.00	−81.40	−662.50
NBA	714.50	133.40	133.40	52.00	−81.40	−662.50
LPD SLEP $	15.00					−15.00
PYT$	0.00					0.00
Total	15.00					−15.00
NBA	15.00					−15.00
T-AG Qty	0	1	1	1	0	1
$	0.00	68.90	68.90	57.00	−11.90	57.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	68.90	68.90	57.00	−11.90	57.00
NBA	0.00	68.90	68.90	57.00	−11.90	57.70
ARTB Qty	0	0	0	1	1	1
$	30.00	26.50	26.50	175.40	148.90	145.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	30.00	26.50	26.50	175.40	148.90	145.40
NBA	30.00	26.50	26.50	175.40	148.90	145.40
TACS Qty	1	3	3	3	0	2
$	36.00	82.50	82.50	82.50	0.00	46.50
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	36.00	82.50	82.50	82.50	0.00	46.50
NBA	36.00	82.50	82.50	82.50	0.00	46.50
TAVB Qty	1	1	1	1	0	0
$	31.80	26.90	26.90	26.90	0.00	−4.90
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total	31.80	26.90	26.90	26.90	0.00	−4.90
NBA	31.80	26.90	26.90	26.90	0.00	−4.90
R&C Qty	3	5	5	7	2	4
$	827.30	204.80	204.80	810.80	606.00	−16.50
AP$	0.00	186.90	186.90	52.00	−134.90	52.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Total$	827.30	391.70	391.70	862.80	471.10	35.50
NBA$	827.00	391.70	391.70	862.80	471.10	35.50
CRAFT Total$	296.70	420.90	379.10	369.70	−51.20	73.00
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
NBA$	296.70	420.90	379.10	369.70	−51.20	73.00
OTHER						
StratSlft $	31.00	203.40	228.40	228.40	25.00	197.40
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Tot$	31.00	203.40	228.40	228.40	25.00	197.40
Outftng $	212.90	228.50	228.50	228.50	0.00	15.60
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Tot$	212.90	228.50	228.50	228.50	0.00	15.60
PostDel $	170.70	112.60	112.60	112.60	0.00	−58.10
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
Tot$	170.70	112.60	112.60	112.60	0.00	−58.10
OTHER TOT$	414.60	544.50	569.50	569.50	25.00	154.90
PYT$	0.00	0.00	0.00	0.00	0.00	0.00
NBA	414.60	544.50	569.50	569.50	25.00	154.90
FINADJ	0.00	0.00	−973.60	−241.70	−241.70	−241.70
GRDTOT$	11584.50	11411.60	10001.20	10840.40	−668.20	−841.10
GRDAP$	1084.30	1589.80	1396.80	982.70	−607.10	−101.60
GRDPYT$	0.00	0.00	0.00	0.00	0.00	0.00
GRDNBA$	11584.50	11411.60	10001.20	10840.40	−668.20	−841.10

LEGEND:

Qty–Number of ships
$–Program Dollars in Millions
AP$–Advance Procurement
PYT$–Prior Year Transfer
NBA–New Budget Authority
CG–Cost Growth
FINADJ–Financial Adjustment
GRD–Grand Totals

Source: Shipbuilders Council of America

HAS POOR SERVICE GOT YOU GOING IN CIRCLES?

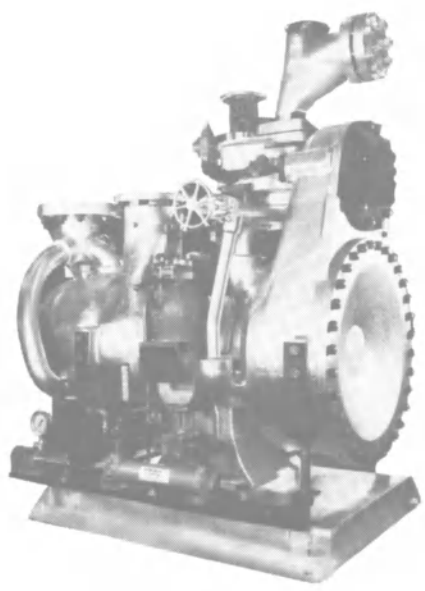


Factory-Trained Coffin® Service Engineers Will Help To Steer You In The Right Direction . . .

Dealing with sub-standard replicator 'specialists' for pump parts and service can make you feel like you're running in circles. Your boiler feed pump is just too valuable a piece of capital equipment to go that route.

The truth is, you don't have to pay higher prices to get OEM quality and service. Coffin® factory trained engineers will respond to your needs quickly. We'll thoroughly check your boiler feed pump operation for parts renewal, and offer recommendations for improved maintenance.

Protect your investment. Call today, or write, for the name of the Coffin® authorized marine agent nearest you.



(201) 568-4700

FMC Coffin® Turbo Pump

Coffin® Turbo Pump • 326 South Dean Street, Englewood, NJ 07631

USS Crommelin—Todd Seattle

UPDATE ON FY 1986 NAVY PROGRAMS

by
James R. McCaul, President
International Maritime Associates, Inc.

On 19 December Congress passed a continuing resolution providing defense program appropriations for FY 1986. It provides total obligational authority of $281 billion for defense programs. The Administration had requested $304 billion and last year's defense appropriation was $278 billion.

Navy Funding

Navy has received obligational authority totalling $95.6 billion—or 34 percent of the defense dollars. Last year Navy received obligational authority totalling $93.5 billion.

Exhibit I summarizes FY 1986 legislative action related to key Navy programs.

Gramm-Rudman

The Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman) signed by the President on 12 December keeps the FY 1986 budget in suspense. Under the Gramm-Rudman law a complicated mechanism has been adopted to reduce future government spending deficits. The law sets a deficit target for each of the next six years. Budget cuts are automatically mandated in any year where the deficit target will be exceeded. These cuts will be across the board unless the President and Congress agree to a deficit reduction plan.

The House Armed Services Committee recently estimated that the Gramm-Rudman law will require cuts of $10.3-13.3 billion in FY 1986 defense spending authority. Navy funding for operations and procurement programs will obviously be affected by these reductions.

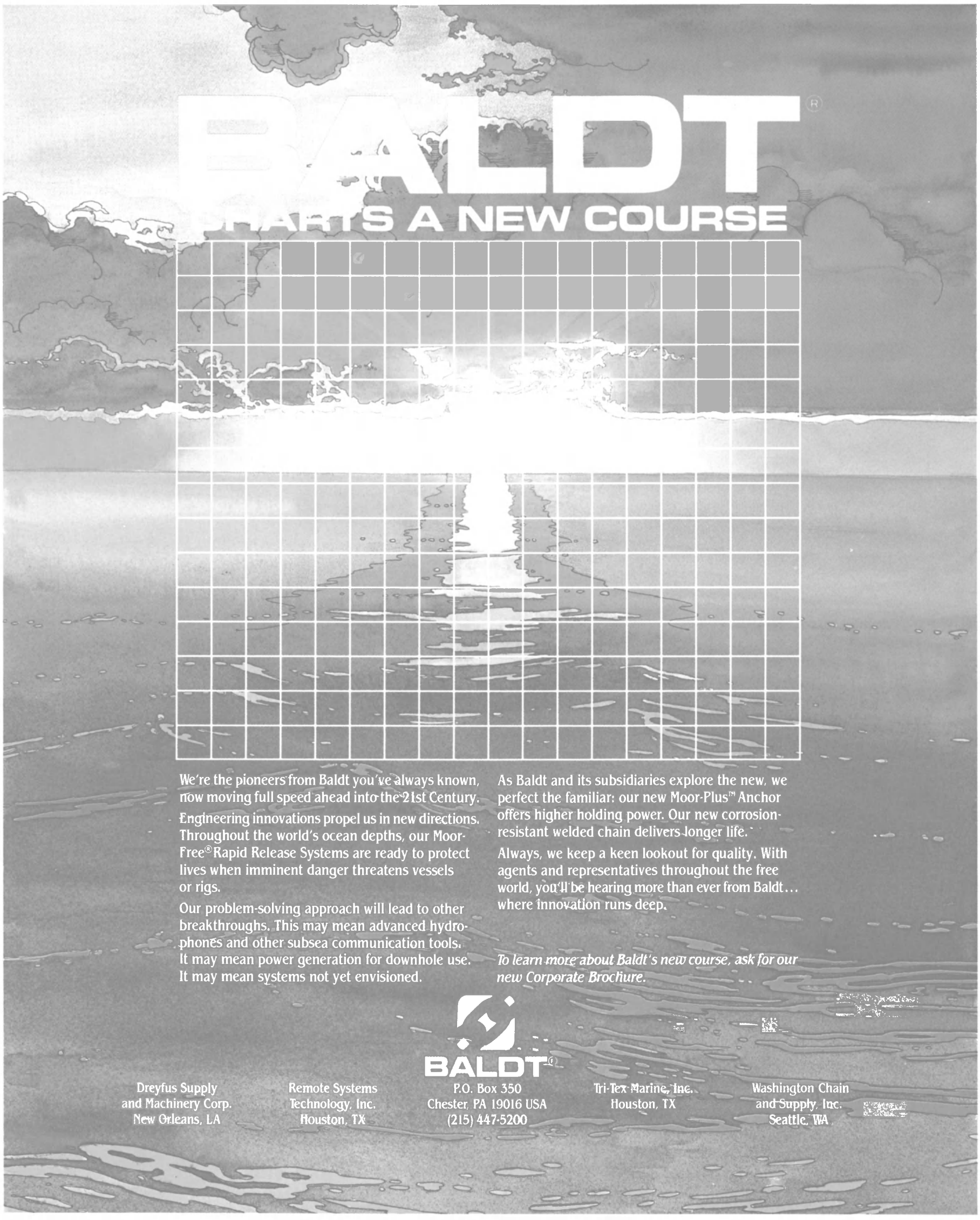
The constitutionality of the Gramm-Rudman law is now being argued in federal court. Meanwhile, as prescribed by the law, the Office of Management and Budget (OMB) and the Congressional Budget Office (CBO) are preparing revised estimates of the FY 1986 deficit. In late January the President is to propose his plan for meeting the FY 1986 Gramm-Rudman deficit target.

Planning in DOD is affected by the uncertainty created by this funding suspense.

Procurement and Engineering/Design

Congress made a number of changes to the FY 1986 Navy ship procurement program. Funds were provided to begin reactivation of the battleship Wisconsin this year, in-

(continued)


BALDT®
CHARTS A NEW COURSE
We're the pioneers from Baldt you've always known, now moving full speed ahead into the 21st Century.
Engineering innovations propel us in new directions. Throughout the world's ocean depths, our Moor-Free® Rapid Release Systems are ready to protect lives when imminent danger threatens vessels or rigs.
Our problem-solving approach will lead to other breakthroughs. This may mean advanced hydrophones and other subsea communication tools. It may mean power generation for downhole use. It may mean systems not yet envisioned.
As Baldt and its subsidiaries explore the new, we perfect the familiar: our new Moor-Plus™ Anchor offers higher holding power. Our new corrosion-resistant welded chain delivers longer life.
Always, we keep a keen lookout for quality. With agents and representatives throughout the free world, you'll be hearing more than ever from Baldt... where innovation runs deep.
To learn more about Baldt's new course, ask for our new Corporate Brochure.
BALDT®
P.O. Box 350
Chester, PA 19016 USA
(215) 447-5200
Dreyfus Supply and Machinery Corp.
New Orleans, LA
Remote Systems Technology, Inc.
Houston, TX
Tri-Tex Marine, Inc.
Houston, TX
Washington Chain and Supply, Inc.
Seattle, WA

NAVY UPDATE

Exhibit 2—Changes to Proposed FY 1986 Navy Program During Defense Appropriations Process

Program	Administration Request	House Appropriations Bill	Senate Appropriations Bill	Conference Agreement
Ships				
Battleship reactivation	advanced procurement of long lead items for FY 1987 program to reactivate Wisconsin (BB-64)	transfer of $469 million from prior year funding to begin reactivation of the Wisconsin in FY 1986	stay with schedule to reactivate Wisconsin in FY 1987	$469 million to begin reactivation of Wisconsin in FY 1986
Mine countermeasure ships (MCM)	$334 million for four MCM ships	funds denied for this program in FY 1986 due to program problems and delivery slippage	$197 million for two MCM ships and transfer of one ship from FY 1985	$197 million for two MCM ships and transfer of one ship from FY 1985
T-AGOS surveillance ships	$114 million for two T-AGOS ships	$90 million for two ships (no mention of new design)	$114 million, which can be used for one SWATH and one monohull T-AGOS	$114 million to be used for one SWATH and one monohull T-AGOS
Special warfare craft—medium	$34 million for three craft	$11 million for one craft, directing Navy to award on a competitive basis	$34 million for three craft	program funding not provided
Coast Guard vessels	no funding requested	no funding provided	$20 million for one 140′ icebreaking tug and $112 million for 16 110′ patrol boats	$20 million for one 140′ icebreaking tug and $112 million for 16 110′ patrol boats
Mariner Fund	no funding requested	no funding provided	$852 million for a cargo vessel build-lease program	$852 million for a cargo vessel build-lease program
Ship Ordnance and Systems				
Rolling airframe missile (RAM)	$45 million for 117 missiles plus R&D funding of $11 million	$15 million	defer FY 1986 procurement funding due to program and development uncertainties, cut R&D funding to $4 million	no funding provided for RAM procurement, full $11 million approved for RAM R&D work
Captor mine	no FY 1986 funds for MK-60 Captor mines	$60 million for 150 MK-60 Captor mines	no funds in FY 1986 pending Navy internal review of mine inventory requirements	$60 million for 150 MK-60 Captor mines
Seasheds	$59 million for sealift support equipment, of which $30 million is for seasheds	$71 million for sealift support equipment, of which $42 million is for seasheds	$59 million for sealift support equipment, of which $30 million is for seasheds	$71 million for sealift support equipment, of which $42 million is for seasheds
AN/SQR-17 acoustic processors	$15 million for 20 units	$22 million for 23 units	$15 million for 20 units	$22 million for 23 units
AN/BLD-1 over-the-horizon radar	no funds	$12 million	$12 million	$12 million
Low cost sonobuoy	$11 million for 100,000 units	$46 million for 150,000 units	$46 million for 150,000 units	$46 million for 150,000 units
Microwave landing system	$7 million for 14 units	deferment of this program	deferment	deferment
Engineering				
SUBACS development	$205 million to continue engineering development	no further funding of SUBACS, but $60 million for new SSN 21 combat system	no further funding of SUBACS, but $200 million for new SSN 21 combat system	no further funding of SUBACS, but $200 million for new SSN 21 combat system; conferees criticized Navy and DOD management of SUBACS
Variable payload design (SSES)	$5 million for engineering	continued funding denied	deletes $3 million and recommends slowing program	deletes $3 million, slowing program
Ship contract design	$89 million for design work	$80 million	$120 million, including $40 million to fully fund SSN 21 contract design and $5 million for AO jumboization	$120 million, including $40 million to fully fund competitive SSN 21 contract design and $5 million for AO 177 jumboizing design
Electromagnetic system environment engineering (EMSEDE)	$1 million for new project start	cut $1 million from program budget	specifically denied EMSEDE funding request, pointing out it will become a $50 million effort	$1 million cut from program budget, but left to Navy discretion to assign cut to EMSEDE
Advanced ASW target	$13 million for development	$8 million	$13 million	$9 million, with $3 million earmarked to develop a stored chemical energy propulsion system

Source: House and Senate Appropriations Committee Reports

Exhibit I—Summary of FY 1986 Legislative Action Affecting Navy Funding
(billions of dollars)

	Administration Budget Request	House Appropriations Bill	Senate Appropriations Bill	Appropriations Conference Agreement
Shipbuilding and Conversion	$11.4	$10.7 (2.1)	$10.7 (1.1)	$10.8
Weapon Procurement	5.6	5.2 (.1)	5.4 (0)	5.2
Other Procurement	6.6	6.0 (.3)	6.7 (.2)	6.4
Research, Development, Test and Evaluation	11.3	9.7 (.3)	10.3 (.2)	10.1
Ship Maintenance & Modernization	6.1	6.1	6.1	6.1

Note: Figures in parentheses are amounts obtained from transferring unobligated funds from prior year programs.

Source: FY 1986 Defense Appropriation Bill

Exhibit 3—FY 1986 Ship Overhauls Scheduled For Commercial Shipyards
(millions of dollars)

Ship	Assigned To	Estimated Cost Repair	Alterations	Total
Active Fleet Ships:				
AS 36	Commercial	38.4	13.5	51.9
ASR 13	Commercial	7.3	1.5	8.8
ASR 14	Commercial	7.3	1.4	8.7
CVN 69	Commercial	209.0	103.6	312.6
DD 963	Commercial	27.9	35.7	63.6
LPH 2	Commercial	30.9	10.3	41.2
LSD 38	Commercial	20.1	4.7	24.8
MSO 490	Commercial	2.0	.6	2.6
DD 990	Commercial	22.5	29.1	51.6
DD 991	Commercial	22.5	47.7	70.2
DD 992	Commercial	22.5	39.8	62.3
LSD 40	Commercial	22.5	8.9	31.4
Naval Reserve Ships:				
MSO 433	Commercial	1.4	.4	1.8
MSO 456	Commercial	1.2	.9	2.1
MSO 511	Commercial	1.4	.7	2.1
MSO 427	Commercial	3.2	1.0	4.2
MSO 437	Commercial	3.2	.3	3.5
MSO 488	Commercial	3.2	.6	3.8

Source: FY 1986 Defense Appropriations Hearings

(continued)

stead of in FY 1987. The MCM program was partially deferred due to technical problems and program slippage. A SWATH design has been approved for the T-AGOS program. The Coast Guard has received funding authority to build an ice-breaking tug and 16 patrol boats. And a Mariner Fund to build and subsequently lease cargo ships was tentatively funded—subject to authorizing legislation.

In weapons and systems procurement, Congress denied funding of the rolling airframe missile. Funds were provided to buy 150 MK-60 Captor mines. The funding for seasheds was increased $12 million from the $30-million budget request.

Important changes were made in engineering and design programs. Funds for the SUBACS program were denied due to "severe technical and management problems (which) have significantly increased costs, delayed schedules, and degraded planned system capability." IBM is the prime contractor in the SUBACS program. In place of the $205 million requested by Navy for further SUBACS development, Congress provided $200 million for a new SSN-21 combat system program and strongly criticized Navy and DOD's management of the SUBACS program.

These and other FY 1986 program changes are summarized in Exhibit 2.

Ship Maintenance and Modernization

Congress appropriated $6.1 billion this year for ship maintenance and modernization. This is the full amount requested by the Administration. It will provide funding for 35 active fleet ship overhauls, six naval reserve ship overhauls and 142 short term ship maintenance jobs.

Exhibit 3 lists the active and reserve fleet overhauls scheduled for commercial yards in FY 1986. The dollars shown are Navy's estimate of the cost to complete each job.

The Congress also issued a number of policy directions concerning homeport policy, yard certification and number of ships to include in this year's public/private yard competition.

Future Navy Programs

On 3 February the President will send his FY 1987 budget request to Congress. It is expected to call for a 3 percent real increase in defense spending next year.

The deficit targets set by Gramm-Rudman, and more generally the growing concern over continued deficit spending, are likely to impact future Navy programs. Look for elimination and stretch out of marginal procurement programs—such as support ships. Navy will likely reduce operational tempo in an effort to save money, with ships spending less time at sea.

Navy Contracts Totaling $629.2 Million Awarded To Bath And Ingalls Yards

Bath Iron Works Corporation of Bath, Maine, has been awarded a $386.6-million Navy contract for the construction of two Aegis guided-missile cruisers (CG-63 & 64) of the Ticonderoga Class, and Ingalls Shipbuilding of Pascagoula, Miss., was awarded $242.6 million to build one ship (CG-65) of the same class.

Bath now has four Aegis cruisers under contract, and recently launched its first, the Thomas S. Gates (CG-51). These ships are 563 feet long, with a beam of 55 feet and displacement of 9,600 tons.

With the latest contract, Ingalls has eight of these ships on order, and has delivered four others.

The Aegis weapons system, the heart of the Ticonderoga Class fighting capability, is a significant advance in fleet anti-air warfare. Fixed array radar antennas, mounted on the four sides of the ship's superstructure, enable the crew to "see" in all directions simultaneously. The system can simultaneously fire and direct more missiles at more targets with greater accuracy than any other system.

All American Marine Selects Vasquez As VP And Assistant Manager

Jerry Vasquez has been appointed vice president and assistant manager of All American Marine Slip (AAMS). He is in charge of underwriting and selective claims for offshore, energy-related risks.

Mr. **Vasquez** has been assistant vice president of underwriting since 1982. He began his career with AAMS in 1973 as an underwriter at its New York home office and became senior underwriter five years later. In 1979, Mr. **Vasquez** was made administrative assistant to the president, and in 1981, assistant manager.

All American Marine Slip, managed by Marine Office of America Corporation, a unit of Continental Insurance, is a syndicate of insurance and reinsurance companies that insures high-value, offshore energy risks.

Peterson Builders Delivers ARS-51, Grasp, To Navy

Peterson Builders, Inc. of Sturgeon Bay, Wis., held successful acceptance trails for the second 225-foot steel vessel of the new class of Navy Auxiliary Rescue/Salvage ships, ARS-51, Grasp. The trial included included performance tests for all ship systems and operational equipment.

Having passed her acceptance trials with flying colors, ARS-51 was delivered to the Navy at Little Creek, Va., the first week of December. The lead ship of the ARS Class (ARS-50, Safeguard) is already at her homeport of Pearl Harbor, Hawaii. The third and fourth ships of the class are in their completion stages at Peterson Builders and will be delivered this year.

Peterson Builders also held successful acceptance trials for another Navy ship in the same week. YP-682, seventh of the 108-foot wooden yard patrol training craft built by PBI, passed her trials with excellence.

For further information on Peterson Builders,

Circle 91 on Reader Service Card

Lindenau Yard Offers New Gas Carrier Designs —Literature Available

The Paul Lindenau shipyard in Kiel, West Germany, has developed a family of gas carriers with capacities ranging from 1,600 to 15,000 cubic meters. The company calls these vessels, which are fully pressurized and semi-refrigerated, "the most advanced and economical gas carriers in the world."

The Lindenau gas carriers are said to have the following features: low fuel consumption due to the yard's ship lines; excellent maintenance concept; ease of construction; optimal draft/trim/stability conditions; and high flexibility of gas transportation.

For free brochures containing full details and drawings of this family of gas ships,

Circle 97 on Reader Service Card

NAMS Annual Meeting To Be Held In N.Y. City, April 16-18

The National Association of Marine Surveyors, Inc. (NAMS) will hold its 1986 Annual Meeting and Seminar at the Halloran House, Lexington Avenue, New York, N.Y., April 16-18.

The general session on Thursday, April 17th, is open to nonmembers of the marine industry. Workshops are slated for Friday, April 18th. Members from 50 states and overseas will attend.

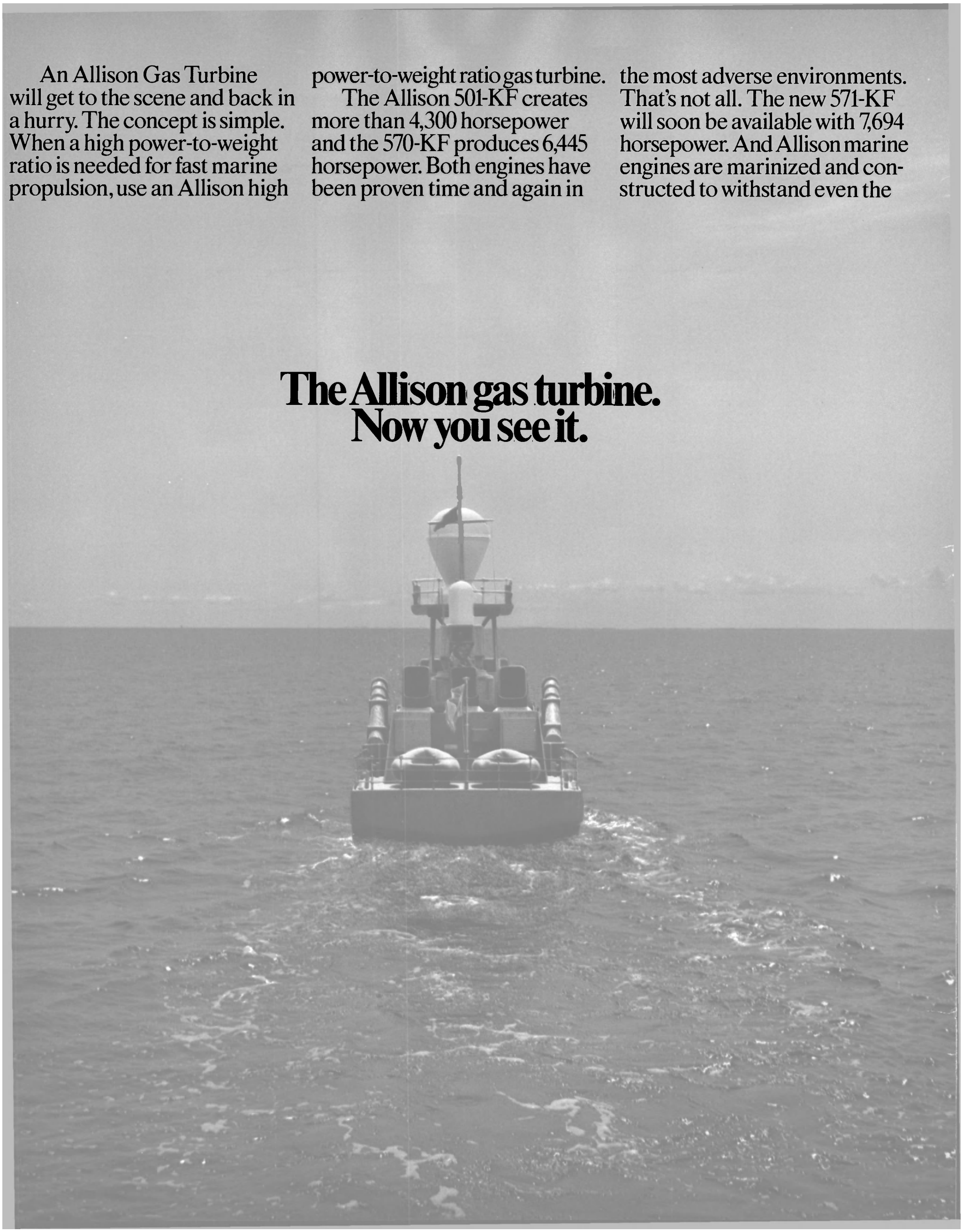
For information on membership contact: **Robert E. Christoverson,** secretary, NAMS, Premium Point, New Rochelle, N.Y. 10801, (914) 576-6080.

Circle 265 on Reader Service Card

An Allison Gas Turbine will get to the scene and back in a hurry. The concept is simple. When a high power-to-weight ratio is needed for fast marine propulsion, use an Allison high power-to-weight ratio gas turbine.

The Allison 501-KF creates more than 4,300 horsepower and the 570-KF produces 6,445 horsepower. Both engines have been proven time and again in the most adverse environments. That's not all. The new 571-KF will soon be available with 7,694 horsepower. And Allison marine engines are marinized and constructed to withstand even the

The Allison gas turbine. Now you see it.



most rigorous maritime uses.

An Allison Gas Turbine is easily maintained. As a division of GM, Allison has a worldwide parts and service network which means you get the security, the reliability and the technology of GM. Plus we have 50 years as an experienced military contractor.

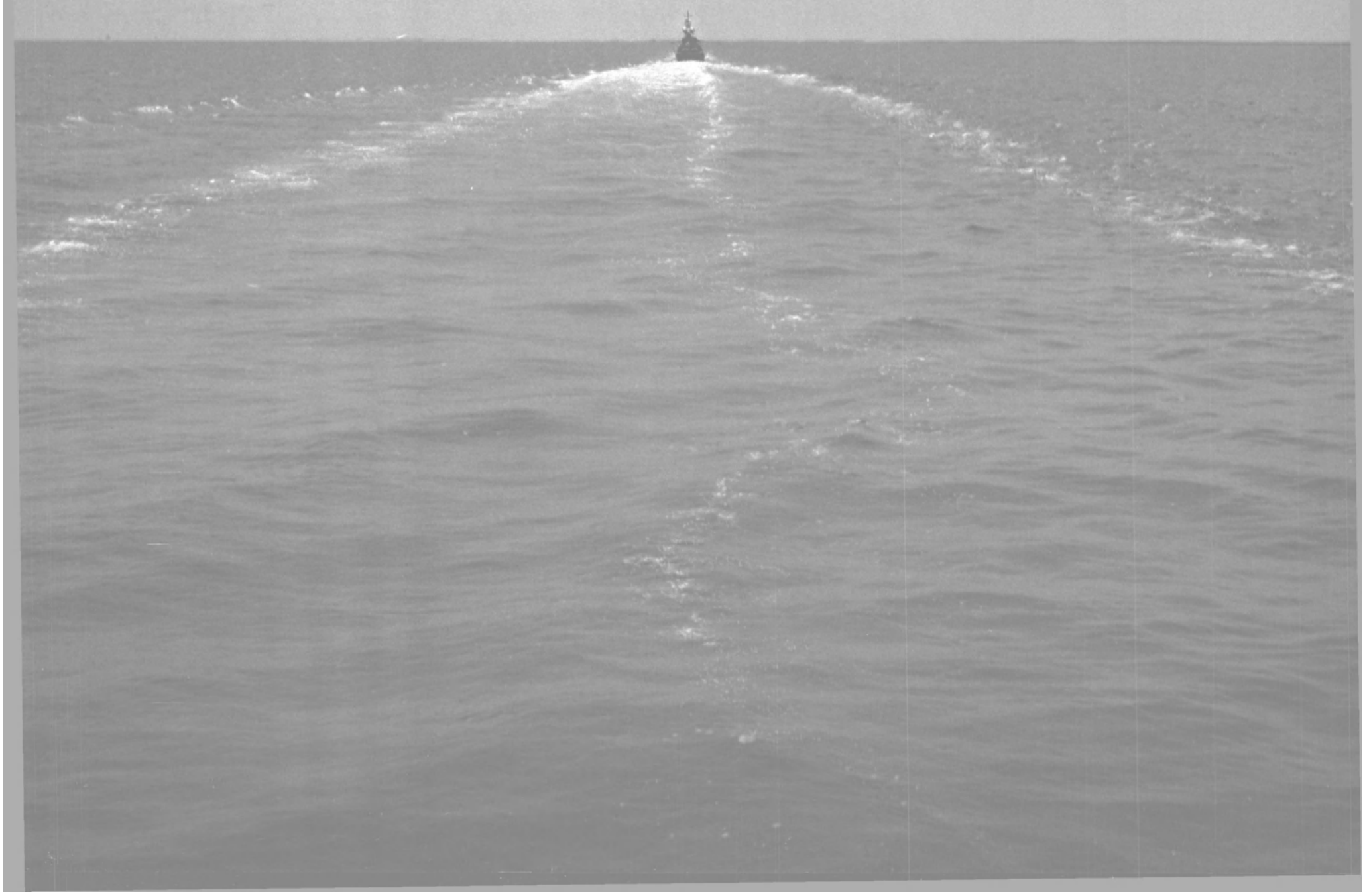
For more information about Allison Marine Systems, write to Allison Gas Turbine Division, General Motors Corporation, P.O. Box 420 Speed Code U6, Indianapolis, Indiana 46206-0420, USA. Telex 276400.

Allison

GM

Circle 300 on Reader Service Card

Now you don't.



1986 Apelco Full-Color Product Catalog Available

Apelco Marine Electronics has published a full-color 1986 catalog describing a number of new, exciting high-tech products. Among these is a liquid crystal display (LCD) radar, the Model LDR-9900, which Apelco plans to introduce this spring. Using the newest LCD technology, this is said to be the smallest, lightest, lowest-priced radar in the world.

Outstanding new Apelco products also include the XCD 480 Recording LCD Fishfinder with readouts for pH, speed, temperature, depth and the ability to freeze and recall displays; the FXL 400 Color Flashing Fishfinder which indicates target size and bottom hardness using a color LED analog display, and an LCD digital depth readout; and the new, compact XVC 8000 Color Video Fishfinder with dramatic eight-color picture clarity. Lorans, radiotelephones, ADF, and other flashing and chart recording echo sounders, loudhailers, and EPIRBs round out the full line of Apelco marine electronics for all kinds of boats.

Apelco, a Raytheon Company, offers an exceptional warranty and extended service program. For a free copy of the 1986 Apelco catalog,

Circle 11 on Reader Service Card

MPMA Elects Officers For 1986

The United States Marine Products Manufacturers' Association, Inc., held elections for officers of the Association for 1986 at a recent meeting. The following officers were elected: **James E. Palmer,** Baldt Incorporated, president; **John M. Foulk,** Lucian Q. Moffitt, Inc., first vice president; **Robert E. Rogaski,** Drew Ameroid Marine Division, second vice president; **Sidney A. Lewis,** Hayward Industrial Products, Inc., secretary; and **Gary W. Dayton,** Bird-Johnson Company, treasurer.

The United States Marine Products Manufacturers' Association, Inc., is a trade association of over 40 member companies engaged in the manufacture of marine products in the U.S.

For further information on the MPMA, contact MPMA, 1230 Keith Building, Cleveland, Ohio 44115-2180.

Senate Passes Bill To Close Jones Act Loophole

On December 19, 1985 the Senate passed H.R. 2466, miscellaneous maritime provisions, adopting a substitute bill. The Senate amendments include a provision strongly supported by AWO that would close a loophole in the Jones Act which allow foreign-flag tugs to provide assist-service for foreign-flag vessels in U.S. ports. The House began consideration of this bill, but was unable to complete action before adjournment.

Carnegie Hero Medals Awarded Posthumously To Fournier, Govoni

Two Carnegie Hero Medals were recently awarded posthumously to Capt. **William A. Fournier** and seaman **Daniel J. Govoni** by the Carnegie Hero Fund Commission. The medallions are awarded annually by the commission, citing the heroic actions of one individual to save another's life.

Captain **Founier** and Mr. **Govoni** were awarded the 3-inch bronze medals for their actions on April 11 of last year, to rescue fellow crew member **Richard Lisa,** who was trapped in an oxygen-deficient hold of a barge owned by Penobscot Bay Towing Company of Belfast, Maine. Mr. **Lisa** survived the barge accident, but his two 20-year-old rescuers suffocated and drowned in two-feet of bilge water in the hold. The men were part of a crew working aboard tugs and barges at the Penobscot Bay Towing Company, a subsidiary of Fournier Marine Corporation, at Marshall Wharf.

According to **Walter Rutkowski,** assistant secretary for the Carnegie Commission, a $2,500 honorarium was presented to the families of Captain **Fournier** and Mr. **Govoni** along with their medals.

Coast Guard And Navy To Hold Joint Fire Research Program

The U.S. Coast Guard recently announced that it will begin joint shipboard fire protection research, development and testing with the U.S. Navy at the Coast Guard Fire and Safety Test Detachment at Mobile, Ala., early this year.

The two services will share operating costs and equipment and the Navy will provide its own staff. The Navy will tow a decommissioned dock landing ship, the former USS Shadwell, to the Mobile facility, where full-scale fire testing is conducted. It will be used as a military fire test ship and be positioned on Little Sand Island in Mobile Bay next to two former merchant ships—a tanker and a cargo ship—used by the Coast Guard in their research.

The addition of a Navy ship will reduce costs by eliminating the need to modify the merchant ships for military tests. When engaging in fire protection research for military ships, it becomes necessary to modify the commercial ships to resemble the configuration of the military vessels. The testing program will be used to improve fire protection on Coast Guard cutters as well as Navy ships.

Free Report Details Gas-Fired Boiler Fuel Savings

Modifying gas-fired drum boilers to improve turndown and cyclic shutdown capability for reduced fuel costs is the topic of a Bailey Control technical paper titled "Trinidad Unit 6—A Case History of a Control System Retrofit."

Included are illustrations showing performance curves, cost differentials and control strategies implemented on a tangentially gas-fired boiler owned by Texas Power & Light.

Bailey Controls, Wickliffe, Ohio, is a division of Babcock & Wilcox, and a leading worldwide supplier of instrumentation, controls, and computer systems for power generation, process automation and energy management in the petrochemical, electric utility and process industries. Babcock & Wilcox is a major operating unit of McDermott Incorporated, a subsidiary of McDermott International, Inc.

Peterson Builders Receives Navy Certification Of Metal Spray Facility

Peterson Builders, Inc., (PBI), Sturgeon Bay, Wisc., has announced the certification of their metal thermal spray facility and metal thermal spray operators by the Naval Sea Systems Command, Washington, D.C.

Metal thermal spray is a system for melting any metal (aluminum, bronze, copper, stainless and zinc) and spraying it in a molten state onto any other material, creating a permanent bond.

This system is used to control corrosion, to build up worn parts and to create thermal and electrical barriers. It protects iron and steel from corrosion and may last in excess of 15 years. Metal thermal spray coatings are excellent corrosion undercoatings for organic materials such as paint and plastic finishes.

The Navy has been testing metal thermal spray for over 20 years and is now using this technique for corrosion control and metal parts buildup on their vessels. Ceramic coatings and electrical emission control are additional advantages of this system.

PBI reports it is the only shipyard in the Central United States certified to perform metal thermal spray in accordance with Mil Standard DOD-2138-SH. Using the latest state-of-the-art equipment, PBI can conduct metal thermal spraying operations at their new facility or at a specified job site.

For further information on Peterson Builders' new facility and metal thermal spraying,

Circle 68 on Reader Service Card

Circle 215 on Reader Service Card ➔

Key Appointments At Oerlikon

Oerlikon Welding Industries, Houston, Texas, has announced several key appointments.

Jim Finley has joined the company and will have sales responsibility in the Western states. Mr. **Finley** joins Oerlikon after several years experience with manufacturing companies and welding distributors. He is a specialist in selling through distributors and distributor support.

Jim Kozarewicx was selected to have sales responsibility for the Midwest states. He joins Oerlikon with previous experience both in working with manufacturers in the welding industry and for distributors in the same field.

Ron Pfeifer has also joined the company, with sales responsibility in Texas, Louisiana and Oklahoma. Mr. **Pfeifer** has many years' experience working in the welding distributive industry.

All three appointments represent an expansion of the Oerlikon In Field Distributor Support Team as part of the company's Square Deal Distributor Sales Policy.

In another appointment, **Barney Burks** was selected as field sales manager with responsibility for management of the field sales support activity of the Oerlikon Distributor Support Team.

Oerlikon offers a complete range of welding consumables for all processes.

Circle 6 on Reader Service Card

Rauma-Repola Awarded Contract To Build Research Vessel For Soviet Union

Rauma-Repola's Rauma Shipyard has just signed a contract for construction of a 7,600-dwt hydrometeorological research vessel for V/O Sudoimport of Moscow. Scheduled for an August 1987 delivery, the ship will have an overall length of 359.3 feet, beam of 75.7 feet, draft of 27.9 feet, and speed of 16 knots.

The vessel will serve as an icebreaker and as a research, supply, and passenger ship in the Antarctic. She will accommodate 250 passengers, including 90 scientists, ship's crew and helicopter crew, and 160 complement going to and from the Antarctic base. She will also carry containers, vehicles, aircraft, liquid cargo, and explosives.

NICOR Consolidates Administrative Functions Of 2 Marine Subsidiaries

NICOR Inc., Naperville, Ill., recently announced consolidation of various administrative functions of two of its marine subsidiaries, NICOR Marine Inc. and National Marine Service Incorporated, in new offices in New Orleans, La.

The corporate offices, financial, accounting, legal and treasury functions of both companies are headquartered at: Plaza West Building, Second Floor, 3201 General DeGaulle Drive, New Orleans, La. 70114; and have a telephone number of (504) 364-1826.

NICOR Marine had previously occupied offices in New Orleans' French Quarter, and National Marine Service was based in St. Louis, Mo. The move to New Orleans' west bank brings the corporate staff nearer to the company's Morgan City, La., Gulf Division headquarters and Gulf shipyard facilities in Harvey, La. The consolidation is part of the marine companies' effort to cut operating costs and improve efficiencies.

Glen H. Fornell is president of NICOR Marine and National Marine Service. Other officers of the two companies, headquartered in New Orleans, include **Thomas D. Greenberg,** vice president; **Tim M. Williams,** treasurer; **Barrett B. Daly,** secretary; and **Barbara A. Schaffer,** controller. **Thomas K. Babington,** vice president of both companies, is based in St. Louis.

For further information on NICOR Inc. and its subsidiaries, services and facilities,

Circle 99 on Reader Service Card

Omega Marine Awarded Engineering Design Work By Union Texas Petroleum

Omega Marine Services, Inc., Houston, Texas, has been awarded the engineering design for Union Texas Petroleum Corporation's Eugene Island 371 'A' platform topside facilities. Equipment is being designed to produce 250 BCPD and 60 MMSCFD gas. Omega Marine will also provide assistance in construction management and procurement.

BP Offers Free 32-Page Brochure On World Energy

The British Petroleum Company p.l.c. is offering a 32-page brochure which gives a statistical review of world energy consumption and production.

The full-color publication offers several pages of outstanding color graphs presenting the world energy picture clearly and concisely. Some of the graphs presented in the brochure include: oil production by area; oil consumption; oil discoveries 1859-1984; refinery capacities; imports and exports of oil in 1984; natural gas production; nuclear energy consumption; and coal production.

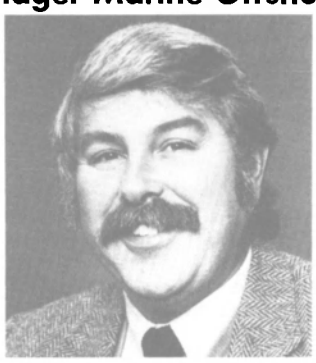
The brochure offers an impressive array of statistical facts on the entire globe including: North America, Latin America, Western Europe, the Middle East, North Africa, West Africa, East and South Africa, South East Asia, South Asia, Australasia, Centrally Planned Economies, OECD members, OPEC members and Non-Communist World countries.

A special feature included in the brochure is a conversion table for tons, long tons, barrels, gallons (imperial), gallons (U.S.), and barrels/day.

To receive a copy of this impressive, full-color brochure from British Petroleum,

Circle 65 on Reader Service Card

ASEA Names Jon Turley Manager Marine Offshore



Jonathan Turley

Jonathan Turley has been named product manager for Marine and Offshore of ASEA Inc., company officials announced.

Mr. **Turley** has some 20 years' experience in the marine business. After spending five years at sea with the British P.O. Lines, he joined the ASEA organization in 1971 in Amsterdam, Holland, as marine sales application engineer. In 1983, he assumed responsibility for ASEA Inc.'s west-coast marine activities in Vancouver, B.C.

In Montreal, Mr. **Turley** will be responsible for the newly formed Marine and Offshore Centre. All ASEA Marine automation and power equipment activities for North America will be concentrated in this office. The new Marine and Offshore Centre will handle all application engineering, systems coordination and documentation, but certain hardware and standard subsystems will be imported from Sweden.

By concentrating the expertise locally, the new organization will be able to offer improved services to ASEA's many Canadian and U.S. customers and increase the level of North American content in the finished products.

ASEA Inc. employs more than 650 people in seven locations across the country designing and building a wide range of industrial and utility products.

ASEA Inc. supplies complete propulsion controls as well as highly advanced electronic automation equipment, speed controls and alarm and safety systems for marine and offshore applications.

For free literature and further information on ASEA equipment,

Circle 80 on Reader Service Card

For Aeroquip Literature: ▶
Circle 147 for Bulletin 5732
Circle 148 for Bulletin 5890
Circle 149 for Catalog 261
Circle 120 for Catalog 305B

Marine Machinery Association To Sponsor Navy/Industry Panel Discussions On Feb. 26

MMA, the Marine Machinery Association, continuing its efforts to foster a better understanding and a better business climate between the Navy and the marine industry, will host two panel discussions at its next meeting on February 26 in Crystal City, Arlington, Va.

During the morning, four panel members representing the Navy and industry will discuss "Quality Issues." Panel moderator will be Mrs. **Hazel Bradford** of *Business Week* magazine. Mrs. **Bradford** was a major contributor to the December 16, 1985, *Business Week* cover story, "The Counterfeit Trade."

The morning panel will include Rear Adm. **Roger Horne,** USN, Deputy Commander, Air Facilities, Naval Sea Systems Command; **Richard McFarland,** Executive Director of USN Ships Parts Control Center, Mechanicsburg, Pa., **George Landberg,** president, Warren Pumps; and **David Cote,** vice president, Terry Steam Turbine.

"Rights in Data" will be addressed during the afternoon sessions, with four panelists from the Navy and industry. Following each intra-panel discussion, the moderator will invite questions/discussion from the audience.

Names of the afternoon panel members were not all confirmed at press time. The afternoon panel moderator will be Rear Adm. **Thomas Hopkins,** USN (ret.). Panel members will include **Gordon Flynn,** president of Hardie Tynes; a representative of Dresser Industries; and others to be announced.

The meeting will take place at the Sheraton Crystal City in Arlington, Va., on Wednesday, February 26, from 9 a.m. to 4:30 p.m.

Registration fee for the meeting is $75 for members, $100 for nonmembers. A continental breakfast will be available from 8—9 a.m. during sign-in, and cocktails and lunch will be served between the sessions. The luncheon speaker will be announced later.

As seating will be limited, anyone interested in attending and/or joining the association should contact: **Dan Marangiello,** MMA's executive director, at (703) 553-1821, or write directly to Marine Machinery Association, 1700 K Street NW, Suite 903, Washington, D.C. 20006.

The Sheraton Crystal City is offering guaranteed rates of $88 single/$98 double for attendees. Make reservations directly with the Sheraton Crystal City, (703) 486-1111, advising them that you will be attending the MMA meeting.

New One-Stop Shopping Sensors And Controls Catalog From Transamerica Delaval

A new line of flow transmitters is included in the free One-Stop Shopping, sensors and controls catalog from Transamerica Delaval, Inc., Catalog Sales, Plainville, Conn.

A patented flow-through paddlewheel design is used to give accurate linear output; ± 1 percent. One version is cavitation-free to 50 ft./sec., and can be used with fluids containing particulate matter up to 1 percent of fluid volume. They will monitor flow, bi-directionally in pipes ranging ½-inch to 4 inches in diameter.

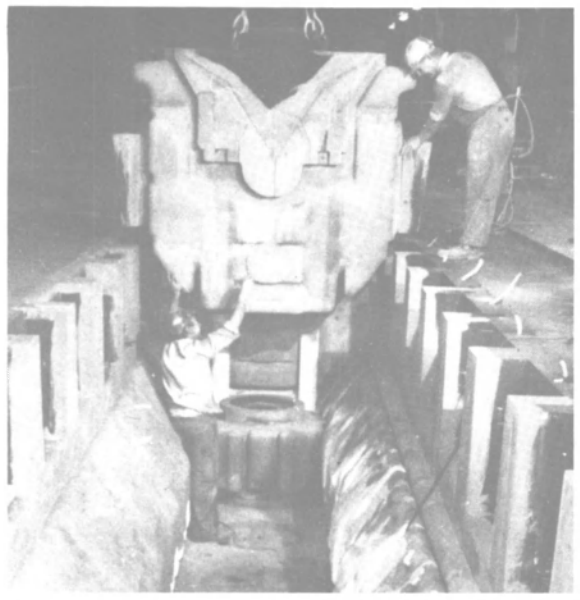
Other versions include high-pressure and temperature models, microsensors for low flow applications (down to 120 ml/min.), and a microprocessor-controlled, magnetic flow sensing unit with no moving parts, designed for fluids with up to 30 percent particulate matter.

All sensor/transmitters will send information to a broad range of receivers and controllers, also offered in the catalog.

For more information,

Circle 85 on Reader Service Card

M.A.N.-B&W Diesel Produces 90-Ton Casting —Its Biggest Ever



Casting mould for casting the frame of the 9L 58/64 large-bore diesel engine is shown being prepared in the foundry shop of M.A.N.-B&W Diesel in Augsburg.

The M.A.N.-B&W Diesel foundry of Augsburg, West Germany, recently made its biggest ever casting—of approximately 90 tons.

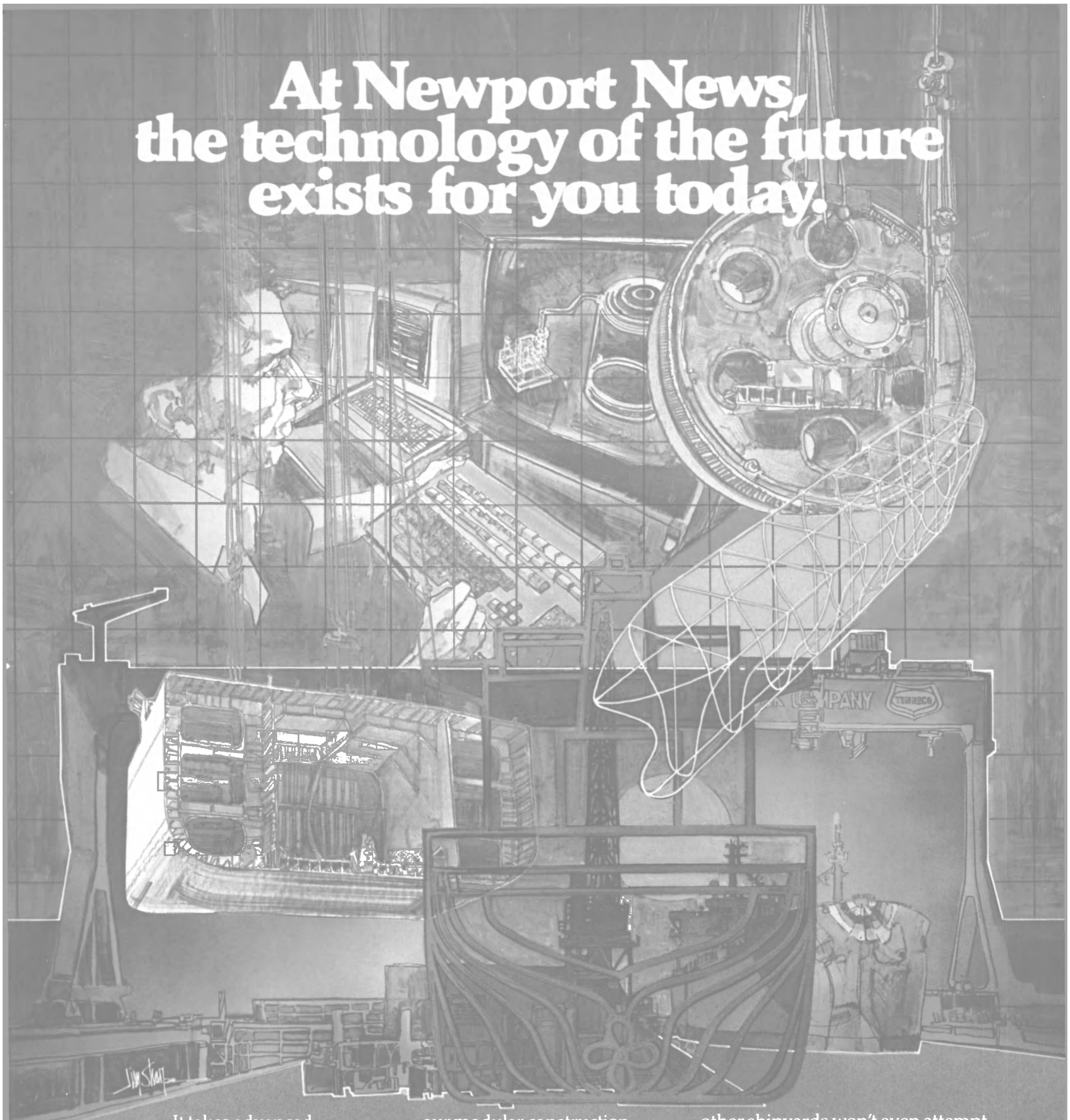
This blank serves as a frame for the first of nine 9L 58/64 large-bore diesel engines to be used for the conversion of the propulsion system of the passenger ship Queen Elizabeth 2. The total output of its diesel-electric propulsion concept amounts to 130,000 hp (94,500 kw).

As previously reported, M.A.N.-B&W Diesel are responsible for the engineering layout and the delivery of the complete engine room equipment including line shaft and propeller. The order value for M.A.N.-B&W exceeds 90 million Deutsche Marks (about $37,000,000).

For more information on M.A.N.-B&W Diesel,

Circle 89 on Reader Service Card

At Newport News, the technology of the future exists for you today.



It takes advanced technology, superior facilities and imagination to design and build the most sophisticated ships in the world.

At Newport News these capabilities are at your service.

Our integrated Computer Aided Design/Computer Aided Manufacturing System, our modular construction techniques and our 900-ton superlift capacity enable us to build every kind of commercial ship to your specifications. And deliver on time.

So when you need a ship built to specific requirements, come to us. We can handle the toughest jobs, including some other shipyards won't even attempt.

Newport News Shipbuilding.
Newport News, Virgina 23607.
1-804-380-2600. Telex 82-3453.
TWX 710-880-0007.

Newport News Shipbuilding
TENNECO
A Tenneco Company
Newport News, Virginia 23607

Circle 166 on Reader Service Card

PROPULSION UPDATE

The New 710G Series Diesel Engines From General Motors Electro-Motive Division

By Hugh Williams Jr.*

(Ed. note—Complete literature is now available from GM/EMD describing the new 710G Series.)

The new 710G Series of diesel engines from General Motors Electro-Motive Division (GM/EMD) offers increased reliability, better fuel efficiency, and the potential for significantly higher horsepower in the future. This design is an evolutionary development of GM/EMD's turbocharged, uniflow scavenged, two-stroke cycle engine, which retains the latter's historical simplicity of design, maintainability, and high reliability.

The 16-cylinder diesel is rated conservatively at 3,600 horsepower at 900 rpm for marine applications, and has a displacement of 710 cubic inches per cylinder. GM/EMD will market models of this new series of engines for a variety of applications.

The design of the 710G is a logical outgrowth of GM/EMD's current production series, the 645F engines. The most recent version of this series, the 645FB, is the result of a succession of incremental improvements to the engine. From 1980 to 1983, for example, the fuel efficiency of the 645F was increased by 6 percent and the compression ratio was increased from 14.5:1 to 16:1.

Similarly, the 710G can be viewed as a new dimension in engine design, in terms of its potential for future growth. (Table 1 is a comparison of specifications.) Greater displacement and an advanced turbocharger give the 710G the capacity for significant increases in horsepower. Thus, the 710G combines innovation with the proven technology of its predecessor, but its potential makes it more than just this year's model.

The 710G is the product of extensive development at GM/EMD. Total development cost was $60 million. Tooling cost alone was $78 million.

ENGINE SPECIFICATIONS

	16-645FB	16-710G
Bore in.	9.06	9.06
Stroke in.	10	11
Displacement in.	645	710
Cylinder Spacing in.	16⅝	16⅝
Bank Angle	45	45
Compression Ratio	16.01:1	16.01:1
Engine Speed rpm	900	900
BHP (marine rating)	3,400	3,600

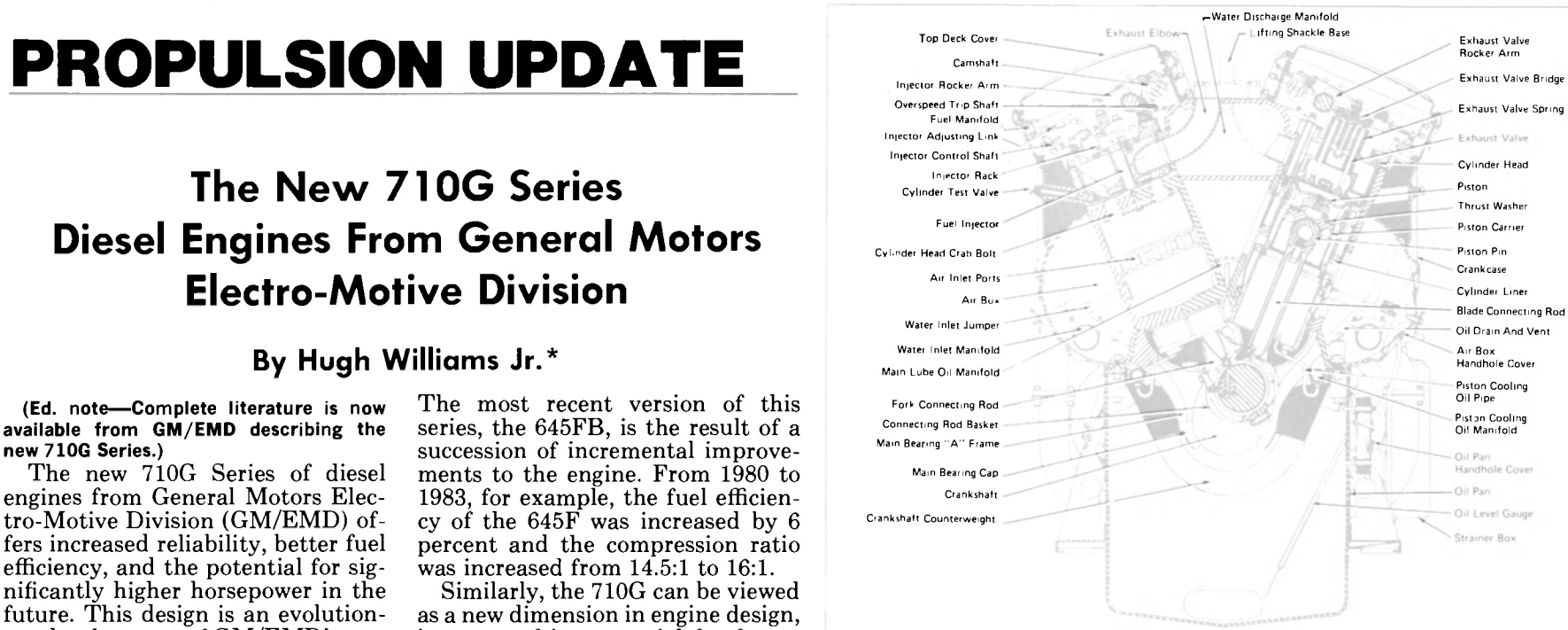
Table 1. This table compares the specifications of GM/EMD's new 710G diesel with its predecessor, the 645FB.

Fuel Efficiency

The 710G is GM/EMD's most fuel-efficient diesel to date. Full load fuel consumption of the Model 710G engine has been improved by 9 percent from the 1980 Model 645F3 engine.

Displacement

A major change in the 710G design is greater displacement. The 10-inch piston stroke of the predecessor 645FB was increased to 11 inches in the 710G engine. The longer stroke at the same bore adds 10 percent more displacement—from 645 to 710 cubic inches per cylinder. This added displacement is a key factor in the 710G's promise of greater horsepower in future models.



Capacity of the camshaft/valve-train system has more than doubled compared to that of the 645FB, resulting in reserve capacity for future growth to a ⅝-inch injector. The camshaft base circle was increased from 2.50 to 3.25 inches in diameter; the cam roller follower was increased 0.375 inches in diameter, and the injector and exhaust rocker arms were strengthened.

The General Motors Electro-Motive Division 710G engine is a two-stroke cycle, uniflow scavenged, open-combustion chamber diesel with overhead camshafts and unit injectors. The unitized cylinder power assembly with jacketed liner provides simplification of maintenance and minimization of bolted and gasketed water connections. These maintainability advantages of the GM diesel have been retained while providing significant improvements in fuel economy and structural integrity for future growth

The longer stroke and added displacement led to structural improvements in the engine:

- Model G crankcase
- Larger diameter plunger injectors
- A larger diameter crankshaft
- A new camshaft
- A longer cylinder liner
- A longer piston and rod assembly

The 710G design also increased the overall dimensions: The engine is 1⅝ inches higher and 4⅝ inches longer.

Turbocharger

The added engine length is the result of a larger, extremely efficient turbocharger. Entry to the turbine was streamlined to improve gas flow. An improved exhaust diffuser also reduces flow restriction. The turbocharger is deeper to accommodate a larger annulus for a smoother and less restrictive discharge of exhaust gases. Overall, the turbocharger is the most efficient ever produced by GM/EMD.

HORSEPOWER RATINGS

Marine

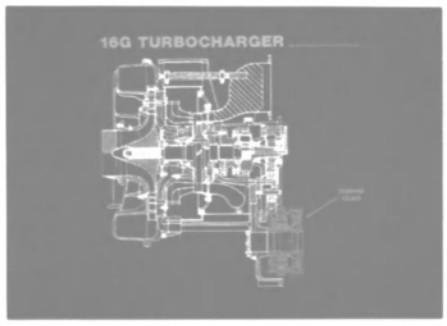
Model	Engine	900 RPM	800 RPM
GM8G7	8-710G	1,800	1,600
GM12G7	12-710G	2,800	2,400
GM16G7	16-710G	3,600	3,200
GM20G7	20-710G	4,300	4,000

Drill Rigs

Model	Engine	900 RPM
MD8G9	8-710G	2,000
MD12G9	12-710G	3,100
MD16G9	16-710G	3,960
MD20G9	20-710G	4,700

Stationary Power

Model	Engine	900 RPM	800 RPM
S8G4	8-710G	1,800	1,500
S12G4	12-710G	2,800	2,250
S16G4	16-710G	3,600	3,000
S20G4	20-710G	4,300	3,800



The G turbocharger illustrates the state-of-the-art advancements in turbocharger design providing a 10 percent increase in overall air-fuel ratio over previous models, significantly reducing the thermal loading of critical power assembly components.

The new state-of-the-art, high-efficiency "G" turbocharger provides a 15 percent increase in air flow for reduced thermal loading of critical engine components. This higher air flow, in combination with an increased injection rate from the new $\frac{9}{16}$-inch plunger injector, accounts for the increase in fuel economy at rated output, with no increase in engine thermal loading.

Reliability

A key concern in the development of a large displacement engine is reliability. Throughout the development of the 710G, GM/EMD used advanced laboratory techniques to analyze stress and predict performance. Finite element analysis and comprehensive strain-gauge testing were used extensively to take full advantage of GM/EMD's extensive development and reliability experience on the 645 engine.

In manufacturing, extensive use is being made of statistical process control.

For copies of free brochures containing complete data describing in detail the new 710G Series of diesels from GM/EMD,

Circle 22 on Reader Service Card

*Mr. **Williams** is a supervisor, product engineering, engine design section, Electro-Motive Division, General Motors Corporation, LaGrange, Ill.

Todd Ceases Operations At New Orleans Division

Todd Shipyards Corporation has announced that it has put operations at its New Orleans Division on idle status following a six-month strike by Local 29 of the Industrial Union of Marine and Shipbuilding Workers of America. According to Todd president **Hans K. Schaefer,** this action was made necessary after the union continued to insist on unrealistic wage and fringe benefits demands despite several counter-offers by the company.

At the time of the strike, employment at the New Orleans ship repair facility stood at about 140 workers—a relatively low level compared with past periods. At the present time, Todd has no plans to reactivate the facility in the near future.

One of the country's leading ship construction and repair companies, Todd operates shipyards in Seattle, San Francisco, Los Angeles, and Galveston. Its recently acquired ARO subsidiary is an international manufacturer of industrial air powered equipment and aeronautical life support systems.

Carbocoke Orders Two Supply Vessels From Ferrari For $8.8 Million

Carbocoke Armamento SpA of Genoa, a 12-ship fleet specializing in the carriage of liquefied gas and chemicals, has awarded a contract valued at $8.8 million to Cantieri Ferrari Shipyard in La Spezia for the construction of two supply vessels to serve offshore structures. Each will be of 1,400 gt and be powered by diesel engines with a total output of 8,400 bhp.

Ferrari expects to deliver the two supply vessels before the end of 1987. The La Spezia yard is currently building six 2,800-bhp tugboats for Rimorchiatori Riuniti of Genoa under a $14.7-million contract.

Marine Travelift Introduces New Floating Boat Hoist Design —Literature Available

Marine Travelift has announced the development of a new "Floating Boat Hoist" model. The 35-ton-capacity unit was designed for use in ports where conventional launching pier facilities would be impossible or not practical.

Model 35FBH is gasoline powered for adaptability to a wider variety of installation localities. Hydraulic hoist control is utilized to power a single point lift component. The new mode features unitized design to facilitate easy assembly or take-down for containerized shipping between installations.

The first of the floating boat hoist models was installed at Halifax, Nova Scotia, where it is used to haul the Royal Nova Scotia Yacht Squadron's new 12-meter America's Cup Challenger, The True North.

Marine Travelift, originator of the mobile boat hoist concept, has been producing boat hoists for over 25 years. Besides the new floating hoist, their line of mobile boat hoists ranges from 15 through 250-ton-capacity.

For further information and specifications on the new floating boat hoist, as well as other models in the line,

Circle 75 on Reader Service Card

Polish Shipyards To Build 300 Ships For USSR At Cost of $3.8 Billion

The Soviet Union's next five-year shipbuilding plan includes some 300 vessels of various types to be built by shipyards in Poland at an estimated total cost of $3.8 billion. Included will be cargo ships, fishing vessels, and a variety of special-purpose craft. With these orders, Polish shipyards will not experience the severe crisis being felt in other shipbuilding countries.

The Adolf Warski shipyard in Szczecin currently is building 16 oceangoing tugs for the Soviet Union. These will be used mainly to transport material for offshore platforms, and will be effective in Arctic areas.

Puroflow Filters To Protect Sperry Computers —Literature Available

Puroflow Marine Corporation, which recently announced the development of a new series of compact power-line filters for OEM applications, has reached agreement with Sperry Corporation to provide Puroflow filters for Sperry's new line of "ruggedized" on-board computers for the marine industry.

The Puroflow filters will provide essential protection for the Sperry computer from the harmful effects of voltage surges and conducted electromagnetic interference (EMI).

Sperry has developed a special version of its popular PC for use abroad ships and offshore rigs, and as an enhancement to its satellite communicators. The computer has been extensively ruggedized with vibration and shock isolation and power-line conditioning to permit dependable operation in the harsh marine environment. The Puroflow filters were selected after an extensive evaluation in which they were found to offer an extremely cost-effective solution to the problem of power-line fluctuations, according to Sperry vice president, marketing, **C.R. Kenney.**

Puroflow's small modular OEM power-line filters were developed to meet the perceived demand for adequate built-in protection in modern electronics systems, said Puroflow vice president **G. Howard Warren.** Voltage fluctuations and EMI are common problems aboard ships and offshore oil rigs, causing frequent breakdowns and malfunctions in the sophisticated electronic suites now used in modern marine management. The Puroflow devices have been extensively tested and independently documented to provide total protection, even from the most severe voltage surges, said **Mr. Warren.**

For further information on Puroflow power-line filters,

Circle 94 on Reader Service Card

Jacobs Promoted To Operations Manager For Welded Beam

Alex Jacobs

Alex Jacobs has been named operations manager for Welded Beam Corporation of Perry, Ohio. The appointment was made by **Larry N. Lamphier**, president.

Formerly product manager for the company's custom welded steel shapes, Mr. **Jacobs** will now be responsible for all plant management, engineering, and quality-control functions. Prior to joining Welded Beam, he was sales engineer and later regional sales manager for Matrix Churchill Company of Solon, Ohio. Before that, he was product engineer for Advancement Corporation, also in Solon.

Free Revised 24-Page Vaneaxial Fan Bulletin Offered By Aerovent Inc.

Aerovent Inc. of Piqua, Ohio, has issued a revised 24-page Vaneaxial Fan Bulletin on its broad line of belt-driven and direct-drive vaneaxial fans.

Bulletin 455 provides useful information on belt-driven and direct vaneaxial fans in sizes from 18 inches to 84 inches, volumes to 211,000 CFM and 224,500 CFM, respectively, and power ratings to 143 bph. Accessories outlined include inlet dampers, silencers, belt guards and shaft seals.

General information, specifications, dimensions and performance data for all models are described in the bulletin.

For a free copy,

Circle 16 on Reader Service Card

ELECTRONICS UPDATE

Texas Instruments Offers New GPS Software —Literature Available

A new relative-positioning software package, called Geomark, designed to process data collected by TI-4100 Global Positioning System (GPS) Navigators was recently introduced by Texas Instruments.

The Geomark software for GPS provides highly accurate postprocessing positioning information from data collected by two TI-4100 GPS Navigators simultaneously tracking the same four GPS satellites.

The TI-4100 is a satellite-based navigation system that provides precise absolute positioning or relative point-positioning surveys, including aerial surveys, offshore platform positioning, marine navigation and oceanographic and geophysical surveys.

According to **John Applegate,** marketing manager, commercial GPS, the introduction of the Geomark software gives the TI-4100 user a totally self-contained, on-site collection and postprocessing system that can be used anywhere in the world.

"The software provides comprehensive, documented solutions to relative positioning problems that were previously cumbersome and expensive," he said. "Additionally, Geomark provides these solutions with much greater accuracy, speed, flexibility, ease and economy."

Accuracies are obtained using the broadcast ephemeris data recorded by the TI-4100 and do not require the use of precise ephemeris that some GPS systems must obtain from other sources, he added.

The Geomark software provides typical solutions in less than one hour of off-line processing using as little as 30 minutes of collected data, including data cassette translation.

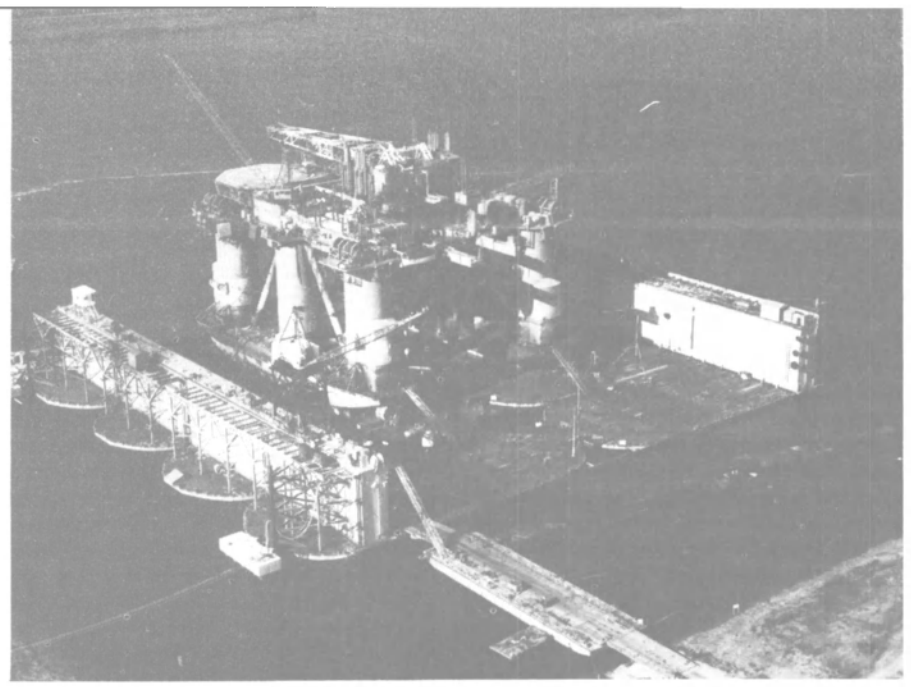
Geomark offers totally automatic operation. Users may enter custom specifications by overriding the automatic defaults. Users can also specify the reference location or derive the location using the TI-4100. Geomark processes both Precise Code (P-Code) or Coarse/Acquisition (C/A Code). The software uses broadcast empheris, but can also support post-mission precise ephemeris.

Geomark records all necessary data on a one-page report that provides the user with the monument-to-monument baseline vector. The system can provide the answer in standard latitude, longitude, altitude; state plane; UTM; or local datum.

The complete TI-4100/Geomark package is available now and includes Geomark and MS-DOS™ software. The package also includes the TI Portable Professional Computer with 256K bytes RAM, a multifunction board with an additional 256K RAM, a single floppy diskette drive, a 10-megabyte Winchester hard disk drive, an 8087 coprocessor, three-plane graphics board, a built-in high-resolution 9-inch color monitor, two Memtec cassette readers, two RS-232 cables, and the TI 855 microprinter.

For additional information about the TI-4100 and Geomark software, including detail-filled literature,

Circle 18 on Reader Service Card



THE FIRST AND SEVENTH—The Aleutian Key became the first semisubmersible oil drilling rig and seventh vessel to be drydocked at Bethlehem Steel Corporation's floating drydock at the firm's new Sabine Yard, Port Arthur, Texas. Inspected and repaired in November, the rig measures 260 feet by 200 feet by 111 feet high. In addition to the semisubmersible, the yard has serviced one jackup rig, four ships and a large barge. The floating drydock is one of the nation's largest and is said to be the only one in the world that can be configured in either a ship mode or a rig mode.

USS Valley Forge (CG-50), shown on sea trials in the Gulf of Mexico, is the fourth Ingalls-built Aegis cruiser commissioned into the U.S. Navy Fleet.

Aegis Missle Cruiser Valley Forge Commissioned At Ingalls Yard

The U.S. Navy's Pacific Fleet received its newest ship, and its second Aegis guided missile cruiser, following the recent commissioning of the USS Valley Forge (CG-50) at the Ingalls Shipbuilding yard in Pascagoula, Miss. Principal speaker at the commissioning ceremony was **William H. Taft IV,** Deputy Secretary of Defense. He was welcomed to Mississippi by Congressman **Trent Lott** (D-Miss.).

The Valley Forge is the fourth in a series of Ticonderoga Class cruisers being built by Ingalls. She is equipped with the advanced Aegis weapons system, the most capable shipboard air defense radar and missile system in the world today.

Also participating in the commissioning ceremony were: Adm. **James B. Busey,** vice chief of naval operations; Vice Adm. **Joseph Metcalf III,** deputy chief of naval operations for surface warfare; Vice Adm. **William H. Rowden,** commander, Naval Sea Systems Command; Rear Adm. **John W. Nyquist,** commander Cruiser Destroyer Group Five; Rear Adm. **John F. Shaw,** Aegis program manager; Capt. **George W. Dowell,** supervisor of shipbuilding, Pascagoula; and **Jerry St. Pe,** vice president of Litton and president of Ingalls Shipbuilding.

Mrs. **Julia Vadala Taft,** who served as sponsor of the Valley Forge during her September 1984 christening, also participated in the commissioning ceremony.

The Valley Forge and other ships of the Aegis class, the most important surface shipbuilding program in America today, will provide the primary protection for the Navy's battle forces well into the next century. Aegis cruisers are big ships—567 feet long with a beam of 55 feet. Four 20,000-shp gas turbine engines drive the 9,400-ton ship at speeds in excess of 30 knots.

The ship's Aegis weapons system, the heart of her fighting capability, is a significant advance in fleet air defense. Four fixed array radar antennas mounted on the sides of the ship's superstructure replace conventional totaling antennas, enabling the crew to "see" in all directions simultaneously. The Aegis system can simultaneously fire and direct more missiles at more targets, with greater accuracy, than any other system.

The Valley Forge is also equiped with a fully integrated LAMPS (Light Airborne Multipurpose System) MK III combat suite. This includes the SH 60B Seahawk helicopter for antisubmarine warfare, ship surveillance, targeting, and search and rescue; The RAST (Recover, Assist, Securing, Traversing) recovery system that "pulls" the helicopter to the ship's deck during heavy weather opertions; and advanced electronic control systems. The LAMPS significantly improves the ship's antisubmarine warfare capabilities.

As lead shipbuilder for five of the latest classes of Navy surface combatants, Ingalls has delivered 44 complex warships into the Navy Fleet since 1975, more than any other shipyard in the country. The Mississippi shipyard delivered the lead ship of the Aegis cruiser class, the USS Ticonderoga (CG-47), ahead of schedule in 1983. The second ship of the class, the USS Yorktown (CG-48), joined the Atlantic Fleet ahead of schedule in July 1984. The USS Vincennes (CG-49) became the first Pacific Fleet Aegis cruiser following commissioning in July 1985.

VALLEY FORGE
Major Suppliers

Main engines	General Electric
Reduction gears	Westinghouse
Propellers	Bird-Johnson
SS generators	Stewart & Stevenson
Auxiliary boilers	Combustion Engineering
Ship control system	Litton
Sonars	General Electric
Aegis computers programing	Computer Sciences
Fire control system, radar system	Raytheon
Combat system operating consoles	Hughes Aircraft
Combat system computers	Sperry Univac
Guns and missile launchers	FMC
Fire control system	Lockheed Electronics
Missile control directors	GE
Switchboards & panels	Nelson Electric
Shaft bearings	American Metal Bearings
Deck covering	Steigerwald
Commissary equipment	H.E. Green
Distilling plants	Aqua-Chem
Air cond. & ref.	York
Fan coil assemblies	Nuclear Cooling
LP air compressors	Worthington
Steering gear	Jered Brown
Pumps	Carver and Warren
Fans	Joy Manufacturing
Strikedown elevators	Unidynamics
Duplex strainers	Chas. M. Bailey
Control valves	Cla Val
Bronze valves	Milwaukee and Pima
Globe valves	Waeco
Electrical connectors	SAE
Electrical backshells	Sunbank
Gauges	Weksler
Valves & fittings	Mobile
Electrical symbol items	Henschel
Steel plate	Armco; U.S. Steel
Steel shapes	Inland
Electrical cable	Collyer
House & hose fittings	Aeroquip
Contract design personnel	Advanced Marine

New Straight Thread Ball Valve From PBM—Free Literature Offered

Pittsburgh Brass Manufacturing, Irwin, Pa., has added straight thread tube fitting end connections to MS-33649, to its growing family of ball valves. These full port valves give maximum Cv factor, and are fitted with lock washers for vibration-proof operation.

Panel-mounted version with gull wing handle is available, as well as standard in-line and actuated versions. Sizes range from ½-inch to 2 inches in 316 stainless steel from stock, but other metals can be furnished with reasonable lead time.

Pressures to 600 psi and temperatures to 500°F are possible, with TFE body cavity fillers as an option.

For free literature on the new ball valves with straight thread tube fittings and connections from Pittsburgh Brass Manufacturing,

Circle 69 on Reader Service Card

PROFESSIONAL

(718) 939-4422

AERO NAV LABORATORIES, INC.

14-29 112th Street, College Point, N.Y. 11356
Navy-Hi Shock, Vibration & A.B.S. Testing

Ameritech Corp.

Commercial • Shipbuilding & Repair

7 Belver Avenue, Suite 215
Quonset Pont - Davisville ind. Park 401 295-2663
North Kingston, Rhode Island 02852 401 295-2664

AMIRIKIAN ENGINEERING CO.
HARBOR AND DRYDOCKING FACILITIES
FLOATING LIFT DOCK AND SHORE TRANSFER
CONCEPTS, DESIGN, INVESTIGATIONS
Chevy Chase Center Office Bldg.
Suite 505, 35 Wisconsin Circle
Chevy Chase, Md. 20015 (301) 652-6903

NAVAL ARCHITECTS MARINE ENGINEERS

ART ANDERSON ASSOCIATES

Bremerton, WA (206) 479-5600
Seattle, WA (206) 622-6221

Captain Astad Company, Inc.
Complete Marine Services - Full Broker Service
Owners Representative Service
Purchase & Sale of All Types of Vessels

CAPTAIN A. J. ASTAD, President
P.O. BOX 53434
NEW ORLEANS, LA 70153
PHONE (504) 529-4171 (24 HRS.)

Ocean Engineering Centre
SHIP-MODEL TESTING

- Resistance Tests • Flow Visualization
- Wake Surveys
- Towed Directional Stability Evaluations
- Seakeeping

For Information Contact:

B.C. Research
Ocean Engineering Centre
3650 Wesbrook Mall,
Vancouver, Canada V6S 2L2
Telephone (604) 224-4331
Telex 04-507748

C.T. MARINE

NAVAL ARCHITECT • MARINE ENGINEER

- TUGS
- TOWBOATS
- BARGES

18 Church Street, Georgetown, CT 06829
Telephone: 203-544-8110
Telex: ITT 4994761

CDI marine company

NAVAL ARCHITECTS
MARINE ENGINEERS

JACKSONVILLE, FL (904) 724-9700	BOSTON, MA (617) 878-8340	EXECUTIVE OFFICE: JACKSONVILLE, FL (904) 723-2620
WASHINGTON, D.C. (703) 892-0210	SEATTLE, WA (206) 235-0888	PASCAGOULA, MS (601) 762-0098
PHILADELPHIA, PA (609) 772-0800	CHARLESTON, S.C. (803) 883-3747	BREMERTON, WA (206) 479-8828
HAMPTON, VA (804) 627-4328	CHESAPEAKE, VA (804) 543-4211	YOKOSUKA, JAPAN 011-81-468-26-1911

CHILDS ENGINEERING CORPORATION
Waterfront & Structural Engineering • Diving Inspection
Box 333/Medfield/MA 02052
(617) 359-8945

Thomas Coudon Associates
Marine Equipment Sales
6655 Amberton Drive Baltimore, Md. 21227 (301) 796-2525

CRANDALL
DRY DOCK ENGINEERS, INC.
Railway and Floating Dry Docks
Waterfront Structures • Consulting
Design • Inspection
Dry Dock Hardware and Equipment
21 Pottery Lane Dedham, MA. 02026
Tel. (617) 329-3240 Telex: 924406

---

crane consultants Inc.
15301 1st Ave. So. Seattle, Washington 98148
(206) 246-7962 TWX 910-444-2085
Crane hoist, materials handling specialists

FRANCIS B. CROCCO, INC.
Marine Consultants, Marine & Cargo Surveyors
"Forty years of Surveying Experience in the Caribbean" Phone: (809) 723-0769
BOX 1411, SAN JUAN, PUERTO RICO 00903
Telex RCA 325 2634 PRCA 385 9005

C. R. CUSHING & CO., INC.
NAVAL ARCHITECTS, MARINE ENGINEERS
& TRANSPORTATION CONSULTANTS
18 Vesey Street
NEW YORK, N.Y. 10007
TEL (212) 964-1180 CABLE CUSHINGCO
TX: 752481

DEL BREIT INC.
MARINE ENGINEERING CONSULTANT
326 Picayune Place Suite 201
New Orleans, La. 70130
(504) 523-2801

DESIGNERS & PLANNERS, INC.
NAVAL ARCHITECTS MARINE ENGINEERS

CRYSTAL PARK #1, SUITE 500
2011 CRYSTAL DRIVE
ARLINGTON, VA 22202
(703) 892-8200
TWX 710-955-1132

1941 OLD CUTHBERT ROAD
SUITE 106
CHERRY HILL, NJ 08034
(609) 795-1170

190 TOWNE STREET
NORWICH, CT 06360
(203) 887-2501

797 BROADWAY
BAYONNE, NJ 07002
(201) 339-9446

DESIGN ASSOCIATES, INC.
M. KAWASAKI
14360 Chef Menteur Highway
New Orleans, Louisiana 70129
Naval Architects Marine Engineers
Marine Management Transportation Consultants
Phone: (504) 254-2012 TWX 810-951-5317

DLI ENGINEERING CORPORATION
MARINE
VIBRATION ANALYSIS
NOISE CONTROL
253 Winslow Way West, Bainbridge Island, WA 98110
(206) 842-7656

Measurement, recording and analysis of mechanical, structural and electrical phenomena.

ECO Inc.
Ship Design and Engineering
Ports, Waterways and Offshore Facilities
Military and Defense Systems
1036 Cape St. Claire Center, Annapolis, Md. 21401
(301) 757-3245

ENCON MANAGEMENT & ENGINEERING CONSULTANT SERVICES
Marine Structures • Engineering Analysis • Marine Survey
Project Management • Loss Prevention • Naval Architecture
P.O. Box 7760 • Beaumont, Texas 77706
(409) 866-9158

Envisions
ENGINEERING VISIONS, INC.
Formerly PRC Guralnick and PRC Marine Services
Naval Architects & Marine Engineers
1111 Bay Boulevard (619) 575-3300
Chula Vista, CA 92011

BARGES - TUGS - TOWING CHARTERS AND SALES PROCUREMENT AGENTS ON INLAND AND OCEAN TOWING
Jack Faulkner, Inc. ESTABLISHED 1964
Cable Address: FAULKBOAT
OFF. (504) 838-9675
(312) 798-2419

1001 W. HARIMAR COURT, METAIRIE, LA 70003
2419 Caddy Lane Flossmoor, Illinois 60422
"TOWING ANYWHERE THERE IS WATER"

CHRISTOPHER J. FOSTER, INC.
WORLD-WIDE EXPERIENCE AS DESIGNERS OF
GRAVING DOCKS • MARINE STRUCTURES
SHIPYARDS • MODERNIZATION • PORT FACILITIES
OFFSHORE TERMINALS • FLOATING DRYDOCKS
MARINE ENGINEERS • NAVAL ARCHITECTS
CONSULTING ENGINEERS
PORT WASHINGTON NEW YORK 11050
(516) 883-2830 TELEX 14-4674 CABLE: "CEFOSTA"

GIBBS & COX INC
NAVAL ARCHITECTS & MARINE ENGINEERS
119 West 31st Street • New York, N.Y. 10001
(212) 613-1300

Naval Architects Seattle, WA
Marine Engineers 206-624-7850
Ocean Engineers Telex: 32-1226

THE GLOSTEN ASSOCIATES, inc

Phillip Gresser Associates Ltd.
MARINE ENGINEERS
CONSULTANTS & SURVEYORS
3250 SOUTH OCEAN BLVD.
PALM BEACH FLORIDA 33480 TEL: (305) 586-0813

MORRIS GURALNICK ASSOCIATES, INC.
NAVAL ARCHITECTS MARINE ENGINEERS
MGA

MAIN OFFICE:
620 FOLSOM STREET, SUITE 300
SAN FRANCISCO, CA 94107
(415) 543-8650

EAST COAST OFFICE:
1911 JEFFERSON DAVIS HIGHWAY
SUITE 902 ARLINGTON, VA 22202
(703) 892-1700

J·J·HENRY·CO·INC·

naval architects • marine engineers • marine consultants
40 EXCHANGE PLACE
NEW YORK, N.Y. 10005
TEL. (212) 635-4000
TWX 710-581-2021, TELEX 422-036
Cohasset, Mass. (617) 383-9200 | Moorestown, N.J. (609) 234-3880 | Sturgeon Bay, Wis (414) 743-8217

HI-TEST LABORATORIES, INC.

P.O. Box 226 Buckingham, Virginia 23921
(804) 969-4264

- Underwater Explosion Shock Testing (MIL-S-901)
- Fixture Design and Fabrication
- R & D Support
- East & West Coast Facilities
- Test Program Management
- Field Testing with Craft & Engineering Support
- Pitch and Roll Simulation to 20,000 Lbs.

C. Raymond Hunt Associates, Inc.

High Speed Powerboat Design

69 Long Wharf - Boston, MA 02110
Tel: (617) 742-5669/TX: BSTLX 294116 (Attn. Hunt)

Naval Architects
Marine Engineers
Marine Design Computer Services

HYDROCOMP Inc
10 CUTTS ROAD
PO BOX 865
DURHAM, NH 03824
603-868-2560

MARINE ENGINEERS
SURVEYORS
CONSULTANTS

INTRAMARINE, INC.

P.O. BOX 53043 JACKSONVILLE, FL 32201
(904) 353-0828 TELEX: 56-8421
ALSO NEW YORK, HAMBURG, PIRAEUS
•HULL •MACHINERY •CARGO •YACHT SURVEYS

R. D. Jacobs and Associates

Naval Architects • Marine Engineers
Consulting Engineers

MARINE AND STATIONARY PROJECTS
Marine Surveyors; Project Specifications and Designs; Energy Efficient Concepts
Owner Representation Services; Machinery Casualty Investigations;
Practical Engineering Economics Analyses

11405 MAIN ST., ROSCOE, IL 61073 815-623-6760

Jantzen Engineering Co., Inc.

Consulting Engineers
Ocean Mining and Dredging
(301) 796-8585
6655 Amberton Dr. Baltimore, Md.

JAMES S. KROGEN & CO., INC.

NAVAL ARCHITECTS & MARINE ENGINEERS
Tel. (305) 642-1368
1515 N.W. South River Dr. Miami, Fla. 33125

RODNEY E. LAY & ASSOCIATES

NAVAL ARCHITECTS

NAVAL ARCHITECTS · MARINE ENGINEERS
13891 Atlantic Blvd.
Jacksonville, Florida 32225
(904) 246-6438 TWX 810-828-6094

Alan C. McClure Associates, Inc.

NAVAL ARCHITECTS • ENGINEERS
2600 South Gessner • Suite 504 • Houston, Texas 77063
(713) 789-1840 • Telex 792397

John J. McMullen Associates, Inc.

JJMA

Naval Architects • Marine Engineers • Transportation Consultants
New York, N.Y. • Arlington, Va. • Newport News, Va. • Houston, Tx
Ventura, Ca. • Bath, Me. • Seattle, Wa. • Pascagoula, Ms
One World Trade Center/Suite 3000/New York, New York 10048/(212) 466-2200

Speed & Propulsion Power Policy

FENDALL MARBURY
NAVAL ARCHITECT
1933 LINCOLN DRIVE
ANNAPOLIS, MARYLAND 21401 (301) 268-6168

MARITIME DESIGN, INC.

NAVAL ARCHITECTS
MARINE CONSULTING
MARINE DESIGN
MARINE ENGINEERS
COMPUTER PROCESSING
MARINE SURVEYS
2955 HARTLEY RD • JACKSONVILLE, FL 32217 • (904) 268-9137

MARINE DESIGN, INC.

NAVAL ARCHITECTS · MARINE ENGINEERS
Formerly TAMS INC. *Naval Architects, Estb. 1965.*
401 BROAD HOLLOW RD. (Rt. 110)
MELVILLE, L.I., N.Y. 11747
(516) 293-4336

SPECIALISTS IN TUGS AND BARGES

MPA MARINE POWER ASSOCIATES

MARINE ENGINEERS
THE PROFESSIONALS
Maintenance, Repair & Retrofit Specialists
1010 Turquoise St., Ste. 217, P.O. Box 99546
San Diego, CA 92109, (619) 488-7703

Marine Technical Associates, Inc.

MARINE ENGINEERS/ELECTRICAL CONSULTANTS
USCG AND IMCO REGULATIONS
Phone (201) 798-0689
95 River Street Hoboken, NJ 07030

GEORGE E. MEESE

NAVAL ARCHITECTS CONSULTANTS
194 ACTON ROAD
ANNAPOLIS, MARYLAND 21403
MARINE ENGINEERS SURVEYORS
TELEPHONE (301) 263-4054

R. CARTER MORRELL

MARINE CONSULTANT
715 S. CHEROKEE
BARTLESVILLE, OK 74003 918-336-8306

MOWBRAY'S TUG AND BARGE SALES CORP.

SPECIALISTS IN BUYING, SELLING AND BENTING TUG BOATS · BARGES CONTRACTORS FLOATING EQUIPMENT
21 WEST STREET, NEW YORK, N.Y. 10006
TWX: 710-581-2872
YOUR MARINE CONSULTANTS

NELSON & ASSOCIATES, INC.

MARINE
SURVEYORS ENGINEERS
CONSULTANTS APPRAISERS
610 N.W. 183 St., Miami, Fla. 33169 (305) 653-4584
Telex: 44-1869 Cable: NELSURVEY

NKF ENGINEERING, INC.

RESEARCH AND ENGINEERING COMPANY
SHOCK, NOISE AND VIBRATION
NAVAL SHIP PROTECTION
NAVAL ARCHITECTURE AND MARINE ENGINEERING

12200 SUNRISE VALLEY DRIVE, RESTON, VIRGINIA 22091
(703) 620-0900 TELEX II (703) 620-3273

Nickum & Spaulding Associates, Inc.

naval architects · marine engineers
zone outfitting design
marine consultants
2701 first avenue, seattle wa. 98121-1123
(206) 728-4444 • tlx: 320053

NORTHERN MARINE

Naval Architecture - Marine Engineering
Marine Surveying
(616) 946-5959
P.O. Box 1169 Traverse City, MI 49685

PILOTAGE CONSULTANTS, INC.

Capt. Jim Stillwaggon 516-742-2467
P.O. Box 2046 New Hyde Park, NY 11040

Q.E.D. SYSTEMS, INC.

VIRGINIA BEACH (804) 490-5000
MARINE ENGINEERS NAVAL ARCHITECTS LOGISTICS ENGINEERS
ARLINGTON BREMERTON JACKSONVILLE SAN DIEGO PHILADELPHIA LAKEHURST CHARLESTON SAN FRANCISCO

M. ROSENBLATT & SON, INC.

NAVAL ARCHITECTS AND MARINE ENGINEERS

New York City 350 Broadway (212) 431-6900
San Diego 1007 Fifth Avenue (619) 238-1300
San Francisco 667 Mission Street (415) 777-0500
Charleston Heights, S. C. 3370 Rivers Avenue (803) 744-1686
Arlington, Va. 2341 Jefferson Davis Highway (703) 892-5680

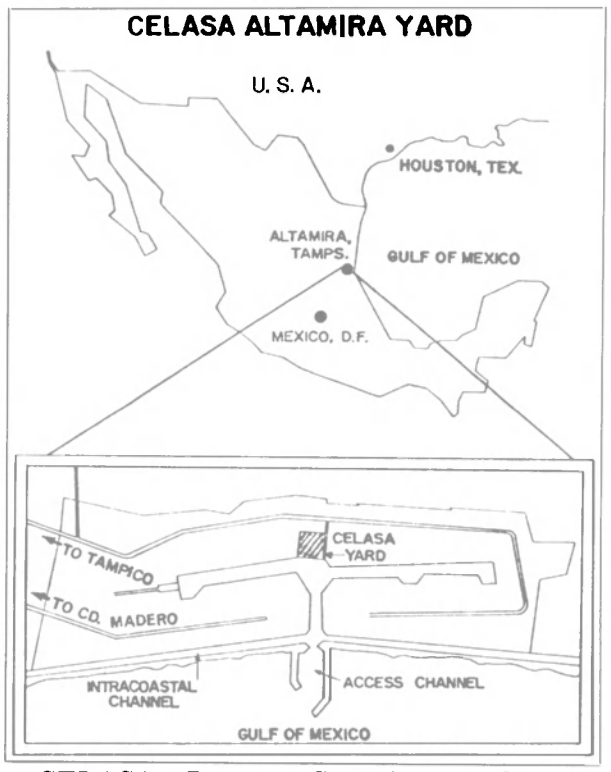
SARGENT & HERKES, INC.

NAVAL ARCHITECTS • MARINE ENGINEERS
1005 INTERNATIONAL BLDG., 611 GRAVIER ST.
NEW ORLEANS, LA. 70130
(504) 524-1612

SEACOR

Quality Marine Engineering, Management, Training and Support Services
AT 9 NATIONWIDE LOCATIONS
CHERRY HILL, NJ (609) 424-6600
DOVER, NH (603) 431-5668
PASCAGOULA, MS (601) 769-7601
ARLINGTON, VA (703) 486-6600
LOS ALAMITOS, CA (213) 431-3541
VALLEJO, CA (707) 643-0061
CHARLESTON, SC (803) 723-2267
NATIONAL CITY, CA (619) 474-8841
VIRGINIA BEACH, VA (804) 481-3060
SYSTEMS ENGINEERING ASSOCIATES CORPORATION
Where Quality Is a Tradition
SEACOR is a subsidiary of Day & Zimmermann, Inc.

New Yard Opens In Port of Altamira



CELASA (Protexa Group) recently announced the availability of its new yard location in the Port of Altamira in the Gulf of Mexico to the Gulf of Mexico and Atlantic Offshore market.

In addition to its present Gulf yard in Tuxpan, Veracruz, which is capable of building jackets up to 700 feet, the CELASA yard in the new port of Altamira will be capable of building the largest structures now on the drawing boards such as 1,600-foot jackets, 2,000-foot towers, or heavy TLPs.

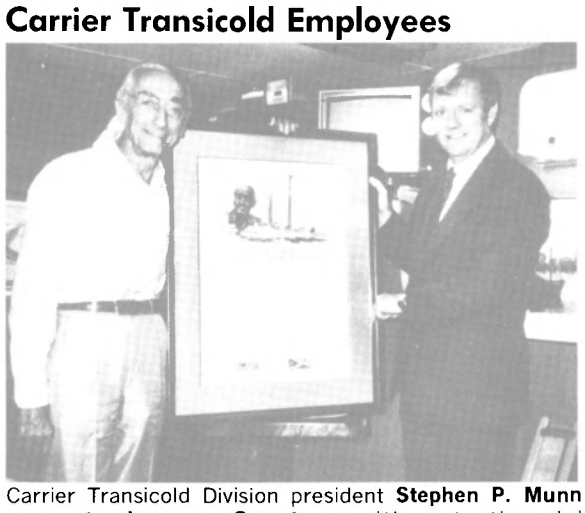
The new yard is in a duty-free area and can work with in-bond materials. It occupies 197 acres with options for expansion. Water frontage is 3,280 feet facing the port's main channel—a straight exit to the open sea. The main channel is 43 feet deep at CELASA's yard. The width is 1,150.

CELASA has extensive experience building more than 50 major offshore structures including jackets, decks, production facilities and packaging.

For free literature containing full information on CELASA's facilities and capabilities,

Circle 59 on Reader Service Card

Jacques Cousteau Receives Testimonial Plaque From Carrier Transicold Employees



Carrier Transicold Division president **Stephen P. Munn** presents **Jacques Cousteau** with a testimonial plaque,signed with pride by the Carrier employees who built two air conditioning systems donated to the Alcyone, Captain **Cousteau's** experimental windship.

Jacques Cousteau's experimental windship Alcyone completed its maiden voyage across the Atlantic last June, thanks in part to two water source heat pump systems donated by United Technologies' Carrier Transicold Division. The pride of Carrier employees who built the systems was recognized as Carrier Transicold Division president **Stephen P. Munn** presented a testimonial plaque bearing their signatures to Captain **Cousteau** at the Cousteau Society Headquarters in Norfolk, Va.

"We're pleased the water source heat heat pump systems were of service to Captain **Cousteau,**" said Mr. **Munn,** presenting the plaque on behalf of employees at Carrier's Bramalea, Ontario, manufacturing facility. "For us at Carrier Transicold, it was a point of pride to apply our work to such an important, innovative undertaking."

The 50VQ048 heat pumps are Alcyone's only source of heating and cooling. In addition to providing in-cabin comfort for the crew members, the vertically installed units help maintain proper indoor temperatures for the sensitive electronic, radar and research equipment on board.

Carrier Transicold specified the highly efficient, corrosive-resistant systems to conform to Alcyone's strict energy conservation requirements, and specially adapted both units to marine configurations. The Division also donated shipboard spare parts.

Captain **Cousteau** appreciated the results, saying that without the Carrier systems, Alcyone's interior would have felt like "a World War II submarine." Equipped with two aluminum Turbosail® cylinders resembling masts, Alcyclone utilizes wind propulsion through a design concept borrowed from aviation wing technology. During the next two years, the ship will continue a series of expeditions to test the Turbosail system.

Carrier Transicold is a leading global manufacturer of transport refrigeration and air conditioning equipment for trucks, trailers, containers, buses, ships and railway cars.

For more information and a free catalog on all Carrier Transicold products.

Circle 84 on Reader Service Card

Vecom Takes Over Marine Division Of Houseman

The Marine Division of the British company, Houseman (Burnham) Ltd. has been acquired by Vecom B.V. of Maassluis, Netherlands. Aiming at strengthening its water treatment operations in specific geographical areas of the industrial market, Houseman wanted to restructure its International Division. This offered Vecom the opportunity to expand its business in the international marine market with regard to water treatment, maintenance products, and technical services. All Houseman personnel involved and offices are included in the deal. The British firm has been involved in water treatment since 1876.

Vecom, a member of the German Benckiser Group, has produced chemical cleaning and maintenance products for the marine market since 1953. Water treatment is also one of its specialties.

The acquisition is seen as giving Vecom a much stronger U.K. base and providing important support for its most recent division, Vecom Technical Services. That division specializes in optimizing engine room machinery efficiency by use of electronic monitoring techniques and support equipment.

For further information on Vecom,

Circle 95 on Reader Service Card

Todd-Pacific Receives $21.7-Million Contract For Ship Modification

Todd Pacific Shipyards Corporation, Galveston Division, Galveston, Texas, was awarded a $21,686,820 modification to a previously awarded firm-fixed-price contract for modifying a Seabridge class container ship to a T-AVB-4 aviation logistics support ship. This modification also provides for shore-based spare for the T-AVB-3 and T-AVB-4.

The work will be performed in Galveston and is expected to be completed in August 1986. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-84-C-2046).

Belgian Line Appoints Rausch Vice President, Operation Services

John Rausch

Henry X. Diercxsens, executive president/CEO of Belgian Line Incorporated, general agents in the USA for CMB (Compagnie Maritime Belge, Antwerp, Belgium) and SITRAM (Societe Ivoirienne de Transport Maritime, Abidjan, Ivory Coast), has announced the appointment of **John Rausch** as vice president, operation services.

Captain **Rausch** came to this country in 1979 as operations manager of Atlantic Overseas Corporation and was heavily involved in the promotion of the West African trade. Prior to that, he sailed on several Belgian vessels and was also an advisor on SITRAM training ships.

Aqua Signal Opens Subsidiary In Chicago —Literature Available

Aqua Signal, manufacturers of lighting and electronic equipment for the marine offshore and recreational industry, has opened a subsidiary in the U.S. under the name of Aqua Signal Corporation, based in Chicago.

In addition, Aqua Signal Corporation has taken over the Browning Marine Organization.

For further literature containing full information,

Circle 14 on Reader Service Card

Caterpillar Offers Literature On New Marine Diesel Propulsion System Products And Support Programs

Fuel Savings Alone Can Justify New Engine Investment

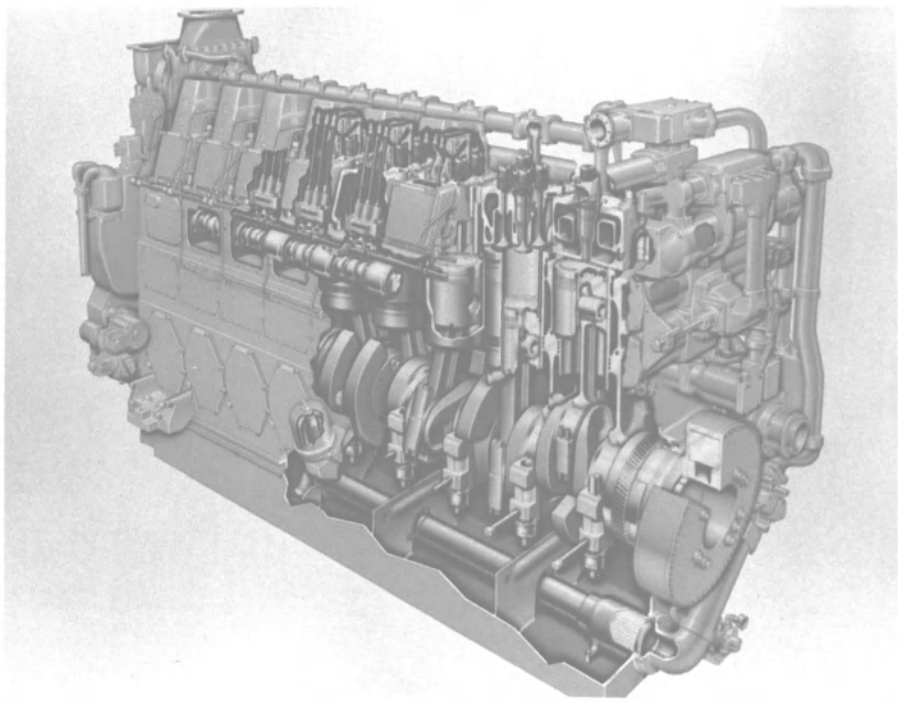
At the New Orleans Work Boat Show in January, Caterpillar Engine Division announced new and improved diesel marine propulsion system products and support programs designed to help operators reduce costs and improve equipment availability. "With fuel and lubricants representing up to 90 percent of vessel operating costs," said **Bill Jensen,** North American marine business manager, "operators must analyze new products and their potential contribution to bottom-line profitability." In addition to new vessel construction, existing vessels are prime candidates for new, fuel-efficient engines. Coupled with low fuel and lube oil costs, low maintenance and financing costs, operators can pay for new engines by simply paying for them with fuel savings and higher availability. According to Mr. **Jensen,** "Operators today are feeling more cost pressures than ever before. Survival often depends upon more technology investment . . . and the basic need for low operating cost and high availability can best be met with current technology."

Caterpillar diesel engines are offered in a range of propulsion ratings from 85 to 3,000 hp (64 to 2,240 kW) and marine generator sets from 55 to 1,800 kW (60 Hz). During 1986, with commercial availability of the 3616, propulsion ratings will extend up to 6,000 hp (4,475 kW) and generator set ratings up to 3,650 kW.

Marine transmissions match desired shaft speeds for both high productivity and low fuel consumption. Caterpillar auxiliaries are also provided as generator set packages or in industrial, mechanical drive configurations to provide essential ship services—lighting and communications, powering winches, operating compressors, pumping water, and operating bow and stern thrusters. Optional power takeoffs are also offered for powering steering pumps, winches, power blocks and refrigeration units.

3600 Series On Stream

Caterpillar's 3600 Series medium-speed, heavy-duty diesel engines in the 2,000- to 6,000-hp (1,500-4,500 kW) class were announced to the industry two years ago. Marine field testing began in August 1984, with the 3606 repowered Cecile Erickson, a bulk freighter operated by Morton Salt. The 2,250-hp (1,675 kW) engine has been in service more than 7,500 hours and fuel consumption has been cut by almost 15 percent compared to the previous engine. A 3612 was used to repower the George A. Sloan during the spring of 1985 and has since accumulated more than 1,300 hours. This 4,500-hp (3,356 kW) 12-cylinder engine powers a self-unloading bulk freighter operated on the Great Lakes by USS Great Lakes Fleet. The Sloan has obtained almost one-third fuel savings and a 15 percent increase in its carrying capacity, the result of increased speed capability and a small increase in tonnage that can be carried each trip because the new engine is lighter than the steam engine it replaced.



This cutaway of the new four-stroke cycle diesel 3600 engine series covers a power range from 2,000 to 6,000 hp (1,500 to 4,500 kw) at an operating rpm range of 720 to 1,000. The series is offered in in-line six and eight, and V-12 and -16 configurations and is specifically designed for marine use. On display at the Work Boat Show in New Orleans was a 3608, the first exclusive North American showing of this new engine to the marine industry. Representative of its broad product offering, Cat also displayed the 3208 rated at 210 hp (112 kw).

Production of the 3600 Series is underway at Cat's Lafayette, Ind. facility. Four 3606 Generator Sets and a 3612 Locomotive Engine were shipped during the fourth quarter, 1985. A 3616 Generator Set and three 3608 Marine Engines will be shipped early in 1986. The 3608 on display at The Work Boat Show is destined for Mid-South Towing's Julia Woods along with two other 3608s. The 3606 displayed at Europort 1985 is currently being installed on a Rhine River barge; and, the first 3606 production engine to run on residual fuel will be installed in a hopper dredge in Belgium. These applications occurred after single and multicylinder test engines accumulated more than 56,100 hours.

The 3600 Engines represent the company's first entry into big ship main propulsion and large ship auxiliary power. According to Mr. **Jensen,** "Whether you operate a tug, push boat or container ship, your vessel is no better than the power that helps it do its job . . . we know of no engine in the same horsepower class of similar rpm that is more fuel efficient than the 3600 Series. The 3600 will meet or exceed fuel economy of any comparable engines manufactured worldwide." Early production engines have demonstrated specific fuel consumption of 198 g/kW-h with pumps at full load.

Residual Fuel

Cat continues to thoroughly test residual fuels in order to determine their effect on engine performance and durability. "We are learning how to heat, clean and treat residual fuels, and how to modify our engines for their use," said Mr. **Jensen.** "Our laboratory programs have significantly improved component life that previously was severely shortened by the heavy fuels." The 3500/3600 Series have been designed to start, operate and stop on blended residual fuels. Because blended residual fuels vary greatly, Cat Engines will be individually modified to optimize return on investment for the operator, balancing higher initial cost against time-to-overhaul based on regional fuel characeristics. The 3600 Series are currently qualified on residual with up to IF380 viscosity, up to 4 percent sulfur content by weight and up to 300 ppm vanadium. The 3500 Series up to IF160, up to 2½ percent sulfur and up to 100 ppm vanadium.

New 3500 Series Ratings

During 1985, after hundreds of thousands of successful operating hours, Cat has increased 3500 Series output up to 25 percent and improved fuel economy up to 3 percent for all ratings, while retaining or exceeding original component durability and reliability objectives. The series consists of 60° V8, V12 and V16 models, all with 6.7-inch bore and 7.5-inch stroke (170 x 190 mm). Higher ratings and improved fuel efficiency are the result of design improvements, including a stronger, reinforced cylinder head and fuel system components; a forged aluminum, gallery-cooled piston; increased main and rod bearing load capabilities; higher load capacity valve train; and more efficient turbocharging and air induction systems. Maximum intermitten output is now approximately 125 hp (93 kW) per cylinder compared to 100 hp (75 kW) per cylinder at introduction.

According to Mr. **Jensen,** "3500 Series Engine performance and low operating cost has been exceptional in workboat applications, whether used in new vessel construction or repower." Mr. **Jensen** cited improved performance capabilities. When introduced in 1980, the 3500 Series offered more than 11 percent improvement over the 6.25-inch bore 300 Series fuel comsumption. Putting this into perspective, a 3512 Engine would save the owner $250,000 over its operating life—more than double the original purchase price of the engine. The additional 3 percent improvement offered during 1985 would produce an additional $50,000 in lifecycle cost savings. It should also be noted that the 3512 is about 20 percent smaller in volume than the D399, is significantly quieter, and easier to service. Coupled with product improvements just completed, Caterpillar's low cost financing will make the engines an even better investment.

3300/3400 Series Products

Caterpillar continues to improve 3300 and 3400 Series Marine products. Specifically, Series B 3300 and 3400 Series Engines now use a new high pressure fuel system with matched turbocharging and manifolding to ensure precise injection and efficient breathing for better fuel efficiency. The fuel system maintains top fuel economy without periodic adjustment at full and part load. Part load performance is important to main propulsion and auxiliary applications where engines do not run fully loaded 100 percent of the time.

New 1,200 rpm ratings for auxiliary packages are now available for generator sets where extended life, reliability, reduced noise, and improved fuel economy are important.

Increased 3208 Output

The 3208, having served the workboat industry for more than 15 years, is now available from 150 to 375 hp (112 to 280 kW). For harbor tugs and utility vessels, the 3208's

(continued)

NUMBER 1

MARITIME REPOR

ALONE DELIVERS YOUR ADVERT TO MORE MARINE BUYERS THA ANY OTHER TWO MARINE MAGAZINES COMBINED.

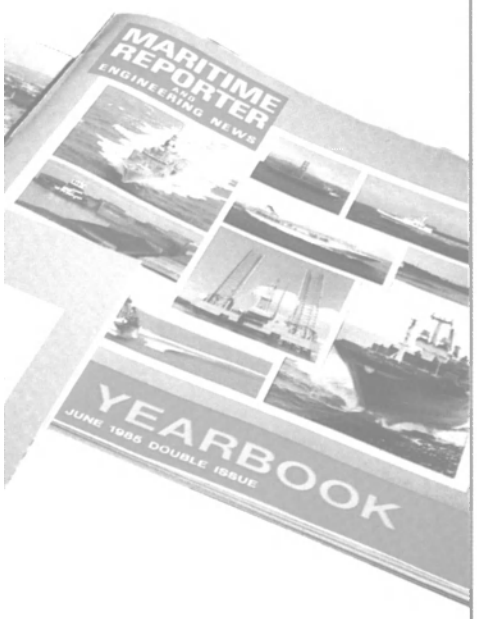
In 1985, MARITIME REPORTER's total circulation increased again to a record 24,305 copies every issue... the largest total requested circulation of any marine magazine in the world.

This entire increase consisted of only Buying Influence Readers. MARITIME REPORTER now delivers your advertising to an unequalled 21,609 buying influence readers... thousands more than any other Marine magazine in the entire world... and, more than any other two marine magazines combined.

THE UNITED STATES is the largest marine market nation in the world... offers greater potential for marine sales than any other country.

MR HAS THE LARGEST TOTAL U.S. CIRCULATION... thousands larger than No. 2, ME/Log... including thousands more U.S. marine buyers than ME/Log or any other marine magazine in the world.

YOUR MOST POWERFUL MARINE A



TER
ISING
N

WORLD'S LARGEST CIRCULATION TO BUYERS

1985—MARITIME REPORTER's total circulation increased to 24,305 including a record 21,609 Buying Influence Readers.

COMPARE CIRCULATION TO BUYERS

	MARITIME REPORTER	ME/Log	WATERWAYS JOURNAL	THE WORKBOAT
BUYERS	21,609 89%	15,107 60%	2,347 34.2%	?
NON-BUYERS AND UNIDENTIFIABLE MIXED GROUPS	2,696 11%	10,028 40%	4,526 65.8%	?
Total Requested Circulation	24.305	22,745	6,873	9,985
Unrequested free copies	0	2,390	0	3,046

WORKBOAT does not report titles of all readers, Presidents, Vice Presidents, Treasurers, Purchasing Agents, etc. Impossible to identify number of buyers reached.

Circulation audit bureaus do not identify buyers.
Identification of BUYERS is based on a 1984 survey, commissioned by MARITIME REPORTER, of over 1,000 marine sales managers who identified true buyers as shoreside management, design and purchasing people in vessel operations, shipbuilding and design (naval architects). Signed and dated replies on file at MARITIME REPORTER.

RECORD SALES LEADS FOR ADVERTISERS

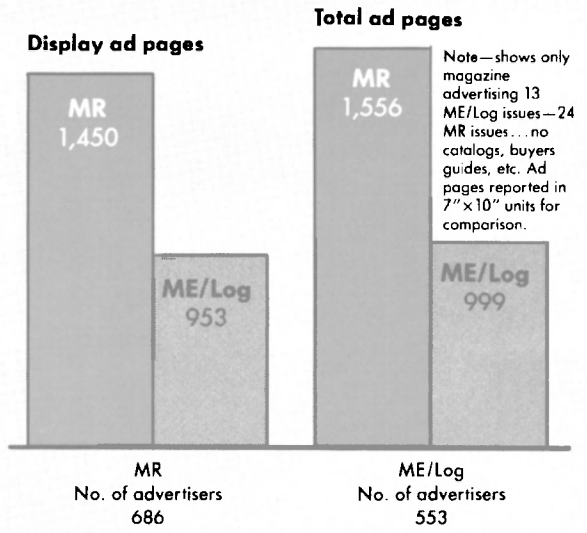
MARITIME REPORTER produces more and better sales leads than any other marine magazine... two times and three times more than the number 2 magazine. Each figure listed represents inquiries produced for an individual advertiser by MARITIME REPORTER in one year or less.

PAINT CORROSION CONTROL	SHIPBUILDING/REPAIR
1,033	2,147
714	613
655	570
DECK MACHINERY/ CARGO HANDLING	**DIESEL ENGINES**
545	1,533
415	1,352
477	1,168
NAVIGATION & COMMUNICATIONS	**OILY WATER SEPARATORS**
773	936
663	751
623	459

THE ADVERTISING LEADER

In 1984, and for years, more media buyers placed more pages of advertising, for a larger number of advertisers, in MARITIME REPORTER than in No.2 ME/Log.

COMPARE 1984 ADVERTISING



NUMBER 1 THE WORLD'S MOST SUCCESSFUL MARINE MAGAZINE

By their actions, the most important people in the marine industry – the readers and the advertisers – have voted MARITIME REPORTER NUMBER ONE.

- **WORLD'S LARGEST TOTAL REQUESTED CIRCULATION**
- **LARGEST TOTAL US. CIRCULATION**
- **THOUSANDS MORE BUYING INFLUENCE READERS**
- **LARGEST NUMBER OF ADVERTISERS**
- **LARGEST NUMBER OF AD PAGES**
- **BEST RESULTS—LARGEST NUMBER OF INQUIRIES FOR ADVERTISERS**

118 East 25th Street
New York, New York 10010
212-477-6700

MARITIME REPORTER AND ENGINEERING NEWS

DVERTISING SALES FORCE FOR '86

Caterpillar

(continued)

cubic inch (10.41) displacement and short power stroke give it quick response and acceleration without sacrificing fuel economy. The compact, low-profile, turbocharged and aftercooled 3208 engine's 375 hp (280 kW) rating burns only 21.1 gph (79.9 1/h) at full load and rated (2,800) rpm. Backing off 400 rpm, it burns 12.1 gph (45.7 1/h). In addition to reducing fuel costs and providing dependable operation, the 3208s are completely rebuildable with redorable block, regrindable crankshaft and undersized bearings.

"The challenge at hand is first to analyze the current operating costs of your equipment, including downtime, repair and maintenance," concluded Mr. **Jensen.** "Second, compare these known costs with manufacturers' projected costs for new, fuel-efficient engines. New technology is available to make your operation more profitable by lowering operating costs and increasing availability. The third step is to make a decision to become more profitable. This means setting into motion a plan of change. Caterpillar dealers are prepared to make a feasibility analysis of investment alternatives. To survive, operators must use fuel-efficient engines."

For full literature on the complete line of Caterpillar Diesel Engines, including the brochure, "Marine Systems: Propulsion and Generator Set Power," which contains a listing of Caterpillar Marine Engine specifications,

Circle 9 on Reader Service Card

NAVSEA Awards $3.2-Million Contract To Northrop Corporation

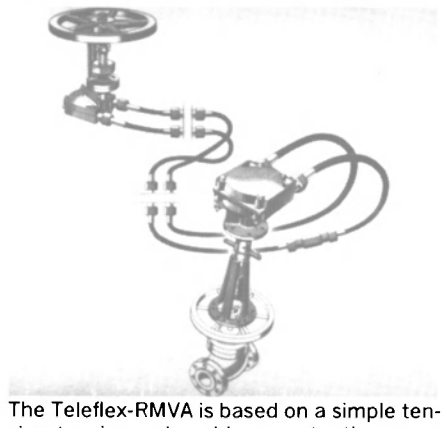
Northrop Corporation, Precision Products, Norwood, Mass., was awarded a $3,178,000 cost-plus-fixed-fee contract for repair and engineering support for Poseidon/Trident class submarines.

The work will be performed in Norwood, and is expected to be completed in September 1988. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-86-C-4005).

New Teleflex Remote Valve Actuators Are Designed To Eliminate Problems And Cut Costs —Literature Available

System failures due to corrosion, misalignment and binding are problems that have plagued the current methods of remote valve actuation for years. The use of these methods will decrease with the development of the Remote Mechanical Valve Actuator (RMVA) by Teleflex Inc.'s Remote Actuation System Group.

Teleflex reports their RMVA system was designed to eliminate the problems associated with these conventional methods. It has been approved for use on all U.S. Naval surface vessels and is certified by the American Bureau of Shipping. In fact, the RMVA system has been in use aboard U.S. Naval vessels for over two years, and has proved itself to be more reliable and cost effective.



The Teleflex-RMVA is based on a simple tension-tension, closed-loop actuating concept. Helical cable, operating in a conduit, converts rotary to linear motion and then back to rotary.

RMVA System Design

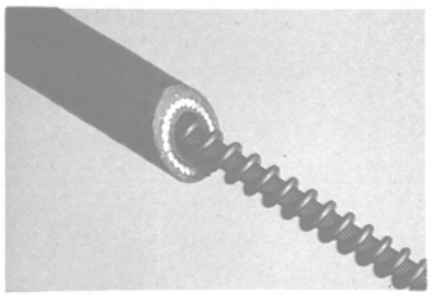
RMVA has been designed with a minimum number of parts, all of which are enclosed in a sealed system for increased reliability. It operates using a tension-tension closed loop actuating system and can replace most existing manual remote valve actuators, as well as hydraulic and pneumatic systems. At the heart of this patented system is a helical cable that Teleflex has manufactured for the aerospace and marine industry for over 40 years.

The helical cable meshes with cable gears located in the actuator housings that are at each end of the system. Each cable gear has a worm gear with a pitch matching the pitch of the helical wrap on the cable; this allows the meshing of the cable and the gear. The rotary motion from the remote operator is then transmitted through the input shaft to the cable gear in the operator station actuator housing. When this occurs the cable gear/helical cable interface converts the rotary motion to a linear movement of the cable.

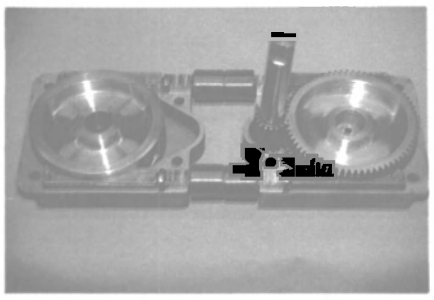
The cable moves linearly in a conduit through the system driving the cable gear in the valve station actuator housing where the motion is converted back to a rotary output via an identical cable gear/helical cable interface. The rotary motion is transmitted through the output shaft to the valve coupling. The helical cable is protected from the environment by a conduit that is both flexible and durable.

While the remote operator stations and the valve couplings are similar to those available with the reach rod and flexible shafting system, the Teleflex components have been manufactured using materials that offer superior corrosion resistance.

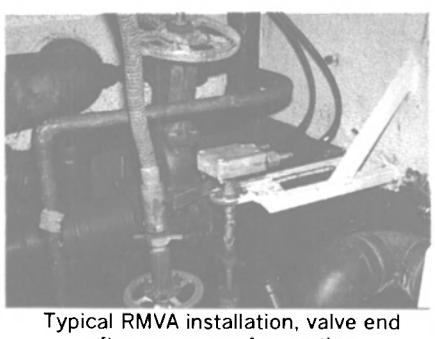
The system is available with either handwheel driven remote operators or deck boxes; rising stem, non-rising stem and rising handwheel valve couplings can be supplied with or without quick disconnects. Custom designed valve couplings are also available to meet specific application requirements.



Type 2 helical cable/conduit



Open operator and valve station actuator housings.



Typical RMVA installation, valve end after one year of operation

Cost Savings

In addition to providing increased reliability, RMVA yields significant cost savings when compared to reach rod and flexible shafting applications. "The flexibility of the RMVA conduit allows the system to make bends without the use of expensive gear boxes," said **Larry Resnick,** Teleflex sales engineering manager. "The conduit's flexibility also eliminates the need for troublesome, costly universal joints

Circle 130 on Reader Service Card

by allowing the system to be routed without worrying about critical alignments." Also, since the system is permanently lubricated during assembly, regular maintenance is not required.

Easy Installation

Perhaps the most significant cost savings that can be attributed to the RMVA system is the ease of installation. Recent studies have shown that installation costs can be reduced by as much as 65 percent versus comparable reach rod and flexible shafting applications. In fact, one major shipyard has estimated that replacing just 59 reach rod and flexible shafting systems with the RMVA will save approximately 4,000 man-hours per ship. This savings is due to the flexibility of the conduit. This simplifies the routing of the system since no gear boxes or universal joints are required to change directions. Also, the RMVA eliminates the need for shop preparation.

"Given today's labor rates, this corresponds to a significant savings in labor dollars," Mr. **Resnick** added. "Time is also saved when ordering the RMVA since it is supplied as a complete system—there is no need to spend time identifying and ordering individual components." The system also includes all hardware required for installation.

Weight Reduction

RMVA eliminates gear boxes, universal joints, heavy shaft hangers and the rod and shafting themselves to yield significant reductions in system weight. The shipyard noted above found that the same 59 applications resulted in a weight savings of 1.14 long tons per ship (2,561 pounds).

"The Teleflex RMVA has been designed to survive in the harshest environments," Mr. **Resnick** said. "The fact that the RMVA has been used on naval ships over the past two years and still has not had a system failure is evidence of its superior reliability."

The increased reliability, the elimination of regular maintenance and the significant cost savings indicate that the RMVA is a viable replacement for the troublesome remote actuation systems currently in use.

For further information, including detailed literature on Teleflex's remote mechanical valve actuator,

Circle 8 on Reader Service Card

Dr. A.C. Antoniou Joins ASRY Production Team

Dr. **Anthony C. Antoniou,** formerly general manager of Hellenic Shipyards, Scaramanga, has joined the Arab Shipbuilding & Repair Yard in Bahrain, the yard recently announced.

Dr. **Antoniou,** whose technical and managerial experience includes seven years as head of the design and drawing office at Scaramanga, will head the production function at ASRY.

Dr. **Antoniou's** managerial experience is expected to be of great value to ASRY, which has recently taken steps to make substantial improvements in productivity at the yard in Bahrain. His relations with the Greek shipowning community will also be an asset since Greek owners are an important element in ASRY's customer list.

Dillingham Offers Free Full-Color Brochure On Ship Repair Facilities

Dillingham Ship Repair, a part of the worldwide Dillingham Corporation, is offering a free full-color brochure on their ship repair services and facilities available at the Portland Ship Repair Yard in Portland Harbor.

This brochure is divided into six major sections, "Dillingham Ship Repair," "Port of Portland," "Utilities-Slop Disposal," "Ballast Water Treatment," "Drydocks" and "Dillingham Worldwide." The text is accompanied by several excellent watercolor reproductions of Dillingham ship repair services and the Portland Ship Repair Yard. As an added attraction, a building layout map of the Portland Ship Repair Yard (PSRY) is included. The map gives a detailed account of the location of Dillingham's fabrication shops, machine shop, office and other facilities. Also included is the location of dour drydocks at PSRY.

According to the publication, repairs afloat can be scheduled at the shipyard's 14 berths or arranged at any of Portland's 21 cargo berths by calling Dillingham Ship Repair. The cargo berths are part of the marine terminal cargo system and range in length from 700 feet to 1,050 feet.

For a free copy of this full-color brochure from Dillingham Ship Repair,

Circle 92 on Reader Service Card

Ahlemeyer Named Area Engine Manager At National Marine

Lynn A. Ahlemeyer has been promoted to Gulf Area engine manager at National Marine Service, Inc., and will be responsible for all Engine Group sales and operations activities in the area.

Mr. **Ahlemeyer** joined National Marine part time in 1975 and became a full-time employee in 1980 as a customer service representative in Harvey, La. He later became engine repair coordinator and was also an estimator at the Hartford, Ill. shipyard. Mr. **Ahlemeyer** will have his office at the Harvey, La. shipyard.

FOR MORE INFORMATION
ON
EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

CIRCLE THE APPROPRIATE NUMBER ON READER SERVICE CARD OPPOSITE ⟶

ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
ACTION THREADED PRODUCTS	THREADED PRODUCTS	130
AEROQUIP CORP.	FLUID LINE PRODUCTS	120/147/148/149
ALLWEILER PUMP	PUMPS	141
ATKINSON DYNAMICS	INDUSTRIAL INTERCOMS	125
B&B DREDGING	SUBMERGIBLE PUMP DREDGES	145
BALDT INC.	MOORING SYSTEMS	140
CENTRICO, INC.	OIL/WATER SEPARATORS	150
CROSBY GROUP	CARGO HANDLING EQUIPMENT	151
DEL GAVIO	HYDRAULICS	155
A.L. DON	LADDERS	135
DORBYL MARINE	SHIPBUILDING/REPAIR	160
ENGINEERING VISIONS INC.	NAVAL ARCHITECT	162
FMC COFFIN TURBO PUMP	PUMPS	170
FERNSTRUM	KEEL COOLERS	165
FIBERGRATE	STRAINER PLATES/GRATING	168
GALBRAITH-PILOT MARINE DIV.	MONITORING/ALARM SYSTEMS	171
GENERAL MOTORS/ALLISON GAS TURBINE DIV.	PROPULSION SYSTEMS	300
GIBBS & COX, INC.	NAVAL ARCHITECT	176
GLADDING HEARN	VESSEL CONSTRUCTION REPAIR	174
HARDWARE SPECIALTY	FASTENERS	190
HELESHAW	HYDRAULICS	180
HENSCHEL	MASTER CLOCK SYSTEMS	182
HOSE-McCANN TELEPHONE	COMMUNICATIONS EQUIPMENT	185
HYDROCRAFT	STAINLESS STEEL RESERVOIRS	188
JIM'S PUMP REPAIR	PUMP REPAIRS	195
JOHNSON RUBBER/DURAMAX MARINE	BEARINGS/STUFFING BOXES/FENDERING/KEEL COOLERS	200/201/202/203
KEARFOTT DIV./SINGER	WINDOWS/DOORS	205
KNIGHTS PIPING	PIPING FABRICATION/INSTALLATION	210
McALLISTER BROS	TOWING SERVICES	250
MARKETEC	WYNN WINDOW WIPERS	212
MECHANICAL RESOURCES	REFRIGERATION EQUIPMENT	215
MEGATOR	MARINE PUMPS	222
MILLER ELECTRIC	WELDING SYSTEM	218
L.Q. MOFFITT	BEARINGS	220
NAVAL ELECTRONICS	TV/ANTENNA SYSTEMS	225
NEWPORT NEWS SHIPBUILDING	VESSEL CONSTRUCTION/REPAIR	166
OMNITHRUSTER	PROPULSION EQUIPMENT	230
PARKER HANNIFIN	FILTERS	240
	VALVES	245
	ACTUATORS	260
PEARLSON ENGINEERING	SHIPLIFT SYSTEMS	115
PHOENIX PRODUCTS	LIGHTING SYSTEMS	235
PORT OF PORTLAND	SHIPBUILDING/REPAIR	228
RAYTHEON SERVICE	SALES/SERVICE	320
RILEY BEAIRD	DESALINATORS/SILENCERS	265
ROCKY MT ENERGY	HULL CLEANING SYSTEMS	280
SAFETY AT SEA	TRADE SHOW/CONFERENCE	295
SAIT INC.	COMMUNICATIONS EQUIPMENT	285
SIGMAFORM	MULTI-CABLE SYSTEM	315
SIMRAD	NAVIGATION/COMMUNICATIONS	275
SQUIRE-COGSWELL	AIR COMPRESSORS	255
STRIDER RESOURCES	LIFTING CLAMPS	270
TATE ANDALE	MARINE PRODUCTS	290
TIOGA PIPE	MIL SPEC PIPE	325
TELEFLEX	VALVE ACTUATORS	305
TRANSAMERICA DELAVAL	COMPONENTS FOR SHIPWIDE CARGO HANDLING	310
VAPOR CORP.	COOLING SYSTEM	345
VITA MOTIVATOR	PUMPS	335
WARREN PUMPS	PUMPS	350
WRIGHT-AUSTIN	GAS/LIQUID SEPARATORS	340

Hempel Introduces 'Damp Steel' Primer—Literature Available

A new primer, specially developed for application on damp steel surfaces, was recently introduced by Hempel's Industrial Coatings, a worldwide manufacturer of industrial, offshore and container coatings.

Called Hempadur 1557, the new coating is well suited for surfaces that have been wet abrasive blasted or for steel that is to be coated under humid conditions.

Typical applications of Hempadur 1557 are for offshore structures (on all areas above the waterline); maintenance work on refineries, petrochemical plants and storage tanks, where wet abrasive blasting is used because it eliminates the danger of sparks; where it is necessary to apply wet abrasive blasting to eliminate the detrimental effects of dust on nearby installantsions and machinery; and the detrimental effects of dust on nearby installations and machinery; and the superstructure of ships.

The new coating is a two-component epoxy polyamide-cured primer, and is suitable as a general primer for both new construction and maintenance work, providing a strong bond between the substrate and the subsequent coating.

It is compatible with epoxy and other advanceced top coat systems such as polyurethane, vinyl, acrylic and chlorinated rubber-based materials, and has extended service life in moderate to severe corrosive marine and industrial environments.

For further information and free detail-filled literature on the new primer, Hempadur 1557, from Hempel's Industrial Coatings,

Circle 93 on Reader Service Card

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 20 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.**

AIR COMPRESSORS
Squire-Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc, 2323 Randolph Avenue, Avenel, NJ 07001
Borg-Warner Air Conditioning, P.O. Box 1592-361C, York, PA 17405
Flakt AB, Box 8862, S-40272, Gothenburg, Sweden
Mechanical Resources Inc., 210 West Side Ave., Jersey City NJ 07305
Stal Refrigeration AB, Butangsgatan 16, S 601 87 Norrkoping, Sweden
Carrier Transicold Division, Carrier Corp., P. O. Box 4805, Syracuse, NY 13221

ANCHORS AND CHAIN
Baldt Incorporated, P.O. Box 350, Chester, PA 19016
G.J. Wortelboer Jr. B.V., Eemhavenstraat 4, P.O. Box 5003, 3008 AA Rotterdam, Netherlands

ANODES—Cathodic Protection
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Federal Harco, P.O. Box 40310, Houston, TX 77240
Thermal Reduction Company, 1 Pavilion Avenue, Riverside, NJ 08075
Wilson, Walton International, Inc., 66 Hudson St., Hoboken, NJ 07030

BALLASTS
Genstar Stone Products Co., Executive Plaza IV Hunt Valley, MD 21031

BASKET STRAINERS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

BEARINGS—Rubber, Metallic, Non-Metallic
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Thomson-Gordon Limited, 3225 Mainway, Burlington, Ontario, Canada L7M 1A6
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

BLASTING—Cleaning—Equipment
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223 9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Clemco, P.O. Box 7680, San Francisco CA 94120
E.I. DuPont De Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
Inventive Machine Corp., P.O. Box 369, Bolivar, OH 44612
Key Houston Division of Jacksonville Shipyards, 13911 Atlantic Blvd., Jacksonville, FL 32225

BOILERS
Combustion Engineering, Inc., 1000 Prospect Hill Road, Windsor, CT 06095
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144
Boiler Tube Company of America, P.O. Drawer 517, Lyman, SC 29365
Murray Tube Works, P.O. Drawer 517, Lyman, SC 29365
Senior Green Economizers, P.O. Drawer 517, Lyman, SC 29365

BOILER CLEANING
Asea Stal, 50 Chestnut Ridge Rd., Montvail N.J. 07645

BROKERS
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Jack Faulkner, Inc., 1005 W. Harimaw Ct., Metairie, LA 70001
Mowbray's Tug & Barge Sales Corp., 21 West St., New York, NY 10006
Western Maritime, 701 B Street, San Diego, CA 92101

BRONZES—COMMEMORATIVE
Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

BUNKERING SERVICE
Belcher Company, Inc., 8700 West Flagler, P.O. Box 525500, Miami, FL 33152
Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022
National Marine Service Inc. (Transport Div.), 1750 Brentwood Blvd., St. Louis, MO 63144

CARGO HANDLING EQUIPMENT
MacGregor-Navire International, Box 8991, S-402 74 Goteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016

CASTINGS/FORGINGS
NKS Industria Pesada, Grupo Industrial, Reforma 404, 140 Piso, Mexico, D.F. 06600 U.S. REP.—Lexington International Trading, Inc., 551 Fifth Ave., Room 910, New York N.Y. 10017

CLAMPS
Inter Product, Inc., Avon Street Business Center, P.O. Box 1848, Charlottesville, VA 22903

CLOSURES—Marine
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

COMPUTERIZED INFORMATION SYSTEMS
Marine Management Systems, Inc., 102 Hamilton Ave., Stamford, CT 06902
Maritime Data Network, Ltd., 102 Hamilton Ave., Stamford, CT 06902
Military Contract Information Service, Inc. Dist. by Maritime Reporter/Engineering News, 118 East 25 St. N.Y. N.Y. 10010
TIMSCO, 622 Azalea Rd., Mobile, AL 36609
Veson Systems, 29 Broadway, Suite 1002, New York, NY 10006

CONDENSERS/SEPARATORS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Wright Austin Co., 3245 Wight St., Detroit MI 48207

CONTROL SYSTEMS—Monitoring
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
ASEA, Inc., 4 New King St., White Plains, NY 10604
Bailey Controls, 29801 Euclid Avenue, Wickliffe, OH 44092
Barringer Research, 304 Carlingview Dr., Rexdale, Ontario, Canada M9W 5G2
Biospherics Inc., 4928 Wyaconda Rd., Rockville, MD 20852
Cooper Energy Services, Mount Vernon, OH 43050
Ergon, Inc., P.O. Drawer 1639, Jackson, MS 39205
Indikon Corp., 26 New St., Cambridge, MA 02138
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Leslie Co., 401 Jefferson Rd., Parsippany, NJ 07054
Pandel Instruments Inc., 2100 N. Hwy. 360, Grand Praire, TX 75050
Propulsion Systems, Inc., 21213 76 Ave., Kent, WA 98032
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
Thomas Products Ltd., Flow Switch Div., 987 West St., Southington, CT 06489-1023
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway

CRANES—HOISTS—DERRICKS—WHIRLEYS
Allied Marine Crane, P.O. Box 23026, Portland, OR 97233
Appleton Marine, P.O. Box 2339, Appleton, WI 54913
ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380
Davit Sales, Inc., P.O. Box 232, Jefferson Valley, NY 10535
HIAB Cranes & Loaders Inc., 258 Quigley Boulevard, New Castle, DE 19720
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202

DECK MACHINERY—Cargo Handling Equipment
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, WA 98134
McElroy Machine & Mfg. Co., Inc., Lorraine Rd., Industrial Seaway, Gulfport, MS 39501
Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118

DECKING—GRATING
Alligned Fiber Composites, Highway 52, South Chatfield, MN 55923
International Grating, 7625 Parkhurst, Houston, TX 77028
Selby, Battersby & Company, 5220 Whiby Ave., Philadelphia, PA 19143

DIESEL ACCESSORIES—CYLINDER LINERS
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360
Haynes Corporation, P.O. Box 179, Jackson, MI 49204
Illman Jones, 1111 Green Island Rd., American Canyon, CA 94589
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA

DIESEL ENGINE—Spare Parts & Repair
Alban Engine Power, Inc., 6455 Washington Blvd., Baltimore, MD 21227
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Caterpiller Tractor Co. 100 N.E. Adams Street, Peoria, IL 61629-2325
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Co., Inc., Mail Code 40642, Box 3005 Columbus, IN 47202 3005
Goltens, 160 Van Brunt Street, Brooklyn, NY 11231
Granges Repair Service GMBH, Gutenbergring, 64 D-2000 Hamburg-Norderstedt TX:0215553
Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, Federal Republic of Germany
Schoonmaker Service Parts Co., Inc., P.O. Box 757, Foot of Spring St., Sausalito, CA 94966
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166
Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647

ELECTRICAL EQUIPMENT
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Newmar, P.O. Box 1306, Newport Beach, CA 92663
Sigmaform Corporation, P.O. Box 515, Richboro, PA 18954
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Ward Leonard Electric Co., 31 South St., Mt. Vernon, NY 10550
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, OR 97201

ELECTRONIC SYSTEMS
Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217 TX: 125327

EMULSIFICATION SYSTEMS
Cleanodan A/S, N. American Agents, American United Marine Corp., 5 Broadway, Route 1, Saugus, MA 01906
Sunbelt Energy Systems, Inc., Park Square, 2105 Park Ave., Suite 14, Orange Park, FL 32073
S/S Research & Development Inc., 1050 State St., Perth Amboy, NJ 08862
Todd Marine Systems, 61 Taylor Reed Place, Stamford, CT 06906

ENGINE TEST EQUIPMENT
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360

EQUIPMENT—Marine
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94083
ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380
Band-It Division, Houdaille Industries, Inc., P.O. Box 16307, Denver, CO 80216
Beaver Tool Co., 1525 SE 29th St., Box 94717, Oklahoma City, OK 73143
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227
Genstar Stone Products Co., Executive Plaza IV, Hunt Valley, MD 21031
Hossfeld Manufacturing Co., P.O. Box 557, Winona MN 55987
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, NY 10550
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
Marketec, Inc., 27 Bowers Lane, Chatham NJ 07928
Nicolai Joffe, P.O. Box 5362, 9171 Wilshire Blvd., Beverly Hills, CA 90210
Raytheon Service Co., 100 Roesler Rd., Suite 103, Glen Burnie, MD
Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749
Waterman Supply Co., Inc., 2815 E. Anaheim Street, P.O. Box 596, Wilmington, CA 90748

EVAPORATORS
Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
Atlas-Danmark Marine & Offshore, Baltorpvej 154, KD-2750 Blerup, Copenhagen DENMARK
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

FANS—VENTILATORS—BLOWERS
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Joy Manufacturing Company, 338 So. Broadway, New Philadelphia, OH 44663
Jon M. Liss Associates, Inc., 411 Borel Ave., P. O. Box 5554, San Mateo, CA 94402

FASTENERS
Hardware Specialty Co., Ships Division, 48-75 36th St., Long Island City, NY 11101

FENDERING SYSTEMS—Dock & Vessel
InterTrade Industries, 15301 Transistor Lane, Huntington Beach, CA 92649
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, VA 22044

FILTERS
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Parker Filter Division, 16810 Fulton County Road, #2, Metamora, OH 43530

FINANCING—Leasing
Gulf Western Leasing Corp., 1500 City West Blvd., Suite 300, Houston, TX 77047
JMJ Marine Investors, P.O. Box 51509, New Orleans, LA 70151

FIRE PROTECTION, DETECTION & ALARM SYSTEMS
Walter Kidde, Walter Kidde Dr., Wake Forest, NC 27586

FUEL OIL/ADDITIVES—Analysis & Combustion Testing
Ferrous Corporation, 910 108th N.E., P.O. Box 1764, Bellevue, WA 98009
McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716

FURNITURE
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

GALLEY EQUIPMENT
Insinger Machine Co., 6245 State Rd., Philadelphia, PA 19135

GANGWAYS
Rampmaster Inc., 9825 Osceola Blvd., Vero Beach, FL 32960

HATCH & DECK COVERS—Chain Pipe
MacGregor-Navire Internatinal, Box 8991, S-402 74 Goteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

GAUGES
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062

HEAT EXCHANGERS
Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis MO 63144
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Vapor Corp., 6420 West Howard St., Chicago IL 60648

HOLD LINERS
Himont U.S.A., Inc., 1313 N. Market St., Wilmington, DE 19894

HULL CLEANING
Aurand 1270 Ellis Street, Cincinnati, OH 45223
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Petroferm Marine, Route 2, Box 280, Amelia Island, FL 32034
Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France
Seaward Marine Service, Inc., 201 N. Union Street, Alexandria, VA 22314
Seaward Marine Service, Inc. 5409 Beamon Rd., Norfolk, VA 23513 TX: 710-881-1182
Seaward Marine Service, Inc. 424 West 8th Street, National City, CA 92050
Taylor Diving & Salvage Co. Inc., 701 Engineers Rd., Belle Chasse, LA 70037

HYDRAULICS
Aeroquip Corp., 1130 Maynard Road, Jackson, MI 49202
Bardex Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA. 93116
Cunningham Marine Hydraulics Co., Inc., 201 Harrison St., Hoboken, NJ 07030; 2030 E. Adams St., Jacksonville, FL 32204, TX: 710-730-5224
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood, NJ 07607
Hydra-Dynamics, Inc., 2141 Greenwood Ave., Wilmette, IL 60091
Parker Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Titeflex Corporation, P.O. Box 54, Springfield, MA 01109
Washington Chain & Supply, Inc., P.O. Box 3646, Seattle, WA 98124

INERT GAS—Generators—Systems
Maritime Protection A/S, N. American Agents, American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

INSULATION—Cloth, Fiberglass
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
Duracote Corp., 350 North Diamond St., Ravenna, Ohio 44266
Superior Energies, Inc. P.O. Drawer 386, Groves, TX 72619

INSURANCE
Adams & Porter, 510 Bering Dr., Houston, TX 77057-1408
Adams & Porter, 1 World Trade Center, Suite 8433, New York, NY 10048
Wm. Keith Hargrove, Inc., 1300 Post Oak Blvd., Suite 2050, Houston, TX 77056
United States P&I Agency, Inc., 80 Maiden Lane, New York, NY 10038

JOINER—Watertight Doors—Paneling
Advanced Structures Corp., 235 W. Industry Ct., Deer Park, NY 11729
Astech, 3030 S. Red Hill Ave., Santa Ana, CA 92711
Bailey Distributors, Inc., 2323 Randolph Avenue, Avenel, NJ 07001
Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS
R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
Carlisle & Finch, 4562 W. Mitchell Avenue, Cincinnati, OH 45232
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Perko Inc., P.O. Box 6400D, Miami, FL 33164
Phoenix Products Company, Inc., 4769 North 27th Street, Milwaukee, WI 53209

UNE BLINDS
American Piping Products Inc., Box 1056, New Hyde Park, NY 11040
Stacey/Fetterolf Corp., P.O. Box 103, Skippack, PA 19474

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
A-C Brake Co., 308 E. College St., Louisville, KY
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202

Del Govio, 207 W. Central Ave., Maywood, NJ 07607. Telex: 132610 DEL-MARINE
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663

MINING

Rocky Mountain Energy, 10 Longspeake Dr., Box 2000, Broomfield, CO 80020

NAME PLATES—BRONZE—ALUMINUM

Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Aero Nov Laboratories, Inc., 14-29 112 St., College Point, NY 11356
American Hydromath Inc., Box 2450, Danby-Pawlet Road, Pawlet, VT 05761
American Systems Engineering Corp., P.O. Box 4265, Virginia Beach, VA 23454
Ameritech Corporation, 7 Belver Avenue, Suite 215, N. Kingston, RI 02852
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, MD 20015
Art Anderson Associates, 148 First St., Bremerton, WA 98310
B.C. Research, 3650 Wesbrook Mall, Vancouver, B.C. Canada V6S 2L2
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211
C.T. Marine, 18 Church Street, Georgetown, CT 06829
Century Engineering, inc., 32 West Rd., Towson, MD 21204
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, WA 98148
C.R. Cushing, 18 Vesey St., New York, NY 10007
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
Engineering Visions, 1111 Bay Blvd., Chula Vista CA 92011
Capt. R.J. Fearson & Associates, P.O. Box 983, Tampa, FL 33601
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, NY 11050
Gibbs & Cox, Inc., 119 West 31st Street, New York, NY 10001
John W. Gilbert Associates, Inc., 66 Long Wharf, Boston, MA 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hamilton Cornell Associates, Box 188, Snug Harbor Station, Duxbury, MA 02331
J.J. Henry Co., Inc., 40 Exchange Place, New York, NY 10005
Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921
HydroComp, Inc., 10 Cutts Road, P.O. Box 865, Durham, NH 03824
Intramarine, Inc., P.O. Box 53043, Jacksonville, FL 32201
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, MD 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, FL 33133
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, NY 10048
Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, OH 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, NY 11746
Marine Power Associates, 1010 Turquois St., Ste 217, San Diego, CA 92109
Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030
Maritime Design, Inc., 2955 Hartley Rd., Jacksonville, FL 32217
George E. Meese, 194 Acton Rd., Annapolis, MD 21403
R. Carter Morrell, 715 S. Cherokee, Bartlesville, OK 74003
NKF Engineering Assoc., Inc., 8150 Leesburg Pile, Vienna, VA 22202
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean-Oil Internatinal Engineering Corporation, 3019 Mercedes Blvd., New Orleans, LA 70114
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, FL 33156
Q.E.D. Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Sargent & Herkes Inc., 611 Gravier St., New Orleans, LA 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, FL 33316
SEACOR Systems Engineering Corp., 520 Fellowship Rd., Ste C306, Mt Laurel NJ 08054
STV/Sanders & Thomas, Inc., 1745 Jefferson Davis Hwy., Arlington, VA 22202
Seaworthy Systems, Inc., 28 Main St., Essex Ct. 06426; 17 Battery Place, N.Y. N.Y. 10004, P.O. Box 205, Solomons, MD 20688
Seaworthy Electrical Systems, 17 Battery Pl. N.Y. N.Y. 10004
George G. Sharp, Inc., 100 Church St., New York, NY 10007
Simmons Associates, P.O. Box 760, Sarasota, FL 33578
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
J.F. Stroschein Associates, 666 Old Country Rd., Garden City, NY 11530
Richard R. Taubler, Inc., 610 Carriage La., Dover, DE 19901
Thomas Coudon Associates, 6655 Amberton Drive, Baltimore, MD 21227
Timsco, 622 Azalea Road, Mobile, AL 36609
Tracor Hydronautics, Inc., 7210 Pindell School Rd., Laurel, MD 20707
Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744

NAVIGATION & COMMUNICATIONS EQUIPMENT

Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080
British Telecom International, The Holborn Centre, 120 Holborn, London EC1N 2TE
CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614
COMSAT World Systems, 950 L'Enfant Plaza, S.W., Suite 6151 Washington, DC 20024
A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
General Electric Company, Mobile Communications Division, Lynchburg, VA 24502
Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610
Henschel, 9 Hoyt Drive, Newburyport, MA 01950
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Mackay, 441 U.S. Highway #1, Elizabeth, NJ 07202
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Kongsberg Vopenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 1453 Pinewood St., Rahway, NJ 07065
Micrologic, 20801 Dearborn, Chatsworth, CA 91311
Nav-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navigation Sciences Inc., 6900 Wisconsin Ave., Bethesda, MD 20815 TX: 705999
Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164
Racal Marine Inc., 1 Commerce Blvd., Palm Coast, FL 32037-0029
Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033
Raytheon Marine Co., 676 Island Pond Road, Manchester, NH 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Robertson Autopilot, 400 Oser Ave., Happauge, NY 11738
S.P. Radio A/S, DK 9200 Aalorg, Denmark
Sait, Inc., 33 Rector St., New York, NY 10006
Sperry Corporation, Rte 29 North, Charlottesville, VA 22906
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Telesystems, 2700 Prosperity Ave., Fairfax, VA 22031 USA
Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067
Tracor Instruments Austin Inc., 6500 Tracor Lane, Austin, TX 78725

OILS—Marine—Additives

B P North America Petroleum, 555 US Route 1, So. Iselin, NJ 08830
Exxon Company, U.S.A., Room 2323 AH, P.O. Box 2180, Houston, TX 77701
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil, New York District Sales Office (Domestic), 433 Hackensack Avenue, Hackensack, NJ 07601
Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022
Mobil Oil Corp., 150 East 42 Street, New York, NY 10017
Texaco, Inc. (International Marine), 135 East 42nd St., New York, NY 10017

OILY WATER ALARMS/MONITORS

Biospherics, Inc., 4928 Wyaconda Road, Rockville, MD 20852

OIL/WATER SEPARATORS

Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148
NALCO Chemical, Co., 2901 Butterfield Road, Oak Brook, IL 60521
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323
Sigma Treatment System, Merry Meadows RD 1 Box 70, Chester Springs, Pa 19425

PAINTS—COATINGS—CORROSION CONTROL

Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
Dampney Company, Inc., 85 Paris St., Everett, MA 02149
Devoe Marine Coatings Co., P.O. Box 7600, Louisville, KY 40207
Drew Ameroid Marine, One Drew Chemical Plaza, Boonton, NJ 07005
E.I. DuPont De Nemours & Co., Inc. Nemours Bldg., Rm. N-2504-2, Wilmington, DE 19898
DuPont Co. MPS , Room X40750, Wilmington, DE 19898
Esgard, Box 2698, Lafayette, LA 70502
Farboil Company, 8200 Fischer Rd., Baltimore, MD 21222
Hempel Marine Paints, Inc., Foot of Currie Ave., Wallington, NJ 07057; 6868 NorthLoop East, Suite 304, Houston, TX 77028; P.O. Box 10265, New Orleans, LA 70181
International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
Jaegle Paint Company, Inc., 1012 Darby Road, Havertown, PA 19083
Jotun Marine Coatings Inc., 175 Penrod Court N&O, Glen Burnie, MD 21061
Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NJ 07650
Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale, CA 91203
Selby Battersby & Co., 5220 Whitby Ave., Philadelphia, PA 19143

PIPE-HOSE—Cargo Transfer Clamps, Couplings, Coatings

Amermarine International, P.O. Box 9205, Dundalk, MD 21222
Deutsch Metal Components, 14800 S. Figueroa St., Gardena, CA 90248
Hydro-Craft Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063
Knights Piping Inc., 5309 Industrial Road, Pascagoula, MS 39567
Tioga Pipe Supply Co. Inc., 2450 Wheatsheaf La., P.O. Box 5997, Philadelphia, PA 19137

PLASTICS—Marine Applications

Action Threaded Products, Bridgeview, IL 60455
Hubeva Marine Plastic, Inc., 390 Hamilton Ave., Brooklyn, NY 11231
Norton Chemplast, 309-150 Dey Rd. Wayne NJ 07470

PROPELLER POUSHING

Pacific Marine Services, P.O. Box 3400, Terminal Island, CA 90731

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines

Allison Gas Turbine Division, General Motors Corp., P.O. Box 420 Speed code U6, Indianapolis, IN 46206
Amarillo Gear Co., P.O. Box 1789, Amarillo, Texas 79105
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, LA 70150
Bergen Diesel Inc., 2110-10 Service Rd., Kenner, LA 70062
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629
Colt Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520
Combustion Engineering, Inc., Windsor, CT 06095
Coolidge-Stone Vickers, Inc., 56 Squirrel Rd., Auburn Hills, MI 48057
Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340
Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505
George Engine Company, Inc., Lafayette, LA
General Motors, Electro-Motive Division, LaGrange, IL 60525
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Isotta Fraschini S.p.A., c/o Italian Aerospace Industries (U.S.A.), Inc., 1235 Jefferson Davis Hwy., Suite 500, Arlington, VA 22202
KHD Canada Inc., 180 Rue de Normandie, Boucherville, Quebec J4B 5S7, Canada
Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323
M.A.N.-B&W Diesel, 2 Ostervej, DK-4960 Holeby, Denmark
MTU of North America, One E. Putnam Ave., Greenwich, CT 06830; 10450 Corporate Dr., Sugarland, TX 77478; 2945 Railroad Ave., Morgan City, LA 70203; 180 Nickerson St., Seattle, WA 98109; 1730 Lynn St., Arlington, VA 22209
MWM-Murphy Diesel, 12 Greenway Plaza, Suite 1100, Houston, TX 77046
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Mitsubishi Kakoki Kaisha LTD, Mita Kokusai Bldg. 4-28 Mita 1-chome, Minato-ku Tokyo 108 Japan
National Marine Service Louisiana, Inc., 222 Bayou Rd., Belle Chasse, LA 70037
North American Marine Jet P.O Box 1232 Benton, AR 72015
Omnithruster Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670
Penske GM Power, Inc., 600 Parsippany Road, Parsippany, NJ 07054
Inland Water Propulsion Systems, Inc., 580 Walnut St., Cincinnati, OH 45201
Propulsion Systems, Inc., 21213 76 Ave. So., Kent, WA 98032
SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France
Schottel of America, Inc., 8375 N.W. 56 St., Miami, FL 33166
Skinner Engine, Co., P.O. Box 1149, Erie PA 16512
Stewart & Stevenson Services, Inc., P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers, Dept. Diesel Engines, CH-8401 Winterthur, Switzerland
Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, OH 45414
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, NJ 08650
Ulstein Maritime Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Ulstein Trading Ltd. A/S, N-6-65, Ulsteinvik, Norway
J.M. Voith GmbH Dept. WErung, Postfach 1940 7920 Heidenheim/Brenz, West Germany
Voith Schneider America, 159 Great Neck Rd., Ste. 200, Great Neck, NY 11021
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647
WABCO Fluid Power, an American-Standard Company, 1953 Mercer Rd., Lexington, KY 40505
Wartsila Power Inc., 5132 Taravella Rd., P.O. Box 868, Marrero, LA 70072
Waukesha Engine Division, Waukesha, WI 53187

PUMPS—Repairs—Drives

Allweiler Pump Inc., 5410 Newport Dr., Rolling Meadows, IL 60008 TX: 270-0444
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co., Inc., 201 Harrison St., Hoboken, NJ 07030; 2030 E. Adams St., Jacksonville, FL 32204, TX: 710-730-5224
Del Gavio, 207 W. Central Ave., Maywood, NJ 07607. Telex: 132610 DEL-MARINE
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Ingersoll—Rand Pump Group, Dept. B—346, Washington, N.J. 07882
Jim's Pump Repair, 48-55 36th St., Long Island City, NY 11101
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Transamerica Delaval, Pyramid Pump Div., P.O. Box 447, Monroe, NC 28110
Vita Motivator Company, 200 West 20th St., New York, NY 10011
Warren Pumps Division, Bridges Avenue, Warren, MA 01083
Wilden Pump & Engineering Co., 22060 Van Buren St., P.O. Box 845, Colton, CA 92324

REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, NY 11231
Grasso, Inc., 1101 N. Governor Street, P.O. Box 4799, Evansville, IN 47711-0799
United Technologies Carrier Transicold Div., Carrier Corp., P.O. Box 4805, Syracuse, NY 13221

ROPE—Manila—Nylon—Hawsers—Fibers

A.L. Don Co., Foot of Dock St., Matawan, NJ 07747
Allied Fibers, 1411 Broadway, New York, NY 10018
American Mfg. Co., Inc., Willow Avenue, Honesdale, PA 18431
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
DuPont Co., KEVLAR Aramid Fiber, Room G-15465, Wilmington, DE 19898
Tubbs Cordage Company, P.O. Box 709, Orange, CA 92666
Tubbs Cordage Co., P.O. Box 7986, San Francisco, CA 94120-7986
Vermeire N.V. Industripark Zwaarveld, B-9160 Hamme, Belgium TX: 21687
Wall Industries, Inc., P.O. Box 560, Elkin, NC 28621

SANITATION DEVICES—Pollution Control

Davit Sales Inc., P.O. Box 232, Jefferson Valley, NY 10535
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
FAST Sewage Systems, Div. of St. Louis Ship, 611 East Marceau St., St. Louis, MO 63111
Golar Metal A/S, P.O. Box 70, 4901 Tvedestrand, Norway
Marland Environmental Systems, 8188 Newington Road, Lorton, VA 22079

SCAFFOLDING EQUIPMENT—Work Platforms

McCausey Lumber Co., 7751 Lyndon, Detroit, MI 48238
Trus-Joist Corp., P.O. Box 60, Boise, ID 83704

SCUTTLES/MANHOLES

Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

SHAFT SEALS, MECHANICAL PACKING

EG&G Sealol Engineered Prod. Div. Marine Products Group, Warwick, RI 02888
Garlock Inc., Mechanical Packing Div., 1666 Division St., Palmyra, NY 14522
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470

SHIPBREAKING—Salvage

Fred Devine Diving & Salvage, Inc., 6211 N. Ensign, Swan Island, Portland, OR 97217
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, OR 97201

SHIPBUILDING EQUIPMENT

Bardex Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA. 93116
M.A.N.—GHH Sterkrade Werfsrabe 112 D-4100 Duisburg 18, West Germany
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, FL 33156
Total Transportation System Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 248, N 5201, Os, Norway

SHIPBUILDING STEEL

Armco Steel Corp., 703 Curtis St., Middletown, OH 45042
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
High Strength QA Steel, P.O. Box 40606, Houston, Tx 77240-0606
United States Steel Corp., Christy Park Plant, 2214 Walnut St., McKeesport, PA 15132
Welded Beam Company, P.O. Box 280, Perry, OH 44081

SHIPBUILDING—Repairs, Maintenance, Drydocking

Amsterdam Drydock Company, Post Box 3006, 1003 AA, Amsterdam, Holland
Arsenale Triestino-San Marco Shipyard, Trieste, Italy, U.S. Rep: Marine Technologies & Brokerage, 33 Rector St., New York, NY 10066
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valpariso, Chile, S.A.
Astilleros Unidos De Veracruz, S.A. San Juan Ulua S/N, Apdo. Postal 647 Veracruz, Ver Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, LA 70150
Bardex Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA 93116
Bath Iron Works Corp., 700 Washington St., Bath, ME 04530
Bay Shipbuilding Corp., 605 N. 3rd Ave., Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair Co., Inc., P.O. Box 42, Mobile, AL 36601
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
Blohm & Voss AG, P.O. Box 100720, D-2000 Hamburg 1 (In US)-Blohm & Voss CO, Springfield, N.J.
Blount Marine Corp., P.O. Box 368, Warren, RI 02885
Boston Whaler Commercial Div., 1149 Hingham St., Rockland MA 02370

Burrard Yarrows Corporation, P.O. Box 86099, North Vancouver, B.C., Canada
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Geneva, Italy
Chesapeake Shipbuilding Inc., 710 Fitzwater St., Salisbury, MD 21801
Conrad Industries, P.O. Box 790, Morgan City, LA 70380
Coast Iron & Machine Works, 5225-7th Street E., Tacoma, WA 98424
Curacao Drydock (U.S.A.) Inc., 26 Broadway, Suite 741, New York, NY 10004
Dubai Drydocks, P.O. Box 8988, Dubai, United Arab Emirates—U.S.A. Agents: Keppel Marine Agencies, Inc., 26 Broadway, New York, NY 10040, 6240 Richmond Ave., Houston, TX 77057
Eastern Marine, Inc., P.O. Box 1009, Panama City, FL 32401
Gladding-Hearn Shipbuilding, Box D (1 Riverside Ave.), Somerset MA 02726
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
HBC Barge Co. Brownsville, PA 15417
Hitachi Zosen Corp., 1-1-1 Hitotsubashi, Chiyoda-ku, Tokyo 100, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
Hyundai Mipo Dockyard Ltd., 456 Cheonha-Dong, Ulsan, KOREA
Industrial Marine Engineering Ltd., P.O. Box 172, Suva, Fiji
Jakobson Shipyard Inc., P.O. Box 329, Oyster Bay, NY 11771
Jeffboat Inc., Jeffersonville, Ind. 47130
Jered Brown Brothers, Inc., 56 S. Squirrel Rd., Auburn Hills, MI 48057
Keppel Shipyard Limited, 325 Telok Blangah Road, P.O. Box 2169, Singapore 0409
Koch Ellis Barge & Ship Service, P.O. Box 9130, Westwego, LA 70094
Paul Lindenau GmbH, & Co., Schiffswerft u. Maschinenfabrik, D-2300 Kiel-Friedrichsort, West Germany
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, WA 98134
M.A.N. GHH Sterkrade, P.O.B. 110240, D-4200 Oberhausen 11, West Germany
Main Iron Works, Inc., P.O. box 1918, Houma, LA 70361
Marathon LeTourneau Offshore, P.O. Box 61865, Houston, TX 77208
Marinette Maine Corporation, Marinette, WI 54143
Mitsubishi Heavy Industries, Ltd., 5-1, Marunochi 2-chome, Chiyoda-ku, Toyko, 100 Japan
MonArk Boat Co., P.O. Box 210, Monticello, AR 71655
Moran Shipping Agencies, 602 Sawyer, Suite 200, Houston, TX 77077
Moss Point Marine Inc., P.O. Box 1310, Escatawpa, MS 39552
National Marine Service (Shipyard Division), P.O. Box 38, Hartford, IL 62048
National Steel & Shipbuilding Corp., San Diego, CA 92112
Nautilus Surveys Inc., 10822 Sageleaf Lane, Houston, TX 77089
Neorion Shipyards Syros Ltd., Syros, Greece–U.S.A. Agents: Keppel Marine Agencies Inc., 26 Broadway, New York, NY 10004, 6420 Richmond Ave., Houston, TX 77057
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Nichols Brothers Boat Builders Inc., P.O. Box 580, 5400 S. Cameron Rd., Freeland, WA 98249
Pennsylvania Shipbuilding, P.O. Box 442, Chester, PA 19016
Port Allen Marine, P.O. Box 108, Port Allen, LA 70767
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
Promet Marine Services Corp., 242 Allens Ave., Providence, RI 02905
Samsung Shipbuilding & Heavy Industries Co., Ltd., Samsung Main Bldg. 250, 2Ka, Taepyong-ro, Chung-ku, Seoul, Korea
Southwest Marine, Inc., P.O. Box 13308, San Diego, CA 92113
Tampa Shipyards Inc., P.O. Box 1277, Tampa, FL 33601
Thomas Marine, 37 Bransford St., Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, NY 10004
Tracor Marine, P.O. Box 13107, Port Everglades, FL 33316
Vanguard Services, P.O. Drawer A, New Johnsonville, TN 37134
Verreault Navigation Inc., Les Mechins, Quebec, G0J 1T0
Walker Boat Yard, P.O. Box 729, Paducah, KY 42001
Waller Marine, Inc. 11777 Katy Freeway/Suite 395, Houston, TX
Westport Shipyard, Inc., P.O. Box 308, Westport, WA 98595
Zidell Explorations, Inc., 3121 S.W. Moody Street, Portland, OR 97201

SHIPPING—PACKING
Pilotage Consultants, Inc., P.O. Box 2046, New Hyde Park, NY 11040
Signet Corporation, 1800 West Loop South, Suite 1600, Houston, TX 77027

SIMULATOR TRAINING
Marine Safety International, Marine Air Terminal, LaGuardia Airport, NY 11371

SILENCERS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

STUFFING BOXES
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062

SURVEYORS AND CONSULTANTS
Advanced Technologies Dept. PZ-01, 7926 Jones Branch Dr., McLean, VA 22102
Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
Frank Jeffrey & Assoc., 5201 Westbank Exp., Suite 206, Marrero, LA 70073
M.A. Stream Associates, Inc., 400 Second Ave. W., Seattle, WA 98119

SURVIVAL EQUIPMENT
Fitz-Wrights Suits Ltd., 17919 Roan Pl., Surrey, B.C., Canada V3S 5K1
Harvey's Commercial Marine Division, 205 South 252 St., Kent, WA 98032
Imperial Manufacturing Co., P.O. Box 4119, Bremerton, WA 98312
Viking Life-Saving Equipment, 3305 N W 37th St., Miami, FL 33142

TANK CLEANING
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Gamlen Marine Division, 375 Allwood Rd., Clifton, NY 07013
Gamajet Equipment Div., Sybron Chemicals Inc., 121 S. Maple Ave., So. San Francisco, CA 94080
Petrochemical Services, Inc., 3820 Dauphine St., New Orleans, LA 70117
SAAB Tank Control, 5 Marine View Plaza, Hoboken, NJ 07030

TANK LEVELING INDICATORS
American United Marine Corp., 5 Broadway, Route 1, Sagas, MA 01906
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
SAAB Tank Control, 5 Marine View Plaza, Hoboken, NJ 07030
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062

TORSIONAL VIBRATION SPECIALISTS
T.W. Spaetgens, 156 W. 8th Ave., Vancouver, Canada, V5Y 1N2

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Bay Houston Towing Co., 2243 Milford, P.O. Box 3006, Houston, TX 77253
Bulkfleet Marine Corporation, 1800 West Loop S., Ste 1600, Houston, TX 77027
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, MD 21202
Jack Faulkner, Inc., 1005 W. Harimaw Ct., Metairie, LA 70001
Jan Erik Dyvi A/S, P.O. Box 454, Sentrum, Norway
McAllister Bros., Inc., 17 Battery Pl., New York, NY 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, LA
Midland Affiliated Co., 580 Walnut St., Cincinnati, OH 45201
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, NY 10048
National Marine Service, Transport Div., 1750 Brentwood Blvd., St. Louis, MO 63144
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767; Walker Boat Yard, P.O. Box 729, Port Allen, LA
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, TX 77002
Turecamo Coastal & Harbor Corp. 1 Edgewater Plaza Staten Island, N.Y. 10305

VALVES AND FITTINGS
Bailey, Division of CMB Industries, P.O. Box 8070, Fresno, CA 93747
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Cajon Co., 9760 Shepard Rd., Macedonia, OH 44056
Crawford Fitting Company, 29500 Solon Road, Solon, OH 44139
Elliott Manufacturing Co., Inc. (Remote Valve Operating Equipment), P.O. Box 773, Binghamton, NY 13902
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Jamesbury Corp. 640 Lincoln St., Worcester, MA 01605
Nupro Co., 4800 E. 345th St., Willoughby, OH 44094
Parker Hydraulic Valve Didision, 520 Ternes Avenue, Elyria, OH 44035
Parker Actuator Division, 9948 Rittman Road, P.O. Box 450, Wadsworth, OH 44281-0450
Parker Systems Division, 651 Robbins Drive, Box 3500, Troy, MI 48007 3500
Pittsburgh Brass Manufacturing, Sandy Hill Rd., R.D. 6 Box 387-A, Irwin, PA 15642
Sno-Trik Co., 9760 Shepard Rd., Macedonia, OH 44056
Stacey/Fetterolf Corporation, P.O. Box 103, Skippack, PA 19474
Stockham Valves & Fittings, Box 10326, Birmingham, AL 35202
Swagelok Company, 5171 Hudson Dr., Hudson, OH 44236
Tate Andale Inc., 1941 Landsdowne Rd., Baltimore, MD 21227
Waukesha Bearings Corp., 405 Commerce St., P.O. Box 798, Waukesha, WI 53186
Whitey Co., 318 Bishop Road, Highland Heights, OH 44143
William E. Williams Valve Corporation, 38-52 Review Avenue, Long Island City, NY 11101
Zidell Explorations, Inc., (Valve Division), 3121 S.W. Moody Avenue, Portland, OR 97201

VESSEL OWNER/OPERATOR
Wallenius Lines, P.O. Box 17086, S–10432 Stockholm, Sweden

VIBRATION ANALYSIS
DLI Engineering Corp., 253 Winslow Way West, Bainbridge Island, WA 98110

WATER PURIFIERS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Atlas-Danmark Marine & Offshore Baltorpej, 154 DK-2750 Ballerup, Copenhagen, Denmark, TX 35177 Atlas DK
Drew Chemical Corporation, One Drew Chemical Plaza, Boonton, NJ 07005
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

WEATHER CHART RECORDERS
Alden Electronics, 40 Washington St., Westborough, MA 01581

WELDING
KSM Fastening Systems Inc., 301 New Albany Rd., Moorestown, NJ 08057
Metallizing Co. of America, Inc., 321 So. Hamilton, Sullivan, IL 61951
Miller Electric Mfg. Co., P.O. Box 1079, Appleton, WI 54912

WELDING EQUIPMENT
Enerjee Ltd., 32 S. Lafayette Ave., Morrisville, PA 19067

WINCHES AND FAIRLEADS
Fritz Culver, Inc., P.O. Box 569, Covington, LA 70434
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
McElroy Machine & Mfg. Co., Inc., Lorraine Rd., Industrial Seaway, Gulfport, MS 39501
Nashville Bridge Co., P.O. Box 239 Nashville TN 37202
Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118
Smith Berger Marine Inc., 516 S. Chicago St., Seattle, WA 98108

WINDOWS
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, NY 10550

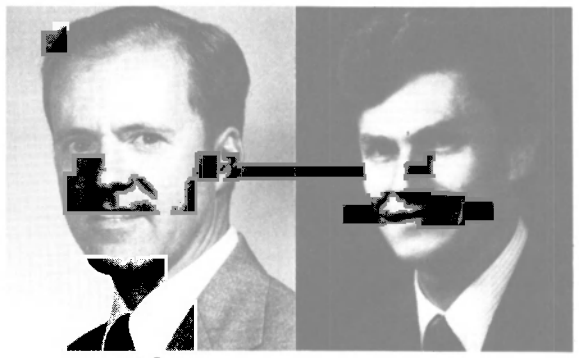
WIRE/CABLE LUBRICATOR
Atlantis Services, Inc., 1057 Kings Ave., Jacksonville, FL 32207

WIRE AND CABLE
AMP Special Industries, P.O. Box 1776, Southeastern, PA 19399
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, IL 60076
Atlantic Cordage Corp., 60 Grant Ave., Carteret, NJ 07008
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings
Atlantic Cordage Corp., 60 Grant Ave., Carteret, NJ 07008
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
A.L. Don Company, Foot of Dock Street, Matawan, NJ 07747

ZINC
The Platt Bros. & Co., Box 1030, Waterbury, CT 06721
Thermal Reduction Company, 1 Pavilion Avenue, Riverside, NJ 08075
Smith & McCroken, 153 Franklin St., New York, NY 10013

Terry Steam Turbine Names Two Vice Presidents



David Cote | Sergio Cosso

David M. Cote has been promoted to vice president, operations, and **Sergio Cosso** has been named vice president, marketing at Terry Steam Turbine Division, according to corporation president **William L. Wathen.**

Mr. **Cote** will be responsible for manufacturing, engineering, purchasing and quality control for Terry's Windsor and Niantic facilities, as well as Terry GmbH in Oberhausen, West Germany.

Mr. **Cosso** will be responsible for all marketing activities including pricing, cost price analysis, and contract administration.

He will also manage administration of Terry's international operations in Mexico, India, Japan, United Kingdom, Canada and West Germany. Also, Mr. **Cosso** will handle Terry's future licensing and joint venture efforts.

Reco Crane Promotes Hardin—Literature Offered

Reco Crane Company of New Orleans, La., announced the promotion of **Gary Hardin** to general sales manager.

Gary Hardin

Mr. **Hardin,** a veteran sales manager of the Xerox Corporation, joined Reco three years ago as assistant offshore operations manager.

Reco, with branches in Baton Rouge, Lafayette, Lake Charles, and corporate headquarters in New Orleans, is expanding their sales force to promote sales of the Link Belt product line, and their own Reco hydraulic box boom marine cranes. Reco Marine Crane, a subsidiary of Reco Crane Company, manufactures hydraulic cranes for the offshore oil and marine industry.

For further information and literature on Reco Crane Company and their products and services,

Circle 83 on Reader Service Card

Sales And Marketing Functions Realigned At TECO Transport

Following the recent resignation of **Thomas G. Hoback** as director of marketing for TECO Transport & Trade Corporation of Tampa, there has been a realignment of sales, traffic, and marketing duties.

D. Bryan Bashore has been appointed director-sales and marketing, **Peter S. Gibbons** is now manager-sales and traffic, and **James R. Turner** has been named manager-marketing.

Division Of M.A.N. Formed Into New Subsidiary—MAN Gutehoffnungshütte

M.A.N. Maschinenfabrik Augsburg-Nurnberg, West Germany, has announced that M.A.N.'s Machinery, Plant and Systems Division, with works at Gustavsburg, Nurnberg, and Oberlhausen-Sterkrade, will be segregated from M.A.N. The new company, named MAN Gutehoffnungshutte GmbH, is to be registered at Oberhausen as a legally independent 100 percent subsidiary of M.A.N. There will be a direct control and profit transfer agreement with the parent company.

This segregation will not entail any changes in business relations. MAN Gutehoffnungshutte GmbH will enter into and honor all contracts, agreements and other understandings originally signed with the former M.A.N. Machinery, Plant and Systems Division.

The telephone and telex numbers, as well as official addresses will also remain the same.

For more information,

Circle 15 on Reader Service Card

Metropolitan Offers New Vanstone Flanged Fittings —Literature Available

Metropolitan Master Machinists, the Manufacturing Division of Metropolitan Plumbing Supply Corporation, has introduced a new line of Vanstone flanged fittings.

According to the manufacturer, the company has doubled its machine shop capacity and they are diversifying their line to include all types of regular and special valves and fittings, in various sizes and metals.

Metropolitan's new swivel adjustable Vanstone flanged fittings are offered in sizes 2 to 24 inches, in standard and extra-heavy carbon steel, stainless steel, aluminum, copper bronze, carpenter alloy 20 and monel. Regular and specialty fittings, elbows, tees, crosses, reducers, lateral Ys, true Ys, spool pieces, stub ends, and adapters are also available in straight and reducing sizes.

For further information and free detailed literature on Metropolitan Master Machinists and their products,

Circle 71 on Reader Service Card

Ingram Barge Purchases Great Rivers Marine

Ingram Barge Company, Nashville, Tenn., purchased all of Great Rivers Marine Services, according to a recent company newsletter. Ingram had previously been a 50-percent partner with an individual.

Great Rivers, which serves as a valuable midstream fuel facility for Custom Fuel to serve the river industry, is an important staging and fleeting area for Ingram Barge.

In addition to in-house fleeting, minor barge repairs, fueling and other fleeting services, the company provides an important commercial fleeting facility which has developed a reputation for prompt, efficient and economical service to the inland river industry.

Newport News Awarded $3-Million Contract For Planning Yard Services

Newport News Shipbuilding and Drydock Company, Newport News, Va., is being awarded a $3,012,236 cost-plus-fixed-fee contract for reactor planning yard services. Work will be performed in Newport News and is expected to be completed in September 1986. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-C-4014).

Meyer Retires As Deputy Commander At NAVSEA

Adm. Wayne E. Meyer

Rear Adm. **Wayne E. Meyer,** a leader in the development of the U.S. Navy's revolutionary Aegis weapons system, retired recently after 42 years of Naval service. His last assignment was a deputy commander for weapons and combat systems at the Naval Sea Systems Command.

His accomplishments in the development of Aegis were recognized in 1985 by the Navy League of the United States, which awarded him the Rear Adm. William S. Parsons Award for Scientific and Technical Progress. He was cited for his determined and dedicated leadership resulting in the development and deployment of the Aegis weapons systems aboard Ticonderoga Class cruisers.

Adm. **Meyer** began his career as an apprentice seaman, and was commissioned ensign in the Naval Reserve in 1946. He transferred to the regular Navy in 1948. His assignments have taken him to sea in the radar picket destroyer USS Goodrich, light cruiser USS Springfield, destroyer tender USS Sierra, radar picket escort ship USS Strickland, and guided-missile light cruiser USS Galveston. He has also had numerous key shore assignments.

He was selected for flag rank in January 1975 and assumed duties as project manager, Aegis shipbuilding. He assumed his final assignment at NAVSEA in September 1983.

Operations Expanded At Goltens, New York; Crellin Joins Staff

Norman Golten, president of Goltens, NY, a worldwide diesel engine repair facility and spare parts supplier, announced recently the addition of **John Crellin** to its staff. "Burgeoning operations and production have created the need for additional technical engineering expertise. **John** fits that slot perfectly," stated Mr. **Golten.**

Mr. **Crellin** is a licensed steam and diesel engineer. For 29 years he has been associated with Meir & Oelhaf. He will utilize his experience and knowledge to assist **Armando Giachin** in operations.

American Appoints Monaco New Cordage Engineer

American Manufacturing Co., Inc. of Lafayette, La., one of the country's largest producers of rope and cordage products, recently announced the appointment of **Albert T. Monaco** as cordage engineer.

Albert Monaco

Mr. **Monaco** has spent the last 35 years in a variety of engineering, research and sales positions in the rope and fiber industry. Most recently, he was in cordage and sales engineering with Wall Industries where he was instrumental in the development of a wide range of new products. Previously, he held management positions with Goodyear Tire & Rubber Co., Beacon Management Counselors and the Industrial Rayon Corp.

During his career, Mr. **Monaco** has been deeply involved in design and development of new rope and fiber technologies. He has helped create federal, industrial and customer rope specifications as well as aiding customers in the technical aspects of rope use. Mr. **Monaco** provides technical advice to lawyers and insurance companies and has been called as a technical expert in rope liability cases.

He has been an active member of the Cordage Institute Technical Committee for more than 15 years and has chaired the A.S.T.M. subcommittee D13.16 on Ropes and Cordage for over 10 years.

For more information on American Manufacturing rope and cordage products,

Circle 26 on Reader Service Card

CLASSIFIED AND EMPLOYMENT ADVERTISING

HOW TO PLACE CLASSIFIED ADVERTISING: Mail clearly written or typed copy to: MARITIME REPORTER, 118 East 25th Street, New York, NY 10010. Include any photos, drawings or logos if required. Specify size of ad and number of insertions . . . Classified Advertising — Per Issue Rate: Classified advertising is sold at a rate of $70 per column inch . . . MARITIME REPORTER'S classified section carries more advertising and sells more products than any other publication in the marine industry. MARITIME REPORTER is published the 1st and 15th of each month. Closing date for classified advertising is 20 days prior to the date of the issue. For further details contact John C, O'Malley at (212) 477-6700. Send all advertising material to MARITIME REPORTER and Engineering News, 118 East 25th Street, New York, NY 10010.

Bell Aerospace

TEXTRON

A recognized leader in development of Surface Effect Ships (SES) and Amphibious Air Cushion Vehicles (ACV) is currently seeking personnel for its long range navy Mine Sweeper Hunter (MSH) Surface Effect Ship contract.

DEPUTY PROGRAM DIRECTOR

Candidates must possess a minimum of 5 years experience in Marine Engineering and Project Management. Knowledge of Federal Procurement Regulations, production, scheduling, and budgets is also required.

SUPERVISOR OF CHANGE ADMINISTRATION

Requirements for this position include 8-10 years experience in estimating/changes on government contracts, at least two of which must be in a supervisory position.

We offer excellent benefits, including a full relocation package, and competitive salaries to the most qualified individuals.

If you meet our requirements and are interested in a career with Bell send a resume to:

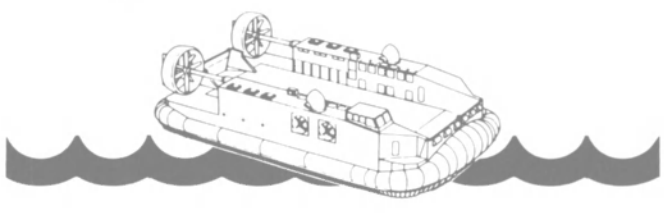
WAYNE CASSARD,
Supervisor of Personnel Administration

Bell Aerospace

TEXTRON

6800 PLAZA DRIVE
NEW ORLEANS, LA 70127

EEO



MANAGEMENT OPPORTUNITIES!
SHIPBUILDING—SHIP REPAIR

MANAGER OF MATERIAL CONTROL
MANAGER OF PURCHASING (2 OPENINGS)
SUPERINTENDENTS (WELDING, JOINERS)
FOREMEN (SHIPFITTING, WELDING, PIPE, MACHINERY)
MANAGER OF SHIP REPAIRS
DIRECTOR OF ESTIMATING
SENIOR ELECTRICAL ENGINEERS (SEVERAL)
CHIEF WELDING ENGINEER

We specialize in recruiting key management personnel for the shipbuilding and ship repair industry. All fees and expenses are company paid. The above positions, and many others, are now open. Call Mr. M.A. Weeks at (205) 661-2294 as soon as possible or send resume immediately!

WEEKS AND ASSOCIATES
Management Consultants
921 Cottage Hill Avenue, Mobile Alabama 36609

INDUSTRIAL SPECIALIST, GS-1150-11
$26,381-$34,292 PER ANNUM

The Supervisor of Shipbuilding, Conversion & Repair, USN, New Orleans has a vacancy for the above position which requires that the employee be familiar with all disciplines and outfitting efforts related to new construction. Employee must be able to evaluate schedules and performance, communicate both orally and in writing; organize and prioritize tasks pertaining to sea trials, guarantee period, and postdelivery industrial periods. Interested applicants should contact the Consolidated Civilian Personnel Office, New Orleans, Department of the Navy, New Orleans, LA 70142-5200 or call Ms. C. Ebberman at (504) 361-2560.

OPERATIONS MANAGER

Manage a barging operation in N. Y. Harbor utilizing large ocean-going tank barges and tugs. Excellent salary and fringe benefits. Send resume in strictest confidence to Ocean Disposal Co., Inc., 216 North Avenue East, Cranford, N. J. 07016.

POSITION WANTED

Marine Engineer with Chief Engineer's License 12 years' experience afloat. Now studying M.S. transport management. Need sponsored job. Kindly respond to:

Maritime Reporter
118 East 25th St.

Box 201
New York, NY 10010

Resume on request.

PORT ENGINEERS

American Systems Engineering Corporation has openings for experienced Port Engineers. Our Port Engineers maintain selected U. S. Navy ships in a Phased Maintenance Program.

Applicants should be degreed Marine Engineers holding USCG Engineer's License. U.S. citizenship is required.

Send resume and salary requirements to:

American Systems
Engineering Corporation
Box 8988
Virginia Beach, VA 23452

SALES/MARINE/ INDUSTRIAL

Ship repair company in search of industrious individual with background in all facets of shipboard mechanics. Responsibilities will be diverse and extensive. Past contacts helpful, but not necessary. Interested, respond by resume to Philly Ship, P.O. Box 1286, Philadelphia, PA 19105, Attention R. Venuti.

ACQUISITION OPPORTUNITY
SHIP REPAIR/SERVICE CO.

25 years providing complete 24-hour shipboard service for Calif. ports, including onboard riding crews for service underway. Facilities include fully-equipped machine and welding shop and large spare parts inventory. $6 million annual gross.

C.F. BREER & COMPANY, 12016 Wilshire Blvd. #4, Los Angeles, CA 90025 (213) 476-4964

SALES DIRECTOR (Marine Construction)
SEEKS POSITION

East Coast based Sales Director seeks position with greater challenge and faster growth.

27 years of marine experience, familiar with all aspects of marine construction and sales. Experienced with government contracts and proposal requirements. First hand experience in international business from development to completion. Excellent customer relations. Experienced in advertising and public relations.

Resume upon request.

MARITIME REPORTER
Box 116
118 East 25th Street,
New York, NY 10010

COVERED BARGES

Former N.Y. Harbor Coffee Barges:

116 x 34 x 10.6

Excellent Condition

$100,000.00

Call HELEN AMAKER
(201) 659-3550

Growing ship repair operation has need for ship superintendent type who is well qualified in machinery and hull repairs. Must be able to write total job description of each item performed. Send resume of experience and salary desired to P.O. Box 2162, Savannah, Ga. 31402.

FOR SALE

EX. U.S.C.G. 110 FT TWIN SCREW ICE BREAKING TUG, LESS ENGINES. EXCELLENT CONDITION. NEW SHAFTS + RUDDERS. 10" CHANNEL KEEL COOLERS. BUILT 1945. ALWAYS IN FRESH WATER

312 721-4138

FOR SALE
ALL STEEL 1200 Ton
FREIGHT VESSEL

196' x 34' x 10'. Operating draft 6' light 10' loaded. Speed: Approximately 12 miles per hour.

Engine room: Twin D353 Caterpillar, 2 - 40 KW Generators A.C.-Keel cooled. For more information and inspection call:

ANDERTON MARINE, INC.
Salisbury, MD Area Code 301-742-5189 or write to: P.O. Box 2293, Salisbury, MD 21801

PRICE $250,000.00

PORTAL WHIRLEY TRAVEL TRUCK

1-set (4) travel trucks for 85 tn Whirley, 4 whls. ea. truck, 171 rail 2 whls drive-2 free, 3-swivels, 20 HP DC. New cond. P.O.R.

1-set recond. travel trucks, model 24 Clyde, new whls., bushings, Houston (both).

Wheels, shafts, gears for Whirleys & Overhead cranes to 200 tns. We do custom rehab. & upgrdng. Get our quote on disassembling & moving Whirleys.

J. A. Davies Co., Inc. (713) 449-4717

HYDRAULICS

SERVICE • REPAIR • PARTS
CONSULTING • DESIGN

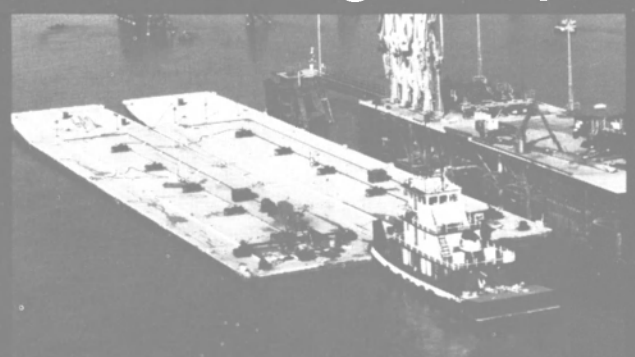
CUNNINGHAM MARINE
HYDRAULICS CO., INC.

201 Harrison St. • Hoboken, N.J. 07030
(201) 792-0500 (212) 267-0328

2030 E. Adams St. • Jacksonville, FL 32202
(904) 354-0840

TWX 710-730-5224 CMH Hoboken, NJ

Call the Barge People



McDONOUGH MARINE SERVICE

Our rental fleet of U.S. Coast Guard-certified tank barges, some with heating coils, can transport or store liquids in volumes of 2,700 to 23,000 barrels.

New Orleans
(504) 949-7586
Telex 58-4993
P.O. Box 26206
New Orleans, LA 70186

Houston
(713) 452-5887
17500 Market St.
P.O. Box 233
Channelview, TX 77530

Parkersburg
(304) 485-4494
Telex 86-9412
P.O. Box 1825
Parkersburg, WV 26101

St. Louis
(314) 725-2224
Suite 1108
11 S. Meramec Ave.
St. Louis, MO 63105

Rentals Sales Service

WATERTIGHT DOORS IN STOCK

SIZES

26"x48" 26"x66"
26"x60" 30"x60"
5/16" Frame - 1/4" Panel

STEEL DOGS

6-Dog right and left hand hinged doors with frames. Constructed of ¼" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed. Built to ABS.

LEVER OPERATED OR WHEEL OPERATED DOORS AVAILABLE

26"x48" 26"x66" 30"x60"

NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14" x 10" CLEAR OPENING

With extended legs for welding to deck. 14" wide on base — length 28" — height 27¼". IMMEDIATE DELIVERY FROM STOCK.

ALSO 12" x 10" IN STOCK

THE BOSTON METALS COMPANY
233 E. Redwood St.—(301) 539-1900—Baltimore, Md. 21202
Marine Warehouse (301)-752-1077

Free Heavy Duty Flexible Reach Rod Brochure describing mechanical valve control from a remote station.

Write or call 201-752-8300,
S. S. WHITE INDUSTRIAL PRODUCTS
151 Old New Brunswick Road, Dept-M
Piscataway, NJ 08854.

Your Source for Electric Heat

INDEECO

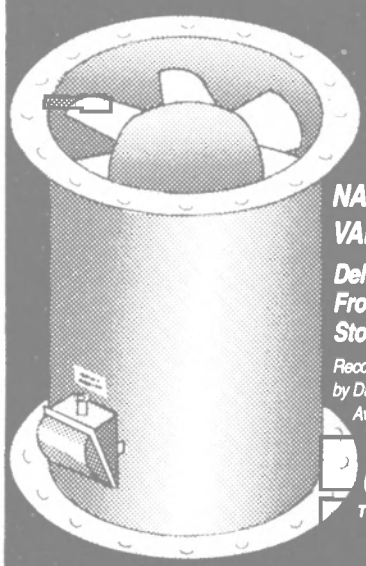
- Over 50 years' experience
- Quality heaters in custom-designs
- UL & CSA approvals
- 24-hour delivery on stock designs
- The most complete library of heater catalogs

For your free general catalog, write or call:

Industrial Engineering & Equipment Co.
425 Hanley Industrial Court
St. Louis, Missouri, 63144
(314) 644-4300

JON M. LISS ASSOCIATES, INC.

411 BOREL AVENUE, SUITE 505 • POST OFFICE BOX 5554 • SAN MATEO, CALIFORNIA 94402-0554



NAVY STANDARD VANEAXIAL FANS

Delivery From Stock

Reconditioning and Rewinding by Dahl Beck Electric. Available with Warranty.

(415) 573-9191

TELEX 17-2655 GOJON SMT

BFGoodrich Offers Cutless® Rubber Bearing Application Guide For Engineers

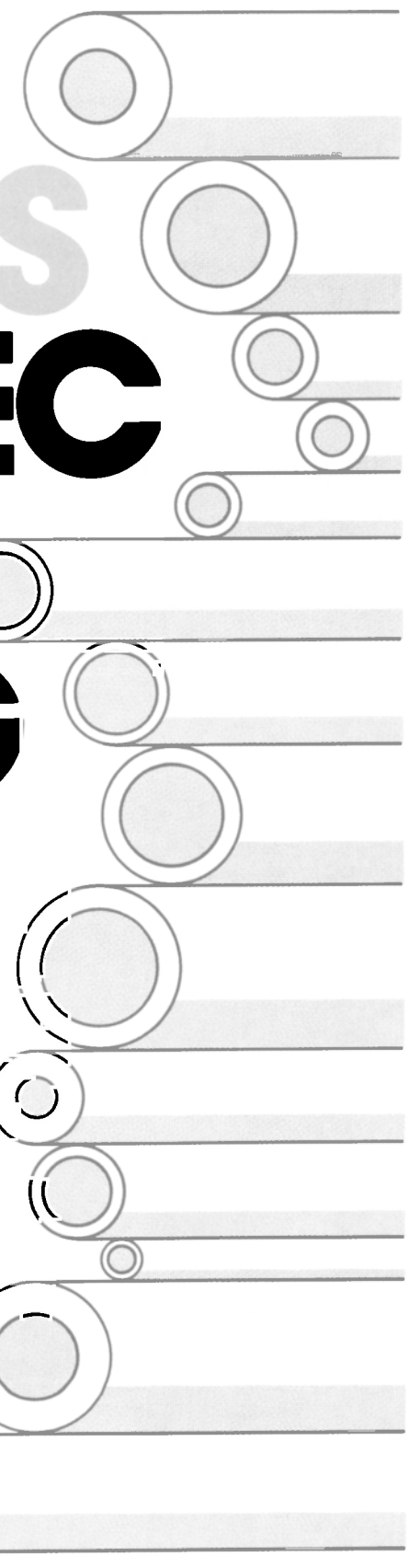
BFGoodrich, Akron, Ohio and its marketing subsidiary Lucian Q. Moffitt, Inc., announced publication of a 12-page color brochure directed to the application engineer and other related bearing application job functions.

The brochure covers bearing design, operation, performance, installation and servicing. Several tables enumerate commercial marine, naval and industrial bearing clearance data. Also included is a section on recommended dimensions for full-molded bearings in marine service.

For additional information and a free copy of the brochure,

Circle 88 on Reader Service Card

TIOGA STOCKS MIL-SPEC PIPE & TUBING



We know what you need.

At Tioga, we offer immediate stock delivery on the most diversified range of pipe and tubing in the U.S.A. We also stock stainless, carbon and alloy steel pipe, fittings and flanges for any application.

Tioga is qualified to provide:

- **LEVEL 1** material from stock. • ABS inspection.
- All forms of supplemental testing, including ultrasonic, liquid-dye penetrant, and hydro-testing. • Government source inspection.

Tioga has an inspection system in compliance with MIL-I-45208A. We stock and provide the following MIL specs:

MIL-P-1144	MIL-T-8504	MIL-T-16420	MIL-T-23226
MIL-P-24338	MIL-T-8506	MIL-T-18165	WW-P-404D
MIL-T-1368	MIL-T-15005	MIL-T-20155	WW-P-406D
MIL-T-5066	MIL-T-16286	MIL-T-20157	
MIL-T-6736	MIL-T-16343	MIL-T-22555	

TIOGA PIPE SUPPLY COMPANY INC

QSC 467

2450 Wheatsheaf Lane, P.O. Box 5997, Phila., PA 19137
(215)831-0700 TELEX: 83-4650
TELECOPIER: 215-533-1645
Toll Free National Wats Number 800-523-3678

Circle 325 on Reader Service Card

OVER 99% OF ALL SHIPLIFT OPERATIONS AROUND THE WORLD ARE ON SYNCROLIFTS®

There are very good reasons why Syncrolift is the world leader in shiplift technology with more than 160 installations in 59 countries. If you're planning a shipyard and comparing docking systems, find out why your best move is with Syncrolift.®

The largest shiplift platform in the world – 655 ft. long by 106 ft. wide at Todd Pacific Shipyards Corporation, Los Angeles Division.

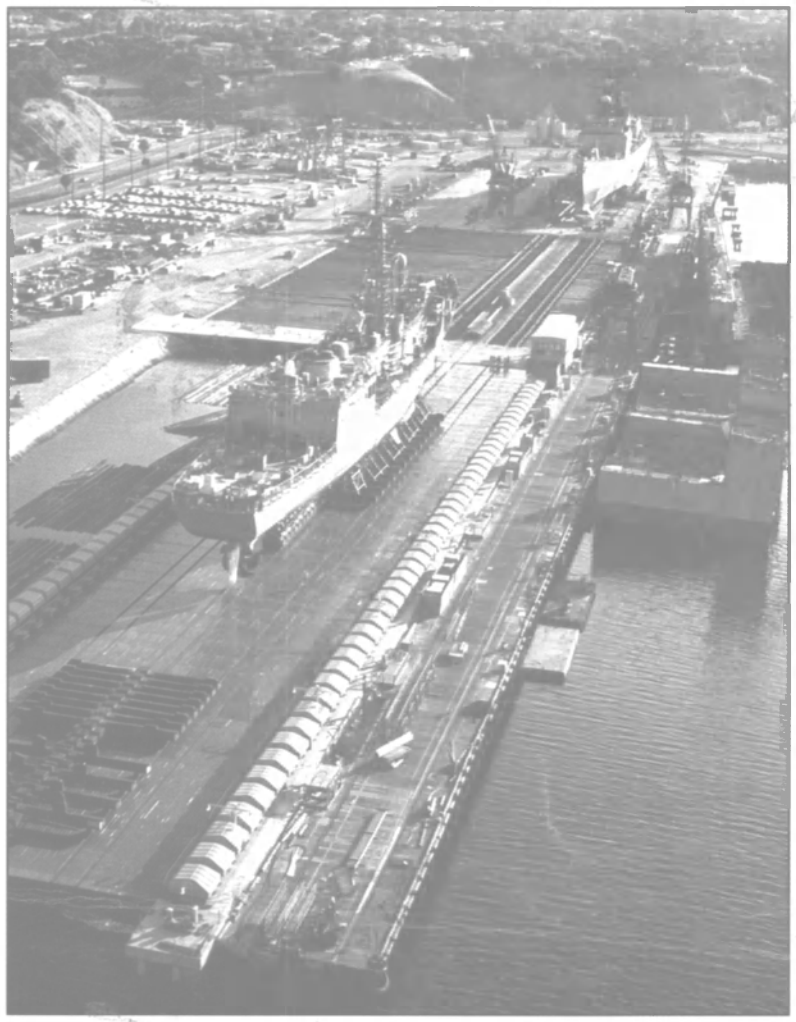
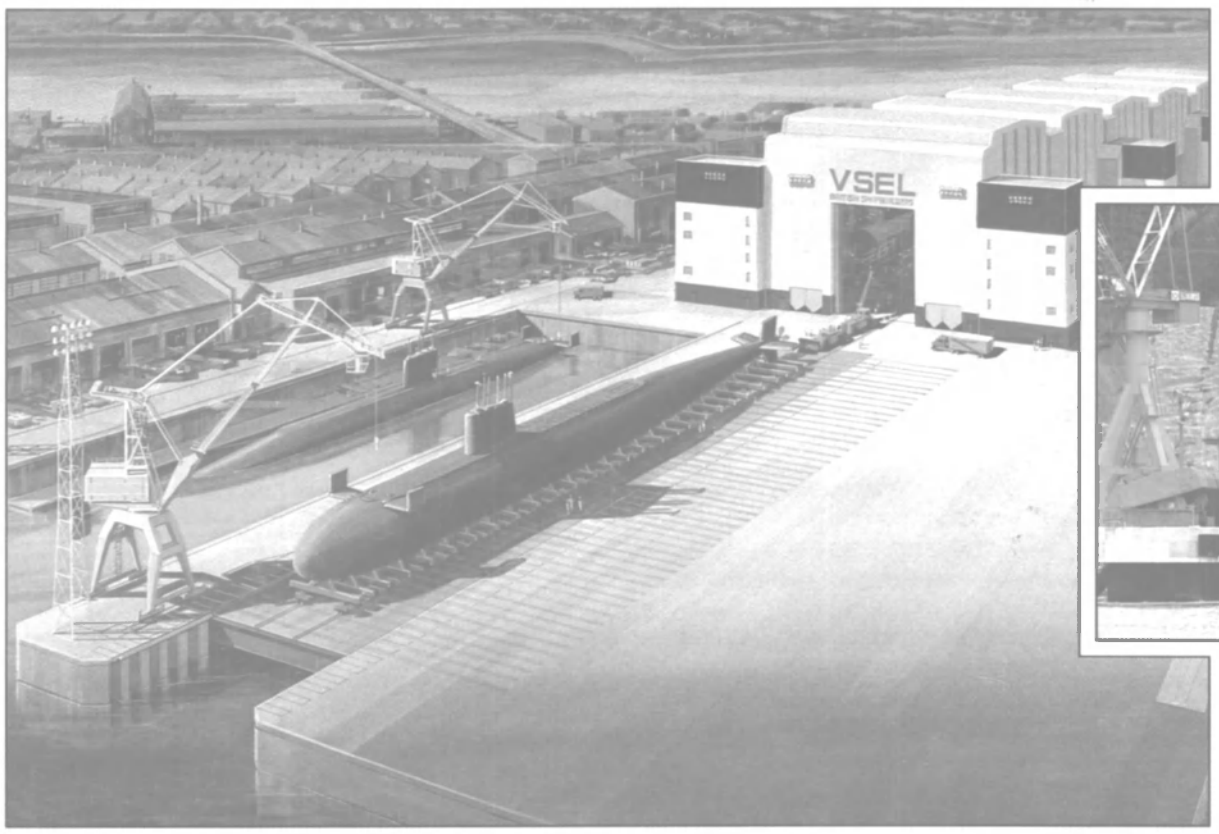


Photo by Joseph Ernest



The highest capacity per metre shiplift in the world – 200 tons per metre for launching concrete caissons at Yunotsu, Japan.

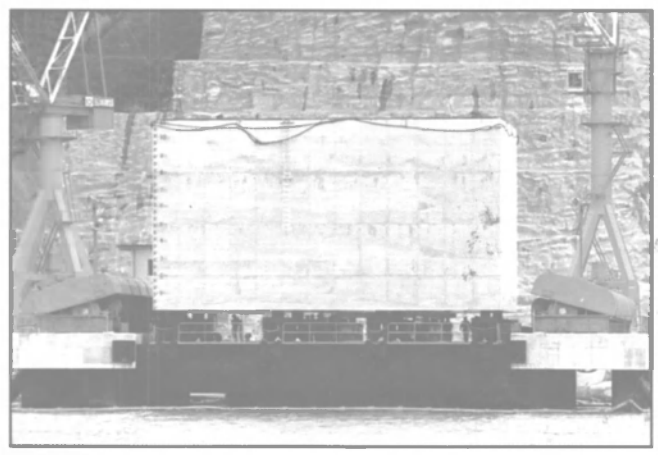


Photo by Penta-Ocean Construction Co., Ltd.

The greatest lifting capacity shiplift in the world – 24,000 tons for nuclear submarines at Barrow-in-Furness, England.

SYNCROLIFT

World Leaders in Shiplift Technology

PEARLSON ENGINEERING COMPANY, INC.

8970 S.W. 87th Court, Miami, FL 33176 • U.S.A. • (305) 271-5721 • Facsimile: (305) 595-5134
Mailing Address: P.O. Box 560008, Miami, FL 33256 • U.S.A. • Telex: 051-9340 SYNCROLIFT MIA

Circle 115 on Reader Service Card

A MEMBER OF THE NSC GROUP