MARITIME
REPORTER
AND
ENGINEERING NEWS

WEST COAST SHIPYARDS

The Maritime Prepositioning Ship, Pfc Eugene A. Obregon, Built By Notional Steel & Shipbuilding

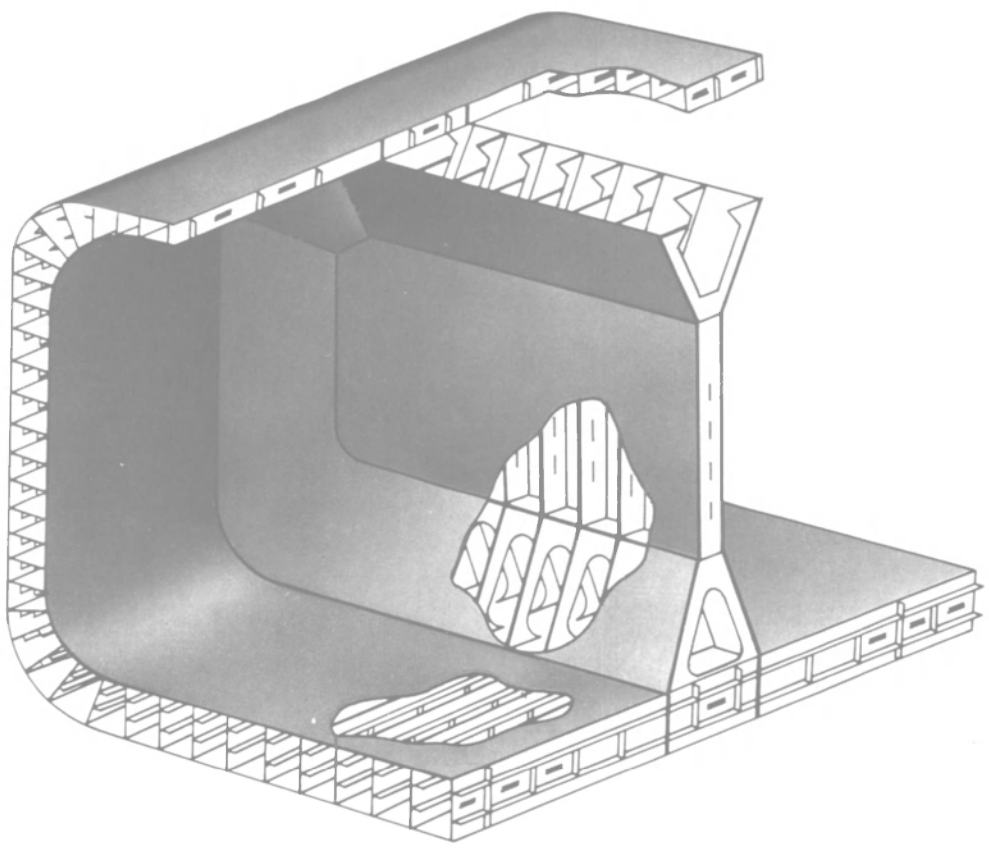
U.S. Navy Ship Overhaul Market – An Update –

(SEE PAGE 4)

JULY 16, 1985

INTRODUCING THE EPOCH MARK II SERIES.

A new era in product oil carrier design.



Hitachi Zosen has developed the EPOCH MARK II series which has a unique structure not found on conventional ship designs.

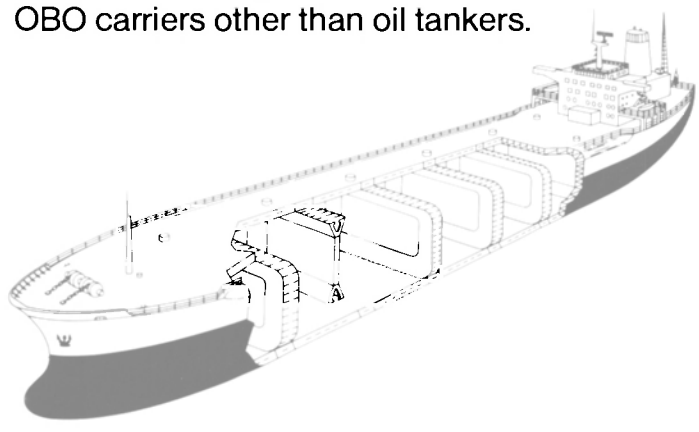
Revolutionary in concept, the MARK II incorporates a unidirectional girder system combined with a complete double hull structure.

While a ship's hull is customarily designed with a grillage of longitudinal and transverse members for strength, this system uses only longitudinal members in a double hull to provide sufficient strength.

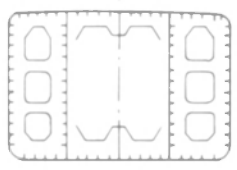
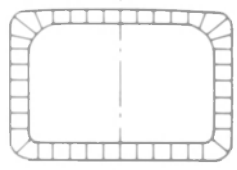
This unidirectional girder system results in unprecedented structural simplicity and completely flush surfaced cargo tank interior. MARK II product oil carriers provide unrivaled advantages in performances over more conventional designs.

The EPOCH MARK II series is available in 40, 60 and 80 thousands dwt designs. And has won the approval of leading classification societies (ABS, BV, LR, NK, NV). At present many worldwide patents are under application.

Hitachi Zosen is also expanding this new structural system for the development of combination cargo carriers such as PROBO or OBO carriers other than oil tankers.



The Superior Performance of the EPOCH MARK II Series:

		Conventional	EPOCH MARK II
Tank configuration			
Cargo/ballast segregation		★	★★★
Unloading efficiency	unloading time	★	★★★
	stripping	★	★★★
Cargo tank cleaning	cleaning time	★	★★★
	completeness	★	★★★
Gas free	cargo tank	★	★★★
	ballast tank	★★	★★
Cargo tank heating		★	★★★
Cargo purity		★	★★★
Maintenance	cargo tank coating	★	★★★
	ballast tank coating	★★	★★
	hull construction	★	★★★
Safety	crack free	★★	★★★
	stranding & collision	★	★★★

★★★: Excellent ★★: Good ★: Normal

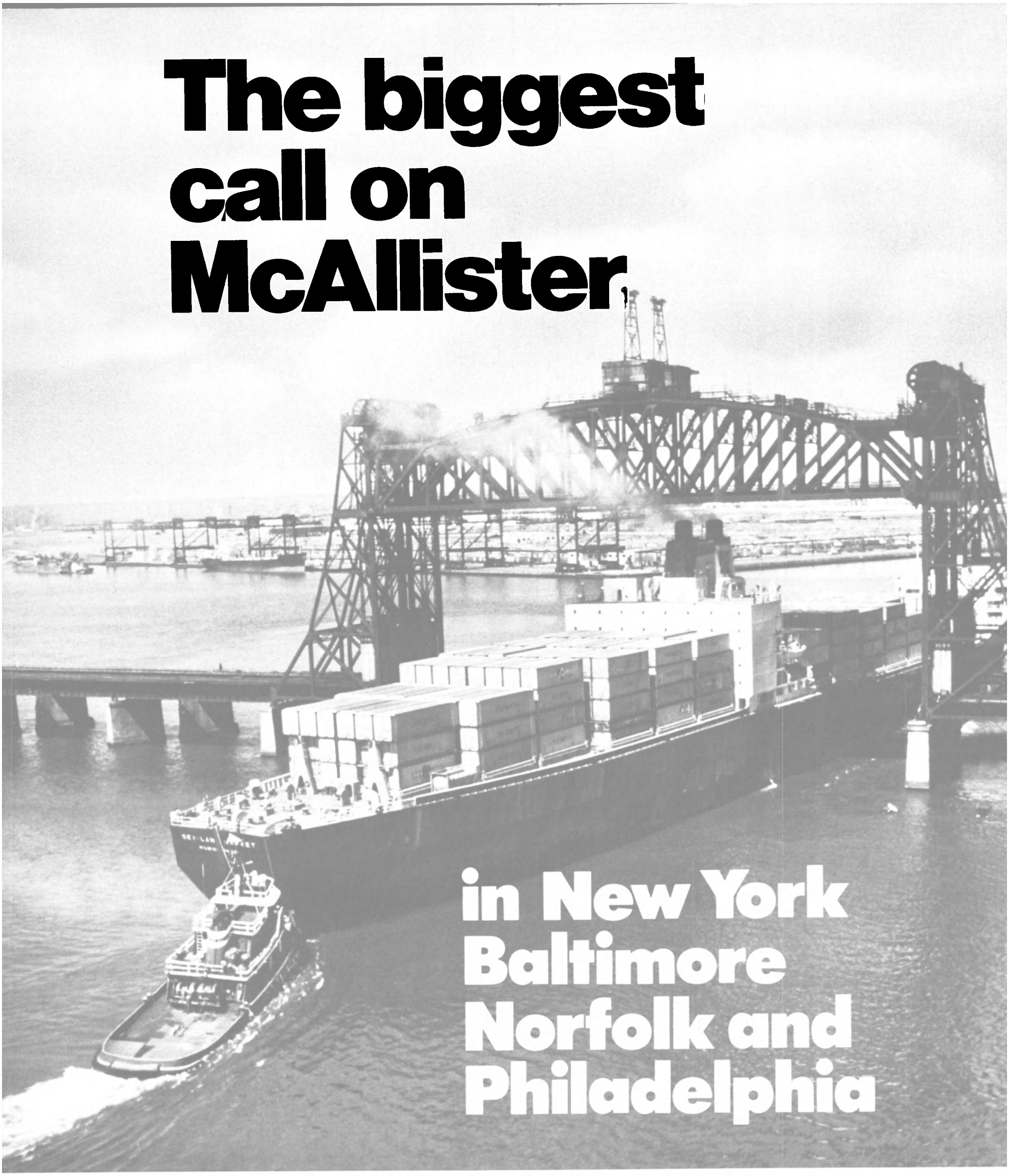
We build industries

Hitachi Zosen

HITACHI ZOSEN CORPORATION

HITACHI ZOSEN INTERNATIONAL, S.A.: London: Winchester House, 77 London Wall, London EC2N 1BQ, England Phone: 01-628-3891/8 Telex: 887873/884009 Greece: 98-B Filonos Street, Piraeus, Greece Phone: 452-7548/9 Telex: 212943
HITACHI ZOSEN U.S.A. LTD.: New York: 345 Park Avenue, New York, N.Y. 10154, U.S.A. Phone: 212-355-5650 Telex: 232036A, 232036B, 12 6582, 710 581 6099 Houston: Suite 3080, Two Allen Center, 1200 Smith Street, Houston, Texas 77002, U.S.A. Phone: 713-658-0136/8 Telex: 6868224, 203134, 775038
HITACHI ZOSEN CORPORATION: 1 1 1 Hitotsubashi, Chiyoda-ku, Tokyo 100, Japan Phone: 03-213-6611 Telex: J22363, J24490 OVERSEAS OFFICES & SUBSIDIARIES: Oslo: Raadhusgaten 4, Oslo 1, Norway Phone: 2-41 12 75 Telex: 76934 Düsseldorf: Graf Adolf Strasse 24, Dusseldorf, West Germany Phone: 0211 (DUES)-133011~4 Telex: 8587231 Beijing: Rm. No. 6087, Beijing Hotel, Dong Chang An Jie, Beijing, The People's Republic of China Phone: 50-7766 Ext 6087 Telex: 22519 Hitachi Zosen Engineering Singapore (Pte.) Ltd.: UOB Building, 325 Boon Lay Place, Jurong, Singapore 2262 Phone: 264 1344 Telex: RS21999 Permint Hitachi Zosen Sdn. Bhd.: Kawasan Perindustrian Kerteh, Kerteh, Kemaman, Terengganu, Malaysia Phone: 09-871777/871786 Telex: 51489 Hitachi Zosen Company (HK) Limited: Rm. 1007-1009, Tak Shing House, 20 Des Voeux Road, Central, Hong Kong Phone: 5-223350, 5-220597 or 5-246237 Telex: 73648 Hitachi Zosen Industria Pesada Limitada. Rua Mexico 90, Grupo 610, Rio de Janeiro-RJ, Brazil Phone: 240-9098, 240-9047 Telex: 2122904

The biggest call on McAllister



Circle 333 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

West Coast Shipyards —A Review— PAGE 14

Navy Overhaul Market PAGE 24

ODECO Will Buy Two Jackup Rigs From Salen For Total Of $33.5 Million

Ocean Drilling & Exploration Company (ODECO) of New Orleans has announced an agreement to purchase two independent-leg, cantilevered jackup drilling rigs from Salen Energy and its partners. The two units, capable of operating in water depths to 250 feet, most recently were employed in the Gulf of Mexico by Salen Offshore Company of Houston.

The rigs, Salenergy V and Salenergy VI, were built by Swedeyards' Gotaverken Arendal of Sweden in 1980 and 1981, respectively, at a total cost of approximately $71 million. The purchase price for both units will be $33.5 million.

Hugh J. Kelly, ODECO president and chief executive officer, said the purchase of the two rigs reflects the company's long-term strategy of expanding its drilling fleet during depressed periods of offshore activity, rather than in boom times.

Pace To Replace Lewis As Chairman And CEO For General Dynamics

David S. Lewis, chairman and chief executive officer of General Dynamics Corporation, has announced that **Stanley C. Pace** has joined the company as vice chairman, and will become chairman and chief executive officer when Mr. **Lewis** retires, but not later than January 1, 1986.

Mr. **Pace** had been vice chairman of TRW Inc., from which he has retired. He has been employed in increasingly important positions with TRW for the past 31 years. Prior to his being named vice chairman in January 1985, he had served as president and chief operating officer of TRW since 1977.

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 R. SNYDER
Editorial Coordinator: LILIAN IRVINE
International Editor: ROBIN F. BURNETT, MRINA, MNI, London, England
Advertising Sales Director: JOHN C. O'MALLEY
Advertising Sales Manager: LINDA NIEPOKOJ
Production Manager: ROGER S. STABIN
Circulation Manager: M. SOTTILE

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

REPRESENTATIVES

U.S.A. Houston, Texas
ROBERT HAWLEY
GARY LINDENBERGER
MIKE SULLIVAN
11777 Katy Freeway, Suite 155
Houston, TX 77079
Telephone (713) 870-0470

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

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

France Netherlands Belgium
MR. ROBERT BROEKMAN
American Publishers Representatives Inc.
L'Avant Seine
4 Rue Robert De Flers
75015 Paris, France
Telephone: 609.95.95
Telex: 270560

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

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.

ISSN-0025-3448
No. 12 Volume 47

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

Navy Awards $7.2-Million Contract To Sperry Corporation

A $7,200,000 cost-plus-fixed-fee contract was awarded to Sperry Corporation, Defense Products Group, Great Neck, N.Y., for engineering services for the AN/SPG-55B MK-92 phased array radar. The work, which is expected to be completed in April 1987, will be performed in Great Neck. The contracting activity is the Naval Sea Systems Command, Washington, D.C.

$17.1-Million Contract Awarded To Automar III For Ferncarrier Charter

A $17,102,005 firm-fixed-price contract was awarded to Automar III Corporation of Washington, D.C., for the charter of the M/V Ferncarrier, a Norwegian flag heavy-lift, float-on/float-off ship. The vessel will be changed to a United States flag prior to delivery to the Military Sealift Command. The Ferncarrier will be assigned to the Near Term Prepositioning Force, Diego Garcia, in the Indian Ocean. The contract period is for 18 months beginning between January 27 and February 5, 1986. The vessel will be delivered to Charleston, S.C. Approximately 300 offers were solicited and eight bids received. The contracting activity is the Military Sealift Command, Washington, D.C.

Raytheon Marine Unveils New Doppler Speed Log —Literature Available

Raytheon Marine Company of Manchester, N.H., has just introduced the DSL-150 doppler speed log for ships, workboats, and fishing vessels. This highly accurate speed log exceeds all International Maritime Organization (IMO) standards for speed-measuring devices that are now required on new ships of 500 grt and over and ships fitted with automatic radar plotting aids (ARPA). The DSL-150 interfaces with radar, ARPA, satellite navigators, and other equipment, and offers a wide range of optional remote speed and distance-run displays.

This new model is a three-part unit with transducer, digital display, and main electronics cabinet. The display is a three-digit red LED readout showing speed measurements from zero to 30 knots in $\frac{1}{10}$-knot increments. Fore and aft indicators are shown in red and green. Distance run is displayed using a six-digit counter with manual reset control on the front panel.

For more information and free literature on the DSL-150 doppler speed log,

Circle 79 on Reader Service Card

Marland Receives Contract For Six 1,000-Gph Mil-Spec Reverse Osmosis Purifiers —Literature Available

Bob Daniels, president of Marland Environmental Systems Inc., Lorton, Va., recently announced the company's receipt of a contract for six military Reverse Osmosis Purification Systems (MMS-1000).

The order, valued in excess of $1,000,000, came from the Nigerian Armed Forces. Each unit is specified to be built to the same rigid mil-spec requirements as the U.S. Army's current ROWPU 600 with the exception that these units produce an additional 400 gallons per hour, or 1,000 gph.

Delivery of all six 1,000-gph mil-spec units is scheduled within six months, at which time the Nigerian Armed Forces may exercise their option to purchase six additional units at the same cost.

For additional information and literature on Marland's complete lines of military, marine and land-based water treatment products,

Circle 96 on Reader Service Card

Canonie Names Andrie Transportation Director —Peters Promoted

Stanley Andrie Jr. has been appointed director of transportation for Canonie Transportation of Muskegon, Mich. He has been with the company since 1974, and has held the positions of captain, operations coordinator, and most recently, manager of operations. A graduate of the University of Michigan School of Business, he also holds a Masters License.

John R. Peters, formerly operations coordinator, has been promoted to transportation manager. He joined Canonie in 1980, and in his new position will oversee all marine transportation activities.

Canonie Transportation designs and manages transportation systems for the handling and transporting of bulk materials, basic commodities, and specialty items. In addition to servicing long-term contracts, the company also carries out lightering, salvage, and ice-breaking services on a project basis. These services are provided through the company's Bultema Marine Transportation subsidiary.

Advanced Marine Awarded Navy Contracts Valued At Total Of $26.5 Million

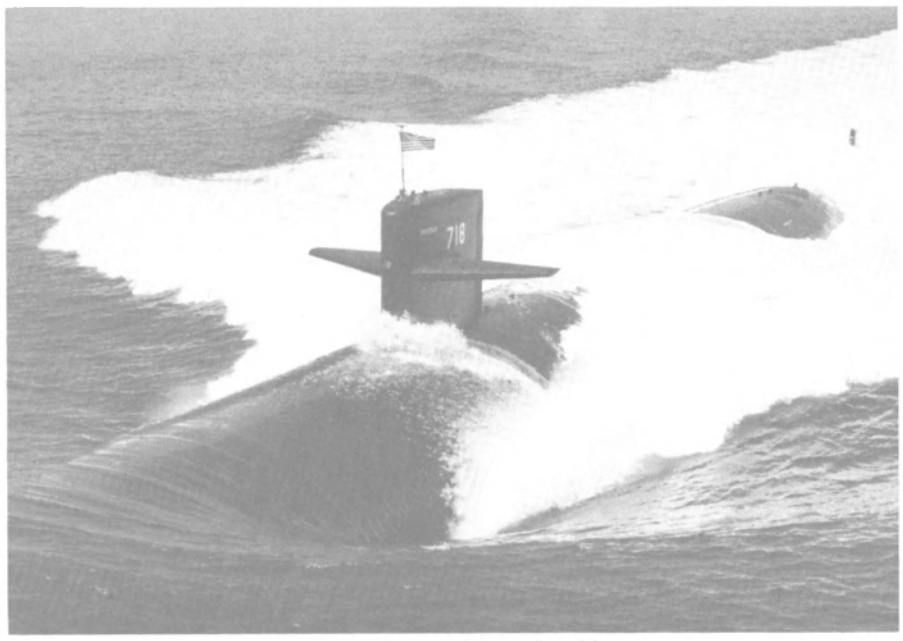
Advanced Marine Enterprises, Inc. (AME), headquartered in Arlington, Va., was recently awarded Navy contracts with a total value of approximately $26.5 million.

The Military Sealift Command awarded a one-year contract, with two one-year options, for a total projected value of some $7.5 million. AME will provide engineering and technical services in the performance of investigative and design efforts relating to the design, overhaul, modification, maintenance, repair, improvement, and regulatory certification of MSC ships.

The Naval Sea Systems Command awarded a one-year contract with two one-year options for a total value of about $13 million. This NavSea contract, to be performed primarily by AME's Washington Division, calls for technical and engineering support for the Naval Architecture Subgroup, SEA 55W.

AME's Northeast Division, located in Cherry Hill, N.J., has been selected to provide design engineering services in support of Portsmouth Naval Shipyard submarine planning and overhaul services. The one-year contract with two one-year options has a projected value of approximately $4.6 million.

Advanced Marine has opened a MSCPAC Project Office in Oakland, Calif., following the award of a one-year contract with a one-year option from MSC Pacific. Valued at some $1.5 million, under this contract AME will provide engineering and technical services in the performance of investigative and detail design efforts relating to design, overhaul, modification, maintenance, repair, improvement, and regulatory certification of MSC ships.



The USS Honolulu on sea trials earlier this year.

Newport News Shipbuilding Delivers 13th Los Angeles Class Submarine, SSN-718 'Honolulu,' To Navy

The submarine Honolulu (SSN-718) became the 13th Los Angeles class attack submarine delivered recently to the Navy by Newport News Shipbuilding. The sub is the 37th the Virginia shipyard has built for the Navy.

The Honolulu will officially enter the fleet early this month when it is commissioned at the Norfolk Naval Station. The ship's keel was laid November 1981 at Newport News.

The shipyard launched the submarine September 24, 1983 when it was christened by **Joan B. Clark**, wife of the former national security advisor to President **Reagan**. **Mrs. Clark** was the principal speaker at the launching.

Los Angeles class submarines are 360 feet long, and have a beam of 33 feet and a submerged displacement of 6,900 tons. They accommodate 12 officers and 115 enlisted men. Newport News Shipbuilding currently is building eight other attack submarines, along with three Nimitz class aircraft carriers.

U.S. Navy To Utilize Ship Analytics Simulator For Shiphandling Training

Ship Analytics of North Stonington, Conn., has announced receipt of a three-year U.S. Navy contract for the training of senior officers at the Maritime Training and Research Center (MTRC) in Toledo, Ohio.

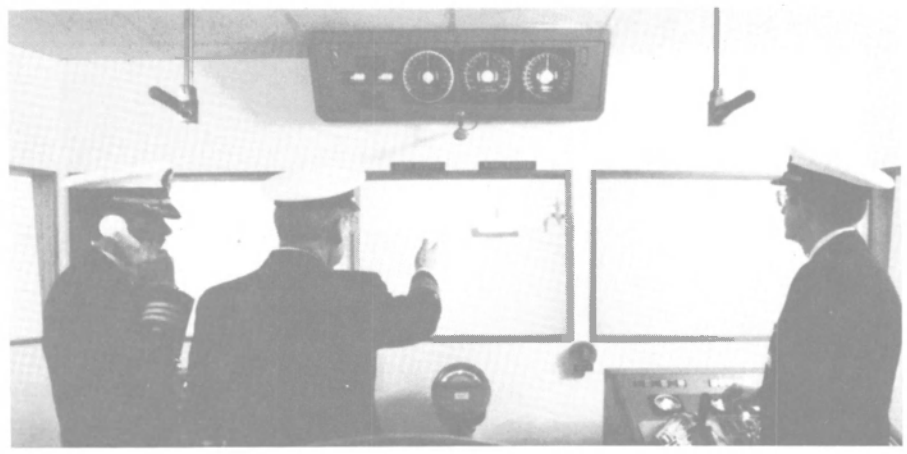
For seven weeks each year, Navy personnel will take part in a comprehensive, scientifically structured training program developed to enhance shiphandling skills on the $6-million simulator that was designed, built, and operated for the MRTC (MEBA/AM, District 2) by Ship Analytics.

Through courses specifically tailored by the firm to meet Navy requirements, Naval personnel will train on bridge and radar simulators, with computer-assisted classroom sessions. These sessions allow trainees to observe and analyze the progress of others, while examining alternative approaches to maneuvering their vessel, under a variety of environmental conditions.

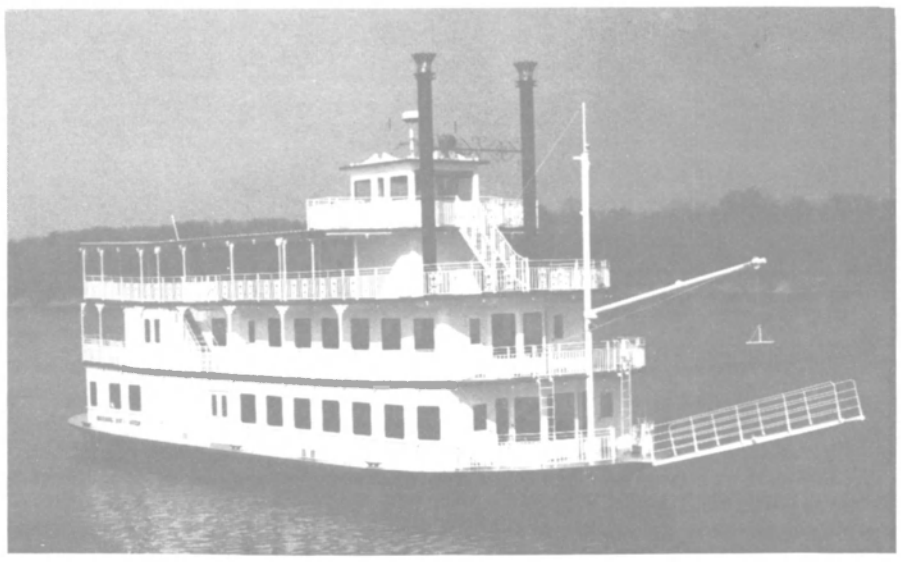
Ship Analytics is a world leader in the design of real-time computer graphics software. It provides major systems in technologies ranging from marine simulation to military tactics. It also markets a variety of graphics presentation software to business.

For free literature and additional information on Ship Analytics services and systems,

Circle 49 on Reader Service Card



The Ship Analytics $6-million ship simulation system located at the Maritime Training & Research Center, Toledo, Ohio.



Cummins-Powered Excursion Boat 'Missouri River Queen' Delivered By Marine Builders

Marine Builders, Inc. of Utica, Ind., recently launched the Missouri River Queen (shown above), a 95-foot paddlewheel excursion boat with a 31-foot beam, 6½-foot depth, 3½-foot draft and a ¼-inch steel hull. The 600-passenger vessel was delivered to **Richard Lynn** of Kansas City, Mo., where plans call for it to make daily excursion trips along the Missouri River in the Kansas City area.

The main engines on the Missouri River Queen are two Cummins NT855-Ms rated 290 horsepower at 1,950 rpm, and generators are two I.E.C. model G415GAD rated at 85 kw each and driven by two Cummins 6BT5.9-GC engines. Other equipment includes Twin Disc reduction gears, Columbian Bronze four-blade stainless-steel propellers, Fernstrum Gridcoolers, Furuno radar, and ENERGAIRE air compressor.

The Missouri River Queen was designed by Alan L. Bates and features steering controls on each wing of the wheelhouse. The engine controls are Marine Builders, Inc. design, and feature full pilothouse instrumentation including low oil pressure, high water temperature and gear oil pressure alarms.

Todd, Bath Win Coast Guard Contracts Worth $352-Million

Todd Pacific Shipyards Corporation, Seattle, Wash. and Bath Iron Works, Bath, Maine, have been awarded contracts totaling $352,353,340 to rehabilitate and modernize 12 of the Coast Guard's Hamilton Class cutters.

According to **John T. Gilbride Jr.**, vice president and general manager of Todd-Seattle, the shipyard was awarded a $240-million contract for work on eight of the West Coast-based 378-foot-long high-endurance cutters. The five-year project is scheduled to begin in October and last until March 1990. Bath Iron Works will do work on the other four cutters.

The project is said to be ideally suited to Todd-Seattle because of its experience with the Navy's guided-missile frigate construction program. The average manning for the five-year cutter project will be approximately 400 and will entail extensive design work and enhancements to all major systems, including combat systems.

The rehabilitation and modernization of the vessels—the removal and replacement of weapon systems, design modification, etc.—is done on approximately 15-year intervals. With the completion of the project, which is said to be the largest ship repair contract in Coast Guard history, the vessels will be able to operate effectively for the remainder of their 30-year life expectancy.

According to the Coast Guard, the fixed-price contracts provide for economic price adjustment for all years after the first year.

American-Standard Offers New Bulletin On Replacing Heat Exchangers

A new bulletin recently published by American-Standard Inc. Heat Transfer Division makes it simple for maintenance personnel to identify and replace leaking or failed heat exchangers.

Bulletin 104-50 outlines six simple steps that provide information to permit easy and simple ordering of a replacement unit. Also included are information and details to help estimate the savings in water consumption incurred by replacement of older, less thermally efficient coolers with such models as American-Standard's BCF® heat exchangers (Saving one extra gallon per minute of cooling water conserves up to 240,000 gallons per year).

For a free copy of Bulletin 104-50,

Circle 93 on Reader Service Card

First Half Of Drydock 'Virginian' Arrives At Norshipco Yard

Norfolk Shipbuilding & Drydock Corporation (Norshipco) has taken a significant step in improving its ship repair capabilities with the purchase of a used floating drydock from Verolme Botlek in Rotterdam, the first half of which arrived in Norfolk recently (photo).

When the second half arrives at the shipyard it will be joined with the first half, making a unit 670 feet long and 123 feet wide. The steel dock, named the Virginian, will have a lifting capacity for vessels weighing up to 22,000 tons.

The Virginian will be located at Norshipco's Berkley yard, the largest of the company's three facilities. The dock is scheduled to be operational by early fall this year.

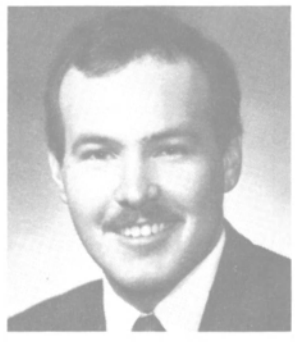
For additional information on the Virginian as well as free literature fully describing Norshipco's facilities and services,

Circle 48 on Reader Service Card

Falk Corporation Announces Three Appointments

Dennis J. Clark

Joseph L. Eiben



David P. Pilon

The Falk Corporation, Milwaukee, Wisc.-based subsidiary of the Sundstrand Corporation, recently announced three personnel appointments.

Dennis J. Clark, who joined Falk in 1971 and was previously a sales representative in the St. Louis and Pittsburgh offices, was appointed district manager of the Cleveland, Ohio, sales office.

Joseph L. Eiben, who joined Falk in 1968 and served as a sales representative in the Cleveland office and manager since 1979, was appointed district manager of the Baltimore, Md., sales office.

David P. Pilon has been assigned to the Charlotte, N.C., district office sales staff. He joined Falk in 1984 and his assignment to the Charlotte district office follows completion of an extensive training program in the design, production and application of Falk products.

The Falk Corporation is a major manufacturer of industrial power transmission machinery. For free literature fully describing Falk's line of marine power transmission products,

Circle 45 on Reader Service Card

Collins Gets $2.6-Million Contract From Kuwait For Electronic Repair Facility

A $2.6-million contract to design, furnish, and install an electronic maintenance/repair facility for the Kuwait Navy has been awarded to Collins Systems International, Inc. (CSII) by the State of Kuwait.

Design of the facility will be done at Rockwell's Collins Defense Communications facility in Richardson, Texas. CSII will install the facility at Kuwait's main navy base. The new facility will enable the Kuwait Navy to repair up to 75 percent of all communications equipment failures on its ships and ground stations.

CSII recently completed and commissioned the Kuwait Navy's ground station communications program. With the addition of the repair facility, the State of Kuwait will have the most modern communications stations in the Middle East.

Rockwell International is a multi-industry company applying advanced technology to a wide range of products and industries.

Circle 55 on Reader Service Card

Korean Shipbuilders Request Reduction Of Interest Rates

The major Korean Shipyards have recently asked the Korean Government to lower the interest rate on loans for ship and plant equipment exports on deferred payment terms.

At a recent meeting arranged with the minister of commerce and industry at the Plaza Hotel in Seoul, Korean shipbuilders requested the reduction of interest rates from the current 9 percent for export ships and 10 percent for plant equipment to 8 percent and 9 percent, respectively, in order to cope with the current shipbuilding recession. The Korean yards pointed out that Japanese General Trading Companies have now adopted a 7.5 percent interest rate, while the OECD Guide Line is 8 percent.

Minister **Keum-Jin-Ho** said in reply to the request that he would look for ways to improve financing conditions, but the lowering of the interest rate would be difficult under the present circumstances. He said, however, that an increase in the ratio of loans from the Korean export and import bank would be considered from the current 70 percent to 80 percent to provide additional Koexim (Korean Export/Import) funds.

Meanwhile, Korean yards received export orders for only four vessels of 125,425 gross tons valued at $89 million in the first three months of this year.

Westinghouse Awarded $20.8-Million Contract For Nuclear Reactor Plant Components

Westinghouse Electric Corporation, Wilkins Township, Pa., was awarded a $20,860,000 modification to a previously awarded cost-plus-fixed-fee contract for replacement of nuclear reactor plant components for unspecified ships. The work, which is expected to be completed in September 1990, will be performed in Wilkins Township. Contract funds would not have expired at the end of the current fiscal year. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-85-C-4016).

Gems Sensors Offers Kits To Custom-Assemble Level Indicators —Literature Available

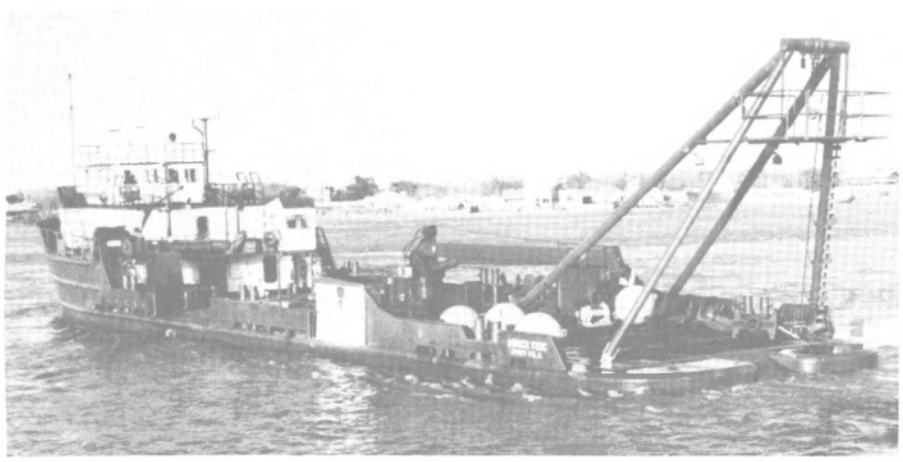
New from the Gems Sensors Division of Plainville, Conn., are FabriSite Kits, which permit users to custom-assemble level indicators to exact requirements. The indicators provide direct continuous level readout of water, oil, or most corrosive or flammable liquids. Externally mounted, the indicators can be used on tanks of various shapes and sizes. They feature bi-colored, interlocking, magnetic flags which change color with moving float to indicate exact level of monitored liquid within the float housing. Unlike cloudy sight glasses, these indicators are safe, provide outstanding visibility and are virtually maintenance free.

FabriSite Kits include four different flag assembly lengths from 6 inches to 4 feet; clamps; switch modules; and three different types of float assemblies. The floats are available in PVC or stainless steel. The customer supplies his own pipe or tube. These components allow easy stocking and permit quick and easy custom assembly without special tools.

FabriSite Indicators withstand temperatures of 300°F and, depending upon component selection, pressures up to 600 psi. Electrical switches may be incorporated for remote location monitoring. A complete custom assembly can be purchased as well.

For further information and literature on the Gems Sensors Division's FabriSite Kits,

Circle 84 on Reader Service Card



Tidewater's Koock Tide has been modified for special service off the coast of West Africa..

Tidewater Marine Service Modifies Vessel For West African Service

Tidewater Marine Service, Inc., Tidewater Inc.'s marine subsidiary, has outfitted one of its supply vessels for special service off the coast of West Africa for Nigerian AGIP Oil Co., Ltd., a venture of the national oil companies of Nigeria and Italy.

According to **Richard M. Currence**, president of Tidewater Marine Service and a senior vice president of Tidewater Inc., the Koock Tide, a 180-foot, 2,250 horsepower supply vessel, was modified and equipped to support Nigerian AGIP's Brass River production and loading facilities in Nigeria, West Africa.

Principal modifications included: the installation of stern and side ramps to facilitate the handling of floating hoses; a workshop; a storage area; and a decompression chamber. The vessel's quarters have also been enlarged and modernized to accommodate the charterer's crew.

The new equipment additions to the Koock Tide are: a 20-ton telescopic crane; a mooring system with independent hydraulic mooring winches; and 80-ton-capacity "A" frame; two tugger winches; and a waterfall type double-drum winch.

The vessel's navigation and communications equipment was streamlined and in addition, a satellite communication system was installed.

The Koock Tide was also fitted with an improved firefighting system capable of discharging water or foam.

With these modifications and additions, the Koock Tide is the only ship of its kind in Tidewater's 267-vessel fleet and will be joined by two new mooring tugs off the coast of Africa, this summer. The tugs are currently under construction for Tidewater Marine at a U.S. Gulf Coast shipyard.

Tidewater owns and operates one of the world's largest fleets of vessels supporting the offshore oil and gas industry.

Italian Advanced Industries Formed By Finmeccanica

Franco Viezzoli, president of Finmeccanica, one of Italy's largest and most advanced industrial groups, has announced the establishment of Italian Advanced Industries, Inc. in Washington, D.C. Ownership of the new company is shared by Finmeccanica, Aeritalia, Alfa Romeo, Ansaldo and V.M., all of which were active in the U.S. last year in programs which amounted to $200 million.

Mr. **Viezzoli** cited Aeritalia's agreement with Boeing for the 767 aircraft and the McDonnell Douglas for the DC-9, MD-80 series, and DC-10 aircraft; Ansaldo's agreements with General Electric and Westinghouse for conventional and nuclear technologies; and contracts for V.M.'s Isotta Fraschini amagnetic diesel engines for U.S. Navy mine sweepers, as major agreements between his Finmeccanica companies and U.S. industry. Mr. **Viezzoli** also highlighted Alfa Romeo's increase in automotive sales and the near completion of a 110MW geothermal power plant in California.

In establishing Italian Advanced Industries, Inc., Finmeccanica provides evidence of the continuing interest in the commercial and technological importance of the North America market.

Gates Joins AMETEK As Lead Design Engineer

AMETEK, Offshore Research & Engineering Division, a high-technology offshore research and development company headquartered in Santa Barbara, Calif., has announced the addition of **Stephen Gates** to its engineering staff as a lead design engineer, responsible for mechanical and structural marine systems. The company also announced that **Manuel Martinez** has been employed as principal mechanical/structural engineer.

Samsung Wins $50-Million Contract For Two Tankers For Australian Owner

Samsung Shipbuilding & Heavy Industries Co., Ltd., of Korea has been awarded a newbuilding contract to construct two 95,000-dwt product/crude oil tankers for an Australian shipowner at a total value of $50 million.

The contract is the second for the Korean yard obtained from Australia this year. It was signed in Seoul by **K.S. Choi,** president of SHI; **A. Thomson,** assistant general manager of Howard Smith Ltd.; and **E.G. Anson,** general manager of Howard Smith Industries Pty. Ltd. After delivery, which is scheduled for the second half of 1986, the two vessels will be in operation on the Australia-Middle East route to carry crude and product oil.

The approximate principal dimensions of each of the vessels are 754½ feet long, 150 feet wide, and 63 feet deep, with a draft of 40 feet. The vessels will be propelled by B&W 5L80MCE engines developing 14,050 bhp at MCR, with a service speed of 14.8 knots. The vessels feature a shallow draft and high efficiency in fuel saving.

Burker Elected President And CEO Of Siemens-Allis

Harry S. Burker Jr. has been elected president and chief executive officer, and member of the board of directors of Siemens-Allis Inc., it was recently announced. He succeeds **C.W. Diercks Jr.,** who will serve as president and chief executive officer of Utility Power Corp., a sister company.

Mr. **Burker,** who was named senior vice president of Siemens-Allis by the board of directors in December 1984, has been president and general manager of the I-T-E Electrical Products Division since it was acquired from Gould Inc. in January 1983. Previously, Mr. **Burker** served in various senior level management positions with Gould, beginning in 1969. These included vice president and director of marketing, Century Electric Division; president and general manager, Electrical Products Sales Division; vice president of marketing, Distribution and Controls Division; and president of Electrical Products Sales Division. In 1981 he was appointed president and general manager of the Distribution and Controls Division and held that position until I-T-E's acquisition by Siemens-Allis in 1983.

Headquartered in Atlanta, Ga., Siemens-Allis Inc. is a manufacturer of electrical and electronic equipment and systems for electric utilities and general industry. The company, which is jointly owned by Siemens AG of West Germany and Allis-Chalmers Corp. of Milwaukee, has 24 plants in the United States and its products are marketed worldwide.

Siemens-Allis is one of four principal Siemens USA companies, the others being Siemens Communication Systems, Siemens Components, and Siemens Medical Systems. Together they employ more than 15,000 people in more than 200 locations nationwide. The combined sales of all Siemens companies in the United States are in excess of $1.6 billion annually.

Circle 26 on Reader Service Card

Cousteau's Experimental Windship 'Alcyone' Arrives In New York

The experimental windship Alcyone arrived in New York recently after a highly successful trans-Atlantic crossing from La Rochelle, France. The maiden voyage, with Capt. **Jacques-Yves Cousteau** aboard, was designed to test extensively the Cousteau-Pechinev Turbosail™ wind propulsion system with which the vessel is equipped.

The unique craft docked at the South Street Seaport Museum on the East River. It was joined by the Cousteau Society's famed research vessel Calypso, which recently underwent an extensive refurbishing at Saint Augustine Shipbuilding in Florida, and accompanied by Coast Guard, police, and fire boats, as well as a flotilla of private vessels from New York area yacht clubs.

At dockside ceremonies, Captain **Cousteau** told the assembled guests, representing the press, diplomatic corps, business and financial community, academia, and government, that the Alcyone far exceeded expectations and "sailed like the wind. I would take her anywhere," he added.

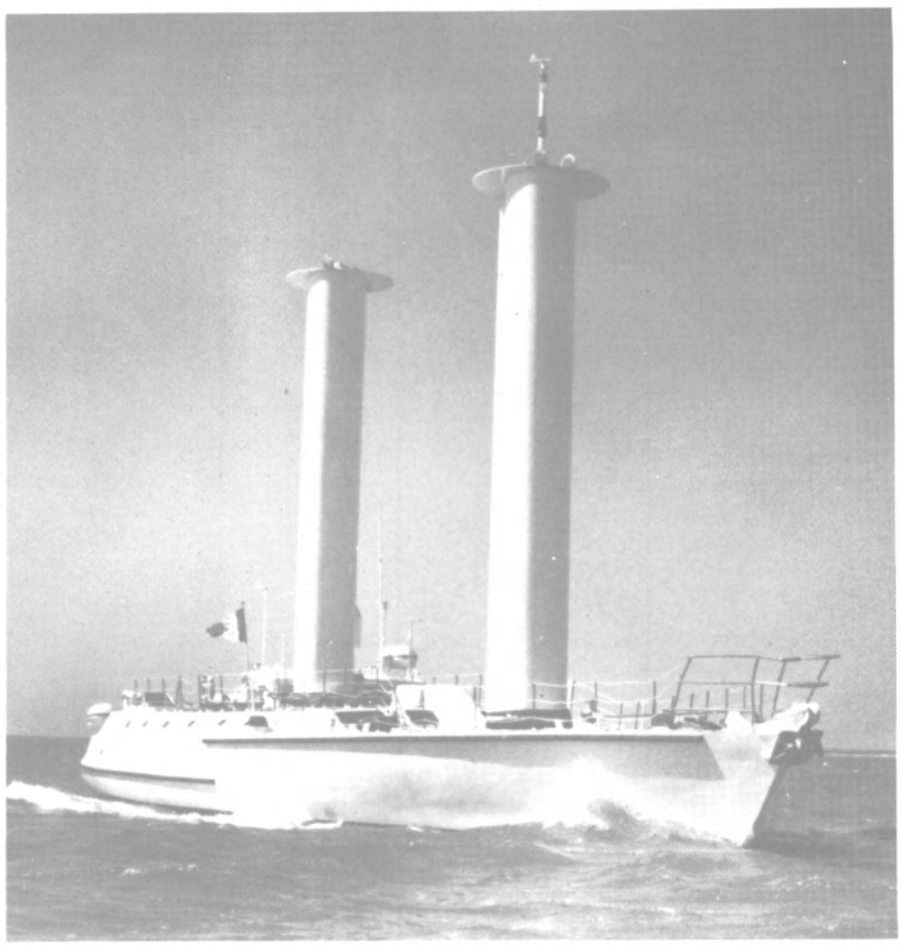
Named after the daughter of the Greek god of the wind, the Alcyone was launched earlier this year at La Rochelle, and went through extensive sea trials in that vicinity. The voyage to New York included scheduled stopovers in the Azores and Bermuda for additional sea trials and filming.

Fondation Cousteau, with the help of the Paris-based Pechiney company, began construction of the Alcyone in May last year. The vessel is 103 feet long and constructed entirely of aluminum. She was built for the high seas and is equipped with two all-aluminum Turbosail units. A microcomputer controls the Turbosail propulsion system and operates both in response to the climatic conditions encountered and to direct orders from the vessel's captain. The computer also records all pertinent data for future study.

The Cousteau-Pechiney Turbosail system utilizes wind for the propulsion source. The aluminum "sails"—the Turbosail units—are hollow, orientable cylinders with suction areas on both sides. A fan on top of the cylinder draws air through the open, leeward side in order to create the lift phenomenon needed for propulsion. The movement of the sails is controlled electronically.

Renewed interest in wind as an auxiliary is linked to the high cost of fossil fuels. "The Cousteau-Pechiney Turbosail system that propels the Alcyone was designed to harness this clean, natural resource of which there is an unlimited supply," said Captain **Cousteau.**

The Turbosail system is designed to cut fuel costs for commercial vessels by 15 to 25 percent, depending on the routes sailed and the winds encountered. "This technology represents a significant potential savings to the shipping industry, as well as the conservation of large amounts of fossil fuels," said **George-Yves Kervern**, president of Pechiney's Aluminum Branch, which did extensive work on the Turbosail system at its research and development center in Voreppe, France.



The experimental windship Alcyone can maintain a constant cruising speed of 9 to 11 knots using its unique turbosail system alone during strong winds.

Pechiney is also perfecting a range of Turbosail systems for a number of different types of ships. A marketing study conducted by Pechiney and Fondation Cousteau indicates that by 1990, there will be a potential of around 100 new or existing merchant ships a year that could be equipped with the system. They essentially will be merchant ships of 3,000 to 80,000 dwt; 90 percent of the ships built today fall into this category. Fishing vessels also constitute a promising market for this auxiliary propulsion system.

During the next two years, Alcyone will continue her voyage around the world to further prove out the system's commercial feasibility. During this period, it is planned to install the Turbosail system on a commercial vessel. Currently, Pechiney is studying, along with Fondation Cousteau and a shipbuilder, and with the help of the European Economic Community Commission, the possibility of installing the system on a 5,000-dwt vessel that is scheduled to be launched in March 1986.

Fondation Cousteau, headquartered in France, and The Cousteau Society of the U.S., are nonprofit environmental research organizations dedicated to the preservation and improvement of life on our planet. Both organizations are under the direction of Captain **Cousteau**.

Pechiney is a major world producer of aluminum, advanced metals and materials, nuclear fuels, and carbon and copper products. The company maintains a growing commercial network in 65 countries, which will allow international marketing of the Turbosail system.

George Panitz Journalist/NYSA Executive

George Panitz, a vice president of public relations for the New York Shipping Association, Inc., and a former maritime editor with the New York Journal of Commerce, died at his home in Brooklyn recently at the age of 65.

A native of the Bronx, Mr. **Panitz** spent most of his professional career in journalism and public relations, writing extensively about U.S. and worldwide merchant shipping, government maritime policy, the waterfront, shipbuilding, and marine insurance, and other maritime matters. He specialized in maritime labor relations, particularly the contract negotiations involving the International Longshoremen's Association and port employers in New York and other harbors.

Prior to joining NYSA in 1974, he served for 14 years with the Journal of Commerce, which he joined in 1960 as a reporter on the shipping news desk. He was named maritime news editor in 1964, and in 1969 was appointed to a new position as editor of maritime and transportation news, a post he held until he joined the NYSA.

POSITIONING:

MAJOR STEPHEN W. PLESS, the last of three Maritime Pre-positioning Ships (M.P.S.) converted at NASSCO in San Diego, CA

A NEW DIMENSION

"The MPS program represents a significant new dimension in mobility, readiness enhancement, and global response."

General P.X. Kelley, Commandant of the U.S. Marine Corps

All three MPS ships converted by NASSCO for Waterman Steamship Company, are now on charter to the Military Sealift Command *within the original schedule and budgeted cost.* The *new dimension* of proven major conversion capability has now been added to NASSCO's already impressive credentials and has *positioned* NASSCO as one of the finest, full service new construction, conversion and repair shipyards in the United States.

nassco

WHATEVER IT TAKES

NATIONAL STEEL AND SHIPBUILDING COMPANY
a wholly-owned subsidiary of Morrison-Knudsen Company

CONTACTS:
1725 K Street, N.W., Washington, D.C. 20006 • 202/785-9036 28th at Harbor Drive, San Diego, CA 92138 • 619/696-7000

Circle 123 on Reader Service Card

WEST COAST SHIPYARD

—A Review—

FOR MORE INFORMATION

If you wish to receive additional information on any of the yards described in the review, circle the appropriate reader service number(s) listed under each company's name, using the postage-paid card bound into the back of this issue.

BOEING

Circle 10 on Reader Service Card

Boeing Marine Systems in Seattle announced recently that it has decided to concentrate its marketing and sales efforts for its hydrofoils on military markets.

Since it began promoting its passenger-carrying Jetfoil some 10 years ago, Boeing has delivered 19 of the high-speed craft. Twelve are in service between Hong Kong and Macao, two each in the English Channel, the Canary Islands, and the Sea of Japan, and one operating between Seattle and Vancouver, B.C.

In service with the U.S. Navy are six PHM high-speed patrol craft. These are Boeing's largest hydrofoil; they are operating mainly in the Caribbean area. The Republic of Indonesia also operates four Boeing Jetfoils on coastal patrol. Boeing is currently building two more Jetfoils for Indonesia, and is hoping that country will exercise its option for six additional vessels.

Photo Above — USNS Algol (T-AKR-287), first of three fast logistic supportships, atler conversion at NASSCO for the U.S. Navy

BURRARD YARROWS (VERSATILE PACIFIC)

Circle 11 on Reader Service Card

At Burrard Yarrows Corporation in North Vancouver, B.C, Canada (the company has just been renamed Versatile Pacific Shipyards Inc. to better reflect its membership in the Versatile Group, which also includes Versatile Vickers in Montreal and Versatile Davie Shipyard in Lauzon, Quebec), one of the most interesting recent developments has been the company's success in winning U.S. Navy refit contracts.

The $1.2-million refit of the MSC cable ship USNS Neptune was a breakthrough in the company's history. The order was secured under the terms of a Military Shiprepair Agreement that allows selected Canadian yards the opportunity to bid on MSC work free from the constraint of U.S. customs duties normally levied on repair work carried out on U.S. commercial vessels in foreign shipyards.

Six months later, the Neptune contract was followed by a second for an MSC vessel, the auxiliary fleet supply ship USNS Spica. This was a $3.5-million refit that was completed in 10 weeks on schedule.

Versatile Pacific's expertise in the design and construction of icebreaking vessels was recognized by the Canadian Government towards the end of 1984 with the award of a contract to develop detailed proposals for the construction of a large and unique icebreaker, the Polar Class 8. This vessel will have an overall length of about 636½ feet, a beam of 105½ feet, and draft of 40 feet. Propulsion power on three propellers will total 100,575 bhp.

Construction is progressing of two Type 1100 Navaid icebreaking vessels for the Canadian Coast Guard under a contract with a total value of C$108.5 million. These ships have a displacement of 4,662 tons, speed of 15.3 knots, range of 6,500 nautical miles at 13 knots, crew of 52, and propulsion power of 8,445 bhp.

These two vessels will be followed by a third icebreaker, a Type 1200 Arctic Class IV, again for the Coast Guard. This contract is worth C$91.3 million. This vessel is designed for large ship escort, and will be suitable for operation in the Great Lakes, Gulf of St. Lawrence, and East Coast of Newfoundland in winter, and Arctic regions in summer.

Recent repair and conversion contracts of note included the cruise ships Island Princess and Pacific Princess, which had mini-conversions and drydocking late last year. These vessles were diverted from Los Angeles because of P&O's confidence in Versatile Pacific's ability

to complete the work on a very tight schedule.

Another recent major retrofit was the Cable & Wireless cable ship Cable Enterprise. The last of a four-frigate refit contract for the Canadian Navy is under way with the drydocking of HMCS Saskatchewan at the company's Esquimalt yard on Victoria Island, following completion of the HMCS Yukon in January this year.

DILLINGHAM

Circle 12 on Reader Service Card

During the past 12 months, Dillingham Ship Repair in Portland, Ore., has performed some major repair and conversion jobs. Mitsui Integrated Propeller Ducts were installed on four 165,000-dwt tankers—Brooks Range, Exxon North Slope, Kenai, and Thompson Pass. These ducts, each weighing 70 tons with a diameter of 35 feet, were manufactured by Mitsui in Japan and shipped to the Portland yard via containership.

Another noteworthy job was the rebuilding of the rudder stock and rudder of the 225,000-dwt tanker Bay Ridge. The rudder weighed 180 tons and the stock 150 tons. This was a 17-day job; similar work on two sister ships performed in Rotterdam and South Africa took 40 and 70 days to accomplish.

A six-month job on the Alaska State ferry Matanuska involved a complete re-engining of both main engines, reduction gears, shafting, and propellers. The original fixed propellers were replaced with CP units. The job also included refurbishing of the engine room controls, pumps, piping, and electrical other than the generating sets.

Other jobs included the installation of a Foster Wheeler inert gas generating system on the tanker Chevron Colorado, and the replacement of the main reduction gear on the tanker Exxon North Slope.

Recent upgrading of facilities at Dillingham included the purchase and installation of two 100-ton chain air hoists manufactured in West Germany, and the installation of a test rack for valves up to 36-inch. This latter unit cut valve testing time from several hours by several employees to a matter of minutes.

Other facilities improvements include a new blasting room 12 by 12 by 24 feet, a dehumidification system for use when blasting tanks, four additional vacuum material removers, and a 12- by 40-foot, multiple-head, computer-controlled plate burning machine.

Dillingham recently was awarded a $20.5-million contract by the Maritime Administration for the conversion of the containership ex-President Polk into an auxiliary crane ship (TAC-S-3) for assignment to the Navy's Ready Reserve Fleet.

FOSS SHIPYARD

Circle 24 on Reader Service Card

Foss Shipyard in Seattle and Dillingham Maritime Services (DMS) recently completed a major conversion of the oil barge Foss 255, which is used for supplying Chevron petroleum products to Alaska's Gulf Coast and Aleutian Island communities. DMS won the Chevron USA distribution contract, and put the conversion contract out for bid. The Foss yard won the contract in highly competitive bidding.

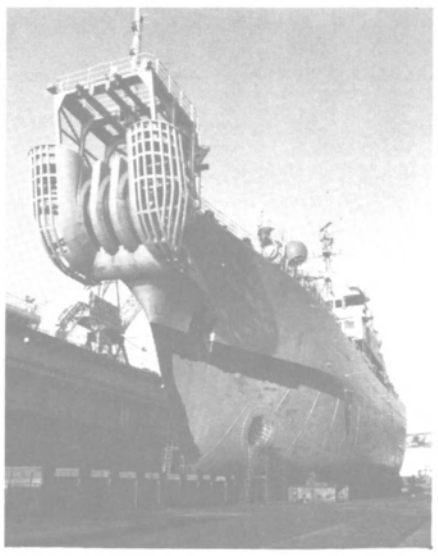
Conversion of the Foss 255 was carried out to Chevron specifications, creating an all-weather, year-round floating distributor of Chevron products. Replacing the Alaska Standard, a tanker retired because of age, the converted Foss 255 is a U.S. Coast Guard Grade A petroleum vessel, featuring 12 segregated tanks and four separate pumping systems. It will carry three grades of automobile gasoline, two grades of aviation gas, jet fuel, No. 2 disel fuel, home heating oil, drums of lube oil, and cases of gas station type products to more than 15 Alaska communities. The barge is 250 feet long, with a beam of 76 feet and a capacity of more than 40,000 barrels. Foss Shipyard completed the conversion on schedule.

GUNDERSON

Circle 14 on Reader Service Card

A group of Oregon investors recently purchased FMC Corporation's Marine and Rail Equipment Division in Portland, bringing corporate ownership back to the State.

(continued on page 16)



U.S. Naval Ship Neptune at Burrard Yarrows (Versatile Pacific) during refit.

West Coast Shipyards

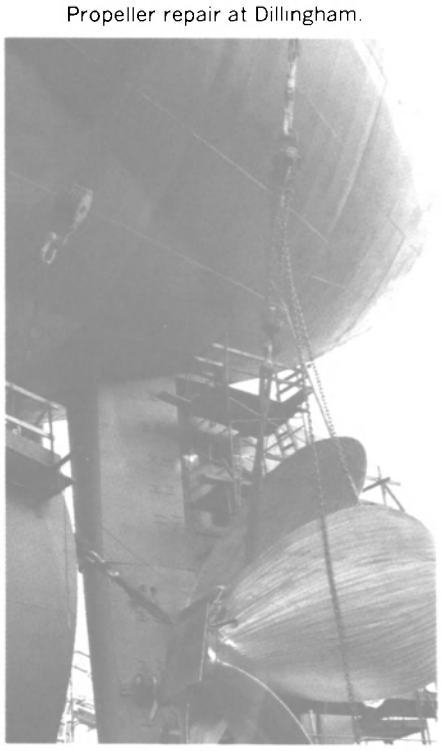
(continued)

The new company, named Gunderson Inc., will re-establish some 400 manufacturing jobs in the Portland area.

The acquisition was spearheaded by **C. Bruce Ward**, a former president of the FMC Division, and **William A. Furman**, president of Greenbrier Leasing Corporation of Oregon City, with financial assistance from Standard Insurance Company and the State of Oregon. Greenbrier is a privately held railcar leasing company.

In 1984, FMC and Greenbrier Leasing entered into a joint development contract, funded by Greenbrier, to design, engineer, and build a new railroad car capable of carrying double-stacked intermodal cargo containers. The result is the new TwinStack™ railcar that is rapidly gaining acceptance from the railroad industry and major container shippers nationwide. The success of this new railcar and FMC's subsequent decision to divest its Portland operation encouraged the investors to make the acquisition.

Propeller repair at Dillingham.



Gunderson manufactures and repairs railcars of all types at its 75-acre facility along the waterfront in northwest Portland. It also builds and repairs barges and other marine equipment.

LAKE UNION DRYDOCK

Circle 15 on Reader Service Card

Lake Union Drydock Company is located virtually in the center of Seattle on Lake Union, a body of fresh water accessible through locks operated by the Army Corps of Engineers. The largest lock allows ships of up to 800 by 80 feet to enter the lake, where water depth is generally 35-40 feet.

The 12-acre Lake Union Drydock site has operated as a shipyard for 66 years, the past 40 under the same ownership and management. The company built several ships until the end of the Korean War, but since then has specialized in ship repair, both government and commercial. The facility has seven drydocks ranging up to 3,900 tons, and maintains shops in all shipyard trades that are capable of complex ship overhauls to Navy, Coast Guard, and American Bureau standards.

A separate ship repair division serves the fishing industry and other non-government activities.

Encouraged by the upward turn in the economy, Lake Union is proceeding with the purchase of new equipment including lathes, air compressors, sandblast pots, mobile cranes, forklifts, and trucks. In this manner management expects to keep pace with the increasing needs of customers.

Currently, the confirmed ship repair commitments are at about the same dollar volume as last year, and management is optimistic that additional prospects under negotiation will lead to a substantial increase in the present level of employment.

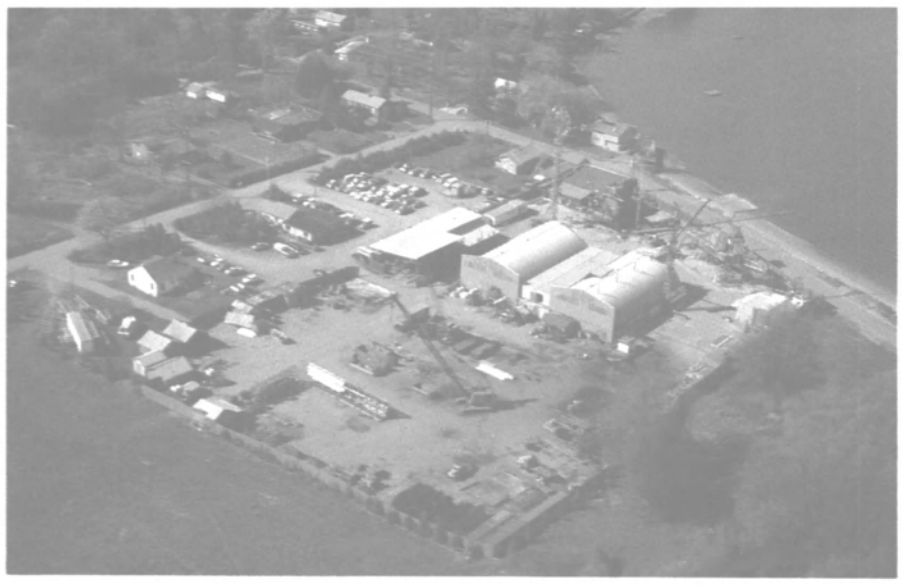
MARCO SEATTLE

Circle 16 on Reader Service Card

The Shipyard Division of MARCO Seattle is the "flagship" operation of the firm that was founded more than 30 years ago. Though the company has made significant contributions in such areas as deck machinery and systems, particularly for the fishing industry, shipbuilding and repair have long been a mainstay of the MARCO heritage.

The compact, fully paved, and well-staffed shipyard enjoys an enviable reputation for its repair work, due in no small part to its leadership role in the design and construction of vessels such as fishing boats, oil spill recovery craft, tugs, and other specialized vessels. Backed by a full complement of in-house shops and trade personnel, the Seattle yard provides complete repair services to vessels large and small, both on- and off-site.

MARCO operates two floating drydocks (designed and built by the company) with lifting capacities of 500 and 1,800 tons, plus a 70-ton lift



Nichols Bros. Yard

with a side-tracking system that is unique in the area. Yard shops include steel and aluminum, carpentry, paint, and a variety of machine shops. MARCO also features full-time mechanical engineering and naval architecture departments among its services.

In addition to fishing vessels and fleet operators, the company's repair clients include tug fleet operators, the Navy, the Coast Guard, NOAA, and others.

NASSCO

Circle 17 on Reader Service Card

National Steel and Shipbuilding Company (NASSCO) in San Diego, the largest shipbuilder on the West Coast, is a wholly owned subsidiary of Morrison-Knudson Company of Boise, Idaho. For the past 10 years, NASSCO has been the leading producer of tankers for the U.S.-flag merchant fleet, delivering more than 40 percent of all new tankers built in the U.S. The shipyard is also a leading supplier of U.S. Navy auxiliary and amphibious ships.

In addition to ship-related work, the company's Offshore Division is capable of providing competitively priced deck structures and other modules for the offshore market. Steel fabrication and machine shop services to a variety of industrial customers in southern California are also provided.

NASSCO's current orderbook includes a $250-million contract from Exxon Shipping Company to build two 209,000-dwt tankers, with delivery scheduled for the last quarter of 1986 and the first quarter of 1987. Major conversion work includes the reconstruction of two San Clemente Class tankers (ex-Rose City and Worth) into 1,000-bed hospital ships (T-AH) for the Navy, a job worth $186 million. Conversion of the yard's third Fast Logistrics Support Ship (T-AKR) for the Navy is nearing completion, with delivery expected in August this year.

Ongoing repair work at the San Diego yard includes: the tank landing ship Bristol County (LST-1189), the last of a five-ship LST Regular Overhaul contract awarded in October 1982; a three-ship Navy crusier SRA (Shipyard Restricted Availability) contract, with work to be completed in Januarv 1986; the destroyer USS Hewitt (DD-966) is the last of a three-ship DD-963 Class Navy SRA contract, scheduled for delivery in September this year; regular overhaul of the amphibious assault ship USS Tripoli (LPH-10), to be completed in May 1986; and SRA work on the destrover USS Merrill (DD-976).

The LST Phased Maintenance Program was recently awarded to NASSCO by the Navy. This three-ship contract involves a total of nine repair availabilities—three on each ship including a drydocking—over the next five years. Work is to commence late this month and is scheduled to be completed in January 1990.

In January this year the Pfc. Eugene A. Obregon, NASSCO's second Maritime Prepositioning Ship (T-

(continued on page 18)

E.L. Bartlett under repair at Marco Seattle.

West Coast Shipyards

(continued)

AK), was delivered to the Navy, and in May the yard turned over the Maj. Stephen W. Pless, the last of the three-ship T-AK contract. During the last half of 1984, a quarters building, generator station, and temporary work decks were delivered by the Offshore Division.

NASSCO's facilities include a 25,000-ton floating drydock, a building dock in which ships up to 980 feet by 170 feet can be constructed, three inclined building ways, cranes that can provide lifts up to 175 tons, and 10 full-sevice berths.

Current facility upgrading includes dredging to re-establish a 35-foot water depth alongside the piers, increased electrical and utility supplies, a newly built pier, and a facility for berthing barges.

While placing a heavier emphasis on the repair of ships, NASSCO is actively seeking work in all segments of the shipbuilding and offshore markets. Constant monitoring of market trends and timely action will insure that NASSCO maintains a position in the forefront of the U.S. shipbuilding industry.

NICHOLS BROTHERS

Circle 18 on Reader Service Card

Nichols Brothers Boat Builders, Inc. has found a niche as a builder of a wide variety of specialty boats, and a level of sophistication that belies the company's pastoral setting on Whidbey Island, Wash. In particular, the company, which marked its 20th anniversary last year, took a bold approach to marketing a line of fast, economical catamarans designed by an Australian firm.

At midyear, with four of the International Catamaran-designed vessels already delivered, Nichols Brothers had letters of intent for some four 86-foot, 400-passenger catamarans, most headed for the developing market for high-speed commuter vessels.

Nichols' first catamaran, the 72-foot Klondike delivered in 1984, now plies the Yukon River in Alaska. The second was the 72-foot, 212-passenger Spirit of Alderbrook, now in both scheduled and excursion service on Puget Sound. Before heading north, the Klondike participated in two significant tests under lease to Crowley Maritime—scheduled service to Catalina Island from San Pedro and from San Francisco to the Marin Peninsula.

Buoyed by the success of the Klondike on San Francisco Bay, Crowley's Red & White Fleet ordered an 86-foot, 400-passenger, 30-knot catamaran. Named the Catamarin, she was delivered recently and is now operating between San Francisco and points in Marin County across the Bay.

Crowley's Blue & Gold Fleet also ordered a similar vessel, the Gold Rush, for use on the Bay. Upon her recent completion, however, the vessel began a three-month test and demonstration trial on the Inside Passage in Southwestern Alaska under lease to Exploration Cruise Lines.

Catamarans are not the only vessels built by the 100 to 150 employees at the company's 10-acre yard in Freeland and completed at an outfitting dock in Langley. The City of San Francisco, a dinner/excursion vessel with lines from the 1890s, was delivered to Hornblower Yachts of Berkeley in November 1984. This vessel will accommodate 900 people in various lounges, dance floors, and banquet facilities.

The Seattle fireboat Chief Seattle was christened in August last year. Capable of 26 knots, this craft will deliver 7,500 gallons per minute from an assortment of monitors.

The aluminum passenger ferry McNeil, delivered in April, is a 66-foot, 200-person vessel that operates between Fort Steilacoom and the Washington State Correction Center on McNeil Island carrying passengers and supplies.

Nichols Brothers also built a series of yard-designed, shallow-hull tugs during the past 18 months. Other vessels delivered recently include the 3,600-bhp tractor tug Portland for Shaver Transportation, 152-foot cruise vessels for Explorer Cruise Lines, and the 4,000-cubic-yard, split hopper dredge Newport for Manson Construction and Engineering.

NORTHWEST MARINE

Circle 19 on Reader Service Card

Northwest Marine Iron Works

(NMIW) is a 24-hour-a-day, 7-day-a-week, full-service shipyard located on the Willamette River five miles downstream from Portland's central business district. It is a privately owned company that operates in conjunction with the Port of Portland Ship Repair Yard.

PSRY is one of the largest, most modern, fully equipped ship repair and drydock facilities on the U.S. West Coast. This facility has 5,900 feet of fully serviced repair berths, 16 cranes up to 120-ton capacity, and a water depth of 40 feet. It has four drydocks with a maximum lifting capacity of 81,000 long tons, maximum beam of 180 feet, and maximum draft of 35 feet.

NMIW owns 6.7 acres of office and shop buildings, and 8 acres of open paved area. The shop area is divided into 12 bays of up to 45,000 square feet each. All shops are fully equipped with a complete range of facilities and modern tools needed to support the full range of production activities required for ship repair and conversion.

Recent deliveries include the upgrading of the Military Sealift Command ship USNS Observation Island (AG-153), overhaul and modernization of the Holland America Line cruise ships Noordam and Nieuw Amsterdam, and overhaul of the U.S. Coast Guard icebreakers Polar Star and Glacier.

RMI

Circle 20 on Reader Service Card

RMI, Inc. is a privately owned corporation located in National City, Calif., on San Diego Bay, currently engaged in the construction and repair of naval and commercial vessels. However, the primary focus of RMI is the design, development, and construction of advanced marine vehicles such as Surface Effect Ships (SES), Air Cushion Vehicles (SCV), and Small Waterplane Area Twin Hull (SWATH) vessels. Related business activities include engineering services and towing tank testing.

During the past year, RMI has been involved in two advanced vessel construction projects—the Halcyon and the Sea Viking. The Halcyon is a 60-foot SWATH boat launched last year. Completely funded by RMI as a demonstration vessel to show the ability of SWATHs to government and industry, the Halcyon is currently completing engineering trials on San Diego Bay, with results exceeding design goals and predictions.

The Sea Viking, currently under construction, is an 82-foot SES, first of the U.S. Navy's Special Warfare Craft, Medium (SWCM) Class. The vessel is scheduled for launching in January 1986, with delivery in March. Total value of the Sea Viking contract is $8.3 million.

RMI holds a Navy Master Ship Repair Agreement, and has completed more than 20 repair and overhaul jobs during the past year. The most significant was the overhaul of the tank landing ship USS San Bernardino (LST-1189), with a value of $12.2 million, which was completed in June this year.

The SWMC under construction is a diesel-powered, all-aluminum SES that rides on a cushion of contained air. This high-speed patrol boat will be capable of carrying out a number of missions for the Navy. Follow-on orders for up to 18 craft are anticipated.

Formerly the Atkinson Marine Company San Diego Shipyard, RMI's modern 15-acre facility is the newest in San Diego. Some 85,000 square feet of enclosed shop area make it ideal for construction of advanced marine vehicles such as the SWCM, as well as ship repair.

SOUTHWEST MARINE

Circle 25 on Reader Service Card

The San Diego Division of Southwest Marine, Inc. (SWM) continues with its extensive shipyard modernization program. The new, computerized floating drydock Pride of San Diego has been in almost constant use since its delivery a year ago.

The yard's "mix" of ships has been comfortable, with Navy amphibious assault ships (LPH) and cruise ships among the largest vessels docked. The newest addition to the yard is a mooring system that effectively doubles the amount of usable pier space for repair berths. SWM's current orderbook of repair bookings include U.S. Navy cruisers, barges, offshore anchor-han-

(continued on page 20)

President Washington undergoing inspection in Todd Seattle drydock.

Northwest Marine Iron Works facilities.

West Coast Shipyards

(continued)

dling tugs, and harbor as well as oceangoing passenger ferries.

Southwest Marine's San Pedro Division is quite busy. Its repair backlog includes the Rio Papa Laopan and Pennsylvania Trader. The USS Racine, first of the ships in the $35-million LST Phased Maintenance Program, is under repair, as well as the USS Mount Vernon, which is undergoing a $15-million fixed-price overhaul.

The USS Roanoke is the second ship of the $100-million AOR 5-year Phased Maintenance Program, and is scheduled to enter the yard this month. The San Pedro facility continues to be SWM's most active yard.

SWM of San Francisco recently accepted delivery of a 1,000-ton drydock that will add to the yard's capability. Main engine work of the UNSN Meteor is currently in progress.

Southwest Marine of American Samoa, Inc. commenced operation May 15 this year, and has been busy since. The Samoan facility includes a new, certified 3,000-ton marine railway that greatly enhances the ship repair capabilities in the South Pacific. The Samoa shipyard is staffed with personnel that were formerly at the San Pedro and San Diego yards.

USS Whidbey Island (LSD 41) and the USS Germantown (LSD-42), two of three amphibious assault ships under construction at Lockheed Shipbuilding for the Navy.

TODD LOS ANGELES

Circle 21 on Reader Service Card

The Los Angeles Division of Todd Pacific Shipyards Corporation is located on 107 acres in the West Basin of the Port of Los Angeles, and contains two floating drydocks, four piers, and two building ways. A Syncrolift shiplift and transfer system that became operational in March 1984 was specially designed for the repair and construction of naval vessels. It is able to lift cruisers, destroyers, and frigates out of the water and move them overland to work bays for repair and general maintenance. The system's 600- by 106-foot platform, transfer carriage, and work bays represent a private investment of $48 million by Todd.

The yard is served by 11 traveling cranes; two are 175-ton revolving units on tracks spanning the complete length of the building ways. Computer-aided design (CAD) and manufacturing capability enhances the application of programmable welding, burning, machining, and bending equipment. Recent facility upgrading has included expansion of the pipe, plate, and sheetmetal shops; the only on-line production welding robot in U.S. shipbuilding; and the use of block/on unit pre-outfitting and modular construction methods.

A 450-man Navy crew housing complex is available for the exclusive use of the officers and men of naval combatants and auxiliaries undergoing Post Shakedown Availability (PSA), overhaul, maintenance, and repair.

Todd Los Angeles has undertaken construction, repair, and overhaul of both commercial and naval vessels since World War II. These have included freighters, tankers, containerships, DLGs and DEs, in addition to the current FFG-7 guided missile frigate program for construction of 18 frigates for the U.S. Navy. Through May of this year, 15 of these frigates have been completed below budget with a cumulative early delivery of 97 weeks ahead of contract schedule.

Through June this year, Todd LA has completed PSAs on 15 FFGs built by both the Los Angeles and Seattle Divisions, redelivering these vessels to the Navy a total of 110 days ahead of contract schedule.

Todd's Los Angeles Division is the only West Coast shipyard designated by the Navy as qualified to construct Aegis-equipped surface combatants.

TODD SEATTLE

Circle 22 on Reader Service Card

The Seattle Division of Todd Pacific Shipyards Corporation is located on Puget Sound's Elliot Bay,

Catalina Express built by Westport Shipyard.

one of the country's great deepwater ports and the closest U.S. port of call to Asia. The 42-acre facility is well equipped to handle all aspects of shipbuilding and repair. Facilities include three drydocks to 40,000 displacement tons, 150-ton-capacity whirley cranes, nearly a mile of berthing space, fully equipped shops, and complete data-processing capabilities.

Todd's Seattle yard has set new industry standards for automated tool tracking, automated purchasing, and advanced welding techniques, both automated and manual. Expertise in propulsion systems includes high-pressure steam, gas turbine, and low-, medium-, and high-speed diesel. In addition, the yard is an authorized service representative for Sulzer marine diesel engines and M.A.N.-B&W engines. Todd can supply technical support both in the yard and through the use of riding crews anywhere in the region.

Recently Todd Seattle became the first shipyard in the country to receive two prestigious distinctions—the U.S. Navy's Master Ordnance Repair certification, and the Defense Department's Quality Excellence Award "in recognition of its past performance from October 18, 1983 to October 19, 1984 in producing high-quality products in conformance to MIL-Q-9858A, Quality Program Requirements, thereby contributing significantly to the defense interests of the nation."

Todd Seattle was recently awarded a U.S. Coast Guard contract to modernize eight Hamilton Class cutters, a project scheduled to be completed by 1990. This project will include a major design effort as well as modernization of all operating systems.

Recent projects include the construction of 13 Perry Class (FFG-7) guided missile frigates, six overhauls of major naval combatants, the reflagging of two 700-foot containerships, the construction of a 450-foot Navy drydock, and hundreds of routine commercial repairs.

WESTPORT

Circle 23 on Reader Service Card

Westport Shipyard, Inc. in Westport, Wash., has been busy building large fiberglass vessels. In addition to two 56-foot charter and commercial fishing vessels under construction, the yard recently delivered a 65-foot charter fishing boat, three 95-foot fiberglass yachts, and the 90-foot Catalina Express that carries 150 passengers at 24 knots.

The 90-footer is one of the largest fiberglass passenger vessels built to date, and is the third vessel built by Westport for Doug Bombard Enterprises. The latest vessel carries passengers to Catalina Island on a year-round basis from San Pedro, Calif. Powered by Detroit Diesel 12V92TA engines turning three-bladed Michigan propellers, the vessel has a top speed in excess of 26 knots.

Equipped with airline type seating, teak paneling, and stabilized with Niad 301 hydraulic stabilizers, the Catalina Express was designed for exceptional passenger comfort. Auxiliary systems include a Northern Lights 12-kw generator, Wesmar 25-hp bow thruster, and a baggage conveyor system for faster boarding of passengers.

The shipyard is also completing the first 115- by 24-foot hull—the largest fiberglass/Airex hull ever built—from its new 120-foot hull mold. This new mold can produce hulls from 90 through 120 feet, with beams from 22½ to 26 feet. The mold utilizes a new method of fiberglass hull building that allows the lines to be changed, or "tuned," to match the various speeds, weights, and other design features of different vessels.

The yard is also utilizing a Venus Impregnator that semi-automates the process of hull building. The hulls are built with Airex/PVC core and are subjected to a complete structural analysis. The result is a hull that is lighter and tougher than aluminum. This combination of lighter than aluminum construction and superior corrosion resistance makes hulls from the new mold good candidates for high-speed crewboats, ferries, and patrol vessels.

Westport Shipyard anticipates beginning construction of a 90- by

(continued on page 22)

West Coast Shipyards

(continued)

22½-foot tour vessel for Alaska shortly, and a 110- by 26-foot dinner/cruise vessel to follow. Also planned is a 120- by 24-foot tour boat for use in the Northwest.

CONTINENTAL MARITIME

Circle 31 on Reader Service Card

Continental Maritime has two facilities on the West Coast, one in San Francisco and a second in San Diego.

The company recently accepted delivery of the M.A.N.-GHH built drydock, Mission Bay (MARITIME REPORTER/Engineering News, May 15, 1985).

Innovative features of the drydock include an advanced system of adjustable keel and bilge blocks developed by M.A.N.-GHH and modified specifically for the docking of U.S. Navy ships with large deadrise. In addition, the dock has been outfitted with a sonar dome pit, 102 feet by 40 feet by 5 feet.

The new drydock is another step by Continental Maritime toward implementing the firm's decision to become a full-service shipyard. "We're primarily trying to attract Navy ship repair work," said Continental's president **D. Whitney Thornton II.** He also stated the yard is in an ideal position to increase its West Coast commercial work through competitive pricing and quality workmanship.

This ship repair firm presently employs 520 people in its San Francisco yard and 430 people in its San Diego yard.

LOCKHEED SHIPBUILDING

Circle 32 on Reader Service Card

Lockheed Shipbuilding Company located on Seattle's Elliott Bay, is completing construction of the second and third ships of a three-ship construction contract signed in 1981. The first of the new class of dock landing ships, U.S.S. Whidbey Island (LSD-41), was delivered to the Navy earlier this year. These three amphibious assault ships are 650 feet in length and have a beam of 84 feet. The dock landing ships are designed to accommodate four air cushioned landing craft (LCAC) in a 440-foot wet well. The Whidbey Island class of dock landing ships are designed to replace the aging Thomaston class dock landing ships.

The three giant amphibious assault ships were designed by Lockheed Shipbuilding Company and are being constructed under two separate contracts totalling more than $900 million.

The second of the class, the U.S.S. Germantown (LSD-42), is scheduled for delivery to the Navy in early 1986 and the third is scheduled for delivery in June 1987.

Lockheed's Shipyard is part of the Lockheed Marine Systems Group which also includes the Advanced Systems function at Santa Clara and San Diego, Calif. In conjunction with its AMS Division, Lockheed Shipbuilding is developing a twin-hulled patrol ship called SWATH (small waterplane area twin hull). This concept exploits the latest marine technologies to provide maximum speed, strength and stabililty in heavy seas.

In Advanced Marine Systems work, some of which is classified, Lockheed is supporting contractor for the Navy's deep submergence rescue vehicles--designed and built by Lockheed—and is producing advanced models of a low-cost, wire-guided, mine neutralization vehicle.

PORTLAND SHIP REPAIR

Circle 33 on Reader Service Card

The Portland Ship Repair Yard, owned and operated by the Port of Portland with its facilities rented to private ship repair contractors, has been successful in diversifying its product lines from traditional ship repair projects, while still registering 9.8 million ton days on its four dry docks last year.

Ship repair contractors at the Portland Ship yard service the ma-

jority of the Alaskan VLCC fleet utilizing Dry Dock 4, one of the largest floating docks on the West Coast at 982 feet long and 185 feet wide, with a lift capacity of 81,000 tons.

In addition to inspection and repair work, Dillingham Ship Repair has perfected installation of propeller ducts, a fuel saving energy conservation device.

The Port of Portland's other major ship repair contractor, Northwest Marine Iron Works, has completed several multi-million dollar projects in the past year for the Military Sealift Command, and has also attracted maintenance and drydock warranty work on Holland America Cruise Line vessels.

In an effort to secure more Navy and military ship overhaul contracts, 11 craft unions working for Dillingham and Northwest Marine voted to reduce the basic hourly wage as well as reduce overtime, weekend and night shift bonuses on project agreements for military and other ship repair work. Based on these agreements, Dillingham Ship Repair was the low bidder on a $20-million project to convert a former container vessel to crane ship service for the Military Sealift Command.

During the year, Lockport Marine Co., a wholly-owned subsidiary of Lockheed Corporation, Burbank, Calif., became a new ship repair contractor at the Portland Ship Repair Yard. Lockport will concentrate on Navy and other military projects.

Portland's major diversification of shipyard product lines has been in the field of constructing oil and gas production modules for the oil fields of Alaska's North Slope.

ARCO has sited two projects at the Portland Ship Repair Yard: one by Brown and Root for construction of six 450-ton drill site modules and four 80-ton pipe bridge structures. The other by Daniel International, for seven larger modules for ARCO's Lisburne oil fields.

Another Alaskan North Slope project completed at the yard was a 250-ton $5-million mobile oil rig service unit built by Nordic Well Service.

To facilitate what the Port of Portland is planning to be a highly diversified and growing business volume, it has undertaken an $11 million rehabilitation of the older part of the Portland Ship Repair Yard.

The rehabilitation is about one-third complete including total rehabilitation of one berth, several cranes, and start-up of the rehabilitation of a second berth.

The Port of Portland also has revised its tariff schedule to provide contractor incentives and make the Portland Ship Repair Yard among the most competitive on the West Coast.

TRIPLE A SHIPYARDS

Circle 29 on Reader Service Card

Triple A Shipyards provides general ship repair and drydocking services at two facilities, one at Hunters Point (San Francisco) and the other in San Diego.

The Hunters Point facility can accommodate ships up to 1100 feet in length with a maximum beam of 144 feet and a draft of 40 feet. This facility offers multi-drydocking capabilities as well as the largest graving dock on the West Coast. In addition the yard has six 1,000-foot long deep-water repair berths.

The San Diego facility can accommodate vessels up to 389 feet, with a maximum beam of 52 feet and a draft of 17 feet.

Both facilities offer large and highly versatile alongside weight-handling capabilities. The shipyards' complement of fully-equipped shops allows a wide range of services. These include: machine shops, plate area and welding shops, sheet metal shops, paint shops, electrical and electronic shops, pipe shops, joiner and lofting shops, valve shops and staging shops.

The yard has published a full-color, 4-page brochure describing the two facilities' capabilities in ship repair, conversion and construction.

USS Crommelin—Todd Seattle

U.S. NAVY OVERHAUL MARKET

James R. McCaul
President, International Maritime Associates

This article is an excerpt from IMA's recent quarterly update on the Navy ship maintenance and overhaul market. Information is current as of 1 July, except where noted.

ANALYSIS OF FUTURE CONTRACTING

Navy has issued a new ship maintenance planning schedule covering FY 1985-1986. We have analyzed this schedule to see how Navy will manage future contracting with ship repair yards.

Number of Contracts

As shown in Exhibit 1, a drastic reduction in the number of regular overhauls will occur next year. Only ten regular overhauls are planned in FY 1986 for commercial yards on the East Coast. This compares with 20 in FY 1985 and 18 in FY 1984. A similar decline is planned on the West Coast. Five regular overhauls are scheduled for West Coast commercial yards in FY 1986. This compares with 11 in FY 1985 and nine in FY 1984.

SRA's and PMA's will continue to increase on the East Coast, reflecting the need for short maintenance periods as Navy extends ship overhaul intervals. In FY 1986 Navy plans 62 SRA or PMA job starts on the East Coast. This compares with 38 SRA/PMA job starts in FY 1985 and 30 in FY 1984.

A similar increase in SRA/PMA job starts will not occur on the West Coast. In fact the number of West Coast SRA/PMA's in FY 1986 will decline to 35 job starts from 44 in FY 1985.

The number of jobs (overhauls, DSRA's, DPMA's) requiring drydocking will increase on the East Coast, fall on the West Coast. In FY 1986, 34 drydocking jobs are planned for commercial yards on the East Coast. This compares with 30 drydocking jobs in FY 1985 and 24 in FY 1984. On the West Coast there will be 16 commercial drydocking jobs in FY 1986, compared with 28 in FY 1985 and 17 in FY 1984.

In all, it's bad news for West Coast shipyards and most East Coast yards. The only good news seems limited to a few yards in major East Coast homeport areas—where captive SRA/PMA work is increasing.

Limits On Overhaul Competition

Reflecting the diminishing overhaul business and the FY 1985 Appropriation conferees instructions, Navy has dramatically increased the percentage of overhauls earmarked for coastwide competition. Eight of ten East Coast regular overhauls and all five West Coast overhauls will be bid coastwide in FY 1986. These data are shown in Exhibit 2 and compared to earlier years.

Type Contracts To Be Awarded

Exhibit 3 shows the shift toward fixed price contracts for future Navy awards. With the exception of a nuclear carrier overhaul, all regular overhauls in FY 1986 will be fixed price or fixed price incentive awards (the type contract for the carrier overhaul has not yet been decided). Almost all SRA's will be fixed price contracts. Phased maintenance availability contracts will, however, continue to be cost plus award fee awards.

Type Procurement Planned

Eight out of 15 regular overhauls in FY 1986 will be contracted using invitation for bids (IFB's). RFP-IP procurement will be used for 43 of 69 SRA contracts next year. All but one FY 1986 PMA contract will involve source selection procurement. These data are shown in Exhibit 4 and compared to earlier years.

Overhaul Contracting By Ship Type

As shown in Exhibit 5, support ships represent six of the 15 overhauls scheduled for FY 1986. All are coastwide bids with a fixed price contract to be awarded. Five of the six involve IFB procurement procedures.

Four cruiser/destroyer contracts are scheduled for next year. All are to be bid coastwide and fixed price incentive contracts are to be awarded. RFP-2P procedures are to be used in three out of four procurements.

All three amphibious ship overhauls scheduled in FY 1986 are to be competed coastwide and fixed price contracts are planned. Two of the three will involve IFB procurement.

No frigate or submarine overhauls are scheduled for commercial yards next year.

RECENT DEVELOPMENTS

Among the recent developments are action on the defense authorization bill, changes in homeport policy, issues raised about the Kitty Hawk modernization, and a proposed restriction on Navy ship repair in Japanese shipyards.

Authorization Bills

Both House and Senate have passed a FY 1986 defense authorization bill. The Senate version provides defense spending authority of $302.5 billion in FY 1986. The House version holds spending authority to $292.5 billion. House/Senate conferees will meet this month to reconcile the two bills.

Neither bill dramatically impacts the Navy ship maintenance program. The Administration requested $25.8 billion for Navy operation and maintenance programs in FY 1986, of which $6.1 billion is for ship maintenance and modernization. The House bill authorizes $25.1 and the Senate authorizes $25.5 billion. The only direct impact is a provision in the House bill which authorizes an additional $20 million for depot maintenance to reduce ship maintenance backlog.

The legislative process is far from complete. An appropriations measure must be passed and sent to the President for signature. Ship maintenance tends to be of more interest to the appropriators than the authorizers.

Homeport Policy

OPNAV Note 4700 issued in late May specifies that all scheduled

(continued on page 26)

Navy Overhaul Market

Exhibit 1
Number of Contracts

	Fiscal Year		
	1984	1985	1986
East Coast			
Number of Overhauls			
Regular overhauls	18	20	10
Reserve ship overhauls	3	1	3
Number of Selected Restricted Availabilities (SRA)			
Drydocking involved	3	6	12
No drydocking	27	26	33
Number of Phased Maintenance Availabilities (PMA)			
Drydocking involved	–	3	9
No drydocking	–	3	8
West Coast			
Number of Overhauls			
Regular overhauls	9	11	5
Reserve ship overhauls	–	4	3
Number of Selected Restricted Availabilities (SRA)			
Drydocking involved	8	13	6
No drydocking	20	25	18
Number of Phased Maintenance Availabilities (PMA)			
Drydocking involved	–	–	2
No drydocking	–	6	9

Exhibit 2
Limits On Overhaul Competition
(regular overhauls only)

	Fiscal Year		
	1984	1985	1986
East Coast			
Number of overhauls	18	20	10
Coastwide competed			
Number	11	12	8
Percentage of total	61	60	80
Homeport restricted[1]			
Number	7	8	2
Percentage of total	39	40	20
West Coast			
Number of overhauls	9	11	5
Coastwide competed			
Number	4	6	5
Percentage of total	45	55	100
Homeport restricted[2]			
Number	5	5	–
Percentage of total	55	45	–

Notes: 1. FY 1985 includes two Charleston based submarines earmarked for Newport News.
2. Includes 3 ESA's.

Exhibit 3
Distribution Of Work By Type Contract Award
(number of awards)

	Fiscal Year		
	1984	1985	1986
East Coast			
Regular Overhauls:			
Fixed price/fixed price incentive awards	10	14	9
CPAF awards	8	3	–
Other	–	3	1
Reserve Ship Overhauls:			
Fixed price awards	3	1	3
Phased Maintenance Availabilities (PMA):			
CPAF awards	–	6	17
Selected Restricted Availabilities (SRA):			
Fixed price awards	22	30	44
CPAF awards	8	1	–
Other	–	1	1
West Coast			
Regular Overhauls:			
Fixed price/fixed price incentive awards	6	8	5
Other	3	3	–
Reserve Ship Overhauls:			
Fixed price awards	–	4	3
Phased Maintenance Availabilities (PMA):			
Fixed price awards	–	1	–
CPAF awards	–	5	11
Selected Restricted Availabilities (SRA):			
Fixed price awards	11	19	22
CPAF awards	3	–	–
Other	14	19	2

(continued)

availabilities (overhauls, SRA's and PMA's) exceeding six months duration are to be competed coastwide. Under prior policy all SRA's and PMA's were restricted to homeport area competition.

Ten FFG 7 frigates (maybe only eight) scheduled to be retrofitted with the LAMPS III helicopter landing system (RAST) are affected by this instruction. This retrofit work was planned to be performed during an SRA since FFG 7 class frigates are not scheduled for overhaul during their service life. These special SRA's will take ten-twelve months to complete and under previous policy the work would be reserved for local homeport shipyards. The new policy opens this work to coastwide bidding.

Eight of these frigates are homeported on the East Coast. Two are homeported on the West Coast. The first retrofit is scheduled for the McInerney (FFG8) in February 1986.

Norfolk Homeport Extended To Include Baltimore

Another development was a memorandum from the Secretary of Navy instructing the CNO to include Baltimore in the Norfolk area homeport radius. As background the memo cited the increasing percentage of SRA's and described how this development has hurt shipyards outside the Norfolk homeport area.

The instruction specifies that beginning 8 May 1985, Baltimore area shipyards are eligible to bid on jobs reserved for the Norfolk homeport area. This policy, however, applies only to fixed price solicitations and requires a relocation cost differential to be added to the Baltimore bid(s). Because only fixed price awards are included, Baltimore yards will be unable to bid for phased maintenance contracts (they are cost plus contracts). This eliminates many amphibious and support ships from the available market.

Depth limitations in Baltimore further restricts the impact of this policy change. The channel depth at the Bethlehem-Sparrows Point shipyard is 26-27 feet, ruling out major combatant ships. As a result it is unclear whether the new policy will open much Navy SRA business to Baltimore shipyards.

No plans to widen other homeport areas are being considered by Navy—at present. But this development opens the door for shipyards in other non-homeport areas to push the same initiative.

Kitty Hawk Service Life Extension (SLEP)

Both House and Senate Armed Services Committees have requested Navy to provide further information on the cost effectiveness of performing the Kitty Hawk modernization at the Philadelphia Naval Yard. Underlying the requests is an attempt to assign Kitty Hawk to the Puget Sound Naval Shipyard, rather than the Philadelphia Naval Shipyard. Language in the House version leaves open the possibility of sending the ship to a commercial yard on the West Coast.

The House referred to a Navy internal study and requested an analysis of the cost effectiveness of alternative approaches:

> A Navy paper, known as the "AIRPAC Study," suggested that dollar savings and increased operational availability may be achieved by accomplishing the extension of the service life through a complex overhaul (COH) and a series of short shipyard periods (that could be performed in West Coast shipyards) rather than during a single long shipyard period (that would be performed in Philadelphia, the site of previous SLEP's). The study also suggested that a single long shipyard period SLEP would involve unnecessary or duplicative work because West Coast based carriers have different (higher) maintenance standards.
> The Commander of the Naval Sea Systems Command (NAVSEA) has studied the matter. The NAVSEA study concluded that a single long shipyard period was preferred because it could include necessary major main engine repairs and structural repairs that would have to be deferred under the alternative approach. The NAVSEA study also concluded that cost, workload, and facilities considerations favored the assignment of U.S.S. Kitty Hawk to Philadelphia for a single long shipyard period. Accordingly, the Commander of the Naval Sea Systems Command recommended to the Chief of Naval Operations and the Secretary of the Navy that U.S.S. Kitty Hawk be assigned to the Philadelphia Naval Shipyard for extension of service life in a single shipyard period.
> The committee directs the Secretary of the Navy to assess the cost effectiveness of alternate approaches to extension of service life of U.S.S. Kitty Hawk and to submit a report to the Committees on Armed Services of the Senate and House of Representatives describing the results and conclusions of that assessment. The report should include the following: a description of the work planned to be accomplished during the SLEP; an assessment of the costs and benefits (to include operational availability) of accomplishing the planned work in a Service Life Extension Program as compared to accomplishing the same work in a complex overhaul; and a comparison of the work planned to be accomplished during the SLEP with the work identified as being required in the "AIRPAC Study."

The Senate Armed Services Committee requested that Navy certify the cost effectiveness of its plan and

placed limits on use of funds until the certification is provided:

> The committee recommends authorization of $133.4 million for CV SLEP. The committee also has included bill language prohibiting the obligation or expenditure of more than $86.4 million of these funds until ninety days after the Secretary of the Navy certifies that, all relevant factors considered, a full SLEP at Philadelphia Naval Shipyard is more cost effective than alternative means for achieving the same service life extension of the U.S.S. Kitty Hawk at other naval shipyards. Certification should be provided in a letter to the Committees on Armed Services of the Senate and the House of Representatives.

Ship Maintenance Performed In Japan

In general provisions attached to the FY 1986 defense authorization bill, the House has instructed Navy to:

> . . . carry out in U.S. shipyards not less than one-half of the depot-level maintenance work (measured in cost) for fiscal years 1986 through 1988 scheduled to be accomplished in Japanese shipyards as of May 8, 1985 for ships homeported on the West Coast.

This provision was introduced by Rep. **Duncan Hunter** (R, Calif.) in full Committee markup of the defense authorization bill. It does not apply to MSC ships. The Senate bill does not contain a similar provision and it will be an issue taken up by the conferees.

Strategic Homeporting

Navy has decided to station the battleship Wisconsin (BB 64) in Corpus Christi, Texas. This was the outcome of competition over the past year to select a Navy homeport in the Gulf. Navy has also decided to assign ships to eight other Gulf ports. A 15th battle group will be stationed in the Gulf.

This concept of strategic homeporting has significant political advantage. It produces wider political support for Navy programs. However, it is a very expensive idea which raises many logistics issues.

The cost issue was recently addressed by the Senate Armed Services Committee. In approving the initial $36 million project to develop homeports in Staten Island and Everett, the Committee sought further justification of the proposed expenditure:

> The Navy is currently expanding to meet the goal of a force of 600 ships. With this increase comes the requirement for increased port facilities. In this year's re-

Exhibit 4
Distribution Of Work By Type Procurement Method
(number of awards)

	Fiscal Year		
	1984	1985	1986
East Coast			
Regular Overhauls			
IFB	5	8	6
RFP-1P	–	4	–
RFP-2P	5	3	2
FSS/MSS/NSS	8	3	1
Sole	–	2	1
Reserve Ship Overhauls			
IFB	2	1	2
RFP-1P	1	–	1
Selected Restricted Availabilities (SRA)			
IFB	11	10	14
RFP-1P	10	20	29
RFP-2P	1	1	1
FSS/MSS/NSS	8	–	–
Sole	–	1	1
Phased Maintenance Availabilities (PMA)			
RFP-2P	–	–	1
FSS/MSS/NSS	–	6	16
West Coast			
Regular Overhauls			
IFB	4	4	2
RFP-1P	1	3	–
RFP-2P	1	3	3
FSS/MSS/NSS	3	1	–
Reserve Ship Overhauls			
IFB	–	4	3
Selected Restricted Availabilities (SRA)			
IFB	10	9	7
RFP-1P	1	11	14
FSS/MSS/NSS	17	18	3
Phased Maintenance Availabilities (PMA)			
RFP-1P	–	1	–
FSS/MSS/NSS	–	5	11

Navy Overhaul Market

Exhibit 5
Overhaul Contracting Profile By Type Ship
(regular overhauls only)

	Fiscal Year		
	1984	1985	1986
Cruisers/destroyers			
Number of overhauls	5	6	4
Competing limits			
coastwide bids	5	6	4
homeport areas only	–	–	–
Type contract awarded			
fixed price incentive	–	3	4
CPAF	5	3	–
Type procurement used			
RFP-2P	–	3	3
FSS/MSS/NSS	5	3	1
Frigates			
Number of overhauls	9	3	–
Competing limits			
coastwide bids	7	3	–
homeport areas only	2	–	–
Type contract awarded			
fixed price	6	3	–
CPAF	2	–	–
CPFF	1	–	–
Type procurement used			
IFB	–	1	–
RFP-2P	6	2	–
FSS/MSS/NSS	3	–	–
Amphibious			
Number of overhauls	7	9	3
Competing limits			
coastwide bids	5	5	3
homeport areas only	2	4	–
Type contract awarded			
fixed price	4	8	3
CPAF	1	–	–
CPFF	2	1	–
Type procurement used			
IFB	4	7	2
RFP-1P	–	1	–
RFP-2P	–	–	1
FSS/MSS/NSS	3	1	–
Support			
Number of overhauls	4	8	6
Competing limits			
coastwide bids	1	5	6
homeport areas only	3	3	–
Type contract awarded			
fixed price	4	8	6
Type procurement used			
IFB	3	4	5
RFP-1P	1	3	–
RFP-2P	–	1	1
Submarines			
Number of overhauls	–	2	–
Competing limits	–	N/A	–
Type contract awarded	–	TBD	–
Type procurement used			
Sole	–	2	–
Minesweepers/Patrol Hydrofoil			
Number of overhauls	1	3	1
Competing limits			
coastwide bids	–	–	–
homeport areas only	1	3	1
Type contract awarded			
fixed price	1	3	1
Type procurement used			
IFB	1	–	1
RFP-1P	–	3	–
Aircraft Carrier			
Number of overhauls	–	–	1
Competing limits	–	–	N/A
Type contract awarded	–	–	TBD
Type procurement used			
Sole	–	–	1

(continued from page 27)
quest, the Department has sought funding totaling $36 million to open two new ports, one to support a battleship surface action group at Staten Island, NY, and one for a carrier battle group at Everett, WA. The total military construction cost of facilities for these two ports is estimated at $750 million. However, a substantial part of these funds would be required to homeport these new ships whether new or existing ports are used.

The committee has approved the initial projects requested for both of these facilities, subject to a requirement that no funds authorized to be appropriated in this act for naval strategic homeporting may be obligated or expended until 90 days have elapsed following the submission of a report to the Congress by the Secretary of the Navy justifying the expenditures of such funds on the basis of military necessity and cost effectiveness.

INDUSTRY ACTIVITY

Navy continues to be the dominant source of shipyard business in this country. Commercial work is depressed due to the strong dollar and poor economic conditions in international and domestic shipping. Most U.S. ship repair yards are relying on Navy contracts for their business base.

Navy Contract Awards

Major Navy contract awards over the past three months are described below:

- Todd Shipyards—An $11.5 million fixed price contract was awarded the San Francisco division to overhaul the ammunition ship Mt. Hood (AE-29). Todd was one of five bidders. The San Pedro division received a $3.5 million fixed price contract to perform SRA work on the destroyer Paul Foster (DD 964). It was one of two bidders.
- Boston Shipyard—The firm received a $5.0 million fixed price contract from the Military Sealift Command to overhaul the fleet oiler Mississinewa (TAO 143). Boston Shipyard was one of eight firms that bid the job.
- Southwest Marine—The San Pedro division received a $14.9 million contract to overhaul the amphibious landing ship Mt. Vernon (LSD 39). Two firms competed for this contract.
- Continental Maritime (San Diego)—A $7.5 million fixed price contract was received to overhaul the frigate Roark (FF 1053). Continental was one of six firms competing for the contract.
- NASSCO—The firm was awarded a $12.8 million fixed price contract to overhaul the amphibious assault ship Tripoli (LPH 10). Two companies competed for this job. A $6.0 million fixed price contract for SRA work on the destroyer Merrill (DD 976) was awarded to NASSCO. Three firms competed for the work. NASSCO also received a $3.5 cost plus award fee contract for phased maintenance of four tank landing ships. Two firms competed for this job.
- Service Engineering—This San Francisco firm received a $4.2 million cost plus award fee contract for phased maintenance of four Kilauea-class ammunition ships: Kiska (AE 35), Shasta (AE 33), Mt. Hood (AE 29) and Flint (AE 32). Five firms competed for this contract.
- Braswell-Hoboken—The yard received a $7.6 million fixed price contract to overhaul the frigate McCloy (FF 1038). Work is to be performed by its Hoboken division. Seven firms competed for this contract. Boston Shipyard was low bidder at $5.8 million but, according to the Navy contracting office, was "determined to be nonresponsible."
- Litton-Ingalls—A $12.0 million fixed price incentive contract was awarded to overhaul the destroyer Preble (DDG 46). Litton was one of five firms competing for this contract.
- Burrard Yarrows—This Canadian firm was awarded a $3.0 million fixed price contract for work on the combat stores ship Spica (TAFS 9). The firm was one of six companies who competed for the job.
- Alabama Dry Dock—The firm received an $8.8 million fixed price contract to overhaul and upgrade the combat stores ship Saturn (TAFS 10). Ten firms competed for this contract.

PROJECTED NAVY SHIP MAINTENANCE

In May Navy released its 1985-86 schedule of ship maintenance to be performed in commercial yards. It shows the dramatic change in overhaul scheduling which results from the shift to engineered operating cycle and phased maintenance.

Nichols Bros. Delivers High-speed Passenger Catamaran To Crowley

Nichols Bros. Boat Builders of Whidbey Island (Freeland), Wash., recently completed the 85-foot catamaran Catamarin (shown above) for Harbor Carriers of San Francisco, a subsidiary of Crowley Maritime. The 30-knot, 400-passenger vessel will operate in commuter and charter service between San Francisco and Marin County points. Harbor Carriers operates the Red & White Fleet from Pier 41 at Fisherman's Wharf.

The Catamarin is powered by twin Deutz B/AM 816 diesel engines, each rated at 1,346 bhp, driving Coolidge propellers via Reintjes WVS 832 reduction gears. Speed is better than 30 knots light. Alaska Diesel Electric supplied the two 50-kw generators.

This new vessel is the third in a series of catamarans built by Nichols. A fourth was scheduled for June christening and delivery to the Blue & Gold Fleet, also for operation in San Francisco.

Previous catamarans were the Klondike, built for Alaskan service, and the Spirit of Alderbrook, which is operating on Puget Sound. Crowley leased the Klondike last summer for use between Los Angeles Harbor and Catalina Island during the Olympics, then took the craft to San Francisco for experimental service. The six-month trial period proved highly successful, according to Harbor Carriers, and set the stage for the order of the new catamaran.

Designs for these catamarans were originated by International Catamarans Pty. Ltd. of Australia. Nichols Bros. holds the license for production of the catamarans in North America.

Other companies that supplied equipment for the Catamarin included Harris Electric and PSI for electronics, Systems Engineering for propulsion controls, Hough Marine for steering systems, Cascade Machinery and Pacific Pump for pumps, and Fisheries Supply Company for lifesaving gear and marine hardware.

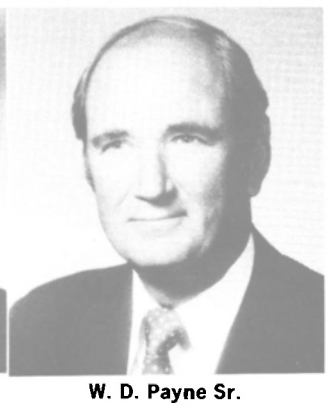
Other equipment includes valves from Haller Company, motor starters from North Coast Electric, wiring and light fixtures from Hardware Specialties, anchor and rope from Everett Steel, doors from Pacific Coast Marine, and piping from Alaskan Copper and Brass.

Nichols recently signed a sublicense agreement with Atlantic and Gulf Boatbuilding, Inc. of Fort Lauderdale, Fla., for construction of one catamaran to the Australian design. The Florida yard will build a 72-foot vessel for Bottom Time Adventures that will contain staterooms and be used for overnight trips to the Bahamas for diving expeditions.

Roper Named Chairman, Eure President, Payne Executive VP At NORSHIPCO


John L. Roper III


Charles H. Eure Jr.


W. D. Payne Sr.

Norfolk Shipbuilding & Drydock Corporation (NORSHIPCO) recently announced major changes in its corporate structure.

John L. Roper III has been elected chairman of the board of directors. Formerly president and chief executive officer, he will continue as CEO.

Charles H. Eure Jr., formerly executive vice president of operations, is now president and chief operating officer. **W.D. Payne Sr.,** formerly senior vice president of production, has been named executive vice president of production.

Carlos E. Agnese, formerly vice president of estimating and contract administration, is now senior vice president in the same area. **Ernest C. Reilly** moves from assistant vice president of estimating and contract administration to vice president in the same functions.

Daniel H. Knight has been named assistant vice president and director of purchasing. **John L. Roper IV,** formerly assistant treasurer and assistant secretary of the corporation, is now secretary and assistant treasurer.

Mr. **Payne** was also elected to the board of directors. Other members of the board are **John L. Roper III,** Mr. **Eure, George W. Roper II, L.C. Ackerman, William H. Jory,** and **O. Raymond Yates Jr.**

ABS Headquarters Moving To New Jersey Location

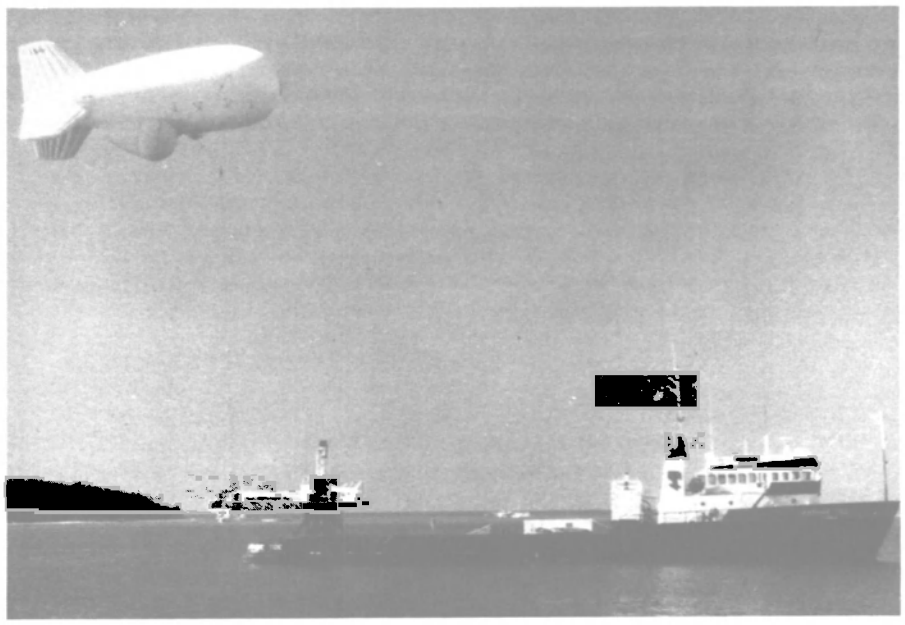
The American Bureau of Shipping, a not-for-profit ship classification society, is acquiring a new headquarters office building in the Executive Park complex in Paramus, N.J. The move, from the present location at 65 Broadway, New York City, is expected to take place in late November or early December this year.

The new ABS building is a five-story structure with a total of 167,800 square feet of office space. It is located on Eisenhower Drive near the Garden State Parkway, and about one-quarter of a mile from the intersection of Routes 4 and 17. Driving time is about 20 minutes from the George Washington Bridge out of New York City, and little more than an hour from the major airports.

ABS has had various addresses in its 123-year history, each one to accommodate its growth. All have been in the general location of lower Manhattan, historically the area of the shipping industry.

Tidewater Marine Vessel Adaptations Create New Market Opportunities

Since inception of the industry over 30 years ago, Tidewater Inc.'s marine subsidiary, Tidewater Marine Service, Inc., has consistently been a leader in the development of oil and gas support vessel design and operating improvements—hull design, superior machinery and innovative equipment.



Innovative new uses for marine support equipment is everyday work at Tidewater.

The current reduced demand for Tidewater's vessels in the offshore petroleum industry has prompted Tidewater Marine to aggressively pursue alternative employment opportunities for its fleet.

A recent striking example is the company's conversion of the Abshire Tide, a 194-foot, 2,250-horsepower supply vessel. The Abshire Tide is currently performing surveillance support service at sea.

According to **Richard M. Currence**, president of Tidewater Marine, the modification of the vessel presented an unusual challenge and opportunity for Tidewater Marine's design and engineering department. The vessel was lengthened and deck area expanded to accommodate a stern gantry and mooring system to support a 85-foot-long, 25,000-cubic-foot helium-filled aerostat (balloon).

"We also strengthened the below deck section to be able to handle the weight of the gantry and mooring system as it travels forward and aft in tracks mounted on the rear deck of the vessel," Mr. **Currence** said.

He said that in addition to the gantry, a drive system was also designed to propel it. "We specified hydraulic power by tying the gantry into the vessel's existing hydraulic system. The objective was to make the entire operation as economically feasible as possible, and the Abshire Tide's hydraulic system provided the solution."

The Abshire Tide is powered by twin Caterpillar engines that develop a speed of 12 knots. It is one of 267 vessels that make up the Tidewater Marine fleet currently deployed in 21 areas of the globe, everywhere, in fact, that major oil and gas support activities are taking place offshore.

Other recent examples of specialized support equipment that Tidewater has tailored to the charterers' specifications include a dynamically positioned support vessel, Australia; crew-towing supply vessel, West Africa; geophysical survey, Gulf of Mexico; and supply-utility, Middle East.

In addition to owning and operating one of the world's largest fleets of vessels supporting the offshore oil and gas industry, Tidewater is also active in oil and gas exploration and production and in the air and natural gas compression business, in addition to owning minor interests in real estate and in insurance.

Whittaker Survival Capsules Employ Formsprag Clutches For Extra Safety

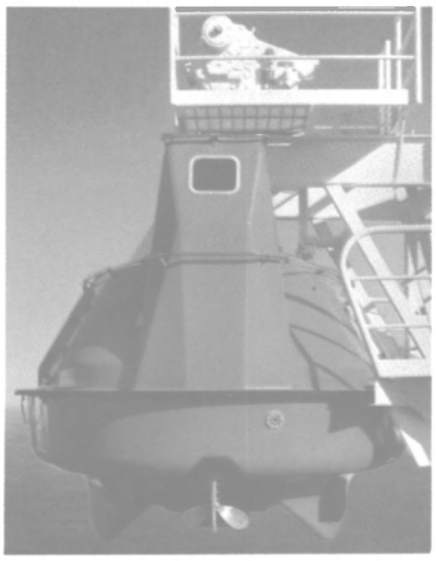
Survival capsules are lowered from offshore rigs with winch systems that contain overrunning clutches capable of withstanding extreme shock loads. Whittaker Corporation, La Mesa, Calif., selected Formsprag® overrunning clutches manufactured by the Industrial Power Transmission Division of Dana Corporation for use on some models of the U.S. Coast Guard-approved capsules.

Produced in 14-, 36/38-, 50-, and 54-man-capacity models, the Whittaker survival capsules are impact resistant and totally enclosed for protection against fire and the environment. They are equipped with air, water, food, and other survival gear, and are propelled by diesel engines. They also have pumps that can provide a continuous exterior water bath in the event of fire on the water surface.

The capsules are supported on rigs above the ocean surface by electric winches and platforms. The winch cable is attached to the capsule at a single point with an on-load/offload hook. This single-point attachment eliminates the need for fore and aft connections, and speeds launch and recovery during emergencies and drills.

The winch consists of a single-grooved cable drum driven by an electric motor through a gear reducer and an overrunning clutch. The input shaft from the gear reducer runs through and is keyed to the clutch's inner race. A weight-set band-type brake can be used to hold the outer race of the clutch during raising and stowage.

An overrunning clutch consists basically of cylindrical inner and outer races with a full complement of precision-machined sprags filling the annular space between the races. Each sprag is essentially a strut that transmits power from one race to the other by a wedging action when either race is rotated in the driving direction. Rotation in the other direction frees the sprags and the clutch is disengaged, or overruns. In standard clutch designs either race may be the driving member or the driven member.



Whittaker's survival capsules are used on rigs and other offshore installations.

When the band-type brake securing the sprag clutch's outer race is released, the gear reducer, shaft, clutch, and drum assembly are free to turn, allowing the capsule to descend to the water. A centrifugal brake attached to the gear reducer's input shaft limits the lowering speed to within safe parameters.

For hoisting, the band brake on the clutch's outer race is set and the clutch's inner race overruns the outer race as the drive shaft turns the drum to raise the capsule. Since the sprag clutch permits rotation in one direction only, when the band brake is set, the clutch serves as a safety backstop during hoisting.

Transient shock load protection is provided by the Formsprag PCE™ (Positive Continuous Engagement) sprag design. It prevents sprag rollover and permanent clutch damage that can occur during overload.

With the PCE design, projections on the front and back flanks of each sprag provide positive sprag-to-sprag abutment during overloading to prevent damage and allow the unit to continue to function.

Another feature of these overrunning clutches is the "Free-Action" sprag retainer. It spaces and positions each sprag uniformly, yet allows independent movement of each sprag while under load. Each sprag adapts automatically to varying annular space conditions, resulting in uniform engagement and load distribution of all sprags at all times.

Ultra-hard Formchrome® sprags, exclusive with Formsprag clutches, provide extra-long life, maximum wear resistance and lower maintenance costs.

The U.S. Coast Guard requires a service factor of 6:1 for safety equipment. The long life and consistent performance provided by the "Free-Action" retainer and Formchrome wear resistance combined with the shock load protection of PCE sprags enables the Formsprag overrunning clutch to meet this stringent requirement, providing added safety for Whittaker's survival capsules.

For further information on Whittaker survival capsules,

Circle 46 on Reader Service Card

For more information on Formsprag overrunning clutches,

Circle 47 on Reader Service Card

Vacuum Sewage Systems Described In Brochure Offered By Envirovac

A free six-page brochure entitled "Envirovac Vacuum Sewage Systems" is being offered by Envirovac Inc. of Rockford, Ill.

Using a diagram to depict the elements of a vacuum sewage system, the publication explains what such a system is, and describes in detail three kinds available from Envirovac that offer design flexibility: the Type III Envirovac Vacuum Sewage Collection and Holding System, the Envirovac Standard Column System, and the Envirovac Mini Column System. Each is thoroughly discussed and illustrated with diagram drawings to clearly show how they work.

The Envirovac three-pint water flush vacuum toilet that can reduce sewage volume by 90 percent is also described and illustrated with photos and diagrams. Some of its other benefits include smaller sewage and water holding tanks, reduced water supply systems, and smaller treatment plants.

The literature also points out that Envirovac's ORCA Sewage Treatment Systems are designed to easily interface with any of the three vacuum systems described in the brochure, and that eight standard ORCA models are available (two are Type I and six are Type II). ORCA Type II units are U.S. Coast Guard certified and IMO approved to handle twice the number of people when an Envirovac vacuum system is utilized.

For further information and a free copy of the brochure from Envirovac,

Circle 38 on Reader Service Card

Rados Converts Tuna Purse Seiner Into Stern Trawler 'Alaska I'

Rados International Corporation, Naval architects and marine engineers of San Pedro, Calif., has announced completion of a new design to convert existing tuna purse seiner fishing vessels into mid-water stern trawlers.

Under a contract with the Fishing Company of Alaska, Rados was recently commissioned to convert the 214-foot M/V Fenicio, ex-Bold Phoenician, ex-Maria Elena, originally designed and construction supervised by Rados, and built in 1972 by San Diego Marine Construction Company as a tropical water, 1,100-ton-capacity tuna purseiner, into the Alaska I (shown above), a mid-water stern trawler operating principally in the Gulf of Alaska.

With the primary philosophy of utilizing as much of the existing equipment and arrangements as possible in the conversion process, minimum structural modifications were implemented and much of the existing equipment overhauled for continued use.

The tall kingpost/mast with its associated crow's nest atop, long identified as a tuna purse seiner trademark, was removed along with other tuna fishing equipment such as booms, winches, ammonia refrigeration equipment and brine system.

After a complete modification to the stern section, including increased length, beam, and stern ramp alterations, new trawl handling facilities were erected and installed, including a stern gallow structure and an "A" frame structure, capable of handling 35 tons of fish. The addition of a hydraulic, stern wave gate, designed to prohibit the flooding of the work deck by trailing seas, was also incorporated.

Alterations to the superstructure included reinforcement of the forward and side portions of the deckhouse to accommodate heavier Arctic Sea conditions, and reinforcement of decks and working platforms especially around the large trawl winch, provided by Kawasaki of Japan. It has a trawling strength of 35 tons.

With the addition of 10 new crew berths, four of which are just aft of the stack area on the boat deck, the total crew complement has been increased to 30.

Adjacent to the crew quarters on the starboard side of the boat deck, an aft-facing maneuvering and equipment control station was added, which houses all controls and monitoring for the machinery and trawling operations including net deployment, and acts as communications center for deck operations.

All hull modifications were designed and approved in accordance with the American Bureau of Shipbuilding Regulations.

As the catch is brought aboard and funneled through a hydraulic loading hatch to the wet deck or main deck, it is sorted, filleted, and cartoned before being conveyored to six large plate freezers supplied by Mycom of Japan. The freezers are capable of freezing 27 metric tons of fish per day at a temperature of −35 C.

The catch is then transferred to ten of the existing cargo wells, and

(continued on page 32)

Sternwheeler 'Colonel' Launched By Moss Point Marine

Moss Point Marine, Inc., Escatawpa, Miss., has launched the sternwheel/excursion boat, Colonel (shown above), which is being built for the Colonel Museum, Inc., Galveston, Texas.

When completed later this summer, the sternwheeler will be able to accommodate as many as 800 passengers on sightseeing, historical and jazz dinner cruises on the Galveston Bay Harbor. The Victorian-styled riverboat will be 152-feet in length, with a 40-foot beam, and an 8-foot 6-inch depth upon completion. She will also be powered by two Caterpillar 3408 diesel engines developing 365 hp each at 1,800 rpm.

The Colonel will be operated by New Orleans Paddlewheels (Texas) Inc., for its Texas owners. The company operates a similar vessel, the Creole Queen in New Orleans.

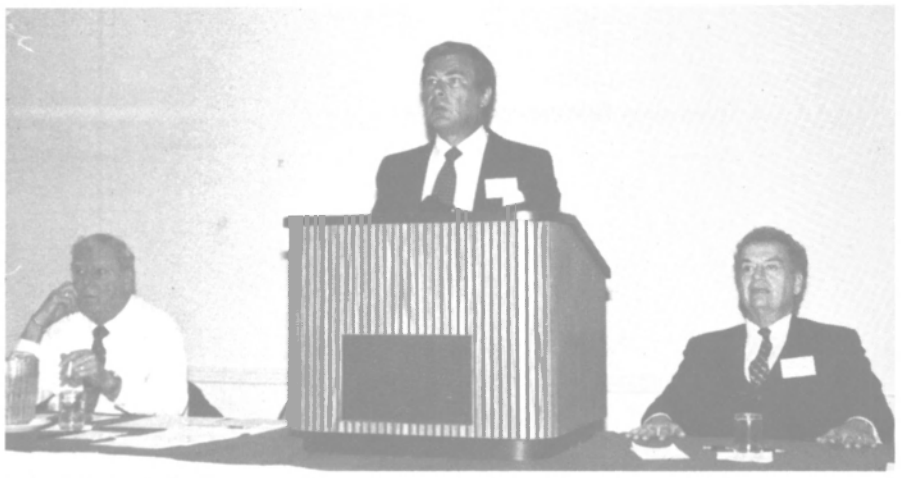
For a complete equipment suppliers' list and further details and background on the Colonel, check the June 1985 Double Issue of Maritime Reporter, "Moss Point Marine To Build Victorian-Style Sternwheel Riverboat."

Navy Purchasing And NAVSEA Officials Address Marine Machinery Association Seminar

More than 80 key marketing and sales executives representing some 40 leading marine machinery manufacturing companies currently selling to the U.S. Navy attended a recent seminar in Washington, D.C. conducted by the Marine Machinery Association (MMA).

Rear Adm. **James Nunnelly,** USN (Ret.), president of the American Society of Naval Engineers, welcomed attendees at the seminar and commented on the importance of the work of the MMA to the Navy and to the nation. He wished the association continued success.

Rear Adm. **James Nunnelly,** USN (Ret.), president, ASNE.



Left to right, **Jack Flannigan** (Terry Corporation) newly elected president of the Association, and **Jack Janetatos** (Baker & McKenzie) past president of the Association. **Daniel Marangiello** (ORI, Inc.) MMA executive director.

Organized specifically for the Navy market when it was founded more than a year ago, the non-profit MMA is the first and only organization of its type. It is a recognized, fully operational, and growing association with notable successes already to its credit.

The main purpose of MMA, largely achieved in a surprisingly short period of time, is to establish a united presence in Washington to work more closely with the Navy to help solve problems, to more efficiently meet Navy requirements, and to increase cooperation and generally improve working relationships for the mutual benefit of both the Navy and the marine equipment suppliers.

In his welcoming address, MMA executive director **Daniel Marangiello** of ORI, Inc. told how MMA founders were particularly concerned with extensive, costly, and continuing problems created for both the Navy and the equipment manufacturers in the critical area of spare parts and service.

He noted that there is a great need to close the communications gap between the users (the Fleet), the purchasers, and the technical community. He pointed out that it was the obligation of the technical community to exercise its integrity and to insist on requisite quality. If the technical community does not lead and demand quality parts and service, Fleet reliability will suffer and the maintenance burden of ships' personnel will increase, he stated.

Richard McFarland, executive director, Navy Ship Parts Control Center.

Mr. **Marangiello** concluded by warning that if the technical community did not stand up for technical excellence, the reputable manufacturers will not be able to compete with suppliers who have no engineering, no quality assurance, no traceability, and no product liability. The end result will be 100 suppliers, each of whom can build a spark plug but none of whom can build an engine. Such a situation, Mr. **Marangiello** stated, could be catastrophic for the industry, the Navy, and the country.

Jack Janetatos, then president of the MMA, spoke on ethics in business. Ethics, he noted, must be a requirement not only for the manufacturer but also for the government. Government personnel must feel a sense of obligation for their actions in dealing with manufacturers.

He described how the government was issuing challenges to rights and data solely for the purpose of forcing manufacturers into a decision not to defend their rights because of the prohibitive cost and time involved in such legal actions. In the view of the association, this is improper conduct and not in the spirit of good, ethical business practice, he concluded.

Richard McFarland, executive director of the Navy Ship Parts Control Center in Mechanicsberg, Pa., addressed the seminar on his operations. He stated that SPCC maintained good security of rights and data, and it is their commitment to do so. He admitted that the SPCC had no Quality Assurance per se, and that it depended totally upon NAVSEA for instructions and guidance in this regard. He noted that this was right, as it is the technical community that has the knowledge, expertise, and responsibility in this area.

Hon. **Robert McClory,** former member of Congress with 20 years of service in the House of Representatives, gave a report on the legislative efforts of the association during the past year, and noted the significant impact of the MMA on several pieces of legislation. He also outlined plans for the coming year, including testimony before the House Armed Services Committee and its Subcommittees.

Jack Flannigan of Terry Corporation was elected president of the association to succeed Mr. **Janetatos.** He thanked the board of directors for its confidence, Mr. **Janatatos** for his extraordinary efforts during the past year, and vowed to continue efforts to restore honest, fair, and true competition.

The membership list of the MARINE MACHINERY ASSOCIATION is constantly growing. Current members of the Marine Machinery Association include the following leading corporations:

Allied Corporation
Atlantis Services Inc.
Bendex Electro Dynamic Division
Buffalo Pumps, Div. of Buffalo Forge
Byron Jackson Pump
Elliott Company
Gimpel Corporation
Hale Fire Pump
Hardie-Tynes Manufacturing Co.
John Crane
Ingersoll-Rand Engineered Pump Div.
Ingersoll-Rand Compressor Div.
Marotta Scientific Controls
Leslie Co.
Pacific Pump
Sargent Industries
Solar Turbines, Inc.
Terry Corporation
Transamerican Delaval, Inc.
Treadwell Corporation
Trubodyne
Vacco Industries
Waukesha Bearings Corporation
Warren Pump
Westinghouse Electric Corp., Turbine Division
Worthington Pump
Worthington Compressor

Manufacturers interested in doing business with the U.S. Navy, as well as those now doing business with the U.S. Navy, can derive impornant benefits from a membership in the MARINE MACHINERY ASSOCIATION. Complete details regarding benefits and membership may be obtained by contacting:

THE MARINE MACHINERY ASSOCIATION, Suite 903, 1700 K. St. N.W., Washington, D.C. 20006, (202) 293-7169; or **Jack Flannigan,** Terry Corporation, Industrial Road, Niantic, CT 06357, (203) 739-6271.

Rados Converts Purse Seiner

(continued)

held at a temperature of −30 C. The vessel is capable of storing 513 tons of frozen, cartoned fish.

The new liquid ammonia circulating refrigeration system includes three 100-hp Mycom Compressors, Model N62B, with associated condensers, receivers, ammonia pumps and accessories.

Originally designed with engine room and machinery spaces in the forward portion of the ship, the two forward fishwells both port and starboard, have been converted into a refrigeration machinery space and a hydraulic machinery space. The refrigeration machinery space housing compressors, condensers, receivers, chillers, pumps and accessories, is located on the port side while the hydraulic machinery space, housing the four Kawasaki/Japan 100 HP hydraulic pumps responsible for winch operations and hydraulic equipment through out the vessel, is located on the starboard side of the vessel. This arrangement provided for increased space and maintenance area around each major piece of equipment.

Extensive electronic reinstrumentation includes Furuno communication, navigation and fishing equipment supplied by Honor Marine of San Diego. For ship's communications, a new SSB radio-telephone and VHF/FM radio telephone were added. The new navigation equipment included two Model FR 1011 radar units, a Loran C, an electromagnetic log, a direction finder, two echosounders and a facsimile receiver. Additional electronic fishing equipment included two net recorders, a catch monitor, water temperature indicators and a color video sounder, Model FCV-121-ET.

The completed conversion was undertaken and directed by Marine Service Enterprise of Del Mar, Calif., and completed in May 1985. After successful sea trials, the Alaska I departed for Arctic fishing grounds and is reported to be successfully fishing the Arctic waters.

Rados Converts Tuna Purse Seiner Into Stern Trawler 'Alaska I'

Rados International Corporation, Naval architects and marine engineers of San Pedro, Calif., has announced completion of a new design to convert existing tuna purse seiner fishing vessels into mid-water stern trawlers.

Under a contract with the Fishing Company of Alaska, Rados was recently commissioned to convert the 214-foot M/V Fenicio, ex-Bold Phoenician, ex-Maria Elena, originally designed and construction supervised by Rados, and built in 1972 by San Diego Marine Construction Company as a tropical water, 1,100-ton-capacity tuna purseiner, into the Alaska I (shown above), a mid-water stern trawler operating principally in the Gulf of Alaska.

With the primary philosophy of utilizing as much of the existing equipment and arrangements as possible in the conversion process, minimum structural modifications were implemented and much of the existing equipment overhauled for continued use.

The tall kingpost/mast with its associated crow's nest atop, long identified as a tuna purse seiner trademark, was removed along with other tuna fishing equipment such as booms, winches, ammonia refrigeration equipment and brine system.

After a complete modification to the stern section, including increased length, beam, and stern ramp alterations, new trawl handling facilities were erected and installed, including a stern gallow structure and an "A" frame structure, capable of handling 35 tons of fish. The addition of a hydraulic, stern wave gate, designed to prohibit the flooding of the work deck by trailing seas, was also incorporated.

Alterations to the superstructure included reinforcement of the forward and side portions of the deckhouse to accommodate heavier Arctic Sea conditions, and reinforcement of decks and working platforms especially around the large trawl winch, provided by Kawasaki of Japan. It has a trawling strength of 35 tons.

With the addition of 10 new crew berths, four of which are just aft of the stack area on the boat deck, the total crew complement has been increased to 30.

Adjacent to the crew quarters on the starboard side of the boat deck, an aft-facing maneuvering and equipment control station was added, which houses all controls and monitoring for the machinery and trawling operations including net deployment, and acts as communications center for deck operations.

All hull modifications were designed and approved in accordance with the American Bureau of Shipbuilding Regulations.

As the catch is brought aboard and funneled through a hydraulic loading hatch to the wet deck or main deck, it is sorted, filleted, and cartoned before being conveyored to six large plate freezers supplied by Mycom of Japan. The freezers are capable of freezing 27 metric tons of fish per day at a temperature of −35 C.

The catch is then transferred to ten of the existing cargo wells, and

(continued on page 32)

Sternwheeler 'Colonel' Launched By Moss Point Marine

Moss Point Marine, Inc., Escatawpa, Miss., has launched the sternwheel/excursion boat, Colonel (shown above), which is being built for the Colonel Museum, Inc., Galveston, Texas.

When completed later this summer, the sternwheeler will be able to accommodate as many as 800 passengers on sightseeing, historical and jazz dinner cruises on the Galveston Bay Harbor. The Victorian-styled riverboat will be 152-feet in length, with a 40-foot beam, and an 8-foot 6-inch depth upon completion. She will also be powered by two Caterpillar 3408 diesel engines developing 365 hp each at 1,800 rpm.

The Colonel will be operated by New Orleans Paddlewheels (Texas) Inc., for its Texas owners. The company operates a similar vessel, the Creole Queen in New Orleans.

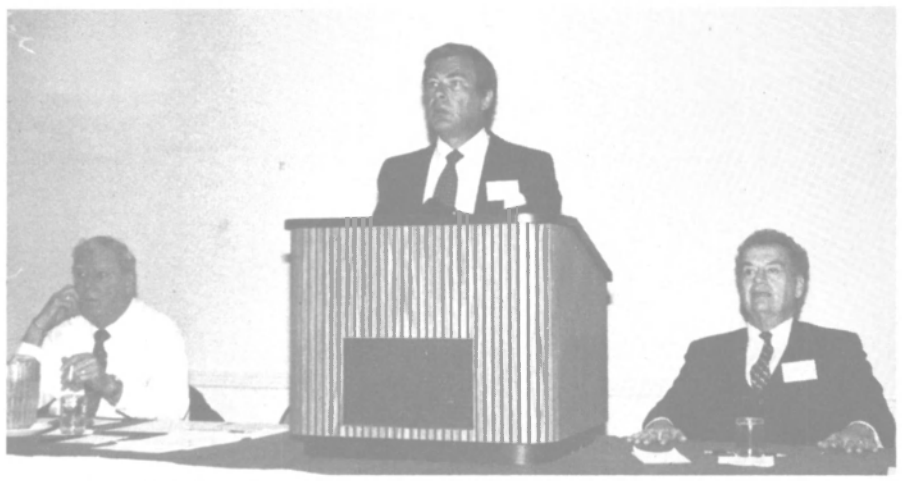
For a complete equipment suppliers' list and further details and background on the Colonel, check the June 1985 Double Issue of Maritime Reporter, "Moss Point Marine To Build Victorian-Style Sternwheel Riverboat."

Navy Purchasing And NAVSEA Officials Address Marine Machinery Association Seminar

More than 80 key marketing and sales executives representing some 40 leading marine machinery manufacturing companies currently selling to the U.S. Navy attended a recent seminar in Washington, D.C. conducted by the Marine Machinery Association (MMA).

Rear Adm. **James Nunnelly,** USN (Ret.), president of the American Society of Naval Engineers, welcomed attendees at the seminar and commented on the importance of the work of the MMA to the Navy and to the nation. He wished the association continued success.

Rear Adm. **James Nunnelly,** USN (Ret.), president, ASNE.



Left to right. **Jack Flannigan** (Terry Corporation) newly elected president of the Association, and **Jack Janetatos** (Baker & McKenzie) past president of the Association. **Daniel Marangiello** (ORI, Inc.) MMA executive director.

Organized specifically for the Navy market when it was founded more than a year ago, the non-profit MMA is the first and only organization of its type. It is a recognized, fully operational, and growing association with notable successes already to its credit.

The main purpose of MMA, largely achieved in a surprisingly short period of time, is to establish a united presence in Washington to work more closely with the Navy to help solve problems, to more efficiently meet Navy requirements, and to increase cooperation and generally improve working relationships for the mutual benefit of both the Navy and the marine equipment suppliers.

In his welcoming address, MMA executive director **Daniel Marangiello** of ORI, Inc. told how MMA founders were particularly concerned with extensive, costly, and continuing problems created for both the Navy and the equipment manufacturers in the critical area of spare parts and service.

He noted that there is a great need to close the communications gap between the users (the Fleet),

Richard McFarland, executive director. Navy Ship Parts Control Center.

the purchasers, and the technical community. He pointed out that it was the obligation of the technical community to exercise its integrity and to insist on requisite quality. If the technical community does not lead and demand quality parts and service, Fleet reliability will suffer and the maintenance burden of ships' personnel will increase, he stated.

Mr. **Marangiello** concluded by warning that if the technical community did not stand up for technical excellence, the reputable manufacturers will not be able to compete with suppliers who have no engineering, no quality assurance, no traceability, and no product liability. The end result will be 100 suppliers, each of whom can build a spark plug but none of whom can build an engine. Such a situation, Mr. **Marangiello** stated, could be catastrophic for the industry, the Navy, and the country.

Jack Janetatos, then president of the MMA, spoke on ethics in business. Ethics, he noted, must be a requirement not only for the manufacturer but also for the government. Government personnel must feel a sense of obligation for their actions in dealing with manufacturers.

He described how the government was issuing challenges to rights and data solely for the purpose of forcing manufacturers into a decision not to defend their rights because of the prohibitive cost and time involved in such legal actions. In the view of the association, this is improper conduct and not in the spirit of good, ethical business practice, he concluded.

Richard McFarland, executive director of the Navy Ship Parts Control Center in Mechanicsberg, Pa., addressed the seminar on his operations. He stated that SPCC maintained good security of rights and data, and it is their commitment to do so. He admitted that the SPCC had no Quality Assurance per se, and that it depended totally upon NAVSEA for instructions and guidance in this regard. He noted that this was right, as it is the technical community that has the knowledge, expertise, and responsibility in this area.

Hon. **Robert McClory,** former member of Congress with 20 years of service in the House of Representatives, gave a report on the legislative efforts of the association during the past year, and noted the significant impact of the MMA on several pieces of legislation. He also outlined plans for the coming year, including testimony before the House Armed Services Committee and its Subcommittees.

Jack Flannigan of Terry Corporation was elected president of the association to succeed Mr. **Janetatos.** He thanked the board of directors for its confidence, Mr. **Janatatos** for his extraordinary efforts during the past year, and vowed to continue efforts to restore honest, fair, and true competition.

The membership list of the MARINE MACHINERY ASSOCIATION is constantly growing. Current members of the Marine Machinery Association include the following leading corporations:

Allied Corporation
Atlantis Services Inc.
Bendex Electro Dynamic Division
Buffalo Pumps, Div. of Buffalo Forge
Byron Jackson Pump
Elliott Company
Gimpel Corporation
Hale Fire Pump
Hardie-Tynes Manufacturing Co.
John Crane
Ingersoll-Rand Engineered Pump Div.
Ingersoll-Rand Compressor Div.
Marotta Scientific Controls
Leslie Co.
Pacific Pump
Sargent Industries
Solar Turbines, Inc.
Terry Corporation
Transamerican Delaval, Inc.
Treadwell Corporation
Trubodyne
Vacco Industries
Waukesha Bearings Corporation
Warren Pump
Westinghouse Electric Corp., Turbine Division
Worthington Pump
Worthington Compressor

Manufacturers interested in doing business with the U.S. Navy, as well as those now doing business with the U.S. Navy, can derive impornant benefits from a membership in the MARINE MACHINERY ASSOCIATION. Complete details regarding benefits and membership may be obtained by contacting:

THE MARINE MACHINERY ASSOCIATION, Suite 903, 1700 K. St. N.W., Washington, D.C. 20006, (202) 293-7169; or **Jack Flannigan,** Terry Corporation, Industrial Road, Niantic, CT 06357, (203) 739-6271.

Rados Converts Purse Seiner

(continued)

held at a temperature of −30 C. The vessel is capable of storing 513 tons of frozen, cartoned fish.

The new liquid ammonia circulating refrigeration system includes three 100-hp Mycom Compressors, Model N62B, with associated condensers, receivers, ammonia pumps and accessories.

Originally designed with engine room and machinery spaces in the forward portion of the ship, the two forward fishwells both port and starboard, have been converted into a refrigeration machinery space and a hydraulic machinery space. The refrigeration machinery space housing compressors, condensers, receivers, chillers, pumps and accessories, is located on the port side while the hydraulic machinery space, housing the four Kawasaki/Japan 100 HP hydraulic pumps responsible for winch operations and hydraulic equipment through out the vessel, is located on the starboard side of the vessel. This arrangement provided for increased space and maintenance area around each major piece of equipment.

Extensive electronic reinstrumentation includes Furuno communication, navigation and fishing equipment supplied by Honor Marine of San Diego. For ship's communications, a new SSB radio-telephone and VHF/FM radio telephone were added. The new navigation equipment included two Model FR 1011 radar units, a Loran C, an electromagnetic log, a direction finder, two echosounders and a facsimile receiver. Additional electronic fishing equipment included two net recorders, a catch monitor, water temperature indicators and a color video sounder, Model FCV-121-ET.

The completed conversion was undertaken and directed by Marine Service Enterprise of Del Mar, Calif., and completed in May 1985. After successful sea trials, the Alaska I departed for Arctic fishing grounds and is reported to be successfully fishing the Arctic waters.

New Electronic Control Equipment From Danish Firm Described In Free Brochure

Malling Kontrol A/S, the independent Danish-owned firm in the field of electrical alarm, supervision and control equipment, is offering a new full color brochure on the products produced by the company.

Titled "Malling Kontrol—75 Years," the publication gives a brief history of the firm from 1910 through the present, and mentions that since 1935 a great number of ships have been equipped with Malling alarm and calling systems for unmanned engine spaces, fire alarms, navigation and signal light panels, push-button telegraphs and also anemometer systems for the measuring of wind speed and direction.

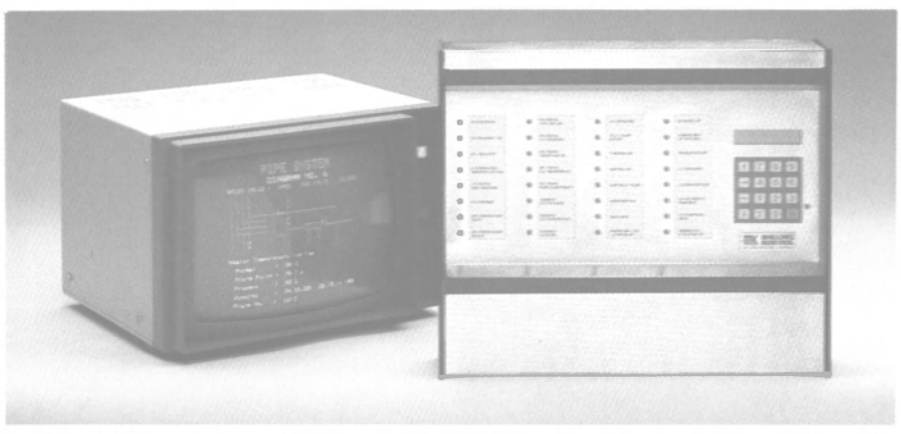
Discussed in detail in the brochure is the new Malling Kontrol microprocessor-based alarm and control system, MK Monark, which has been designed to fulfill the requirements concerning unmanned engine spaces in ships, even if the central processor and CRT display is not included in the system. The basic unit is a 32-channel Drabant panel, which contains all necessary functions such as individual alarm indicators, group outputs and a siren relay, to form an independent alarm system. Channel type, alarm limits, delays, alarm grouping, inhibit etc., can be programmed via keyboard and display in each Drabant unit. Up to 32 Drabant panels can be connected together to an integrated system by means of the 16-bit MK 900 Processor. The information can be represented by CRT display, color display and alpha-numerical printer.

Other electronic control equipment described along with the MK Monark include: fire alarm system type 813 classified for up to 25 fire detector loops and type 815 for fishing boats and small cargo ships; fire detectors of the thermo-sensitive type which are approved by the classification societies; push-button engine telegraphs; navigation light panels; the anemometer transmitter type 878 for continuously measuring wind speed and wind direction on board ships; the automatic weather station AVS 888; Malling Kontrol bells, horns, sirens and rotating lamps; and the recently developed series of signal light columns with clear standardized symbols for the information of the crew when an acoustic alarm signal sounds.

Excellent color photos of the products are used to illustrate the descriptive text of the literature.

For further information and a free copy of the brochure on electronic control equipment from Malling Kontrol,

Circle 50 on Reader Service Card



MK Monark Drabant

Hull Electronics Introduces Model H-130CU SSB Antenna Coupler

Hull Electronics Company, San Diego, Calif., has introduced another automatic coupler for use with single-sideband radiotelephones. Model H-130CU has a frequency coverage of 2 to 13 MHz and is rated at 150 watts.

System performance is not affected by rigging changes or the substitution of an antenna of a different length. Perfect tuning is assured automatically—tune up time is typically less than two seconds. It is housed in a moisture proof fibre glass box with an overlapping cover and heavy gasket.

For additional information on the Model H130CU automatic coupler from Hull Electronics,

Circle 37 on Reader Service Card

$222.4-Million Navy Contract Awarded Pennsylvania Shipbuilding To Construct Two Fleet Oilers

Pennsylvania Shipbuilding Company recently announced that it has been awarded a contract by the Department of the Navy for the construction of two new fleet oilers of the T-AO 187 class. The basic contract value is $222,476,849.

Work will start immediately on planning, engineering and material procurement with construction beginning in early 1986. The first ship will require about 1,000 man-years of production effort and will take about three years to build, with delivery to the Navy in 1989. Employment at the shipyard is expected to grow to about 2,000 over the next three years.

The ships to be built are fast-replenishment oilers, designed to refuel the Navy's ships at sea. Each is 667 feet 6 inches long, 97 feet 6 inches wide, with a draft of 35 feet. Each carries 180,000 barrels of fuel and is powered by state-of-the-art diesel engines of 32,000 horsepower, giving a service speed of about 20 knots. They will be operated by the Military Sealift Command with a civil-service crew of 95 and a Navy detachment of 21.

AAPA Convention Set For September 15-19 In Portland, Ore.

The 74th Annual Convention of the American Association of Port Authorities (AAPA) will be held in Portland, Oregon, September 15-19. Port of Portland is the official host of this year's convention which is expected to draw approximately 1,000 participants. The theme of this year's convention is Experience Portland.

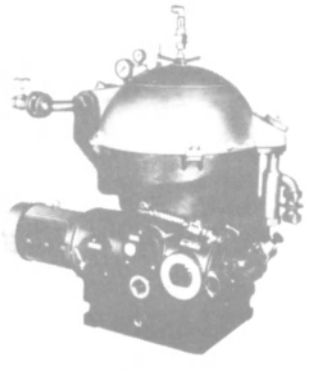
AAPA's annual convention is designed to provide a forum for the discussion of issues confronting port managers, and it's also a time in which the organization develops its policy positions to guide association efforts.

Centrico's Westfalia Oil Purifiers Improve Engine Performance

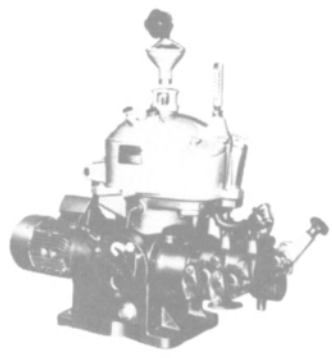
The great advantages of efficiently and reliably cleaning diesel fuel and lube oils are well recognized, and Centrico, Inc. of Northvale, N.J., offers a wide range of Westfalia Oil Purifiers for this purpose.

Westfalia Oil Purifying Centrifuges are being specified by diesel engine manufacturers and shipbuilders to remove water and impurities from heavy fuel oil, to improve engine performance and reduce the possibility of breakdowns due to diesel engine damage. They are also widely used to remove carbon and metal particles from lube oil, preventing premature engine wear, reducing downtime and greatly extending lube oil life.

Westfalia OSA/OSB models are used where automatic, continuous operation is required. They incorporate self-cleaning disc-type bowls designed for optimum oil-water separation even when oil characteristics and feed rates change. OSA/OSB models are available with maximum rated capacities up to 19,000 liters/hour (4,000 gph), but actual throughput depends on viscosity, specific gravity and other properties of the oil.



The Westfalia OSA model.



The Westfalia OTB take-down oil purifier.

Westfalia OTB take-down oil purifiers are designed for dewatering and removal of solid impurities from fuel and lube oils containing a small proportion of solids. They are currently in use on many service vessels in the Gulf area, and in other workboats throughout the world.

Centrico, Inc. is represented in the Gulf area by Marine Engineering Inc. (ME) of Belle Chasse, La.

For further information, literature, etc., on Westfalia Oil Purifiers from Centrico,

Circle 63 on Reader Service Card

GUEST EDITORIAL

West Coast Shipyards

By J. T. Gilbride, Chairman Todd Shipyards Corporation

John T. Gilbride

The following is excerpted from remarks made by **John T. Gilbride,** chairman of Todd Shipyards Corporation, before the Puget Sound Marine Economy Critical Issues Conference in Seattle, Washington.

In our world of rapid and continuous change, we have come to accept many situations and events which, just a few years ago, we would have thought "could never happen": the first man on the moon; Japan's technological ascendancy over many major U.S. industries; $33 per barrel oil; the breakup of the world's best telephone system, Ma Bell; and a trillion dollar national debt, to name just a few. Most of us would not have conceived of such developments very long before they occurred, and I don't believe our foresight is greatly improved now.

Today, I'm going to discuss a future possibility you probably haven't thought about because it is in that "it could never happen" category. What would happen if, by the year 2000, there were no longer any privately-owned, full-service shipyards, that is, shipyards capable of doing both naval and commercial work, operating on the West Coast? What economic, social and military impact would such a development have on our nation, and on the Pacific region?

Your immediate response will, understandably, be that such a development is highly unlikely and could easily be avoided by common sense government and public support. As a person who has been intimately involved with shipbuilding for over 40 years, I must reply that, no, this possibility is *not* unlikely but, *yes,* it can be avoided with public support.

Let me review some of the reasons why I don't think this scenario can be easily dismissed.

As you well know, the U.S. shipbuilding industry is currently undergoing a drastic shakeout caused by a variety of factors:

First, commercial ship construction and repair work is at an all-time low. Shipyards solely dependent on this sector are desperately short of work and many have closed. Todd has not been exempt; we closed our Brooklyn and Houston Divisions in 1983.

Second, current government policy through the Maritime Administration has eliminated construction differential subsidies and will use operating differential subsidies to actually promote the construction of ships for the U.S. Merchant fleet in foreign shipyards. Jones Act protection is in jeopardy and, in my opinion, is very likely to disappear, I regret to say.

Third, the few healthy yards remaining are engaged in naval construction and repair but, as Vice Admiral **Joseph Metcalf,** Deputy Chief of Naval Operations (Surface Warfare), recently said, "The Navy simply cannot generate the work required either in repair, new construction or conversion to maintain the existing industrial base in any condition of profitability. We are almost the only game in town but we are by no means a large enough game to support so many players."

Which facilities are likely to succumb? The industrial base to which Admiral **Metcalf** referred is currently comprised of 23 shipyards, not all of which have work today and only 5 of which are located on the West Coast, three in this area (Todd, Lockheed and Tacoma). Obviously, any further shakeout here on the West Coast would be a severe blow to the national security interest, and to the Pacific region.

Last summer, the local ship supervisor of shipbuilding for the Navy who was also in charge of Navy repair contracts in the Northwest—was quoted by the press as saying that unless shipyards out here got their wage costs more in line with Eastern competitors, they could not expect to get any more work. This apparently reflected the Navy's "low-bid" procurement policy, which has ignored the need to maintain shipbuilding resources on all coasts and has resulted in the overwhelming majority of new construction contracts being awarded to East and Gulf Coast operations. Todd's two major competitors for frigate/destroyer/cruiser type ships, for instance, one of which is on the East Coast, the other on the Gulf, will share an estimated $11 billion of ongoing work during the next five years, including 27 Aegis cruisers (CG 47) and several Aegis destroyers (DDG 51), whereas the opportunities available to all five West Coast mobilization base shipyards are a small fraction of that amount during the same period.

This lack of work has impacted employment unfavorably in the Seattle area. In the past three years, 6,000 jobs have been lost and about 3,000 of these layoffs have been at Todd's Seattle Division.

What is the cost differential between East and West Coast private shipyards that has led to such a harsh procurement policy towards Pacific Coast shipyards? An October 1984 Maritime Administration report estimated West Coast shipbuilding costs to be 4.6% higher than in the East and 9.2% higher than in the Gulf. Is this such a considerable difference that our nation can risk losing its West Coast private shipyard capability to build and support the Pacific Fleet, plus the U.S. merchant fleet and ships owned by nations of the Pacific Basin, our number one trading area? Further, what will the real defense costs be after the initial savings by low-bid, or "low balling" procurement have been realized?

For the Navy, follow-on cost increases would be unavoidable for normal peacetime operations and would be greatly increased under emergency conditions. Why? Let me describe a few "could never happen" scenarios based on a series of interrelated events which are pure fiction today but have enough plausibility to be seriously considered for contingency planning. Scenario number one:

• **The Panama Canal is blocked by terrorist action.** As a result, submarines, cruisers and other ships built in the East and assigned to Pacific fleet duty, which normally travel an average of 6,000 miles to West Coast ports, must now travel around the tip of South America, adding over 10,000 miles to the voyage. Clearly, this compromises fleet readiness, increases operating costs, exposes the ships to unnecessary risk and involves the crew and ship in weeks of nonproductive activity. Scenario number two:

• **Government-owned shipyards replace the private sector on the West Coast.** Since naval yards had not been building naval vessels, they will not be able to overhaul and repair them as cost-effectively as the experienced private builder. Furthermore, in my judgment, having dealt with relative private and government shipyards' costs since before World War II, the cost of doing work in Government non-taxpaying yards in terms of dollars, time and bottom line results are 30% higher than private yards and this cost variance would be further increased by West Coast Navy yards' wage rates which are 18.7% higher than their East Coast counterparts, as reported in the 1984 Maritime Administration report. Over the 30-year life expectancy of the ships, therefore, the added cost of life-cycle support services required to keep a ship in state of readiness would far exceed any savings realized from initial low-bid purchase. Scenario number three:

• **The national shipbuilding industrial base is reduced to eight East and Gulf Coast yards** because West Coast yards, forced to bid for new business at a 4.6% to 9.2% loss by Navy procurement policy, are eventually closed down. New construction and repair competitions fail to reduce prices since fewer competitors exist—the inevitable economic result of creating near monopolistic conditions—and government yards are overloaded. "Surge" capacity is nonexistent, labor strikes for less overtime, and crew morale sinks because of overhaul delays and prolonged separations from families at home ports. The problem is particularly acute for the nine Pacific Fleet aircraft carriers and their escort ships, some of which must return to the East for major overhaul. The fleet is put at greater risk when a South American country, denied further credit by the U.S., gives the USSR rights to establish a naval base in return for economic aid.

As these scenarios so clearly point out, the loss of future naval work and industrial capacity would have a severely unfavorable impact on the nation, and the Pacific region.

Implausible as some of these fictional occurrences may seem today, present government maritime policy and procurement actions are heading this nation towards an era of maritime insufficiency that could bring them about. By allowing our U.S.-flag merchant fleet to decline—as of January 1, 1985, our active fleet totaled only 393 ships, down 50 units from 1984—by concentrating the overwhelming majority of our nation's fleet construction and repair resources in the Eastern half of the country and by allowing

Total Navy Repair Work —FY '84

67%—East Coast
29%—West Coast
3%—Gulf Coast
1%—Great Lakes

Total Navy New Construction—FY '84

74%—East Coast
4%—West Coast
21%—South
1%—Great Lakes

West Coast resources to wither, government policy will surely lead the United States into economic, military and political decline by abdicating its position of supremacy at sea and leaving the world's sealanes open to whatever nations have the ability to command or interdict them. Lack of sealift capability spells weakness to our opponents just as surely as does lack of domestic sources of basic commodities and strategic materials. Admiral **Ike Kidd** said it concisely: "If the (merchant ship)-owning nations chose to deny sealift to us, the result could be economic blackmail to which we could not respond in peacetime, much less in war."

This concern was dramatized by the following fictional scenario by **Harlan Ullman** in the May issue of Naval Institute Proceedings which, if present downward trends continue for the merchant marine and shipbuilding industries, could be tomorrow's reality.

Thus, scenario number four:

• "It is winter 1990. The war in the Persian Gulf between Iran and Iraq, after ten years of bloodshed, has finally spilled over. As a result of a series of bone-chilling winters and other economic factors, Western dependence on Gulf oil significantly grew in the latter part of the 1980s. A Western naval task force, largely composed of U.S. forces, was ordered into the Gulf to protect both the shipping routes and the oil-producing facilities on the Arabian Peninsula. Conflict resulted, and large numbers of Western forces were brought to bear. Unfortunately, because of the spread of advanced weapons to the belligerent states and terrorist groups acting in their behalf, Western naval losses, including warships and merchantmen, have been heavy. But worse, after several months of a grinding campaign of attrition, the United States has found itself increasingly hamstrung by lack of a merchant fleet. It has only limited ability to provide the "wherewithal" for Western forces engaged in the region and the cargo capacity to compensate for the economic embargo imposed by non-aligned states against all belligerents. Further, erosion of the U.S. shipbuilding base has made repair work on damaged ships a very lengthy process."

Surely, this scenario suggests that now is the time to return to reality and a good start would be to observe the law of the land. In 1956, Congress recognized the importance of maintaining a geographically-dispersed shipbuilding mobilization base to enable us to build ships when and where they're needed, on all three coasts, and enacted statute 10.7302. I quote:

"Construction on the Pacific Coast. The Department of the Navy shall have constructed on the Pacific Coast of the United States such vessels as the President determines necessary to maintain shipyard facilities there adequate to meet the requirements of national defense. Aug. 10, 1956, c. 1041, 70A Stat. 451"

Second, in regard to shipbuilding and repair, the government should not be involved in any activity that the private sector can do better and at less cost—and that applies to all our coasts.

Third, we must face up to the real cost of not maintaining total seapower resources. The difficulties we face in making such an analysis have been the lack of an overall maritime strategy, the mistaken belief that U.S. maritime industries must survive under "free market" conditions, and the misconception that the Navy can fulfill its peacetime or military missions effectively with its own sealift resources and a greatly diminshed shipbuilding industrial base.

Without a clear national policy to maintain adequate seapower resources it is difficult to accurately define how much of each resource (naval, merchant and industrial) is needed and how we can pay for it. This subject needs urgent consideration at the highest policy levels. I believe the Center for Strategic & International Studies has stated the issue succinctly in its recent report "Forecasts for U.S. Maritime Industries in 1989: Balancing National

(continued on page 36)

Guest Editorial

(continued)

Security and Economic Considerations." This report concludes that "U.S. commercial maritime capabilities will probably decline by a third or more by this decade's end. That condition may or may not be in the national interest. That decline must not, however, occur by default. Broader public debate and discussion are essential. The issue is too vital to be resolved through inaction."

This issue, we believe, transcends partisan and parochial interests and is truly a national issue. Furthermore, it is an issue on which we have clear historical perspective. Two world wars have demonstrated beyond all argument the essentiality of maintaining three-coast shipbuilding capacity, as reported in Frederick Lane's comprehensive history of World War II shipbuilding entitled "Ships for Victory." I quote: "In 1940 and 1941, the Maritime Commission and the leaders of the shipbuilding industry attempted to applv lessons learned from 1917-1919. Recalling the overconcentration in the Northeast, they wisely placed many new shipyards on the Gulf and Pacific Coasts." In addition, of four administrative offices established, "the most important regional office was that in Oakland, California" which from 1939 to 1945 delivered 10.2 million displacement tons of ships all from West Coast commercial yards, compared with 7.7 and 3.9 million displacement tons, respectively, on the East and Gulf Coasts.

Todd is fully committed to seeing that none of the foregoing scenarios becomes a reality. We intend to speak out and to stay in business despite current and projected difficulties in our industry.

Should the citizens of the West Coast also be concerned about these "could never happen here" events? You bet they should. We have the responsibility to make citizens in our ten neighboring Western states aware that they, too, have a stake in maintaining a healthy private West Coast shipbuilding industry and must convince government decision makers to redirect national policy towards preserving balanced maritime resources.

As things now stand, the West Coast is the area most severely impacted by government misdirection. It is also a strategically located maritime/industrial center of immense value to national security and economic well-being. The message to be sent is not from a supplicant with hat in hand, but from a group of proud and productive citizens who are greatly disturbed at its government's shortsightedness. We at Todd urge you to share our sense of deep concern on this issue and we pledge to support your action with all our resources.

Hope/Progressive Yard Delivers Patrol Boat To Bolivian Navy

The 67-foot patrol boat Santa Cruz de la Sierra (shown above) was christened at a recent ceremony held at the Hope/Progressive shipyard in Houma, La. The new vessel, ordered by the Naval Forces of the Republic of Bolivia, was built under contract with Napco International Inc. of Minneapolis. Napco is an international marketing firm that supplies a full line of defense-related products to the U.S. Government and the governments of more than 60 nations around the world. Hope/Progressive is an established group of companies specializing in offshore fabrication of structures, oilfield equipment, living quarters, and high-performance aluminum vessels.

The ceremony included a Catholic Mass celebrated by Father **Timbre** of St. Francis de Sales Church, followed by the blessing of the vessel's flags, emblem, and crew. Title to the vessel was handed over to the commanding officer, Capt. **Marco Antonio Justiniano**, by **Joseph Jany**, treasurer of Napco International, as flags were raised and the Bolivian National Anthem played over the vessel's public address system.

The festivities coincided with Dias de la Armada—Navy Day of Bolivia. "This event is of great significance to Bolivia," said Captain **Justiniano.** "It is an historical landmark for our Navy because it is the first patrol boat of this size and category," he stated.

The new patrol boat, built of high-strength aluminum, is a unique design specified by the Bolivian Navy, and incorporates the latest technology and state-of-the-art electronic equipment. It will operate in rivers, protecting Bolivia's borders, and in drug interdiction duty.

The captain and his nine-man crew are delivering the vessel. After leaving Houma he will travel southwest through the Gulf of Mexico, along the coast of South America, and upon entering the River Plate in Argentina will proceed by river to Bolivia. The total distance to be covered is more than 6,000 miles, and with stopovers is estimated to last approximately 50 days.

The captain and his engineers were well satisfied with the quality of the vessel and its performance. They consider their experience during the sea trials as very significant. This should assure the continuity of relations between the Bolivian Navy and the American companies that participated in the project.

SANTA CRUZ DE LA SIERRA
List of Suppliers

Main propulsion	(2) Detroit Diesel
Generators	(2) Detroit Diesel
Clutches	(2) Twin Disc
Propellers	(2) Michigan Dyna Quad
Alarm system	E.M.T. Electronics
Radar	Furuno
VHF/FM	Cybernet
Fathometer	Empulse
Loud Hailer	Cybernet
Sound-powered telephones	Hose McCann
Paint System	Glidden
Air Conditioning	Carrier

FELS And Smit Combine Resources For Heavy Lifts —Color Brochures Offered

Asianlift, a specialized marine heavy-lift pool, has been formed by two widely experienced companies in this field—Far East Levingston Shipbuilding Ltd. (FELS) and Smit International South East Asia Ptd. Ltd. The Asianlift fleet currently comprises four heavy-lift floating sheerleg cranes. Two of the units are self-propelled, with lifting capacities up to 1,600 tons, capable of lifting to heights of 130 meters (426.5 feet).

Asianlift's experienced engineering staff can reliably identify and develop the optimum solution to any lifting or construction problem and high-lift engineering. It can also plan operations to insure fast, reliable execution with maximum safety, and provide supervision at every stage of the operation.

The new venture has direct access to FELS and Smit know-how and experience in heavy and high lifts, rig supply services, offshore maintenance, underwater services, heavy-lift barge transportation, salvage and wreck removal, worldwide towage, cable laying, marine engineering and installation and inspection of offshore projects, building of offshore construction vessels, drilling rigs, and accommodation/support vessels; and offshore fabrication and repair.

For further information and free brochures giving specifications on cranes that each company operates,

Circle 88 on Reader Service Card

Thomas Products Offers Model 1500 Flow Switch —Literature Available

Thomas Products Ltd., Southington, Conn., has made available the model 1500, a high-pressure in-line flow switch which is designed for accurate field adjustability with flow settings for both liquids and gases. The model 1500 comes with ½-inch NPT ports and is constructed of brass or 316 stainless steel. Flow settings range from .5 gpm to 20.0 gpm in liquids or from 3 to 475 SCFM in gases. The flow switch is very versatile because of its wide range of flow settings and its low pressure drop.

Operation of the model 1500 is simple. The piston houses a magnet which is displaced by the liquid's or gas's flow or no flow condition to actuate a hermetically sealed S.P.D.T. reed switch.

For more information concerning the Thomas Products's Model 1500 Flow Switch,

Circle 81 on Reader Service Card

Blackmer Pump Offers New Marine And Special Products Bulletin

A new eight-page bulletin by Blackmer Pump Division of Dover Corporation, Grand Rapids, Mich., presents their full line of rotary positive displacement, sliding vane pumps for military, marine and specialized industrial applications. Included are pumps specifically designed for bilge, feed water, lube oil, liquid service, transfer and stripping applications.

In addition to a description of the unique Blackmer design and operating features, the bulletin contains illustrated sections on individual pump series ranging in capacity from 5 to 730 gpm (0.19 to 2763 liters/minute) with operating pressures to 210 psi (14.7 kg/cm^2).

The features and options of each pump series are described and performance charts and materials of construction are provided along with available unit mounting arrangements and drive styles.

For further information and a copy of "Blackmer Positive Displacement Pumps for Military, Marine and Industrial Applications,"

Circle 28 on Reader Service Card

Circle 243 on Reader Service Card

Circle 155 on Reader Service Card

Circle 130 on Reader Service Card

Circle 221 on Reader Service Card

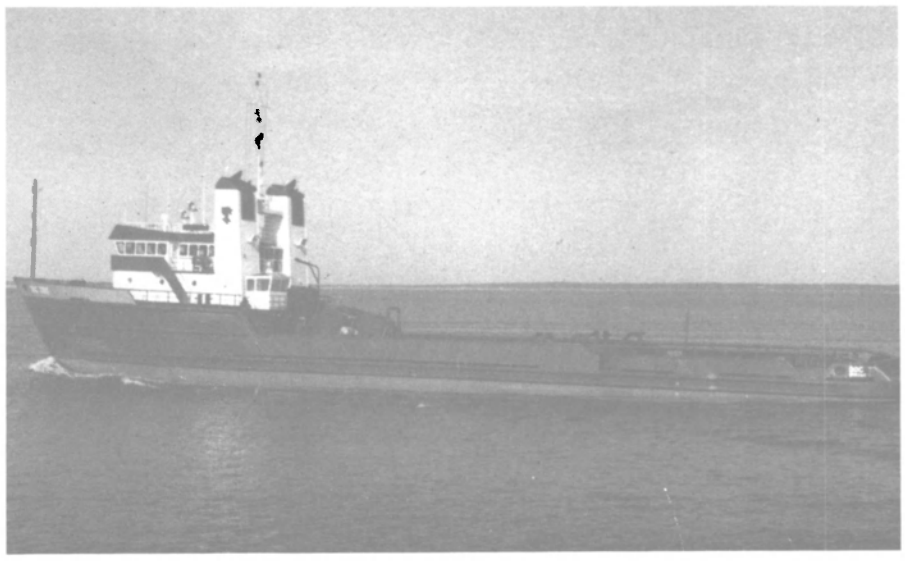
Circle 246 on Reader Service Card

Circle 19[illegible] on Reader Se vice Card

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.
ADAMS & PORTER	INSURANCE	163
ADVANCED STRUCTURES	PANELS/DOORS	245/246
BARDEX	SHIPLIFT SYSTEMS	205
BEAUFORT	MARINE SAFETY	190
CMC COMMUNICATIONS	TV ANTENNA SYSTEMS	130
DRAVO CORPORATION	MARINE EQUIPMENT	271
ENVIROVAC, INC.	SEWAGE TREATMENT	327
ESGARD	CORROSION CONTROL/COATING	155
FRED DEVINE	TOWING/SALVAGE SERVICES	212
FRITZ CULVER	WINCHES	174
HARDWARE SPECIALTIES	FASTENERS	275
WM HARGROVE	INSURANCE	167
HELESHAW HYDRAULICS	HYDRAULICS	302
HIGH STRENGTH QA STEEL, INC.	STEEL	107
HITACHI ZOSEN	VESSEL CONSTRUCTION	313
IMA	MARKETING GUIDES	346
JAMESBURY CORP.	VALVES	227
JERED BROWN	VESSEL REPAIR	224
MCALLISTER BROS.	TOWING SERVICES	333
MASONITE	JOINER PANELS	110
MORAN TOWING	TOWING SERVICES	176
NASSCO	VESSEL CONSTRUCTION/REPAIR	123
NEWMAR	ELECTRONIC POWER SUPPLIES	165
OMNITHRUSTER	THRUSTERS	315
RAMPMASTER	GANGWAYS	243
RAYTHEON MARINE	NAVIGATION COMMUNICATION EQUIPMENT	141
ROCKY MT. ENERGY	HULL CLEANING SYSTEM	179
SQUIRE COGSWELL COMPANY	AIR COMPRESSORS	118
THERMAL REDUCTION	CORROSION CONTROL	191
TODD SHIPYARD	VESSEL CONSTRUCTION/REPAIR	173
TOTAL TRANSPORTATION SYSTEMS	SHIPYARD PRODUCTION SYSTEMS	151
UNAFLEX RUBBER COMPANY	MARINE PRODUCTS	139
VERREAULT NAVIGATION, INC.	DREDGING/CONSTRUCTION/REPAIRS	294
WASHINGTON CHAIN & SUPPLY	MARINE PRODUCTS	220
WESTPORT SHIPYARDS	VESSEL CONSTRUCTION/REPAIR	127
GJ WORTELBOER	ANCHORS/WINCHES/CHAINS	321
ZIDELL EXPLORATION	BARGE SALES	221



The offshore supply vessel 'Doc Tide' after conversion by Bender Shipbuilding.

Bender Shipbuilding Converts Two Offshore Supply Vessels For Tidewater Marine

Bender Shipbuilding & Repair Co., Inc. of Mobile, Ala., recently redelivered two offshore supply vessels to Tidewater Marine Services, Inc., New Orleans, La., after completing extensive conversions.

The Doc Tide and Darol Tide were lengthened by 16 feet to accommodate liquid mud tanks and chain lockers, making the new overall length 216 feet.

Both vessels are equipped with a more efficient, 55-inch diameter Bird-Johnson 35/3S/FP bow thruster which develops 16,050 pounds of thrust; a Fritz Culver releasable cable stop; and a GM 4V71 diesel engine which was added to drive the four Mission Viking liquid mud pumps. Each pump can transfer 850 barrels per hour. Bender also carried out routine drydocking and repairs on the two vessels.

Tidewater Marine Service, Inc., a division of Tidewater Inc., operates one of the world's largest offshore service fleets.

Aside from its well-known new construction capabilities, Bender Shipbuilding & Repair is a leading ship repair facility on the Gulf Coast with three floating drydocks of up to 18,000 tons of lifting capacity.

For full details on the services offered by Bender,

Circle 44 on Reader Service Card

Fuel Management Systems Lease Program Introduced By DiFlo International

DiFlo International recently announced that the company is introducing a monthly lease program for its Series 1000 Fuel Management Systems as an alternative to an outright purchase, according to **Thomas E. Prosser**, DiFlo president.

Available to financially qualified operators of vessels and fleets in the inland waterways and offshore, the leasing program has been designed to eliminate the initial outlay of capital for the purchase of the equipment and to allow the operator to immediately lower operating expenses from lower fuel costs.

The lease can be structured up to 36 months, depending on the customer's needs, with an option to purchase the system for a small percentage of the original purchase price. Depending on its tax structure, the customer may also choose to take advantage of the Investment Tax Credit with the lease. Installation of the system and training of key wheelhouse/bridge personnel is also included in the DiFlo Lease Program.

"Based upon savings documented by customers currently using the Series 1000, and combined with an estimated daily lease cost in the $13 to $15 range, we believe that an operator can gain the advantage of a 10 to 30 percent fuel savings," Mr. **Prosser** stated. "Depending on the daily fuel costs for a vessel, the daily accumulation of these savings can be very attractive to fleet managers working in a competitive industry currently characterized by signs of slow growth in the short term," he added.

"In addition to the direct benefits associated with lower fuel costs, operators have experienced reduced expenditures for lubricants and maintenance when they find they can run their engines at the lower rpm indicated by the DiFlo System," Mr. **Prosser** concluded.

DiFlo International, Inc., from its headquarters in Houston, Texas, designs, manufactures, markets and installs a line of computer-based fuel management systems for internal combustion engines fueled by diesel or natural gas in the marine, and oil and gas and transportation industries throughout the United States and internationally.

For further information on DiFlo's new leasing program for its fuel management systems,

Circle 56 on Reader Service Card

New Control Valve By Pittsburgh Brass —Literature Available

Pittsburgh Brass Manufacturing, Irwin, Pa., has introduced the pressure logic valve, a new concept in directional control for fluids, gases and air.

The operating principle incorporates a unique "sliding stopple" that logically shuttles back and forth to direct media flow. With its short travel stroke, motivated by low cost air pressure, (20 psi max) thousands of cycles have been accomplished without any sign of wear.

These full port valves reduce the cost of a piping system, with one P.L.V. taking the place of two 2-way valves and in some cases a more costly three or four way multi-port valve with a standard actuator.

Available in ½ through 4-inch sizes with screwed, grooved or flanged ends.

For a catalog describing the pressure logic valve,

Circle 57 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
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Squire-Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, NY 11231
Flakt AB, Box 8862, S-40272, Gothenburg, Sweden
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
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
Grant Manufacturing & Alloying, Inc., 600 Schoolhouse Rd., Souderton, PA 18964
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
E.I. DuPont De Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
Key Houston Division of Jacksonville Shipyards, 13911 Atlantic Blvd., Jacksonville, FL 32225

BOILERS
Combustion Engineering, Inc., Windsor, CT 06095
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144
Senior Green Inc., 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
Mowbray's Tug & Barge, 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 Transport (New York) Inc., 551 Fifth Ave., Room 910, New York N.Y. 10017

CHOCKING SYSTEMS
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, PA 18936

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

CONTROL SYSTEMS—Monitoring
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
ASEA, Inc., 4 New King St., White Plains, NY 10604
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
Failsafe Motor/Generator Protector, Marine Safe Electronics Ltd., 101 Jardin Dr., Unit 24/25, Concord, Ontario, Canada L4K 1B6
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
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Marine Safe Electronics, 37 Staffern Drive, Concord, Ontario, Canada, L4K 2X2
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

COUPLINGS
CamLock Flange Sales Corp./Marine Moisture Control Co., 60 Inip Dr., Inwood, N.Y 11696

CRANE BUMPERS
Kastalon Inc., 4101 West 123rd St., Alsip, IL 60658

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
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
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
Granges Repair Service GMBH, Gutenbergring, 64 D-2000 Hamburg-Norderstedt TX:0215553
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

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
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 94080
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
Fitz-Wright Suits Ltd., 17919 Roan Pl., Surrey, B.C., Canada V3S 5K1
Genstar Stone Products Co., Executive Plaza IV, Hunt Valley, MD 21031
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, NY 10550
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
Raytheon Service Co., 100 Roesler Rd., Suite 103, Glen Burnie, MD
Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749
Viking Life Saving Equipment, 3305 N.W. 37th Street, Miami, FL 33142
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
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

FANS—VENTILATORS—BLOWERS
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Hartzell Fan Company, 901 Downing Street, Piqua, OH 45356
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
Sales Systems Limited,7006, 700 Florida Ave., Portsmouth, VA 23707

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

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
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716

FURNITURE
Bailey Carpenter & Insulation Co., 74 Sullivan Street, Brooklyn, NY 11231
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
CamLock Flange Sales Corp./Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
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

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

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 Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Seaward International, 5409 Beamon Rd., Norfolk, VA 23513 TX: 710-881-1182
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
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., Inc., 74 Sullivan St., Brooklyn, NY 11231
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., 74 Sullivan St., Brooklyn, NY 11231
Masonite Commercial Division, Dover, OH 44622
Megadoor Inc., 441 Lexington Ave., Suite 903, New York, NY 10017
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
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

LINE BLINDS
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
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

METALS
Bayou Steel Corp., P.O. Box 5000, Laplace, LA 70068

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
ACB Industries, 3400 Camp Street Suite 100, New Orleans, LA 70130
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
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
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.A.C.I., Inc., 1815 No. Fort Myer Dr., Arlington, VA 22209
C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211
C.T. Marine, 18 Church Street, Georgetown, CT 06829
Phillips Cartner & Co., Inc., 203 So. Union St., Alexandria, VA 22314
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
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
McLear & Harris, Inc., 28 West 44 Street, New York, NY 10036
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 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
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, FL 33156
S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317
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 Associates Corp., 19 Perina Blvd., Cherry Hill, NJ 08003 (Publications Division at Cherry Hill location)
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 Corp., 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
Japan Radio Co., Ltd., Akasaka Twin Tower, 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, Japan U.S. Rep: 405 Park Ave., New York, NY 10022
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
Sperry Corporation, Great Neck, NY 11020
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
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

OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Biospherics, Inc., 4928 Wyaconda Rd., Rockville, MD 20852
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
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
NALCO Chemical, Co., 2901 Butterfield Road, Oak Brook, IL 60521
Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
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
Hubeva Marine Plastic, Inc., 390 Hamilton Ave., Brooklyn, NY 11231
Norton Chemplast, 309-150 Dey Rd. Wayne NJ 07470

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
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
Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788
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
Mapeco Products, Inc., 20 Vesey St., New York, NY 10007
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
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
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Ingersoll—Rand Pump Group, Dept. B—346, Washington, N.J. 07882
Jim's Pump Repair, 48-55 36th St., Long Island City, NY 11101
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Sims Pump Valve Co., Inc., 1314 Park Ave., Hoboken, NJ 07030
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
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
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Marine Moisture Control Co., Inc., 60 Inip Dr., Inwood, L.I., NY 11696
Marland Environmental Systems, P.O. Box 501, Great Falls, VA 22066

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, REVOLUTION INDICATOR EQUIPMENT
Crane Packing Company, 435 Regina Dr., Clarksberg, MD 20734
EG&G Sealol Engineered Prod. Div. Marine Products Group, Warwick, RI 02888
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 Hydronautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA. 93116
Cockatoo Dockyard Pty. Ltd., P.O. Box 1139, North Sydney, NSW 2060, Australia TX: 72086
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
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
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
Genstar Marine, 10 Pemberton Ave., No. Vancouver, B.C., Canada V7P 2R1
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
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
Hyundi 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
Kone Corp. P.O. Box 6 SF-05801 Hyvinkaa, Finland
Paul Lindenau GmbH, & Co., Schiffswerft u. Maschinenfobrik, 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
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
Promet Marine Services Corp., 242 Allens Ave., Providence, RI 02905
Rauma-Repola, 26100 Rauma 10, Finland
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
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

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

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

SMOKE INDICATORS
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, NJ 07928

STUFFING BOXES
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Smith-Meeker Engineering Co., 157 Chambers St., New York, N.Y. 10007

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

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

TANK LEVELING INDICATORS
American United Marine Corp., 5 Broadway, Route 1, Sagas, MA 01906
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
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
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, MD 21202
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
Crawford Fitting Company, 29500 Solon Road, Solon, OH 44139
Baily, 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
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
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Nupro Co., 4800 E. 345th St., Willoughby, OH 44094
Parker Hannifin Corp. Rotary Actuator Div., 9948 Rittman Rd., Wadsworth, OH 44281
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
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, NJ 07928
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-Donmark 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
Marine Moisture Control, 60 Inip Dr., Inwood, NY 11696
Marland Environmental Systems, P.O. Box 501, Great Falls, VA 22066
MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

WEATHER CHART RECORDERS
Alden Electronics, 1145 Washington St., Westborough, MA 10581

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., P.O. Box 4454, W. Biloxi, MS 39531
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

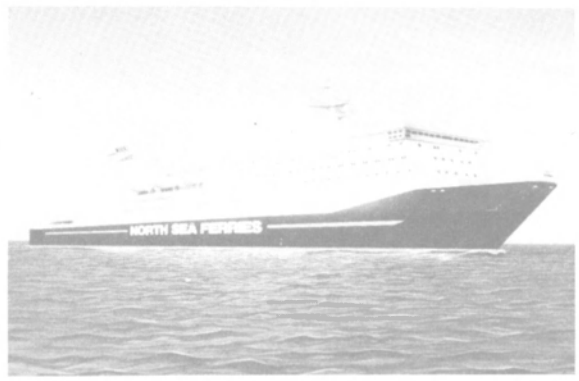
WIRE AND CABLE
AMP Special Industries, P.O. Box 1776, Southeastern, PA 19399
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, IL 60076
Atlantic Cordage Corp., 60 Grant Ave., Carteret, NJ 07008
Delco Wire & Cable, Inc., 257 Rittenhouse Circle, Keystone Industrial Park, Bristol, PA 19007
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

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

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
Smith & McCloken, 153 Franklin St., New York, NY 10013

Nippon Kokan Awarded Contract To Build Ferry For European Consortium



Artist's rendering of 1,250-passenger ferry that will be built by Nippon Kokan for use by North Sea Ferries.

Nippon Kokan (NKK) recently received a contract from a Dutch/U.K. company to build a passenger/cargo ferry, the first such European order for the Japanese yard. The keel for the 1,250-passenger, roll-on/roll-off vessel will be laid at NKK's Tsurumi Works in the spring of 1986.

When completed in 1987, the 30,000-gt ferry will be operated by North Sea Ferries, a joint venture of Royal Nedlloyd Group N.V. of the Netherlands and the Peninsular and Oriental Steam Navigation Company of the U.K., between Hull in England and Europort in Holland.

The contract was awarded by Hollandse Vrachtvaart Maatschappij B.V., a subsidiary of the Nedlloyd Group. A sister ship to operate on the same run will be built by the Govan shipyard in Scotland.

The ferries will have an overall length of 587 feet, beam of 83 feet, depth of 94 feet, and draft of 20 feet. Four diesel engines driving two shafts will have a total output of 26,000 bhp, providing a service speed of approximately 18.5 knots.

Schrader Bellows Introduces New Line of Mini-Valves

A series of five miniature pneumatic valves has been introduced by the Automation Products Group of Schrader Bellows, including four spool valves and one poppet valve.

The new Directair® miniature valve series features high flow capacities (.127 C_v to 1.0 C_v), while still maintaining smallness for use in compact areas and the ability to interface with computerized equipment. In addition, the smallness of the valves makes them less expensive.

The series includes Directair 1 body-ported, poppet and spool valves; Directair 2 sub-base mounted and pipe ported spool valves; and Directair 4 body-ported, sub-base and manifold mounted spool valves. The valves are available in port sizes 10-32 UNF and ⅛-inch and ¼-inch NPT. Actuators for the entire series can be solenoid, pilot, mechanical or manual.

The new Directair miniature poppet valve is in response to the demand for ultra-small, efficient and reliable valves. A range of actuators for mechanical or manual use is available.

For literature containing full information on the Directair miniature valves from Schrader Bellows,

Circle 27 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.

POSITIONS IN SHIP REPAIR YARD

Well established South Hampton Roads area shipyard is currently seeking resumes from qualified candidates for several positions. Candidates must have pertinent experience in ship repair, with background in Navy ship repair preferred. Positions include:

- Purchasing Supervisor
- Buyer
- Subcontracts Assistant (Electronic)
- Estimator
- Production Planner/Scheduler
- Ship Superintendent
- Q.C. Inspector
- NDT Technician
- Test Director
- Testing Technician
- Program Assistant

Send resume together with salary history and requirement in confidence to:

Maritime Reporter and Engineering News
Box 716, 118 East 25th Street
New York, New York 10010

WANTED
ELECTRICAL ENGINEER

Progressive Northeastern Wisconsin Shipyard is in need of an electrical engineer. Prior experience with government contracts and familiarity with military specifications required. The proper candidate should have a degree in electrical engineering, from a major university with a minimum of 3-5 years shipbuilding experience. This position would entail an active participation with production personnel.

We offer an attractive salary and benefit package including profit sharing. Qualified applicants should send a resume and salary history to:

Personnel Manager
Peterson Builders, Inc.
101 Pennsylvania Street
Sturgeon Bay, Wisconsin 54235

"AN EQUAL OPPORTUNITY EMPLOYER M/F/V/H

Purchasing Agent position wanted. 20 Yrs. Exp. in buying for military & commercial vessels. Aggressive, non-prima donna type individual, who doesn't watch clock, takes no lunch or gratuities.

Box 601 Maritime Reporter
118 East 25th St. New York, 10010

PORT ENGINEERS

Responsible for the day-to-day supervision to insure the efficient operation of tug/barge units in US coast wise trading. Responsibilities include administering the maintenance and repair of hulls, machinery and equipment, and repair specifications for voyage repair and annual dry docking and overhaul. Position requires 3-6 years marine operation experience and handling shipyard repair and negotiations. Slow and high speed diesel experience and knowledge necessary. Travel required. Send replies to: Box 515, Maritime Reporter, Engineering News, 118 East 25 Street, New York, N.Y. 10010

PRODUCTION ENGINEERING MANAGER

Our company, a designer and manufacturer of a broad line of switchboards, thyristor drives and associated components for the Navy and industry, has an immediate opening for a Production Engineering Manager.

The selected candidate will direct the design of our product line in our modern facility. Applicant must possess a BSEE degree from an accredited school. Experience with naval shipboard electrical equipment is highly desirable.

Qualified individuals are encouraged to submit their resumes, including salary history, to: Box 715, Maritime Reporter, 118 East 25th Street, NY, NY 10010.

Mt. Hope & Narragansett Bays
DOCKING & COASTAL TOWING
All Diesel Fleet
PROVIDENCE STEAMBOAT COMPANY
1 India St., Providence, RI 02903
401-331-1930

CACI

Integrated Logistics Support Product Development

ILS *PROPOSALS PROGRAMS PLANS PROCEDURES*

Program Management and Integrated Logistics Element Deliverables in Direct Support of Shipbuilding Contracts Including:
• LSA • FOMIS • PMS/RCM
• Provisioning • Technical Publications

CACI, INC.-FEDERAL: 4525 E. HONEY GROVE RD., BLDG. 2
VIRGINIA BEACH, VIRGINIA 23455. TELEPHONE (804) 460-8210

BROKERS OF MARINE TALENT
2200 6th Avenue Seattle, WA 98121 (206) 343-3307

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

313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

STOP

DESTRUCTION OF TIMBER and STEEL MARINE PILINGS WITH PILE-GARD

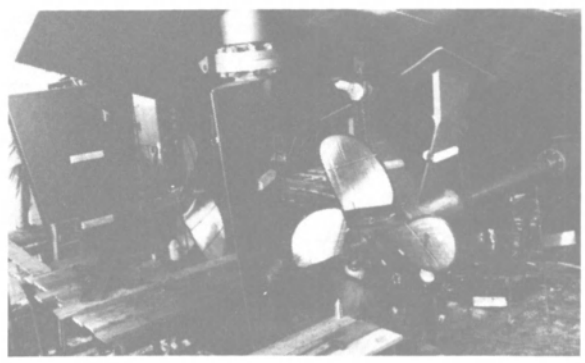
A patented encapsulation system provides an alternative to expensive pile replacement and costly downtime caused by marine borer damage to timber and corrosion to steel piling. Call for complete literature.

TOLL FREE 1-800-241-0240

Pile-Gard

OSMOSE MARINE DIVISION
P.O. DRAWER 0 • GRIFFIN, GA 30224

Lips Propellers Power Tanker 'Eastern Sun' —Literature Available



Twin four-bladed Lips propellers drive the most recent addition to the fleet of Sun Refining and Marketing Company, the coastal tanker Eastern Sun delivered recently by Jeffboat, Inc.

To meet the demands of the coastwise trade, the propellers (shown above) were cast of Cunial, Lips' proprietary nickel/aluminum/bronze alloy that meets or exceeds the requirements of American Bureau of Shipping Grade IV. The alloy is corrosion- and abrasion-resistant, as well as being easy to repair.

Each propeller is 9 feet 2 inches in diameter, has a blade area ratio of 0.505, and a mean pitch of 88.5 inches to apply the 2,400 bhp developed by each of the vessel's two EMD 8/645E6 diesel engines.

The Eastern Sun will carry some 25,700 barrels of products along the East Coast of the U.S.

Lips Propellers, headquartered in Chesapeake, Va., is a propeller manufacturing and repair company serving vessel owners and operators with units precisely fitted to their needs.

For further information on Lips,

Circle 54 on Reader Service Card

New Floating Drydock Arrives At Sociber Facility In Valparaiso

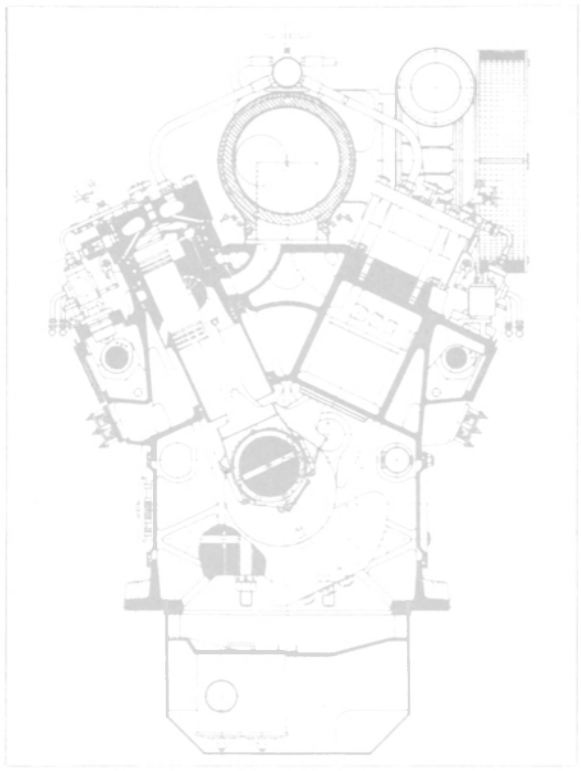
The Valparaiso III, a new floating dock of 10,000 tons lifting capacity that can handle ships of up to 30,000 dwt, is shown above arriving at Valparaiso, Chile, after being towed 240 miles by three tugs from ASMAR's Talcahuano yard where it was built.

The new drydock has an overall length of about 548 feet, length over keel blocks of 496 feet, width between wing walls of 85.6 feet, maximum docking draft for ships of 24.6 feet, and keelblock height of 5 feet.

The new dock, which was designed by Senermar of Spain, is owned and operated by Sociber Ltd., a joint venture company involving ASMAR and Empresa Nacional Bazan of Spain.

PROPULSION UPDATE

Wichmann Reports On First Year Of WX28 Engine Operation



Cross section of Wichmann's WX28V engine.

A/S Wichmann of Norway reported the first WX28, a V-8 heavy-fuel engine, passed its first 12 months of operation earlier this year. The engine, which has a maximum continuous rating of 3,000 hp at 600 rpm, has now logged a total of 7,000 operating hours on board the M/V Bommeloy. In addition to the operation of the WX28 on board the Bommeloy, extensive heavy fuel tests have been carried out on a 4-cylinder WX28 engine on a testbed.

The operation of these two engines has demonstrated that the WX28 satisfies the heavy demands and stresses placed on the engine. The prototype V-8 on board the Bommeloy has not had any unanticipated breakdowns during its first year of operation.

An inspection performed on the valveless-turbocharged-medium-speed engine revealed practically no cylinder wear. Clean ports and a clean combustion chamber indicated effective scavenging and combustion. The heavy fuel tests on the 4-cylinder WX28L4 show cylinder wear well below 0.02 mm per 1,000 operating hours, a wear giving a liner lifetime of a minimum of 40,000 hours.

The WX28 has a cast iron piston skirt with a steel piston crown. The skirt is equipped with a shrunk-on bronze sleeve. Bronze is an excellent bearing material, and the piston skirts look new after one year of operation. The piston crowns have hardened ring grooves, and the groove height was well within the tolerances for a new crown.

The piston is equipped with three compression rings at the upper end of the piston. Ring No. 1 is a plasma-free-rotating ring, No. 2, a chrome-plated-free-rotating ring, and No. 3, a fixed-cast iron ring with a special gas-tight joint. The ring grooves were clean upon inspection, and there was no fouling. The ring wear on the V-8 on board the Bommeloy was so minor accurate estimates on ring lifetime are not possible. Heavy fuel tests on the L4 indicate, however, an interval of 8,000 operating hours between ring renewals.

The oil scraper ring is located at the bottom end of the piston and is working below the ports in the cylinder liner, where the liner has no wear. No wear was observed on these rings.

The engine has separate cylinder lubrication from a hydraulically operated cylinder lubricator. The lubricator is essential in reducing cylinder and ring wear, as well as keeping them in excellent condition.

The WX28 differs from earlier Wichmann engines with regard to the auxiliary blower. The engine has a fan (radial compressor) operated hydraulically with oil from the engine's lubricating oil system. Hydraulic operation allows the blower speed independence of engine speed, which gives greater flexibility for adjustments. The system has worked well and has proved reliable and simple.

The turbo charger, main bearings, cylinder cover and fuel injection systems have all been functioning excellently, both on the V-8 aboard the Bommeloy and on the L4 on the test stand.

According to Wichmann, the first year of operation of the WX28 has been a success. The V-engine has had several operating profiles conducted, with periods of full power, part load and frequent maneuvering. No problems have been reported of any kind, and inspection of the cylinders and the pistons show a clean engine with optimal conditions in both the cylinder and the combustion chamber.

For further information, including a complete detail-filled brochure,

Circle 51 on Reader Service Card

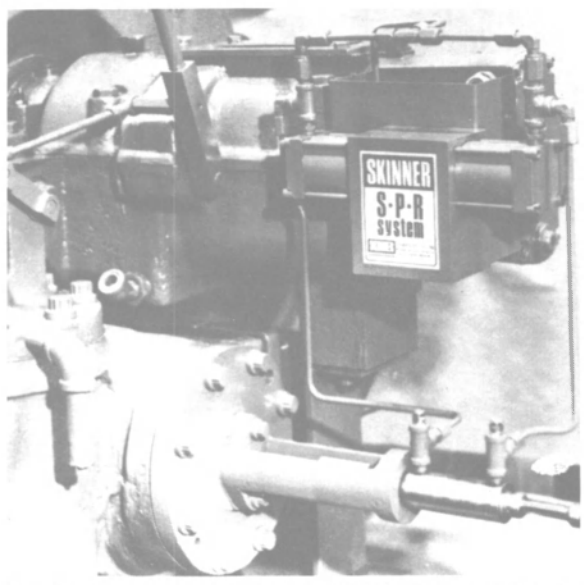
Hydraulic Governor Valve Control Surpasses Initial Expectations

A year after its introduction by the Power Division of the Skinner Engine Company, Erie, Pa., the first hydraulically actuated governor valve control for controlling steam turbine speed has performed even better than initial expectations. Data gathered from dozens of installations around the country reveal a record of unsurpassed economy, adaptability and dependability.

The Skinner SPR™System—powered by the Woodward TG-13 constant speed governor—requires fewer adjustments following initial start-up than comparable governor valve controls because it is a closed system with no mechanical wear points. It instantly corrects variations in pre-set turbine speed without the "hunting" for correct speed found in standard mechanical linkage controls.

The SPR system is free from the shock loads and backlashes which can cause the levers, arms and pins of mechanical systems to weaken or break prematurely. The system's elimination of speed correction turbulence also helps extend the life of the governor valve, cage and stem, and the absence of any mechanical linkage reduces maintenance costs.

At slight underspeed or overspeed conditions, the movement of a rotary actuator in the SPR system initiates a chain of events in the hydraulic system which opens or closes the steam inlet to provide immediate response to speed variations. The Skinner SPR system also produces a substantial increase in the power available at the governor valve.



The Skinner Engine Company's SPR™System is said to be the first hydraulically actuated governor valve control for steam turbines.

The Skinner SPR system is a retrofit package made for all popular types of single stage steam turbines. It is presently available in configurations for Coppus, Elliot and Terry turbines with others available upon application.

For more information and free literature on Skinner's SPR system,

Circle 52 on Reader Service Card

Monarch Introduces New Pistol Grip Portable Tachometer

Monarch Instrument of Amherst, N.H. has introduced a new convenient non-contact optical tachometer that is packaged in a pistol grip configuration. The new instrument, called PHASAR-TACH, measures rotational speed over the range of 50 to 20,000 rpm to an accuracy of +/ -1 rpm. Speeds are measured by aiming the instrument at a single reflective marker on the rotating object and reading the displayed speed directly in rpm. Speeds can be measured at distances up to three feet and angles up to 45 degrees from the reflective target.

Two models of PHASAR-TACH are available, the PHASAR-LCD featuring a liquid crystal display, both equipped with an on-target indicator. Both models are powered by four "AA" batteries accessible by lifting the hinged top cover of the instrument.

For those applications where the operator needs both hands free, PHASAR-TACH may be latched in the 'on' mode by means of a locking push button on the pistol grip trigger, and mounted on a standard ¼-20 threaded bushing at the base of the handle.

For more information on the new pistol grip tachometer from Monarch Instrument,

Circle 53 on Reader Service Card

Fairbanks Morse Training Center Offers Finest In Hands-On Diesel Engine Service Training

The recently completed Fairbanks Morse Diesel Training Center headquartered in Beloit, Wisc., is designed to give all Fairbanks Morse customer operating and service personnel the finest in hands-on training in service and repair of Fairbanks Morse Opposed Piston and Colt/Pielstick engines. (It also provides special training programs for US Navy personnel from around the world).

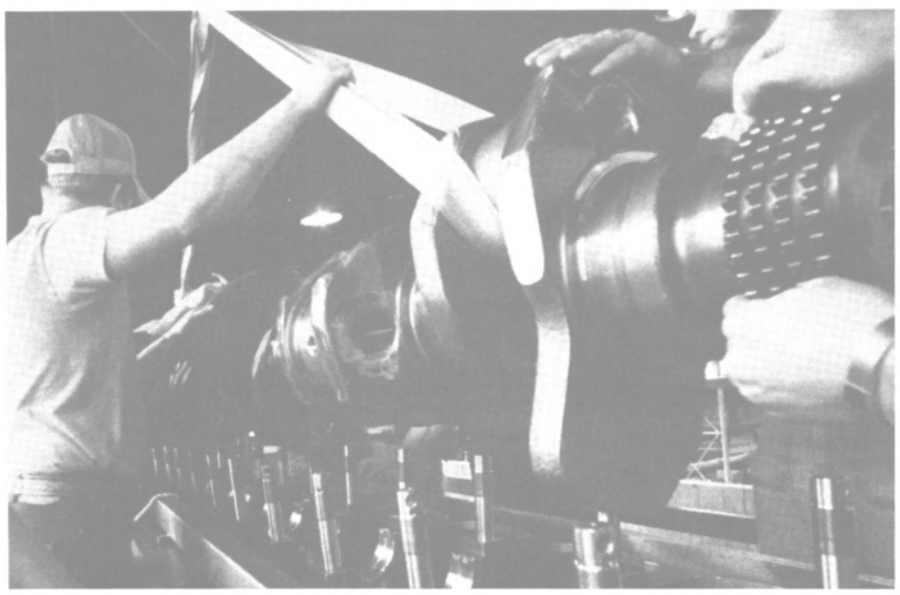
The new Fairbanks Morse Training Center is one of the most modern facilities of its type in the industry.

For training, the school has two complete engines installed along with working models of major engine systems and components for hands-on instruction in tear down and inspection, repair and reassembly. In addition, sound-proof classrooms are equipped with the most modern audio visual and video tape equipment. Specially prepared video tapes covering critical maintenance procedures are used throughout the training program to help students better understand and perform proper engine maintenance.

Training programs for the Fairbanks Morse OP Engine and the Colt/Pielstick Engine are usually one or two weeks in length depending upon the degree and depth of training desired. All courses are tailored to the specific requirements of each individual customer and are conducted by a skilled staff of Fairbanks Morse training instructors with assistance from manufacturing, research and engineering personnel. After completion of their training, customer trainees are awarded a Diesel Training Center Certificate verifying the fact they have completed the prescribed course.

For more information on the Fairbanks Morse Training Center,

Circle 43 on Reader Service Card



As part of hands-on instruction, students replace a crank shaft in a Fairbanks Morse Opposed Piston Engine installed at the school.

Flight Systems Introduces Model 995 Diesel Monitor

Flight Systems, a manufacturer of electronic engine protection systems, has introduced the Model 995 Diesel Monitor—the "Demon."

The Demon is a rugged, reliable and cost-effective method of protecting a diesel from destructive and expensive engine failure, utilizing advanced solid-state circuitry to react to potential problems before they occur—without false alarms or shutdowns.

Designed primarily for 4, 6, and 8-cylinder applications, the Demon monitors (1) idle range oil pressure; (2) power range oil pressure; (3) power range coolant pressure; (4) RPM; (5) two independent temperature channels; and (6) an undedicated auxiliary channel for a wide variety of customer selectable options. Additional features include "Black Off" pre-overspeed warning, 12V/24V operation, built-in fault indicators that remain lit after trip to aid problem diagnosis, provisions for remote indication, switch-programmable alarm/shutdown options and "cast-case" construction with internal electrical connections for harsh environment and marine applications.

The Demon can accept RPM input from magnetic pickups, tach generators or alternator outputs.

For more information on the "Demon" diesel monitor from Flight Systems,

Circle 30 on Reader Service Card

New Technical Bulletin Now Available From Ferrous Corporation

Ferrous Corporation, Bellevue, Wash., manufacturer of FE-4 Marine Grade and FE-6 Diesel Combustion Catalyst is offering a new technical bulletin titled "User's Guide to Diesel Fuel Additives." This bulletin helps identify fuel problems and discusses the use of chemical additives as possible solutions.

Ferrous notes that no one additive will cure every problem, therefore one must identify the problem and treat that specific condition. The bulletin reviews the three fuel problem areas: those occuring prior to burning (pre-flame); those that occur during burning (flame); and those that come after the burn (post-flame).

An easy to use chart is included which lists 14 diesel fuel additive types and describes the primary function and secondary effects of each.

For your copy of "User's Guide to Diesel Fuel Additives,"

Circle 34 on Reader Service Card

British-Made Sea Star Blender Cuts Fuel Costs With Heavy And Light Oil Mixture

The British-made Sea Star Blender is said to substanially reduce the generator fuel costs of seagoing vessels—it blends the relatively cheap heavy oil used by the main engines with the more expensive light oil that is normally used by generators. The blender achieves an average proportion of 70:30, to provide a mixture which can be supplied to the generator engines. The mix is automatically adjusted according to the generator loading. Light loadings require a higher proportion of light oil, while heavy loadings permit a higher proportion of cheaper, heavy fuel.

The blender, which is an in-line system, supplies fuel directly to the generator engines and avoids the risk associated with conventional blender units of the two fuels settling or stratifying in the blended fuel supply tank. Entirely self-contained, the unit requires no additional pumps, heaters or filters.

Heavy and light oils are introduced and constantly circulated within the unit to ensure thorough, continuous mixing and a high degree of filtration (an automatically operated viscosity control unit is included).

If a malfunction should occur, the blender automatically shuts down and switches the fuel supply to light oil. An alarm goes off, and diesel engine operations continue uninterrupted.

For a free brochure and further literature on the Sea Star Blender,

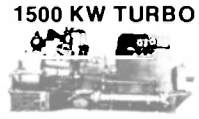
Circle 42 on Reader Service Card

MARINE EQUIPMENT FOR USE ASHORE OR AT SEA!

750 KW A.C. TURBO GENERATORS

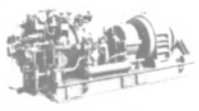
Ex-USN — GEI-16846 — type FN3-FN24 — seven stage — 10033 RPM — typical serial # 49351 or 61718 Single helix reduction gear — 10033/1200 RPM — type S-187 GENERATOR: 750 KW — 6-pole 0.8 P.F. — 450/3/60/1200 EXCITER 10 KW — 120 volts. Steam inlet flange 2½" — exhaust 17⅜" X 25⅛" rectangular. Overload 25% 2 hours. Units can be upgraded to 1250 KW for USN applications. Complete with throttles, etc. 8 Available

1500 KW TURBO GENERATOR SET



11-Stage turbine — FN4 — 8145 RPM — 3" steam — 525# — 825° TT. GEARS: 195-8145-1200 RPM. GENERATOR 1500 KW — 450/3/60/1200 RPM — 2405 amps — 0.8 P.F. EXCITATION: 13.2 KW — 120 volts DC. Weight 36,000 lbs — exhaust flange 18" X 38"

L.P. 450KW A.C. TURBO GENERATORS



Suitable for waste heat turbo generators on motor ships

175 PSIG — D&S — 27½" vacuum. GENERATOR: Westinghouse 450KW — 563KVA — 450/3/60—1200 RPM. GEAR 6097/1200 RPM. TURBINE 175 lbs/D&S—27½" vacuum. Other pressures & temps. 250# @ 40°C—27½" vacuum. Turbine serial #7801-7802. OAL 13' 1-3/16"—OAH 5'—OAW 5'⅜". Total dry wt. 17,100 lbs. Plans on request

TURBINES/ROTORS REDUCTION GEARS

ROTORS: DRU-618M-73 — 700 KW — 10938/1200 RPM — GEI 90755 — 850° DIAPHRAGMS: Labyrinth — bearings GEAR: S-432 — Form B — 10938/120

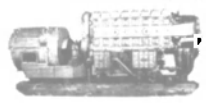
G.E. ROTORS: 600KW — 700KW — 618M — 6-stage — 10022 RPM — G.E.I. 34822. GEAR: S-277A — 10022/1200 RPM — MARAD units.

G.E. ROTOR: DRU-318 — MRI non-condensing — 10938/1200 — 24 lbs

DeLAVAL TURBO GENERATOR SETS: ROTOR 7-stage class CD — 5910 RPM. REDUCTION GEAR type KD — 5910/1200 — double helical. Newport News hulls 499-504. Some Sparrows Point hulls.

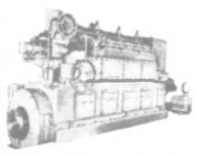
DeLAVAL 1000 KW TURBO GENERATOR SET ROTOR: 1442 HP — Class G.J.N. — 10009 RPM — 9-stage

300KW GM 8-268A 120/240 DC DIESEL GENERATOR SET



ENGINE: GM 8-268A — 6 x 7 — 1200 RPM. Heat exchanger cooled — equipped with heavy duty coolers. Just overhauled and can be seen running. Good condition

NEW CLARK 500 BHP DIESEL



500 BHP @ 400 RPM. 4-Cylinder straight inline type — 12" X 16" — 2-stroke single acting — liquid cooled — direct reversible — CW rotation. With standard shaft-connected starting air compressor. Wt. 25,000 lbs — 228" long — 98" wide — 132" high. Designed for heavy duty, rugged use, its extreme simplicity will result in lower operating and maintenance costs

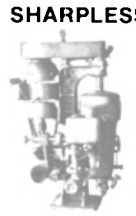
MATCHED PAIR 900 HP GM 12-567A DIESELS W/ FALK REVERSE & REDUCTION GEARS

ENGINE: GM 12-567A 8" x 10" 2-cycle V-type — 747 RPM — electric starting. GEAR: Falk Airflex reverse & reduction — 2.48:1 forward — 2.52:1 reverse. From USN LST

UNUSED FARRELL-BIRMINGHAM MAIN PROPULSION REDUCTION GEAR

Single reduction 1.81:1. Will handle up to 3200 HP input at 402 RPM. Complete with hydraulic coupling. Port

SHARPLESS OIL PURIFIER



225 GPH — type M85-34-5-23-BY-44 — bowl speed 17,000 RPM — 2 HP — 440/3/60/3400 RPM. Reconditioned

$3950

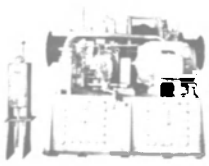
ALMON JOHNSON CONSTANT TENSION LST STERN ANCHOR WINCHES WITH ALL CONTROLS

Drum capacity 900' of 1⅜" wire. Gypsy performance 12,000 lbs @ 125 FPM. OAL 12' — CAW 10'1". Driven by 50 HP 230 VDC 181 amp motor. 2 Available with controls

PERFORMANCE

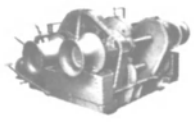
	Max. Control	Auto. Tension Control	
Line Speed	100,000 lbs	26,000 lbs	3000 lbs
Line Tension	10 FPM	Stall	400 FPM

50HP VARIABLE SPEED ELECTRO-HYDRAULIC CARGO WINCH



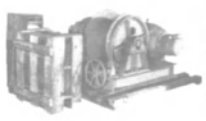
Made by Lakeshore. DUTY 7400 lbs. SLP — 220 FPM — drum size 24" diameter — 15" wide. Complete with ratchet & pawl. CAPACITY: 600' of ¾" wire. MOTOR: 50 HP — 440 volts — 66.3 amps — 3-phase 60 cycle — squirrel cage — 1200 RPM constant — Frame CC-445-N

7X10 AH&D 10,000 LB CARGO WINCHES



2-Speed single drum — reverse throttle operation. LINE PULL: low gear 10,000 lbs — high gear 5000 lbs. LINE SPEED: low gear 125 FPM based on 1st layer of ¾" diameter rope — high gear 250 FPM based on 1st layer ⅝" diam. rope. DRUM: 26" diam. — 20" long — 26" flange diam. Rope capacity of drum: ⅝" diam. rope in 6 layers — 650', ¾" diam. rope in 8 layers 1200'. Steam pressure at throttle 115 lbs. Operating weight 6450 lbs.

GENERAL PURPOSE WINCH 3500 LBS AT 200 FPM



New — Unused — Ex-USN A.C. Motor drive — 25/12.5 HP — GE 440/3/60 — 40°C AB — 1750 RPM — Type KR — full load amps 32. Motor drives winch through Falk reduction gear. Has compression hand brake

LARGE STEAM TOWING ENGINE 9X10 TWIN ENGINE DRIVE

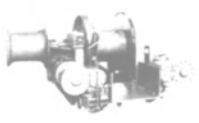
Air or Steam — 125/250 PSI

Heavy duty Clyde with 36" diam. X 51" Face single drum. Flanges 68". CAPACITY up to 2800' of 2" wire rope. Normal line pull 40,000 lbs @ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb pull from any layer. Equipped with level wind device. Approx wt 30,000 lbs. DIMENSIONS: 12'6" wide — 6'6" high. Write for details. ALSO AVAILABLE: Large towing ring — 36" diameter

12" X 14" STEAM MOORING WINCHES

Steam Or Air Driven with foot brake & declutchable gypsy head 20,000 LBS @ 100 FPM — FIRST LAYER

ALSO HANDLES 16,000 LBS @ 150 FPM OR 50,000 LBS @ 8 FPM



Drum will stow 1500' of 1" wire in 9 layers. Steam inlet 3" — 4" exhaust — 171 PSI working pressure. BASE DIMENSIONS: 6' X 6'3" — overall 8'4" wide X 9' long. Mfg by Friedrich Kocks — Bremen, Germany. Remover from ARCO "Challenger". ALSO IN STOCK — 12" X 14" Double gypsy unit. Can be demonstrated running

UNUSED STEAM WINCH FOR MOORING & CARGO SERVICES

Lidgerwood 10X12 — with Morse controls. 10,000 lb. line pull — declutchable gypsy — hand compression brake

SMALL 4 X 6 WINCH

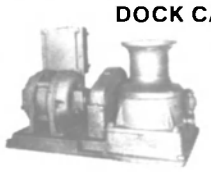
STEAM OR AIR

DRUM: 20" Diameter X 23" width — 8" flange. Rated 2000#/90 FPM on 3rd layer of rope. 125# Steam or 3500 @ 90 FPM 150 PSI steam. 13,000 lb static load. Fitted with ratchet & pawl so drum can be locked in off and on position

HEAVY DUTY 2-SPEED DOCK CAPSTANS

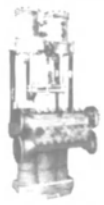
For tugs, docks, etc. Suitable for manila or wire rope because barrel is ridged. 40/40 HP — 1200/600 — 24,000# @ 30 FPM — 12,000# @ 60 FPM. Barrel size 22" diameter by 24" high — with controls.

DOCK CAPSTANS



Spool 10" diam. X 4". 15 HP — 220/440/3/60. 10,000 lbs @ 40 FPM. 48" Long — 32" wide — 28" high

DEAN BROS. ALL-BRONZE STRIPPING PUMP BILGE & BALLAST 12 X 10 X 18



Max. pressure 730 GPM @ 200 lbs — steam end 250 lbs. Serial 67735. OA Dimensions: 43" wide — 39" deep — 104" high. Complete with spare unused bronze valve deck & spare liquid lines piston, steam end spares, rods, etc. This pump ready for immediate use — equal to new — little if any use.

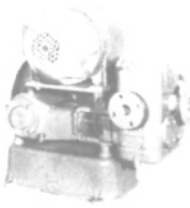
WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP

1400 GPM @ 110PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction — 10" discharge — 2½" steam — 4" exhaust. Overall width 6'8" — overall height 9'1½" — depth 3'9½". Wt. approx 10,000. Reconditioned 1980. ABS — ready to go.

HIGH PRESSURE HULL CLEANING PUMP

Mfg by Hypro — type L — 25 HP — 220/440/3/60 — Frame 284T. Pump capacity 25 GPM @ 500 PSI — 600 RPM

DEMING MOTOR DRIVEN RECIPROCATING PUMP



For sanitary and potable water use. 30 GPM @ 90 lbs. 190 RPM — 2" suction — 1½" discharge. GE motor — 2 HP — 440/3/60/1735 RPM

U.S. NAVY FANS

25000 CFM — A25A4W6 — 42½" ID — 52" high — 25/14 HP — 440/3/60 — 1200/900 RPM — 36/24 amps. 4 Available

3000 CFM — A3A4W6 — 21¼" ID — 29" high — 3 HP — 1150/1750 RPM. Mfg. by Joy. 4 Available

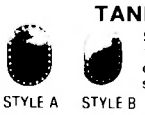
5000 CFM — A5A4W6 — 23½" ID — 29" high — 4 HP — 1150/1750 RPM. Mfg by Joy. 1 Available

12000 CFM A12AX6 Explosion-proof — 29½" ID — 37½" high — 10/3 HP — 1800/1200 RPM — Frame 254U — group D Reliance motor

ALSO MARAD FANS

40665 CFM — size 43 AF — 60 HP

TANK TOP COVERS



STYLE A STYLE B

Steel — with 12mm (½") cover and 19mm (¾") flange. Gasket between top cover and flange. Mounting bolts are stainless steel

Style A has flush deck mounting flange with 24½" diameter bolts. Style B has extended deck mounting flange with 20¾" diameter bolts

21" & 24" I.D. MAN-WAY 3-DOG HATCHES

18" Coaming. Available with T socket-wrench or removable handwheel (can be welded in place) for top opening. Spring-loaded lid w/inside handwheel. Coaming 12mm thick — top 11mm. Bosmet drawing #67/56

QUICK OPENING HATCH

Handwheel top & bottom. 4-Dogs. 16"X24" with 5" coaming. Drawing #60-40

4-DOG GENERAL PURPOSE 15"X23"X5" HATCH

QUICK-ACTING 4-DOG HATCHES

Heavily constructed. Handwheel operated. Handwheels top & bottom. Size A: 27" X 21" w/12" coaming. SIZE B: 31"X31" w/12" coaming. For ocean-going barges, etc.

TANKER EXPANSION TRUNK

36" Diameter — 26" coaming — 7-dog drop-bolts. Drawing 36/26

20" ROUND HATCH

18" Coaming — 3 brass dog drop bolts. Coaming 12mm thick — top 11mm. Bosmet #68.

36" X 48" — 24" X 36" DECK HATCHES

Has 10 brass dogs — 18" coaming. Coaming is 12mm — top is 11mm.

FLUSH HATCHES 24" X 30" 30" X 30"

4-Dogs bottom — T-key top opener. 4" Maximum coaming. Coaming 8mm thick — top 7mm.

NEW 18" & 24" HATCH COVERS

Flush mounting watertight hatch with machined steel mounting ring. T-Handle is recessed and hand tightens against a strongback across mounting ring. 18" (60 lbs) — 24" (100 lbs)

NEW 3-DOG WEATHERTIGHT DOORS 26" X 78"

NEW QUICK-ACTING WHEEL OPERATED WATERTIGHT DOORS

6-DOG 5/16" Steel frame — ¼" panel — 26" X 48" — 30" X 60" — 30" X 69" — 30" X 54"

QUICK-ACTING LEVER-OPERATED 8-DOG WATERTIGHT DOOR

EXTRA LARGE EXTRA HEAVY DUTY PANAMA CHOCKS

Clear opening 16" X 20" — 10" radius — 36½" high — 40½" long. For extra large tankers or heavy dredges where 1½" wire or eye-spliced loop must pass through chock. VLCC type from 250,000 ton tankers

INQUIRE ABOUT ITEMS NOT SHOWN HERE

The BOSTON METALS Co.

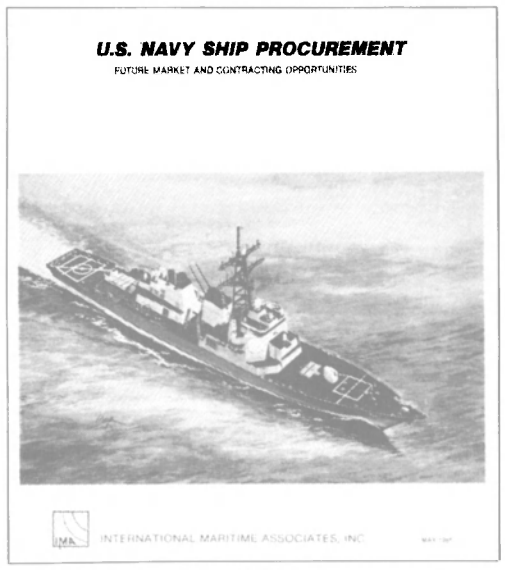
Marine Office And Warehouse

Scott & McHenry Sts.—Baltimore, Md. 21230—(301) 752-1077 TWX: 710-234-1632

NEW
Published May 1985

U.S. NAVY SHIP PROCUREMENT

A Thoroughly Professional Assessment Of The Future $40 Billion Annual Navy Market For Ships, Ship Systems, System Integration And Engineering Services



225 Pages + Updates

I. OVERVIEW OF THE BUSINESS
- Historical Pattern of Navy Ship Construction
- Market Drivers
- Impact of Technology
- Important Issues

II. INDUSTRY STRUCTURE
- Shipbuilders Involved in Navy Work
- Ship Systems Manufacturers
- Engineering Service Firms
- Contract Operators
- Summary of Recent Work Distribution

III. PROJECTED MARKET
- Future Spending Plans
- Projected Industry Impact
- Projected Geographical Impact
- Ship Construction Prospects
- Electronic Systems
- Ordnance Programs
- Mechanical Systems
- Engineering Services
- Ship Operation Contracts

IV. PROCUREMENT PROCESS
- Organization Structure
- Program Development
- Congressional Budget Process
- Ship Acquisition Process
- Recent Variants in Navy Procurement

V. CONTRACTING RULES AND PROCEDURES
- Federal Acquisition Regulation
- Bidder's List
- DOD Contract Types
- Source Selection Process
- Specifications
- Set Asides
- Buy American Requirements
- Defense Sharing Agreements

VI. POINTS OF MARKETING CONTACT
- Navy Contacts
- Shipbuilders
- Electronics and Ordnance Manufacturers
- Machinery and Ship Equipment Manufacturers
- Engineering and Design Firms

APPENDICES
- Navy Contract Awards for Electronics/Ordnance Systems 1983-1984
- Breakdown of Major Components by Manufacturer and Recent Ship Class
- Engineering Services and Design Contracts Awarded by NAVSEA and NAVELEX in FY 1984
- Detailed Projection of Navy Procurement and Research Budgets for FY 1986 and 1987

PRICE: $480.00 INCLUDING FOUR UPDATES

Updated Thru June 1985

U.S. NAVY SHIP OVERHAUL MARKET

A Thoroughly Professional Assessment Of The Future $6.8 Billion Annual Market For Navy Ship Maintenance, Repair And Alteration

180 Pages + Updates

I. OVERVIEW OF THE BUSINESS
- Market Drivers
- Government Owned Maintenance Facilities
- Commercial Ship Repair Industry
- Recent Work Distribution

II. OVERHAUL AND MODERNIZATION PLANNING
- Key Navy Organizations
- Types of Maintenance
- Maintenance Strategies
- Planning Ship Maintenance and Modernization
- Executing A Ship Overhaul
- MSC Ship Maintenance

III. PROJECTED MARKET
- Projected Ship Maintenance and Alteration Funding
- Projected Navy Ship Overhauls
- SRA's and Overhauls Scheduled for Private Sector
- MSC Repair and Overhaul Plan

IV. CONTRACTING POLICIES AND PROCEDURES
- General Ground Rules
- Contracting Methods
- Contractor Qualification
- Overhaul Contracting Process
- Subcontracting Rules
- Rules Applicable to Foreign Firms

V. DOING BUSINESS WITH THE NAVY
- Questionnaire Response Profile
- Profitability of Navy Ship Repair
- Future Market Opportunities and Planned Facility Improvements
- Performance and Selection Considerations
- Source and Management of Component Supply
- General Comments

VI. POINTS OF CONTACT
- Navy Contacts
- Ship Repair Firm Contacts

APPENDICES
- Detailed Description of Overhaul Planning Process
- Relevant DOD Contracting Forms
- Firms Holding Master Repair Agreements with Navy and/or MSC

PRICE: $480.00 INCLUDING FOUR UPDATES

BOTH REPORTS AVAILABLE FOR $750.00

Over 250 corporations, including the largest equipment manufacturers selling to the Navy, are now subscribing.

Available from:

International Maritime Associates, Inc.
1800 K Street, N.W. Washington, D.C. 20006
(202) 296-4615 ***Telex: 64325***

IMA

Tailor-made marine coverage. Imagining you have it could leave you out in the cold.

In the maritime world, your business is as individual as you are. So, doesn't it make sense that your insurance should be that way, too?

At Adams & Porter, we're known for custom marine coverage. First, we study your company from every angle, using our experts in your special area. Only then do we develop a plan that fits your exact needs. There's never any guesswork.

You see, with Adams & Porter, you're getting more than 75 years of experience behind every decision. And as brokers, we have the entire insurance marketplace from which to select just the right combination of coverage, price and security.

Whether your business is on inland waterways or on the high seas, you can feel secure that we have the specialized knowledge of your hull, cargo, liability and other marine as well as non-marine requirements.

In short, when you choose Adams & Porter, you can be sure your company has truly tailor-made coverage that won't leave you out in the cold. Adams & Porter Associates, Inc., 510 Bering Drive, Houston, Texas 77057-1408, (713) 975-7500. Also in New York and Bermuda.

Adams&Porter

We take the myth out of corporate insurance.

Circle 163 on Reader Service Card