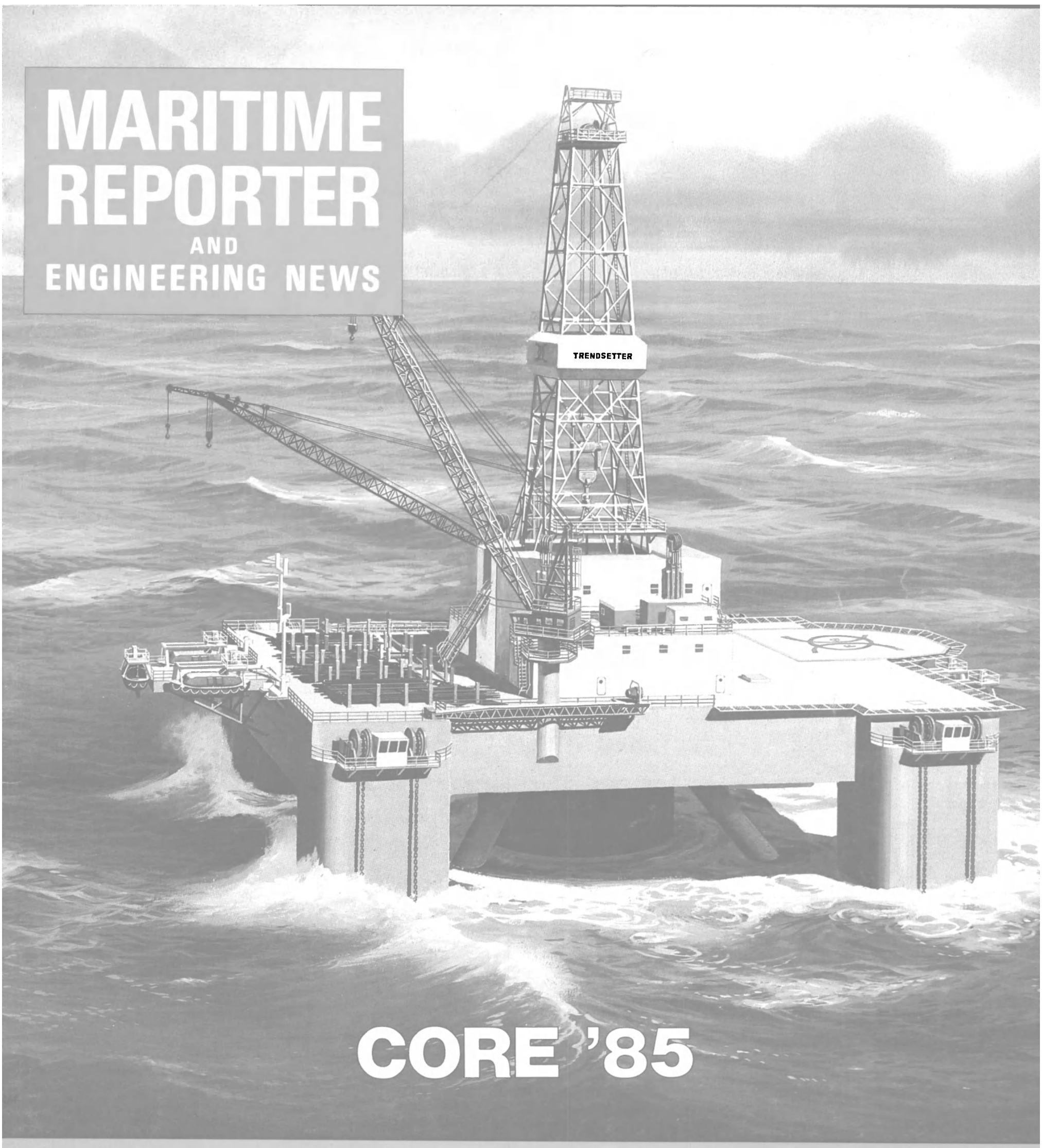
MARITIME REPORTER
AND
ENGINEERING NEWS



CORE '85

CORE '85 Preview
Canadian Shipyards Review
Outstanding Rig Designs

(SEE PAGE 4)

Friede & Goldman Trendsetter™ Rig

SEPTEMBER 15, 1985

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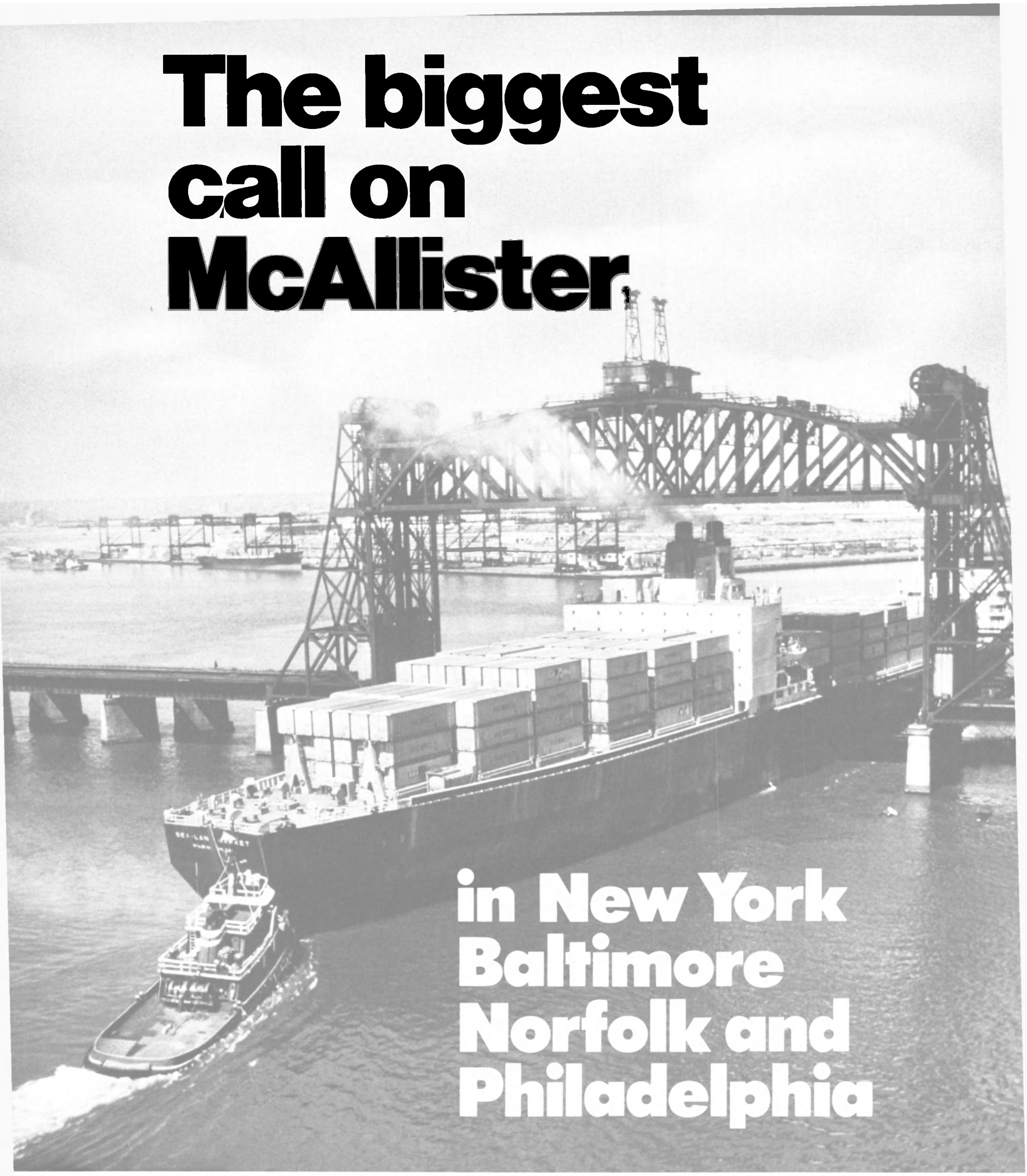

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ON THE COVER

$50-Million Contract Awarded Brown & Root To Construct Modules

After being awarded a $50-million contract, Brown & Root Construction Co. of Houston, Texas, chose the former 76-acre fabricating plant of PAR industries in New Iberia, La., as the site for building six fuel collection and transport modules to be used by Sohio Petroleum Co. and its partners in the Endicott area of Alaska. The modules will range up to 4,000 tons in weight.

Participating with Sohio, which will bear $1.1 billion of the estimated $2 billion cost of the Alaskan project, are Amoco Production, Arco Alaska Inc., Cook Inlet Region Inc., Doyon Ltd., Exxon Corp., NANA Regional Corp., and Unocal Corp.

According to Brown & Root, the new Port of Iberia plant will employ about 300 people by year's end; however, about 1,500 workers will be employed when the plant is in full operation in 1986 and 1987.

New 'Maintainer' Focuses On Cooling Systems And Turbochargers

Operation and care of engine cooling systems are examined in a new issue of the *Waukesha Maintainer*, a publication from Waukesha Engine that promotes proper operation and maintenance of all makes of gasoline, diesel and natural gas engines.

An additional article explains the principles of turbocharging and procedures for retrofitting turbochargers to naturally aspirated engines to increase power output.

For further information,

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MARITIME REPORTER and Engineering News

Editorial and Executive Offices
118 East 25th Street, New York, NY 10010
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Publishers: JOHN E. O'MALLEY, CHARLES P. O'MALLEY
Editorial Director: CHARLES P. O'MALLEY
Editor: ROBERT WARE
Senior Editor: THOMAS H. PHILLIPS
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Advertising Circulation and Sales Offices
118 East 25th Street, New York, NY 10010
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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
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France, Netherlands, Belgium — MR. ROBERT BROEKMAN
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L'Avant Seine
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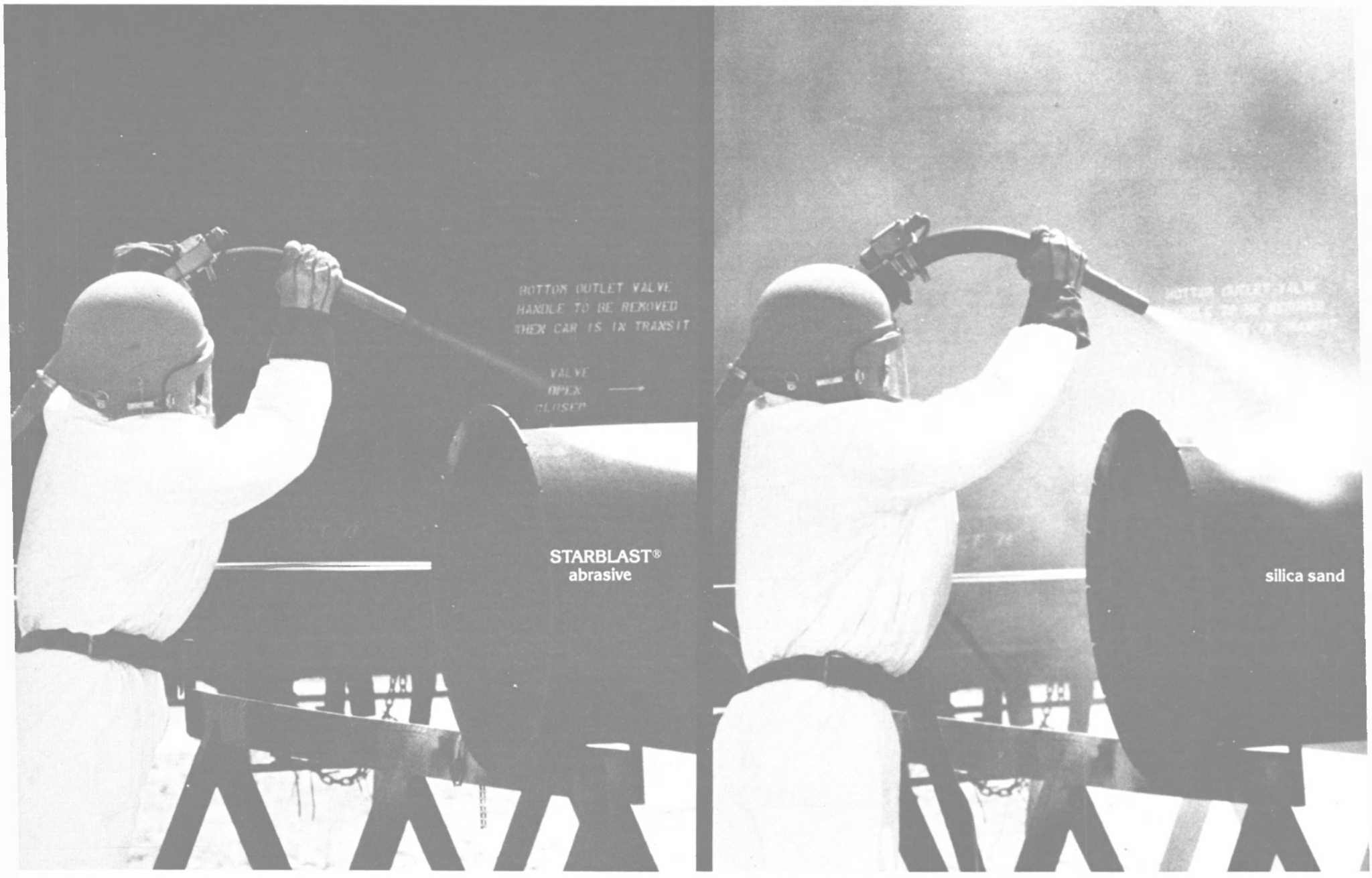

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MSC Announces FSS Award Totaling $30.7 Million

The Navy's Military Sealift Command has awarded a fixed-price contract totaling $30,709,896 to Bay Tankers, Inc., One Chase Manhattan Plaza, New York, N.Y., for the operation and maintenance of four T-AKR Fast Sealift Ships. Two of the ships will be based in Violet, La., one in Bayonne, N.J., and the fourth at an East Coast location still to be determined. The ships will be maintained in a four-day, ready-for-sea status to respond to military contingencies. The contract period is for five years beginning August 16, 1985.

Bay Tankers, Inc., was determined to be low offeror following competitive procurement. One hundred and fifty companies were solicited, and seven responded. The Military Sealift Command is the contracting authority.

Eight T-AKR ships comprise the Military Sealift Command's Fast Sealift Ships program, a Navy initiative designed to significantly increase the mobility and potential responsiveness of the U.S. Armed Forces. The 30-knot-plus ships will be berthed at various ports in the United States to provide the capability for fast sealift of military equipment and supplies from the United States to any overseas area of the world.

The conversion design for the 946-foot-long ships gives each of them roll-on, roll-off capability; heavy and medium-lift cargo handling equipment for a self-sustaining capability independent of a developed port facility; an emergency helicopter landing area; and side ports to facilitate rapid loading and unloading operations.

The U.S. Army will be the principal user of the Fast Sealift Ships, but the FSS, as they are called in the Navy, will be equally capable of transporting Marine Corps, Air Force and Navy equipment and supplies when necessary.

Periodic dock and sea trials will be conducted for each ship; and they will take part in major military deployment exercises. Last year MSC awarded a contract to Sea-Land Services, Inc. of Elizabeth, N.J., for the operation and maintenance of the first four of the eight ships.

MSC is responsible for providing the necessary sealift to rapidly deploy military forces overseas and sustain them for as long as operational requirements dictate. The Command also operates auxiliary ships that deliver supplies to Navy combatant ships while underway, oceanographic and survey ships, and tankers and dry cargo ships that deliver Defense Department cargo worldwide.

Owen And Richards Named Managers At Honeywell

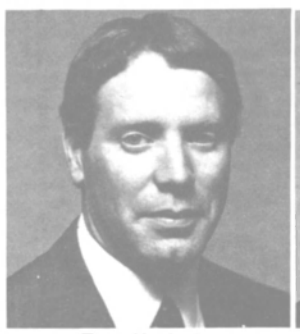
As part of an ongoing effort to strengthen its responsiveness to the offshore industry, Honeywell's Marine Systems Division has announced two new appointments in its offshore business.

John D. Owen was recently named systems business manager. Mr. **Owen** joined the offshore industry in 1970, and has held a variety of program management and engineering positions. The systems business area includes engineering services and offshore control and monitoring systems. This area has supported such innovative offshore programs as the Exxon Lena Guyed Tower installation.

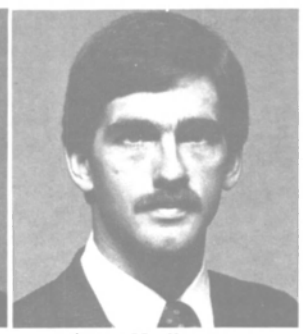
Caroline Z. Richards has been named acoustics business manager. **Ms. Richards** has been involved with acoustic product marketing at Honeywell since 1975. Products in the acoustics business area include the HydroStar subsea tracking and relocation system, the new RigStar rig-positioning and riser-angle monitoring system, and a new line of acoustic beacons.

Mr. **Owen** and **Ms. Richards** will share the marketing responsibilities previously handled by **L. Charles Meeks.**

Vorholt And Medberry Join Midland's Dry Bulk Sales Unit



Tom Vorholt



Scott Medberry

Midland Affiliated Company, headquartered in Cincinnati, has announced the appointment of **Tom Vorholt** and **Scott Medberry** to its dry bulk sales division.

Mr. **Vorholt**, a graduate of the U.S. Coast Guard Academy, has been named sales manager for West Virginia, Tennessee, and parts of Kentucky. He comes to Midland with extensive experience in sales and operations.

Mr. **Medberry**, who joined the staff as a result of the Federal Barge Line acquisition, has been named field sales representative. A graduate of Iowa State University, he will be on special assignment for the next several months.

Autronica's New NK-5 Unit Monitors Ship's Engine —Free Literature Available

Autronica Marine A/S of Norway is offering a free, six-page brochure on their MIP-calculator, type NK-5, which enables ship engineers to readily monitor the engine's performance and thereby ascertain the action necessary to obtain maximum possible efficiency.

The brochure, which folds out for easy reading, has graphics and drawings of the diesel engine cylinder pressure monitoring equipment: NK-5, NK-50, GT-20 and GT-30. In addition, the publication includes a full-color photo of the NK-5 unit and a handsome watercolor reproduction of the device on its front cover.

Autronica's new mean indicated pressure calculator, the MIP-calculator, NK-5, will be an important tool for increased performance and improved economy of the diesel engine.

The new MIP-calculator NK-5 is based upon the use of a microprocessor and a comprehensive software package. At the same time, an effort has been made to create a product which is easy to use for the engineer. It is said that the engineer will find the NK-5 to be of great value for evaluating the measurements and other information that can be obtained from the diesel engine cylinder pressure monitoring equipment.

For a free copy of the Autronica six-page brochure on the MIP-calculator type NK-5,

Circle 44 on Reader Service Card

Grow Group Acquires Napko Coatings Division —Literature Available

Grow Group, Inc. has acquired the Napko Protective Coatings Division of the O'Brien Corporation, according to an announcement by **Russell Banks,** president and chief executive officer of Grow Group. Napko Corporation, with headquarters in Houston, is now a subsidiary of Grow Group, Inc.

Mr. **Banks** stated that "Napko is an excellent addition to our Marine and Corrosion Control Group, which manufactures high-performance, advanced-technology paints and coatings."

According to **Joseph M. Quinn,** vice president of Grow Group and president of Napko Corporation, "Napko's position in the marine, offshore, petroleum, power generation, and chemical industries not only increases our present market penetration but also fills several market niches and adds unique applications to the segments we serve."

Lou Vincent, vice president of Napko, will continue to manage the daily operations of the firm. With the full support of Grow Group, Napko will continue to offer the high-quality products and customer service for which it has been well known internationally.

Grow Group is one of the nation's largest producers of specialty coatings and paints, with subsidiaries located around the world.

For further information and free literature,

Circle 88 on Reader Service Card

First of 16 new Island Class patrol boats for U.S. Coast Guard is launched at Bolinger Shipyard in Lockport, La. Deliveries will extend well into 1987.

Bollinger Shipyard Dedicates Island Class USCG Patrol Boat Fleet

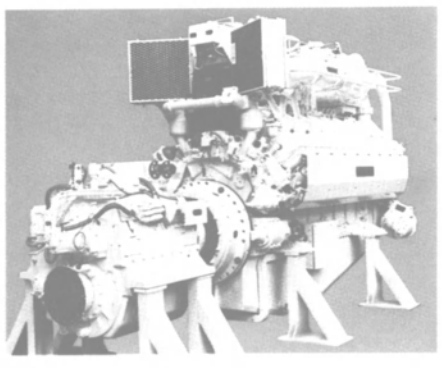
Bollinger Machine Shop & Shipyard, Inc. of Lockport, La., is building 16 Island Class patrol boats (WPB) under an $80-million contract awarded by the U.S. Coast Guard. These boats will be used for offshore patrol work involving law enforcement, surveillance, and boardings. Basic duties will involve drug law enforcement in the waters off the Florida coast, and when necessary, for search and rescue missions.

Prior to the recent delivery of the first vessel of the class, fleet dedication ceremonies were held at the Lockport shipyard, with Vice President **George Bush** officiating. Also in attendance were Secretary of Transportation **Elizabeth H. Dole** and Adm. **James Gracey**, Commandant of the Coast Guard.

Vice President **George Bush** officiated at dedication ceremonies for fleet of 16 new patrol boats. Also in attendance were Transportation Secretary **Elizabeth Dole** and Coast Guard Commandant Adm. **James Gracey.**

Constructed with a steel hull and aluminum deck and superstructure, these vessels have an overall length of 110 feet, beam of 21 feet, and depth of 7.3 feet. They are powered by twin 16-cylinder Paxman Valenta diesel engines supplied through the British company's U.S. distributor and logistic supplier company, Alco Power Inc. of Auburn, N.Y. Alco will also provide 16 spare Valentas, for a total of 48 engines.

The concept of this program of new patrol boats had its roots in a speech given by President **Reagan** at Miami in February of 1982, in which he promised government action to help curb the flow of illegal drugs into the U.S. Initially, the Southeast Task Force was created, later renamed the National Narcotics Border Interdiction System, headed by Vice President **Bush.**



Paxman Valenta diesels powering new Coast Guard patrol boats will be supplied through Alco Power Inc., Paxman's U.S. distributor and logistic support company.

The Coast Guard Request for Proposal (RFP) had as a basic requirement for the patrol boats the "Parent Craft" concept. It required bidders to base the quoted vessel design on a previously built and operated patrol boat. The original intention of the Coast Guard in specifying this concept was to be sure that the vessels would be free of the usual troubles associated with the first boat of any new design.

Bollinger offered a design that had been developed by Vosper-Thornycroft (UK) Ltd. At the time the Bollinger proposal was submitted, 24 vessels of this design were in service in South America, Singapore, and the Middle East.

The RFP required that the Parent Craft be selected by name; in this case the vessel selected was in service in the Middle East. One of the requirements of the RFP was that the propulsion configuration of the main engines be identical. Much thought and discussion took place on this issue at Bollinger because the selected Parent Craft was built in 1974 and had 16-cylinder Paxman Valenta engines, each with a continuous power rating of about 2,600 bhp and a sprint rating of about 3,000 bhp. The Parent Craft selected, to produce the speed necessary, needed about 2,900 bhp on each shaft in 1974, or very close to the sprint rating.

However, in 1984 the same engine was rated at 3,500 bhp continuous and 4,000 bhp sprint. Obviously, the Valenta had been upgraded to the point that the 12-cylinder Paxman had a continuous rating that met the horsepower requirements. There was a question in Bollinger's mind as to whether the specifications would allow using a 12-cylinder unit instead of the 16-cylinder engine that was on the quoted Parent Craft. Final interpretation directed Bollinger to bid with the 16-cylinder configuration. The decision was made to rack-limit the 16-cylinder engine to 2,900 bhp.

Differences between the Coast Guard patrol vessel and the original Vosper Thornycroft quoted include the deck house and internal configuration. These were altered to meet Coast Guard requirements. There is also more tankage and a better view from the wheelhouse obtained by relocating exhausts through the sides of the vessel instead of up a stack.

The USCG patrol boat will have a continuous operating speed of more than 26 knots. Total fuel capacity of 10,600 gallons provides a range of 1,882 miles running at 26 knots, or 96 hours at the best economical speed, allowing for a 20-percent reserve. Fresh water capacity of 1,700 gallons can be supplemented by a fresh water generator capable of producing 100 gallons per day.

The main propulsion engines drive through ZF reverse/reduction gears. Electrical power is provided by two 99-kw generators driven by Caterpillar 3304T diesels. An Avon Searider boarding boat can be dropped into the water from either side of the vessel using an Appleton davit; the boat stows on a raised section above the engine room.

Accommodations are arranged with one section aft of the engine room, and the galley, mess, and petty officer and crew quarters forward of it. The officers' cabins are in the deckhouse. Above the weather deck is one level of superstructure with the wheelhouse above it. The vessel is designed to accommodate two officers, two petty officers, and 12 enlisted men (with space for two more).

The superstructure features both open and enclosed steering positions, and a separate communications center. The sophisticated electronic gear is mostly government-furnished. Commercial equipment includes a Raytheon radar with ARPA, and Raynav 750 Loran C; a Tracor Model 11 Omega receiver; and Sperry doppler log, gyrocompass, and autopilot. Also aboard are Sunair HF transceivers and receiver, two Triton and one Regency VHF transceivers, along with a hand-held VHF transceiver. The MF/HF direction finder was supplied by Sitex.

This Coast Guard contract is the largest single order ever placed at Bollinger, and required construction of new facilities as well as extension of existing buildings. It also required purchase of a computer system for weight control, a critical factor in construction of these boats. The vessels are being constructed in modular units, with the hull divided into six main modules. The bow and stern sections are separate modules; the main section of the hull is divided both vertically and horizontally to create the remaining four modules. The transverse framing system of the vessel dictated the unusual horizontal division of the hull construction.

For more information on Bollinger,

Circle 89 on Reader Service Card

For more information on Paxman engines,

Circle 90 on Reader Service Card

CORE

Canadian Offshore Resources Exposition

Halifax, Nova Scotia—October 1-3

This year's Fifth Annual Canadian Offshore Resources Exposition and Conference (CORE) is again scheduled for Halifax, Nova Scotia, October 1-3. The exposition will be held at the Port of Halifax Ocean Terminals and the conference at the Halifax World Trade Centre.

First organized in 1981, CORE has become Canada's leading annual event devoted exclusively to the offshore oil and gas exploration, drilling, and production industry. At the 1984 event, 620 firms from 18 countries exhibited their products and services, making it one of the biggest shows of its kind in Canada. The CORE exposition features domestic and international exhibits, and the business transacted at the show is one of the major attractions.

With the ever-increasing activity in offshore exploration and development in Atlantic Canada, the Beaufort Sea, and the Arctic (where the environment is unique to other parts of the world), there are technical problems that can only be solved through constant updating of knowledge and experience. CORE was established to provide a forum where this knowledge could be disseminated through the proper channels.

This year CORE is sponsored by: Atlantic Provinces Economic council; Canadian Institute of Mining; Canadian Ocean Industries Association; Canadian Petroleum Offshore Operators Division; Cape Breton Offshore Trade Association; Halifax Board of Trade; Newfoundland Ocean Industries Association; Offshore Trade Association of Nova Scotia; and Oilweek Magazine. It is produced and managed by Industrial Trade Shows Inc. of Toronto.

The overall theme of this year's Conference is "Development of Canadian Oil & Gas Frontiers." It will be held in three sections—in the morning and afternoon of October 1 and in the morning on October 2. Luncheon speaker of October 1 will be **Jack A. McLeod**, president and chief executive officer of Shell Canada. The luncheon gathering on October 2 will be addressed by The Honorable **Pat Carney**, Minister of Mines & Energy, Government of Canada.

CORE attempts to provide the visitor to the Conference with a roster of experts and authoritative speakers from both Canada and the international community, who are chosen to discuss the many aspects of the search and exploitation of oil and gas resources in waters that are often environmentally hostile.

CONFERENCE AGENDA
Tuesday, October 1

Section 1 theme: Meterology & Oceanography and their Relevance to Offshore Development.
Chairman: **Wynne Potter**.
9:30 am—Official opening of the Conference by Hon. **Joel Matheson**, Minister of Mines & Energy, Province of Nova Scotia.
10:00 am—"Overview," by Dr. **B.P. Sharples**, Novel Denton & Associates.
10:30 am—"Beaufort Sea," by **Richard Hass**, Dome Petroleum.
11:00 am—"Grand Banks," by **John Miller**, Petro Canada.
11:30 am—"Scotian Shelf," by

Michael Coolen, Mobil Oil Canada.
12:30 pm—Luncheon.
Section 2 theme: Planning & Assessing of Facilities.
Chairman: **William Riley.**
2:30 pm—"Overview," by **R.R. Huddleston**, Ensan Land Engineering.
3:00 pm—"Beaufort Sea," by **James Lee**, Esso Resources.
3:30 pm—"Grand Banks," by **Wesley Abel**, Mobil Oil Canada.
4:00 pm—"Scotian Shelf," by **N.F. McIntyre**, Petro Canada.
4:30 pm—"Quality Assurance," by **Touray Nasseri**, Det norske Veritas.

Wednesday, October 2

Section 3 theme: Transportation: Getting the Oil & Gas to the Marketplace.
Chairman: **Hugh Plant**.
9:00 am—"Beaufort Sea 'Arctic'," by **K.S. Alexander**, Pan Arctic Oil.
9:30 am—"Grand Banks," by **Robert Byrd**, IMODCO.
10:00 am—"Scotian Shelf," by **Derek Henwood**, Sable Gas Systems.
10:30 am—"Evolving Role of Helicopters in Offshore Development," by **J.C. Jones**, Sealand Helicopters.
11:00 am—"Opportunities & Benefits for the East Coast Region," by **Michael Gardner**, Gardner Pinfold & Associates.
12:00 noon—Luncheon.

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Amherst Area Ind'l Commission
Anadrill-Schlumberger
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British Petroleum Co. Plc
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Burnside Realty Ltd.
Butler Manufacturing Co. of CDA
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Can-Dive Services Ltd.
Can-Nav Limited
Canada Post Corp.
Canada Safety Products Inc.
Cape Breton Development Corp.
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Gulf Publishing
Halifax Board of Trade
Halifax Industries Ltd.
Halifax Office Products Ltd.
Hallmark Offshore
Hurum Marine Inc,

(continued on page 10)

CORE 85

(continued)

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Helly Hansen Limited
Household Movers & Shippers
Husky Bow Valley
Imperial Eastman Ltd.
Imperial Tobacco
Ingersoll-Rand Canada Inc.
Int'l Paints (Canada) Ltd.
Justram Equipment Inc.
Kelly Real Estate Ltd.
Krupp Mak Canada Inc.
Lackie-Apex
Lavalin Inc.
Liebherr-Werk Nenzing GMBH
Lips N V Canada
Livingston International Inc.
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For further information contact: **James E. Myles,** show manager, or **Christine Samarin,** show & conference coordinator, Canadian Offshore Resources Exposition, 20 Butterick Road, Toronto, Ontario, Canada M8W 3Z8; telephone (416) 252-7791.

Moss Point Marine Delivers New Sternwheeler, Colonel

Moss Point Marine, Inc. of Escatawpa, Miss., recently delivered the 800-passenger, sternwheel excursion boat Colonel to her owner, the Colonel Museum, Inc. in Galveston, Texas. The 152-foot vessel is now providing historical and dinner cruises of the Galveston Bay harbor.

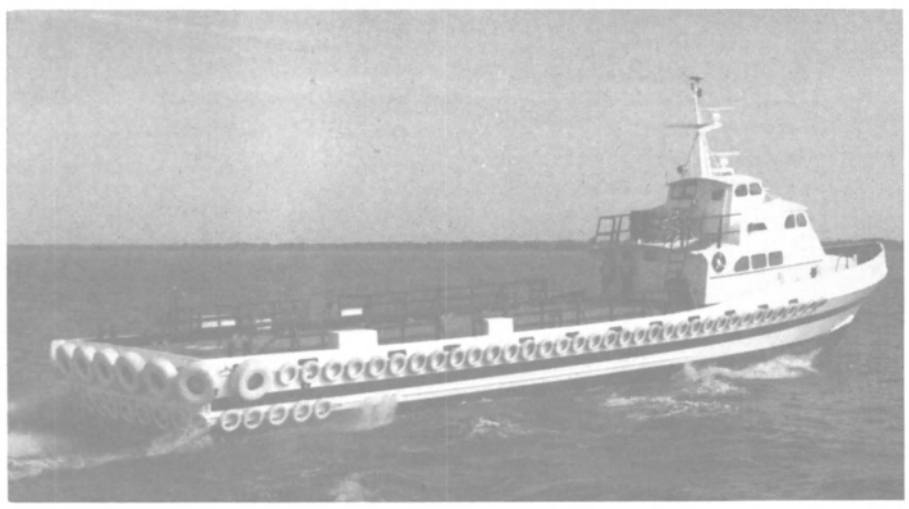
The Colonel can serve 500 for dinner, and is equipped with catering facilities, bars, bandstands, and dance floors. Her two main salons, the Galveston Room and the Texas Room, each seat 250 diners and can host separate parties. Large windows afford passengers unobstructed views while allowing more passengers to use them. She also has a large, open promenade deck at the upper level.

The new excursion vessel is operated by New Orleans Paddlewheels (Texas) Inc., whose parent firm operates the Creole Queen in New Orleans.

The Colonel has a beam of 40 feet and depth of 8 feet 6 inches. She is powered by two Caterpillar 3408 diesels, each developing 365 bhp at 1,800 rpm. They drive five-bladed, stainless steel propellers via Caterpillar 7221 reverse/reduction gears. An EMI electro-hydraulic steering system, with control stations at three locations, guides the vessel; steering is enhanced by a 112-hp Propulsion Systems bow thruster.

Passenger comfort is maintained year-round by 56 tons of Carrier air conditioning and heating. Power for the air conditioning and other ship's services is provided by two Caterpillar 3306 diesels driving two Delco 135-kw generators.

The new sternwheeler is named after **W.L. Moody Sr.,** a Confederate colonel during the Civil War, who founded several enterprises including banks and a cotton company in Galveston.



Aluminum Boats Delivers High-Speed Crew/Utility Vessel To A&P Boats

The 115-foot Oriole, built by Aluminum Boats, Inc. of Crown Point, La. for A&P Boat Rentals of Cut Off, La., gives new meaning to the term "crew/utility vessel." the all-aluminum, triple-screw boat can not only haul 63 people, 30 long tons of cargo, and 12,000 gallons of rig water; it can also fight off-ship fires with a 700-gpm monitor mounted aft. When not carrying rig water, she can haul up to 80 tons of cargo on her spacious aft deck.

The new vessel has a beam of 24 feet and depth of 9¼ feet. She is powered by three Detroit Diesel 12V71TI engines developing a total of 1,530 bhp. They drive Federal 36-inch propellers via Twin Disc MG-514 reverse/reduction gears with a ratio of 2.5:1. Two Delco 40-kw generators driven by Detroit 3-71 diesels provide electrical power for ship's service and wheelhouse electronics.

Compressed air for starting the main engines, the generator sets, and the Morse engine control system is provided by two Quincy 208 VAC units. A Demming pressure set supplies the galley, heads, shower, drinking fountain, and deck and engine room taps. A Raritan masserator sanitation system is installed for pollution control.

The pilothouse is equipped with two electro-hydraulic steering stations, with one facing aft for backdown on rigs. Stainless steel hydraulic tubing is used throughout the boat.

The off-ship fire-fighting system, unusual for a crewboat, consists of a keel-cooled Detroit Diesel 3-53 engine driving a Hale 700-gpm pump at 150 psi through an Elkhart 292 monitor. A feature of this system is its portability; when not in use the monitor can be stowed to avoid damage while loading and unloading cargo. It features an easy on/off coupler to allow quick connect for rapid response to any emergency.

Passenger and crew comfort is aided by eight tons of custom-designed, keel-cooled air conditioning. The maintenance-free system, designed by South Lafourche Air Conditioning Service, utilizes Copelomatic compressors and condensers that are keel-cooled by 120 feet of aluminum piping.

Navigation/communications equipment includes a Sitex/Koden Loran C; Sperry autopilot, compass, and rudder angle indicator; Furuno 701 and 711 radars, Datamarine depth sounder; Standard Horizon VHF radio; and Motorola SSB radio.

Southern Steamship Appoints Spilling As VP/Operations

The Southern Steamship Agency, Inc., recently announced the appointment of **Robert B. Spilling** as vice president, Mississippi River operations.

In his new capacity, Mr. **Spilling** will head up Southern Steamship Agency's New Orleans office, and will be responsible for agency services in the ports of New Orleans and Baton Rouge.

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Matson Asks Bids On $30 Million Conversion of 'Matsonia'

Matson Navigation Company has sent invitations, to selected shipyards on the three U.S. coasts, to bid on conversion of the roll-on/roll-off trailer ship Matsonia to a combination RO/RO and lift-on/lift-off container carrier for the West Coast-Hawaii trade.

This followed a preliminary inquiry by Matson to shipyards around the country to determine which yards have the capability to handle the job that will enlarge, widen and lengthen the vessel and nearly triple its cargo capacity.

"The additional lift capacity is being added to accommodate projected cargo needs of the State of Hawaii," said **C.B. Mulholland**, senior vice president-freight division. "The unique cargo characteristics of the converted Matsonia, with its combination carriage, will provide Hawaii shippers with a highly flexible and efficient means of moving their goods," he added.

Quotations for the project are expected to range between $30 million to $35 million, according to **Arthur J. Haskell**, senior vice president-engineering and marine operations.

Matson plans to award the contract before the end of the year. The completed vessel, lengthened to 756 feet by removal of 291½ feet of the existing midbody and replacement with a 347½-foot new section, is expected to be delivered to Matson by the fall of 1987 and will enter service soon after that. It is expected to be able to carry about 1,200 twenty-four-foot container equivalents, 55 trailers and 420 automobiles.

Mr. **Haskell** said the project is intended to accomplish the same objectives for the Matsonia as the conversion of its former sister ship Lurline, reconstructed in 1982, which emerged as one of the most efficient and productive vessels in Matson's West Coast-Hawaii fleet.

Williams Retires As Vice President-Sales Of Equitable Shipyards

J. Frank Williams

J. Frank Williams, formerly vice president of sales for Equitable Shipyards Inc. in New Orleans, has announced his retirement from that position due to the reorganization of Equitable and Halter Marine Inc. by Trinity Industries, the parent firm of both companies. He has been retained as a consultant to **Jack Edwards**, president of Halter Marine.

Mr. **Williams** is currently president-Southwest Region of the Navy League of the United States, with responsibility for the states of Texas, Louisiana, Arkansas, and Oklahoma. He is a director and member of the Executive Committee of the League. He is a past president of the Propeller Club-Port of New Orleans, and is a member of the board of directors of International House.

Liebherr Awarded Order By Reading & Bates For Two Offshore Cranes

Liebherr-Werk Nenzing GmbH of Austria has received an order for two diesel-hydraulic driven BOS 75/1200 D offshore pedestal cranes for Reading & Bates's new semisubmersible drilling vessel Zane Barnes, to be built at IHI in Japan.

The cranes will be manufactured at Liebherr Japan, a joint venture established in 1983 between Liebherr and NKK. These offshore cranes are rated for full service in ambient temperatures down to −20° C and dynamically rated to lift 75 metric tons at 8 to 11 meters radius. The whip line can lift 10 metric tons with one part line at 41.3 meters.

The features of the Liebherr design will allow these pedestal offshore cranes to operate safely in conditions equal to a significant wave height H/3 of 3.6 meters.

For further information,

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Brown & Root Awarded Feasibility Study Contract For Chevron Offshore Unit

Brown & Root International, Inc. has been awarded a contract for engineering feasibility studies related to the development of Chevron U.S.A. Inc.'s Rocky Point Unit drilling and production platform offshore California.

Chevron and partners Phillips Petroleum and Champlin Oil are considering installation of a fixed platform in 300 feet of water offshore Point Arguello. The platform would be designed to support drilling and production of oil and gas.

Brown & Root will perform the conceptual studies from its engineering office at San Ramon, Calif. As the home of Brown & Root's West Coast design operations, the San Ramon facility also serves as the base for power generation, petroleum and chemical, and other land-based industrial engineering services.

Brown & Root International is a subsidiary of Brown & Root, Inc. of Houston, a Halliburton company.

Congressional Maritime Caucus Establishes An Advisory Board

The Congressional Maritime Caucus has created an Advisory Board made up of industry and Executive Branch leaders to prepare an "action plan" aimed at stimulating legislative and regulatory initiatives to revitalize the American merchant marine.

The Caucus, consisting of 72 members of the House of Representatives, was formed earlier this year and is headed by Rep. **Walter B. Jones**, chairman of the Merchant Marine and Fisheries Committee. Vice chairmen are Rep. **Glenn M. Anderson** and Rep. **William Carney**. Influential members of the Caucus include House Speaker **Thomas P. (Tip) O'Neill Jr.**; Majority Leader **James C. Wright**; and Minority Whip **Trent Lott**.

The 15 industry officials invited to serve on the Advisory Board are:

Joseph F. Abely Jr., chairman and CEO, Sea-Land Corporation; **W. James Amoss Jr.**, president and CEO, Lykes Bros. Steamship Company; **J. Ronald Brinson**, president, American Association of Port Authorities; **Jesse M. Calhoon**, president, National Marine Engineers Beneficial Association; **John C. Couch**, president, Matson Navigation Company; **Thomas B. Crowley**, president, Crowley Maritime Corporation; **Frank Drozak**, president, Seafarers International Union; **Conrad Everhard**, chairman, Dart Orient Services; **Robert J. Frulla**, president, Freight Forwarders Institute; **D. Ward Fuller**, president and CEO, American Steamship Company; **John T. Gilbride**, chairman, Todd Shipyards Corporation; **Brian Harrison**, president, Metropolitan Stevedore Company; **Raymond M. McKay**, president, Marine Engineers Beneficial Association, District II: **W. Bruce Seaton**, president and CEO, American President Lines; and **Martin Seham**, Seham, Klein & Zelman.

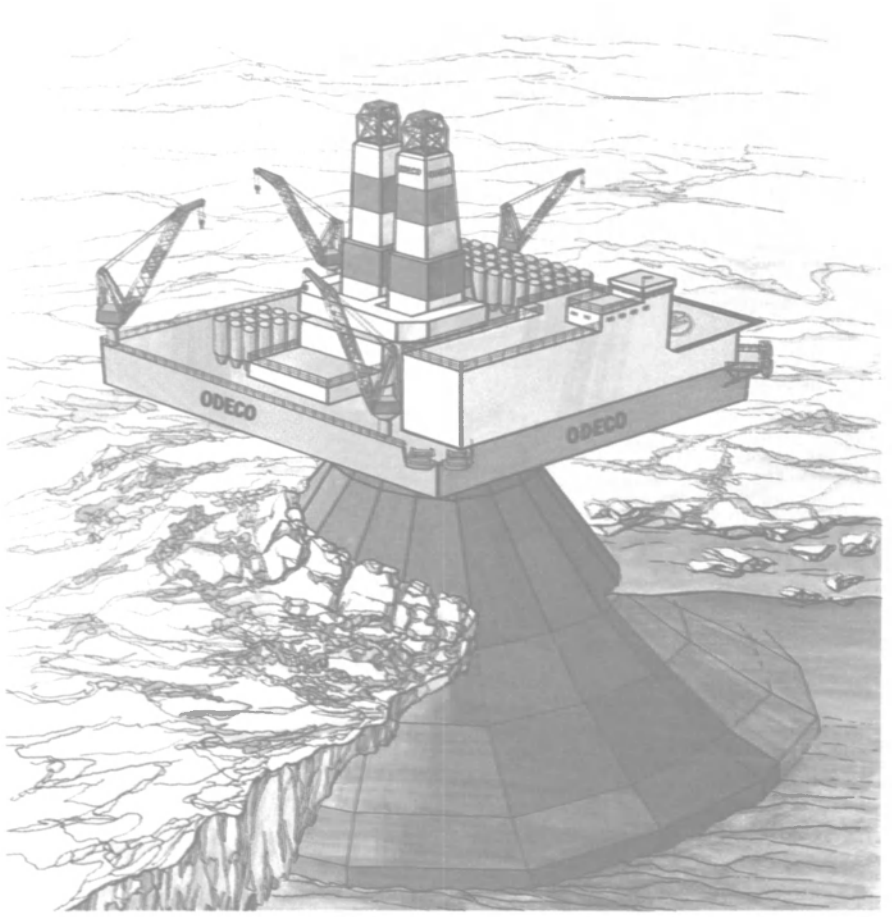
Five other individuals have been invited to participate as observers, to "contribute a sense of purpose on behalf of the U.S. merchant marine." They are:

Herbert Brand, chairman, Board of Trustees, Transportation Institute; **Elizabeth F. Jones**, editor, News Briefs; **Drew Lewis**, chairman, Warner Amex and former Secretary of Transportation; **George H. Miller**, USN (Ret.), Transportation Institute; and **Emanuel Rouvelas**, Preston, Thorgrimson, Ellis & Holman.

The leaders of the various industry segments are to draft a proposed national maritime policy "as it would apply to that segment" for presentation at a meeting of all Advisory Board members and observers on November 13, 1985. The proposals are to be reviewed so that by February 13, 1986 at a meeting of Administration officials, industry advisers and the observers, the proposals can be merged into a "working national maritime policy proposal" that can be presented to the Congressional Maritime Caucus. Finalized proposals are scheduled to be taken to the Caucus on March 4, 1986 for its consideration.

OUTSTANDING RIG DESIGNS

A review of new designs to meet the challenges of deep water and harsh environments

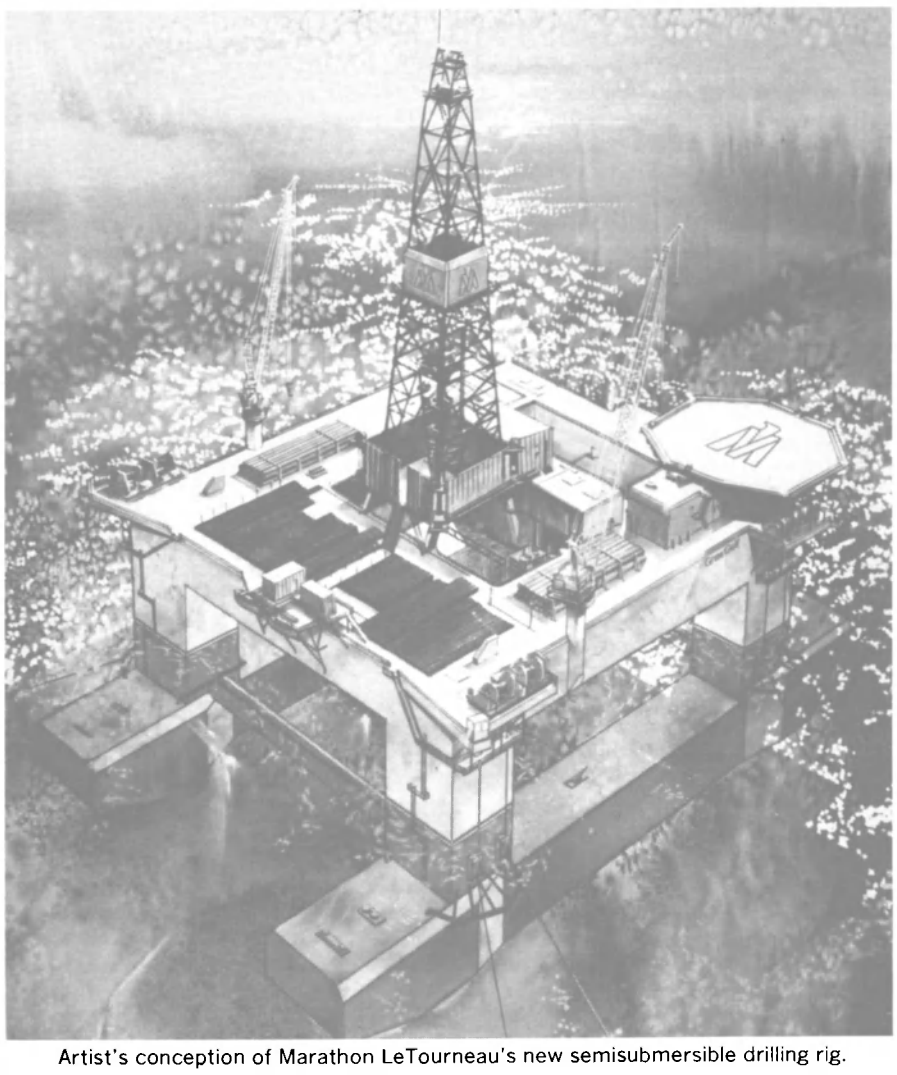


Artist's conception of the ODECO and NKK Arctic Mobile Drilling Platform (AMDP)

Offshore drillers, in 1984, ordered a total of 37 units to be built, including 24 semisubmersibles. Some of these orders were letters of intent and subsequently never materialized into firm construction contracts. However, 22 of the 24 semisubmersible orders were firm. A closer examination of the types of semisubmersibles and when they are scheduled for delivery will help explain why so many of these units were ordered during a rig oversupply situation.

Every semisubmersible ordered in 1984 and so far in 1985 is rated for over 1,000 ft. of water except one unit being built by and for the U.S.S.R. which is rated for 650 ft. of water. Three other Russian semisubmersibles are rated for 1,500 ft. of water. This fact should not be surprising since the offshore industry is constantly moving toward exploring deeper and deeper waters. Most of the units presently on order are harsh environment designs, suitable for use in Arctic conditions and in the North Sea and in northern North Sea waters, where the UK and Norway are beginning to open acreage for leasing. Norway also now allows year around drilling north of the 62nd Parallel, where harsh environment rigs will be needed.

Arctic class semisubmersibles should not be confused with the Arctic class submersibles, of which there also are several new designs, some of which are rated to work in up to 200 ft. of water. The submersibles are bottom-supported structures. Drilling semisubmersibles also should not be confused with semisubmersible production units such as the tension leg platform design, which are permanently fixed to the seafloor. However, some drilling semisubmersibles have been converted to floating production units.


Artist's conception of Marathon LeTourneau's new semisubmersible drilling rig.

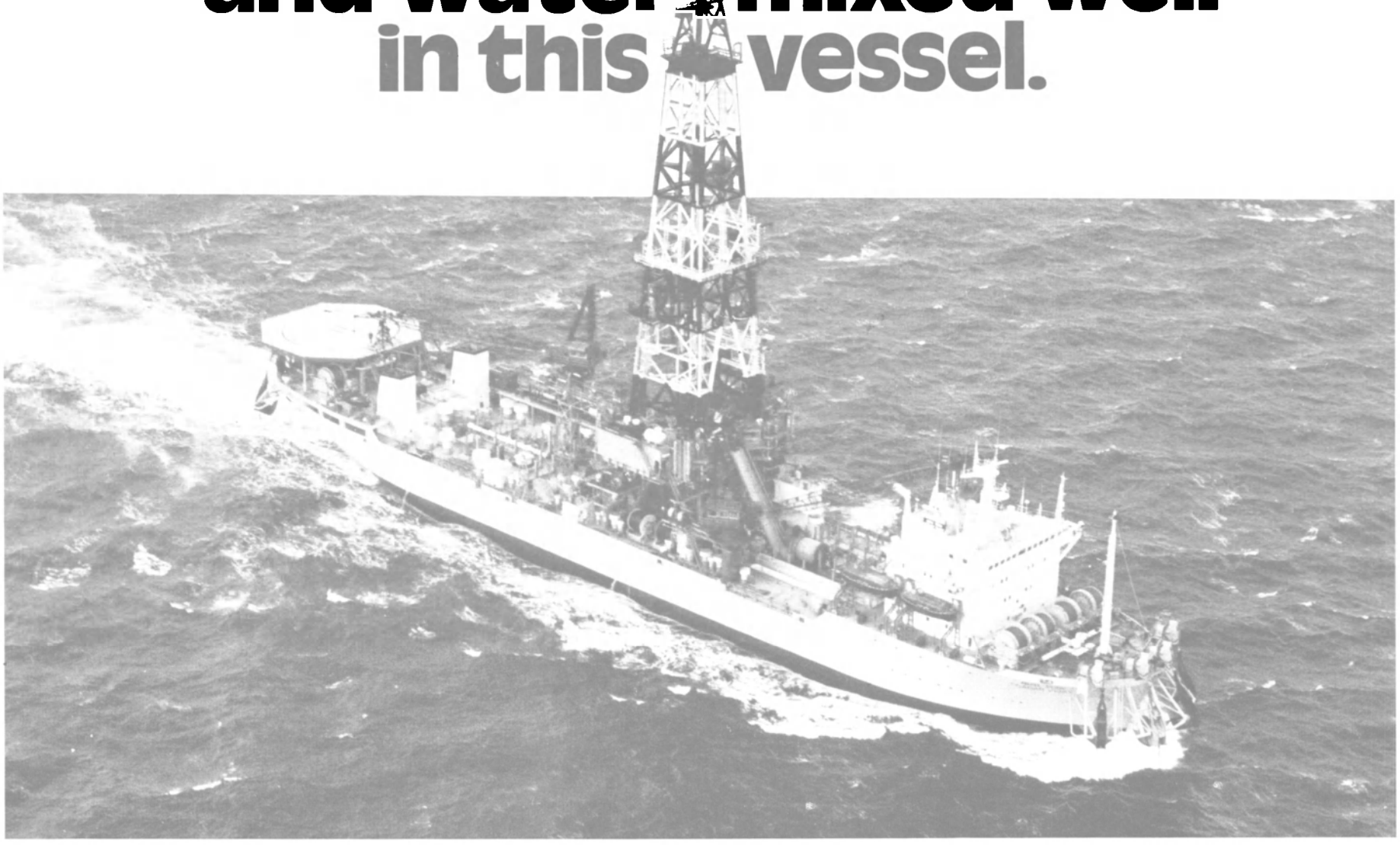
A majority of the semisubmersibles are scheduled for delivery between mid-1986 and throughout 1987, with some deliveries stretching to 1989. The latter deliveries, however, are actually options on new rigs. It is apparent these contractors think these rigs will be in demand enough to make a profitable day rate upon delivery. A major factor in several rig orders, especially those being built in South Korean shipyards, are the lucrative construction costs. Sonat placed a seemingly blockbuster order late in 1984 for six Gotaverken Arendal GVA 4500 design semisubmersibles at Daewoo for an average cost of about $71 million each. The contract actually is a firm order for two units with options for four additional rigs. This order was closely followed by a four-rig order from Odeco at Hyundai with an average cost of $65 million each. Odeco's units are of the Ocean Odyssey class.

Most of the semisubmersibles on order are proven designs or enhanced, larger versions of proven designs such as the Aker H-4.2, Friede & Goldman Pacesetter or the Gotaverken GVA 4000. Among the new designs ordered were the Yatzy Class by Dyvi, Friede & Goldman's Trendsetter™ and one designed by Maritime Engineering. The most "radical" of the new semisubmersibles is the Trendsetter™, which moves away from the traditional six or four column unit into a five-column design. Reading & Bates Drilling Company ordered the first Trendsetter™ last February at IHI in Japan, naming it the ZANE BARNES. The Trendsetter™ basically is a four-column unit with a center drilling caisson which also serves to store marine riser and drillpipe. Variable deck load capacity is 5,000 tons in the transit, operational and survival modes. The rig will be capable of drilling in up to 5,000 ft. of water with conventional mooring and thruster assist in mild climates such as the Gulf of Mexico. With dynamic positioning capability, which can be added at a later date, the unit will be able to work in 5,000 ft. of water in harsh environments.

Several new semisubmersible designs are on the drawing boards from various firms. Most are for deepwater and harsh environments. One, however, from Marathon LeTourneau, best known for its jackups, was designed specifically for mild climates. The GranGulf design is a four-column unit with two horizontal cross bracings between the pontoons. The GranGulf is rated for up to 2,000 ft. of water conventionally moored and up to 3,000 ft. of water using dynamic positioning. This design incorporates pontoons which are flared at each end, a concept from SeaTek Corp. of California. The contoured pontoon increases buoyancy and stability. Other semisubmersible designers utilizing the contoured pontoon configuration include Gotaverken Arendal, Rauma Repola, Dyvi and Friede & Goldman (on the Trendsetter™ design).

Of the various deepwater, harsh environment designs, most are either partially or fully winterized by enclosing and heating work and/or storage areas. Finnish shipbuilder Rauma Repola introduced a new design earlier this year, dubbed the RR-2952, which features four columns, two horizontal cross bracings and also is winterized with an enclosed work area and smooth underdeck to minimize ice accumulation. This design also incorporates the

Our experience with oil and water mixed well in this vessel.



Building a drillship calls for a special blend of expertise.

Which is why the Oil and Natural Gas Commission of India called on Hitachi Zosen to design and construct the SAGAR VIJAY — a self-propelled, anchor-moored drillship built under license of Gusto Engineering C.V., Holland.

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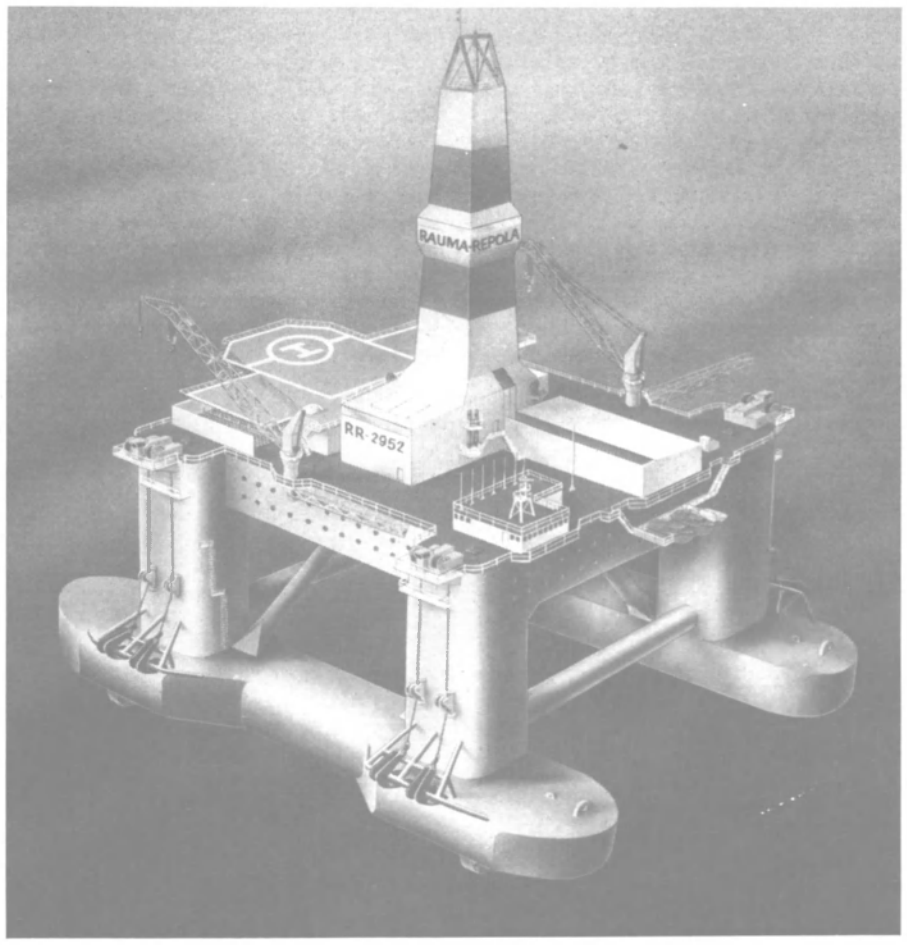


OUTSTANDING RIG DESIGNS

(continued)

contoured pontoon concept. Sumitomo of Japan and MSC of Holland teamed together to provide the DSS-40 semisubmersible, a four-column, two horizontal bracing design which also happens to be fully winterized.

Of the new or enhanced semisubmerisble designs, Aker Engineering of Norway continues to stand by its tried and true six-column design. Its latest unit is called the D-6, a six-column, harsh environment, fully winterized unit. However, like most of the new designs, the D-6 is fitted with the two horizontal cross bracings that have become so popular, eliminating the support bracings from the pontoons to the underside of the deck. The mooring equipment and chains are housed inside each of the four corner columns down to the fairleads. The rig also can be configured so that drilling can be carried out through one of the middle columns or through the center of the unit.

Marine Structure Consultants (MSC) and Neddrill teamed together to develop the DSS-10,000 semisubmersible designed to drill in up to 10,000 ft. of water with a maximum payload of 10,000 tons in harsh and Arctic conditions. The four-column unit features a completely enclosed derrick and moonpool and a central drilling column which serves also as a vertical riser storage area. The vessel can operate in up to 10,000 ft. of water with dynamic positioning equipment, and up to 1,500 ft. with an eight-point conventional mooring system.

Blohm & Voss of West Germany has the P-099 semisubmersible design rated for drilling in up to 6,600 ft. of water with dynamic positioning equipment. Blohm & Voss claim the rig qualifies for operation in Arctic and subarctic areas with ice drift because of structural reinforcements in the waterline areas. The work area also is protected to permit operation in Arctic conditions. Total payload is 11,000 metric tons. The unit is an eight-column design with the two inside columns on the port and starboard sides inclined toward the center of the deck, providing for greater strength and enabling the use of lighter weight steel during construction.

BOTTOM-SUPPORTED ARCTIC DRILLING STRUCTURES:

With the anticipated rush of oil companies to drill in the Beaufort Sea a few years ago, several marine architects introduced new bottom-supported structures for the area. Of the various designs introduced several years ago and the more recent designs, only three have so far been built.

The first two units were ordered in 1981 by Gulf Canada specifically for its Arctic Drilling program. The MOLIKPAQ, a mobile caisson with an octagonal shaped base, is rated for 60 ft. of water sitting on the seafloor, but also can drill in deeper waters if it is set on a berm. Gulf Canada also ordered the KULLUK in 1981, which is a conical shaped floating barge unit rated for 200 ft. of water. The KULLUK was part of a package Gulf Canada designed for Arctic exploration, including the MOLIKPAQ, two icebreakers and two supply boats.

The third such Arctic unit was ordered by Global Marine Development. The unit is a submersible of its own design dubbed the Concrete Island Drilling System, or CIDs. The structure consists of three sections, a steel mud base which sits on the seafloor, a concrete mid-section which rests on the base and upper steel deck barges for drilling equipment and quarters. The rig is rated for about 50 ft. of water but the water depth can be increased by fitting an extra concrete midsection to the unit. The rig was built under contract for Exxon in the U.S. Beaufort Sea and already has drilled several wells for the oil company.

Other firms with bottom-supported Arctic designs which have not been built include Pool Arctic Alaska, which has a mono-leg jackup concept. Arctic Alaska Drilling originally was working in conjunction with Friede & Goldman on the design before it merged with the Pool Company. The upper hull of the unit measures 200 ft. square and 30 ft. deep, with the lower hull measuring 300 ft. square and 30 ft. deep. The single 40 ft. diameter leg is raised and lowered by a rack and pinion jacking system. The leg is raised above the upper deck during transit, with the rig package slid to one side. When the lower hull is jacked down, the rig is moved over the column where it has the capacity to drill up to four wells. The unit is rated for 100 ft. of water. To keep the unit on location over soft bottoms, the lower hull has 20 spuds with a maximum 50 ft. penetration. The rig has a total variable deckload capacity of about 17,000 tons, including about 500 days' worth of fuel which can be stored in the lower hull, enabling the rig to work for one year without resupply.

Global Marine Development also has a mono-leg jackup design similar to the above mentioned Pool Arctic Alaska unit. Global Marine's unit features a 254 ft. square base which is ballasted to the seafloor and an octagonal shaped upper hull which measures 100 ft. across flats. The base is ballasted until it just reaches the seafloor and then is lowered further via four legs, which are used to jack the upper hull above the water. The four legs then are jacked above the upper hull during drilling operations. This design also features a rig package that is moved to one side during transit and then is placed over the center during drilling.

Sonat Offshore Drilling has a submersible concept called the Sonat Hybrid Arctic Drilling Structure (SHADS) which combines concrete and steel to create a unit similar to Global Marine's CIDS unit. The SHADS consists of a 430 ft. square steel base mated to a concrete midsection and a steel deck. The unit can work in up to 65 ft. of water sitting on the seafloor, and deeper water if set on a berm. The unit can drill up to five wells without resupply.

Zapata Offshore and Brian Watt Associates developed the Brian Watt Arctic Steel Pyramid (BWASP) for operations in up to 65 ft. of water or 120 ft. of water, depending on the configuration. The unit is a one-piece octagonal design which utilizes a steel and concrete sandwich panel for the outer shell and structural bulkheads. In the 65 ft. water depth version, the structure is built with a base width of 480 ft. across flats, with a 430 ft. base width across flats in the 120 ft. water depth version. The unit has a storage capacity to enable it to operate for nine months without resupply.

Brian Watt Associates also has a design of its own called the Arctic Cone Exploration Structure (ACES) which features a 550 ft. diameter base of prestressed, lightweight concrete which is fitted with a floating steel deck. The design is rated for 50-110 ft. water depths. The unit would have the capacity to carry 270 days of supplies or the duration of three 16,000 ft. wells. Brian Watt is the prime contractor for the design, while Zapata Offshore has provided the drilling system design.

CBI Industries also designed an Arctic drilling structure designated the Portable Arctic Drilling Structure (PADS) with a 400 ft. diameter base. The unit is rated for 20-50 ft. of water. The PADS has the capacity to operate for 270 days without resupply and can be used for exploration and development operations. The structure, which was designed for Parker Drilling, utilizes a land rig.

Bouygues Offshore is marketing the "Zee-Star 120" for use in the Beaufort Sea. The unit would be capable of year around drilling in 40-120 ft. of water. Other versions of the structure, the "Zee-Star 60" and "Zee-Star 80" are available for shallower water depths. The "Zee-Star 120" would be able to drill three 15,000 ft. wells during a 270 day period without resupply. The structure features an internal concrete space frame, eliminating the need for internal walls or bulkheads. When Bouygues first introduced the structure in 1984, it envisioned building the unit at Bos-Kaiser Offshore at Ensenada, Mexico, which was formed by Bouygues and Kaiser Steel. Bouygues had all its marketing and equipment suppliers in place for any forthcoming order. Zeeland Resources, a Netherlands Antilles-based company, was formed to enter into the leasing or charter of the rig. Bouygues also formed Zeeland Parker with Parker Drilling to operate the unit, which would utilize a Parker Drilling Company Arctic land rig.

More recently, Odeco introduced its all-steel Arctic Mobile Drilling Platform (AMDP), a 16-sided cone-shaped and multi-sloped hull structure with a 662 ft. base. The unit is rated for up to 200 ft. of water. The AMDP would be outfitted with two enclosed drilling rigs and a moonpool large enough to accommodate up to 48 wells. The AMDP also can be used as a production platform at the same drill site. The unit would be capable of operating up to one year without resupply, equivalent to eight 15,000 ft. wells. The helicopter deck features an enclosed hanger designed to accommodate a Boeing Chinook 234 or Sikorsky S61. The upper hull also provides covered storage for drill pipe and supplies.

Finally, several years ago, Bow Valley Industries and Canarctic Ventures Ltd., both of Canada, developed a concept of a mobile year around drilling structure utilizing surplus supertankers. The firms formed a joint venture known as Bow Arctic Resources to market the

concept, which uses ice reinforced tankers with the framework modified considerably to give the unit the stability of a platform. The tanker would be cut in half, with each half placed side by side with the capacity for two drilling packages and oil storage. Water depth would be about 100 ft., which could be increased if the structure rests on a berm.

There are a few more rig designers with semisubmersibles and Arctic class submersibles on the drawing boards, but the units mentioned earlier typify the type of designs currently being touted. These designers and/or rigbuilders are counting on the offshore industry to move toward deeper waters and harsher environments, and this already is happening to a degree. Unfortunately for the rig designers (who receive a fee when their design is built), and for the rigbuilders, oil companies are not in that much of a hurry to drill in the frontier areas which will require the new semisubmersibles and Arctic submersibles as described earlier. That time will come, however, and these designs will become the next generation of mobile rigs.

For additional information and free literature on new rig designs,

Circle 50 on Reader Service Card

Bethlehem's Newest Jackup Design Can Drill In Water 600 Feet Deep

Bethlehem Steel Corporation's design for the world's largest mat-supported jackup drilling rig, the Bethlehem 600, will open an additional million square miles of outer continental shelf to jackup operations. That's a 30-percent increase from current jackup territory, representing an area nearly double that of the Gulf of Mexico, spread out along the coastlines of the world.

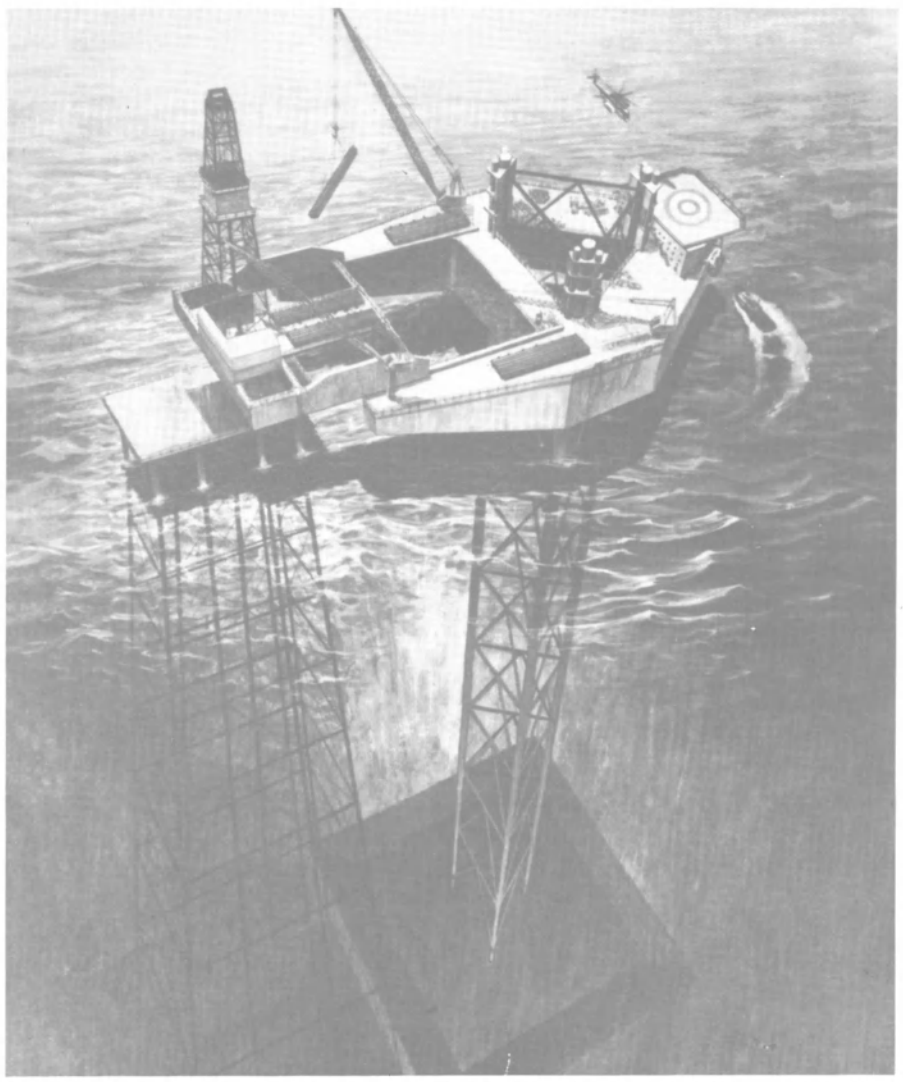
Developed to drill in offshore waters as deep as 600 feet, the 600 is the newest mat-supported jackup rig design to come off the drawing boards of Bethlehem's Beaumont, Texas, rigbuilding yard.

According to a Beaumont spokesman, the new design "is one more in a long string of successes for the Beaumont Yard in the offshore industry." It began in 1954 when the yard delivered Mr. Gus, the industry's first jackup designed to operate in waters to 100 feet deep. The Mr. Gus design tripled the acreage that could be drilled offshore.

The Bethlehem 600 is a heavy-duty, world-class cantilever mat jackup designed for exploratory and developmental drilling in hostile—including arctic—environments and in remote areas difficult to resupply.

For additional free information on the Bethlehem 600.

Circle 10 on Reader Service Card



Congressman To Address OMSA Meeting On Warehouse Vessels

Rep. **W.J. (Billy) Tauzin** (D-LA) will discuss standby boats and warehouse vessels at the next quarterly meeting of the Offshore Marine Service Association (OMSA) to be held at the Sheraton New Orleans Hotel on September 24.

Capt. **W.A. Mayberry**, USCG (Ret.), executive director of OMSA, said the association is pleased to have Rep. **Tauzin** as a speaker because of his background in energy and marine legislation. "He was an energy specialist in the Louisiana Legislature for eight years," said Mr. **Mayberry**, "and now he has national impact through his active membership on the House Energy and Commerce Committee and Merchant Marine and Fisheries Committee."

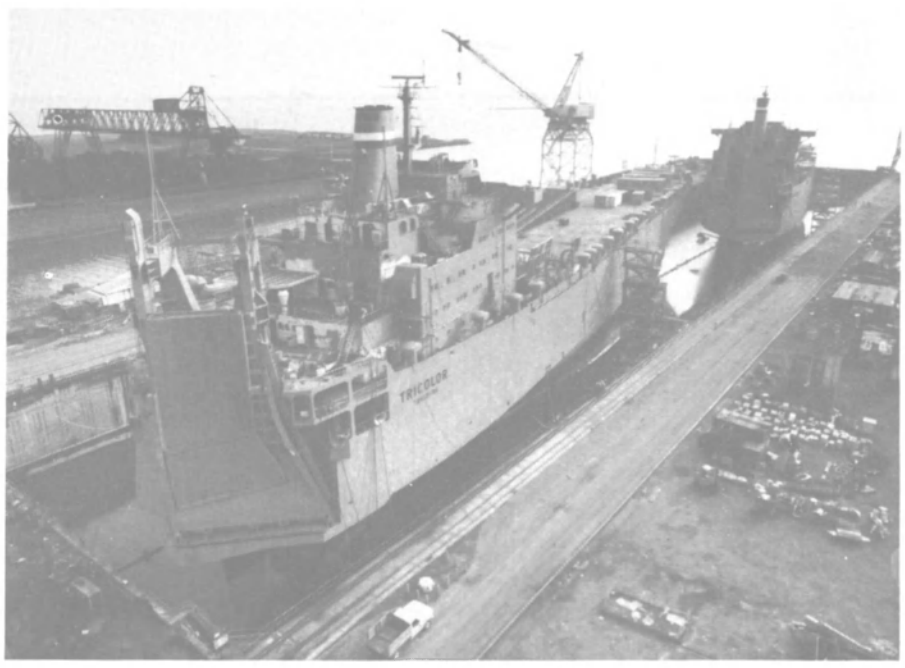
OMSA, with headquarters in New Orleans, is a national trade organization that promotes the goals and interests of firms providing vessel support to all phases of the offshore oil, mineral, construction, and pipelaying interests. Its members operate more than 3,000 vessels and employ more than 30,000 personnel.

For additional information on the OMSA meeting, telephone (504) 523-7363.

Electric Boat Awarded $616-Million Navy Contract To Build Trident Sub

The Electric Boat division of General Dynamics has been awarded a $616.4-million Navy contract for construction of the 12th Trident submarine. The 560-foot Trident has a submerged displacement of 18,700 tons, and is powered by a nuclear reactor and geared turbines producing 60,000 shp on a single shaft.

The Navy also awarded Electric Boat $28.9 million to design the planned SSN-21 attack submarine, $4.3 million for engineering services for the SSN-21, and $3.8 million for engineering work for an existing Trident submarine.



UNIQUE OPERATION of simultaneously docking two 680-foot-long ships in the 1,200-foot long building and servicing basin at Bethlehem Steel Corporation's Sparrows Point shipyard near Baltimore was well worth the effort in time saved. These vessels are two of the five former Barber Steamship Lines ships currently being reflagged for inclusion in the U.S. Navy's Ready Reserve Fleet. The ships are being brought up to U.S. standards as specified by the Coast Guard, American Bureau of Shipping, and other regulatory bodies.

Alsthom Unit Strengthens Position In Norwegian Offshore Market

Alsthom's ACB unit in Nantes, France, has decided to create a subsidiary in Norway, called ACB Norge A/S, to develop business in the Norwegian offshore market. ACB thus intends to concentrate efforts in Norway on activities for which it already has significant involvement, including Skuld technology (Elf Aquitaine license), subsea control systems, and power swivels for oil drilling.

Efforts made to implement closer cooperation and technology transfers with Norwegian industrial firms recently led to the signing of several agreements, with Kongsberg Vaaperfabrikk for Skuld technology and with Liaaen Helitron for subsea control systems. ACB also established contact in 1984 with the Norwegian firm Temco Engineering to cooperate on the sale of drilling rig equipment.

In the future, ACB intends to pursue R&D and to work with Norwegian partners toward development of products aimed at the world oil market.

Sandy Hook Dispatch Boat Delivered By Gladding-Hearn

The N.Y.-N.J.-Sandy Hook Pilots Association recently took delivery of a high-speed, rough-water commuter dispatch boat. It is a 64-foot, all-aluminum, twin-screw vessel designed by C. Raymond Hunt Associates of Boston, Mass., and built by Gladding-Hearn Shipbuilding, The Duclos Corp., Somerset, Mass. The Sandy Hook cruises at 20 knots and has a top speed of 24 knots. Built on the Hunt "deep-V" design, her ample hull is smoothly and quietly powered by M.A.N. Model D-2542-MLE engines, each developing 545 hp at 1,800 rpm. Columbian Tetradyne four-blade 35-inch Ni-bral propellers and Aquamet-22 tailshafts make up the balance of the propulsion train.

Topside, the Sandy Hook features a spacious amidships cabin divided into the pilothouse and salon area. Both areas are electric-baseboard heated and fully air-conditioned (Marine Air Systems, water-cooled). In the well-equipped pilothouse, the center helm features a vertically set, 30-inch destroyer wheel controlling a Hynautic hydraulic steering system. Lexan skylights over the helm area and double-hung windows in the aft bulkhead allow for added ventilation when the air conditioning system is off. The salon space affords a comfortable and roomy area for commuting pilots. Six reclining chairs on a raised platform occupy the starboard side; two more are located foward on the port side. Salon ports and windows are of tinted glass.

Quarters below offer accommodations for 10 (six bunks in the amidships area and four bunks foward). There are two toilet compartments, one of which includes a shower, which are located between the berthing spaces.

On deck, main walkways from the engine room foward, as well as handrails from the cabin doors foward, are hot-water-heated for safety in winter weather. Hull guards include Johnson 7-inch diameter fendering and slanted strakes of D-section rubber.

For more information on the Sandy Hook, see the August 15, 1985 issue of MARITIME REPORTER, page 6.

Rolv Berg Drive Awarded Contract By ONGC For Engineering Services

ONGC, the state oil company of India, has awarded another contract for quality assurance and engineering services to Rolv Berg Drive A/S of Tromso, Norway. This latest contract involves an advanced geotechnical vessel under construction in La Rochelle, France. The vessel, which features advanced geotechnical equipment as well as a saturation diving system and dynamic positioning, Forms part of ONGC's extensive newbuilding program for offshore-related tonnage.

Other ONGC contracts for which Rolv Berg Drive is carrying out similar services are for diving support/well stimulation vessels under construction in India and South Korea.

National Maritime Council Names Kelly President

National Maritime Council chairman **R. Kenneth Johns** recently announced that **William B. Kelly** has been chosen by the council's board of governors as president.

Most recently president of Kelly & Associates, in New York City, Mr. **Kelly** has many years of experience in the international transportation industry, having served in executive positions with U.S. Navigation, Inc., American President Lines and Matson Navigation Company.

Saab Receives Order To Supply TankRadars From Tampa Shipyard —Literature Available

Saab Marine Electronics' U.S. subsidiary, Saab Tank Control of Hoboken, N.J., has announced that Tampa Shipyard, Inc. has ordered five shipsets of level gauging equipment. The systems ordered are the latest development of level gauging equipment by Saab Marine Electronics and marketed under the trade name TankRadar.

Each system includes measurement of 14 cargo tanks and one slop tank. The level readings are to be displayed in the cargo control room and also on a portable readout unit which can be used anywhere on the ship. The processor unit is designed so that temperature and pressure measurement as well as weight and volume calculations can be added when desired by the user.

This equipment will be installed on all five of the 30,000-dwt seven grade product tankers that Tampa Ship is constructing for Ocean Product Tankers, Inc. of Houston, Texas for ultimate charter to the Military Sealift Command.

To obtain free literature and information on Saab Tank control,

Circle 80 on Reader Service Card

Massey Named Assistant General Manager For Port Of Galveston

John Y. Massey Jr. has been appointed assistant general manager at the Port of Galveston, Texas. The announcement was made by **C.S. Devoy,** executive director and general manager.

Mr. **Massey** will direct all day-to-day activities of the port. He has been with the port since 1978, when he joined the staff as Foreign Trade Zone manager. He has been assistant manager of the port's container terminal, and assistant to the general manager for marketing activities, agency coordination, trucking operations, and container line negotiations.

In his most recent post as director of transportation, he was responsible for the port's traffic functions as well as for FMC and ICC relations, leases and agreements, and the Foreign Trade Zone.

Bertrem Products Importing Straub Couplings For U.S. And Canadian Distribution

Bertrem Products, Inc., Tulsa, Okla., recently began importing Straub couplings and pipe repair clamps from Switzerland for use in the United States and Canada. These pipe connections have a patented pressure energized sealing system ideal for all kinds of pipes.

The new Straub coupling replaces flanged, welded, bolted and bonded joints for virtually any metal or plastic piping over a wide range of sizes and pressures. According to the manufacturer, it is so simple to install that the time saved in installation often pays for the actual coupling. The entire body of the coupling is 300 series stainless steel. It is compact and lightweight, making it ideal for tight places such as on boats. It has U.L., ABS, and Marathon approvals, among others.

The Straub coupling is available in the U.S. and Canada only through Bertrem Products, Inc. Four brochures, just published, describe the couplings in detail.

For more information and free copies of the brochures,

Circle 68 on Reader Service Card

Fast Sealift Ship Regulus, delivered to Navy recently by NASSCO, is one of the largest and fastest cargo ships in the world at 946 feet and 30+ knots.

Principals at naming ceremony included (L to R): Comm. **Richard Donnelly**, Commander, Military Sealift Command; Rear Adm. **George Davis Jr.**, Commander, Naval Surface Force, U.S. Pacific Fleet; **William H. Deasy**, president and COO, Morrison-Knudsen Company; **C. Larry French**, chairman of NASSCO; **Ms. Tina Edlund**, matron of honor; U.S. Senator **Pete Wilson**; **Mrs. Wilson**, sponsor; **Richard H. Vortmann**, NASSCO president; and **Alfred W. Lutter Jr.**, NASSCO senior vice president, marketing and business affairs.

Conversion Of Fast Sealift Ship 'Regulus' Completed By NASSCO

A naming ceremony was held recently at National Steel and Shipbuilding Company (NASSCO) in San Diego for the USNS Regulus (T-AKR-292), a Fast Sealift Ship (FS) converted for the U.S. Navy's Military Sealift Command.

Among those participating in the event were: U.S. Senator **Pete Wilson**, keynote speaker; **Mrs. Pete Wilson**, guest of honor and sponsor of the ship; **Mrs. Tina Edlund**, matron of honor; **Lawrence Korb**, Assistant Secretary for Manpower Installation and Logistics, Department of Defense; Rear Adm. **George Davis Jr.**, Naval Surface Force Commander, Pacific Fleet; **William J. Deasy**, president of Morrison-Knudsen; Comm. **Richard Donnelly**, Commander, Military Sealift Command; **C. Larry French**, chairman of NASSCO; **Richard H. Vortmann**, NASSCO president; and **Alfred W. Lutter Jr.**, senior vice president of NASSCO.

The Regulus and her sister ships are among the largest and fastest cargo ships in the world, with an overall length of 946 feet and speed of more than 30 knots. Including the Regulus, five vessels of the FSS program have been delivered to the MSC; all eight T-AKRs will be contracted-operated by civilian mariners, and held in reserve status until needed for contingencies or used in DoD exercises.

The Fast Sealift Ships are former Sea-Land SL-7 containerships. They are being converted to give them roll-on/roll-off capability; heavy- and medium-lift cargo-handling equipment for a self-sustaining potential independent of a developed port facility; an emergency helicopter landing area; and side ports to facilitate rapid loading and discharge. They will provide rapid sealift capability for the transport of military equipment from the U.S. to any part of the world.

MSC is responsible for providing the necessary sealift capability to rapidly deploy military forces overseas and sustain them for as long as operational requirements dictate. The Command also operates auxiliary ships that deliver supplies to Navy combatant ships while under way, oceanographic and survey vessels, and tankers and dry cargo ships that deliver Defense Department cargo worldwide.

ASRY's 1984 Revenues Up Nearly 20 Percent

An occupancy rate of 84 percent during 1984 helped Arab Shipbuilding & Repair Yard (ASRY) of Bahrain to boost revenues up by nearly 20 percent over 1983. The yard celebrated its tenth anniversary last year.

Chairman of ASRY Sheikh **Daij Bin Khalifa Al-Khalifa** said he was particularly encouraged by the success of the non-marine side of ASRY's business in the limited time the company has had to develop it. Its move toward diversification has resulted in a contract for the fabrication and erection of 14 storage tanks for the Ministry of Works, Power and Water, and steel fabrication of 854 tons for the Mina Abdulla refinery project in Kuwait.

During the year, the shipyard completed a major overhaul on Qatar General Petroleum Company's offshore mobile drilling rig Dana, worth almost $4 million; repair of a 62.5-ton propeller for the ULCC Safina Al Arab (357,023 dwt) owned by Salen Tanker of Sweden; and repairs to Saipem of Milan's large pipe-laying barge Castoro Otto (190,984 tons).

A "remarkable" increase in main engine overhauls and in the amount of pipe work carried out helped mechanical work to continue at a high level.

Sheikh **Al-Khalifa**, in looking to the future, said he saw encouraging indications in the shipping industry, pointing out that the number of tankers in lay-up has fallen quite sharply and that charter rates should improve over the next few years. "We also anticipate high traffic in the Arabian Gulf of chemicals and iron ore and in due course the carriage of liquefied gas," he added.

The yard's links with Lisnave Shipyards of Portugal are to continue, although the Bahrain-based facility is gradually reducing the number of employees on secondment as its own technical expertise increases.

For further literature containing full information on Arab Shipbuilding & Repair,

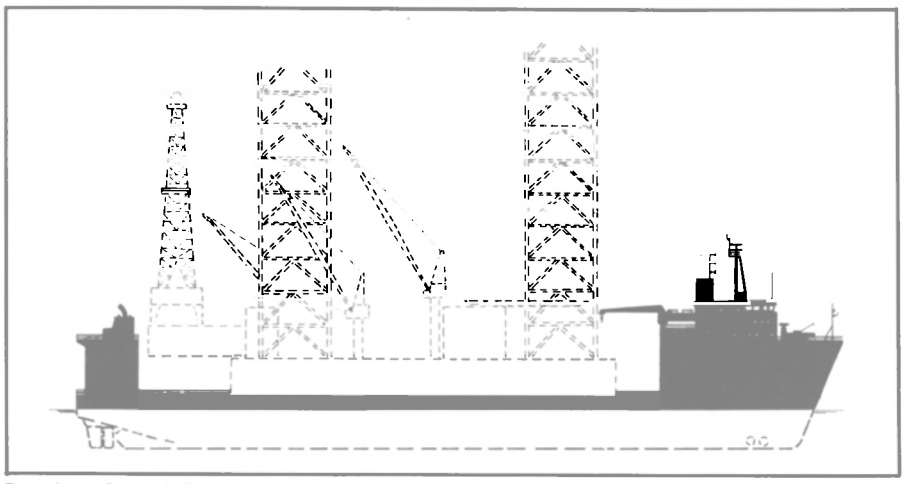
Circle 51 on Reader Service Card

MarAd Awards Contract For Three Workboats To Quality Shipbuilders

The Maritime Administration has awarded a $799,999.95 contract to Quality Shipbuilders, Inc. of Moss Point, Miss., for construction of three fleet service vessels. The contract also stipulates an option for nine additional vessels if funds become available.

The 57-foot, steel workboats will be used by MarAd's National Defense Reserve Fleet (NDRF) personnel to maintain and preserve NDRF vessels. The vessels are expected to be completed in seven months.

MarAd maintains the fleet as a ready source of vessels for use during national emergencies.



Drawing of specialized vessel being built for the Soviet Union by the Wartsila Turku Shipyard, which will transport floating oil drilling rigs.

Wartsila Wins Contract To Build Rig Transport Vessel For USSR

Wartsila's Turku Shipyard in Finland recently received an order from the Soviet Union for a specialized vessel intended for transportation of floating oil drilling rigs weighing up to 20,000 tons. The contract, valued at about $42 million, was won against fierce international competition. Scheduled for delivery at the beginning of 1987, the vessel will provide about 800 man-years of employment for the Turku yard.

The 34,000-dwt transporter will have an overall length of 567.58 feet, beam of 131.23 feet, and depth at the side of 39.37 feet. Main propulsion will be by two medium-speed Wartsila Vasa 18V32 diesels with a total output of 15,650 bhp at 800 rpm. Service speed will be 14 knots.

The vessel will be able to transport on its deck the biggest jackup or semi-submersible drilling rig now in service. The transporter will load a rig by submerging to a draft of about 69 feet, after which the rig will be towed into position above the cargo deck. The ballast tanks will then be emptied using compressed air, raising the vessel and the rig on deck into the transporting position.

In addition to its transporting role, the vessel can be used for the drydocking of drilling rigs and other ships. Loading, transporting, and unloading operations will be monitored and controlled by a Wartsila-developed computer system.

NFLUENCE READERS WORLDWIDE IN . . .

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DOUBLE ISSUE

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ARITIME EXPOSITION IN DECADES"

This will be the fourth year the prestigious society of Naval Architects and Marine Engineers is sponsoring a marine trade show in conjunction with their internationally renowned annual meeting and technical symposium in New York City.

Previous S.N.A.M.E. Expositions have been resounding successes. All exhibit space was completely booked at an extremely early date and attendance exceeded all expectations. This fourth annual combination technical symposium and exposition is also booked to capacity with far more exhibits than last year and attendance is certain to exceed that of 1984.

The November double issue of MARITIME REPORTER will contain details of the full technical program as well as all activities associated with the exhibition during this most important annual event.

The November double special issue will be mailed to MARITIME REPORTER'S entire readership before the conference takes place . . . plus . . . it will receive extra distribution at S.N.A.M.E. in New York.

The November special issue is traditionally one of MR's largest and best-read issues. It provides all marine advertisers with an unequalled opportunity to deliver their sales message to the world's largest audience of marine management readers . . . both in their offices . . . and at this fourth S.N.A.M.E. annual . . . which has firmly established itself as the premier maritime industry exposition.

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- **ANNUAL MARINE CATALOG**

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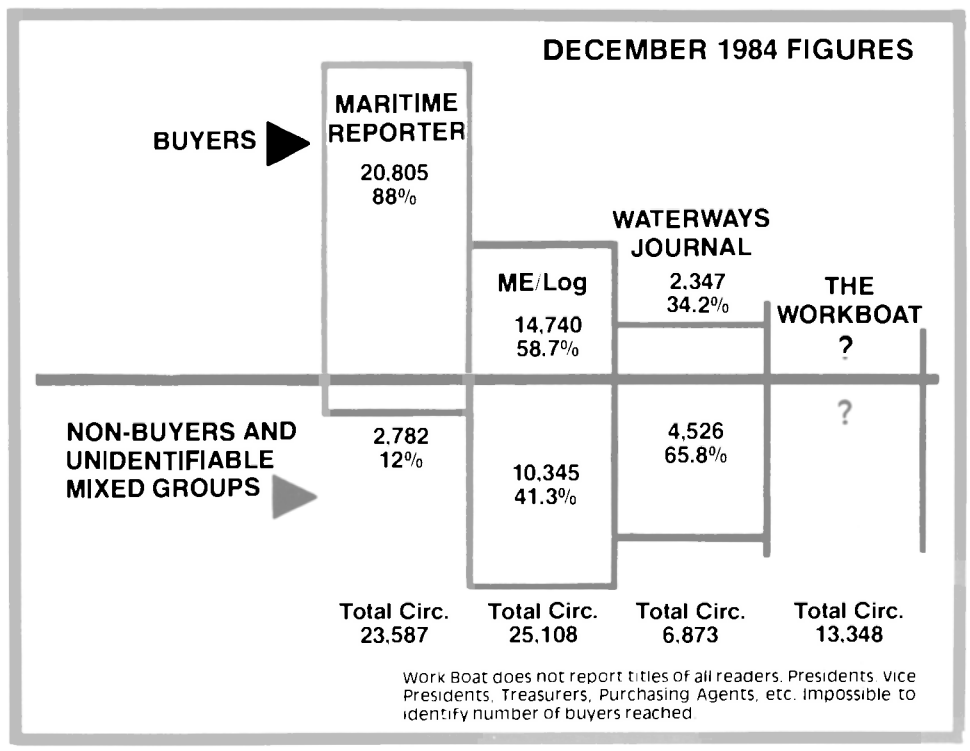

NEW — June 1985 - MARITIME REPORTER's total circulation increased to 24,305 including a record 21,609 Buying Influence Readers.

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459

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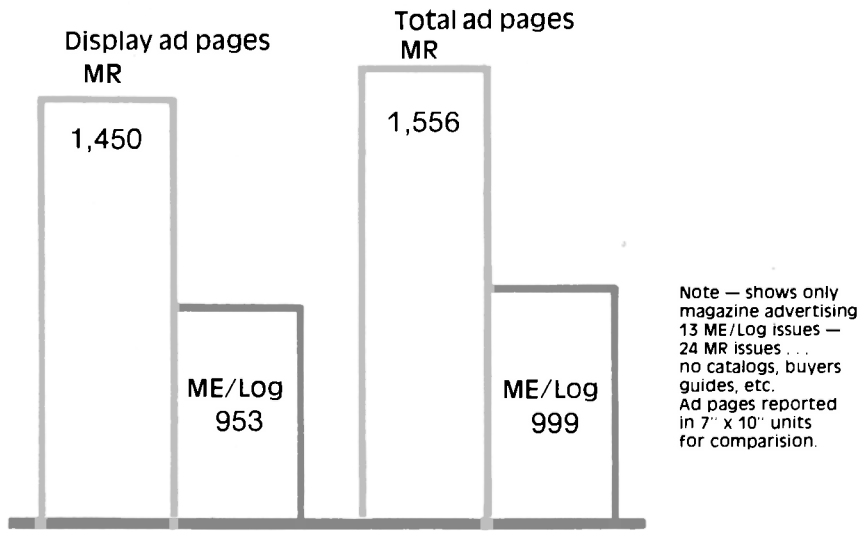

Note — shows only magazine advertising 13 ME/Log issues — 24 MR issues . . . no catalogs, buyers guides, etc. Ad pages reported in 7" x 10" units for comparision.

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CANADIAN SHIPBUILDING AND REPAIR YARDS

—A directory of the leading shipbuilding and ship repair firms—

The following listing of Canadian shipyards highlights yard capabilities and special services offered. For full descriptive literature circle the appropriate number on the Reader Service Card in the back of this issue.

ALLIED SHIPBUILDERS

Circle 21 on Reader Service Card

Allied Shipbuilders Ltd. of North Vancouver, British Columbia.

Builders of: Steel vessels up to 10,000 dwt. Self-loading/unloading log barges—Tugs—Ferries—Fishing Vessels—Shallow Draft Craft—Patrol & Service Vessels—Supply Vessels—Barges & Pontoons.

Specialties: —Vessels for erection at remote sites.
—Western Machine Works hydraulic tow pins and hooks.
—Deliveries within 5-7 months of award of contract.

Ship Repairs: Drydocking and repairs to wooden and steel vessels. Two floating drydocks, one with a capacity of 750 tons and the second with a capacity of 250 tons. Conversions, repowering, mid-life refits, etc.

Shops are equipped for prefabrication of steelwork and piping and include a Joiner Shop, Machine Shop and Electrical Shop. Two floating drydocks provide very adequate facilities for ship repairs, maintenance and modifications. The shipyard occupies an area of some 10 acres with approximately one-quarter mile of river frontage.

Western Machine Works and Coast Engineering Works, Divisions of Allied Shipbuilders Ltd., manufacture patented hydraulic tow pin/hook units, which have gained worldwide recognition, produce and repair shafting and stern gear equipment.

BEL-AIRE SHIPYARD

Circle 22 on Reader Service Card

Bel-Aire Shipyard Ltd., North Vancouver, British Columbia.

Builders of: Offshore and Arctic Drilling Supply Vessels, Fishing Vessels, Tugs and Tug Supply Vessels, Barges, Research Vessels.

Ship Repairs & Conversions: Survey Vessels, Tugs, Fishing Vessels, Pleasure Craft.

The shipyard is self-sufficient for most of its ship construction and outfitting requirements. In addition to steel fabrication and assembly shops, the company operates machine, pipefitting, electrical, joinerwork and paint departments.

BRETON INDUSTRIAL

Circle 23 on Reader Service Card

Breton Industrial and Marine Limited, Port Hawkesbury, Nova Scotia.

Builders of: Tugs, Barges, High Speed Steel and Aluminum Service and Patrol Vessels, Passenger Ferries, Work Boats, Special Service Vessels.

Repair: Repair work to Service Craft, Fishing Vessels, Ship Conversions and general repair in both steel and aluminum.

COLLINGWOOD SHIPYARDS

Circle 24 on Reader Service Card

Collingwood Shipyards—Division of Canadian Shipbuilding & Engineering Limited, Collingwood, Ontario.

Builders of: Specializing in maximum St. Lawrence Seaway vessels including self-unloaders. Other ships include tankers, passenger/vehicle ferries, bulk carriers, tugs, barges for both Great Lakes and ocean service.

Repairs/Conversions: Ship repairs, conversions, refit work of all types and associated services including inspections. Graving dock, 630′ x 65′ x 16′-6″ over sill as well as dockside repair facilities for all Great Lakes vessels.

The General Engineering Department offers steel fabrication and heavy machine shop facilities, all manufactured through CSA Z-299.3 Quality Verification Standards.

One of the yard's widely recognized products is the Collomatic Electro-Hydraulic Self-Tensioning Mooring Winch, designed and patented in response to the need for a rugged, reliable, self-contained winch for the rigorous seaway demands.

Other specialized products include electro-hydraulic towing winches, hatch cover cranes and hatch clamps. A wide variety of other products can be manufactured to owner's specification.

HERB FRASER & ASSOCIATES

Circle 25 on Reader Service Card

Herb Fraser & Associates Limited, Port Colborne, Ontario.

Ship Repairs: All phases of ship repairs afloat to Boilers, Machinery, Hull and Electrical Equipment. Vessels up to 730′0″ accommodated.

Conversions afloat, re-boilering, re-engining, bow thrusters, installations and steel fabrications.

Builders of: Garbage incinerators, Aluminum Ladders and Aluminum Gangways.

GENSTAR SHIPYARDS LTD.

Circle 26 on Reader Service Card

Genstar Shipyards Ltd. (formerly **Vancouver Shipyards Co. Ltd.**) North Vancouver, British Columbia.

Builders of: All types of vessels including tugs, fishing vessels, barges, ferries, offshore supply vessels, seismic research and offshore marine structures up to 167 m long and 30 m beam, maximum launch weight 7,000 tons.

Repairs: All types of vessels up to 1,200 tons displacement. Deepsea going vessels at loading berths. Also have Esquimalt Graving Dock available for vessels up to 357.5 x 38.40 x 10.67 m over keel blocks. Conversions, modifications, lengthening of all types of vessels.

GEORGETOWN SHIPYARD

Circle 27 on Reader Service Card

Georgetown Shipyard Inc., Georgetown, Prince Edward Island.

Builders of: The shipyard specializes in the building of small and medium size steel and aluminum hulled vessels. Vessels constructed include trawlers, seiners, and other fishing vessels, commercial and naval tugs, fishery research vessels, fast search and rescue craft, ferries, barges and floating docks.

Ship Repairs: The company is engaged in all types of ship repairs including drydocking (600 ton maximum at present by 2,000-ton capacity planned for 1985) annual refits, conversions and along-side work on larger vessels such as tankers and Coast Guard vessels.

GOOD PEOPLE SEA & SHORE SERVICES

Circle 28 on Reader Service Card

Good People Sea and Shore Services Inc., North Sydney, Nova Scotia.

Builders of: Ferries, Barges, Special Service Vessels.

Ship Repairs: Repairs, conversions, refits.

HALIFAX INDUSTRIES

Circle 29 on Reader Service Card

Halifax Industries Limited has two yards: Halifax Shipyard, Halifax Harbour, West Shore and Dartmouth Marine Slips, Halifax Harbour, East Shore.

Halifax Shipyard is a comprehensive ship repair, shipbuilding and industrial fabrication facility serving the national and international market for over 100 years. Located in the ice-free, deep-water port of Halifax, Nova Scotia, Halifax Shipyard is the closest major North American repair centre to the North Atlantic Great Circle Route.

Dartmouth Marine Slips, across the harbour from Halifax Shipyard, has been in continuous operation for over 130 years.

Builders of: Trawlers, Oil Rigs, Drill Ships, Ferries, Major Conversions, Industrial Projects, Cranes, Offshore Oil and Gas Projects.

Ship Repairs: The recent addition of a Panamax Dock has added to Halifax Shipyard's capabilities. Halifax Shipyard and Dartmouth Marine Slips are capable of carrying out every type of repair required by national and international ship owners. Both yards provide services for the Offshore Oil and Gas marine activities.

Halifax Shipyard and Dartmouth Marine Slips both have all the shop facilities required in a shipyard.

Halifax Shipyard fabricates and assembles steel units in its large assembly shop up to 100 tons. Halifax Shipyard manufactures Joiner Systems for Marine Outfitting.

MARINE INDUSTRIE LTEE

Circle 30 on Reader Service Card

Marine Industrie Limitée, Tracy, Quebec.

Builders of: Multipurpose cargo ships, container vessels, ice-reinforced supply vessels, tankers, floating cranes, drydocks, diesel-electric research vessels and icebreakers, tugs, barges, trawlers, ferries and naval vessels.

Ship Repair: MIL is also known for outstanding ship repair, refit and conversion work. Situated about 40 miles down river from the Port of Montreal, the shipyard is well situated, completely equipped and expertly staffed to effect speedy and economical overhauls and repairs of virtually any ship up to 25,000 dwt.

Offshore Construction: MIL can undertake the construction of offshore structures including decks, modules, jackets, semi-submersible and jack-up drilling rigs, accommodation rigs, heavy lift vessels, floating production facilities, etc. Offshore hook-up and commissioning and maintenance of fixed and floating offshore structures are also offered by the company.

In addition, the facilities of MIL's

other divisions are available to the Shipbuilding Division—including a well equipped Heavy Machine Shop and a large Stress Relieving Furnace.

The shipyard has been using the AUTOKON CAD/CAM system for steel definition and manufacturing since 1970, and in late 1983, purchased the latest interactive AUTOKON modules that will serve for both engineering .and manufacturing.

Housed in a new CAD/CAM facility, containing 12 terminals and located adjacent to the drawing offices, MIL has one of the most powerful CAD/CAM facilities for shipbuilding.

Apart from the design and drafting capabilities, MIL also uses the "SPAR" planning and control modules for work planning, estimating and material control, etc.

The CAD/CAM software from GE, called CALMA is also being used in the shipyard, but more specifically for the Hydro-Electric Division at this time.

MARYSTOWN SHIPYARD

Circle 31 on Reader Service Card

Marystown Shipyard Limited, Marystown, Newfoundland.

Marystown Shipyard Limited is situated in Mortier Bay, on the Burin Peninsula, Newfoundland. The port is ice free all year round and is strategically located close to all East/West shipping traffic lanes, as well as being very convenient to all local shipping and trawler operations. Mortier Bay is a sheltered deepwater port with depths in excess of 200 feet and is an ideal location for doing work afloat on oil rigs, while offering shelter from the elements.

The yard was completed in 1968 and, in facilities and concept, is one of the more technologically advanced yards of its size in the world.

Shipbuilding: All classes and types of ships to 3,000 L tons displacement.

Specialties: Offshore supply and anchor handling tugs. Fishing vessels of all sizes and types.

Ship Repairs: Vessels of all types to 3,000 L tons displacement, syncrolift, marine elevator with transfer capable of drydocking six ships of maximum size at one time. Dimensions of syncrolift: 76.22 m x 18.29 m x 3,000 L tons displacement. An under cover steel preparation, assembly and erection with two 250 ft. building berths under one roof. The Steel Shop has a 1:10 Automatic Flame Cutter, a 600 ton Rolling and Flanging Press capable of handling plates 30 ft. wide x 1 inch thick, a 300 Brake Press, a 100 ton Gap Press, a 200 ton Cold Bar Bender and Numerical Control Cutting equipment. The Engineering, Pipefitting, Joiner, Painter and Electrical Shops are conveniently situated adjacent to all activities and have all the modern equipment necessary for the construction, fitting out and repair of all types of vessels.

NEWFOUNDLAND DOCKYARD

Circle 32 on Reader Service Card

Newfoundland Dockyard, St. John's, Newfoundland.

The Newfoundland Dockyard is strategically situated in the sheltered, ice-free harbour of St. John's, Newfoundland—close to the North Atlantic shipping lanes. In fact, it's the first point of refuge on the North American shore.

Repairs: Specializing in ship repairs, conversions and refit work on all types of commercial, government, and naval vessels.

NORTHERN ARC SHIPBUILDERS

Circle 33 on Reader Service Card

Northern Arc Shipbuilders Ltd., Hay River, Northwest Territories.

A major portion of shipbuilding, conversions and repair needs of companies engaged in MacKenzie River and Beaufort Sea operations are contracted through Northern Arc.

Builders of: Ice-class tugs, ferries, barges, crew boats, work boats, pollution control vessels.

Ship Repairs: Ships of all types, ship conversions, general repairs and associated services.

(continued on page 30)

CANADIAN YARDS

(continued)

PICTOU INDUSTRIES

Circle 34 on Reader Service Card

Pictou Industries Limited, Pictou, Nova Scotia.

The present company was incorporated in 1984 and along with its affiliated shipyard at St. Catharines, Ontario, has recently concentrated on improving its capability to service offshore petroleum and gas activities, including the supply of steel assemblies and modules up to 2,000 tons, and vessels up to 100 meters long.

Builders of: Steel Fishing Vessels, Passenger Ferries, Automobile and Railway Ferries, Patrol Boats, Ocean Tugs, Barges, Ro-Ro Vessels, Supply Vessels, Drydocks and Cargo vessels to 100 M LOA and 5,000 GRT.

Ship Repairs: Afloat repairs of all types up to 7,000 GRT. Marine Railway—for ships up to 2,000 tons with side transfer to take three 240′ vessels.

Specialities: Offshore Supply Vessels, Safety-Standby Vessels, Oil/Gas Production Platforms and Fishing Trawlers.

Shops are arranged for steel fabrication, machining, piping, electrical, electronics, carpentry, engine fitting, sheet metal, smithing and lofting.

PORT ARTHUR SHIPBUILDING

Circle 35 on Reader Service Card

Port Arthur Shipbuilding Company—Division of Canadian Shipbuilding and Engineering Limited, Thunder Bay, Ontario.

Builders of: Generally confined to ship repairs and major conversions, but facilities and men available for major construction.

Winter Repairs: Docking of ships can now be carried out at all times of the year including winter lay-up by means of an extensive bubbler system.

PORT WELLER DRY DOCKS

Circle 36 on Reader Service Card

Port Weller Dry Docks—A Division of ULS International Inc., St. Catharines, Ontario.

Port Weller Dry Docks was founded in 1946 and was purchased by Upper Lakes Shipping in 1954. The shipyard has been dedicated to remaining flexible in its building capability as a basis for its competitiveness. As such, the company is committed to the acquisition of new technology to maintain and improve its efficiency.

Builders of: Self-unloading bulk carriers for inland and ocean traffic, ice strengthened ships, tankers, ro/ro ships, passenger, rail and car ferries, tugs and barges.

Ship Repair: All types.

PURVIS NAVCON SHIPYARD

Circle 37 on Reader Service Card

Purvis Navcon Shipyard Ltd., Selkirk, Manitoba.

Builders of: Ferries, Cruise Vessels, Tugs, Barges, Crew Boats, Fishing Vessels, Work Boats.

Ship Repairs: Ships of all types, ship conversions, general repairs, associated services.

RIVTOW INDUSTRIES

Circle 38 on Reader Service Card

Rivtow Industries Limited, operates two divisions in Vancouver, British Columbia:

B.C. Marine Shipbuilders Division

Builders of: Tugs, Barges, Ferries up to 80 m

Repairs: Coastal and Deep-Sea, All Types

West Coast Manly Division

Builders Of: Tugs, Fishing Vessels, Patrol Vessels, Crew Boats—Steel or Aluminum to 80 m, Barges to 80 m.

Repairs: Coastal vessels.

West Coast: Manly is also active in Ships Component Manufacturing—doors, windows, quick opening manholes, propellers, Kort nozzeles.

ST. JOHN SHIPBUILDING

Circle 39 on Reader Service Card

Saint John Shipbuilding & Dry Dock Co., Ltd., Saint John, New Brunswick.

The shipyard is situated in the sheltered ice free harbour of the Port of Saint John and is served by the deep water, ice free, approaches of the Bay of Fundy.

Builders of: Ocean going crude and product tankers, bulk carriers, icebreaking and ice strengthened vessels, tug barge systems, ferries—vehicle and passenger, tugs, floating cranes, fishing vessels, floating processing plants, offshore drilling rigs and production platforms, hydrographic and oceangraphic vessels, naval vessels, coast guard vessels, passenger vessels.

Ship Repairing: Support by the technical and production facilities of the shipyard, the ship repair division of Saint John Shipbuilding & Dry Dock Co., Ltd., is staffed by an experienced and well integrated team, capable of responsing promptly to owner's requirements for hull and machinery repairs, conversions and surveys, either in drydock or afloat.

VERREAULT NAVIGATION

Circle 40 on Reader Service Card

Verreault Navigation Inc., Les Mechins, Quebec.

Builders of: Tugs, dredges, scows, ferries, pleasure boats (yachts) and, mostly, fishing vessels.

Ship Repairing: Vessels of all types (icebreakers, tankers, ferries, tugs, etc.).

VERSATILE DAVIE

Circle 41 on Reader Service Card

Versatile Davie Inc., Lauzon, Quebec.

Builders of: Offshore Drill Rigs, Offshore Platforms, Jackets, Supply Boats, Icebreakers, Great Lake Bulk Carriers, Tankers, Cargo Vessels, Barges, Naval Vessels, Patrol and Service Vessels, Ferries, Dredges, Trawlers, Tugs. Capacity up to 100,000 dwt.

Ship Repairs: Ship repairs and conversions of up to 364 m in length and 36.57 m in width.

VERSATILE PACIFIC

Circle 42 on Reader Service Card

Versatile Pacific (formerly Burrard Yarrows Corporation) operates two divisions: the Vancouver Division, North Vancouver, British Columbia and the Victoria Division in Esquimatt, British Columbia.

Versatile Pacific has a wide-ranging capability in ship construction, having built commercial and naval vessels of various types and sizes, including extensive experience in the construction and conversion of ice-strengthened vessels for Arctic service.

Builders of: Destroyer escorts, icebreakers, passenger and automobile ferries, rail car ferries, tugs, tankers, seismographic research vessels, offshore service vessels, large multipurpose barges and special purpose types.

Ship Repairs: Ship repair facilities available at Victoria for ships up to 1,170 feet long and 125 feet wide, and at Vancouver for ships up to 700 feet long and 150 foot beam.

VERSATILE VICKERS

Circle 43 on Reader Service Card

Versatile Vickers Inc., Montreal, Quebec.

Established in Montreal, Quebec in 1911 to support U.K. naval forces under the name of Canadian Vickers Limited, the shipyard was one of the leading builders of commercial, service and naval vessels.

After building 294 ships, the company decided to specialize in ship

repairs to improve customer service and fill an urgent need in the great Port of Montreal and on the Seaway Shipping Lane.

Ship Repairs: Under the name of Versatile Vickers Inc. the company has specialized in ship repairs, conversions and refit work of all types of commercial, service (ice-breakers, ferries, etc.) and naval vessels.

With its own basin (500′ x 1,600′ x 48′ draft), three Seaway lock-size floating drydocks and experienced staff, year-round service and quick turn-arounds are assured.

The yard is fully qualified to undertake annual and quadrennial inspections.

The company's Industrial Division with its three large Fabricating Shops, Pipe Shop, large, well equipped Machine Shop with CAD/CAM system and 16 computerized numerical controlled (C.N.C.) machine tools, in addition to other large equipment is supporting the company's Ship Repairs activities.

Weld Tooling Offers New Brochure Describing Portable Cutting Machine

A four-page brochure describing the new lightweight, easy-to-carry Beam Bug III cutting machine designed to cut beams, channels, and angles from one rail setting is available from Weld Tooling Corporation of Pittsburgh.

The brochure describes how the unit produces smooth, square, accurate cuts and virtually eliminates grinding and touch-up. A photograph of the product, operating details, and schematic drawings are featured in the publication.

For further information and a free copy of the brochure.

Circle 97 on Reader Service Card

Holman and Wildasin Elected At Raymond International

Granville W. Holman Jr. was recently elected president and chief operating officer of Raymond International Inc. and **James J. Wildasin** has been elected president of Raymond Offshore Constructors, Inc., a subsidiary of Houston-based Raymond International, a world-wide engineering and construction company.

Mr. **Holman,** who previously was executive vice president and a member of the Office of the CEO of Raymond International, will continue as chairman and chief operating officer of Raymond Kaiser Engineers Inc., the engineering subsidiary headquartered in Oakland, Calif.

A veteran of more than 30 years of service with the Raymond and Kaiser Engineers organizations, Mr. **Holman** is a director of Raymond International and of the holding company, Raymond Holdings Inc.

Mr. **Wildasin,** a director of Raymond International, had served as executive vice president of Raymond Offshore Constructors since 1981. He joined the company as senior vice president-operations in 1979. His responsibilities encompass the company's foreign and domestic fabrication and offshore installation operations, including the fabrication facility in Houma, La. operated by a subsidiary, Raymond Fabricators Inc.; Raymond Offshore's fleet of heavy-lift vessels; and various major international joint ventures.

Cal Dive Awarded Two Contracts By Pemex —Literature Available

Cal Dive International, Inc., Houston, Texas, through a Mexican joint venture company, Constructora Submarina, S.A. de C.V., has been awarded two rig support contracts by Pemex. These contracts call for saturation diving to a depth of 500 feet onboard the drilling rigs Revolution and Reforma for a two-year term. The drilling operations are taking place in the Sea of Cortez off Mexico's Pacific West Coast.

Cal Dive International, Inc. is a full-service subsea service company operating worldwide in support of the offshore energy industry.

For further information on Cal Dive International,

Circle 58 on Reader Service Card

ELECTRONICS UPDATE

Furuno Introduces New Low-Cost, High-Performance Loran Navigator

Furuno USA, Inc. has recently introduced a new loran navigator, LC-90, which is housed in a rugged diecast aluminum case and provides all the features necessary for safe and efficient navigation aboard any size boat, ranging from freshwater bass boats to the largest world-cruising yachts. Reportedly, the unit's performance matches or exceeds even the most expensive loran C receivers on the market today, yet it is inexpensive and compact, measuring 11 inches wide, 5.75 inches high and 3.5 inches deep, including mounting bracket. The LC-90 weighs 6.4 pounds.

Sealed membrane touchpads provide positive, splashproof control of all functions displayed on the large five-line liquid crystal display (LCD). Both touchpads and display have variable back-lighting for nighttime operation.

Once local position has been entered, operation of the LC-90 is completely "hands-off." It automatically selects the proper GRI and optimum slaves, compensates for ASF to give accurate latitude/longitude readout, compensates for local magnetic variation for accurate magnetic bearings, and sets the six internal notch filters to eliminate interference. If desired, these automatic features can be manually overridden by the operator.

In addition, entry and readout for all position functions may be either Lat/Lon or TD, making Furuno's LC-90 extremely simple to operate.

The LC-90 is highly sophisticated. For example, with 100-waypoint memory and route planning capability, up to 10 individually designed routes can be entered (each consisting of up to 10 waypoints) and the LC-90 will automatically guide a vessel along the programmed course. It will compute and display range/bearing from present position to any waypoint or between waypoints, crosstrack error, course offset and steering indication. It also has off-course, border, arrival and anchorwatch alarms. Additionally, the unit will compute and display speed and course made good, velocity to destination, time and distance to go, plus complete loran system status information.

Connecting to other onboard equipment is simple and straightforward. The LC-90 has a built-in interface that provides Furuno CIF output for course plotters, printers, sonars and color video sounders; NMEA 0180 simple format output for autopilots; and NMEA 0183 complex format output for plotters.

The LC-90 will operate from any 10-42 VDC power source and draws only 9 watts. It comes complete with antenna coupler and cable, installation material and basic spares.

For more information and free literature on the Furuno LC-90 loran navigator,

Circle 61 on Reader Service Card

NMEA Plans Expansion Of Interface Standard

The National Marine Electronics Association (NMEA) is currently studying plans for the revision and expansion of the NMEA 0183 (1.1) Interface Standard for Marine Electronics. This Standard is a uniform data communications protocol providing a common "language" that permits information to be exchanged digitally among various pieces of marine electronic equipment such as Loran C, satnav, speed logs, compasses, track plotters, depth sounders, and autopilots.

The NMEA is a professional trade association made up of marine electronics manufacturers, distributors, and dealers. The association took the lead in creating interface standards in the early 1980s, in response to a generally perceived need for standardization in the industry, according to NMEA president **Gerald A. Gutman.** "There is a clear trend in the industry away from the separate use of individual items of electronic equipment in the direction of greater integration," he said. "Prior to the creation of NMEA 0183, there were no standard data protocols for tying together products made by different manufacturers."

The upgrade program for NMEA 0183 is aimed at expanding the format so that multiple pieces of equipment can be tied together in a local area network (LAN). Currently the NMEA 0183 Standard only permits data to be sent from one "talker" to multiple "listeners." The new format will allow interrogation and reply for multiple listeners and talkers via a dedicated pair of cables.

"Many manufacturers, both in the U.S. and overseas, have already adopted the NMEA 0183 Standard, and it is hoped that the planned revisions will help to advance the cause of standardization in an industry that truly needs it," said Mr. **Gutman.**

The NMEA Standards Committee, which is currently studying the proposed revisions, is chaired by Dr. **Robert M. Freeman** of Metal Marine Pilot, Inc., a pioneer in autopilot technology and a long-time leader in the movement toward standardization.

Complete copies of the NMEA 0183 format are available from the Office of the Executive Director, National Marine Electronics Association, P.O. Box 57, Oronoco, Minn. 55960; (507) 367-2568. The cost is $9.00 postpaid.

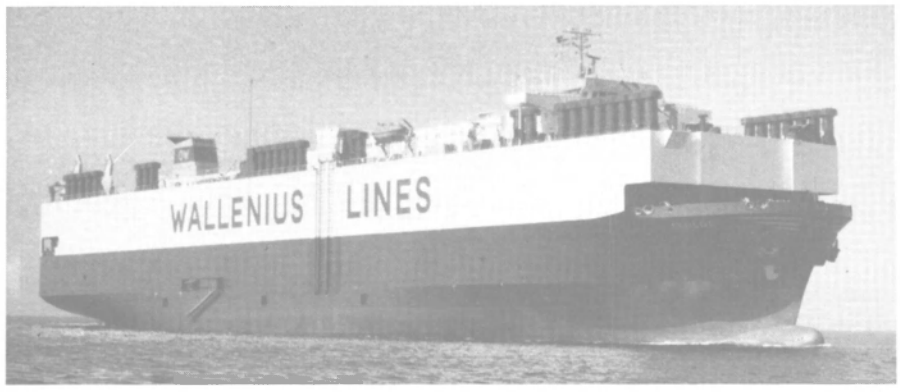
MIROS To Market New Products In U.S. —Literature Available

MIROS A/S of Asker, Norway is a budding company with interests geared towards the offshore market. The company has developed a new generation of instruments for remote sensing of directional ocean waves and surface currents. The system represents a breakthrough for reliable and accurate long term measurements of ocean parameters from offshore installations. The MIROS system is utilized on stationary offshore platforms, and a version for floating rigs and vessels will be commercially available later this year. Typical real-time applications of the system are for support of subsea, crane and anchor operations and for marine traffic control.

MIROS is being represented in the U.S. market by C.A. Richards & Associates, Inc. of Houston, Texas. This company was formed by **Charles A. Richards Sr.** in 1971 as a manufacturer's representative of marine electronics and instrument systems for the offshore petroleum market. The firm has reportedly maintained a steady growth on a profitable basis annually. The sales group consists of the founder, along with **Charles A. Richards Jr.** and **Marshall J. AuCoin**, who both have over 10 years' experience at the firm. C.A. Richards' sales activities cover U.S. oil centers and operations in Texas, Oklahoma, Arkansas, Louisiana and Mississippi.

For further information,

Circle 93 on Reader Service Card



Kockums Completes Advanced Car/Truck Carrier For Wallenius

The pure car/truck carrier Isolde has been delivered by Kockums AB of Malmo, Sweden, to Wallenius Lines of Stockholm. With a capacity of 6,230 passenger cars or a combination of 2,930 cars and 540 heavy vehicles, the new ship has an overall length of 649.6 feet, beam of 105.9 feet, depth to weather deck of 103.35 feet, and scantling draft of 38.7 feet.

The main engine is the latest model low-speed Sulzer 7RTA68 diesel rated 18,100 bhp at 106 rpm, providing a service speed of 20 knots. Isolde is a unifuel ship, with the main and auxiliary engines burning the same heavy fuel oil of up to 600 cSt. Direct-reversing and driving a fixed Lips propeller, the main engine is remote-operated from the bridge or the engine control room; machinery fulfills the UMS requirement of Lloyd's Register of Shipping for unattended engine room.

Electrical power is provided by three 1,600-kw alternators driven by Wartsila-Vasa 6R 32 diesel engines installed in a separate compartment.

Heavy vehicles are loaded on the 4th, 6th, and 9th decks, which are reinforced to carry heavy loads. The 5th, 7th, and 10th decks, and part of the 8th, are divided into hoistable sections that allow vehicle heights of up to 20.34 feet.

The 6th deck is normally the car entrance deck, but at higher berths the middle outside ramp may also be attached to the 7th deck. Two outside loading ramps are positioned at the starboard side; the aft one will be rigged with a 25-degree aft angle to accommodate long vehicles. Internal ramp systems between decks to doors and to openings in transverse bulkheads make it possible to load/discharge the entire ship via only one of the outside ramps.

Fifty-three fans evenly distributed along the entire ship's length have the capacity to change the hold air volume 25/50 times per hour. They are operated individually or in sections from a separate control room on the upper deck; ballast pumps and valves are operated from the same room.

All navigation equipment is of the latest design. The Raytheon radar plant has anti-collision computer with free choice of picture presentation and other features. The Kockumation autopilot is of the totally adaptive, fuel-saving type with set-radius steering for turns. In addition to a Decca Navigator, a Magnavox satellite navigation system is installed. The speed log equipment is duplicated, a Jungner pressure log for deep waters and a Krupp-Atlas doppler log for more restricted waters. Other equipment includes a Raytheon weather facsimile recorder, Simrad echo sounder, Plath magnetic compass and gyrocompass, and Ramanteen radio direction finder.

The radio station, VHF radiotelephones, telex, and lifeboat radios were supplied by Televerket.

Deck machinery includes two Brattvaag combination windlass/mooring winches and six common mooring winches, two of them situated on the forecastle deck and four aft on the mooring deck. Stores, provisions, Suez Canal dingies, etc. are handled by four Maritime cranes on the upper deck.

Crew accommodations, placed on the upper deck far from the engine room and propeller, are outfitted to a very high Scandinavian standard. Other crew facilities include a hobby room, combined cinema/conference room, gymnasium, outside swimming pool, sauna, and a room for trade union matters.

The Isolde operates with a crew of 23 persons. Two 50-person Fiskars covered motor lifeboats and four 25-person Viking life rafts are provided.

Isolde
Equipment/Suppliers

Main engine	Sulzer
Propeller & bow thruster	Lips
Oil-fired boiler	Sunrod
Auxiliary engines (3)	Wartsila-Vasa
Generators	Nebb
Pumps	Hamworthy
Air conditioning	Stal Refrigeration
Hold ventilation system	Flakt
Radio station, VHF radiotelephones, telex, and lifeboat radios	Televerket
Radars (2)	Raytheon
Satnav	Magnavox
Autopilot	Kockumation
Gyrocompass and compass	Plath
Echo sounder	Simrad
Loran C	Navstar
Direction finder	Ramantenn
Doppler log	Krupp-Atlas
Speed log	Jungner
Facsimile recorder	Raytheon
Cargo access equipment	Kvaerner
Windlasses & winches	Brattvaag
Steering gear	Porsgrunn
Anchors	Pihl
Chain	Ramnas
Elevators	Stahl Electric

Tracor's Omega Navigator Offers Precise Positioning —Literature Available

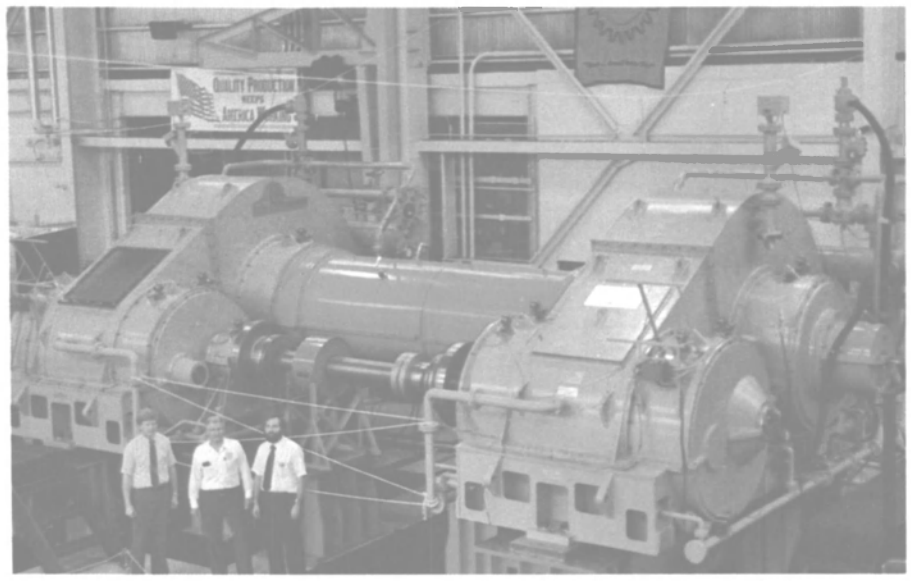
Navigation data are precisely updated every 60 seconds with Tracor Instruments' Omega Navigator. Using the worldwide Omega transmitter network, the microporocessor-based receiver provides latitude/longitude, distance and bearing to multiply waypoints, and calculates course and speed over the bottom, as well as many other useful navigation functions.

Accuracy is enhanced by the use of automatic, three-frequency lane checks and built-in propagation correction. The compact unit comes complete with an antenna/coupler and 100 feet of twin-ax cable. In addition, it may be interfaced with any of Tracor's satellite navigators for a hybrid, integrated system.

For further information and free literature,

Circle 71 on Reader Service Card

PROPULSION UPDATE



CGCO engineers in front of test units while the "load" is held at 115 percent of rate power

Cincinnati Gear Completes Testing Of New, Sophisticated Marine Drive For Navy T-AO 187 Class Oilers

Last month the Cincinnati Gear Company successfully completed back-to-back full-load testing of a sophisticated new marine drive for the U.S. Navy's new T-AO 187 class of fleet oilers. These ships, powered by two Colt-Pielstick PC4, 16, 272-hp diesel engines, represent a giant technological step forward for the Navy. The essential elements in the new T-AO gearboxes are the carburized, hardened and precision ground (CHG) gears having a high-power density. CGCO, under contract to provide these main propulsion gearboxes, stated they developed a cost-effective, high-performance drive package that is stronger, quieter, and 35 percent smaller than a conventional design using through-hardened gears.

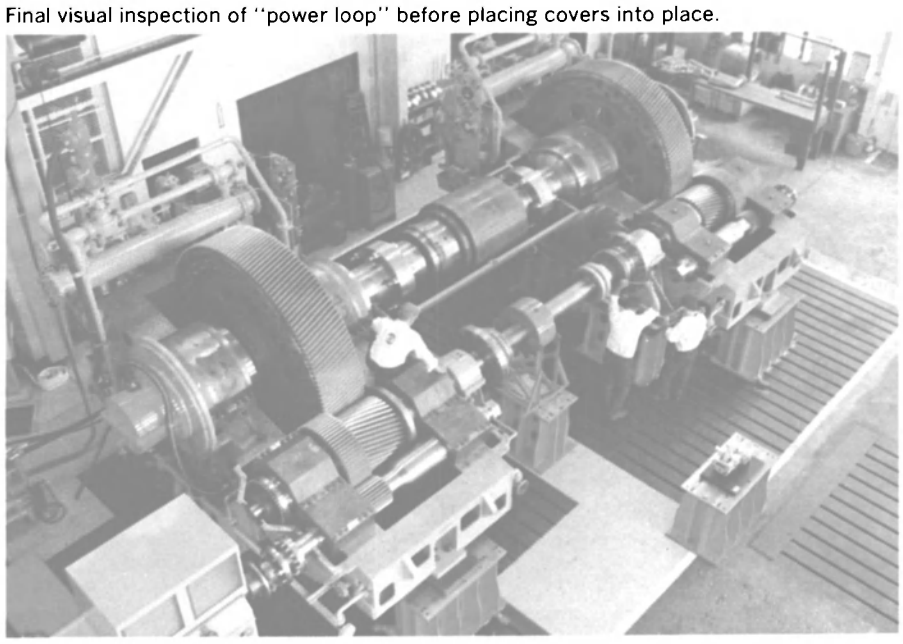
CGCO's high-performance marine facility, Plant III, is utilized to manufacture and test these types of products.

Weighing 23 tons, the surface-hardened bull gear is the largest designed and manufactured in the free world. The T-AO back-to-back test stand is the seventh and largest facility of this kind that Cincinnati Gear has designed, built and operated. CGCO is the first U.S. company to offer back-to-back testing in this size range.

Incorporated into each gearbox are unique features, such as single helical coarse pitch surface-hardened gearing, thrust collars for axial load canceling, integral PTO, three-point mount configuration, and an input quill shaft for main reduction pinion isolation.

The full-load, back-to-back test arrangement had the port and starboard units mounted with the input and the output shaft flanges facing each other and connected with appropriate couplings. The input coupling system incorporated a torque meter in the input quill shaft isolation system to monitor applied torque. The output flanges supported, and were connected by, a large custom-designed hydraulic torque applier.

Final visual inspection of "power loop" before placing covers into place.



The "load loop" was accelerated to speed by a 1,000-hp variable speed motor driving the PTO shaft flange of the port unit. This motor was sized to overcome gear mesh and journal bearing power losses. With these key elements in place, virtually any power/speed combination within the design envelope could be simulated. The tests have established basic performance parameters while the units were subjected to a closely simulated shipboard operating environment in terms of torque, speed and mounting arrangements.

The hydraulic load cell in this test stand in capable of applying loads in excess of 13,000,000 lb.in. torque and 25,000 horsepower. For the T-AO test the unit operated for 25 hours at 100 percent of rated power and speed—16,272 hp at 95 rpm with 900,000 lb.ft. of torque. To demonstrate adequate design margins, the unit was operated at 115 percent of rated power. This back-to-back full-load test confirmed that the units meet given specifications at rated power and speed.

Full face contact of the main pinion/bull gear mesh was verified by dynamic strain gage measurements of a series of bull gear teeth while the test unit ran at rated power and speed. Comparison of variations in peak strain gage measurements of the bull gear teeth verified the accuracy and correctness of the input pinion/bull gear longitudinal and profile corrections. These measurements confirmed that blueprint-specified tooth corrections are adequate to insure a uniform load distribution and allow evaluation relative to current ABS gearing derating factors.

The thrust collar concept demonstrated and proved the effectiveness of canceling the axial force directly at the single helical gear mesh. Loaded thrust collar surfaces were inspected by visually comparing documented static collar pattern/surface finish before testing and collar surface finish after testing.

Airborne and structureborne noise measurements taken throughout the test established a baseline data point for future large, coarse pitch, single helical, main reduction gears.

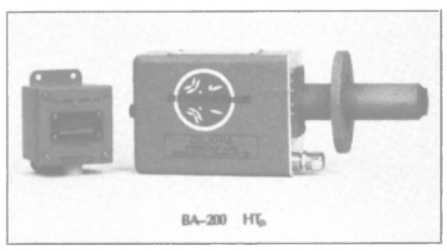
A post teardown inspection at the conclusion of the test program on both the starboard and port units provided engineering/quality assurance data of all gears, bearings, and thrust cones. The units were subsequently reassembled to production configuration, packaged, and shipped.

To the military there are obvious benefits of carburized, hardened and precision ground (CHG) marine gears for applications which are sensitive to noise generation and/or detection. Currently there is a growing interest in CHG gears from engineers with commercial marine and other industrial applications looking for ways to better utilize space in a cost effective package.

For complete free literature on Cincinnati Gear Company equipment,

Circle 63 on Reader Service Card

New Alarm Reduces Boiler Failures, Diesel Failures And Repair Costs —Free Brochure Available



Since nearly the beginning of shipboard and power station boiler use, little thought or consideration has been given to boiler protection from oily condensate return caused by seal failure from the turbines.

The U.S. Navy, to protect their boilers, used double-walled boiler tubes. The weight increase, however, caused weight problems in the submarine fleet. In addition, initial cost of manufacturing was much higher than for standard systems. Where the steam pressure is higher than the lubrication pressure, no problem exists until routine boiler shutdown, then leakage may occur and is not discovered until boiler tube failure from lack of heat transfer.

Biospherics Incorporated, Rockville, Md., has now developed a self-cleaning, on-line, oil-in-water alarm which can withstand temperatures up to 250° F. This unit, placed directly into the condensate return lines, will alarm and trigger switch closure on as little as 2ppm oil-in-water, thus saving the boiler accidental damage.

In addition, damage to diesel engine cylinder walls is often due to "hot spots" created by oily deposits caused by seal or gasket failure, allowing lubrication oil to enter the cooling jackets and act as an insulator. The BA-200 HT, introduced by Biospherics, is said to be ideal for diesel protection, and is already installed on the diesel engines of the Canadian Coast Guard's Ice Breakers. The unit is unaffected by common coolant additives. Although this model is a commercial one, it was found to be able to withstand the continuous shock and vibration of the Bombardier engines used in this class of vessel.

Shipowners and diesel engine manufacturers interested in obtaining further information on this "inexpensive insurance policy," should

Circle 62 on Reader Service Card

Seattle Yard GM Elected To Todd's Board Of Directors

John T. Gilbride Jr., vice president and general manager of Todd Pacific Shipyards Corporation's Seattle Division, has been elected to the board of directors of Todd Shipyards Corporation, the largest independent shipbuilding company in the U.S., with five divisions on two coasts.

Mr. **Gilbride** graduated with honors from Lehigh University in Bethlehem, Pa. He began his career with Todd and its Seattle shipyard in 1968, and completed a one-year Management Advancement Training Course.

Prior to his present position, which he assumed in 1979, Mr. **Gilbride** held various posts in the Production and Administration Departments at Todd-Seattle. Assignments included estimator, price negotiator, ship superintendent, outfitting superintendent, project superintendent, program manager, assistant production manager, general superintendent, and assistant general manager.

Caterpillar Offers 20-Page Catalog On Marine Diesels

Caterpillar Marine Systems is offering a free catalog on their marine engine/transmission and marine generator set lines.

The 20-page catalog lists a dozen Cat marine propulsion diesels including: 3304, 3208, 3306, 3408, 3412, D379, 3508, D398, 3512, D399 and 3516 models.

A handy rating selection chart is included in the catalog which shows the continuous, medium-duty, light-duty and pleasure craft (where applicable) ratings for each model in horsepower and kilowatts. The graph is an excellent help in selecting the correct marine engine/transmission or marine generator set for the right job.

The publication also contains several black and white photographs of the diesels, along with other Cat equipment.

For a free copy of this 20-page catalog,

Circle 94 on Reader Service Card

Wagner Wins $4.5-Million Contract For Steering And Control Systems —Literature Available

Wagner Engineering Ltd. of North Vancouver, B.C., Canada, has announced that it has been selected by Saint John Shipbuilding Limited to supply the steering systems as well as integrated steering control systems for six patrol frigates being built for the Canadian Navy. The $4.5-million contract will provide 73 man-years of employment throughout the duration of the project. The Canadian content of the equipment will be more than 90 percent.

A Wagner 100-ton/meter rotary vane actuator, powered by two 100-hp, electric-motor-driven pumping sets, will operate the rudder through 35 degrees. Two Model TA220 pumping sets will include Model M110 valve assemblies to provide modulated proportional control for high rudder positional accuracy. The valve assemblies will also provide an interface for the electric steering and autopilot.

A dual steering control system will include an adaptive feature in the autopilot as well as automatic fail-safe circuitry to permit instantaneous inter-channel switching. Electric steering controllers and a multiple-station rudder angle indicator system are also part of the package.

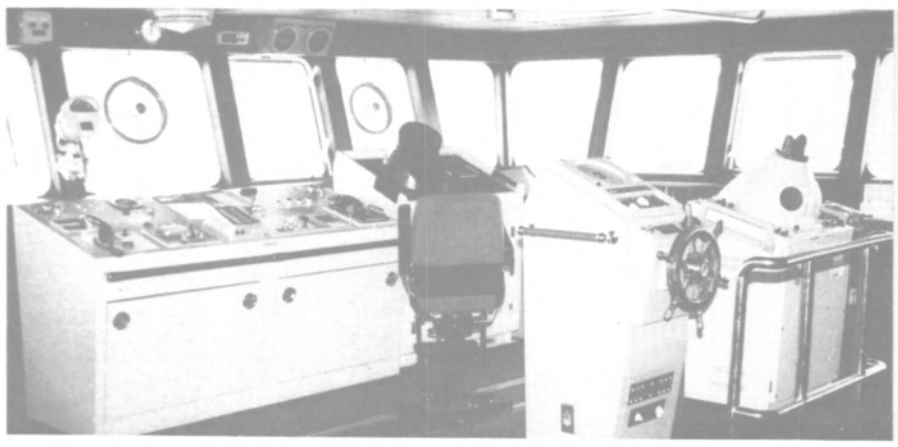
All steering and control components are designed and manufactured by Wagner and meet stringent military quality, performance, and environmental standards with respect to severe shock and vibration.

Wagner Engineering, represented in more than 60 countries, has been manufacturing marine hydraulic steering gears and associated products for more than 40 years.

For further information and free literature,

Circle 78 on Reader Service Card

The high level of sophistication on the Leonard J. Cowley will be of significant benefit for the detection and prosecution of foreign vessels illegally fishing within Canada's 200 mile zone in the Northwest Atlantic.



A section of the bridge.

West Coast Manly Shipyards Delivers Fisheries Patrol Vessel Leonard J. Cowley

The latest addition to the Canadian Department of Fisheries and Oceans' fisheries patrol fleet, the Leonard J. Cowley, is the largest and most sophisticated vessel of her type in Canada. Operating out of St. John's, Newfoundland, her major function will be the surveillance of the offshore fishing fleet within the Canadian 200-mile exclusive fisheries zone as far as 75° N and within Northwest Atlantic Fisheries Organization waters outside the zone.

This activity requires precise navigation, excellent boarding facilities and superior communications as well as seakindliness in all weathers, substantial capability in ice and helicopter facilities. All of these requirements are fully met. The vessel is also well equipped for search and rescue response.

Built by West Coast Manly Shipyards of Vancouver, B.C., a division of Rivtow Industries Limited, the ship's principal particulars are: gross tonnage, 2,244; displacement, 2,086 tons; overall length, 72 meters (about 236 feet); maximum beam, 14 meters (about 46 feet); and mean draft, 4.5 meters (about 14¾ feet). Main engines are two 12-cylinder Polar Nohab F312A diesels, and propulsion is 3,120 kw, single-screw, variable pitch. She is classified Lloyd's 100 A.1., Ice Class 1*, LMC.

Designed by Cleaver and Walkingshaw of Vancouver, the Leonard J. Cowley has numerous innovative features, representing the leading edge of technology in navigation systems, communications, machinery, electrical monitoring and control, accommodation, helicopter facilities, maneuvering, wheelhouse design and boarding facilities.

The navigation system consists of two Sperry true motion MK-340 radars, one X Band (with a C-P antenna) and one S Band, that are fully interswitchable, combined with a CAS II ARPA, with the Channel Navigation Option. This system in turn is linked to a Sperry/TRAC IVB Qubit fully integrated navigation computer that is capable of filtering sensor information for maximum probability computations, using the INSQUA technique. This system includes high resolution color graphics, twin disc drives, a plotter, printer and a remote display. The sensors include twin Sperry Gyros (MK227 and MK37), Magnavox 1107 RS dual channel SATNAV, INTERNAV LC 720 Loran C receiver, and a Raytheon DSN 450 dual axis doppler log.

The communications system by Navitron Communications of Vancouver includes an ITT Mackay 1-kw PEP HF/SSB radiotelephone, two Skanti 400-watt PEP HF/SSB radiotelephones, three VHF/FM transceivers, two VHF/AM transceivers, a watch receiver, an MF/HF radio direction finder, a VHF radio direction finder and radio telex facilities. The vessel is also fitted for future installation of SATCOM and a Glenayre H.F. data terminal.

The machinery and electrical control and monitoring system is fitted to Unmanned Machinery Space requirements. The electrical system includes 3 x 450-kw Stamford main generators powered by Caterpillar 3412 diesels and a 140-kw emergency generator with Siemens switchboards. The ASEA monitoring and control system provides for full monitoring of all machinery systems, including shaft torque and fuel consumption. An interface to the doppler log provides for fuel consumption information based on units of either time or distance.

Modern helicopter facilities have been provided, including an aft helicopter deck and a DAF Indal retractable hangar. For navigation, an Aqua-Signal helicopter strobe beacon and VHF homing transmitter is provided. The vessel is fitted with a Brabazon fueling system that includes provisions for fuel maintenance onboard and can handle all grades of aviation fuel. Twin agent and foam systems are installed for firefighting on the helicopter deck.

For maneuvering, the vessel is equipped with a Wagner MK-6 autopilot with adaptive steering, Wagner radial steering gear, a Schilling rudder and an Ulstein bow thruster. The rudder is one of the largest of its type ever installed and is capable of being put over to 72° in either direction to produce transverse thrust. The bow thruster is a 250-hp constant speed, variable-pitch tunnel thruster. The hull and machinery are reinforced to Lloyd's Ice Class 1* for operations in ice.

The wheelhouse design is unique and designed to maximize visibility in all directions. Shaped like a trapezoid with extended wings, it provides for six distinct yet interdependent workstations.

The boarding facilities are provided to meet the principal mission of the vessel—boarding offshore trawlers at sea in winds to Beaufort 7. The craft themselves are of the Watercraft RI-22 type, built by Crockett McConnell Inc. of Bridgewater, N.S., and are propelled by jet drives powered by Ford Mermaid diesel engines. The port craft is launched by a Miranda davit and the starboard craft by a HIAB 180 Seacrane.

The port boarding craft in Miranda davit.

Tyne Shiprepair Awarded Defence Ministry Contract To Convert Fleet Auxiliary

Tyne Shiprepair Limited (TSL), Britain's biggest shiprepair company, has been awarded a multi-million-pound conversion and refit contract by the Ministry of Defence (Navy). The six-month job is to convert the Royal Fleet Auxiliary (RFA) ship Orangeleaf into a Refueling-at-Sea (RAS) vessel, and to continue her annual refit.

The 33,751-dwt tanker was capable of loading and discharging fuel, but was not fitted with RAS equipment. The contract will be carried out at TSL's Wallsend Dockyards.

The work entails fitting the RAS equipment, fabricating and fitting a 180-ton deck above the main deck, extending the accommodations to provide extra cabins, recreation rooms, and galleys for a total complement of 60, modifying the cargo pipelines, and improving radio facilities.

Some five years ago TSL carried out a similar contract on behalf of the Defence Ministry when the yard converted a 34,000-dwt products tanker into an RFA, a job that also involved the fitting of RAS equipment.

Tyne Shiprepair was returned to private ownership in February 1984 when it was bought from British Shipbuilders by eight members of the Tyne managment team. Since then, RFAs to visit TSL have included the Reliant, the Plumleaf, the Falklands-damaged Sir Tristam that TSL is rebuilding under another multi-million-pound contract, and the Orangeleaf, which docked for two months at an earlier date having the first part of her annual refit carried out.

Another Royal Navy vessel to visit TSL is the HMS Euryalus, a Leander Class frigate that the company is refitting under another multi-million-pound contract at its Middle Docks yard in South Shields.

Edgar Named Commander Of Corps Of Engineers South Atlantic Division

Brig. Gen. **C. Ernest Edgar III** has been selected to become commander and division engineer of the U.S. Army Corps of Engineers' South Atlantic Division in Atlanta, Ga. He previously served as acting director of civil works for the Corps' headquarters in Washington, D.C. He replaces Brig. Gen. **Forrest T. Gay III,** who has retired.

As South Atlantic Division Engineer, Gen. **Edgar** will be responsible for an $800-million annual planning, design, and construction program in seven southeastern states, Puerto Rico, the U.S. Virgin Islands, and Central America.

Product Carrier 'Lucy' Christened At Hyundai's Ulsan Yard For Overseas Shipholding Group

The naming ceremony for the 65,000-dwt product carrier Lucy was held recently at Hyundai Heavy Industries Co., Ltd. Ulsan Shipyard for Overseas Shipholding Group, Inc. (OSG) of the U.S.

The vessel was christened by sponsor **Mrs. J.J. Klement**, wife of the manager of marine transport, Standard Oil of Ohio in the presence of **Morris Feder**, senior vice president of OSG, **J.I. Lee**, executive vice president of HHI and several other representatives from both the owner and the shipyard.

Lucy is the first of two identical vessels ordered by OSG in June 1983, and is the 13th vessel to be built by HHI for Overseas Shipholding during the past eight years.

Overseas Shipholding Group, Inc., among the largest bulk shipping companies in the world, is engaged exclusively in the ocean transportation of liquid and dry bulk cargoes, both within the U.S. and worldwide. OSG's operating fleet now totals 69 vessels with the addition of Lucy, amounting to an aggregate tonnage of 6.2-million dwt.

Lucy is powered by a Hyundai-B&W 5L70MCE diesel engine with an mcr of 11,280 bhp at 91 rpm and an ncr of 10,150 bhp at 88 rpm. Her service speed is 13.8 knots. She is 753.7-feet long, 105.6-feet wide and 59.7-feet deep with a scantling draft of 43.6 feet.

Among the dignitaries at the christening ceremony were: (front row, L. to R.) **M.J. Tak**, director of HHI; **S.E. Hong**, vice president of HMD; **J.I. Lee**, executive vice president, HHI; **Morris Feder**, senior vice president, OSG; **Mrs. J.J. Klement**, sponsor; **Joe Klement**, manager, Marine Transport-SOHIO; **Mrs. Morris Feder**; **K.M. Cheong**, president of OSC; **Mrs. Lee;** and **Y.K. Eum**, executive vice president of HHI.

New Brochure Highlights Capabilities Of Marathon LeTourneau Offshore

A recently published, 20-page, full-color brochure presents Marathon LeTourneau Offshore Company's jackup and semisubmersible rig designs and construction capabilities. The new brochure also describes the company's engineering expertise, its specialized steelmaking and fabrication facilities, as well as repair and modification capabilities and experience.

The brochure presents the full line of Marathon LeTourneau jackup rigs, from the hostile and harsh environment Gorilla and Super 300, to the severe environment 116 Class and the moderate environment, shallow water 82-SD-C and 150-44C Classes. The publication also presents the new GranGulf™ semisubmersible design, an advanced third-generation semi for use in Gulf of Mexico type deepwater environments.

A section on innovations reviews the proven electromechanical rack-and-pinion elevating system that has become a standard for the offshore industry, as well as the new Marathon Slo-Rol™ motion-suppression system that virtually eliminates "waiting on weather" during jacking-down operations, and facilitates towing in rough seas.

A separate section presents the company's repair, service, and modification capabilities, which include major projects involving not only jackup rigs but semisubmersibles and specialized vessels used in many facets of offshore activity.

For your free copy of the new brochure,

Circle 67 on Reader Service Card

Aalborg Vaerft Awarded Danish Navy Contract For Seven Flex 300 Convertible Combatant Vessels

After a year of negotiations, Aalborg Vaerft in Denmark recently signed a contract for the construction of seven Standard Flex 300 vessels for the Royal Danish Navy. The contract provides an option for an additional nine vessels of the same type. The first seven ships will be delivered between 1987 and 1991.

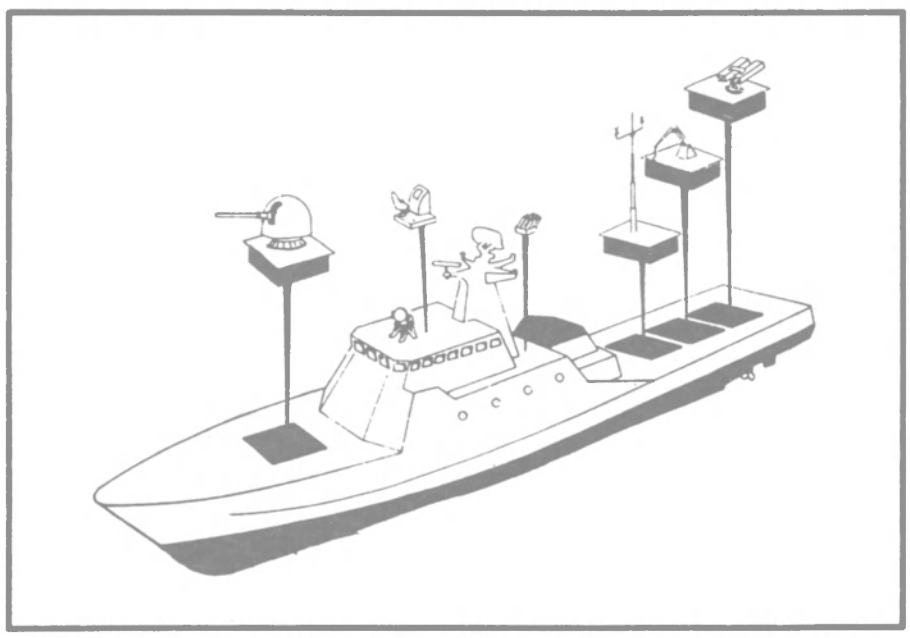
This is a new type of naval design. The hull and superstructure will be a "sandwich" construction of fiberglass reinforced polyester. Designed for flexibility, these vessels can be quickly and easily converted to handle a wide variety of completely different missions by exchanging modular weapons and equipment units. Any module for a specific purpose can be exchanged with a module for another purpose. For example, a self-contained crane unit can be exchanged for a gun or missile unit. Propulsion power for the Standard Flex 300 will be provided by a combination gas turbine/diesel engine (CODAG) installation.

The Danish Naval Material Command (NMC) reports a high level of national interest in the new project.

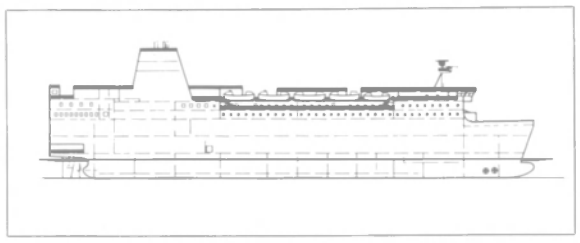
For Aalborg Vaerft, this new order is a continuation of a long-standing cooperation with the NMC. The yard's latest deliveries to NMC were three CODOC corvettes of the Niels Juel Class, design that has achieved an international reputation for flexibility and efficiency.

Construction of the new Standard Flex 300 vessels is a typical task for Aalborg's ship division, which concentrates on the building of specialized vessels of high technology. An example is the 46,000-grt luxury cruise liner delivered earlier this year to Carnival Cruise Lines of Miami. That vessel is now successfully cruising to the Caribbean.

The Standard Flex 300 has an overall length of about 177 feet, beam of 29.5 feet, depth to main deck of 14.5 feet, and displacement of approximately 300 metric tons.



The Danish Navy's Standard Flex 300 design in a mine countermeasure configuration.



Cross section drawing of universal ferry.

Kockums Yard To Build Universal Ferry For Polish Shipping Company

Kockums AB in Malmo, Sweden, and the state-owned Polish shipping company Polska Zeguga Baltycka (PZB) in Kolobrzeg have reached an agreement for the construction of an advanced universal ferry to be delivered in the middle of 1987. The order, worth about 400-million Swedish Kronor ($48.7 million) fits well into Kockums' present production program. The ferry is intended for transportation of railway freight cars, trucks, cars, and passengers, and will operate between Swinoujscie, Poland, and Ystad in the south of Sweden.

The choice of main propulsion machinery is pending. Both conventional diesels and a propulsion plant that includes two coal-fired boilers and two four-cylinder steam engines are being considered. If the steam alternative is selected, it will be achieved through close technical cooperation between PZB and Kockums.

The universal ferry, with an overall length of 508.5 feet and beam of 85.3 feet, has two cargo decks. One is intended for railcars and trucks; the other is suitable for trucks and cars. The latter can also be accommodated in hoistable decks. The vessel will have a capacity for more than 500 passengers.

Transtema Kockumation Introduces New Computer System For Shipping Industry

Transtema Kockumation, Sweden, formerly the electronics division of Kockumation, well-known producers of the Loadmaster and Levelmaster computer systems, recently introduced a new system under the trade name Shipmaster.

The system is designed to furnish the shipping industry with a high-performance-product package which will facilitate full integration aboard any type of vessel, as well as the office ashore.

The hardware of the powerful general purpose computer is tested and type approved by the American Bureau of Shipping; the Bureau Veritas; Det norske Veritas; Lloyd's Register; Nippon Kaiji Kyokai; and Rina.

The program package comprises all the Loadmaster functions, which have been upgraded to meet the latest specifications. The functions include: inventory; on-line presentation of tank levels; planned maintenance; and office automation programs.

The system offers the possibilities of an integrated information system; modular, expandable and flexible hardware/software; local-area networking; and ship/shore communications.

The Shipmaster has already generated a great deal of interest from shipowners and shipyards resulting in orders of 25 units from such such companies as Island Navigation Corp., Hong Kong; Ned Lloyd, the Netherlands; Neste Oy, Finland; Nordenfjeldske, Norway; and Johnson Line and Trans Consultants, Sweden, Some of the owners have to install the Shipmaster in their offices as well.

For further information concerning Transtema Kockumation and the Shipmaster Computer System,

Circle 31 on Reader Service Card

FOR MORE INFORMATION
ON
EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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Huge Drydock At Bethlehem's New Sabine Yard Now Operational

Bethlehem Steel Corporation's new Sabine Yard in Port Arthur, Texas went into service recently when its huge floating drydock was used to perform work on the 1st Lt. Alex Bonnyman, a vessel for the U.S. Navy's Maritime Prepositioning Ship Program. The ship, one of two Maersk vessels reconstructed at Bethlehem's nearby Beaumont Yard, was scheduled for delivery in September.

The drydock raised the ship out of the water to permit painting of the hull and installation of a new propeller. The drydock has a lifting capacity of 64,000 tons, making it one of the largest in the country.

Following a voyage from Hawaii earlier this year, the sections of the U.S. Navy surplus drydock were berthed at the Beaumont Yard for modification and reactivation work. The sections were then towed downriver to the Sabine Yard and assembled into the ship configuration used for the Bonnyman, which provided a clear docking area of 829 by 122 feet.

For drydocking offshore drilling rigs, the sections can be arranged in two side-by-side batteries. This configuration will provide a clear docking area of 413 by 362 feet.

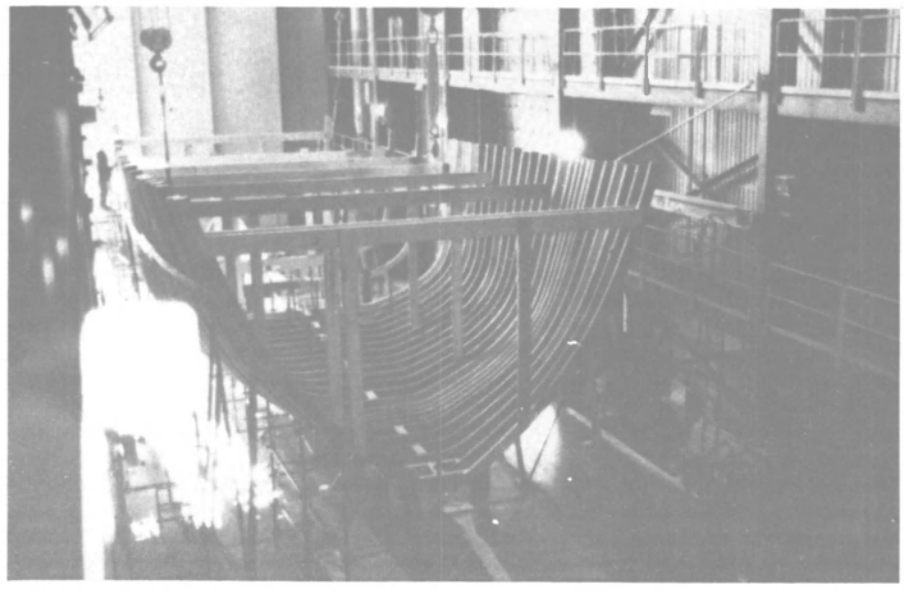
Formal dedication ceremonies for the new Sabine Yard have been scheduled for the fall of this year.

Marinette Marine Lays Keel For First Of 13 Yard Patrol Craft

Marinette Marine Corporation in Marinette, Wisc., recently laid the keel for the first of 13 Yard Patrol (YP) craft in advance of construction schedule. Contracted by the U.S. Navy, the vessels will be delivered to the Naval Academy at Annapolis, Md., and will be used for instruction of midshipmen in seamanship, navigation, and marine engineering disciplines. The YP craft are wood hull construction with an aluminum superstructure. Overall length is 108 feet, with a beam of 22 feet 9 inches and full-load draft of 5 feet 9 inches.

Marinette Marine was awarded the contract for six YP craft by the Naval Sea Systems Command in August 1984; a contract modification for seven additional vessels was awarded in December the same year. The contract also contains an option for construction of up to eight additional craft, subject to approval of program funding for Fiscal Year 1986. Delivery of the first YP is scheduled for August 1986, with the remaining vessels delivered one per month beginning in October that year.

The Wisconsin shipyard is a company of marine design engineers and shipbuilders specializing in the design and construction of defense-related marine vessels and high-technology commercial craft.



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, 2323 Randolph Avenue, Avenel, NJ 07001
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
Thermal Reduction Company, 1 Pavilion Avenue, Riverside, NJ 08075
Wilson, Walton International, Inc., 66 Hudson St., Hoboken, NJ 07030

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

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

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

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

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

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

BROKERS
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
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 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

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
Goltens, 160 Van Brunt Street, Brooklyn, NY 11231
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
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647

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

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

EMULSIFICATION SYSTEMS
Cleanodan A/S, N. American Agents, American United Marine Corp., 5 Broadway, Route 1, Saugus, MA 01906
Cove Shipping, Inc., Wall Street Plaza, New York, NY 10005
S/S Research & Development Inc., 1050 State St., Perth Amboy, NJ 08862
Todd Marine Systems, 61 Taylor Reed Place, Stamford, CT 06906

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

EQUIPMENT—Marine
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94083
ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380
Band-It Division, Houdaille Industries, Inc., P.O. Box 16307, Denver, CO 80216
Beaver Tool Co., 1525 SE 29th St., Box 94717, Oklahoma City, OK 73143
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227
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
Atlas-Danmark Marine & Offshore, Baltorpvej 154, KD-2750 Bllerup, Copenhagen DENMARK
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

FANS—VENTILATORS—BLOWERS
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
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
Hardware Specialty Co., Ships Division, 48-75 36th St., Long Island City, NY 11101
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
Parker Hannifin, 9948 Rittman Road, Wadsworth, OH 44281

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., 2323 Randolph Avenue, Avenel, NJ 07001
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

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

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

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

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

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

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., 2323 Randolph Avenue, Avenel, NJ 07001
Duracote Corp., 350 North Diamond St., Ravenna, Ohio 44266
Superior Energies, Inc. P.O. Drawer 386, Groves, TX 72619

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

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

OILY WATER ALARMS/MONITORS
Biospherics, Inc., 4928 Wyaconda Road, Rockville, MD 20852

OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148
NALCO Chemical, Co., 2901 Butterfield Road, Oak Brook, IL 60521
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323

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
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
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
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
Marland Environmental Systems, 8188 Newington Road, Lorton, VA 22079

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

SCUTTLES/MANHOLES
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

SHAFT SEALS, 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 Hydranautics, 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
High Strength QA Steel, P.O. Box 40606, Houston, Tx 77240-0606

Centurion Industrial Marine Offers The 'Crew Seat'—Free Brochure Available

Centurion Industrial Marine Inc. of Vancouver, Canada, is offering a chair called the Crew Seat that is designed specifically for passenger vessels and workboats.

Featuring an elegant and functional design that will "fit" into the most discriminating environment, this rugged chair affords the highest level of support and comfort for the occupant. Using a design that incorporates life jacket storage under the seat cushion, simplified installation and maintenance, the Crew Seat is a practical, cost-effective chair for marine or industrial applications.

The light weight and strength of the chair is assured in that the shell is manufactured from fiberglass. A number of color combinations and cushion materials, including fire-retardant types, may be specified on order. Optional mounting arrangements include swivel bases, arm rests and seat belts. The chair may be individually mounted or ganged into rows according to individual requirements, and is suitable for helm seats, lounge chairs, etc.

The Crew Seat may be manufactured to meet Coast Guard or specialized requirements upon application.

An attractive brochure is available that features a color photo of the Crew Seat, and details features, applications, dimensions, installations, options, etc. For a free copy,

Circle 69 on Reader Service Card

New Brochure Available From SKF Steel Couplings On Its OK Coupling

A new brochure detailing applications of differing sizes of keyless OK couplings is available free from SKF Steel Couplings of Avon, Conn. The four-page brochure, printed on heavy, silver-coated stock, contains illustrations of the OK coupling connections on a marine vessel's shaft lines, the camshaft of a diesel engine's fuel injection pump, and on the shafts of a nuclear power plant's primary coolant pump.

The OK coupling's easy-on/easy-off, mounting/dismounting technique is explained, as are various applications for the adjustable OKA-HB coupling that permits replacement of one-piece seals and axial length adjustment during installation and servicing; the OKF-HB flanged coupling that connects cylindrical machine shafts to reducer flanges and also couples two different diameter shafts; and the OKFA-HB extended flange coupling that allows axial length final fit-up at the coupling, eliminating last-minute machining of the flange face. The OKFA-HB also provides easy access to the control rod at a gearbox flange when used in controllable-pitch propeller systems.

For a free copy of the new SKF brochure,

Circle 46 on Reader Service Card

New Instrument Manifold Improves Safety In Process Control Systems —Literature Available

A three-valve manifold that connects process lines with differential pressure transmitters in control systems, is now available from Whitey Company, Highland Heights, Ohio.

A major and visible safety feature is the bonnet lock plate on each valve. It prevents accidental removal of the upper valve assembly during operation.

Other safety features include a one-piece 316 stainless steel body construction, plus safety back seating to prevent stem backout. Packing is below the stem threads to prevent lube washout and system contamination. The three-piece packing is externally adjustable in service.

Service ratings are 6,000 psi (41,300 kPa), and −20° to 450° F (−29° to 232° C). Optional high temperatures packings are available for service up to 1,000° F (543° C).

Manifold inlet ports are on standard 2⅛ inch centers. Purge port connections and mounting holes are standard. Choice of body designs allows flange-to-flange or pipe-to-flange mounting.

For more information and free literature on the new manifold from Whitey Company,

Circle 70 on Reader Service Card

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
HBC Barge Co. Brownsville, PA 15417
Hitachi Zosen Corp., 1-1-1 Hitotsubashi, Chiyoda-ku, Tokyo 100, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
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. Maschinenfabrik, D-2300 Kiel-Friedrichsort, West Germany
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, WA 98134
M.A.N. GHH Sterkrade, P.O.B. 110240, D-4200 Oberhausen 11, West Germany
Main Iron Works, Inc., P.O. box 1918, Houma, LA 70361
Marathon LeTourneau Offshore, P.O. Box 61865, Houston, TX 77208
Marinette Maine Corporation, Marinette, WI 54143
Mitsubishi Heavy Industries, Ltd., 5-1, Marunochi 2-chome, Chiyoda-ku, Toyko, 100 Japan
MonArk Boat Co., P.O. Box 210, Monticello, AR 71655
Moran Shipping Agencies, 602 Sawyer, Suite 200, Houston, TX 77077
Moss Point Marine Inc., P.O. Box 1310, Escatawpa, MS 39552
National Marine Service (Shipyard Division), P.O. Box 38, Hartford, IL 62048
National Steel & Shipbuilding Corp., San Diego, CA 92112
Nautilus Surveys Inc., 10822 Sageleaf Lane, Houston, TX 77089
Neorion Shipyards Syros Ltd., Syros, Greece–U.S.A. Agents: Keppel Marine Agencies Inc., 26 Broadway, New York, NY 10004, 6420 Richmond Ave., Houston, TX 77057
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Nichols Brothers Boat Builders Inc., P.O. Box 580, 5400 S. Cameron Rd., Freeland, WA 98249
Pennsylvania Shipbuilding, P.O. Box 442, Chester, PA 19016
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
Promet Marine Services Corp., 242 Allens Ave., Providence, RI 02905
Samsung Shipbuilding & Heavy Industries Co., Ltd., Samsung Main Bldg. 250, 2Ka, Taepyong-ro, Chung-ku, Seoul, Korea
Southwest Marine, Inc., P.O. Box 13308, San Diego, CA 92113
Tampa Shipyards Inc., P.O. Box 1277, Tampa, FL 33601
Thomas Marine, 37 Bransford St., Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, NY 10004
Tracor Marine, P.O. Box 13107, Port Everglades, FL 33316
Vanguard Services, P.O. Drawer A, New Johnsonville, TN 37134
Verreault Navigation Inc., Les Mechins, Quebec, G0J 1T0
Waller Marine, Inc. 11777 Katy Freeway/Suite 395, Houston, TX
Westport Shipyard, Inc., P.O. Box 308, Westport, WA 98595
Zidell Explorations, Inc., 3121 S.W. Moody Street, Portland, OR 97201

SHIPPING—PACKING
Pilotage Consultants, Inc., P.O. Box 2046, New Hyde Park, NY 11040

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

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

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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
SAAB Tank Control, 5 Marine View Plaza, Hoboken, NJ 07030

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

TORSIONAL VIBRATION SPECIALISTS
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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

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Baily, Division of CMB Industries, P.O. Box 8070, Fresno, CA 93747
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Cajon Co., 9760 Shepard Rd., Macedonia, OH 44056
Elliott Manufacturing Co., Inc. (Remote Valve Operating Equipment), P.O. Box 773, Binghamton, NY 13902
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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
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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
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VIBRATION ANALYSIS
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WATER PURIFIERS
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Drew Chemical Corporation, One Drew Chemical Plaza, Boonton, NJ 07005
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Marland Environmental Systems, 8188 Newington Road, Lorton, VA 22079
MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Sweetwater, 8188 Newington Road, Lorton, VA 22079

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

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

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

MARITIME EXHIBITION · MUSEUM OF MODERN ART · RIO DE JANEIRO · 14–19 OCTOBER 1985

EXPOSHIP Riomar 85

CENTRE OF THE CITY • CENTRE FOR SHIPPING

Expoship Riomar is the only international maritime exhibition and conference in the entire continent of Latin America. It is, therefore, the one major shipping event for anyone with business interests in this key market.

In October this year, Expoship Riomar returns to the Museum of Modern Art in the centre of the city. This is a move of enormous significance for it places the exhibition at the heart of Rio's business centre and only a short distance from the city's international and domestic airports. A high attendance is thus anticipated.

As in previous years, a conference will be linked to the exhibition. The two day programme will aim to identify and examine the key issues affecting the Latin American sea transport industry today.

SEATRADE RIOMAR CONFERENCE THE AUDITORIUM OF THE BRASILIAN NAVAL WAR COLLEGE RIO DE JANEIRO 15–16 OCTOBER

DAY ONE — 15 OCTOBER

INTRODUCTORY ADDRESS: Dr Affonso Camargo, Minister of Transport of Brasil

CHAIRMAN: Ambassador Manoel Pio Correa Junior, *President, Esabras - Associated Shipyards of Brasil, and President, Ishikawajima do Brasil Estaleiros S/A – Ishibras*

SPEAKERS: Eliezer Batista da Silva, *President, Companhia Vale do Rio Doce*
Costas Comninos, *Managing Director, Comninos Bros Shipping Co S/A*
Peter Landsberg, *President, Verolme Estaleiros Reunidos do Brasil S/A*

Further speakers to be announced.

SESSION ONE / SESSION TWO
Commodity Exports

Massive new developments such as the Carajas iron ore project and the Cerrados scheme for opening up vast areas of virgin land to agriculture will transform the pattern of raw material exports from Brasil. This session will discuss these and other major shifts in South American commodities trading and look also at their importance in terms of ports and sea transport.

SESSION ONE / SESSION TWO
Finance and Shipbuilding

Against the background of current economic realities and the worldwide surplus of capacity, what are the prospects for the ship construction industries of Ibero-America? What level of domestic demand can be anticipated and what prospects exist for exporting ships? What is the attitude of governments towards an industry which remains a major industrial employer?

DAY TWO — 16 OCTOBER

CHAIRMAN: Hugo Sommerkamp Bernales, *President, Alamar, and President, Consorcio Naviero Peruano S/A*

SPEAKERS: Jaime Luna Traill, *Executive Secretary, Comision Nacional Coordinadora de Puertos, Mexico*
Silvano Valentino, *Superintendent-Director, Fiat Automoveis S/A*

Further speakers to be announced.

SESSION ONE / SESSION TWO
Trade in Manufactured Goods

The important traffic in manufactured goods ranging from automobiles to shoes and the viewpoint of the major shippers in the Latin American liner trades will be reflected in this session. The implications of recent political developments such as the US Shipping Act of 1984 for the Latin American liner trades will also be discussed.

SESSION ONE / SESSION TWO
Ibero-American Ports

The need to upgrade port facilities continuously in line with the demands of trade in South and Central America will be discussed with emphasis on cargo handling and infrastructural development.

This programme may be subject to alteration

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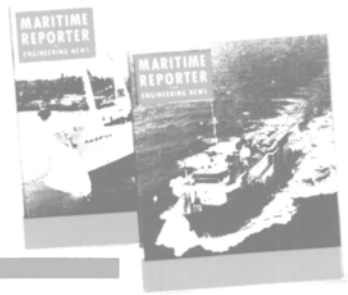

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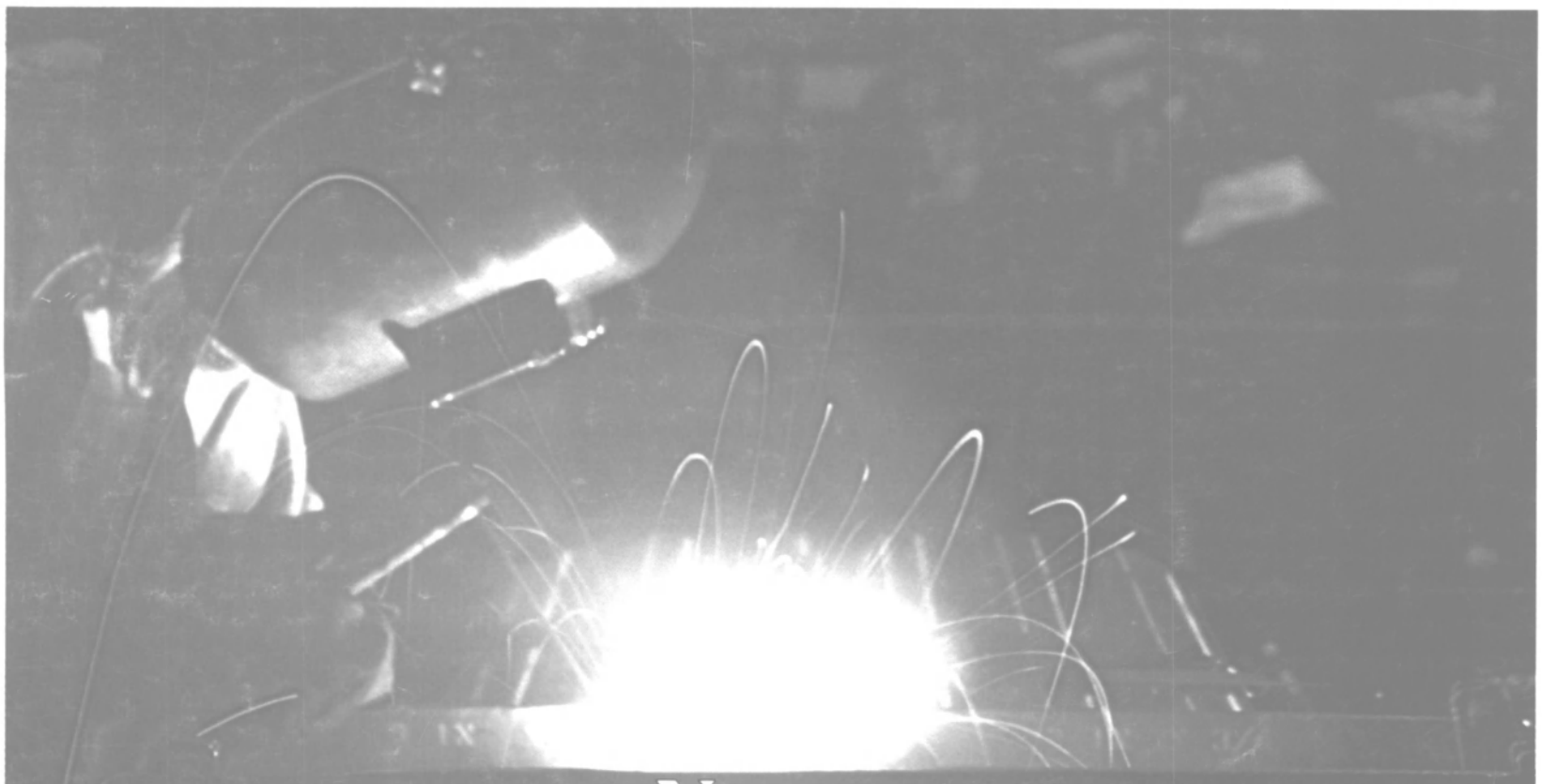

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