

MARITIME REPORTER AND ENGINEERING NEWS



'Captain W.D. Haden' 'W.D. Haden II' 'Barbara H. Neuhaus' 'Mark K'

**Four New Bay-Houston Tugs
Christened—A \$9.2-Million
Addition To The Fleet**

(SEE PAGE 25)

MARICHEM 80

(SEE PAGE 28)

EUROPEC II

(SEE PAGE 14)

OCTOBER 1, 1980

When you spot Elbe One, you're not far from Gulf.



Hamburg is a fine port for going ashore. The trick is to get there without going aground.

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U.S. Cruises Requests Title XI On \$95-Million Conversion Of "Big U"

United States Cruises, Inc. (USCI) of Seattle has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction and conversion of the SS United States from a trans-Atlantic liner to a luxury cruise ship. (See cover story in September 15 issue of MR/EN.)

USCI plans to refurbish the 38,216-gt, 28-year-old vessel and provide warm-weather cruise service from the U.S. West Coast, principally to Hawaii. The owner has not named a shipyard for the refitting and reconstruction work, which would include the addition of staterooms, new exterior decks, swimming pools, and other improvements. The converted liner will provide single-class service for more than 1,400 passengers.

The estimated cost of the work proposed by USCI is \$95,053,000. The owner has requested a Title XI loan guarantee of up to 87½ percent of that amount, or \$80 million.

The SS United States (referred to as the "Big U" by many of her crew) is 990 feet long and has a beam of 101 feet 6 inches—a tight squeeze through the Panama Canal. She was built for United States Lines in 1952 by Newport News Shipbuilding.

The ship, presently part of the National Defense Reserve Fleet maintained by MarAd, is berthed at the International Terminal in Norfolk, Va. She has been in lay-up since the completion of her final trans-Atlantic voyage in November 1969. The vessel—still the world's fastest and most fireproof passenger liner—was purchased from United States Lines by the U.S. Government in 1973.

On September 29, 1978, a contract of sale for the SS United States was entered into between MarAd and USCI. Under its terms, USCI paid a \$500,000 deposit toward the \$5 million purchase price, with the balance payable within 30 days. The terms of the contract have been extended on several occasions, and now call for final payment on or before March 17, 1981. In the meantime, USCI has paid MarAd a total of \$2 million toward the \$5 million purchase price, and has been responsible for paying the costs of maintaining the ship.

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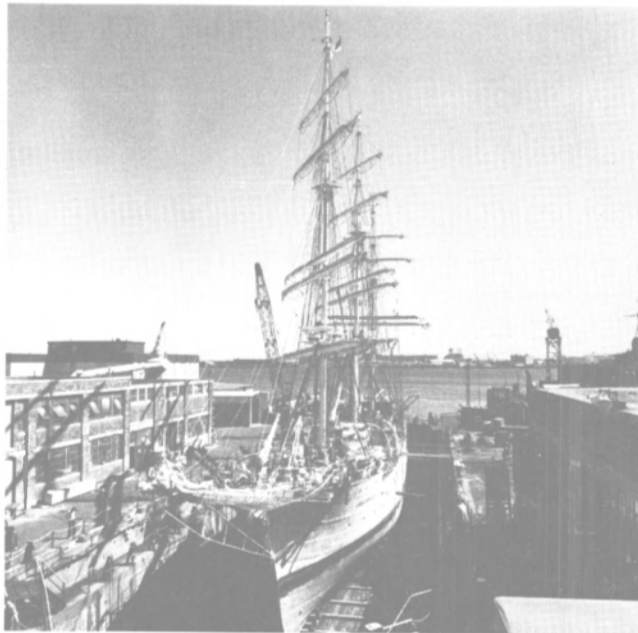
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Some Bethlehem shipyard work is cosmetic

But even here, unblemished "skin" is an essential, for an untended figurehead bodes foul weather.

During the four days the Norwegian square rigger, Christian Radich, lay in our Boston Yard, her crew scrubbed her down and polished her brass to a fare-thee-well. We then put her in drydock and scraped and painted her underwater hull. (And touched her up with paint here and there topside.) Thus made sparkling to the eye and smooth to the sea, the tall ship spread her canvas and sailed the Boston Harbor. She became a jewel of OpSail 80, that lustrous gathering of ships that cast off the year-long celebration of the city's 350th birthday. Bethlehem helped. We look forward to when you, too, will trust your ship to a Bethlehem yard. You'll sail out a winner.



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\$80-Million Order For Bulk Carriers Signed By Alcoa And Hitachi

Alcoa Steamship Company, Inc., a wholly owned subsidiary of Aluminum Company of America, has signed a contract with Japan's Hitachi Shipbuilding & Engineering, Ltd. for three combination liquid/dry bulk carrier vessels.

The contract, valued at more

than \$80 million, calls for the first of three vessels to be completed in December 1981. The second vessel will be ready in February 1982, and the third should be finished in June 1982.

The three identical steel-hull, single-screw vessels will be of approximately 47,000 dwt on a design draft of 11 meters, with 209 meters LOA and 32.2 meters beam (36/685.7/105.6 feet). The ves-

sels will be propelled by 15,200-bhp Hitachi/B&W diesel engines.

A crew of 22 will man each vessel. Two of these new vessels will trade between the U.S. and Australia, transporting caustic soda solution and bulk cargo for Alcoa of Australia's production facilities. Alumina to feed Alcoa's domestic smelters will be carried by these vessels on their return voyage. The third carrier will trade

between the U.S. Gulf and Alcoa's installations in the Caribbean, carrying caustic soda solution southbound and alumina and bauxite northbound.

Felix Isherwood Joins Executive Staff Of Boise-Griffin Steamship

Boise-Griffin Steamship Company, Inc., New York, has announced that Felix Isherwood, recently retired assistant general manager for Hellenic Lines, has joined the executive staff of its organization. He has been assigned to work on special projects.

McMullen Associates Opens Newest Office—Rouse Named Manager

John J. McMullen Associates, Inc. (JJMA), naval architects, marine engineers and consultants, has announced the opening of its newest office at 12 Case Street in Norwich, Conn. This office will operate in conjunction with JJMA's detail design office in Newport News, Va., under the guidance of B.L. Skeens, vice president of JJMA based in Newport News. The Norwich office has a staff of 35 designers and draftsmen experienced in all areas of detail design.

Mr. Skeens announced the appointment of Nicholas C. Rouse as technical manager in charge of the Norwich office. He comes to JJMA with more than 21 years of technical experience in the marine field. Mr. Rouse spent many years at Newport News Shipbuilding, rising to the position of manager of the Machinery Design Department, and most recently served as assistant division head of Gibbs & Cox's Newport News office.

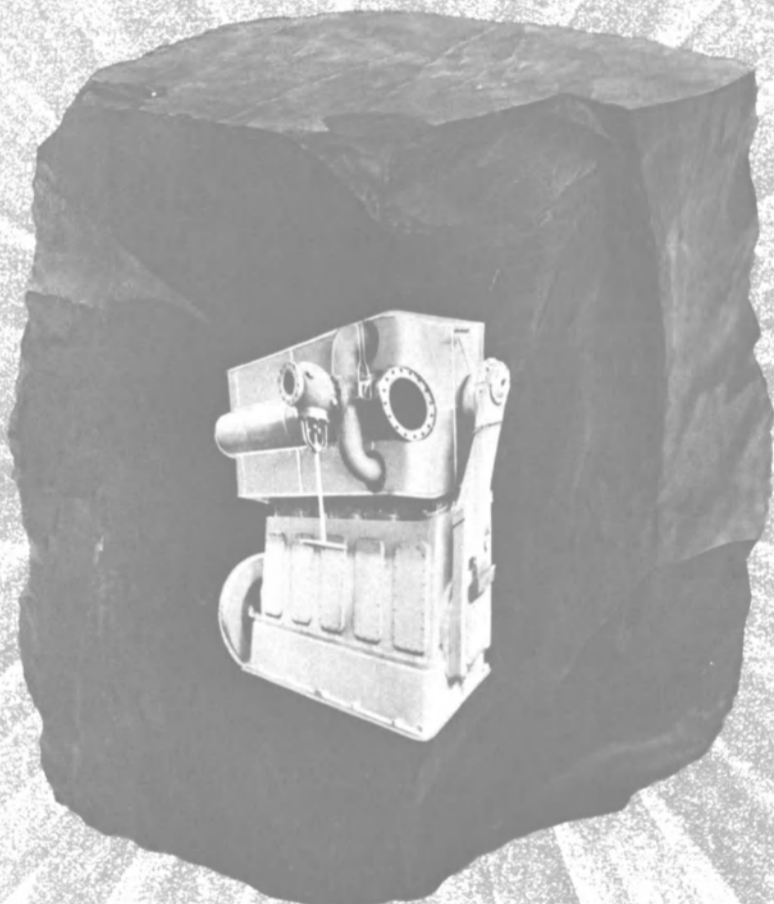
JJMA's principal office is located at Suite 3000, One World Trade Center, New York, N.Y. 10048, telephone (212) 466-2200. JJMA has, in addition to its new office in Norwich, fully staffed engineering offices in Washington, D.C., Newport News, Va., Ventura, Calif., and Houston, Texas.

New Catalog On Lighting Fixtures Available From Snelson Oilfield Lighting

Snelson Oilfield Lighting of Fort Worth, Texas, has announced that their new 10-page catalog is now ready for distribution. The two-color catalog features the complete line of incandescent, mercury vapor, and fluorescent light fixtures and includes mounts, control panels, and connections for marine and oilfield applications.

For a free copy, write to Dept. MR, Snelson Oilfield Lighting, 3619 Alice Street, Fort Worth, Texas 76110.

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\$8.8-Million Overhaul Job Awarded By Navy To Service Engineering

Service Engineering Company, San Francisco, has been awarded a \$8,812,631 formally advertised fixed-price contract for the regularly scheduled overhaul of the USS Cleveland (LPD-7), an amphibious transport dock ship. The Supervisor of Shipbuilding, Conversion and Repair, USN, San Francisco, was the contracting activity (N62798-80-B-0128).

C.L. Taylor Appointed Managing Director For Offshore Marine Limited

Curtis L. Taylor has been named managing director of Offshore Marine Limited, an oilfield supply vessel firm based in Great Yarmouth, England. He will direct the operation of that company, which recently was acquired by Zapata Off-Shore Services Limited, Zapata Corporation's U.K. subsidiary.



Curtis L. Taylor

In addition to his new responsibilities, Mr. Taylor will continue serving as Zapata Marine Service's senior vice president-marketing, a position he has held since April 1980. He joined Zapata Marine Service as controller in 1971, and later served as the company's vice president-finance and administration.

Offshore Marine Limited operates 24 oilfield supply vessels, which joined the Zapata Marine Service fleet in July. Zapata Marine Service currently operates a total of 75 vessels that work under contract for offshore operations worldwide.

New Catalog Available On Full Line Of Wichita Clutches And Brakes

A new, 60-page illustrated catalog (No. 80) describing the full line of Wichita airtube clutches and brakes, designed to increase overall operating efficiency and lower maintenance costs, is now available from Wichita Clutch Company, a subsidiary of Dana Corporation, Wichita Falls, Texas.

The basis of the Wichita design is the combination of a rugged disc-type clutch with the advan-

tage of direct air engagement by means of a simple, axial-pressure airtube. The design provides greater capacity in less radial and axial space. No adjustment or lubrication is required. And the low-volume airtube provides fast engagement and disengagement.

The catalog describes and illustrates the complete range of clutches and brakes produced by Wichita Clutch. This includes

standard airtube disc clutches, special ventilated airtube disc clutches, low inertia airtube disc clutches, low inertia spring-set airtube disc brakes, power take-offs, Hi-Torque™ clutches, and Kopper Kool® clutches and brakes. Also covered are the Wichita springless quick-release valve and the Wichita roto-coupling.

The catalog outlines the operating advantages of these prod-

ucts. It lists specifications such as dimensions and capacities, and provides application data such as selection charts. In addition, the catalog has over 30 pages of typical applications to show the wide variety of uses for Wichita clutches and brakes.

For a free copy of catalog No. 80, write to **Thomas Long**, Dept. MR, Wichita Clutch Company, Wichita Falls, Texas 76307.

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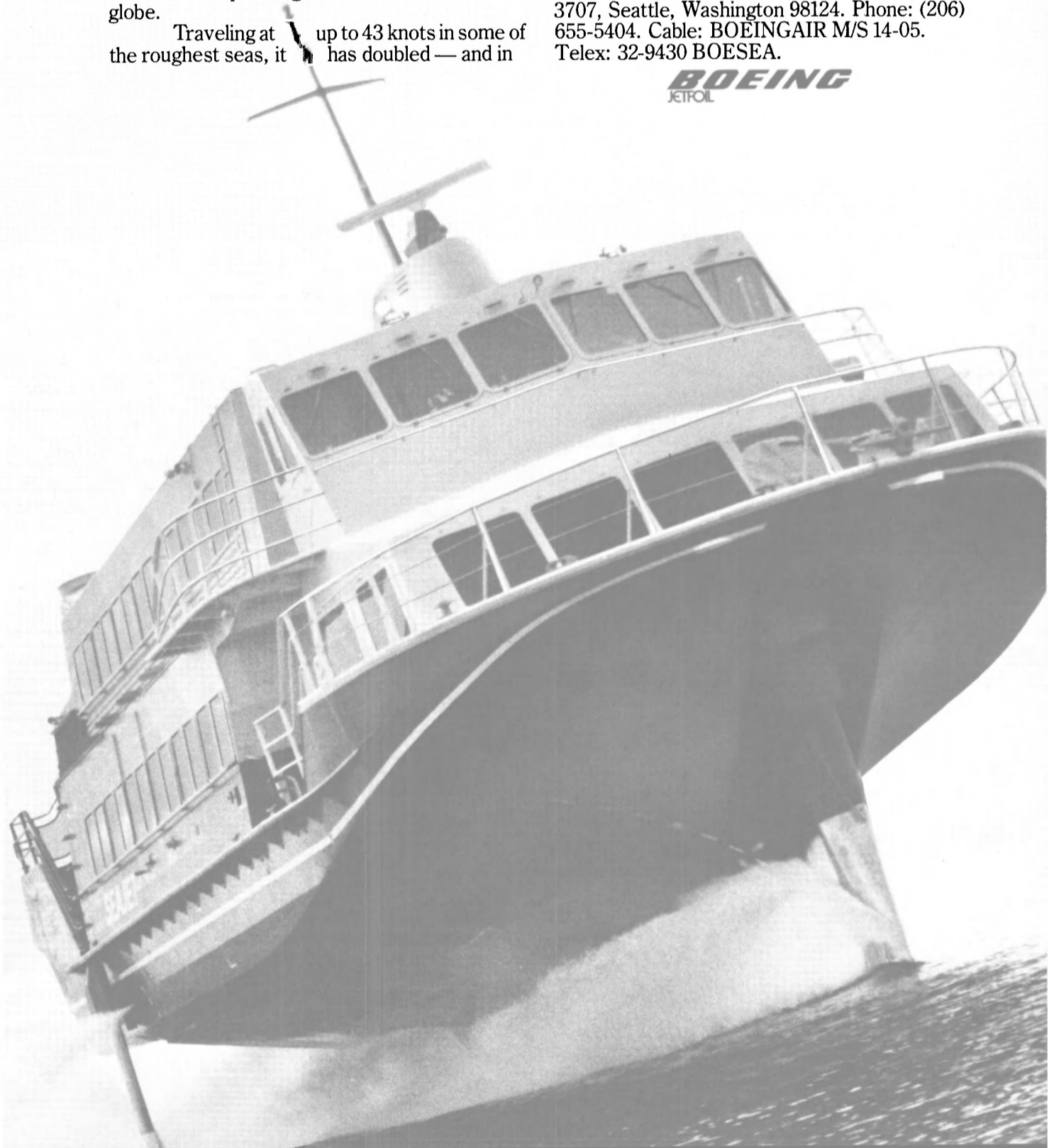
Traveling at up to 43 knots in some of the roughest seas, it has doubled — and in

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ARCTEC Acquires Majority Interest In Offshore Technology Corporation

ARCTEC, internationally known Canadian specialist in cold regions engineering and research, have acquired a majority interest in the Offshore Technology Corporation (OTC) of Escondido, Calif. OTC currently operates two of the largest model test basins in the world, and serves the needs

of the offshore industry and other organizations engaged in ocean engineering.

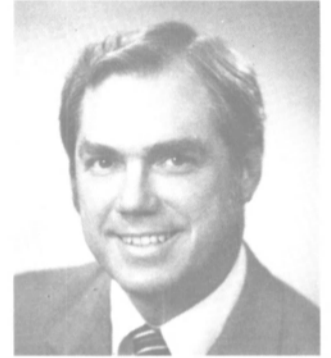
Their deep basin (295 feet long, 48 feet wide, 15 feet deep, with a 30-foot pit) has been the proving ground for many internationally known drilling rigs. Their shallow basin, a new and unique model testing facility (105 by 138 feet with a 5-foot depth) can simultaneously simulate wind, regular and random seas, multidirectional waves and currents, and

is ideally suited for studying offshore moorings, ports, harbors, and breakwaters.

ARCTEC, which currently operates ice model testing basins, hydraulic laboratories, and cold rooms in Canada and the United States, looks forward to serving the existing and future clients of ARCTEC and OTC with a much broader range of ocean, lake, and river engineering and research services. These services will not only include model testing, but

will encompass feasibility studies, engineering design, and field testing.

Hoffmeister Appointed Vice President-Sales For St. Louis Ship



Kent E. Hoffmeister

Edward Renshaw, president of St. Louis Ship, has announced the appointment of **Kent E. Hoffmeister** to vice president-sales, a newly created position, reporting to **Anthony G. Tobin**, executive vice president-marketing.

Mr. Hoffmeister joined St. Louis Ship in 1979 as general sales manager. He brings to the company more than 20 years inland and ocean shipbuilding experience in the fields of engineering and sales.

St. Louis Ship is a leading designer and builder of towboats and barges, with shipyards at St. Louis, Paducah, Ky., and Caruthersville, Mo. The company is a division of Pott Industries Inc., an HNG Company.

Howard Casey Named Deputy Superintendent Of USMMA

The appointment of **Howard F. Casey** as deputy superintendent of the U.S. Merchant Marine Academy, Kings Point, N.Y., with the rank of Commodore, U.S. Maritime Service (USMS), was announced recently by **Samuel B. Nemirow**, Assistant Secretary of Commerce for Maritime Affairs.

Commodore Casey had been acting superintendent of the Federal service academy from October 1979 until last July, when **Thomas A. King** was named superintendent with the rank of Rear Admiral, USMS. Admiral King formerly served as Eastern region director for the Maritime Administration.

Commodore Casey, a MarAd employee since 1969, joined the Academy as assistant superintendent for planning and administration in December 1977. From 1972 until 1977, when he moved to Kings Point, he was Deputy Assistant Secretary for Maritime Affairs at MarAd headquarters in Washington, D.C.

Prior to joining the Federal agency, he worked in the comptroller's office of W.R. Grace & Company, and in the late 1960s served as comptroller and then as treasurer of Grace Line, Inc., formerly a W.R. Grace subsidiary.

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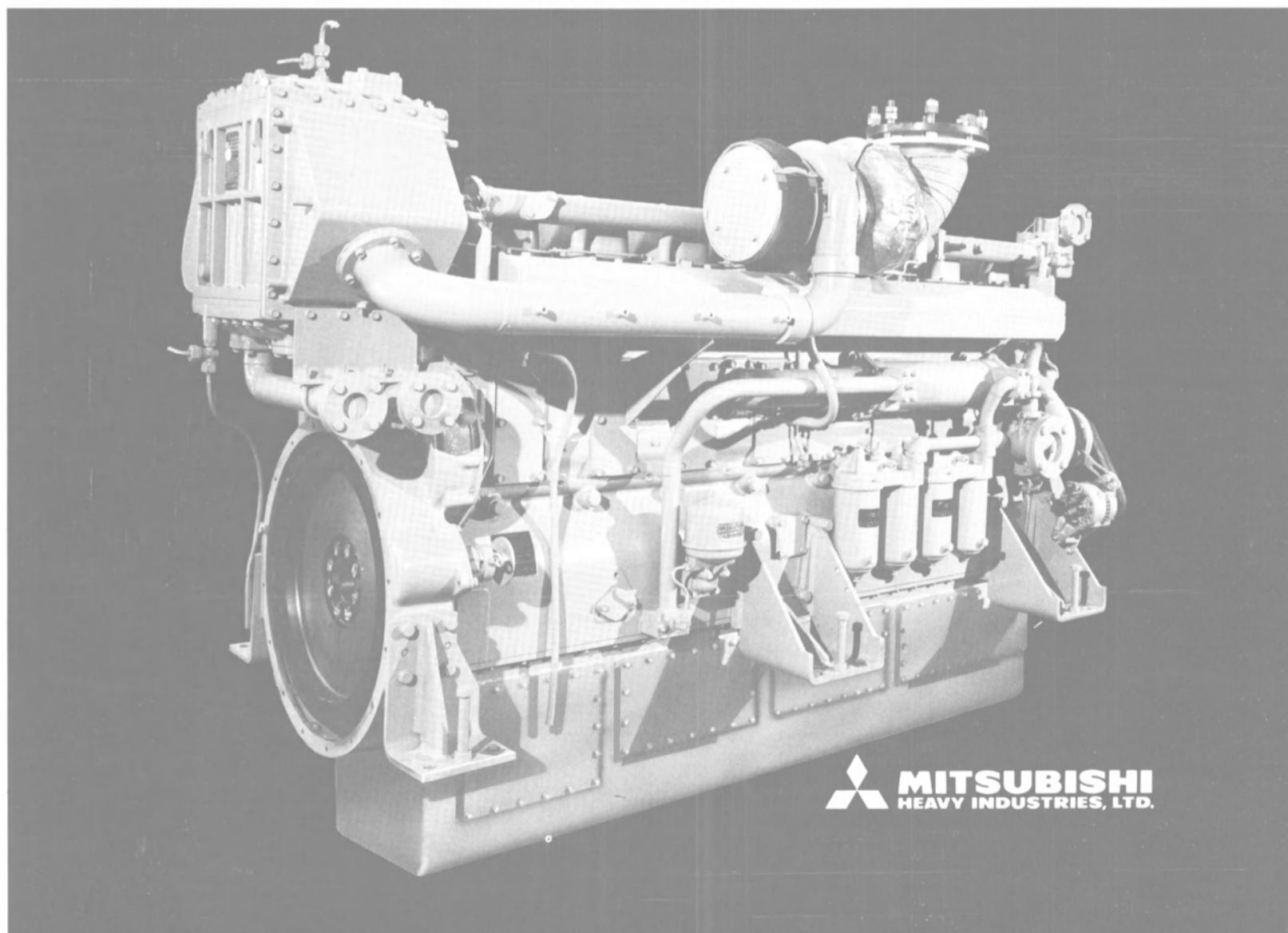
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St. Louis Ship Delivers The 'John M. Donnelly' To Ingram Barge Company

In the shadow of the St. Louis Arch, Ingram Barge Company recently christened their new 9,000-bhp St. Louis Ship-built towboat, the M/V John M. Donnelly. The new vessel is named for **John M. Donnelly**, president of Ingram Barge and a director of Ingram Industries. He is presently chairman of the board of directors of The American Waterways Operators, Inc.

The towboat was designed and built by the St. Louis Ship, Division of Pott Industries Inc., and features their exclusive Hydrodyne Hull. The Donnelly is the third St. Louis Ship towboat in the Ingram fleet.

Edward Renshaw, president of St. Louis Ship, served as master of ceremonies. After remarks by

E. Bronson Ingram, president of Ingram Industries, and **Mr. Donnelly**, the benediction was offered by the Reverend **Kenneth G. Phifer** of New Orleans.

Mrs. Martha Donnelly, sponsor and wife of the towboat's namesake, broke the traditional bottle of champagne. Maids of honor were **Allison** and **Fairleigh Donnelly**, daughters of the Donnellys.

The John M. Donnelly hull measures 200 feet by 50 feet by 11 feet 6 inches with a normal operating draft of 8 feet 6 inches, and is designed to have an overall height of 38 feet 6 inches at its design draft. The all-welded steel hull is heavily framed longitudinally and transversely with the aft deck raised to provide additional strength to the stern. Bot-



St. Louis Arch serves as background for recently christened Ingram towboat **John M. Donnelly**. Triple 3,000-bhp General Motors EMD diesels power the vessel.

tom and bilge knuckle plating is $\frac{5}{8}$ inch, tunnel plating is $\frac{3}{4}$ inch, side plating is $\frac{7}{16}$ inch, headlog plating is 1 inch, transom plating is $\frac{1}{2}$ inch, and stern corner plating is $\frac{3}{4}$ inch. A fender of $\frac{3}{8}$ -inch bent steel plate, filled with concrete, is provided along each side, around the port and starboard stern corners and across the stern.

There are six fuel oil bunkers with a total capacity of 166,300 gallons, two wash water tanks having a total capacity of 20,600 gallons, two potable water tanks having a total capacity of 8,200 gallons, one 3,360-gallon bilge collecting tank, two lube oil storage tanks having a total capacity of 6,400 gallons, and one 3,430-gallon dirty oil holding tank all built into the hull.

Propulsion power is furnished by three General Motors EMD model GM16-645E7BA marine diesel engines, each developing 3,000 bhp at 900 rpm through a Falk model 30MRV48, vertical offset, reverse/reduction gear. The engines and gears are cooled with clear water circulated through a St. Louis Ship-designed skin cooling system. The engines are started from the engine room only, and are controlled by means of WABCO pneumatic control equipment as provided in the pilothouse and locally at each engine. Three five-bladed, stainless-steel, 109 $\frac{1}{8}$ -inch-diameter propellers each turn in a stainless-lined Kort nozzle.

In addition to the conventional engine room gaugeboards, the Donnelly is equipped with an Engine Monitor Inc. monitoring system, which features an alarm panel in the pilothouse and engineer's control booth. All primary and auxiliary systems are continuously monitored, and any abnormal temperature, pressure, or liquid level will manifest itself by both visual and audible alarms on these panels.

The propeller shafts are of A.I.S.I. 4140, high-strength, solid forged steel, and are fitted with Colmonoy sleeves in way of the

stern tube and stern strut Johnson rubber bearings, and Johnson forward stern tube stuffing box. Shaft half couplings are taper-fit, St. Louis Ship design.

A Fluid Power Designs hydraulic power package having two service constant-volume pumps provide the power to the hydraulic system for the three steering and six flanking rudders. Steering is accomplished by means of two sets of levers located in the pilothouse, which operate the steering gear through a mechanical linkage equipped with a positive follow-up control. The position of the pilothouse control levers indicates the rudder positions.

Electric power is provided by two General Motors Detroit Diesel Allison 150-kw, 3-phase, 60-cycle, 460-volt ac diesel generator sets, each turning at 1,800 rpm. A Central Electric Company dead-front switchboard, located in the soundproofed and air-conditioned engineer's control booth is wired for parallel operation of the generators.

The upper and lower engine rooms and auxiliary machinery space are well ventilated by a total of five supply and three exhaust fans to provide sufficient air changes to keep these areas comfortable.

All possible provision is made for the safety of operating personnel. Handrails, grabrails, and safety lines are located wherever needed. Safety guards cover all dangerous moving machinery. Careful attention was given to lighting of all stairs and work areas. Remote manual shutdown is provided on the main deckhouse exterior for the propulsion engines. The fire pump is wired for both local and outside remote control. A Kidde Halon 1301 fixed fire-extinguishing system is provided for the machinery areas. A Kidde CO₂ system with remote control is provided for the paint locker and gasoline locker. Escape hatches are provided for the aux-

(continued on page 12)

Find out how much you can save on exceptionally reliable HF/SSB maritime Telex communications.

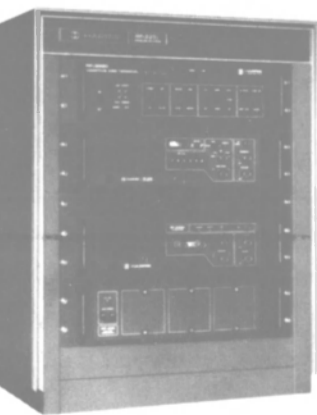
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European Offshore Petroleum Conference

EUROPEC II

EUROPEC II, to be held from October 21 to October 24, 1980 at Earls Court, London, England, will be the world's foremost event dealing with North Sea conditions, operations, and engineering challenges. Its impact on the future of North Sea operations — and similar activities in other offshore environments — will be significant.

This event, which is sponsored by six major professional organizations with a combined membership of more than 240,000, will serve as a definitive forum on innovations and experience in the North Sea. The sponsoring societies of EUROPEC II are: The Society of Petroleum Engineers, The Institution of Civil Engineers, The Institution of Electrical Engineers, The Institution of Mechanical Engineers, The Institute of Petroleum, and The Society for Underwater Technology. The Institution of Mining and Metallurgy is a cooperating society, and the project has been organized by The Society of Petroleum Engineers (U.K.) Limited.

At the first EUROPEC in 1978, more than 15,000 registrants from 22 countries viewed products and equipment from 20 countries and attended technical sessions with industry and professional leaders from Europe, North America, and the Middle East.

EUROPEC II will have an even greater range of technical sessions and exhibits of offshore-related products and services.

More than 115 technical papers will be presented by an impressive roster of speakers drawn from throughout the world. This combination of speaker credentials is unlikely to be duplicated elsewhere. Many of the experts will address new concepts first applied in the North Sea; others will report on techniques used in less hostile waters that may be adapted for the North Sea.

In addition to the technical program, registrants will view a comprehensive technical exhibits display presented by more than 225 manufacturers and suppliers of petroleum services — with an emphasis on creative products geared specifically for the offshore environment.

For full information about EUROPEC II, contact European Offshore Petroleum Conference & Exhibition, care of the Society of Petroleum Engineers, 6200 North Central Expressway, Dallas, Texas 75206; telephone, area code (214) 361-6601, or Telex 730989 SPEDAL in the United States, or European Offshore Petroleum Conference & Exhibition, Montebuild, 11 Manchester Square, London W1M 5AB, U.K.

Technical Sessions

The technical sessions will run from October 21 through October 24, with three sessions each morning and afternoon. The morning sessions will start at 9:30 a.m. and the afternoon sessions at 2:00

p.m. The subjects for each session and the papers to be presented are as follows:

Tuesday morning, October 21.

Session No. 1—Piper Field Development and Field History.

Paper 150 — "Piper Field: Geology."

Paper 151—"Piper Field: Drilling/Completions/Workovers/Data Acquisition and Well Performance."

Paper 152—"Piper Field: Reservoir Engineering."

Paper 153 — "Piper Field: Mechanical Engineering."

Session No. 2—Pipelines

Paper 154—"New Computation Techniques Experimented in Transmed Pave the Way for Future Deeper Waters Projects."

Paper 155—"Western Leg Gas Gathering System."

Paper 156—"The Non-Destructive Examination of Pipeline Girth Welds, Today and Tomorrow."

Paper 157 — "Pipeline Burial

and Protection by Means of Highly Accurate Backfill Techniques."

Paper 158 — "Inspection and Maintenance of the Frigg Pipeline Transportation System."

Session No. 3 — Support Services for Offshore Operations — A Wide Range of Requirements.

Paper 159—"Weather Forecasting for Offshore Operations."

Paper 160—"Monitoring the 3-Dimensional Position and 3-Axis Rotation of Submerged Structures."

Paper 161 — "Clean-Up of Oil Pollution at Sea."

Paper 162 — "Helicopter Offshore Operations."

Paper 163 — "Medical Operations in the Offshore Theatre."

Tuesday afternoon, October 21.

Session No. 4 — Reservoir Development and Case Histories of North Sea Operations.

Paper 164—"The Brent Field, A Reservoir Engineering Review."

(continued on page 16)



Below, Earl's Court, London. Site of this year's EUROPEC II.





Ed Miske, Barry Hall. Standing: Fred West, Dick Steiner, Duane Cozard, Bernie Logan, Fred Ramsden

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EUROPEC II

(continued from page 14)

Paper 165—"Thistle Field Development."

Paper 166—"Montrose Field Reservoir Management."

Paper 167—"Modifications of a Black Oil Model for a Depletion Study on Eldfisk Reservoir."

Paper 168—"The Dunlin Field, A Review of Reservoir Development and Performance to Date."

Session No. 5—Utilization of Offshore Associated Gas.

Paper 169—"Norwegian Gas Gathering Pipeline System."

Paper 170—"St. Fergus Gas Terminal Metering System."

Paper 171—"A Pressure LNG System."

Paper 172—"Offshore Natural Gas—How to Convey it to Potential Markets."

Paper 173—"A Review of Un-

conventional Disposal Routes for Offshore Gas and Gas Liquids."

Session No. 6—Subsea Production Systems—North Sea Operations.

Paper 174—"The Design and Installation of the Buchan Field Subsea Equipment."

Paper 175—"The First Diverless Electro-Hydraulic Control System for Subsea Production."

Paper 176—"The Protection of

Subsea Wellhead Control Systems Against Environmental Hazards."

Paper 177—"New Development in Subsea Production."

Paper 178—"Risk Assessment as Applied to a Complete Seabed Production System."

Wednesday morning, October 22.

Session No. 7—Reservoir Modelling and Simulation Techniques for North Sea Development.

Paper 179—"An Efficient Fully Implicit Simulator."

Paper 180—"The Use of Higher Order Finite Difference Methods in Reservoir Simulation."

Paper 181—"Numerical Modelling of Sharp Flood Fronts in Two-Dimensional Two-Phase Flow."

Paper 182—"Use of a 3-Dimensional 3-Phase Pseudo Compositional Model (TRITRICO) for Simulating Volatile Oil and Gas Condensate Reservoirs."

Paper 183—"Pseudo Hydrocarbon Family Plus Group Extended Analysis and Physical Properties Estimation."

Session No. 8—Overall Project Management—North Sea Operations.

Paper 184—"Management of Major Offshore Projects—An Industry Challenge."

Paper 185—"Project Management—Organizational Relationships."

Paper 186—"Project Services Contractor Concept—Murchison Field."

Paper 187—"Project Management—Fulmar Field."

Paper 188—"Operator Organization for Managing and Integrating New Projects Within an Existing Organization."

Session No. 9—Production Operations I

Paper 189—"Gas Lift Increases High Volume Production from Claymore Field."

Paper 190—"Artificial Lift by Electric Submersible Pumps in Forties."

Paper 191—"Selection of Demulsifiers for Produced Crude Oil Emulsions."

Paper 192—"Computer Assisted Gas Production Operations Offshore The Netherlands."

Paper 193—"A Practical Method of Achieving Good Well Production Allocations from Well Test Data in the Prudhoe Bay Field."

Wednesday afternoon, October 22.

Session No. 10—Applicability of Enhanced Oil Recovery Methods in North Sea Field.

Paper 194—"Some Aspects of the Potential Application of EOR Processes in North Sea Reservoirs."

Paper 195—"The East Midlands Additional Oil Recovery Project."

Paper 196—"Two Dimensional Cross-Sectional Simulations of Waterflooding in a Middle-Juras-

(continued on page 19)

EARLY WARNING DEVICE TO SAVE MILLIONS IN MARITIME INDUSTRY

In an industry where the cost of one critical motor or generator failure can use up much of the profits of a voyage, there is welcome news from Canada. Tests now under way on various commercial vessels are conclusively demonstrating that a new electronic device can virtually eliminate burnouts caused by insulation failure, which is the major cause of burnouts in shipboard AC machinery.

The Early Warning device, the **FAILSAFE** Motor/Generator (patent pending) is simply and easily installed in the starter enclosure of electric motors or on the switchboard of generators. It continuously monitors insulation resistance in the idle machine. When the action of salt water, condensation and unavoidable shipboard contaminants, like oil and grease, causes resistance to fall below a predetermined safe level, the **FAILSAFE** gives the Early Warning necessary to initiate appropriate normal preventive maintenance.

Developed and marketed by Marine Safe Electronics of Canada Ltd., the **FAILSAFE** Motor/Generator Protector is U.L. — Listed and has won the approval of the world's leading maritime licensing agencies. Among the vessels currently using the device to protect essential equipment are the Amoco Europa, S.S. Texaco London, M.V. Regenstein, M.W. Westgae, M.S. Dwarka and M.S. Imperial Bedford. In all cases, the owners have found the Early Warning devices to work most satisfactorily. Some even earn their investments back within a few short months.

The device is available in models for all AC motors operated by starters, contractors or shunt-trip circuit breakers and for generators delivering up to 600 volts. High voltage units, up to 11KV are available. In addition to early warning alarm systems, there are two protective options available: start prevention and start prevention with emergency override.

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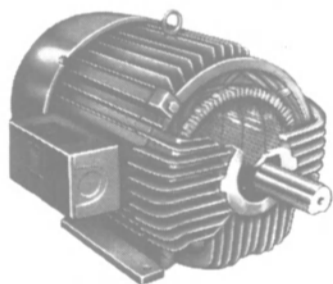
*Patent Pending

PREVENTS MOTOR/GENERATOR BURNOUTS

Caused by Insulation Breakdown

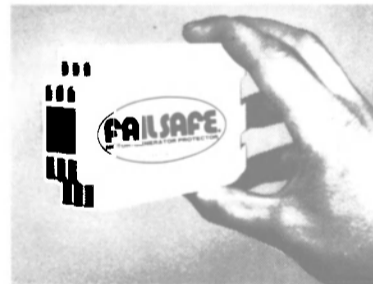
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Failure of insulation is far and away the primary cause of burnouts in modern AC machines. While shipboard motors and generators are idle, their insulation is subject to continuous contamination and degradation. The burnout, when it comes, usually occurs a few seconds after start up. When it is an *essential* motor or generator, the costs are enormous: Expensive rewinding is needed and delays and safety hazards result — which all add up to unscheduled downtime and over-budget expenditures.

The Solution



The **FAILSAFE** Motor/Generator Protector is an *early warning* device for most AC motors and generators. The compact, solid state unit continuously monitors insulation resistance in the idle machine. When it falls below a pre-set level (i.e. 1 meg), **FAILSAFE** triggers an Early Warning alarm and/or prevents starting. Any maintenance crew can then clean dry and/or revarnish the coil as necessary. Preventive maintenance forestalls the burnout and its inevitable delays, frustrations and over-budget expenditures!

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The **FAILSAFE** Motor/Generator Protector (Patent Pending) is approved and/or accepted by American Bureau of Shipping (ABS), U.S. Coast Guard, Lloyd's Register of Shipping, Germanischer Lloyd, Det norske Veritas and is U.L. — Listed.

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EUROPEC II

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sic Reservoir of the Beatrice Oil-field, with Implications for EOR Application."

Paper 197 — "An Appreciation of Middle Brent Sand Reservoir Features by Analogy with Yorkshire Coast Outcrops."

Paper 198 — "Detailed Reservoir Delineation by Interactive Seismic Stratigraphic Extrapolation."

Session No. 11 — Project Management Tools and Techniques—North Sea Operations.

Paper 199 — "A System for Project Planning and Control."

Paper 200—"Murchison Project Approach to Cost Control."

Paper 201—"Computerized Material Control and its Application to Project Management."

Paper 202—"Quality Assurance Programmes for Offshore Production Platforms."

Paper 203—"A New Approach to Project Measurement."

Session No. 12—Production Operations II

Paper 204—"A Systematic Approach to Optimizing the Maintenance Work as Experienced on the Frigg Field."

Paper 205—"Assuring the Reliability of Offshore Gas Compression Systems."

Paper 206—"Wax Deposition in Crude Oil Pipelines."

Paper 207 — "Designing and Managing the Training Programme for a Major North Sea Platform."

Paper 208 — "Simulation: A New Tool in Production Operations."

Thursday morning, October 23.

Session No. 13—Marine Export Systems.

Paper 209—"Offshore Loading System—Shuttle Tanker Installation."

Paper 210—"Reducing Tanker—SPM Loading Downtime."

Paper 211 — "Submerged Harbours for Arctic Conditions."

Paper 212 — "Application of Fixed Storage Units to Marine Export Systems."

Paper 213—"The Mooring Characteristics of Petroleum Tankers for Offshore Fields."

Session No. 14—Economics, Finance and Politics of North Sea Operations.

Paper 214 — "Exploration in a Climate of Relative Uncertainty (Or How the West Was Won)."

Paper 215 — "Some Effects of Depletion Policy on UKCS Field Economics."

Paper 216 — "A Reassessment of the U.K. and Norwegian Systems of Offshore Oil and Gas Taxation."

Paper 217—"Bank Financing of U.K. Offshore Projects."

Paper 218—"The Economics of Petroleum Prospects in the South West Approaches."

Session No. 15 — Inspection, Maintenance and Repair of Offshore Structures.

Paper 219—"Structural Repair Experiences in the Viking Gas Field."

Paper 220—"Inspection and Repair of Offshore Concrete Structures."

Paper 221 — "The Changing Face of Platform Maintenance."

Paper 222—"Critical Parts Re-

garding Corrosion and Corrosion Protection of Offshore Structures."

Paper 223—"Underwater Welded Repairs to Offshore Structures."

Thursday afternoon, October 23.

Session No. 16 — Mechanical Drivers and Compressors—Operational Assessment.

Paper 224—"Contamination of Offshore Centrifugal Process Gas

Compressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate."

Paper 225 — "Unit Testing for the Petroleum Industry."

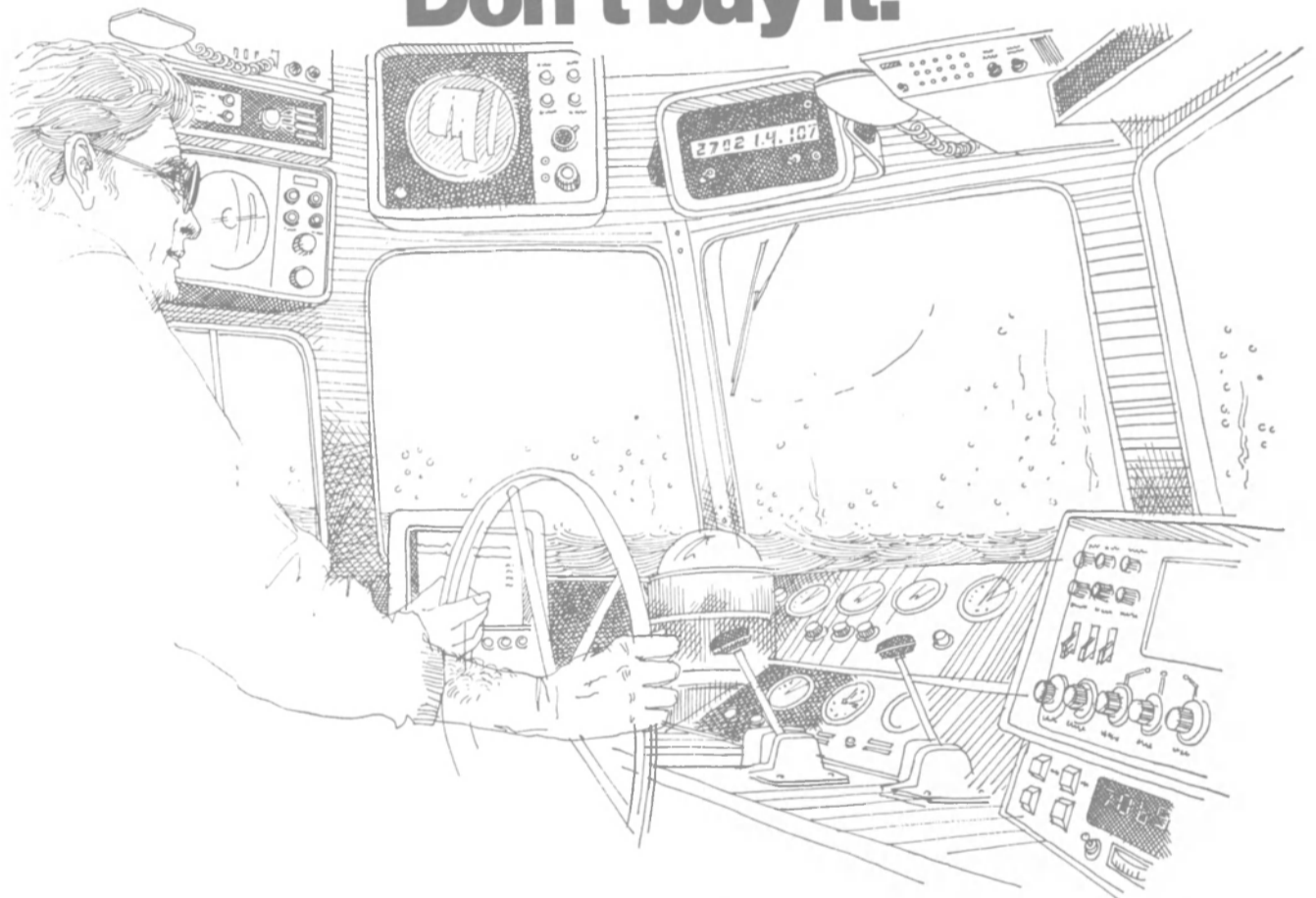
Paper 226—"Explosion Protection for Diesel Engines Offshore."

Paper 227 — "The Rolls-Royce Complete Power Station for Offshore Installation."

Paper 228 — "Modelling the (continued on page 20)

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EUROPEC II

(continued from page 19)

Brent System Production Facilities."

Session No. 17—Marginal Field Development in The North Sea.

Paper 229—"The Economic Aspects of Marginal Field Development in an Offshore Environment."

Paper 230—"The Buchan Field Development."

Paper 231—"Innovative Engi-

neering Makes Maureen Development a Reality."

Paper 232—"Development Plans for Ula Field—Block 7/12 NOCS."

Paper 233—"A Retrievable Offshore Complex for Marginal Fields."

Session No. 18—Design of Offshore Structures.

Paper 234—"Deepwater Platforms Problem Areas."

Paper 235—"Field Scale Model Studies of Piles as Anchors for Buoyant Platforms."

Paper 236—"Foundation Design for the Maureen Steel Gravity Platform (Block 16/29)."

Paper 237—"A Method for the Determination of the Reaction Forces and Structural Damage Arising in Ship Collisions."

Paper 238—"The Advantages of Cast Steel Nodes for Offshore Structures."

Friday morning, October 24.

Session No. 19—Topside Design for Hookup, Commissioning and Operation.

Paper 239—"Electrical System Design and Implementation for Optimum Hook-Up, Commissioning and Operation."

Paper 240—"Certification—The First Five Years."

Paper 241—"Onshore Commissioning of Power Plant."

Paper 242—"Murchison Field Topside Facilities Design."

Paper 243—"Offshore Production Facilities—Recommendations for a Simpler Approach."

Session No. 20—North Sea Drilling and Well Completion Operations.

Paper 244—"Planning for Deep High Pressured Wells in the Northern North Sea."

Paper 245—"The Versatility of the Turbodrill in North Sea Drilling."

Paper 246—"Control of Magnetic Surveying Errors Caused by Magnetism Associated with Both 'Normal' and 'Non-Magnetic' Steel Components in a Drill String."

Paper 247—"Development of a Reliable Deviation Surveying Programme Using Standard Instruments."

Paper 248—"Seven Inch Liner Cementations in the Brent Field—A Case History."

Session No. 21—Monitoring and Analysis of Offshore Structures.

Paper 249—"Measured Behavior of Platforms on the Norwegian Continental Shelf."

Paper 250—"Dynamic Behavior of an Offshore Concrete Platform."

Paper 251—"Realities Concerning Cyclic Loading of Clay Below a Gravity Structure."

Paper 252—"Acoustic Emission Monitoring Techniques Applied to Offshore Structures—Subsea and Topside Applications."

Paper 253—"Vortex Shedding Forces and the Fatigue Analysis of Offshore Structures."

Friday afternoon, October 24.

Session No. 22—Component Systems Design for Production Facilities.

Paper 254—"A Microprocessor Based Fire and Gas System."

Paper 255—"Sullom Voe Oil Terminal Supervisory Control System."

Paper 256—"Brent System Monitoring."

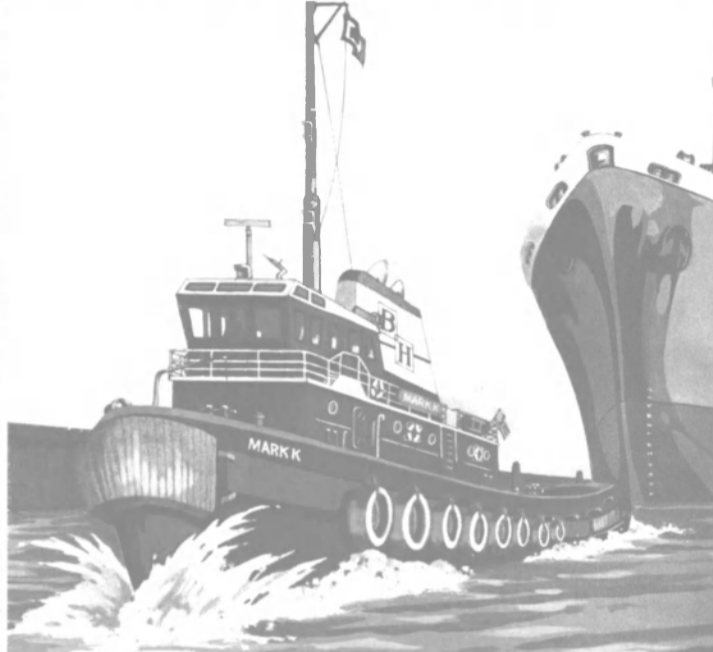
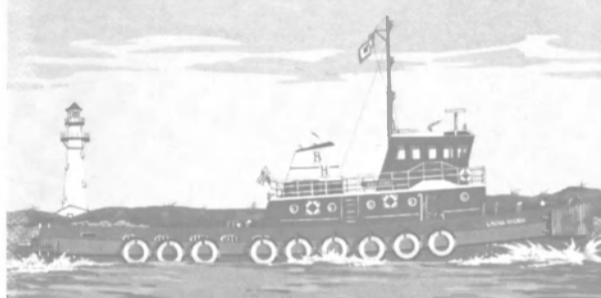
Paper 257—"The Design of Offshore Speech Communications Systems."

Paper 258—"Safe Ventilation with Lower Weight and Less Power Consumption."

Session No. 23—Drilling, Completion and Stimulation Fluids for North Sea Operations.

Paper 259—"Drilling Fluids for Highly Deviated Wells in North Sea Petroleum Development Drilling."

Paper 260—"The Pro's and



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Paper 261 — "High Density Clear Fluids for Completions and Workovers."

Paper 262 — "New Computerized Solids Control Program Reduces Drilling Costs in North Sea."

Paper 263 — "Successful Stimulation Practices — Offshore Holland."

Session No. 24 — Floating and Compliant Structures.

Paper 264 — "The Hutton Tension Leg Platform."

Paper 265 — "Dynamic Behavior of Models of Tethered Buoyant Platforms."

Paper 266 — "The Development of Articulated Buoyant Column Systems as an Aid to Economic Offshore Production."

Paper 267 — "Test-CONAT, A Large Scale Test in the Vicinity of the Research Platform 'Nordsee'."

Paper 268 — "Floating Concrete Platform for Deep Water Oil Production and Storage."

\$2.5-Million Facilities Expansion Under Way At Wiley Manufacturing

JESCO, Inc., a Unit of AMCA International Corporation located in Fulton, Miss., has received a contract for approximately \$2.5 million for the design and construction of manufacturing facilities at Wiley Manufacturing in Port Deposit, Md.

The facilities are part of an expansion project at Wiley, also a Unit of AMCA International, in conjunction with the \$129-million contract that was awarded to Wiley this spring for the fabrication of tunnel tubes for the new Fort McHenry I-95 twin vehicular tunnels to go under the harbor at Baltimore.

Varco-Pruden, a third Unit of AMCA International based in Memphis, Tenn., will furnish metal buildings for the expansion project, which is currently in progress and scheduled for completion early in 1981.

Tracor And MBAssociates Executives Announce Completion Of Merger

Frank W. McBee Jr., president of Tracor, Inc., Austin, Texas, and Robert Mainhardt, president of MBAssociates, San Ramon, Calif., have jointly announced the completion of the merger of MBAssociates (MBA) into a wholly owned subsidiary of Tracor.

Terms of the merger, approved by the directors of both companies and the shareholders of MBA, call for Tracor to issue .3125 of one share of Tracor common stock for each of MBA's approximate 1.2 million shares outstanding. (MBA shareholders will re-

ceive written instructions regarding the conversion of MBA shares to Tracor shares as soon as is practicable.)

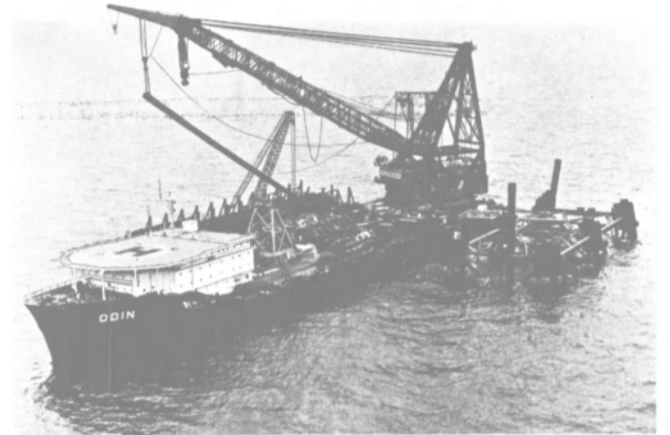
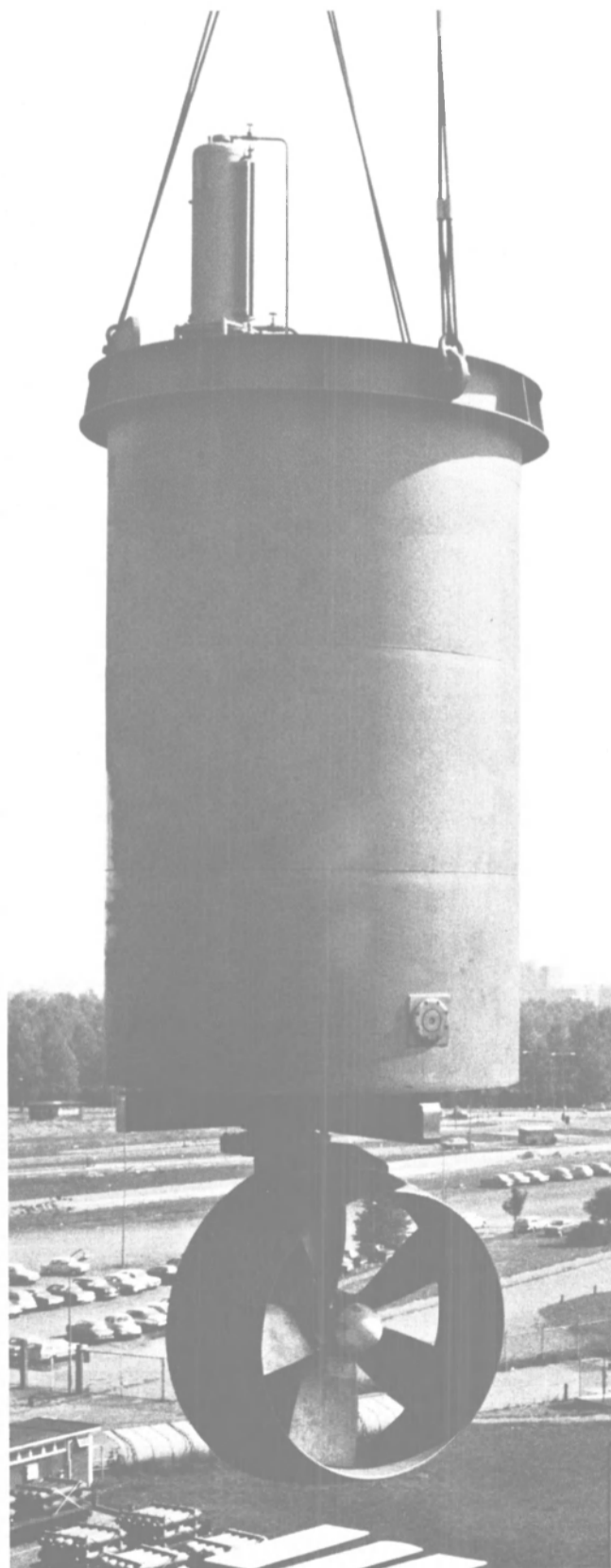
MBA, based in San Ramon, will continue the development and manufacture of its countermeasures, ordnance, and automated systems product lines as part of Tracor's Aerospace operations,

which are headquartered in Austin under the direction of group vice president Hardy M. Caton. The products of MBA complement Tracor's current defense systems business and broaden the company's technological competence in this market, according to Mr. McBee.

Tracor, Inc. is an international

technological products and services company headquartered in Austin. The company is a major technical contractor in sonar and health programs, a leading manufacturer of scientific instruments and advanced electronic systems, and a major high-volume producer of electronic and electromechanical components.

SCHOTTEL-Rudderpropellers for Main Propulsion of Offshore Giant



The mammoth crane and work-ship "ODIN" is regarded as the most powerful and modern offshore work-ship in the world. (Length = 178.15 m, Beam = 42.79 m, Depth = 16.48 m, Draught max. 12 m.) built by NDSM, Amsterdam, for Heerema, The Hague, this vessel was designed specifically for operation in the northern part of the North Sea. Converted from the hull of the 53,000 tdw tanker "ARAMANAC", the "ODIN" ensures maximum stability and has cross-flooding for the crane operation. This was achieved by removing the former engine room and adding wing stabilizing tanks to extend the width of the vessel. The slewing crane constructed by the American Hoist and Derrick Co. is the largest ever supplied for a crane ship. Its lifting capacity over the stern is 3,000 tons at 32 m outreach and as a slewing crane 2,700 tons at 44 m outreach. While erecting the offshore platform "Claymore" in the Thistle-Field, the "ODIN" set a new world record by lifting a 2,407 tons structure at 44 m outreach.

To cope with the sometimes severe weather conditions in unprotected areas such as the North Atlantic, the "ODIN" was fitted out with a main propulsion and manoeuvring system consisting of three electrically driven steerable retractable SCHOTTEL-Rudderpropellers, type S 1500 LSV, each having a capacity of 1,470 kW (2,000 hp). These units, containerized in 10 m steel cylinders 4 m in diameter, were delivered ready for installation by SCHOTTEL-NEDERLAND B.V., The Hague.

At the shipyard they simply had to be installed in the three wells intended for them (two at the stern and one forward) and subsequently connected to the power lines from the control-centre. Each of the containerized units includes a direct-current propulsion motor and its water cooling system, the lubricating system for the rudderpropeller, an electro-magnetic brake, a gravity drainage system controlled by a level switch, as well as all the necessary control and alarm systems. For optimum hydro-dynamic efficiency the 5-bladed propellers are mounted in nozzles. The steering of the three SCHOTTEL units is centrally controlled. The steerable thrust of the SCHOTTEL-Rudderpropeller, which turns through a full 360°, enables the giant offshore work-ship to attain maximum manoeuvrability, allowing for exact positioning even under extremely difficult conditions.

Up to the present over 15,000 SCHOTTEL units with more than 4 million hp propulsion capacity have been delivered for ships of all types all over the world.

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MECO Offers New Heat Recovery Evaporators
—Literature Available

Mechanical Equipment Company, Inc. (MECO), New Orleans, is marketing three new waste heat recovery evaporators for the production of fresh water. Applications include offshore drilling rigs and production platforms, pipe-laying barges, tankers, cargo ves-

sels, tugboats, survey ships, etc. The units, which operate on the vacuum distillation principle, are available in models with capacities of 100, 300, and 600 gallons per hour, and with dry weights of 950, 3,650 and 5,200 pounds, respectively.

The evaporators use waste heat from engine jacket water, turbine exhaust, or surplus steam to boil seawater or brackish water at low

temperatures (usually 120 to 135 F), thus greatly reducing scale formation. The fresh water contains less than 4 ppm of total dissolved solids, and meets U.S. Public Health Service purity standards.

Each unit is a complete package with evaporator shell, piping, heat exchangers, blowdown and distillate pumps, controls, gauges,

thermometers, and a salinity monitoring system.

For additional information and free literature, write to S. Disi, Dept. MR, MECO, 861 Carondelet Street, New Orleans, La. 70130.

James Hodges Named Sales Manager For Houston-Based SOFEC

James Hodges has joined SOFEC, Inc. of Houston as sales manager. His primary responsibility will be the marketing of SOFEC's offshore tanker loading systems within the Americas and Mexico.



James Hodges

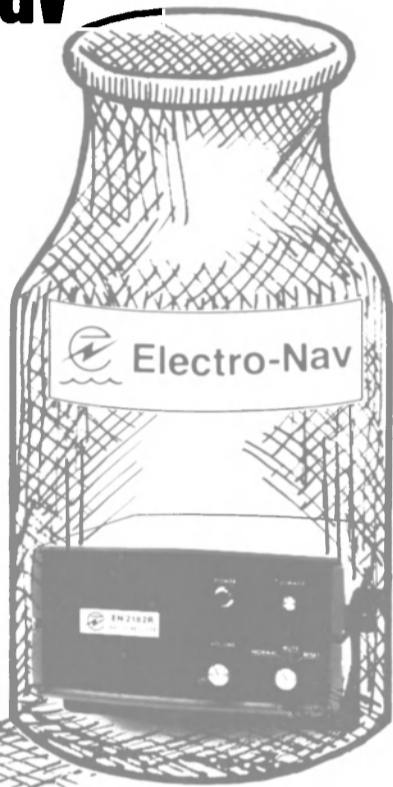
Mr. Hodges has 13 years' experience in construction, installation, and sales of single point mooring terminals in locations around the world. He was previously employed by Imodco.

SOFEC, the forerunner in the development of Single Anchor Leg Mooring (SALM) tanker terminals, is presently constructing three SALM terminals for the first domestic deepwater import facility, the Louisiana Offshore Oil Port (LOOP) Project.

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... and it won't cost you a bundle. It's our new EN 2182R Watch Receiver. We designed it to meet or exceed the very latest SOLAS 74/IMCO A.383 round-the-clock distress monitoring directives, and the pertinent requirements of just about every maritime regulatory agency in the world, CEPT, UK Home Office, Scandinavia's PTT, USA's FCC, you name it. And it's available right now, so you can forget about having to apply for additional extensions.

EN 2182R is compact, rugged, reliable, real state of the art. And fully flexible. With normal and muted operation. Integral loudspeaker and built-in



test generator. Plus provisions for external speakers, alarm indicator and reset controls. And an optional digital clock which automatically lifts mute during silent periods. This watch receiver will mount anywhere, table, bulkhead, or overhead, so it won't get in your way. It operates on both AC and DC; all you do is plug it in and it's ready to go.

The low cost is also a relief. Especially since no unit anywhere near the price of the EN 2182R comes anywhere near its performance. And it comes with a full year's guarantee. So here's an easy way to get rid of a headache — before it starts. Call Electro-Nav today.

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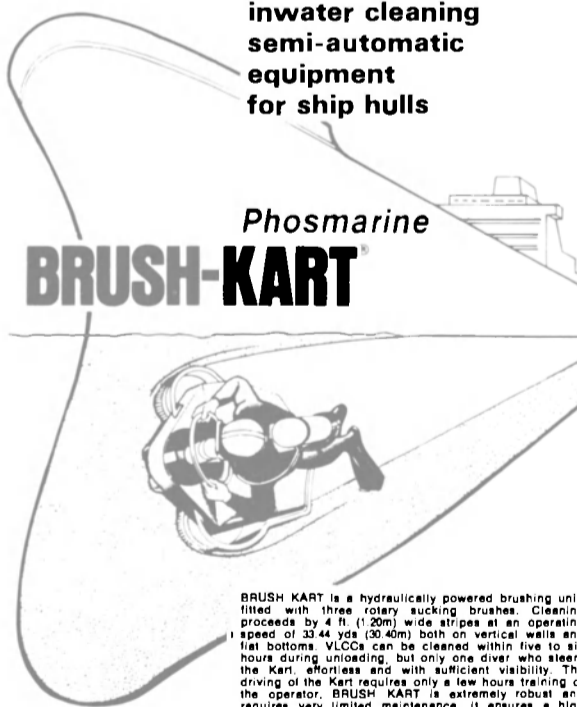
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Dome Petroleum Signs Exploration Agreement With Japanese National

Dome Petroleum Limited of Calgary, Canada, announced it has entered into a letter of intent with the Japanese National Oil Company. This letter confirms an agreement, in principle, whereby the Japanese National Oil Company has agreed to lend Dome Petroleum Limited \$400 million for use in conducting exploratory activities in the Beaufort Sea.

This loan is recoverable out of a share of production from three oil fields developed in the Beaufort Sea. Under the arrangement, JNOC has the right to grant development loans with respect to these three oil fields, with such loan also being recoverable from the Beaufort Sea production.

The Japanese National Oil Company has the right to take in kind up to 25 percent of Dome's share of the crude oil produced from these three fields, dependent upon the percentage of development costs borne by the development loans.

Any export of petroleum hydrocarbons to Japan is subject to all normal Canadian Governmental approvals.



McDERMOTT SHIPYARDS

McDermott Shipyards Group, of J. Ray McDermott & Co., Inc., offers complete engineering construction and repair services to the marine industry, offshore oil and gas industry and the fishing industry.

Since the beginning in 1959, McDermott Shipyards have become recognized leaders in the construction of large ocean-going tugs, offshore supply vessels, jack-up and packaged drilling rigs, inland drill barges, dredges, oceanographic research and exploration vessels, fishing vessels, derrick and pipe-laying barges, crane boats, ferries, and ocean-going work vessels of all types.



McDermott Shipyards offer complete drydock and efficient under-roof construction facilities in both Morgan City and New Iberia,

Louisiana, with direct access to the Gulf of Mexico and the waters of the world.

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Keep the boat working

The MV Dennis Hendrix does — at nearly 98% utilization of her engines at an estimated 80% load factor. Almost 17,000 hours, on MVI Caprinus[®] R Oil.

With only 1400 hours on her three 16-645-E5 EMD engines, the Dennis Hendrix was switched over to Shell's MVI Caprinus^{*} R Oil. That was in the Summer of 1977. When launched, on July 16, 1977, the boat started working the Lower Mississippi pushing tows of up to 40 barges of 1500 tons each. On August 19, 1979, she was finally ready for her first scheduled overhaul. Total engine hours averaged 17,885. Individual engine hours were; port — 18,124, center — 17,421 and starboard — 18,110. Total *elapsed* time from the date of launch; 18,312 hours. And work on the Lower Mississippi usually means long runs with few interruptions. It was estimated that the load factor was averaging about 80% during these hours. In over two years, the engines averaged only 2.3% downtime.

The Dennis Hendrix was the first American Commercial Barge Line vessel to use Caprinus R. So, when the overhaul was scheduled, Shell went along to see the results. As is usual with Caprinus R oil, the engines were very clean, with relatively low deposit levels. Wear was low for the time and type of service. Used oil analysis showed that the premium MVI Caprinus R Oil had equilibrated at a TBN-E of 3.0, which means corrosion protection was adequate even though the engines were operated in 'no drain' service. Carbon deposits were as expected with an MVI oil, soft and flaky.

All three engines appeared about equal in appearance, and the port engine was selected for

detailed inspection. Top rings all rated 2A, #2 rings rated 2 and 2A and #3 compression rings all rated 1. These values are well within the normal range for engines at overhaul. Liner wear was normal for the hours. All three engines had done their job well. The oil had done its job well. MVI Caprinus R oil had helped the Dennis Hendrix stay on the job with minimum downtime and maximum reliability.

MVI oils have been proven in almost half a century of operation in medium-speed diesels. Shell's MVI Caprinus R Oil maintains that reputation of MVI oil and uses a modern additive package to meet the latest engine service requirements.

Shell doubling MVI capacity

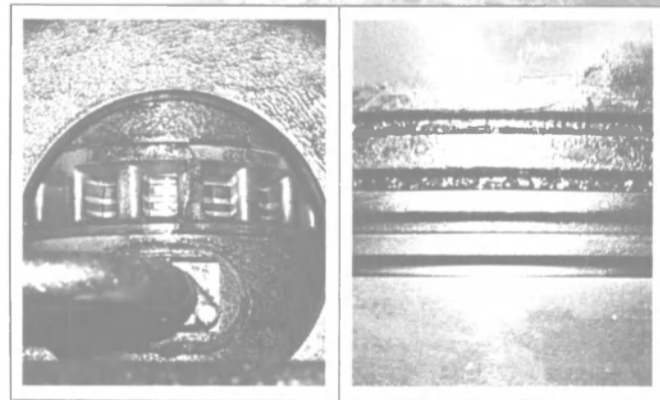
Since Shell is *doubling* its MVI lube oil capacity, there is no need to switch to HVI oils, as suggested by some MVI-short suppliers. HVI oils form harder, denser carbon deposits that can block port areas and crowd rings in their grooves. With Caprinus R Oil, you can usually operate without changing oil in most engine types with good engine protection. A used oil analysis program can be the means to longer life and excellent engine protection with Caprinus R Oil.

For more information write Shell Oil Company, Manager, Commercial Communications, One Shell Plaza, Houston, Texas 77002.

Caprinus is a trademark and is used as such in this writing

Come to

Shell for answers



The light carbon deposits in the airbox are typical of a premium MVI oil such as Caprinus R. Soft deposits will clean up rapidly, and even after 17,000 hours, are not blocking air flow.

Pistons had no scuffing or scoring. Ring groove fill and ring wear were normal for the time and type of engine service. Rings were free.



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Bayou La Batre
 Deep Sea Marine Products
 Location: West Bank, 500 Tram Avenue
 Phone: (205) 824-4127
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Mobile
 Midstream Fuel Service, Inc.
 Location: Mobile River, Mile 1.5
 Address: Fairhope 36532
 Phone: (205) 433-4972
 Radio: Ch 16, VHF
- ARKANSAS**
Helena
 Helena Fuel & Harbor Service, Inc.
 Location: Mississippi Service, Inc.
 Mississippi River, Mile 661
 Riverfront & Bridge Road
 Phone: (501) 338-8321
 Radio: Ch 16
- CALIFORNIA**
Oakland
 Bay Area Petroleum, Inc.
 Location: 421 23rd Ave.
 Phone: (415) 534-4517
San Diego
 Tuna Clipper Marine
 Location: San Diego Harbor
 Foot of Crosby Street
 Phone: (714) 232-1838
San Pedro
 San Pedro Marine, Inc.
 Location: Berth 74
 Phone: (213) 832-1339
- FLORIDA**
Jacksonville
 See Savannah Oil & Chemical Savannah, Ga.
Port Everglades
 Belcher Oil Company
 Location: Port Everglades
 2401 Eisenhower Boulevard
 Address: Fort Lauderdale
 Phone: (305) 525-4261
Tampa
 Belcher Oil Company
 Location: Tampa Bay
 Phone: (813) 247-4572, 247-4573
West Palm Beach
 Belcher Oil Company
 Location: Port of Palm Beach
 1733 Hill Avenue
 Phone: (305) 848-1495
- GEORGIA**
Brunswick
 See Savannah Oil & Chemical Savannah, Ga.
Savannah
 Belcher Oil Company
 Location: Savannah River, Mile 17
 Pier 50, Georgia Ports Authority
 Phone: (912) 964-8821
Savannah
 Savannah Oil & Chemical
 Location: Savannah River
 647 W. River Street
 Phone: (912) 234-5402
- ILLINOIS**
Hartford
 Ory Bros. Marine Service of America, Inc.
 Location: Upper Mississippi River, Mile 197
 Foot of Hawthorne Street
 Phone: (618) 254-0626 (Illinois)
 (314) 741-2570 (Missouri)
 Radio: Ch 16, KLC 791
Wood River
 Hartford Fueling Service
 Location: Upper Mississippi River, Mile 196
 Phone: (618) 254-4333
 (314) 741-3667
 Radio: Ch 16 VHF KLG 280
- KENTUCKY**
Louisville
 Wooten River Service
 Location: Ohio River, Mile 603
 2927 River Road
 Phone: (502) 896-0317
Paducah
 Molloy Marine Service, Inc.
 Location: Ohio River, Mile 934
 100 Husband
 Phone: (502) 443-6456
Paducah
 Walker Midstream Fuel and Service Co.
 Location: Ohio River, Mile 934
 532 South Second St.
 Phone: (502) 442-2738
 Radio: freq. 156
- LOUISIANA**
Amelia
 Berwick Bay Oil Co., Inc.
 Location: Bayou Boeuf
 Intracoastal Waterway
 1/2 mile North 85 mile board
 See Berwick listing under Morgan City, La.
Baton Rouge
 Capital Marine Supply, Inc.
 Location: Lower Mississippi, Mile 230
 Foot of North Street
 Phone: (504) 343-8379
 Radio: Channels 16, 7a, 10, 66a VHF KFT 322
Baton Rouge
 Channel Fueling Service, Inc.
 Location: Lower Mississippi, Mile 232
 River Road
 Phone: (504) 383-4691, 383-4814
 Radio: freq. 156.8
- Belle Chasse**
 Plaquemines Oil Sales Corp.
 See Plaquemines Oil, Venice, La.
Berwick
 Berwick Bay Oil Co., Inc.
 Location: Atchafalaya River - 1/4 mile north of Hwy 90 bridge
 See Berwick Oil Listing under Morgan City, La.
Cameron
 Berwick Bay Oil Co., Inc.
 Location: Calcasieu River
 See Berwick Bay Oil listing, Morgan City, La.
Cameron
 Cameron Marine Service, Inc.
 Location: Calcasieu River
 Phone: (318) 775-5206
Dulac
 Berwick Bay Oil Co., Inc.
 Location: Houma Navigation Channel
 17 miles South of Houma
 See Berwick Bay Oil listing, Morgan City, La.
Gretna
 John W. Stone Oil Distributor, Inc.
 Location: Lower Mississippi, Mile 96.5
 87 First Street, Gretna
 Harvey 77059
 Phone: (504) 366-3401
 Radio: KGW 352
Houma
 Houma Oil Company, Inc.
 Location: Intracoastal Canal
 Phone: (504) 872-0464
Intracoastal City
 Berwick Bay Oil Co., Inc.
 Location: Vermillion River - 1/4 mile north of Intracoastal Canal Mile 155
 See Berwick Bay Oil listing, Morgan City, La.
Lake Charles
 Channel Fueling Service, Inc.
 See Channel Fueling Service, Sulphur, La.
Morgan City
 Berwick Bay Oil Company, Inc.
 Location: Young's Road
 Phone: (504) 384-1610
 Radio: Ch 16 VHF-KXR979
New Orleans
 Gulf Outlet Fuel & Marine Supplies, Inc.
 Location: Gulf Intracoastal Waterways
 Mile 8 East
 3400 Jourdan Road
 Phone: (504) 241-8680
 Radio: KVF 893
Pott Allen
 Tri-State Marine Service Co.
 Location: Lower Mississippi, Mile 227.5
 River Road
 Phone: (504) 749-3171
 Radio: 156.8
Sulphur
 Channel Fueling Service, Inc.
 Location: Gulf Intracoastal Waterway
 West, Intersection of Calcasieu River
 Phone: (318) 583-7215, 583-7384
 Radio: 156.8
Venice
 Plaquemines Oil Sales Corp.
 Location: Mississippi River
 Mile 10.5 at Grand Pass
 Louisiana Hwy 23, Venice
 Address: Belle Chasse
 Phone: (504) 394-5555 (Belle Chasse)
 (504) 534-7403 (Venice)
 Radio: WYZ 2375
- MASSACHUSETTS**
Gloucester
 Progressive Oil Co., Inc.
 Location: Gloucester
 Address: 92 Grove St.
 Phone: (617) 283-2000
- MINNESOTA**
Winona
 Waterways - Winona, Inc.
 Location: Upper Mississippi, Mile 725
 376 East 2nd St.
 Address: 455 North St.
 Fountain City, W.
 Phone: (608) 687-6931 (Wisconsin)
 (507) 452-5252 (Minnesota)
 Radio: Ch 16-12
- MISSISSIPPI**
Biloxi
 Ship Services Corporation
 Location: Gulfport State Port and Biloxi Back Bay, Beacon 7
 Phone: (601) 374-1000
Greenville
 Waterways Marine of Greenville, Inc.
 Location: Lower Mississippi, Mile 537
 Warfield Point Road
 Phone: (601) 335-2526
 Radio: KWS 617
Pascagoula
 Fuel Services, Inc.
 Location: Bayou Casotte
 Ingalls Avenue
 Phone: (601) 762-0636, 762-0640
 Radio: Ch 16
Vicksburg
 Vicksburg Mid-River Services, Inc.
 Location: Lower Mississippi, Mile 437
 Foot of Lee Street
 Phone: (601) 636-4814, 636-7731
 Radio: 156.8
- MISSOURI**
St. Louis
 St. Louis Fuel & Supply Co., Inc.
 Location: Upper Mississippi, Mile 179
 Address: Foot of Gratiot Street
 Phone: (314) 421-3960
 Radio: Ch 16, VHR-KDO 722 Fort Guage
- NORTH CAROLINA**
Elizabethtown
 Campbell Oil Company, Inc.
 Location: 1010 West Broad Street
 Phone: (919) 862-4107
- OREGON**
 all ports
 see Lilyblad Petroleum listing under Tacoma, Washington
- PENNSYLVANIA**
Philadelphia
 River Associates, Inc.
 Location: Delaware River
 Pier 9 North
 Phone: (215) 463-8100
- SOUTH CAROLINA**
Charleston
 Charleston Oil Co.
 Location: Ashley and Cooper Rivers,
 1553 King St. Extension
 Phone: (803) 577-5600
Charleston
 See Savannah Oil & Chemical, Savannah, Ga.
Georgetown
 See Savannah Oil & Chemical, Savannah, Ga.
Port Royal
 See Savannah Oil & Chemical, Savannah, Ga.
- TENNESSEE**
Memphis
 Memphis Boat Refueling Service, Inc.
 Location: Lower Mississippi, Mile 735
 Foot of Illinois Street
 Phone: (901) 775-3131
 Radio: Ch 16
Memphis
 Waterways Marine of Memphis, Inc.
 Location: Young's Road
 Foot of Beale Street
 Phone: (901) 525-5761
 Radio: Ch 16, 156.6
- TEXAS**
Corpus Christi
 Belcher Co. of Texas, Inc.
 Address: 504 Navigation
 Corpus Christi, Tx. 78403
 Phone: (512) 888-6311
Galveston
 Grasso Marine Service, Inc.
 Location: Galveston Ship Channel
 Pelican Island
 Phone: (713) 744-2888 (dock)
 (713) 763-4343 (office)
Houston
 Houston Marine Services, Inc.
 Location: Beacon 126
 Houston Ship Channel
 Phone: Dock (713) 424-4502
 Office (713) 455-8819
 Radio: Channel 16
Lake Jackson
 Channel Fueling Service, Inc.
 Location: Gulf Intracoastal Waterway
 West, Mile 393
 1400 Marlin Avenue
 Phone: (713) 233-5321, 233-5322
 Radio: 156.8
Port Arthur
 Channel Fueling Service, Inc.
 Location: Gulf Intracoastal Waterway
 West, Mile 282
 5700 Proctor Street
 Phone: (713) 962-5557
 Radio: 156.8
Rockport
 Berwick Bay Oil Co., Inc.
 Location: Rockport Navigation Harbor,
 Intracoastal Canal, Mile 526
 See Berwick Bay Oil Listing, Morgan City, La.
- VIRGINIA**
Norfolk
 Marine Oil Service, Inc.
 Location: Elizabeth River
 Address: 71 Radar Street
 Phone: (804) 622-0934, 622-3109
- WASHINGTON**
Seattle
 Ballard Oil Co.
 Location: Lake Washington Ship Canal
 Phone: (206) 783-0241
Tacoma
 Lilyblad Petroleum, Inc.
 Location: Washington and Oregon - all ports
 Phone: (206) 572-4402
 Radio: KLB radio station
 Marysville, Wa.
- WASHINGTON**
 all other ports see Lilyblad Petroleum above.
- WEST VIRGINIA**
Pt. Pleasant
 City Ice & Fuel Co.
 Location: Ohio River, Mile 265.3
 Address: 224 First Street
 Phone: (304) 675-2010

ON THE COVER

Four New Bay-Houston Tugs Are \$9.2-Million Addition To Fleet

In what may be a maritime first, Bay-Houston Towing Company recently christened its four newest tugboats in a single ceremony held at City Dock 4 in the Port of Houston. These four new vessels, built at a total cost of \$9.2 million, represent the second phase of a \$16.9-million expansion and upgrading of the Bay-Houston fleet.

Cecil R. Haden, president of the Houston-based firm that is now the largest harbor tug fleet operating on the Texas Gulf Coast, christened the tug Captain W.D. Haden, named after the company's founder. The other three vessels were christened by the family members whose names appear on the respective bows: **W.D. Haden II**, **Barbara H. Neuhaus**, and **Mark Kuebler**. The family-owned Bay-

Houston Towing has always followed the tradition of naming its boats after family members. The fleet now totals 16 tugs.

The Captain W.D. Haden, designed and built by Halter Marine of New Orleans, is the first silicon controlled rectifier (SCR), diesel-electric tug built for Gulf Coast service. And it is the first tug to bear this name in the company's 100-plus years' history. Captain W.D. Haden started the operation using mules on a tow-path to pull sailing craft up Cedar Bayou in the late 1870s.

The new tug is powered by three GM/Stewart & Stevenson 16V149TI turbocharged diesel-generator sets, each 1,000-kw, 600-volt ac—a total of 4,020 bhp through Ross Hill SCR controllers driving two General Electric 567 dc motors and Philadelphia Gear reduction gearing. The 106-foot by 34-foot by 16-foot vessel has twin four-bladed, stainless-steel propellers turning in Kort nozzles.

The Captain W.D. Haden is fitted with a Markey TES-32, single-drum electric towing winch with a capacity of 2,100 feet of 2-inch wire. Bollard pull is 115,000 pounds ahead, 92,500 pounds astern. Other equipment includes central air-conditioning and heating, all-electric galley, foam fire-fighting system, Halon-protected machinery space, gyrocompass, autopilot, Loran, radar, Fathometer, SSB radio, two VHF's, and

(continued on page 26)



Cecil R. Haden, president of Bay-Houston Towing Company, christens the firm's newest tug named after his father, the founder of the towing company, **Captain W.D. Haden**. The new vessel is the only SCR diesel electric tug built for Gulf Coast service, and one of four just christened.



Four new Bay-Houston tugs were christened recently during single ceremony at Port of Houston. They are (L to R): **Captain W.D. Haden**, **W.D. Haden II**, **Barbara H. Neuhaus**, and **Mark K.**

Shell Oil Company
 Manager Commercial Communications
 One Shell Plaza
 Houston, TX. 77002

Send me the Shell Shallow Draft Marine Products Guide (SOC: 95-79)
 Send me the Shell Marine Equipment Lubricants chart (SOC: 122-79)
 Send me the Shell Marine Jobber Directory (SOC: 127-79)
 Send me the *Caprinus R* Technical Bulletin (SOC: 17-77)
 Send me the *Caprinus R* brochure (SOC: 32-77)

Name _____
 Title _____
 Company/Vessel _____
 Address _____
 City _____ State _____ Zip _____

Four New Bay-Houston Tugs

(continued from page 25)

intercom. A 60-kw auxiliary generator is driven by a Detroit Diesel 4-71 engine.

With the exception of main propulsion machinery, the other three vessels—W.D. Haden II, Barbara H. Neuhaus, and Mark K—are

basically identical. They have a length of 95 feet six inches, beam of 32 feet, and depth of 16 feet. All are fitted with the same auxiliary equipment and outfit as the bigger Captain W.D. Haden. All four tugs are classed +A1 by the American Bureau of Shipping, and carry a crew of 10.

The W.D. Haden II, built at the McDermott shipyard in Morgan City, La., is powered by a 3,070-bhp GM Electro-Motive Division

16-645-E7A diesel driving a stainless steel propeller in a Kort nozzle through Reintjes WAV 3400, 5:1 reduction gear. This boat is equipped with two 100-kw auxiliary generators driven by Detroit Diesel 8V-71 engines.

The Barbara H. Neuhaus, built at Diamond Manufacturing Company's yard in Savannah, Ga., has the same power plant and auxiliaries as the W.D. Haden II. Diamond also built the Mark K,

which is powered by a Nohab Polar F 212V-D825 and Reintjes WAV 3400, 4:5 reduction gear.

Hiroshi Ito Named President Of Kubota America Corp.

Hiroshi Ito has been named president, Kubota America Corporation, New York, a wholly owned subsidiary of Kubota, Ltd. of Japan, succeeding Tsutomu Hashimoto, who returns to Tokyo as export manager, machinery.



Hiroshi Ito

Mr. Ito, with the parent company for 34 years, most of these in export-related areas, was export manager in Tokyo prior to his U.S. assignment. He has extensive experience in marketing the company's wide range of industrial products, which include industrial castings, water supply equipment, and industrial machinery.

In his new post, Mr. Ito will be responsible for the planning and marketing in North America of Kubota products, which include cargo oil pipes for tankers, suction rolls for paper mills, electronic computing scales, valves for water control systems and refineries, rolls and ingot molds for steel works, etc.

Mr. Ito joined Kubota in 1946 as mechanical engineer and became involved in research and development for gas and diesel engines. In 1959, he entered the company's overseas marketing division and was appointed as export manager in 1974.

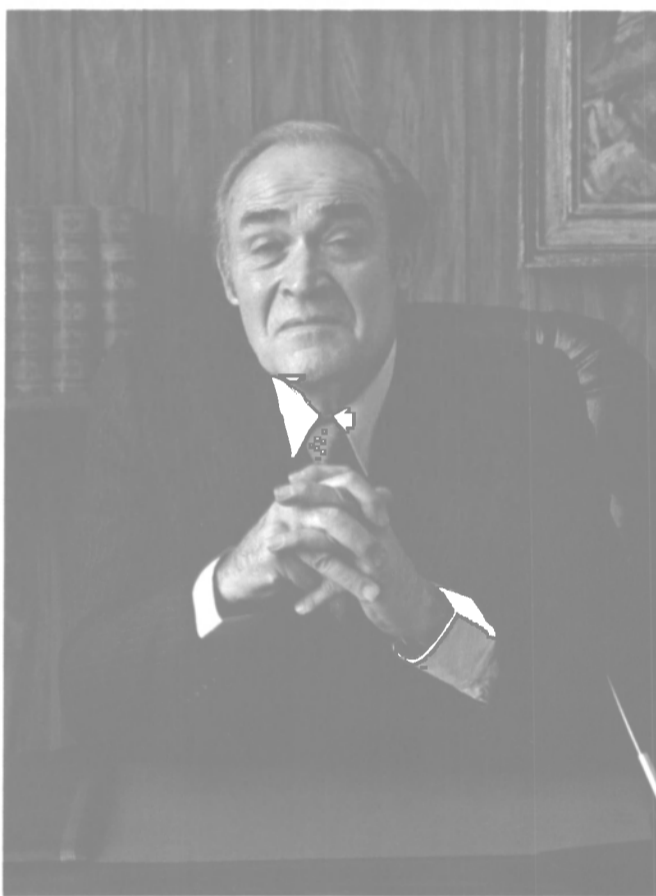
E.G. Smith Named Marine Claims Manager For Ashland Petroleum

Edward G. Smith Jr. has been named claims manager for the marine transportation department of Ashland Petroleum Company, Ashland, Ky., according to G. Ward Disbrow, vice president, marine transportation.

In his new position, Mr. Smith is responsible for accident investigation, settlement negotiation, and claims handling for marine transportation equipment and personnel. He reports to R.B. Keifer Jr., manager, marine transportation.

Mr. Smith joined Ashland Oil, Inc. in 1977 as an insurance analyst in the corporate risk and insurance management department. Ashland Petroleum is the largest operating division of Ashland Oil, Inc.

The new Sperry ASM reduces your need for bunkers and bankers.



If you're tired of all too frequent bunkering and borrowing, Sperry has a "savings plan" for you. The Adaptive Steering Module (ASM).

When used with our Universal Gyropilot, the ASM can provide an annual fuel savings of more than 1.5% when operating in sea states 4 and 5. Based on present fuel costs, this could save more than \$50,000 annually.

It also will save time and effort. The ASM eliminates manual readjustments by automatically adapting the gyropilot as sea conditions change.

In fact, only two manual inputs are required: set the ASM for light or loaded condition and open or confined waters. Then, simply activate the mode switch on the gyropilot, and the module takes over.

The ASM's dedicated microprocessor control system automatically adjusts weather and gain settings on a continual basis. These adjustments are based

on ship speed and type, yaw and rudder angle deviations, and load conditions.

The ASM also executes controlled turns with virtually no overshoot. Audible and visual alarms warn the officer of loss of speed input, computer problems, and loss of power supply.

Yet, with all these practical features, you don't have to be a banker to buy the ASM.

For details, see your Marine Systems representative, or call or write: Sperry Division Headquarters, Marine Systems, Great Neck, New York 11020. (516) 574-3088.



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The Adaptive Steering Module

Huthnance Seeks Title XI On Two Jackup Barges To Cost \$59.6 Million Total

Huthnance Drilling Company/Vanguard I and Charger II, Ltd. of Houston has applied to the Maritime Administration for a Title XI mortgage guarantee to aid in financing the construction of two jackup drilling barges.

The 180-foot by 180-foot, 10,848-dwt barge being built for Vanguard I by Ingalls Shipbuilding, Pascagoula, Miss., is scheduled for delivery by July 30, 1981. Baker Marine Corporation of Ingelside, Texas, expects to complete the other 174-foot by 162-foot, 6,194-dwt barge for Charger II by September 1981. Huthnance Drilling plans to operate both vessels in the Gulf of Mexico.

The estimated cost of the Vanguard I is \$34,396,211; estimated cost of the Charger II is \$25,259,041. If approved, the Title XI guarantee will cover \$44,700,000, or 75 percent of the \$59,655,252 estimated total cost of both vessels.

McMullen's Newport News Office Installs Inter- Active Graphics System

John J. McMullen Associates, Inc. (JJMA), naval architects, marine engineers and transportation consultants of New York, recently installed an AUTO-TROL AD/380 Interactive Graphics System in its detail design office located in Newport News, Va. This office, known as JJMA's Hampton Roads Operation (HRO), has been fitted with four 25-inch screen terminals, a backlit digitizer table, a hard copy unit, a flatbed plotter, a message center, and an alpha-numeric programming terminal. This peripheral equipment is interfaced with a Sperry Univac V77 Model 800 computer. File storage is obtained through the use of a CDC Eagle Disc Drive having a storage capacity of 80 megabytes.

A staff of HRO designers experienced in the structural, electrical, piping, and HVAC design disciplines has been trained in operation of the system. HRO currently has 135 designers and draftsmen employed, and is involved with the detail design for construction of several major shipbuilding projects.

Thomas R. Marr has been engaged as system manager for the interactive graphic system installation at HRO. He comes to HRO from Nuclear Power Services, Inc., where he was employed as system manager, Automated Graphics Division.

John J. McMullen Associates has its principal office at Suite 3000, One World Trade Center, New York, N.Y. 10048.

McDermott Orders Rig Systems For Hutton Field From Hydranautics

Hydranautics, Inc. has been chosen by McDermott Engineering Ltd. of London to provide two complete hydraulic rig systems for use on Amoco's Northwest Hutton Field platform in the North Sea (U.K.).

The contract calls for eight

200-ton, push/pull piston gripper jacks, four 80-ton lift systems, two control panels, and power supplies. The Hydranautics equipment will be used for moving the drilling derrick from well to well and for lifting/lowering the blow-out preventors. The Hydranautics equipment has a maximum moving capacity of 2,000 tons at 20 percent coefficient of friction.

The equipment is scheduled to be shipped in early 1981, and

should be installed and operating on the platform in 1982. With the McDermott order, Hydranautics will have supplied well over 200 rig-skidding systems to the offshore oil industry for use on nearly every large, multi-well offshore platform in the world.

McDermott Engineering, Ltd. is responsible for the management of the topside design of the Amoco platform.

Goodyear Brakeability: Disc brakes, more efficient, more effective than band brakes under dynamic operation.

As a leader in disc brake technology, we supply brakes for bow thrust engines, propeller shafts, anchor windlasses, winches, as well as other uses.

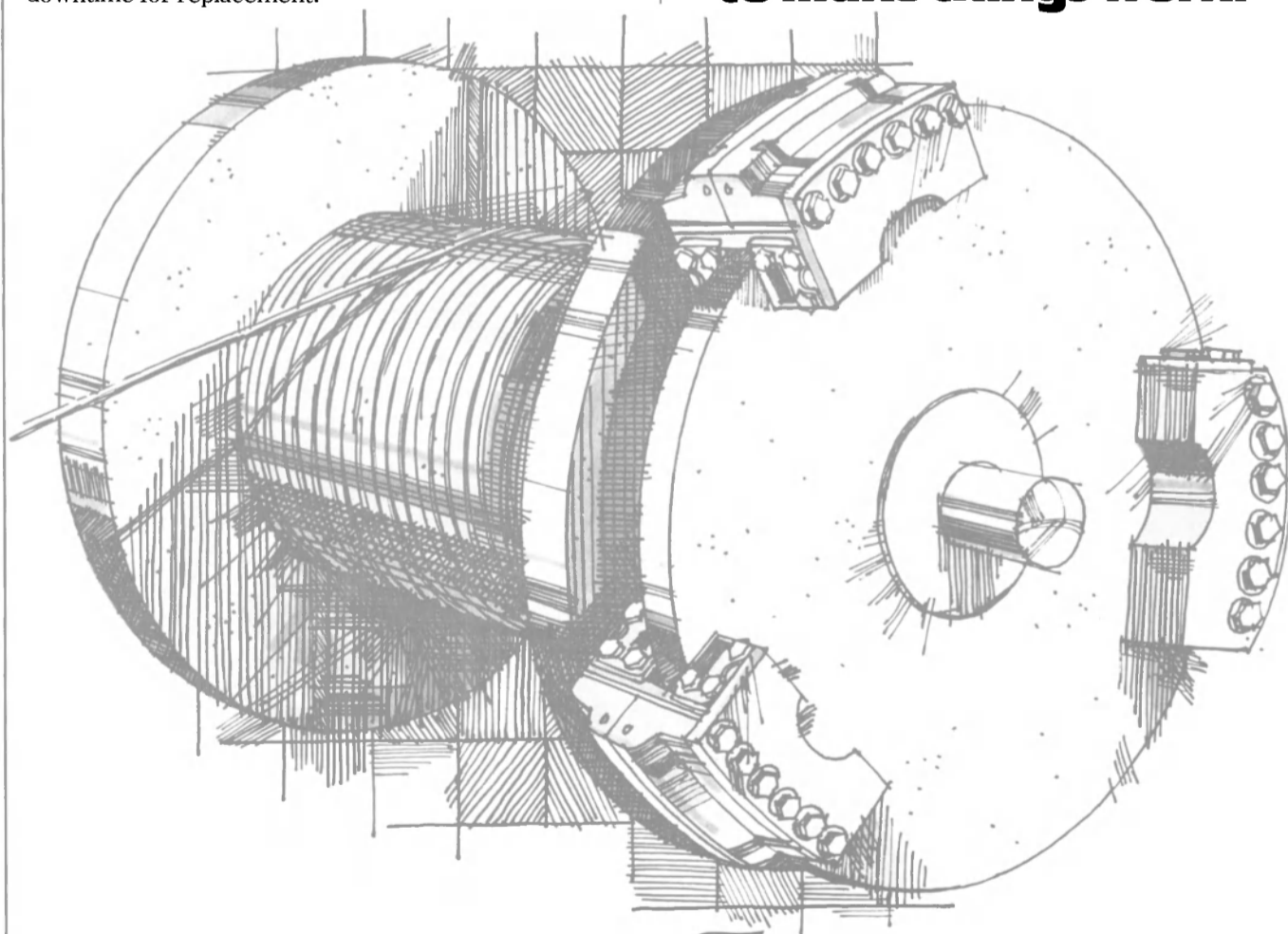
Disc brakes offer many advantages over band and shoe brakes. They are smaller. They can perform in both static and dynamic situations. Their non-self-energizing characteristic assures smooth, controlled payout and superior brake control. The large exposed disc surface dissipates more energy and heat.

Goodyear manufactured friction materials exhibit minimum fade at elevated temperatures and high energy input rates. As the linings wear, pistons continually advance, keeping displacement constant for each application. Quick-change lining design allows minimum downtime for replacement.

Our disc brakes are available in a complete line of caliper designs from 2½ lb. to 300 lb. units. By varying caliper multiples, disc thicknesses, operating pressures, etc., one brake caliper can be used across a complete product line.

For complete information, call Jim Evans, Marketing Manager, Industrial Brakes, Goodyear Aerospace Corporation, Box 427, Berea, Kentucky 40403, (606) 986-9381.

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MARICHEM 80

Third International Conference On Marine Transportation, Handling And Storage of Bulk Chemicals

This year's International Conference on the Marine Transportation, Handling and Storage of Bulk Chemicals—MariChem 80—will be held October 21-23 in the Royal Lancaster Hotel in London, England. The leading role of London in the international shipping industry, and as the headquarters of the Inter-Governmental Maritime Consultative Organization (IMCO), the maritime arm of the United Nations that formulates many of the regulations governing the transportation of bulk chemicals, adds particular significance to the choice of the British capital as the host city.

MariChem 80 will look at problems and hazards of bulk chemicals transportation, and the increasing use of multimodal tank containers for potentially dangerous liquids will be discussed by a panel of experts in the field.

MariChem will be a working meeting for all concerned with the safe and efficient carriage of bulk chemicals; the safety aspect dominates in all sections of the conference program. Speakers have been drawn from government agencies, vessel operators, shipping and tank container ex-

perts, research organizations, and other areas. The program lists speakers from the United States, the United Kingdom, France, West Germany, Norway, and Sweden.

Growing Cost Of Safety

Legislation and regulations continue to dominate the day-to-day business of chemical shipping, and there is considerable concern in the industry on the ever-growing cost of meeting national and international requirements for safe operation. Many owners argue that purely commercial pressures already insure the safe and pollution-free carriage of bulk chemicals. This point of view has been argued strongly at previous MariChem conferences, and the London meeting will see **John Spruyt** of Gotaas-Larsen, and **Tim Berkel**, president of the increasingly influential U.S. Chemical Carriers Association, putting forth the operators' points of view in vigorous fashion.

Explanations and expositions from the U.K. Department of Trade and Department of Industry and from the U.S. Coast Guard will attempt to provide some of the reasoning behind the

most important items of legislation and regulation. A keynote paper in this session will be presented by **Neil Hurford** of the Department of Industry's Warren Spring Laboratory. The subject of his paper is a review of the IMCO standards for procedures and arrangements for the discharge of noxious liquid substances.

The IMCO standards are currently the cause of considerable discussion in the industry, as implementation in full is bound to involve operators in the expenditure of a good deal of extra time, effort, and money. Delegates to the MariChem 80 meeting therefore will be eager to hear a paper by **Eckhart Stovke** from Dow Chemical's Maritime Technical Centre. He will describe a novel approach to stripping and tank washing of chemical parcel tankers "that holds promise of reducing the cost of chemical transport by sea even before MARPOL 73 has been ratified."

Explosion Hazards

The second day of the conference will, like the two earlier meetings in the MariChem series, be devoted largely to operations

and safety matters. Explosion hazards and relevant safety measures at vapor recovery plants will be discussed by **Dr. K. Schampfel** of the Physikalisch-Technische Bundesanstalt, Brunswick, West Germany. In view of the increasing regulatory and economic requirements for efficient vapor recovery systems, his paper is a timely indication of the industry's concern for their safety.

D.J. Bryce, the U.K. health and safety executive who recently imposed stricter security measures at the liquefied natural gas terminals at Canvey Island, will present a paper on safety considerations at shipping terminals for hazardous bulk materials.

T.K. Jenssen of the Norwegian classification society Det norske Veritas will describe his work on public risk analysis applied to the transport of hazardous cargoes, and a leading specialist from the Netherlands, **A.A. Damsteeg**, will report on a study conducted for the Rotterdam authorities on emergency planning in ports. British, Norwegian, and Dutch speakers will describe their approaches to the training of chemical car-

(continued on page 30)

MARICHEM CONFERENCE PROGRAM

Tuesday, October 21

Session 1—Legislation and Regulation
Chairman: **U. Ackerman**, Reederei de Vries & Co., Hamburg.

2:30 p.m.—A Review of the IMCO Standards for Procedures and Arrangements for the Discharge of Noxious Liquid Substances: **N. Hurford**, Department of Industry, Warren Spring Laboratory, Stevenage, Herts.

3:00 p.m.—Effective Regulation in Chemical Shipping: **C.J. Spruyt**, Gotaas-Larsen, London.

4:00 p.m.—Regulations—The Growing Management Burden: **T.G. Berkel**, Stolt Nielsen Inc., president, Chemical Carriers Association, New York.

4:30 p.m.—Overflow Control—Proposals for a Linked Ship-Shore System: **R.C. Gray**, British Shipbuilders, Newcastle-upon-Tyne.

5:00 p.m.—Chairman's Remarks

WEDNESDAY, OCTOBER 22

Session 2—Operation and Safety
Chairman: **Capt. A. Allievi**, Shipping Safety Coordinator, Esso Europe Inc., London.

9:00 a.m.—Explosion Hazards and Relevant Safety Measures at Vapor Recovery Plants: **K. Schampfel**, Physikalisch-Technische Bundesanstalt, Braunschweig, West Germany.

9:30 a.m.—Safety Considerations Relevant to Shipping Terminals for Hazardous Bulk Material: **D.J. Bryce**, Health and Safety Executive, London.

10:00 a.m.—Emergency Planning in Ports: **A.A. Damsteeg**, Voorschoten, the Netherlands.

11:00 a.m.—Parcel Tanker Training for an Effective Endorsement: **G. McGuire**, Hazardous Cargo Handling Unit, Leith Nautical College.

11:30 a.m.—Advances in Special Training in Norway for Personnel on Ships Carrying Liquid Chemicals in Bulk: **J.E. Johnsen**, Ship Research Institute of Norway, Oslo.

12:00 Noon—Chemical Tanker Training Courses in the Netherlands: **A.J. Barendregt**, Chemical Laboratory, "Dr. A. Verwey", Rotterdam.

2:30 p.m.—Risk Analysis Applied to the Transportation of Hazardous Cargoes—Some Examples Related to Public Risk: **T.K. Jenssen**, Det norske Veritas, Oslo.

3:00 p.m.—How Safe Are Chemical Tankers?: **D. Butcher**, N.E. London Polytechnic, London.

Session 3—Tank Containers in the Chemical Trades

Chairman: **Lt. K. Eldridge**, U.S. Coast Guard, Washington, D.C.

4:00 p.m.—Reciprocal Acceptance of Tank Containers: **B. Schulz-Forberg**, Bundesanstalt für Materialprüfung, Berlin.

4:20 p.m.—Tank Containers in the Chemical Trades—the Views of a Tank Container Through Operator: **J.A. Ross**, Trafpak Ltd., Aylesbury, U.K.

4:40 p.m.—Tank Containers in Bell Lines' Total Control Intermodal Services: **R.P. Boneham**, Bell Lines Ltd., Kenilworth, U.K., Secretary, Association of Tank Container Operators.

5:00 p.m.—U.S. Regulation of the Transportation of Hazardous Materials in Intermodal Tank Containers: **Lt. K. Eldridge**, USCG (Chairman).

THURSDAY, OCTOBER 23

Session 4—Technical Developments
Chairman: **R.C. Gray**, British Shipbuilders, Newcastle-upon-Tyne.

10:30 a.m.—A Cost-Benefit Analysis for Installation of Separate Deck-Mounted Cargo Tanks on Parcel/Chemical Carriers: **A. Wiborg**, Shipping Consultants A/S, Oslo.

11:00 a.m.—Slops and Residue Disposal—A New Approach: **E.A. Stoyke**, Dow Chemical GmbH, Stade/Stadersand, Germany.

11:30 a.m.—Developments in Cargo Pumping Arrangements: **M. Mohn West-**

lake, Frank Mohn UK Ltd., and **M. Sigmondstad**, Frank Mohn AS, Nesttun, Norway.

12:00 Noon—Experience With Cargo Monitoring Systems: **A. Eian**, Autronica A/S, Trondheim, Norway.

2:00 p.m.—New Developments in Toxic Gas Detection Using a Silicon Semiconductor Sensor: **Sema Electronics Ltd.**

Tank Coatings and Linings—Panel Session

2:30 p.m.—Tank Coatings: **A.V. Robinson**, Camrex Ltd., Sunderland.

2:45 p.m.—Rubber Lining and Chemical Carriers, Storage Tanks and Pipelines: **R. Heinrichs**, Clouth Gummiwerke AG, Cologne.

3:00 p.m.—Criteria for Selection of Either Steel Plates or Coatings for Ships Transporting Phosphoric Acid: **J. Pauthier**, Technigaz, Maurepas, France.

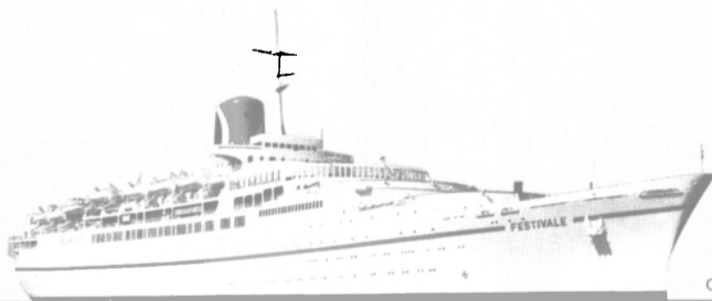
3:15 p.m.—A Survey of Some Failures Typical for Tanks and Piping Systems in Austenitic Stainless Steel; Preventive Measures: **S. Evant** and **A. Berg**, Det norske Veritas, Oslo.

3:30 p.m.—Corrosion Resistance of Stainless Steels to Chlorinated Hydrocarbons: **S. Nordin**, Nyby Uddeholm AB, Uddeholm.

5:00 p.m.—Chairman's remarks

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MARICHEM 80

(continued from page 28)

rier personnel; despite various differences in approach, each speaker will begin with the premise that "safety starts with a well-trained crew."

A detailed survey of chemical carrier "incidents" leads **Don Butcher** of Northeast London Polytechnic to ask, "How safe are chemical tankers?" Mr. Butcher is a well-known contributor in the chemical transportation/safety field, and the results of his survey are bound to be of considerable interest.

Panel On Tank Containers

Part of the conference program will debate a subject of growing importance, and one that has probably caused more concern for safety than any other aspect of bulk chemicals carriage: the question of multimodal tank containers in the chemical trades. While the legislators appear to have covered adequately the various categories of ship/cargo combinations in the chemical parcel trades, it remains a fact that large quantities of bulk chemicals are being shipped around the world in tank

containers aboard normal RO/RO and cellular containerhips.

The tragic results from a leaking container, safely stowed in a cellular containerhip hold, occupied the media a few years ago. A good deal of work has been done since then to attempt to prevent a recurrence of this kind of accident, but there is much to be done and the whole question of hazardous chemicals in intermodal

tank containers must be subjected to careful scrutiny.

A major company specializing in this trade reports that there is no legislation governing the qualifications of transport companies to carry hazardous materials and that the whole business is in danger of being led, under-regulated, towards a possible crisis.

Three major operators will be represented on the tank contain-

ers panel: Trafpak, by managing director **John Ross**; Bell Lines by **Roy Boneham**, who is also secretary of the newly formed Association of Tank Container Operators; and British Rail by **Peter Mabbit**. This panel also will include **Bernd Schulz-Forberg** from B.A.M., Berlin; **Ch. Leclair** of the French Department of Navigation; and **M. Querci** of the French Ministry of Transport. Lt. **Kevin**

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There are three models of the famous Raytheon Doppler Log:

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All three are proven performers with these unique features:

- "Normal" mode readings up to 40 knots within 1/10 knot.
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- True speeds shown over bottoms as deep as 1000 feet.
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- Self-testing. No calibration.
- Large, easy-to-read LED display with mechanical "distance-run" counter.
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Featuring a large 9-inch CRT, the JLE-3400 will also display such important data as:

- Date and GMT
- Time since last satellite fix.
- Time and angle of next satellite fix.
- Ship's speed and course.
- Data from up to ten way-points including: course-to-steer for Rhumb or Great Circle tracks, distance run, ETA's etc.

A printer for displayed data and a remote CRT display are available as options.



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Eldridge, USCG, U.S. representative on the IMCO Dangerous Goods Committee, will chair the panel session.

Technical Developments

The final day of the MariChem 80 meeting will examine some of the technical developments that have, and continue to make possible, the bulk transportation of

chemicals. Stainless steel linings and tanks are employed widely in bulk chemical transportation, although not universally suitable for all products, and a paper at the conference will report on their corrosion-resistance to chlorinated hydrocarbons.

Another paper, by two research engineers from Det norske Veritas, will discuss failures in stain-

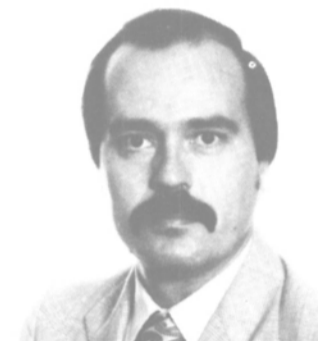
less steel tanks and pipelines, and propose preventive measures.

A panel session at the final day's meeting, with representatives from manufacturers Clouth Gummiwerke, Camrex, and others, will discuss in-service results with typical chemical ship operators. Speakers from the Frank Mohn Company, manufacturers of a well-known range of chemical

pumps, will put forward a paper on the contentious subject of cargo monitoring.

At previous MariChem conferences, some ship operators have complained that industry fails to provide the right equipment needed to monitor hazardous cargoes; MariChem 80 will give both sides the chance to air their views and to report on progress.

A.R. Schultz Appointed Manager Of Offshore Terminals For RJBA



Albert R. Schultz

Albert R. Schultz has joined R.J. Brown and Associates in Houston as manager of the newly formed Offshore Terminals & Floating Production Systems Division. Mr. Schultz comes to RJBA after more than 12 years' experience in the design, engineering and construction management of harbors, terminals, pipelines, and offshore production complexes. This experience has involved him in the development and installation of numerous innovative and prototype systems for projects in the Far East, Middle East, Gulf of Mexico, and Gulf of Alaska. He has held senior appointments with Fluor Ocean Services Inc., where he was responsible for the engineering and construction of LOOP Inc.'s superport in the Gulf of Mexico, and a single-buoy storage for NGL in Indonesia.

Title XI Approved For \$39.4-Million Tug/Barge Units For Bulkfleet

The Maritime Administration has approved in principle an application from Bulkfleet Limited No. 1 and No. 2 of Houston for a Title XI guarantee to aid in financing the construction of two deep-notch, tug/barge units.

McDermott Incorporated of New Iberia, La., is building the 7,800-bhp tugs; General Dynamics' Quincy, Mass., yard is constructing the 502-foot, 28,000-dwt barges. Scheduled to be delivered by the end of this year, the vessels will be used to carry petroleum products between Philadelphia and New England ports.

The Title XI guarantee covers \$17,239,000 for each tug/barge unit, or 87½ percent of each unit's \$19,703,060 estimated cost.

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- Onboard recording of World Meteorological Organization weather charts, fishery charts, daily news for mariners, etc.
- High-quality 12-inch wide reproduction on odorless, dust-free aluminized paper.
- Long-life recording system with self-adjusting pens.
- Advanced solid-state circuitry.
- Simple operation.

The RAYFAX 300 Recorder is available separately for vessels equipped with a suitable wide-band receiver.



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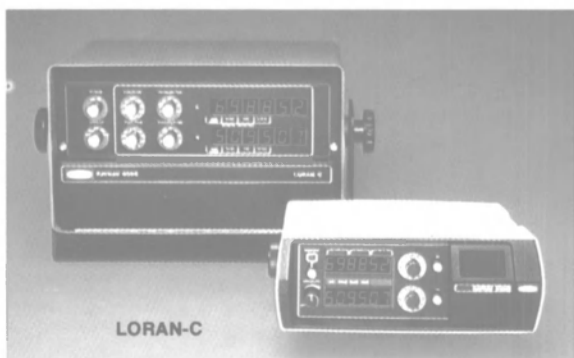
Two Loran-C's with U.S.C.G. approved accuracy. One also a chronometer. One with options for steering, Lat/Long, and course/speed readouts.

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Our RAYNAV 6000 has optional plug-in boards for steering a computed course to a selected destination, and for direct Lat/Long and course/speed readouts.

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- Precise third-cycle matching.
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- 6 over-lapping ranges of 0-110, 100-210, 200-310, 300-400, 0-720, and 650-1370 fathoms.
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The R-8220 is completely self-contained except for hull-mounted transducer.

Fathometer® Digital Sounder goes to 500 feet or 240 fathoms with adjustable depth alarm.

A proven navigational sounder, the DE-740 uses special signal processing to eliminate false bottom readings from schools of fish, thermal gradients, etc.

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- 1% sounding accuracy.
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Designed for console or bulkhead mounting, the DE-740 is supplied with a remote equipment cabinet and a hull-mounted transducer.



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VU-GAGE is a system designed to safeguard tanker and barge crew members from exposure to chemical and petroleum fumes, and to enable vessels to meet present and pending regulations concerning the emission of such fumes.

The system consists of replace-

ment covers for tank washing and ullage openings, a segmented dipstick, and an optional gas dispersal nozzle for vessels not fitted with Class A vent systems. The dipstick, mounted directly below the viewing window, is angled for maximum readability from the deck. Loading can be monitored through the deck openings, as before, without exposing crew members to dangerous concentrations of toxic chemical and petroleum fumes.

Early versions of the VU-GAGE covers were fitted with windows that flipped over for cleaning. An improved model has been developed that permits the underside of the viewing window to be cleaned at any time — even during loading operations — with no venting of fumes. The new model incorporates a manually-operated viton wiper blade on the underside of the completely sealed window.

Shipboard tests aboard a VU-

GAGE-fitted vessel as it loaded gasoline showed that personnel were exposed to less than one part per million of benzene during the entire loading sequence. The system has been accepted by the U.S. Coast Guard, and is being used by a growing number of major tanker and barge fleet operators.

The VU-GAGE system performs a doubly important function aboard vessels with inert gas systems. Open loading on such vessels not only exposes crewmen to sulfur-laden fumes, but also compromises the safety objectives of the inerting system by releasing gas pressure from the tanks.

The unbreakable, scratch-resistant VU-GAGE windows are fitted with screw-down covers to protect them when not being used. VU-GAGE units are available to replace either studded or quick-acting tank washing and ullage opening covers. They are fabricated in brass for conventional service, and in stainless steel for installation aboard chemical ships and barges.

Information and literature about the complete VU-GAGE line, which includes a bottom water sampler and ullaging system for closed loading installations, is available by writing to **J.P. Jones**, VU-GAGE Systems, Dept. MR, Room 910, 150 East 42nd Street, New York, N.Y. 10017

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Houston Leads Nation With 65 Million Tons Of Foreign Trade

During 1979, for the first time in history, the Port of Houston led the nation in a major category of port activity, becoming No. 1 in foreign trade tonnage. In doing so, Houston surpassed the traditional leader, the Port of New York-New Jersey.

Statistics of the U.S. Department of Commerce put Houston's 1979 foreign trade tonnage at 64,899,500 tons, up almost 4 percent over the 62,490,000 tons of 1978. At the same time, foreign trade tonnage at New York decreased more than 10 percent, from 67,038,500 tons in 1978 to 60,183,000 tons last year.

The change is the more notable since shipments of crude petroleum, the major commodity moved through the Port of Houston, declined by 6 percent in 1979, from 33,043,018 tons to 31,027,265 tons. In fact, overall import tonnage decreased at the Port of Houston last year. The decline was 1.3 percent from 42,440,000 tons in 1978 to 41,874,500 tons in 1979. A jump in exports through the Port of Houston combined with a decline in imports at New York to move Houston into the top spot.

Total tonnage at the Port of Houston last year was 122,383,558, an increase of 12 percent over the 1978 total. The foreign trade was valued at \$18.5 billion.



S. Shapiro Appointed Manager-Bulk Services Of Federal Barge Lines



Sheldon Shapiro

Sheldon Shapiro has been appointed manager-bulk services of Federal Barge Lines by Pott Industries Inc., it was announced by Thomas F. Maloney, senior vice president-sales of Federal Barge Lines, a wholly owned subsidiary of Pott Industries. Pott is a member of the Houston Natural Gas Corporation group of companies.

In his new position, Mr. Shapiro will be responsible for administering bulk contracts and handling inquiries on rates and services in connection with all bulk movements, with the exception of coal and grain products. Prior to becoming manager-bulk services, Mr. Shapiro had served as a rate and traffic analyst for Federal Barge Lines.

Mr. Shapiro is a former teacher in the Affton Missouri School District. He joined Federal Barge in 1978 as a dispatcher.

New Technique Measures Power Plant Performance —Bulletin Available

A unique, computer-based technique for accurately determining vessel power plant performance has been developed by Ferrous Corporation of Bellevue, Wash., a manufacturer of combustion catalysts for marine diesels and boilers.

Using a specially developed software package, Ferrous can quickly evaluate plant performance based on engine-room log data. The program already has been tested on a number of ships.

Ferrous collects data on daily fuel use, engine miles, rpm, and average API. The software program evaluates the data and applies a number of correcting factors to determine overall plant efficiency. Results are displayed as bar graphs.

To date, tests conducted before and after use of Ferrous catalyst have indicated fuel efficiency improvements and cost savings of between 5 and 10 percent.

"We've found that the test has become a very important tool for vessel owners who are seriously looking for ways to run their power plants more efficiently," said

K. Chorlton, vice president of the company's Marine Division.

Details on how the programs are developed are contained in a technical bulletin — *Vessel Plant Performance: A Discussion of Methods of Analysis*. For a free copy of the bulletin, or information on arranging a performance evaluation for a specific vessel, write to K. Chorlton, Dept. M.R., Ferrous Corporation, 910 108th Street N.E., Bellevue, Wash. 98004.

Druitt Named Special Projects Manager By Intermarine Services

William Druitt has been appointed manager, special projects (new construction), by Intermarine Services Inc. (ISI) of Houston. ISI, a subsidiary of Global Marine, Inc., provides oil-field equipment procurement and forwarding services on a worldwide

basis to the oil industry as well as the parent company.

The Special Projects section of ISI is engaged in procuring owner-furnished equipment for Global Marine's rapidly expanding fleet of jackup and semisubmersible drilling rigs. Mr. Druitt has served Global Marine since 1970, acting as purchasing agent for the Glomar Explorer and other Global Marine offshore drilling rigs.

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Dravo SteelShip Delivers Two Pushboats To Louisiana Owners



Pushboat **Jo Ree**, delivered recently by Dravo SteelShip to Weber Marine of Burnside, La., is powered by twin GM Detroit Diesel Allison engines with total 910 bhp.

Dravo SteelShip Corporation of Pine Bluff, Ark., has announced the recent completion and delivery of two pushboats to owners in the Gulf Coast area. Each of the vessels is 56 feet long, with a beam of 22 feet and depth of 7 feet.

The **Jo Ree**, delivered to Weber Marine, Inc. of Burnside, La. is powered by twin GM Detroit Diesel Allison engines developing a total of 910 bhp at 1,800 rpm. Among the other equipment in this vessel are Coolidge stainless-steel propellers Fernstrum keel coolers, Detroit Diesel 30-kw generator sets, Quincy 1-hp air compressors, Beebe deck winches, Raytheon RAY-48 VHF

air compressors, NABRICO 20-ton winches, Raytheon RAY-48 VHF radio, Kahlenberg air horn, and Perko searchlights.

The other towboat, the **Lady Genevieve**, was delivered to Deep South Towing and Marine, Inc., Gonzales, La. This boat is powered by twin GM Detroit Diesel Allison engines with a total output of 680 bhp at 1,800 rpm. Other equipment includes Coolidge stainless-steel propellers, Fernstrum keel coolers, Detroit Diesel 30-kw generator sets, Quincy 1-hp air compressors, Beebe deck winches, Raytheon RAY-48 VHF

radio, Kahlenberg air horn, and Perko searchlights.

Each of the vessels has two steering and four flanking rud-

ders, a 27-foot eye level in the pilothouse, 3/8-inch hull plating, and accommodations for a crew of six.

Hitachi-Built Tanker Has Many Advanced Features



Tanker **Yuhu Maru**, completed recently by the Ariake yard of Hitachi Zosen, is powered by a 20,400-bhp Hitachi/Sulzer 6RLA 90 diesel that gave a trial speed of 16.6 knots.

The 79,999-dwt tanker **Yuhu Maru**, constructed at the Ariake Works of Hitachi Zosen, was delivered recently to the Yuyo Steamship Company, Ltd. of Japan. The ship will operate between Japan and ports in the Arabian Gulf and Singapore.

Extensive fuel-saving measures are incorporated in the new ship, including a fuel-saving, low-

speed, long-stroke Hitachi/Sulzer diesel engine, model 6RLA90; a turbogenerator utilizing a two-stage, pressure-type exhaust gas economizer; and hull coating of a self-polishing copolymer type.

The cargo oil piping system inside the tanks is designed to handle three different kinds of crude oil. Highly corrosion-resistant cast steel pipe is used in the system. The ship is equipped and constructed to conform with SOLAS 1974 and its Protocol of 1978, as well as MAPOL 1973 and its Protocol of 1978.

Two control rooms—one for engine control and the other for cargo handling—have been combined into one to reduce personnel needed, and located on the upper deck. For cargo handling control, magnetic float level gauges of the explosion-proof type, and pneumacator type level indicators have been adopted to permit monitoring of cargo oil and ballast water tank levels.

The main engine is remote-controlled from the wheelhouse, and a sophisticated automatic control and monitoring system is installed to permit 24-hour unattended operation of the engine room.

A maritime satellite communications system permits the reception of high-quality audio and telex communications, as well as instantaneous telephone connections.

The **Yuhu Maru** has an overall length of 233 meters, beam of 41.8 meters, depth of 19.6 meters, and full-load draft of 12.77 meters (764.4 / 137.1 / 64.3 / 41.9 feet). Classed by Nippon Kaiji Kyokai, the ship has a complement of 30.

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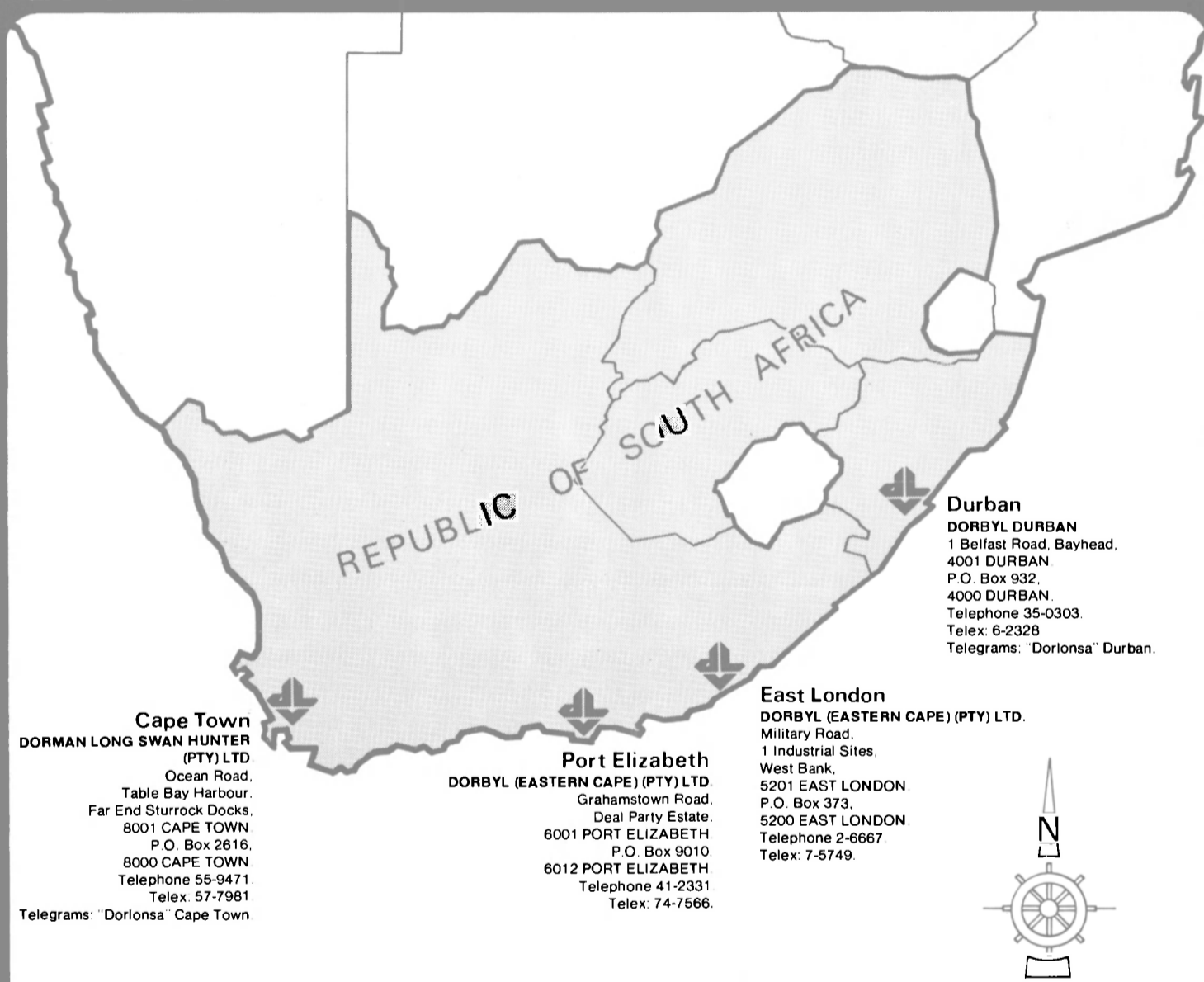
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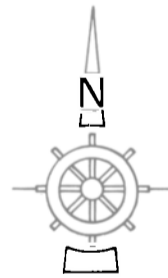


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- 2  450/3/60/1200 RPM — 961 amps — type ATI — 0.8 PF. TURBINE: FSN-FN-20 6-stage — 525 lbs/825°F — superheat 355°/371°F. GEAR: 10033/1200 — RPM 10033 — total — 6390 lbs. steam/hr. steam flow.


G.E. 400 KW TURBO GENERATORS

- 3  450/3/60/1200 — 0.8 PF — 641 amps. TURBINE: 6-stage — 10059 RPM — 525 lbs/825°TT — type GE 618N. Steam rate 5100 lbs/hr. — OAL 10' 10 1/2" — OAW 4' 10 1/2" — OAH 5' 5 1/4" — wt. 14,855 lbs.


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- 4  400 KW (500 KVA) — 0.8 PF — 1200 RPM — 450/3/60. TURBINE: 585 lbs — 840°TT — 28 1/2" vacuum — 9018 RPM — serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA — 400 KW — 450 volts — 641 amps — 0.8 PF — 3-phase 60-cycle — 1200 RPM — CR 40° — excitation amps 41 — excitation voltage 120. Instruction book 5442. Switchgear available.

UNUSED WESTINGHOUSE 60 KW 120 VDC M-20-EH

- 5  120 VDC — 1800 RPM. TURBINE: M-20-EH — 20 lbs dry & saturated — 25" vacuum. 7283 RPM. GEAR: 7283/1800. GENERATOR: 60 KW — 120 VDC — 500 amps — SK — stab. shunt wound.

UNUSED 500 KW DELAVAL-WESTINGHOUSE GEARED TURBO GENERATOR

- 6  GENERATOR: Westinghouse 500 KW — 120/240 volts DC — 2080 amps — 1200 RPM — stab. shunt. TURBINE: DeLaval — 730 HP — 440 PSI working pressure condensing. Temperature 740° — 9977 RPM. HELICAL GEAR: 9977/1200 RPM. Serial # of turbine 245204 — weight 22,000 lbs.

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538 KW WESTINGHOUSE T-2 AUXILIARY GENERATOR — COMPLETE

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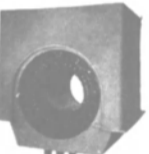
T-2 UNUSED G.E. MAIN PROPULSION STEAM TURBINE WITH ROTOR

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MISSION TANKER T2SEA2 CIRCULATING PUMP MOTOR

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1400 GPM @ 110 PSI; suction lift 11.5 ft. Steam back pressure 15 lbs. Suction 14" — discharge 10" — steam 2 1/2" — exhaust 4". Overall width 6' 8" — overall height 9' 1 1/2" — depth 3' 9 1/2" — approx. wt. 10,000 lbs.

40 **NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP**
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41 **MOTOR-DRIVEN GARDNER-DENVER RECIPROCATING BILGE PUMP**
50 GPM — 150 PSI — Model ALAXE — serial #106335. 3 3/4" bore — 4" stroke — 2 1/2" suction — 2" discharge. 51" long — 21" wide — 21" high — weight 750 lbs. MOTOR: Diehl — 2.5 HP — 440/3/60 — 1750 RPM — 3.53 amps.

42 **GOULD FIRE AND BILGE PUMP**
Ex-LST — horizontal centrifugal — bronze — 4" suction — 3" discharge — 250 GPM @ 100 PSI — 2200 RPM. MOTOR: 30 HP — 230 VDC with magnetic starter.

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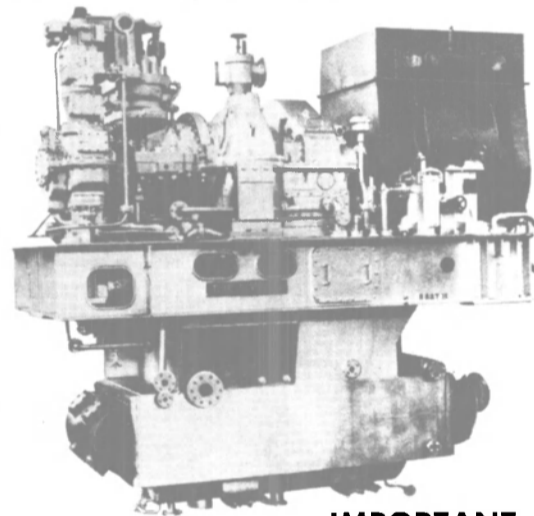
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15" and 16" brass portlights. 16" portlights are 3-dog type.

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IMPORTANT INFORMATION

DELAVAL TURBINE: 1442 HP — 10019 RPM — Class GJ-N — 9-stage — 10,000 RPM — 1050 PSI — 950°TT — condensing steam rate 10.30 lbs. Typical serial number 652468. DELAVAL DOUBLE HELICAL GEAR: 10000/1200 RPM — Allis-Chalmers — 1000 KW — 450 volts — 3-phase — 60 cycle — 1200 RPM — 0.8 PF — static excitation — totally enclosed air-to-water cooling — temperature rise: Stator 130°C — Rotor 110°C — class H insulation — typical serial number 160615 — type M.A.K.G. Complete with 525 sq.ft. condenser — 190 lbs/hr air ejector — oil coolers — strainer — piping & valves — generator switchgear — static excitation control — voltage regulator. Total weight of unit 40,300 lbs. OAL 12' 9" — OAW 6'. Turbo-generator height 5' 8" — total height of turbo-generator & condenser 12' 8". UNITS IN EQUAL-TO-NEW CONDITION. Originally designed for DLG Guided Missile Frigate Program. Installed only about 2 years, then removed and carefully re-boxed by U.S.N. at Bath Iron Works 1964-65. Navy installed larger units due to increased load requirements.

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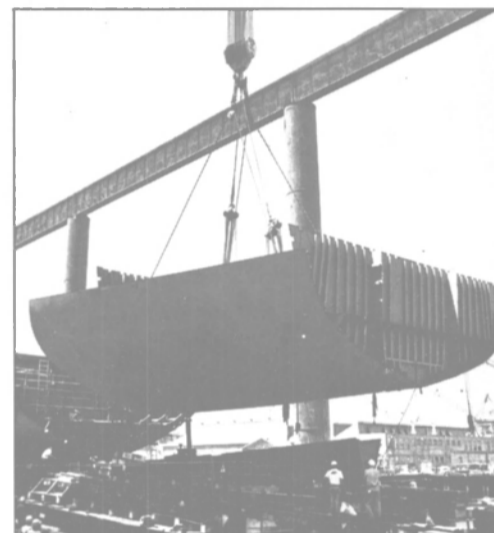
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Every minute a ship spends out of service means lost earnings for its owners.

At C-E, we offer a wide range of follow-on services and fast access to many spare parts to help speed turnaround and reduce maintenance requirements.

Starting with the actual installation of the boiler, we provide a level of assembly and start-up assistance geared to the needs of individual shipyards. In fact, we offer our boilers knocked-down, subassembled or fully assembled.

When it comes to spare parts, we stock replacements on the East and West Coasts. And every C-E

replacement part is engineered to meet or exceed the original in design and performance.

In the area of follow-on services, we can survey and monitor boilers for signs of trouble, provide technical support and feasibility studies aimed at modifications that will reduce maintenance requirements and assist in the actual maintenance and repair work.

For more information on our wide scope of services and spare parts availability, contact C-E Marine Power Systems, Combustion Engineering, Inc., Windsor, CT 06095. Telephone (203) 688-1911, extension 2027 (Service) or 2501 (Parts).

**CE POWER
SYSTEMS**
COMBUSTION ENGINEERING, INC.

AROUND.



G-E: running full steam ahead for the marine industry.

RYSCO Delivers First Of Two Cementing Vessels To Halliburton

Rockport Yacht & Supply Company, Inc., Rockport, Texas, recently delivered the first of two 130-foot cementing vessels to Halliburton Services.

The Halliburton 224 operates out of Harvey, La., and incorporates Halliburton's latest pumping machinery and five P-tanks inserted in the main deck. The vessel has an overall length of 130 feet 7 inches, beam of 33 feet, and depth of 7 feet.

Propulsion is provided by two Caterpillar D-353 diesel engines with continuous output of 415 bhp each, Twin Disc MG521, 4:1 reverse/reduction gears, turning two four-blade propellers on stainless-steel shafts.

The specialized pumping machinery is lo-



Cementing vessel Halliburton 224 was delivered recently by Rockport Yacht & Supply Company to Halliburton Services. The 130-foot vessel is powered by two Caterpillar 415-bhp diesels.

cated on the main deck forward and in a machinery space below the main deck. The vessel is ABS classed A-1, AMS, Inland and Coastwise Service.

The Halliburton 225, the second vessel, will join the fleet in October this year.

Rockport Yacht & Supply Co., Inc. and its

associate shipyard, RYSCO Shipyard, Inc. of Blountstown, Fla., are subsidiaries of Luling Oil & Gas Company of San Antonio, Texas. The RYSCO shipyards are quality builders of supply boats, utility vessels, and tugs. The RYSCO group is known internationally for its powerful, seaworthy shrimp and fishing trawlers.

Biggest Maxim Engine Silencer From Riley-Beard For Allis-Chalmers



Maxim silencer weighing 28 tons was shipped by Riley-Beard to Allis-Chalmers plant in Milwaukee, for use in testing three A-C/Sulzer diesels being manufactured for American President Lines containership under construction at Avondale Shipyards.

The largest Maxim® silencer ever fabricated by Riley-Beard of Shreveport, La., for a reciprocating engine was completed recently and shipped to Allis-Chalmers Corporation in Milwaukee. More than 13 feet in diameter and standing more than 40 feet vertically when installed, the special unit weighs about 56,000 pounds.

This huge silencer was ordered by Allis-Chalmers' Marine Diesel Division for use in testbed running of the three A-C/Sulzer, 12 RND 90M, 43,200-bhp diesel engines being built for installation in three American President Lines containerships under construction at Avondale Shipyards near New Orleans.

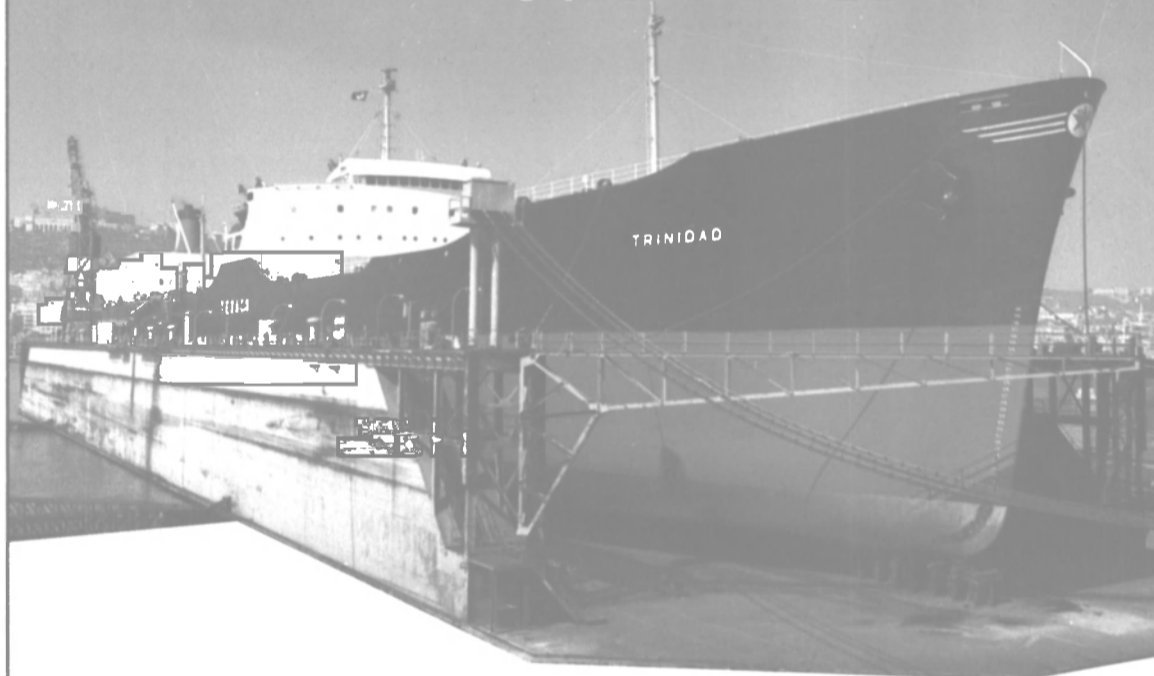
Maxim silencers are designed and manufactured by Riley-Beard and are a proprietary product of the company, which is a division of United States Riley Corporation.



EQUITABLE DELIVERS—Equitable Shipyards, Inc. of New Orleans recently delivered the ferryboat Acadia to the State of Louisiana, Department of Transportation and Development, Baton Rouge. Designed by the owner, the new boat is 150 feet long with a beam of 60 feet, depth of 10 feet, and draft of 5 feet. The vessel is classed by the American Bureau of Shipping +A1, Ferry Service, +AMS. She also meets U.S. Coast Guard Rules and Regulations for passenger vessels. Equitable is a wholly owned subsidiary of Trinity Industries, Inc. of Dallas.

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Well established. S.E.B.N. offers three graving and two floating docks for vessels up to 100,00 DWT. All repair shops and offices have been recently modernized to provide for the requirements of the modern high powered merchant or naval vessels. Turbine rotors 2500 mm in diameter and weighing 13 tons can be rebladed, machined and dynamically balanced while tailshafts of up to 60 tons can be machined. An exclusive automatic submerged arc welding process for reconditioning tailshafts, rudder pintles, etc., is also a feature of the machine shops.

**Contact S.E.B.N. for details on
the full range of repair services available**

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Via Marinella, Varco N. 6 (80133) Naples-Italy
Telex: 710040 SEBN I ■ Telephone: 221512 (10 Lines)
Cables: Carenaaggio, Naples

Sole U.S. Agent
Marecon Corporation International
Frederick A. Ganter
65 Broadway, New York, N.Y. 10006
Telephone (212) 269-3170 ■ Telex 129247

We are proud to announce
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A Syncrolift® 184 meters (604 feet) long, by 32 meters (105 feet) wide, completed only 18 months after contract signing at the shipyard of Tandanor, Buenos Aires, Argentina, for vessels up to 40,000 dead-weight tons.



Above: Artist rendering showing completed shipyard.
Left: Contraalmirante (RE) D. Juan Luis Poggi, President of Tandanor S.A., in the Syncrolift® Control Room.



25,000 DWT vessel on platform awaiting transfer.



Vessel 30 minutes later in extreme rear transfer area.



Water level view of 25,000 DWT vessel on platform.

SYNCROLIIFT® UPDATE:

- There are now 138 Syncrolifts® in 57 countries of the world.
- The navies of 26 nations have purchased Syncrolifts®.
- The first Syncrolift® is now in its 22nd year of operation.
- Pearlson Engineering is the only company in the world whose exclusive product is shiplifts.
- Experienced engineers are always available for visits to your site from sales offices in Florida, California, London and Singapore.

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LONDON W1N 1FS
ENGLAND
TELEPHONE: (01) 580-6536
TELEX: 23717

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MIAMI, FLORIDA 33156
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**Martin Rubin Named
Division Vice President
At RCA Service Company**

Appointment of **Martin H. Rubin** as division vice president, Industrial Electronic Services, was announced recently by **Raymond J. Sokolowski**, division vice president, consumer services, RCA Service Company, Cherry Hill, N.J. Mr. Rubin's responsibilities will include the direction and su-

pervision of all Industrial Electronic Services (IES), including sales and service of marine communications and navigation equipment, installation and maintenance of surveillance systems and satellite communications systems, and video tape duplicating services for business using audiovisuals for training and communication.

Prior to the appointment, Mr. Rubin had been director of indus-

trial electronic services since 1976. He joined the RCA Service Company in 1948, and was named manager of the TV service branch in Asbury Park, N.J., in 1952. He later held the same position at branches in Boston, Flushing, and Manhattan. He was appointed manager of the St. Paul/Indianapolis District in 1960, the St. Louis District in 1961, the Chicago District in 1965, and the Long Island District in 1968. In

1975, he transferred to the company's Cherry Hill home office as director of field operations, technical services.

**E.W. Hahn Elected Vice
President-Treasurer For
Moore McCormack Lines**

Edward W. Hahn, treasurer, has been elected a vice president of Moore McCormack Lines, Incorporated, it was announced by **Robert E. O'Brien**, president and chief executive officer. Moore McCormack Lines is the ocean shipping subsidiary of Moore McCormack Resources, Inc.

Mr. O'Brien commented that the appointment "recognizes the increased scope of Mr. Hahn's responsibility in line with the company's very substantial and long-term commitment of capital and resources."

Mr. Hahn joined Moore McCormack Lines in 1971. He was appointed director of budgets and planning in 1973 and was elected assistant treasurer in 1974, and was named treasurer in May 1977. After graduating from the United States Merchant Marine Academy at Kings Point, he sailed as a deck officer for American Export Lines until 1969.

**Mu-Petco Shipping Asks
Title XI On Two Barges
To Cost \$3.5 Million**

Mu-Petco Shipping Company, a subsidiary of Sentry Refining, Inc., New York, has applied to the Maritime Administration for a Title XI guarantee to aid in financing construction of two non-self-propelled oceangoing barges.

Zidell Explorations, Inc., Portland, Ore., and Norfolk Shipbuilding, Norfolk, Va., are the proposed builders of the vessels, which are scheduled to be delivered later this year. The 304-foot by 90-foot barges are to operate in the U.S. coastwise trade.

If approved, the Title XI guarantee would cover \$3,064,687, or 87 1/2 percent of the estimated cost of \$3,502,500.

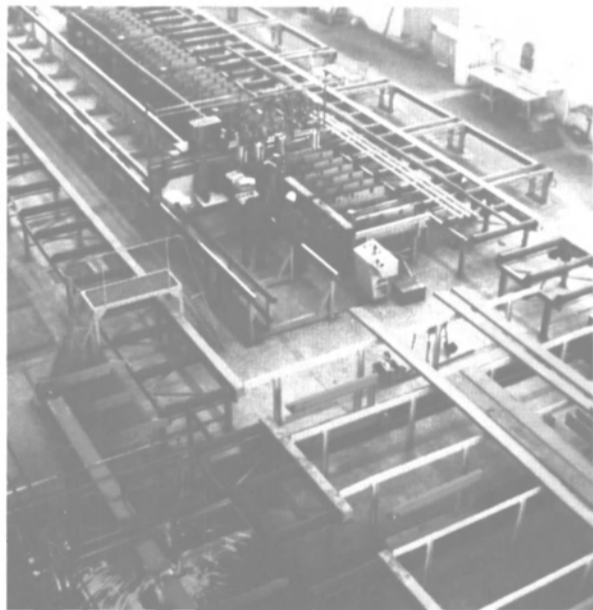
**Breibart Named Deputy
General Counsel For
MarAd And Subsidy Board**

Samuel B. Nemirow, Assistant Secretary of Commerce for Maritime Affairs, has announced the appointment of **Stuart R. Breibart** of Glen Cove, N.Y., as Deputy General Counsel of the Maritime Administration, an agency of the U.S. Department of Commerce. Mr. Breibart will also serve as counsel to the Maritime Subsidy Board.

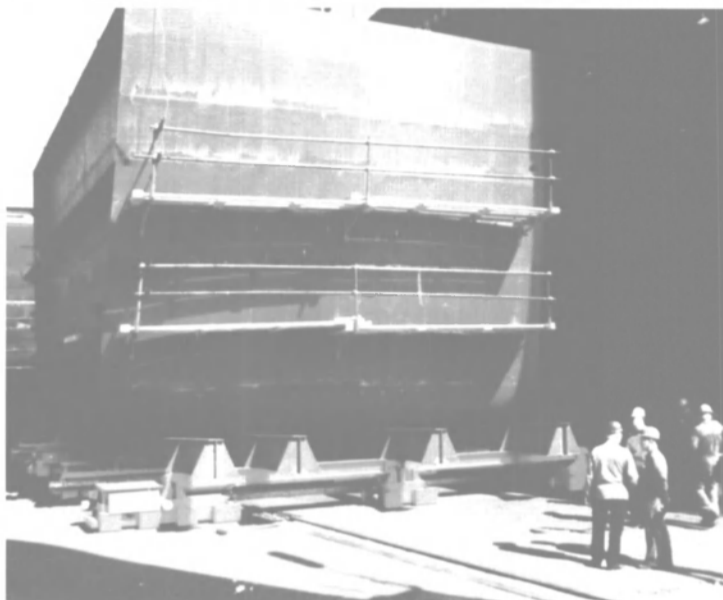
Prior to joining the Maritime Administration, he was engaged in the private practice of law in New York. He had previously served as secretary and general counsel of United States Lines, Inc.

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ships competitively
in the 1980's...**

**you should talk
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Section assembly line with heavy lift transport.



Panel line.

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TTS concepts and production systems are being employed worldwide to significantly reduce overall costs in the marine construction industries.

Our panel and section assembly line concepts have the flexibility to build any kind of ship, and are suited for shipyards of all sizes. Depending upon scantlings, two to ten manhours per ton are realistic production figures.

TTS emphasis is placed on improved material handling, flexible fixturing, and improved working conditions as opposed to cumbersome and costly equipment.

Our shape fabrication concepts have proven themselves as a cost effective adjunct to traditional ship fabrication processes.

All our systems are engineered to be compatible with each builder's requirements and capabilities and are designed to be installed on existing shop floors. These systems are both practical and economical. Increases in productivity are real and immediate.

TTS know-how and experience can assist you in preparing for the 80's and beyond; we have done so for others the world over, again and again.

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Newport News, Va. 23606 TWX 710-880-0003

NEWPORT NEWS

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**Navy Awards ADDSCO
\$17.5-Million Contract
For Overhaul Of Tender**

Alabama Dry Dock and Shipbuilding Company, Mobile, Ala., has been awarded a \$17,478,324 firm fixed-price contract for the regularly scheduled overhaul of the destroyer-tender USS Yosemite (AD-19). The Supervisor of Shipbuilding, Conversion and Repair, USN, Jacksonville, Fla., was the contracting activity. (N62670-70-C0002)

**John Smith Appointed
Regional Manager Of
Krupp International**



John G. Smith

John G. Smith has been appointed regional manager (U.S. East and Gulf Coast) of the Krupp Atlas-Elektronik Division of Krupp International, Inc., it was announced by **Helmut L. Schwarz**, president of Krupp International, Harrison, N.Y. Based in Jersey City, N.J., Mr. Smith joins the Krupp Atlas-Elektronik Division from ITT Decca Marine, where he was director of marketing services.

KI/KAE, with offices in Houston, Seattle, and Jersey City, manufactures and markets marine electronics. Products include radar, echosounders, and positioning devices for commercial shipping, fishing, and survey and offshore mineral exploration industries. Krupp International, Inc. is a wholly owned subsidiary of Fried. Krupp GmbH, Essen, Germany, a major international concern whose products and services include heavy industrial systems and equipment, shipbuilding, steel, engineering services, and construction, worldwide.

**Brochure On Underwater
Treatment Of Hulls
Available From Jotun**

Jotun Marine Coatings has just published a new brochure titled *Zero Growth In Fuel Consumption — How Close Can You Get?* It describes how proper underwater treatment of hulls can result in dramatic savings in fuel costs.

Four case studies of various types of ships are presented. The one for a 21-knot, 32,000-dwt containership indicates that decreased fuel consumption result-

ing from blastcleaning the hull and applying a sophisticated paint system can result in savings, based on fuel costs of \$160 per ton, of up to \$689,000 after one year. On the same ship, accumulated savings after five years are estimated at \$3.7 million.

For more information and a free copy of the new brochure, write to **Terje Lunde**, Dept. M.R., Jotun-Baltimore Copper Paint, 501 Key Highway, Baltimore, Md. 21230.

**Uniflite To Build 22
Fiberglass Utility Boats
For Sea Systems Command**

The Naval Sea Systems Command has awarded a contract valued at \$237,842 for twenty-two 18-foot fiberglass utility boats to Uniflite, Inc., fiberglass boat manufacturer headquartered in Bellingham, Wash., with an Eastern plant at Swansboro, N.C.

In announcing the new contract,

James J. Doud Jr., Uniflite president, said the cathedral-hull craft will be used for general purpose utility duty at U.S. Navy shore installations. Powered with a single 75-hp Chrysler outboard motor, each boat is 17 feet 6 inches long overall with a beam of 6 feet 8 inches.

The boats will be built at Uniflite's Swansboro plant. Starting in early 1981, delivery will be made to Naval bases on the Pacific and Atlantic Coasts.

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Our complete range of Wager Vent Valves are on hand, promptly shipped from stock inventory — by air for your critical needs.

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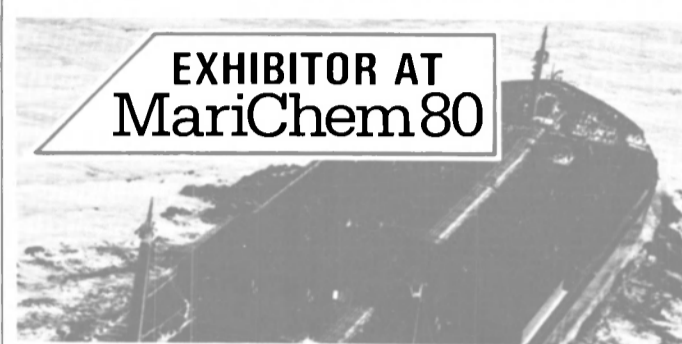
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Level Alarm Switch.
It is designed for
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The construction is backed by experience from deliveries of intrinsically safe systems to more than 70 modern chemical tankers.

Test of correct operation is easily made from cargo control room.

- The system comprises:**
- Switch unit GL-2/2 (or GL-2/1 for alarm only)
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 - Blocking unit NL-3
 - Alarm system KB-6 (or similar)
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Other Autronica systems for cargo monitoring:
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Systems also available for LPG and combined LPG/chemical vessels.
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Seattle Harbor

Ports Of Seattle And Tacoma Will Host

54th Annual Convention Of The Propeller Club Of The U.S.

This year's 54th Annual Convention of The Propeller Club of the United States, and the concurrent 1980 American Merchant Marine Conference, will take place on October 8-10. The host Propeller Club Ports for the event will be Seattle and Tacoma, but

all sessions will be held in Seattle's Washington Plaza Hotel.

General Co-chairmen for the Convention are **Richard D. Ford**, executive director of the Port of Seattle, and **Richard Dale Smith**, executive director of the Port of Tacoma. Deputy Chairmen are **John P. Sullivan**, attorney, Bogle

& Gates, Seattle; and **Hugh Wild**, senior director, Port of Tacoma.

Chairman of the American Merchant Marine Conference is **Sidney D. Campbell**, chairman of the board, Foss/Dillingham, Seattle; **Jasper Baker** will serve as Vice Chairman. **Carl R. Meurk**, vice

president of Todd-Pacific, is Conference Deputy Chairman.

In addition to the agenda listed in the Calendar of Events, there will be a pre-convention golf tournament on October 6 at the Rainier Golf & Country Club, and an early arrivals reception in Seattle's Space Needle on October 7.

CALENDAR OF EVENTS— PROPELLER CLUB 1980 CONVENTION AND CONFERENCE

WEDNESDAY, OCTOBER 8
9:30 a.m.
 Convene Convention
 Presiding, **Richard D. Ford**, General Convention Co-chairman
 Welcome: **The Honorable Charles Royer**, Mayor, Seattle
Michael Benett, President, Propeller Club of Seattle
Richard Dale Smith, President, Propeller Club of Tacoma
Capt. William V. Figari, President, The Propeller Club of the United States
9:45 a.m.
 First Convention Business Meeting
 Presiding, **Capt. William V. Figari**, National President
10:30 a.m.
 Conference Opens

Presiding, **Sidney D. Campbell**, Conference Chairman
 Opening Speaker: **The Honorable Dixy Lee Ray**, Governor, State of Washington
11:30 a.m.
 Luncheon Reception
12:00 noon
 Port of Seattle and Tacoma Luncheon
 Presiding, **Richard D. Ford**, Executive Director, Port of Seattle
 Introduction, **Richard Dashbach**, Chairman, Federal Maritime Commission, Washington, D.C.
 Keynote Speaker: **The Honorable Warren G. Magnuson**, Chairman, Committee on Appropriations, U.S. Senate, Washington, D.C.
2:00 p.m.
 First Conference Session:
 Presiding, **Sidney D. Campbell**, Conference

Chairman
2:00-3:15 p.m.
 Conference Panel
 "The U.S. Merchant Marine—Shadow or Substance?"
 Moderator: **Robert L. Leggett**, President, Joint Maritime Congress, Washington, D.C.
 Panelists:
 Management — **W.J. Amoss Jr.**, President, Lykes SS
 Labor — (Panelist to be announced)
 The Jones Act — **The Honorable Peter N. Teige**, Commissioner, Federal Maritime Commission
 Student Port Member — (to be announced)
3:30-4:45 p.m.
 Conference Panel
 "American Seapower—Shadow or Substance?"
 Moderator: **John J. Spittler**, President, Navy

League of the U.S., Washington, D.C.
 Panelists:
 "Shipbuilding Requirements for a Viable Fleet" — **C. Larry French**, President, National Steel & Shipbuilding Co., San Diego, Calif.
 "Our Merchant Fleet — A Strategic Power in Seapower" — **James T. Crowley**, Senior VP, Moore-McCormack Lines, Inc.
 "The Challenge to United States Seapower" — **Russell D. Hale**, Counsel, Subcommittee on Seapower & Strategic & Critical Materials, U.S. House of Representatives, Washington, D.C.
6:30-8:30 p.m.
 National President's Reception
 (calendar continues on page 48)

Norris rebuild kit . . .



Fastest way to get back on stream:

Norris builds butterfly valves to stay on stream longer. But, because elastomer parts tend to deteriorate or harden with use or exposure to certain media, eventually your Norris valve will need repair.

To get you back on stream faster than you can do it with any other valve, we have prepackaged all the elastomer parts and lubricants you need to repair

your Norris valve. Simple hand tools and a Norris rebuild kit are all you need to get back in operation fast.

Overnight delivery from 10 factory stocking points.

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DOVER CORPORATION / NORRIS DIVISION P.O. Box 1739 Tulsa, Oklahoma 74101

54th Propeller Club Convention Calendar

(continued from page 46)

THURSDAY, OCTOBER 9

9:00 a.m.
Second Conference Session
Presiding, Sidney D. Campbell, Conference
Chairman
9:00-10:30 a.m.
Conference Panel
"Omnibus Maritime Legislation—Where Is It?"
Moderator, Ernest J. Corrado, Assistant to
the President, American Institute of Mer-
chant Shipping, Washington, D.C.
Panelists:
"Maritime Legislation — An Overview"

Jack E. Sands, Deputy Counsel, Committee
on Merchant Marine & Fisheries, U.S.
House of Representatives, Washington,
D.C.;

John D. Hardy, Staff Counsel, Subcommittee
on Merchant Marine and Tourism, U.S.
Senate, Washington, D.C.

"Regulatory Reform in Maritime Legislation"
Thomas F. Moakley, Vice Chairman, Federal
Maritime Commission, Washington, D.C.

"Promotional Reform in Maritime Legislation"
Robert J. Blackwell (Former Assistant Sec-
retary for Maritime Affairs), Attorney, Bogle
& Gates, Washington, D.C.

10:45-11:45 a.m.
Conference Panel

"International Maritime Regulation — Impact
on U.S. Merchant Marine"

Moderator: Emanuel Rouvelas, Attorney,
Preston, Thorgrimson, Ellis, Holman &
Fletcher, Washington, D.C.

Panelists:

"International Conventions the American
Merchant Marine"—G.P. Steele, President,
Interocean Mgmt.

"U.N. Conference on Trade & Development—
Impact on U.S. Merchant Marine"—Robert
S. Agman, Co-Director, Labor-Management
Maritime Committee, Washington, D.C.

"The U.S. Fishing Industry and Fishing Reg-
ulation"—Lucy Sloan, Executive Director,
National Federation of Fishermen,
Washington, D.C.

11:45 a.m.
Luncheon Reception

12:30 p.m.
American Marine Industries Luncheon
Presiding: Richard Dale Smith, Executive
Director, Port of Tacoma, General
Co-chairman
Speaker: John T. Gilbride, Chairman, Todd
Shipyards Corporation, One State Street,
New York, N.Y. 10004

7:00-11:00 p.m.
Tacoma Night Activities—Business Suits

FRIDAY, OCTOBER 10

9:00-11:45 a.m.
Third Conference Session
Presiding, Sidney D. Campbell, Conference
Chairman

9:00-10:15 a.m.
Conference Panel
"Marine Propulsion—And The Energy Crisis"
Moderator: Charles Zeien, President, J.J.
Henry Company, Inc., New York, N.Y.
Panelists:

"Our Merchant Marine, Fuel Costs and Avail-
ability"—Prof. Jose Femia, State Univer-
sity of N.Y. Maritime College, Fort Schuyler,
Bronx, N.Y.

"Nuclear Ship Propulsion—Yesterday, Today
and Tomorrow"—Max T. Johnson, Gen-
eral Manager, Advanced Energy Systems,
Westinghouse Electric Corp., Largo, Pa.

"Fossil Fuels for Marine Propulsion—An Out-
look"—William G. Bullock, Chief, Division
of Engineering, Maritime Administration,
U.S. Department of Commerce, Washington,
D.C.

10:30-11:45 a.m.

Conference Panel
"The User Charge—For Rail and Domestic
Waterborne Shipping Services"
Moderator: Thomas B. Crowley, President,
Crowley Maritime Corporation, San
Francisco, Calif.

Panelists:

"Rail and Water Shipping Subsidies—A Com-
parison"—H.J. Bobzien Jr., President,
American Commercial Barge Line Co., Jef-
fersonville, Ind.

"Needed—A Consistent Tax Policy for Water
and Rail Transportation"—John A. Creedy,
President, Water Transport Association,
New York, N.Y.

11:45 a.m.
Luncheon Reception

12:30 p.m.
American Merchant Marine Conference
Luncheon
Presiding, Sidney D. Campbell, Conference
Chairman

Conference Summary: Sidney D. Campbell,
Conference Chairman
Speaker: The Honorable Samuel B. Nemirow,
Assistant Secretary for Maritime Affairs,
U.S. Department of Commerce, Wash-
ington, D.C.

2:30
Final Convention Business Meeting

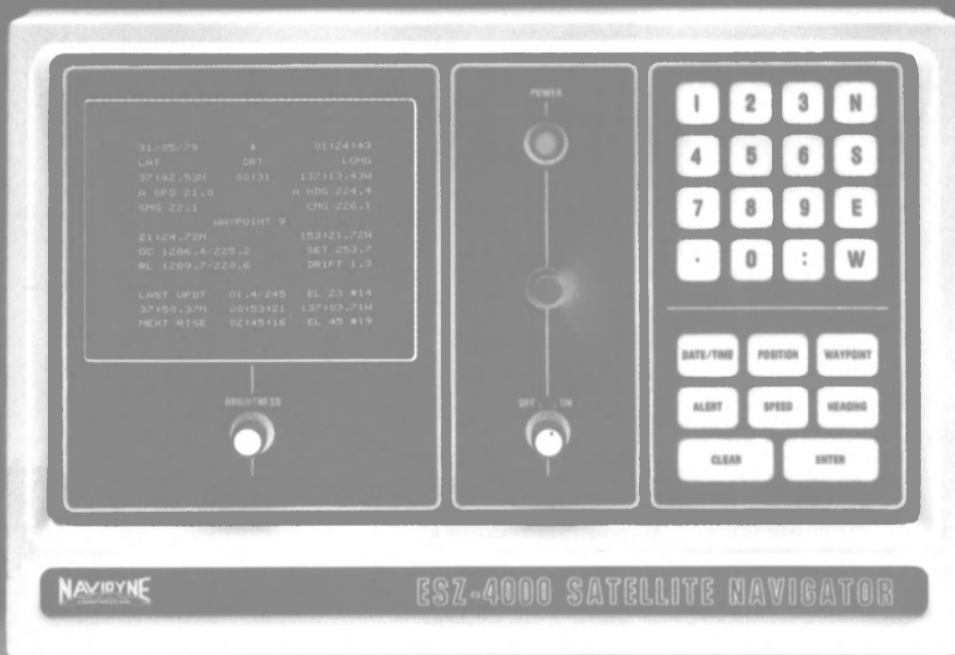
7:30 p.m.
Annual Banquet of The Propeller Club of The
United States and American Merchant Ma-
rine Conference—(Dining, Dancing, Enter-
tainment. Formal dress optional)

New Spare Parts Firm— Scandinavian Marine— Formed By Ray Cole

Ray Cole, formerly associated with Ampower Corporation as marine marketing manager, has announced the formation of Scandinavian Marine Services, Inc. The new company will concentrate on assisting shipowners' requirements in the area of machinery spare parts. It will act as purchasing agents on behalf of these owners, and utilize Mr. Cole's extensive knowledge of the Scandinavian and European marine diesel and machinery supply markets. In addition, sophisticated systems are being developed to coordinate and refine delivery requirements, with the ultimate goal of reducing delivery costs (particularly air freight) substantially.

At present, the company is operating at 11 Lincoln Avenue, Westwood, N.J. 07675, with transition to larger headquarters expected by January 1981. Mr. Cole can be contacted at (201) 664-3145 for further details regarding his approach to specific cost reductions.

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One of the main reasons that our ESZ-4000 is the world's fastest-selling satellite navigator is because it tells everything you want to know — without even being asked.

Every detail of where you are and where you're headed is constantly displayed. Including position, time, speed, heading, and course and distance to any one of nine prestored waypoints. And with the push of a single button, you can read the next ten satellite passes and the last six fixes.

THE INSIDE STORY.

Automatic inputs from speed log and gyro are standard, not optional.

And between satellite fixes, the ESZ-4000's computer updates your

ship's position every 10 seconds, using computed set and drift to make sure dead-reckoned position is as accurate as possible.

The more accurate the navigator, the more miles you'll save. The more time. And fuel. In fact, a large vessel may save the cost of the ESZ-4000 in the course of a single voyage.

No wonder Navidyne has sold more ESZ-4000s than any other single model on the market.

WAIT, THERE'S MORE.

We haven't begun to talk about our

satellite naviga-
tor's unmatched
reliability, three-year warranty,
worldwide shipboard service,
or that it's been type approved
by the Norwegian Maritime

Directorate, the Deutsches Hydro-
graphisches Institut (DHI), and meets
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Three Executive Changes Announced By General Dynamics



Gary S. Grimes

Spencer Reitz

Joseph H. Lennox

Gary S. Grimes, who joined General Dynamics 11 years ago as a management intern, has been named general manager of the corporation's Quincy Shipbuilding Division.

In announcing the appointment, P. Takis Veliotis, General Dynamics' executive vice president-marine, said that Joseph H. Lennox, who has been general manager of the Quincy shipyard for the past two years, will become managing

director of Lachmar, the company that owns and operates the liquefied natural gas tankers Lake Charles and Louisiana. Mr. Veliotis also announced that Spencer Reitz, who joined General Dynamics in 1969 following a U.S. Navy career, will become deputy general manager of the Electric Boat Division, the position previously held by Mr. Grimes.

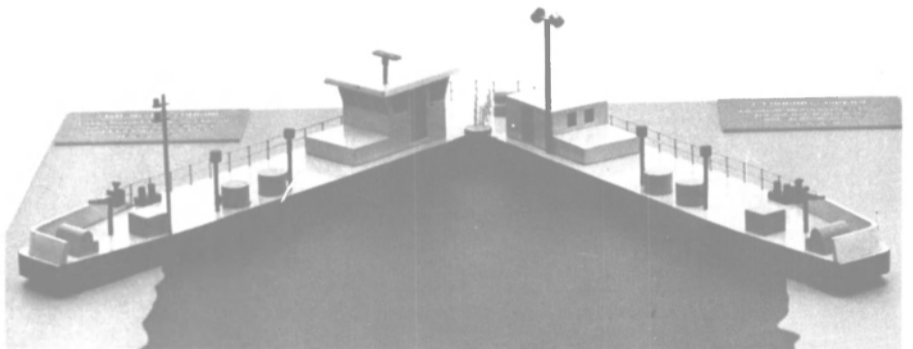
Mr. Grimes was transferred to the Quincy Shipbuilding Division

in 1970 as chief of production support, and later served as assistant to the general manager, director of planning and facilities, and in 1975 was named division controller at Quincy. He was transferred to Electric Boat Division in 1977.

Mr. Reitz served 28 years in the Navy, retiring in 1969 with the rank of captain. He served in a variety of engineering and staff assignments both ashore and afloat. He held senior engineering positions at Quincy prior to his transfer to Electric Boat Division in 1977 as assistant general manager-engineering.

Mr. Lennox, a veteran of over

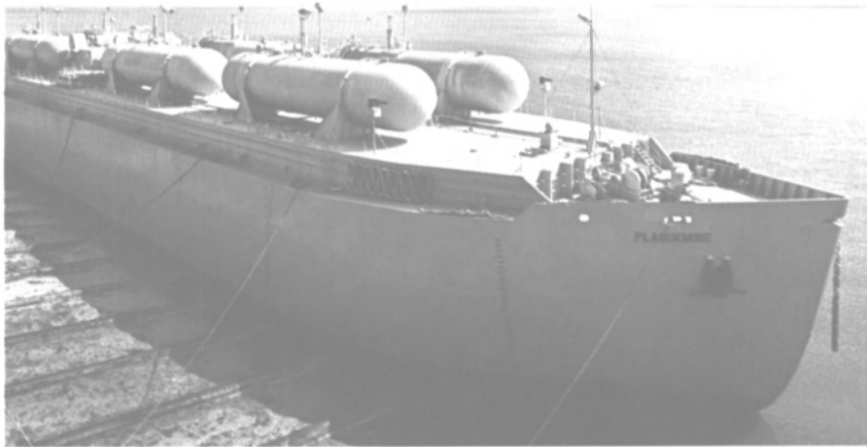
23 years of shipbuilding experience, is assuming a newly created position with Lachmar, a partnership made up of wholly owned subsidiaries of General Dynamics of St. Louis, Moore McCormack Resources Inc. of Stamford, Conn., and Panhandle Eastern Pipe Line Co. of Houston. He joined the Quincy Shipbuilding Division in 1973, and has had primary responsibility for the construction of the LNG tankers there. Prior to coming to Quincy, he was with Davie Shipbuilding Ltd., Quebec, Canada, where he held a number of senior management positions.



Model of split-hull vessel patented by C. Lühring shipyard in West Germany. The unique craft could be used for oil recovery or various other operations.

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This barge and a twin identical unit, **VELASCO**, were delivered to their owner, Dow Chemical Company, during 1978.

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West German Yard To Build Split-Hull Oil Recovery Vessel

For the past three years the C. Lühring shipyard in Brake, West Germany, has been working on the development of an oil recovery vessel based on a split-hull design (see October 1, 1979 issue of MR/EN). The unique vessel is really a simple ship that is divided at its center line. At the stern, both hull sections are connected by a hinge.

In cooperation with Schiffko GmbH, engineering consultants in Hamburg, and with considerable sponsorship by the Federal Ministry of Research and Technology, numerous tests have been carried out, and plans have now been finalized for a seagoing vessel.

As the numerous prospective buyers who have shown interest to date are making their orders subject to a prototype demonstration, a smaller vessel will be constructed first that will serve as a model of the full-size ship.

This prototype will have a length of 34.50 meters, beam of 8.20 meters, depth of 3.50/4.20 meters, and draft of 2.50 meters (about 113 by 27 by 11.5/13.8 by 8.2 feet). The distance between the hull sections when open will be approximately 30 meters (98.5 feet); tank capacity will be about 200 cubic meters.

The design work on this vessel,

which will be built in cooperation with the Federal Ministry of Research and Technology, is now under way.

The split-hull design was developed to offer prospective buyers a vessel that may be put into operation to fight large-scale oil pollution even under unfavorable sea conditions, and could be used as a tanker or similar vessel when not dealing with oil-spill disasters.

With the worldwide interest in vessels to fight oil pollution in mind, the shipyard has applied for patent protection for the new system in the major shipbuilding countries. Several patents already have been granted, while further applications are still pending.

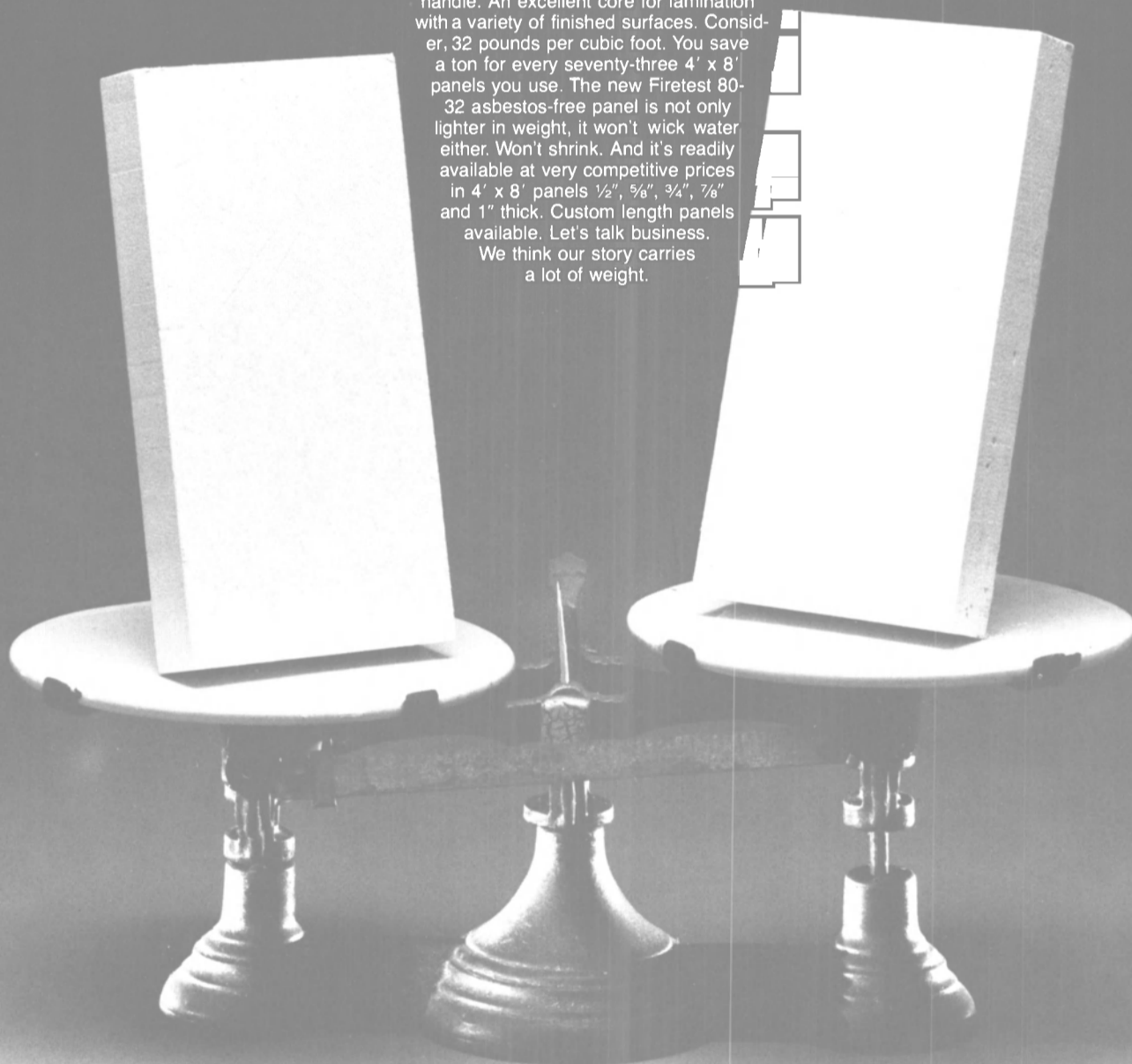
Parallel to the development work, the Lühring yard has begun working out detailed technical documentation on auxiliary equipment, types of operation, and alternative designs that are part of the sponsorship project. These include diver support ships, supply vessels, waste disposal ships, etc., that have been designed on the same general lines. They involve using to full advantage the calm part of the sea's surface between the two hull sections which, owing to the nature of the design, is subject to only slight wave movement.

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**New MTU-ZF Propulsion
Powers Swiftships-Built
CO-MAR Crew/Supply Vessel**

Swiftships, Inc. of Morgan City, La., has announced the completion of a 120-foot, all-aluminum crew/supply boat named C/Raider. This vessel is the first purchased by CO-MAR Offshore Corporation, also of Morgan City, to employ a ZF 2½:1 reduction gear.

MTU engines combined with the ZF gears allow the craft to use a larger propeller. This results in the vessel being able to transport heavier loads at higher speeds.

Paul Haines Jr., owner of CO-MAR, stated: "Many of our vessels are powered by MTU engines. However, this is our first experience using ZF gears with the MTU engines.

"We have to say that the C/Raider is one

of the most impressive boats we've taken delivery on in terms of performance and ease of handling." Mr. Haines acknowledged that CO-MAR has contracted for four sister vessels with the MTU ZF power gear propulsion units.

A twin-screw vessel, the C/Raider has a propulsion package consisting of two MTU 12V331 engines and ZF gears. A Delco 30-kw generator is driven by two Detroit Diesel 3-71 auxiliary power engines. On its sea trial, the crew/supply boat attained speeds up to 25 knots.

Having passed United States Coast Guard inspection, the C/Raider is certified to carry 65 persons, aviation fuel, and corrosives. It also provides living quarters to accommodate a five-man crew.

With a cargo deck size of 58 feet by 16 feet, C/Raider's cargo capacity above deck



Using MTU-ZF power gear propulsion units, the C/Raider, a crew/supply boat built by Swiftships, Inc. for CO-MAR Offshore Corporation, hauls heavier cargo at faster speeds.

is 110 long tons, while below deck its capacity is 52 tons. It maintains a 6-foot draft loaded, 3-foot light.

The tanks hold 3,740 gallons of fresh water, 13,350 gallons of drill water, 500 gallons of drinking water, and 4,000 gallons of fuel which gives the vessel an endurance of 40 hours.

Columbian supplied the propeller, a four-blade, 42-inch by 38-inch Crewboat Bronze. Electronics were installed and supplied by Bibbins & Rice. They include a Furuno radar, two radiotelephones, an SSB Drake TRM 1 and a VHF Drake MRF-55, a Texas Instruments TI-9900 automatic Loran, an Impulse 600CV depth sounder, and a Danforth C654C compass.

The vessel is equipped with lifesaving gear, full fire-fighting capabilities, and air-conditioning and heating throughout. It also carries a full complement of other safety features and navigational equipment onboard.

Swiftships' project engineer, Calvin Leux, reports that C/Raider passed all tests and will be placed into petroleum operation in the Gulf of Mexico.

**Saltech Floating Cement
Terminal Ordered For
Saudi Arabian Port**

Saltech, a company in the Saleninvest group of Sweden, has been commissioned by the National Cement Company (NCC), the Saudi Arabian company based in Jeddah, to design and act as main contractor for the construction of a floating cement terminal that will be sited initially in the port of Yanbu.

The terminal, which has been designed to handle 1.5 million tons of cement per year, will service a new industrial complex to be built in the port area during the next five years. The complex will include refineries, gas-condensation works, petrochemical/technical factories, and cement plants, as well as new quays and all support facilities needed for a modern industrial area.

The large quantities of cement required for construction work will be shipped to the terminal in bulk carriers for unloading, in sacks and bulk, into trucks for transport inland. In due course, when construction of the complex draws to a close and the local cement plants are completed, the terminal can be towed to another site where cement imports have to be handled.

The terminal, which is to be built by a Far Eastern shipyard, is scheduled to be in position and to come into operation in October 1981. Salen Dry Cargo and Saltech will operate the terminal for NCC.

The terminal incorporates a barge with ordinary cargo holds and large hatches. An 800-ton-per-hour ship unloader manufactured by Siwertell, the largest ever delivered

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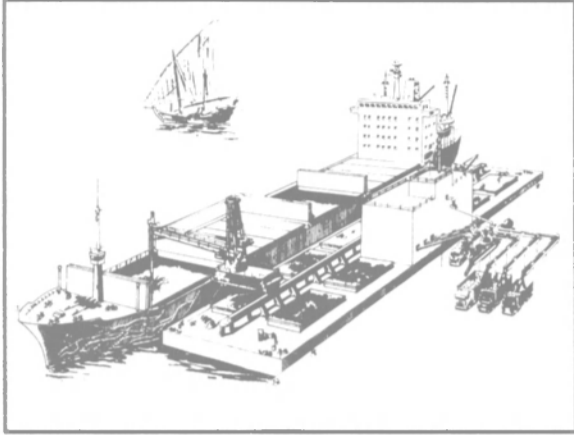
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by the company, moves on rails on the barge deck. The engine room amidships contains a diesel-driven generating set, ballast pumps, and tanks for bunkers and fresh water, making the terminal independent of land-based support facilities.



Drawing of the cement terminal to be supplied by Saltech of Sweden to the National Cement Company to service a Saudi Arabian industrial complex.

The superstructure consists of a section containing the staff changing rooms, dining area and galley, as well as a workshop and office space. A second section houses a packing plant featuring three rotating packing machines, a storage room, and machinery for elevating, hauling, screening, directing, and distributing two types of cement simultaneously.

A number of conveyor belts run from the packing plant to the quay, where trucks can be loaded.

On arrival, bulk carriers are moored alongside the terminal. The cargo is then unloaded by the ship-unloader and transported via a longitudinal screw conveyor directly to the packing area or to the terminal cargo holds. The system is sealed to avoid the spreading of dust, requiring only the ship's cargo hatches to be open. When not engaged in unloading cement from incoming ships, the ship-unloader can be used to move cement from the holds to the packing plant.

The terminal is also designed to be used for other bulk cargo.

Saltech, Salen Dry Cargo, and Siwertell are all companies in the Saleninvest group of Sweden.

Marine Builders Yard Delivers Its Largest Vessel To Date

The 1,400-bhp towboat Jeanne Marie, the first of a completely new design being offered by Marine Builders, Inc., was delivered recently to The Archway Fleeting and Harbor Service Company in St. Louis. The previous largest vessel designed and built by the Clarksville, Ind., yard had a length of 62 feet and rating of 1,000 bhp.

The latest delivery has a length of 70 feet,



Towboat Jeanne Marie, one of three Cummins-powered vessels under construction for Archway Fleeting and Harbor Service of St. Louis, was delivered recently by Marine Builders, Inc. of Clarksville, Ind.

beam of 26 feet, depth of 8 feet 6 inches, and average draft of 5 feet 6 inches. Propulsion power is provided by two Cummins KT-2300 diesel engines, each rated 700 bhp at 1,800 rpm.



The Jeanne Marie is designed and built with side tank construction, which is normally used in the construction of larger towboats. Each side (wing) tank consists of five individual compartments. The vessel has six individual fuel tanks, also in the wing walls, thus providing greater stability. Also, in the event of a rupture or leak in any specific fuel tank, that tank can be isolated until repairs are made.

The vessel is equipped with a central fuel fill and vent system, with the main fillbox located on the side deck. Any spill that occurs during fueling would be directed to the slops holding tanks in the rear wing tanks.


The new craft also utilizes the builder's standard dry bilge design. Water from the stern tubes is siphoned to a central holding basin. This is fitted with a float control pump that pumps water from the stern tubes directly overboard. A bilge pump system pumps bilge contents to a slops holding tank; from there it can be pumped to onshore disposal.

Other equipment in the Jeanne Marie includes Twin Disc reduction gears, Lima/Cummins generator, Kahlenberg propellers and air horn, Johnson keel coolers, Microphor sanitation system, NABRICO deck winches, Regency Polaris radio gear, and Perko searchlights.

The Jeanne Marie is the first of three identical vessels being constructed by Marine Builders for Archway Fleeting. The two sister vessels are scheduled to be delivered by the end of this year.

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New Shipyard Opened In Moss Point, Miss.

A new shipyard, Moss Point Marine, Inc., has opened on the Mississippi Gulf Coast and will specialize in the construction of barges, utility boats, and push-boats, according to **John Dane III**, president. The new facility, on the East Pascagoula River near Moss Point, Miss., occupies a 17-acre site with 800 feet of water frontage with a 30-foot depth.

The yard's first vessel, a 180-foot barge with a 54-foot beam and 12-foot depth, is under construction now and is scheduled for delivery in November. Contracts for several other vessels are pending. "Because of our experienced personnel and smaller size, we are able to offer our customers high-quality construction, personalized attention, and on-time deliveries," said Mr. Dane. Before forming Moss Point Marine, Mr. Dane had been assistant

to the vice president, operations at Halter Marine, Inc., and facilities manager.

Burnice M. Havard is vice president of the new company. He had been shipyard superintendent at Halter Marine's Chickasaw, Ala., division. Other officers are **Chalin O. Perez Jr.**, secretary, and **John Dane Jr.**, treasurer.

The mailing address of the new shipyard is P.O. Box 1310, Escatawpa, Miss. 39552; the telephone number is (601) 475-6885.

Title XI Requested By Atwood Oceanics For \$23-Million Drill Barge

Atwood Oceanics, Inc. of Houston has applied for a Title XI guarantee to aid in financing the construction of one submersible drilling vessel. The non-self-propelled vessel will operate in either the Atlantic Ocean off the coast of West Africa or the Gulf of Mexico, according to the applicant.

Vemar, Inc., Channelview, Texas, is the proposed builder of the 252-foot by 180-foot vessel. If approved, Title XI financing would cover \$17,500,000, or 75 percent of the estimated actual cost of \$23,350,000. Delivery is expected in August 1981.

Diamond M Orders \$60-Million Drill Rig From ADDSCO Yard

Diamond M Company of Houston, a subsidiary of Kaneb Services, Inc., recently signed a construction agreement with Alabama Dry Dock & Shipbuilding Company (ADDSCO) of Mobile, Ala., for a semisubmersible rig capable of drilling to 30,000 feet in water depths up to 1,500 feet.

The estimated cost of the rig is \$60 million, and delivery is scheduled for the fourth quarter of 1981. Diamond M currently owns and operates four semisubmersibles, five jackups, six platform rigs, nine barge rigs, five posted barge rigs, and one drillship.

Maritel Commissions Its First Marisat Terminal —Literature Available

Maritel, Inc. has announced the commissioning of the first JUE-15A Marisat Terminal. The unit, aboard the Chevron vessel George M. Keller, represents the first installation of the new "Third Generation" JUE-15A terminal from Japan Radio Company, Ltd. (JRC) of Tokyo. The JUE-15A design evolved from a continuing research and development program and the experience of over 100 Marisat installations by Maritel and JRC around the world.

Maritel reports the JUE-15A is in full production and over 50 orders have been received for the JUE-15A to date. The new terminal was designed to have complete flexibility in adding communications and data-processing options, particularly in light of the expanded capabilities expected with the Inmarsat System.

The company recently expanded its technical staff and moved to larger facilities located at 139 Old Solomon's Island Road, Annapolis, Md. 21401.

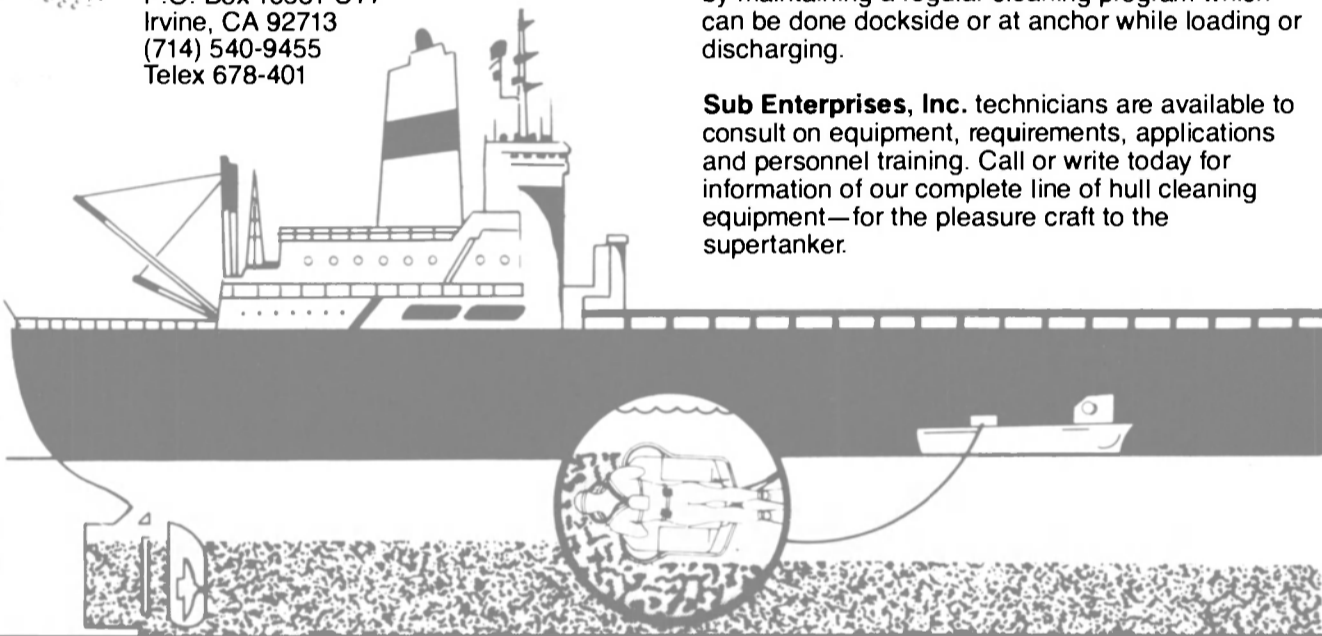
Full literature on the JUE-15A Terminal may be obtained by writing to **David King**, Maritel, Inc., Dept. MR, at the above address.

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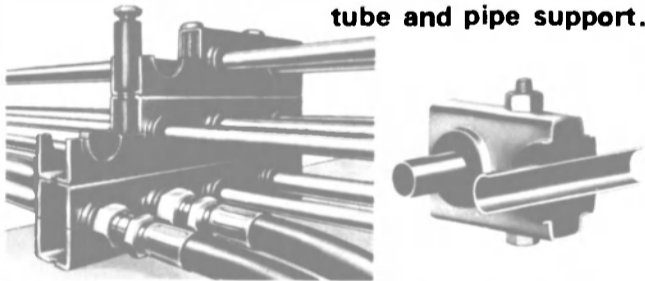
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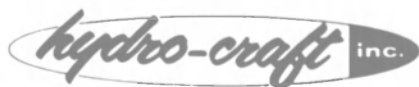
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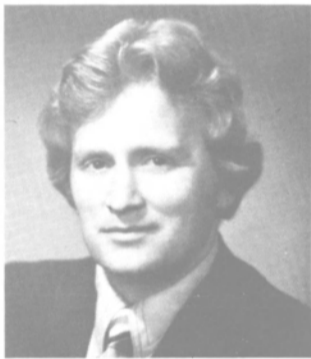
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516-676-3738

Southwest Marine Gets NavShips Contracts—Yard Undergoing Renovations

Southwest Marine, San Diego, recently was awarded two Naval Ship Systems Command contracts totaling \$300,000 for the USNS De Steiguer (T-AGOR 12) to accomplish mid-term overhaul and sponsor modifications, and for USNS Taluga (T-AO62) to accomplish necessary work required for the vessel's INSURV inspection.

The San Diego yard is undergoing major yard renovation. Its 7,000-ton and 1,200-ton drydocks are being refurbished to allow certification under existing Navy standards. The 1,600-ton marine railway is just completing Navy certification. Two smaller marine railways, 300-ton and 500-ton, are being upgraded and increasing their lift capacity to 700 tons and 900 tons respectively.

M.D. Mayfield Named Manager-Coal Sales For Federal Barge Lines



Mark D. Mayfield

Mark D. Mayfield has been appointed to the position of manager-coal sales of Federal Barge Lines by Pott Industries Inc., it was announced by Thomas F. Maloney, senior vice president-sales of Federal Barge, a wholly owned subsidiary of Pott Industries. Pott is a member of the Houston Natural Gas Corporation group of companies.

Mr. Mayfield will be responsible for all carbon product movements which will include, among other things, cargoes of coal, coke, and coke breeze. Previously, he had been manager-bulk sales and services of Federal Barge Lines. With the company since 1972, he has also served as traffic manager, and as a dispatcher.

Synthetic Packing Developed By Garlock —Literature Available

Garlock has developed a synthetic fiber for the manufacture of general service packings, according to an announcement by E.S. Kuhn, vice president and general manager, Compression Packing Division, Garlock Inc. A synthetic organic polymer, the new fiber will provide a pure, non-

asbestos alternative for manufacturers and processors weighing the desirability of asbestos-free materials.

Trademarked "Synthepak", the new fiber, when converted to yarn, can be woven and braided similar to asbestos. Initial test results show its performance characteristics to be equal to or better than asbestos packings in a wide range of industrial environments. The

new synthetic fiber is said to withstand a broader pH range, retain lubricants better, and improve overall resistance to common solvents. Synthepak fiber doesn't swell, and exhibits less sensitivity to adjustment. It contains no asbestos, therefore poses no health hazards.

The packings are recommended as direct replacements for asbestos low- to high-pressure appli-

cations for most rotary, reciprocating, and helical motion, and for many standard valve applications where asbestos packings are used. Temperature ranges to 350 F (177°C).

For further information and free literature, write to E.S. Kuhn, Dept. MR, Garlock Inc., Mechanical Packing Division, 1666 Division Street, Palmyra, N.Y. 14522.

PUSH/PULL POWER

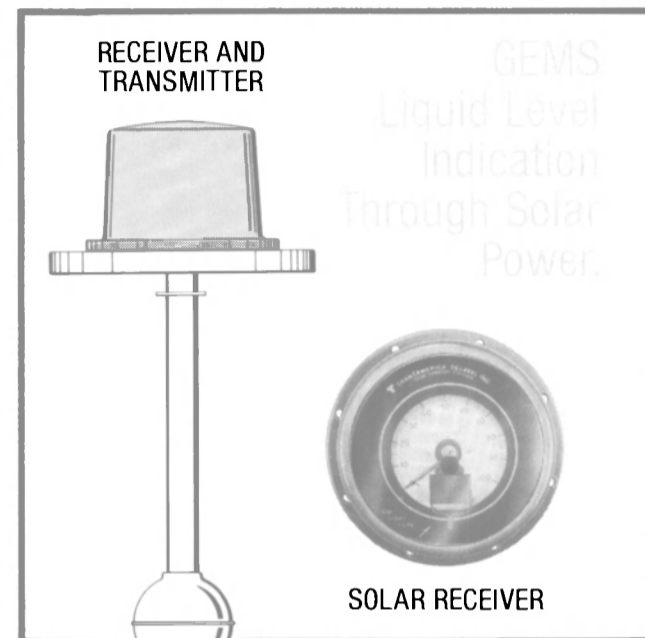
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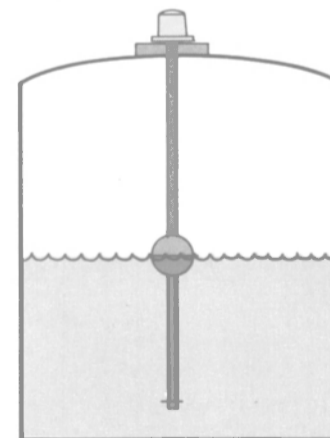
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GEMS Solar-Powered Receivers, used with Gems Transmitters, provide continuous tank level indication without the use of conventional AC or DC power. The light is directed upon the solar receiver and powers the operation of the level transmitter. Changing liquid level in the tank causes the magnetic float to vary an electrical signal to the solar head receiver. This changing signal voltage is directly proportional to liquid level change. This design incorporates a 'discriminator' circuit to preclude false readings. FM approved and is intrinsically safe.

The Solar-Powered Receiver is shown flange-mounted directly on top of a transmitter. However, it can also be supplied for remote mounting at a distance from the transmitter.



For more information, contact GEMS Sensors Division, Transamerica Delaval Inc., Plainville, Connecticut 06062. (203) 677-1311.

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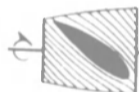


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Norfolk Naval Yard NCAA Honors Captain Kurzenhauser

The Norfolk Naval Shipyard chapter of the Naval Civilian Administrators' Association awarded its NCAA Productivity Award to Capt. A. Kurzenhauser recently in recognition of his leadership in helping this shipyard lead all Navy yards in productivity achievements.



The NCAA Productivity Award, established to provide recognition for the persons who do the most to further productivity, is presented by NCAA Norfolk Naval Shipyard chapter president Andy James to Capt. A. Kurzenhauser for the shipyard commander's innovative leadership in making this shipyard the pacesetter in this field among the eight Navy shipyards.

"Norfolk Naval Shipyard (in Portsmouth, Va.) leads the seven other Naval shipyards in one productivity measurement after another, and it is apparent to the NCAA that Captain Kurzenhauser deserves singular credit for this," said Andy James, president of the local chapter, in presenting the award.

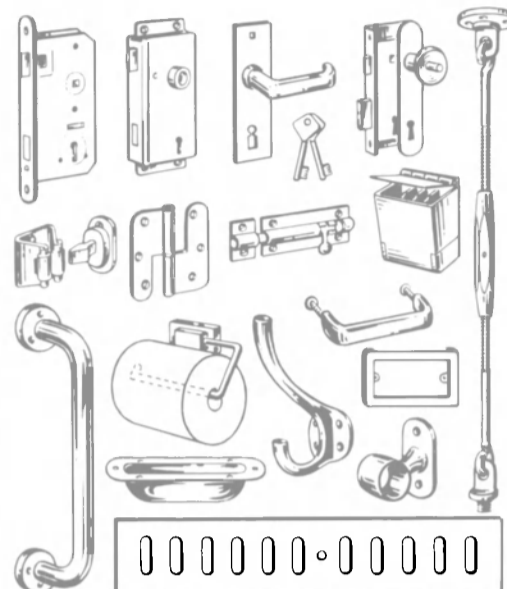
Citing the fact that NNSY had completed more ships, 22, last year than any other yard, with Long Beach second at 16, Mr. James noted that we also were far out in front in total early days on ship completions. Norfolk Naval Shipyard had 136 in 1979 as compared to 62 for the next closest yard and 52 for the third-place command.

"Captain Kurzenhauser has achieved this kind of productivity by inviting all of us to share our talents in the shipyard's work places. He has shown that he values our ideas by encouraging us to be creative workers devising better and more efficient ways of doing things, and by urging us to solve work place problems. We salute him for his special contributions to the productivity of this shipyard, and we wish him smooth seas and following winds in his retirement," Mr. James said.

"Those shipyarders here who have believed with me that the old ways can be changed share this award with me. Their encouragement and initiative have made the difference in making this shipyard better each year. And the day that shipyarders here stop questioning whether and how we can do better is the day we will begin falling behind," the shipyard commander said.

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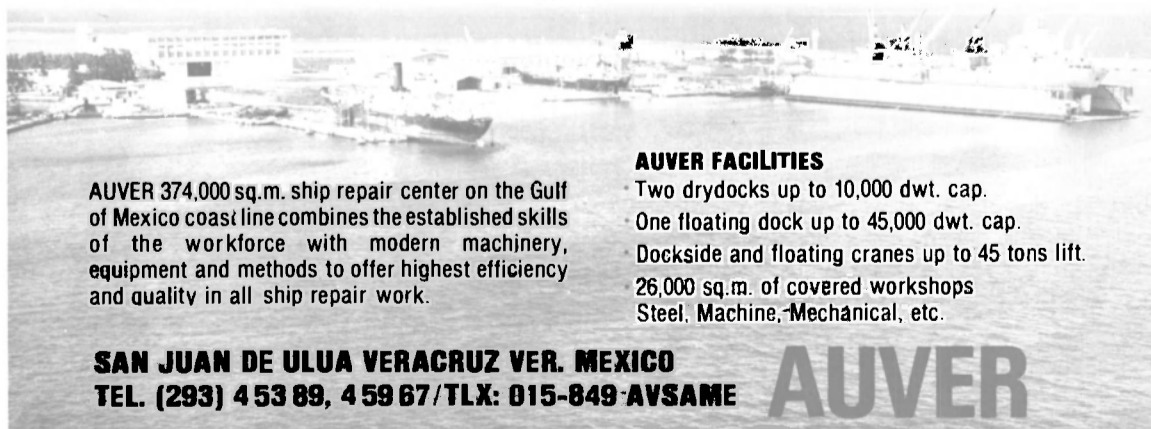
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Maritime Reporter/Engineering News

New Naval Architecture Firm Of Guarino & Cox Formed In New Orleans

The formation of Guarino & Cox, Inc., a consulting naval architectural marine design firm, was announced recently in New Orleans by its two principals, **Salvadore J. Guarino** and **Gregory Cox**, both formerly with Halter Marine, Inc.



Salvadore J. Guarino

Gregory Cox

Mr. Guarino, president of the new company, said the firm has the engineering capabilities for all types of marine equipment but that they intend to concentrate on the design and engineering of vessels for the workboat and fishing industries, including high-speed vessels such as crewboats, naval vessels and yachts. Although both Mr. Guarino and Mr. Cox have been involved extensively in advanced marine technology programs in the past, vice president Cox said that they would focus on practical, cost-effective designs for the vessel owner and builder.

Mr. Guarino, until recently vice president of engineering at Halter, served in various capacities during his 20 years with the company, including sales, marketing, and estimating. Mr. Cox had held the positions of chief naval architect and head of the hull structure group at Halter Marine.

The two naval architects bring with them more than 29 years of experience in the small vessel design field, and have been instrumental in the design of many Halter Marine vessels, some of which have set the standards for modern workboats in the offshore oil and gas support industry.

Guarino & Cox, Inc. has offices at 4445 San Marco Road, New Orleans, La. 70129; telephone number is (504) 254-1277.

Quincy Yard Christens Its Tenth Liquefied Gas Ship



The Louisiana (shown above), the 10th liquefied natural gas tanker to be built by General Dynamics in the past three years, was christened recently in ceremonies at the corporation's Quincy shipyard.

Mrs. Dwight H. Seely Jr. of Houston, wife

of the chairman and chief executive officer of Trunkline LNG Company, Houston, christened the 936-foot ship that will transport LNG from Algeria to the United States. The vessel's five spherical cargo tanks have a total capacity of 125,000 cubic meters of LNG at minus 265 F.

The Louisiana will have a crew of 30. She has a design speed of 20 knots and can load and unload her cargo in 12 hours. She will fly the American flag and will be manned by American crews.

She was built for Lachmar, a partnership of subsidiaries representing Panhandle Eastern Pipe Line Company, Houston; Moore McCormack Bulk Transport Company, Stamford, Conn., and General Dynamics, St. Louis. Trunkline Gas, a subsidiary of Panhandle,

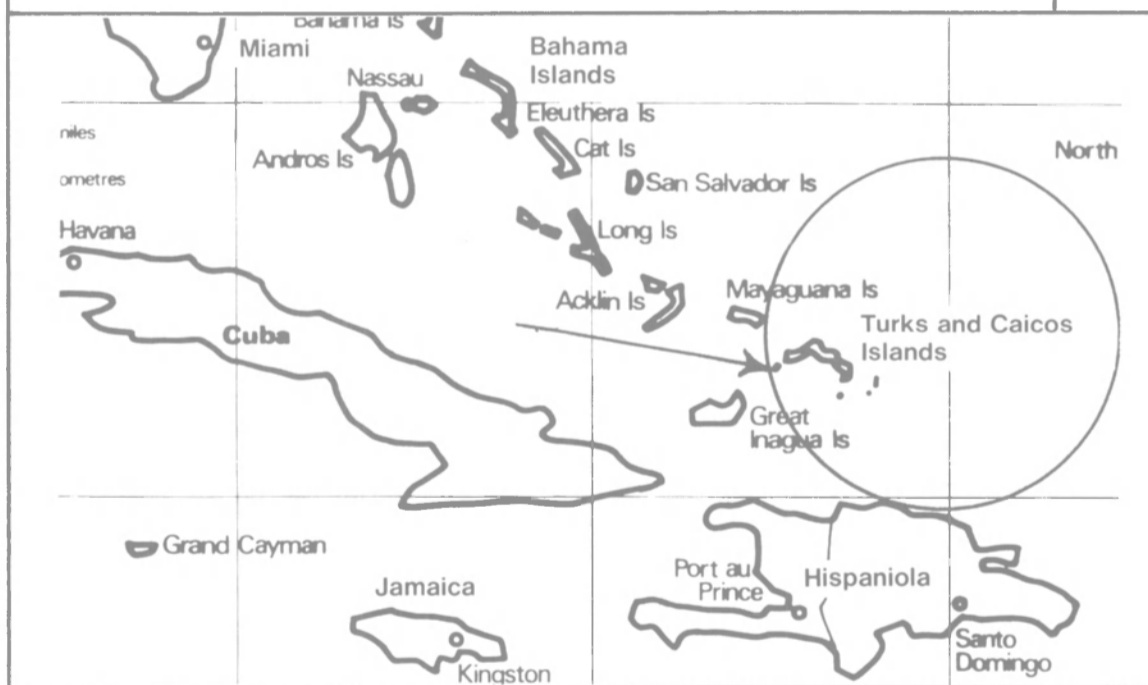
has a purchase contract for the gas with Sonatrach, the national oil and gas company of Algeria.

Eight LNG tankers previously built at Quincy have made a total of 274 round trips and have delivered over 33 million cubic meters of liquefied natural gas from Indonesia to Japan. The Louisiana and her sister ship, the Lake Charles, which was completed earlier this year for Lachmar, will transport gas to the U.S. Gulf Coast. They are the last of the fleet of 10 LNGs under construction at Quincy.

Participants in the christening ceremonies included **David S. Lewis**, chairman and chief executive officer of General Dynamics, and **P. Takis Veliotis**, executive vice president of General Dynamics for marine operations.

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Paceco Cranes In The U.K.**

N.E.I. Clarke Chapman Cranes Ltd. of the United Kingdom recently signed a license agreement with Paceco, Inc. of Alameda, Calif., the world's largest designer and builder of container-handling cranes. After operating several months under an ad hoc arrangement, the two companies signed the agreement in Rodley, England, making N.E.I. Clarke Chapman a full licensee for manufacturing and marketing Paceco's line of Portainer, Transtainer, and Shipstainer cranes in the U.K., Channel Islands, Isle of Man, and Cire.

The agreement was signed by **J. Roger Baker**, managing director of N.E.I. Clarke Chapman, and **A.L. Holme**, managing direc-



First Paceco Transtainer crane manufactured in United Kingdom by N.E.I. Clarke Chapman Cranes Ltd. is now in operation at Felixstowe Port Terminal.

tor of Paceco International Ltd., Paceco's European affiliate. The signing was witnessed by **C. Jay Dunton**, licensee services manager for Paceco, Inc., and **Allan Mason**, N.E.I. Clarke Chapman's commercial manager.

N.E.I. Clarke Chapman Cranes Ltd., an international engineering design, manufacturing, and commissioning firm, recently received its first order for 10 N.E.I./Paceco rubber-tired Transtainer cranes from Felixstowe Dock and Railway Company. One of them has been delivered and is in operation at the Felixstowe Port Terminal.

With a span of 74 feet (22.5 meters), the new Transtainer crane will stack containers four-high and six-wide, leaving room for a truck roadway. The nine other Transtainers on order for Felixstowe are expected to be delivered throughout this year and early 1981.

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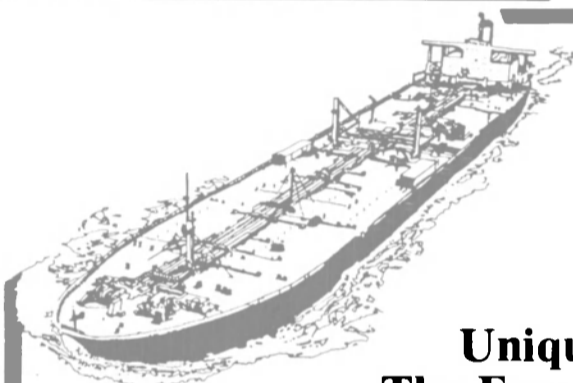
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SII has a high level executive position available right now, reporting to the President, SII. This position; Manager, Marine Chartering Services, provides a centralized area of marine chartering expertise and services for all Sun Company, Inc. including Sun International and all other subsidiaries and units. Heavy emphasis is on intersubsidiary liaison and services. This position now has full Sun Company, and subsidiary-wide agreement to act as Chief Representative of Sun International and all Sun Company units in the marine chartering marketplace.

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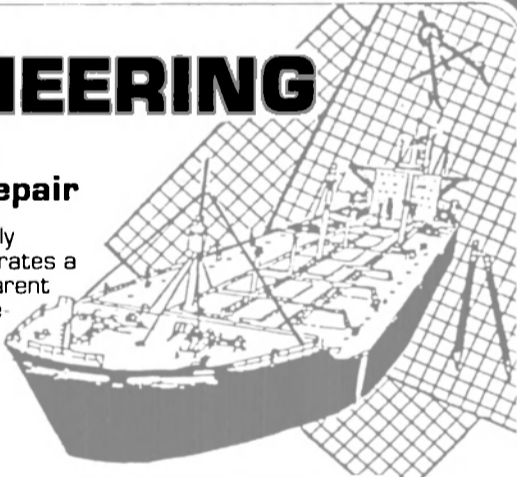
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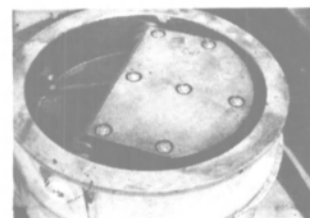
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Smatco model 34-DPS-75 40,000 lb. tow winch
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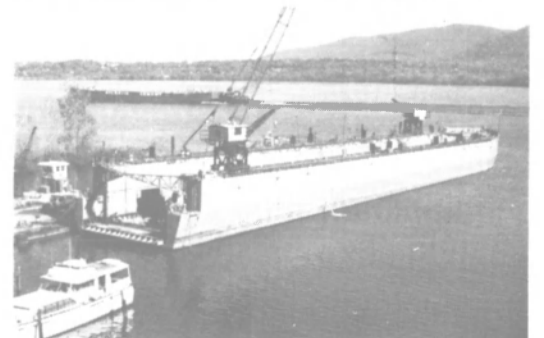
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| Presently in use | Length of basin — 361' |
| Length overall 400' | Gross weight — 2,600 tons |
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Three longitudinal bulkheads. Three transverse
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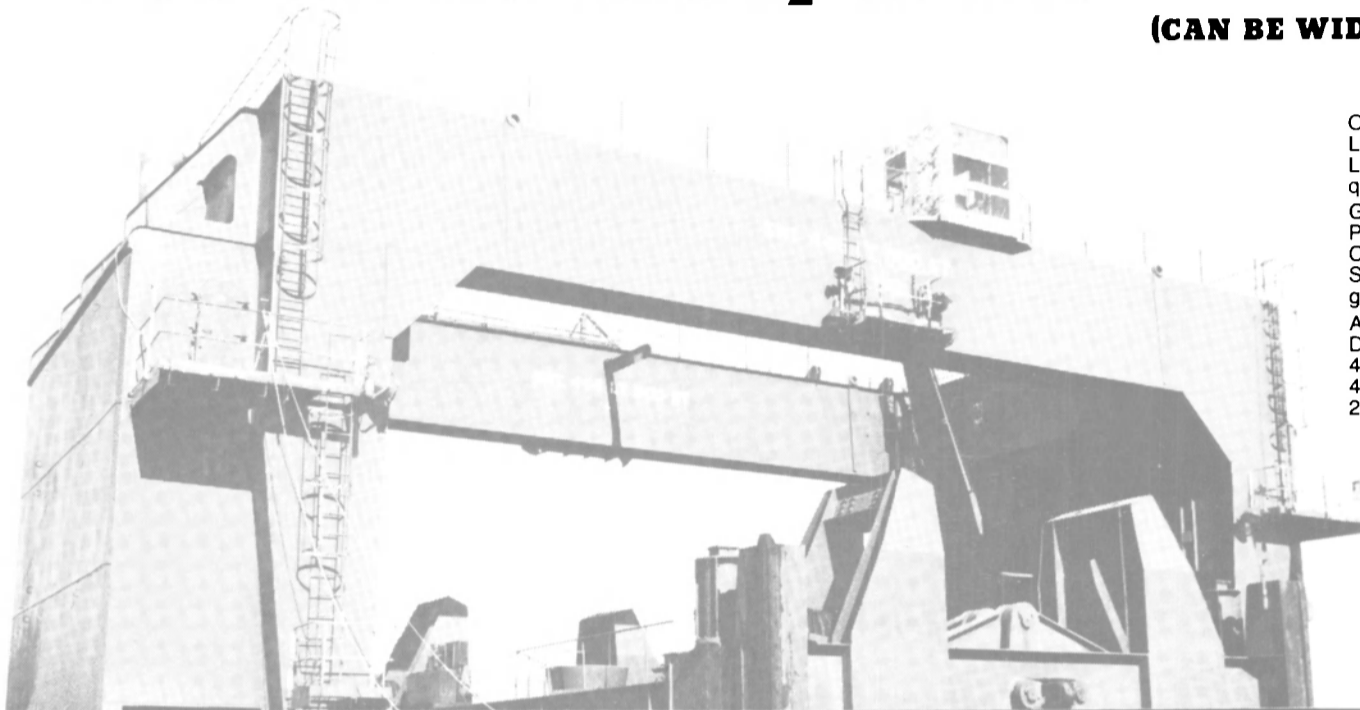
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Two 500-ton Gantry Cranes 70-foot Track Span (CAN BE WIDENED TO 100 FEET)



Originally Barge Handling. As used on LASH Ships. Manufactured by Alliance. Late Model built to ABS and MARAD requirements.

Good Condition. Immediately Available. Priced at a fraction of New Replacement Cost. Complete with Lifting Beams and Spreader Beams (not shown in photograph)

AC Power Input Through Cable Reel
DC Hoist & Gantry Motors & Controls
4-150 HP-240 Volt DC Hoist Motors
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2-265 KW-500 Volt DC M-G Sets

Units Can Be Modified

Possible other uses:

- 1) Moving heavy equipment
- 2) Dam Sites
- 3) Concrete Prefab plants
- 4) Railroad yards
- 5) Steel plants

Geared Track is also available at extra cost

200 TON/DIESEL ELECTRIC Floating Crane

FOR SALE - RENT - CHARTER

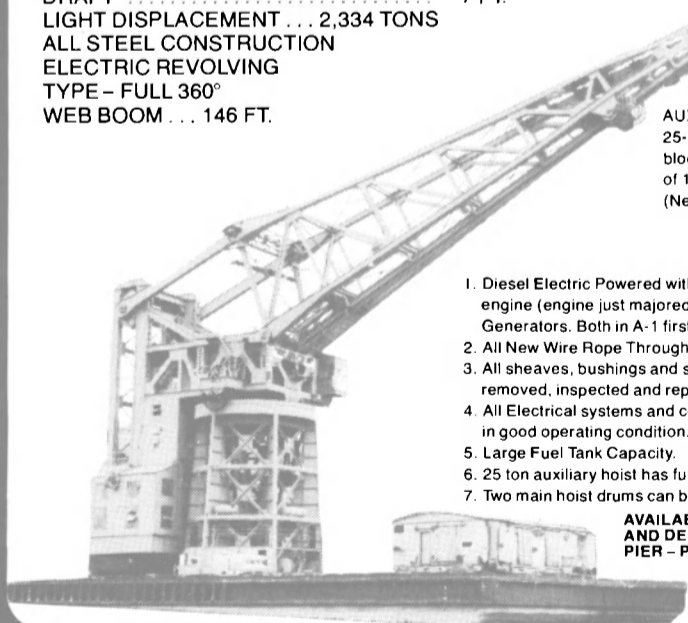
LENGTH OVERALL 140 FT.
BEAM 84 FT.
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LIGHT DISPLACEMENT . . . 2,334 TONS
ALL STEEL CONSTRUCTION
ELECTRIC REVOLVING
TYPE - FULL 360°
WEB BOOM . . . 146 FT.

MAIN HOIST:
200-Ton - By 2 only, 8 part blocks. Each block carries 2,050 ft. of 1 1/2" 6 x 37 I.P.S. wire rope (New).

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1. Diesel Electric Powered with G.M. 8-278A diesel engine (engine just majored) and 300 KW, 230 volt Generators. Both in A-1 first class condition.
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6. 25 ton auxiliary hoist has full 140 ft. of boom travel.
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NEW 1970-72

Priced at a fraction of today's new replacement cost. Good Condition. Immediately Available. From LASH Ships. Late Model. Manufactured by PACEO. Suitable for Ship, Barge or Land Use. Manufactured to ABS and MARAD requirements.

AC Power Input with Cable Reel and 350 feet of 500 MCM Cable.

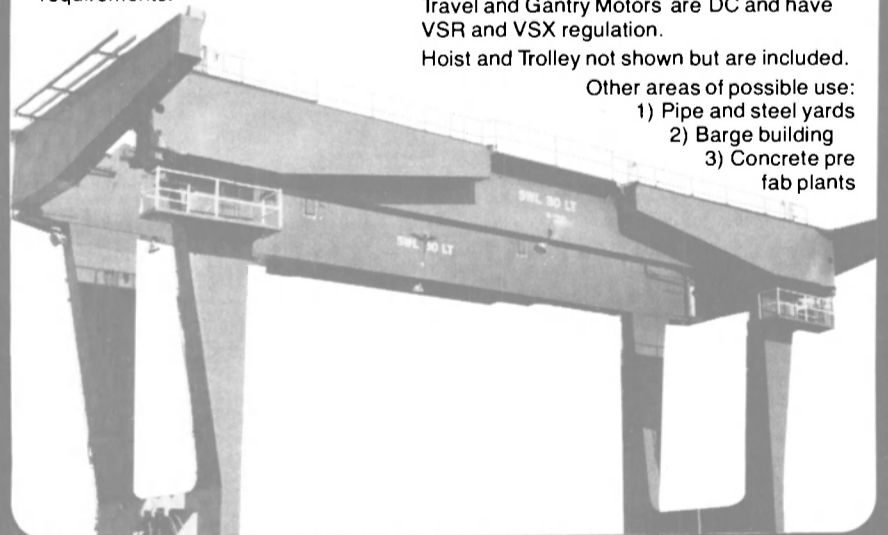
MG set: 250 HP-AC-170 KW 230 DC.

• 200 HP DC Hoist Motor • 100 HP DC Trolley Motor • 2-40 HP DC Gantry Travel Motors • Trolley Travel 275 F.P.M. • Gantry Travel 100 F.P.M. • Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M. • 32'0" Maximum Outstretch • Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.

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- 2) Barge building
- 3) Concrete pre fab plants



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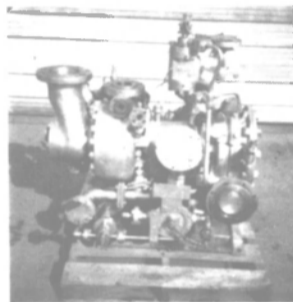


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14-DOG

54" X 66" and 54" X 77"
14 Dog—operated from top side
by T-Key, with dogs marked to
show open & closed positions.



4-DOG

24" X 30"
and
30" X 30"



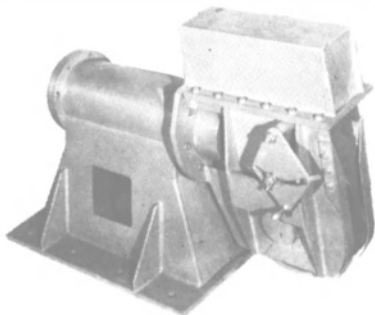
4 Dogs on underside. Top side is flush and dogs are operated with T-Key openers.

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NEW — UNUSED — 1 1/4" SELF-ALIGNING FAIRLEADS

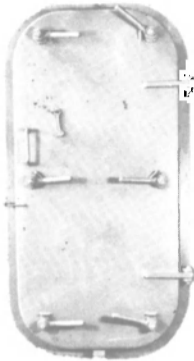


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**FOR SALE
NEW WATERTIGHT DOORS**

Steel Dogs



6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed.

SIZE

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

EACH DOOR

IMMEDIATE DELIVERY

NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)

14" X 10" CLEAR OPENING



With extended legs for welding to deck. 14" Wide on base — length 28" — height 27 1/4". IMMEDIATE DELIVERY FROM STOCK.

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**CROUSE HINDS
1000 WATT
FLOODLIGHTS**



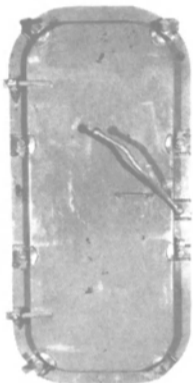
NEW — UNUSED

HEAVY DUTY CAST ALUMINUM marine floodlights—series 48116—ADE 16. U.I. Marine listing 595—also USCG accepted. Mogul base—will handle 1000 watt incandescent or clear metal Halide bulb. Corrosion-resistant—hinged door.

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**QUICK-ACTING
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DOORS**



**26" X 66"
8-DOG
Rights & Lefts**

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FOR T-2 TANKERS



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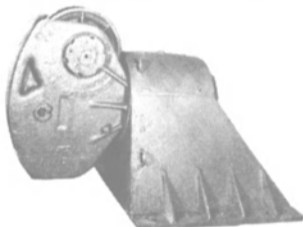
- G.E. Revolving Field — August 1979 Certificate — for immediate delivery

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**SURPLUS
BERGER FAIRLEADS**



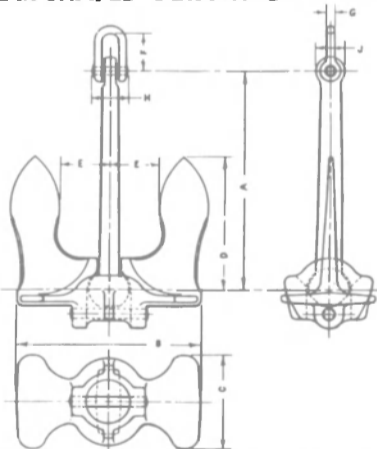
- 2 Model 620 — for 1 3/8" wire — 20" sheave. Located San Francisco, Ca.
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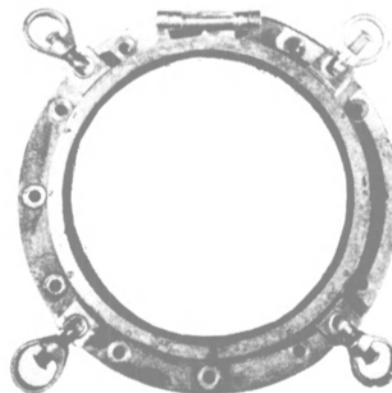
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4-DOG MARINE
PORTLIGHTS**

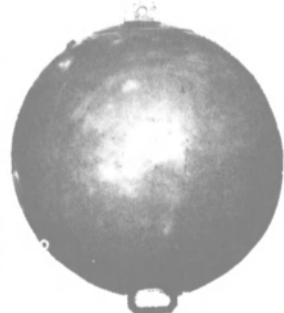
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 Maritime Data Network, 300 Broad Street, Stamford, CT 06901

INSULATION—Cloth, Fiberglass
 Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
 Dupont Company, Nemours Bldg.-RM C31H6, Centre Rd. Bldg., Wilmington, DE 19898
 IDT Corp. (Intersystems Design & Technology Corp.), P.O. Box 1590, Summerville, S.C. 29483

INSURANCE
 Adams & Porter, 1819 St. James Place, Houston, Texas 77027
 Adams & Porter, 5 World Trade Center, Suite 6433, New York, N.Y. 10048
 Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
 Midland Insurance Co., 160 Water St., New York, N.Y. 10038
 Whitehall Brokerage, Inc., 17 Battery Place, New York, NY 10004

JOINER—Watertight Doors—Paneling
 Masonite Commercial Division, Dover, OH 44622
 Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS
 Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

LADDERS
 Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
 ACR Electronics, Inc., 10-99 3901 North 29th Avenue, Hollywood, FL 33020
 Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
 Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
 Perko Inc., P.O. Box 6400D, Miami, Florida 33164
 Phoenix Products Company, 4785 North 27th Street, Milwaukee, WI 53209
 Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

LNG CONTAINMENT
 McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647

LUMBER
 R.N. Templeman, Inc., 3000 Perdido St., New Orleans, LA 70119

MACHINE TOOLS
 Climax Manufacturing Company, P.O. Box 230, Newberg, OR 97132
 Master Machine Tools, Inc., 1300 East Avenue A, Hutchinson, Kansas 67501

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
 A.L. Burbank & Co., Ltd., Marine Thermotest Dept., One World Trade Center, Suite 2811, New York, NY 10048
 General Electric Company—Bldg. 2, Rm 216, Schenectady, N.Y. 12345
 Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS
 Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
 Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202
 Agemar, Avenida 3E No. 71-51, Edif. Acuario (Planta Baja) Apartado 1465, Maracaibo, Venezuela
 American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
 Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
 J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
 Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
 CCS Marine Associates Ltd., 2784 Crescentview Drive, N. Vancouver, B.C. Canada V7R2V1
 C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211
 CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176

CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
 Childs Engineering Corp., Box 333, Medfield, Mass. 02052
 John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
 Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111
 Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026

Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
 C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
 Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
 Designers & Planners Inc., One State Street Plaza, New York, N.Y. 10004
 Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, N.Y. 11050
 Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112
 Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401

Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006
 John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
 L.R. Glisten & Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, Wash. 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
 Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
 Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
 Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227

James S. Kroger & Co., Inc., 3333 Rice St., Miami, Fla. 33133
 Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
 Lucander Designs, P.O. Box 711, San Perlita, TX 78590

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
 John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
 Maclear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036

Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
 Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
 Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106
 Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
 Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307

George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
 Metritape, Inc., 33 Bradford Street, Concord, MA 01742
 Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
 Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104

Robert B. Niederberger, P.E., 507 Evergreen Road, Severna Park, MD 21146
 Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
 Ocean-Oil International 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, Florida 33156
 S.I. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317

M. Rosenblatt & Son, Inc., 330 Broadway, New York, N.Y. 10013
 and 657 Mission St., San Francisco, Calif.
 Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130
 Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316

Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003
 Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
 George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
 R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
 Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
 Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320

Timco, 622 Azalea Road, Mobile, AL 36609
 Corning Townsend III, 18 Church St., Georgetown, CT 06829
 Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
 Wesley D. Wheeler Associates, Ltd., 104 East 40 St., Suite 207, New York, N.Y. 10016

Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744
 XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT
 American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Collins Marine Corp., Pier 32, San Francisco, CA 94105
 Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
 Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

Dantronics Co., P. O. Box 673, Rye, NY 10580
 Electro-Nav, Inc., 1201 Corbin St., Elizabeth Marine Terminal, Elizabeth, N.J. 07201
 EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
 Harris Communications, RF Communications Division, 1680 University Avenue, Rochester, NY 14610
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Hase McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

ITT Decca Marine, U.S. Route 1 & St. Joe Rd., P.O. Box G, Palm Coast, FL 32037
 ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
 Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780

Iotron Corp., 5 Alfred Circle, Bedford, MA 01730
 Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302
 Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
 Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
 Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606

Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
 North American Philips Communication Corp., 91 McKee Road, Mahwah, N.J. 07430
 RCA Service Co., Building 204-2, Camden, N.J. 08101

Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
 Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103

Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Rockwell International, Collins Telecommunications Products Division, Cedar Rapids, IA 52406
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265
Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives

B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
Ferro Corporation, P.O. Box 1764, Bellevue, WA 98009
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS

Alfa-Laval, Inc., 2115 Lindwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932

PAINTS—COATINGS—CORROSION CONTROL

Belzona Molecular Metalife Inc., 224 7th Street, Garden City, NY 11530
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devco Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
The Skybryte Co., 3125 Perkins Ave., Cleveland, OH 44114

PETROLEUM SUPPLIES

Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings

Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

PLASTICS—Marine Applications

Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

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

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Alsthom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France
Arma Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525
Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Motive Power Corp., P.O. Box 365, Mineola, NY 11501 70124
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, P.O. Box 30587, New Orleans, LA 70190
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Tacoma Boatbuilding Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica DeLaval, Inc., IMO Pump Div., P.O. Box 321, Trenton, NJ 08602
Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083

REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

ROPE—Manila—Nylon—Hawsers—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, Orange, CA 92668

RUDDER ANGLE INDICATORS

Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SANITATION DEVICES—Pollution Control

Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford, IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms

Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT

Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage

American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL

Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking

A.D.M. (Amsterdam Drydock Mfg.), Moatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
Asmar Shipyards Co., Astilleros y Maestranos de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.
Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bergeon Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blount Marine Corp., P.O. Box 368, Warren, RI 02885
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124

Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322

Centromar, One World Trade Center, Suite 3557, New York, N.Y. 10048

China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10001

Coastal Dry Dock & Repair Co., Building 131, Brooklyn Navy Yard, Brooklyn, N.Y. 11205

Conrad Industries, P.O. Box 790, Morgan City, La. 70380

Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles

Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004

Delattre-Levievier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France

Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa

Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602

Empresa Nacional Bazan, Paseo de la Castellana 65, Madrid 1 Spain

Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122

FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208

Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553

HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219

Halifax Industries, Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7

Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189

Havre de Grace, Havre de Grace, Md.

Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edo-ori 1-Chome, Nishi-Ku, Osaka, Japan

Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong

Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567

Jackson/New York, 29 45 Richmond Terrace, Staten Island, NY 10303

Jeffboat, Inc., Jeffersonville, Ind. 47130

Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4

Kockums Shipyard, S-201, 10 Malmo 1, Sweden

Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630

Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160

MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016

Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012

Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047

Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681

Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Park, Greenville, MS 38701

Monark Boat Co., P.O. Box 210, Manticello, Ark. 71655

Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202

National Steel & Shipbuilding Corp., San Diego, Calif. 92112

Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012

Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607

North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1

O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genua, Italy 16100

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156

Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862

Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767

Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012

Port of Portland, P.O. Box 3529, Portland, OR 97208

Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22

S.E.B.N., Societa Estercizio Bacini Napoletani, Via Marinella Varco N.6 (80133) Naples, Italy

St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111

STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783

Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402

Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175

The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308

Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal

Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR

Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380

Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422

Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004

Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606

Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway

Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316

Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139

Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087

Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

Zigler Shipyards, P.O. Box 2607, Morgan City, La. 70380

SHIP STABILIZERS

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SMOKE INDICATORS

Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

STUFFING BOXES

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

SURVEYORS AND CONSULTANTS

Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903

Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING

Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

Salwico, Inc., 77 River St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS

Transamerica DeLaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032

Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017

Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TECHNICAL MANUAL PREPARATION

Benhof, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710

TERMINALS—Oil-Transfer

Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614

Delong Corp., 29 Broadway, New York, N.Y. 10006

Houston Marine Services, Inc., First State Tower, (Suite 509), Houston, TX 77015

Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottesville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc. Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002

Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202

Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202

Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771

Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130

James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004

McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

McDonough Marine Service, P.O. Box 26206, New Orleans, La.

Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048

Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002

Turecama Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

UNDERWATER SERVICES—Contracting

SeaTec International Ltd., Blackburn Industrial Center, Gloucester, MA 01930

VALVES AND FITTINGS

Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101

Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207

Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696

Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184

Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208

Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222

Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

WINCHES AND FAIRLEADERS

Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644

Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027

Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada

Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134

Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

WINDOWS

Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

WIRE AND CABLE

Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076

Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055

Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings

Arma Steel Corp., 703 Curtis St., Middletown, Ohio 45042

Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

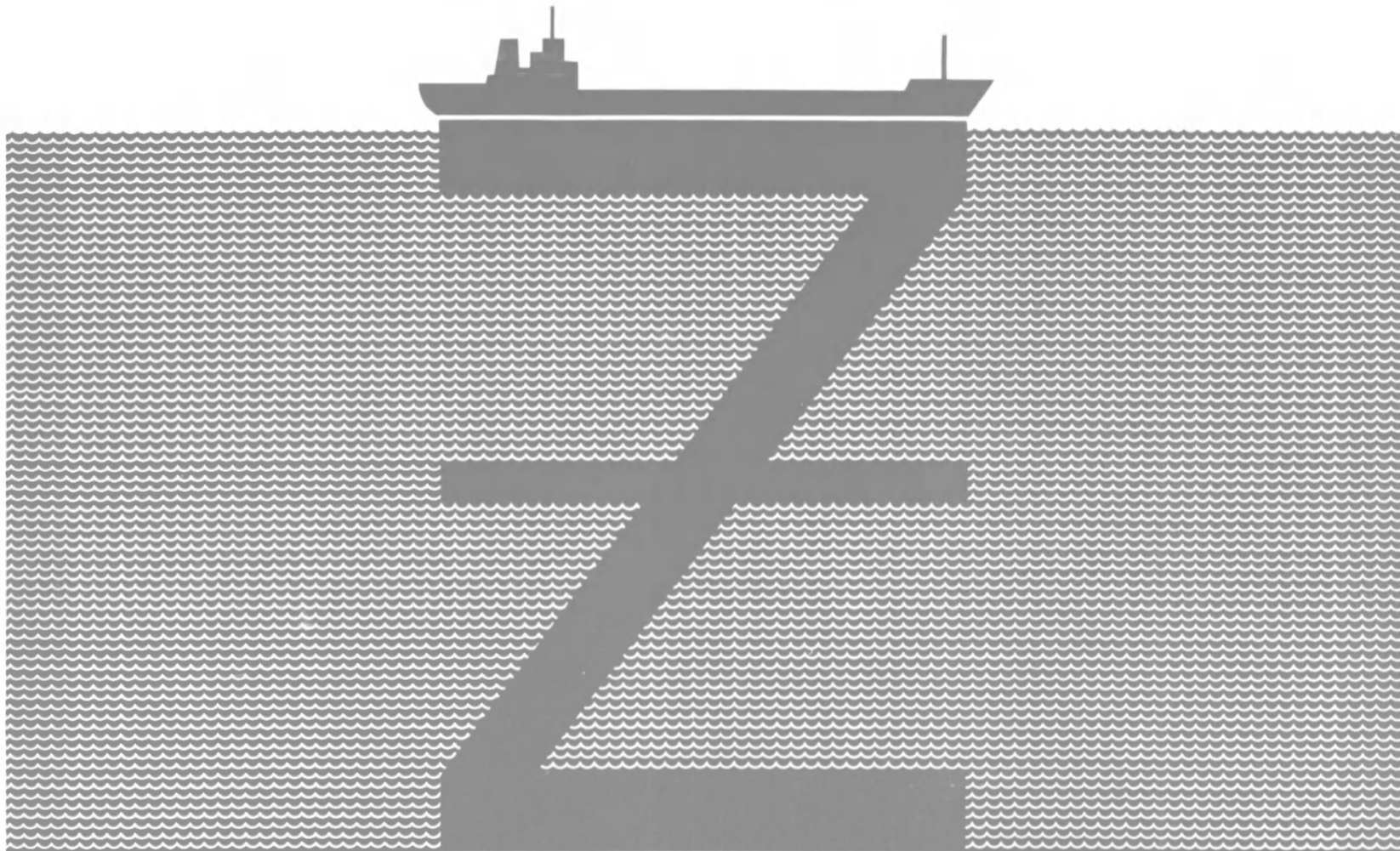
ZINC

Smith & McCracken, 153 Franklin St., New York, N.Y. 10013

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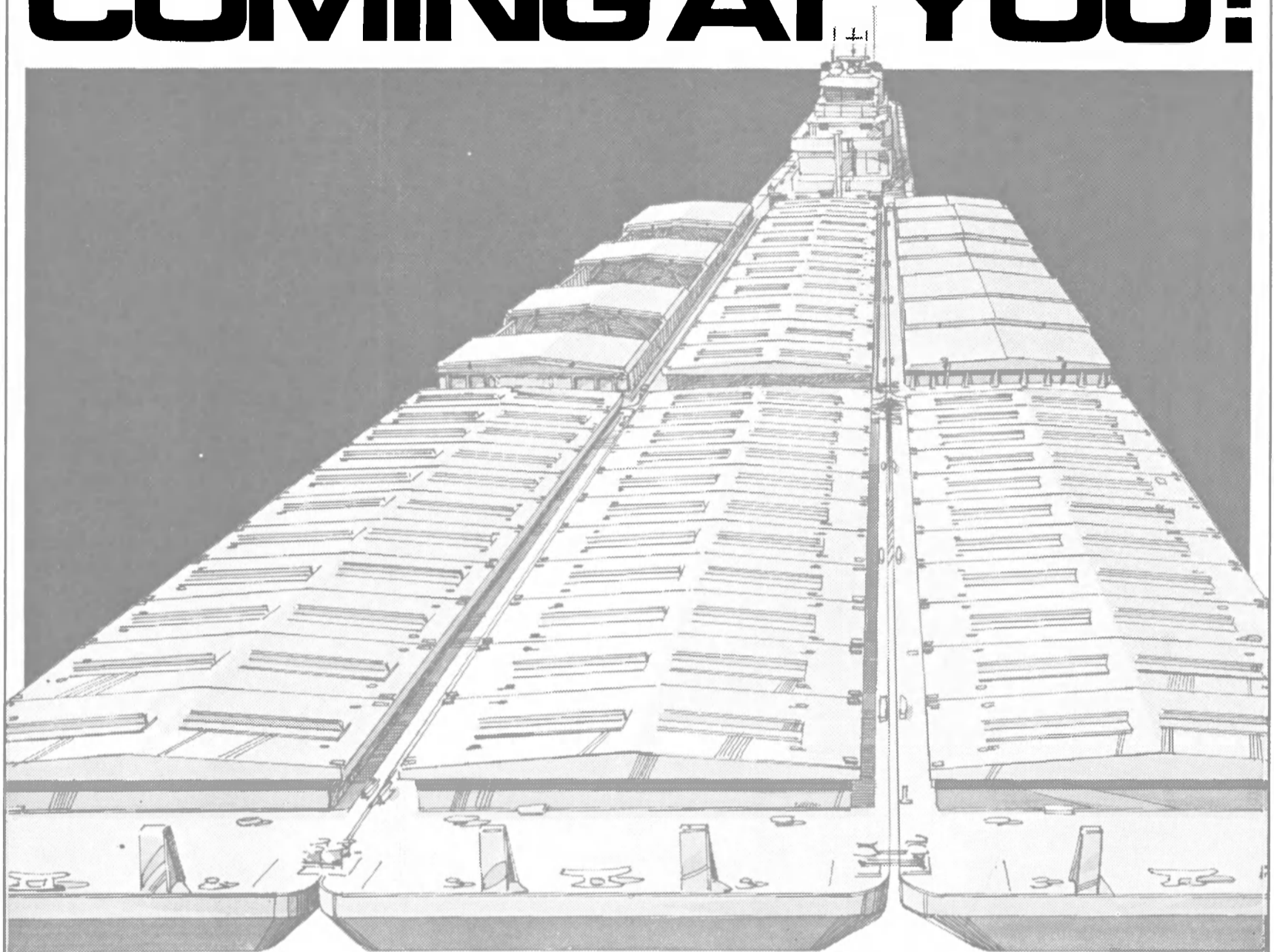
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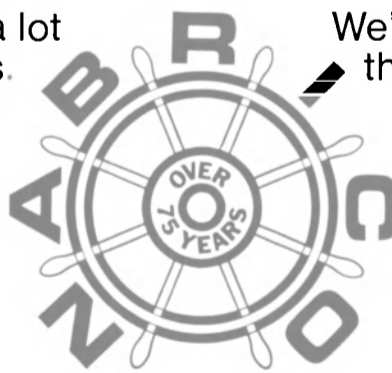
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