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Hellenic Lines Orders Ro/Ro Ships In Japan

Hellenic Lines has placed an order for two 625-foot-long rollon/roll-off vessels with Japan's Sasebo Heavy Industries Co. Ltd. Hellenic also has an option for construction of two more roll-on ships at Sasebo.

Each ship will have approxispace and will be able to carry the use of shore-based gantry

up to 250 forty-foot trailers plus cranes. The vessels' service speed 450 "American" cars, or up to 1,100 twenty-foot containers. The vessels also will have a 23-footwide stern ramp with 160-ton capacity, as well as one ramp and three elevators as internal equipment.

In addition, the ships will be equipped with four twin sets of mately 10,200 running feet of flush hatch covers that will enable

will be 20.3 knots.

The total investment in the four ships, including ancillary equipment, will exceed \$100 million, according to Hellenic Lines. According to Dimitri Rallis, as-

sistant to Hellenic's general manager P.G. Callimanopulos, scheduled delivery date of the first vessel is May 1978, with deliveries of later vessels expected every

two and a half to three months after that. He noted that one prime area for the ships' employment is the Middle East, and said the company is also thinking of using the vessels in the Europe-South Africa trade.

Krupp Atlas Elektronik Names Henry S. Woods Marine Sales Manager





Henry S. Woods III

Krupp Atlas Elektronik, Houston, Texas, has named Henry S. Woods III marine sales manager, South/Central, it was announced by Manfred Reimann, general manager. In his new post, Mr. Woods reports directly to Mr. Reimann in the Houston office.

Mr. Woods will be responsible for sales of Krupp Atlas marine radars, echosounders and survey systems in the coastal areas of Texas, Louisiana, Mississippi, Alabama and Florida, in addition to the Great Lakes and Inland Waterways areas.

Mr. Woods was graduated from Maine Maritime Academy with a Bachelor of Science degree in 1966. Following graduation, he participated in the Vietnam Sea-

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lift as a deck officer with the Military Sea Transportation Service. He holds the rank of lieutenant commander in the U.S. Naval Reserve.

Prior to joining Krupp Atlas, Mr. Woods served as a marketing representative for Sperry Marine Systems Division in both New Orleans and Houston. He is a member of The Society of Naval Architects and Marine Engineers, The Propeller Club of the United States, and the Marine Services Association of Texas.

For complete information and technical literature on Krupp Atlas products, contact Henry Woods, Krupp Atlas Elektronik, 1403 NASA Road 1, Houston, Texas 77058.

Matson Terminals Promotes W.F. Gilger

William F. Gilger has been promoted to vice president of Matson Terminals, Inc., 100 Mission Street, San Francisco, Calif. 94105, it was announced by James P. Gray, president.

Mr. Gilger formerly was assistant general manager for the company in San Francisco. He started with Matson Navigation Company, the parent company of Matson Terminals, Inc., in Los Angeles in 1949.

Maritime Reporter/Engineering News

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Campbell Industries Completes Specialized Vessel Designed To Tow Oil Drilling Rigs



The Independence Service, built by Campbell Industries, San Diego, Calif., was recently delivered to Zapata Marine (U.S.), Inc., a Zapata Corporation subsidiary. The 208 foot ship will go into service initially in the Gulf of Alaska.

Campbell Industries, San Diego, Calif., has delivered its second tug/supply vessel, the Independence Service, for Zapata Marine (U.S.), Inc., a subsidiary of Zapata Corporation, Houston, Texas. The new U.S.-flag ship is the second of six being built for Zapata. Campbell previously delivered her sistership, the Constitu-tion Service. The newest vessel is scheduled to go into service initially in the Gulf of Alaska.

The 208-foot Independence Service is 40 feet wide at the beam, has a draft of 14.5 feet, and will cruise at approximately 15 knots. The specialized vessel is designed to tow drilling rigs, as well as to relocate the platforms' positioning anchors, which weigh up to 20 tons apiece. In addition to an operating crew of 8 to 12, the ship can also carry crews being transferred to and from the platforms, and all necessary supplies. A reduced manning level has been achieved through installation of additional controls and a Smith-Meeker monitoring/alarm system. Key payload items are bulk cement and the drilling "mud" used by the oil operators. The "mud" is a substance carried in dry form which is used to seal off well shafts and circulates to clean and cool the drilling bits.

According to Campbell officials, the new ship is fully Coast Guard inspected and is rated ABS Ice Class IC, Maltese Cross, with Circle E equipment. Certified for full ocean towing, the Independence Service will carry a full complement of equipment for its duties in the offshore drilling industry. She will have a mud system made up of four Smatco 1,500-cubic-foot-capacity tanks, each 13 feet 6 inches in diameter, and 13 feet 8 inches high. Included in the system is a Westinghouse air compressor, driven off a General Motors 6/71 diesel engine. The ship's towing winch is a Smatco 72-DAW-250 doubledrum waterfall, rated at 300,000 pounds at stall. It is driven by a GM 12V71 diesel on the main deck aft of the deckhouse. The stern roller, manufactured by Campbell Industries, is a 12-foot 60-inch-diameter model with a safe working load of 150 tons.

tion and reversing gears. The propellers are set inside fixed nozzles with individual rudders. Auxiliary power is provided by two GM 12V71 diesel drive units with 220-kw Lima generators. Ship's service air comes from

two Quincy D340 compressors. The Independence Service has a bollard pull rating of 80-90 tons. The vessel also features a Mc-Mullen Flume stabilization system and a Brunvoll 51-inch-diameter bow thruster. The 405horsepower thruster is rated at 10,000 pounds thrust and is driven by a GM 12V71 diesel unit. Navaids and other electronic

equipment onboard include a Sperry gyrocompass and autopilot, two Decca radars, a Kelvin-Hughes Loran system, a Raytheon recording Fathometer, a Bendix Marine ADF, a CAI SSB radio, an Intech 55-channel VHF-FM radio, a Hallicrafters emergency receiver, and a Standard PA/Intercom system.

Water-In-Fuel Oil

Homogenizers Described In Gaulin Brochure

A new eight-page technical brochure, available from Gaulin Corporation, explains the role of water-in-fuel oil emulsification for improving the performance and operating economy of both stationary and marine boilers and gas turbines.

The brochure is illustrated with microphotographs of water-infuel oil emulsions and comparative combustion sequences, and describes a number of successful steam boiler and gas turbine ap**Hitachi Zosen Receives Floating Pontoon Jetty Contract From Arabia**



Yasuhiko Kosa, director and general manager of the Hitachi Zosen Offshore Plant Division, has announced the receipt of an order from the Ministry of Public Works and Housing of the Kingdom of Saudi Arabia to construct three floating pontoon jetties. Installation will begin in the autumn of this year.

Each jetty comprises three pontoons measuring 197 feet in length by 131 feet in width, which are joined end-to-end by hinges and connected to an abutment by a link system. Two jetties will be installed near Thuwal on the Red Sea, and the third near Ras Al Ghar on the Arabian Gulf. Each can accommodate ships up to 20,000 dwt.

While these jetties will be used primarily to moor ships bringing housing construction materials to Saudi Arabia as part of the Ministry's housing construction program, they will also contribute to alleviating port congestion in the country. According to Mr. Kosa, this order is the first Hitachi Zosen has received independently from the Kingdom of Saudi Arabia, and the first by the Offshore Plant Division since its establishment in September 1976 to allow the company to become more active in the supply of offshore plants, machinery and steel structures.

The two stern capstans are vertical-axis Smatco versions, with electrohydraulic drive.

Propulsion for the Independence Service comes from two General Motors 16-cylinder 645E5 turbocharged diesels, each rated at 2,875 bhp at 900 rpm. They drive a pair of 132-inch Coolidge four blade stainless-steel propellers through Falk 4.35:1 reduc-



A unique ship "delivery" took place when Campbell Industries presented this handcrafted model of the tug/supply vessel Constitution Service to Zapata Corporation of Houston, Texas. Campbell president Paul I. Stevens (left) and Zapata construc-tion representative Ed Parker (center) hold the all-wood model as its builder, Joe Silva, explains some of the ship's finer details. Mr. Silva, who is Campbell's hull design and construction supervisor, has previously built models of the company's famous tuna seiners, one of which is on permanent display at the Smithsonian Institution in Washington, D.C.

May 1, 1977

plications.

For further information, contact Allen A. Andrews, Manager, Communications, Gaulin Corporation, 44 Garden Street, Everett, Mass. 02149.

Evergreen Handt Corp. Names Frank Hsu

Frank Hsu has been named sales manager of Evergreen Handt Corp., One World Trade Center, Suite 1627, New York. N.Y. 10048, general agents for Evergreen Lines East Coast/Far East Container Service.

The announcement was made by Svend Hansen Jr., president of Evergreen Handt.

Mr. Hsu has been with the Evergreen Marine Corp. for 7 years. In 1974, he came to the United States and helped plan the introduction of this service.

Mr. Hsu studied oceanography at the College of Chinese Culture, Taipei, Taiwan, and served as a second lieutenant in the transportation division of the Chinese Army.

Evergreen operates a fleet of new, specially built container vessels in a regular service to the ports of Pusan, Korea; Keelung and Kaohsiung, Taiwan; and Hong Kong.

SNAME West Gulf Section Meets In Houston, Texas

The West Gulf Section of The Society of Naval Architects and Marine Engineers held its final meeting of the 1976-77 season in the Houston (Texas) Engineering and Scientific Society Building. John C. Chivvis Jr., vice chairman, presided during the technical dinner meeting.

Following the social hour and dinner, Peter Fisher, naval architect, Matson Navigation Company, San Francisco, Calif., pre-sented a paper entitled "The Effects of Variation of Hull Geometric Parameters on Towed Ocean-Going Barges.'

David C. Kilgore of The Offshore Company arranged for the meeting, and Anil Raj of Brown & Root, Inc., arranged for this interesting paper.

Maritime Overseas Awards Contract To Airfilco Engineering

Airfilco Engineering, Inc. of New Orleans, La., has recently been awarded the contract to furnish four Airfilco Inert Gas Systems for the Maritime Overseas Corp. tankers under construction at National Steel and Shipbuilding Company in San Diego, Calif. This is the third such contract for Airfilco Engineering, Inc., the first being four Airfilco Inert Gas Systems furnished for the SOHIO tankers under construction at Avondale Shipyards of New Orleans, followed by the two Exxon tankers also under construction at Avondale.

Two additional Airfilco Systems are under contract for vessels under construction at Sun Shipbuilding & Dry Dock Co. of

Chester, Pa. These will be of design and fabrication of Airfilco Marine Installations, Newbury, England, the U.K. affiliate of Airfilco Engineering, Inc.

Increased interest in regard to inert gas systems seen at Airfilco in recent months tends to confirm an independent report of some months ago forecasting that 65 percent of the world tanker fleet will be retrofitted with inert gas systems over the next five

years. Also, the Safe Tanker Priority Act S.568, which has been introduced by Congressman Hollins of South Carolina, would require inert gas systems on all tankers offloading any oil in any U.S. port.

Only vessels fitted with inert gas systems can take advantage of crude oil tank washing which uses crude oil in lieu of water or other cleaning solutions and inplace cleaning equipment. This process produces less likelihood of oil spillage because there is no water from the cleaning process to be discharged overboard. For complete details of all regulations and more technical information, contact **Rita Curtis**, Airfilco Engineering, Inc., 1901 Julia Street, New Orleans, La. 70113.

American Ship Building Names Allen Zang President Of Nabrico



Foxboro/Trans-Sonics keeps 125,000 cubic metres of LNG under control.



Allen Zang Allen Zang has been named president of The American Ship Building Company's Nashville Bridge Company (Nabrico) Division, it was announced in Cleveland, Ohio, by Francis W. Theis, president and chief executive officer of the parent corporation. In his new position, Mr. Zang will direct Nabrico, a major marine construction firm for barges, towboats and related marine equipment used on the nation's Inland Waterway System. Mr. Zang, who was executive vice president of production for St. Louis Ship Division of Pott Industries, which he joined in 1970, had previously been with Hillman Barge and Construction Company as vice president of operations since 1965. Prior to that, he had served in executive capacities at Gulfport Shipbuilding Corporation, and Bethlehem Steel Corporation, Mr. Zang's career also included service with the American Bureau of Shipping, and he is a retired officer in the U.S. Naval Reserve. He has broad experience in construction of offshore drill rigs and lock and dam sections, overhaul of ocean tankers, building of oceangoing tugs, barges, towboats, and dredging equipment manufacturing. He holds a B.S. degree in marine transportation from the U.S. Merchant Marine Academy and a naval architect and marine engineering degree from the Massachusetts Institute of Technology.

Like most of the world's largest LNG tankers, the new El Paso Paul Kayser depends on Foxboro/ Trans-Sonics custody transfer and cargo control systems for accurate product metering, cargo handling and ship protection.

Foxboro/Trans-Sonics instruments provide precise measurements and data logging of cargo level, temperature, and density for custody transfer purposes. For cargo handling, our instruments monitor, record, and control cargo tank pressures, boil-off gas pressure, compressors, inert gas



vaporizers and heaters . . . helping to insure safety, and protecting against the loss of valuable product. Additionally, Foxboro/Trans-Sonics data loggers, linked with an emergency warning system, monitor and continuously record temperatures and pressures in all areas in and around cargo tanks . . . helping to maintain optimum safety standards both underway and in port.

Cargo control and custody transfer measurement systems are but one example of the broad spectrum of control capabilities available from Foxboro/Trans-Sonics, Inc. Our machinery control systems capability has been demonstrated on LNG carriers as well as on VLCC's, product tankers, and bulk carriers.

With over 130 sales and service outlets located in 70 countries, Foxboro/Trans-Sonics is uniquely qualified to integrate, supply, and support instrumentation and control systems for marine and offshore applications on a worldwide basis. For more details on how we can help your application, write: Foxboro/Trans-Sonics, Inc., P.O. Box 435, Burlington, Massachusetts 01803, U.S.A.





1977 SNAME Spring Meeting & Star Symposium

Energy Research In The Oceans

The potential of the sea as a major source of energy as well as the prime route over which huge quantities of fuel are transported makes it particularly appropriate that the theme "Energy Research in the Oceans" has been selected for the first combined Society of Naval Architects and Marine Engineers Spring Meeting and Ship Technology and Research (STAR) Symposium. The SNAME Spring Meeting and STAR Symposium will be held in San Francisco, Calif., on May 25-27, 1977, with the Fairmont Hotel & Tower serving as headquarters.

The interdisciplinary nature of research in the theme area led the Society's invitation to cooperate in this precedent-setting meeting with the American Society of Civil Engineers (ASCE), Institute of Electrical and Electronic Engineers (IEEE) and Marine Technology Society (MTS).

The papers and discussions will cover current research in such diverse areas as development in marine transportation (naval architecture and machinery), offshore platforms (fixed and mobile), ocean thermal energy conversion, and LNG transportation and safety.

All segments of the maritime industry will benefit from the indepth examination of advances in technology in these fields which are vital to the orderly development of energy sources and efficient water transportation.

ity, price) in marine bunkers for performance of steam plants has become increasingly important. Various changes, including modification of valving, variable steam U.S. Maritime Administration repressure, cruising turbines, numlating to improving fuel consumpber of turbine stages, use of bytion aboard ship are described. pass, condenser vacuum and num-These projects address such areas ber of feed heaters, are discussed as combustion improvement, adand evaluated for their impact on vanced marine boiler/burner depart-load economy for both existsign, degraded fuels, propulsion ing and new design plants.

T1-3 "Efficiency Considerations for Future Marine Gas Turbines" by G.J. Baham and H.D. Marron. SYNOPSIS — Navy programs for development of advanced gas turbines for marine use based on modifications and adaptations of aircraft gas turbines are reviewed. Means for improvement in efficiency by use of regeneration, steam-water injection, closed Brayton cycle, waste heat and bottoming cycles are discussed. A limited economic study evaluates the effectiveness of each cycle when applied to the DD 963. SESSION T2 - May 25, A.M. -Offshore Fixed Platforms

Thompson and R.T. Miller. T2-1 "Fixed Offshore Steel and SYNOPSIS - A lightweight ma-Concrete Platforms" by E.M.Q. rine gas-cooled reactor which is Roren, I.J. Foss and O. Furnes. an outgrowth of the nuclear rock-SYNOPSIS—This paper describes et program is described. A study the major features of the recent showing the installation of this engineering advances that have plant in place of gas turbines in supported the development of the a high-performance surface ship fixed offshore platform.

T2-2 "Maximum Wave Load-

them and a set of equivalent loads. The solution of this simplified system is obtained by an efficient numerical technique, and represents a set of boundary conditions on the remaining linear superstructure.

T4-3 "Structural Damage Detection by Measurement of Dynamic Response" by J.K. Vandiver.

SYNOPSIS - Damage to an offshore structure when below the waterline is difficult to determine by inspection. Recently, dynamic techniques have evolved to sense the presence of major structural damage in below-waterline structural elements. This paper describes experiments toward the evaluation of detecting structural damage by these techniques.

RT-1 Round-Table Discussion -All authors from Sessions T1 and **T**3

RT-2 Round-Table Discussion -All authors from Sessions T2 and T4

SESSION T5 - May 26, A.M. -Ocean Thermal Energy Conversion (OTEC)

T5-1 "OTEC—A Survey of the State of the Art" by H.E. Sheets. SYNOPSIS — The OTEC concept is discussed, with emphasis on results of major studies, demonstrating the adequacy of existing state-of-practice in energy production. Emphasis is on system components, economics and geopolitical aspects, with particular attention to heat exchanger development requirements.

T5-2 "Conceptual Design of OTEC Platforms" by E.H. Har-low, R. Cohen and H. Skowbo.

Technical Program

The technical program includes the presentation of 34 papers and four round table discussions. The schedule is as follows: SESSION T1 - May 25, A.M. -Marine Transportation (Machinery)

T1-1 "Updating an Ancient Art -Research and Development Toward Modern Wind Powered Cargo Ships" by W.L. Warner and M.M. Kossa.

SYNOPSIS — A thorough overview of research in the aerodynamics of sails and the optimization of novel rigs for sailing cargo ships is provided. Theoretical and practical limits in sailing ship size are discussed, criteria are offered for the selection of the rig and hydrodynamic characteristics of sailing ship hulls are covered. Conceptual designs of cargo ships in the "handy" 17,000 to 25,000-dwt range are presented.

T1-2 "Improvements in Part ery) Load Performance of Marine Steam Turbines" by B. Siegel. SYNOPSIS — Increases in fuel F.X. Critelli. prices have modified the econom-

ings on Fixed and Floating Platforms" by F.H. Sellars.

SYNOPSIS — The hydrodynamic forces acting on fixed and floating platforms are reviewed and experience with determining maximum wave loads is discussed. The effect of wave non-linearities is covered. Field data for high wave conditions are summarized and is used in several examples to estimate design wave conditions and to calculate maximum wave forces.

T2-3 "Soil-Structure Interaction in the Design of Offshore Platforms" by L.C. Reese.

SYNOPSIS—One of the more crucial technical challenges relating to the safety of an offshore platform is that due to the soil/ structure interaction. This paper discusses laterally loaded pile foundations and other soil/structure interaction problems important to the design of offshore platforms, reviews the state-ofthe-art, and provides indications for future developments.

SESSION T3 - May 25, P.M. -Marine Transportation (Machin-

T3-1 "Marine Fuels-Their Future and Use Aboard Ship" by

SYNOPSIS — The most probable ics of ship operation so part-load course of events (type, availabil-

fects of the change in powerplant SYNOPSIS-The status of OTEC on hull stress, machinery box conceptual designs suitable for size, first cost and operating cost. SESSION T4 - May 25, P.M. -Offshore Fixed Platforms

and a cargo liner is presented. A

discussion is included of the ef-

the forseeable future is discussed.

Various projects underway by the

systems and advanced power-

T3-2 "Nuclear Energy-A Vi-

able Alternative" by Z. Levine,

R.W. Dickinson and A.O. Winall.

SYNOPSIS-The viability of nu-

clear energy as an alternative to

conventional energy sources (i.e.

fossil fuels) for the propulsion of

merchant ships is examined. Crit-

ical factors are explored in detail

which support the conclusion that

nuclear propulsion is a workable

solution for solving the nation's

T3-3 "Maritime Applications of

an Advanced Gas-Cooled Reactor

Propulsion System" by R.E.

energy problems.

plants.

T4-1 "Dynamic Analysis of Gravity Platforms Subjected to Random Wave Excitation" by T. Moan, K. Syvertsen and S. Haver.

SYNOPSIS — Techniques for the analysis of the dynamic motions of offshore gravity structures have now been developed to the point where they are useful engineering tools. This paper reviews these techniques and indicates the important dynamic motions for gravity platforms in random seas.

T4-2 "A Method for Static Analysis of Pile-Foundation Superstructure Interaction in Fixed Offshore Platforms" by M.F. Metcalf and D.B. Gerdes.

SYNOPSIS — This paper offers a method for solving the static interaction analysis problem in a way that improves the interface model and reduces the cost of an analysis. By viewing the elastic superstructure as a single linear "super element," the non-linear character of the interface is confined to a system composed of non-linear foundation components, an elastic element connecting

operation in areas of the tropical and subtropical oceans is reviewed. Characteristics of OTEC platforms, including cost, mooring, maintenance, motions and habitability are compared for proposed designs. Potential contribution to future energy needs is

T5-3 "Prospects for OTEC Energy Utilization" by J.E. Snyder and R.H. Douglass Jr.

projected.

SYNOPSIS — Direct electrical transmission and energy-intensive product manufacturing on site are two approaches to OTEC energy utilization. Relative merit considerations of transmission versus aluminum smelting and ammonia production facility designs include cost, environmental impact, safety, sea motions and demand for product.

T5-4 "Engineering Aspects of OTEC Systems" by L.C. Trimble. SYNOPSIS—The plant described is a closed-loop thermodynamic cycle with ammonia as the working fluid. Considered are the engineering aspects of the system components, naval architecture of the floating spar-type platform, and economics of energy production and utilization.

(continued on page 14)

Maritime Reporter/Engineering News



SNAME Spring Meeting-

(continued from page 12)

SESSION T6 - May 26, A.M. -Offshore Mobile Platforms

T6-1 "Downtime Evaluation for Operations from Floating Vessels in Waves" by B.G. Burke. SYNOPSIS - Methods are de-

scribed for evaluating downtime for a variety of in-ocean operations from floating vessels in waves. Downtime estimates are

determined from the motion characteristics of the vessel in waves, an evaluation of motion parameters and limits directly associated with operations to be performed, and wave conditions to be encountered. Results provide quantitative measures for evaluating feasibility of operations, relative benefits of alternative vessels, and the effectiveness of special equipment and procedures for increasing operating time. T6-2 "Time Domain Simulation

A New Class of Towboats...

of Semisubmersible Platform Motion with Application to the Tension-Leg Platform" by J.R. Paulling Jr.

SYNOPSIS — A numerical timedomain solution of the equations of motion for a floating semisubmersible stable platform offers the possibility of more accurate estimates of vessel motion response in severe sea conditions than are possible by the linear frequency domain technique. Some example calculations are de-

178 176 176

and anchoring forces for a ten-sion-leg stable platform. T6-3 "Theoretical Analysis of Single-Point Mooring Behavior" by D.G. Owen and B.T. Linfoot.

SYNOPSIS — The detailed development of mathematical models for determining the dynamic behavior of single-point mooring instaliations is discussed. Computer results obtained with a simplified five-degree of freedom mathematical model of a single-point mooring system showing the correla-tion that is established by the results of a limited physical model testing program are presented.

scribed in which the technique is

applied to the analysis of motions

T6-4 "Design Considerations of the U.S. Nuclear Regulatory Commission for the Construction of Nuclear Power Generating Sta-tions in the Ocean" by R.A. Birkel and R.J. Bosnak.

SYNOPSIS — Introductory material describing a typical landbased nuclear powerplant is followed by a discussion of the current projects now under re-view by the Nuclear Regulatory Commission bearing on the use of nuclear power generating plants in the ocean. Design verification through scale model testing and analytical modeling for ocean applications of nuclear power generating plants is discussed. The current NRC position on the respective role of scale model testing and analytical modeling is presented.

SESSION T7 - May 26, P.M. -Ocean Thermal Energy Conversion (OTEC)

T7-1 "Theoretical Evaluation of



the Seakeeping Performance of Five Candidate OTEC Platforms" by R.A. Barr and J.F. O'Dea. SYNOPSIS — A Theoretical approach is presented and applied to five platform types-ship, submarine, vertical column stabilized semisubmersible, disc and axi-symmetric spar. Motions and cold water pipe bending moment distributions are investigated.

T7-2 "Studies of Biofouling in OTEC Plants" by F.C. Munchmeyer, J.G. Fetkovich, G.N. Grannemann, L.M. Mahalingam and D.L. Meier.

SYNOPSIS—An experiment program leading to an understanding of the effects of biofouling on the heat transfer characteristics of tubes in an ocean environment is presented in detail. The test apparatus is described, thermodynamic equations are given, initial laboratory tests and preliminary data from in-situ operational testing are discussed.

T7-3 "The Ocean Food and Energy- Farm Project" by H.A. Wilcox.

SYNOPSIS - A project is described which will supply all the food, energy and petrochemicallike material requirements for a small city. Giant kelp farms in the ocean using nutrient-rich deep waters brought to the warm surface are thoroughly reviewed

including farm concept, kelp biology, methane production, upwelling and test farms. SESSION T8 — May 26, P.M. — Offshore Mobile Platforms

T8-1 "Evaluating Stability Characteristics of Self-floating Offshore Towers" by M.F. Metcalf and M.W. Praught.

SYNOPSIS — Traditional techniques of evaluating stability during upending have been supplemented by new procedures involving interactive computer simulation techniques. Stability considerations developed in the design process are compared with regular guidelines and standards in order to point out the extent to which designers today are de-veloping rational stability criteria.

T8-2 "Nonmetallic Materials for Offshore Engineering" by J.D. Stachiw.

SYNOPSIS - Nonmetallic materials, in particular concrete and glass materials, have many potential offshore applications. Research required on properties of these materials is described.

T8-3 "Current Advancement in Automatic Station-Keeping" by C.R. Schaeffner and T.F. Dixon. SYNOPSIS—A description is given of the automatic station-keeping system proposed for the Glomar-40 Class drillship, consisting of conventional mooring and dynamic positioning based on an inertial reference system. A discussion of the computer simulation showing the value of the inertial reference unit is included. RT-3 Round-Table Discussion -All authors from Sessions T5 and T7.

RT-4 Round-Table Discussion

T9-3 "The LNG Ship in a Changing Energy Environment" by W.D. Thomas.

SYNOPSIS — The author's view on the changing worldwide energy situation and the effects of those changes on future LNG ships is presented. A review of shipboard LNG containment systems which are being offered today or have been constructed in the past is also included. The author discusses various design parameters such as speed and

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HIGH SPEED-OFFSHORE VESSELS

power, fuel oil prices, ship size, tank type and size, liquefaction equipment and their effects on the cost of delivery of LNG by ship.

T9-4 "U.S. Offshore LNG Terminals: If and When" by H.S. Marcus and J.H. Larson.

SYNOPSIS—The authors discuss the many factors, economic and non-economic, that will influence

the possible use of offshore LNG terminals in the United States. Also described is the conceptual

design of a computer model that will permit the economic evaluation of alternative LNG logistical systems. Hypotheses are offered concerning the future use of U.S. LNG terminals.

SESSION T10-May 27, A.M.-Marine Transportation (Naval Architecture)

T10-1 "A Look at Future Materials/Structural Design Interfaces" by P.H. Francis, J. Lankford Jr. and T.S. Cook.

(continued on page 16)



All authors from Sessions T6 and **T8**

SESSION T9 - May 27, A.M. -LNG

T9-1 "A Review of the IMCO Code for Gas Ships" by R.J. Lakey, J.W. Kime and T.R. Dickey.

SYNOPSIS — The paper reviews the background of the development of some of the more important requirements of the IMCO Code for Liquefied Gas Ships, such as those for cargo tanks, relief valves and damage stability. It also explains the actions of the Coast Guard in implementing the Code.

T9-2 "LNG Ship Safety Enhanced by Research and Development" by J.L. Howard and R. Kvamsdal.

SYNOPSIS—The authors provide a brief history of the analytical and research work that formed the basis for the Kvaerner-Moss spherical tank design. They go on to describe in more detail the correlation between the analysis and the recent experimental results obtained testing the larger aluminum tanks. Data concerning recent LNG ship collision studies and a discussion of the importance of total ship safety in the as-built condition are included.

May 1, 1977



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Aurand introduces the Extended Shaft Model M cleaning tool that puts whirling, hardened steel teeth to work to solve those really tough maintenance and cleaning problems. Double sets of replaceable steel cutter bundles increase the effective cleaning area of the tool from 8" to 13". One man can quickly clean large, flat areas of virtually any hard surface while walking upright. Use wherever removal of stubborn accumulation or buildup such as rust, scale or paint is a problem. Kits available for converting Model M



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SNAME Spring Meeting-(continued from page 15)

SYNOPSIS — The paper offers a thorough discussion of the performance characteristics of conventional and advanced steels available for maritime structures. The authors outline their perspectives as to the current state of materials technology with specific reference to steel and weldment metallurgical charac-

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fracture performance, load rate effects and structural fatigue. Identification is made of several problem areas that must yet be solved.

T10-2 "Design Concepts for Efficient Use of Prestressed Concrete Ship Hulls" by B.C. Gerwick Jr.

SYNOPSIS-Recent dramatic advances in the utilization of prestressed concrete for sea structeristics, corrosion susceptibility, tures in the North Sea and off ency of Existing Tankers" by

in concrete ship hulls for use as floating platforms, barges and special purpose transport vessels. This paper briefly reviews the history of concrete ships. Illustrations are given of structural details which optimize the advantages of concrete, problem areas are discussed and construction methods are briefly covered. T10-3 "Improving Fuel Effici-

Australia have awakened interest

P.A. Ellingsen, P.D. Fitzgerald, J.E. Goulden, W.C. Squillario and R.C. Uhlin.

SYNOPSIS — This timely paper identifies four main areas in which steps can be initiated to achieve improved fuel efficiency in existing tankers. They are the powerplant and its auxiliaries, the propeller, hull resistance, and navigation and steering. Specific items discussed in each area range from simple operational procedure changes to major modifications.

T10-4 "Fouling Control Means Fuel Savings for the U.S. Navy' by H.S. Preiser, G.S. Bohlander

SYNOPSIS — Based upon a de-tailed study of the subject by the Navy, the paper reviews the characteristics of fouling and describes current underwater hull cleaning and inspection methods. It discusses the interactions among fuel consumption, fouling, and the compatibility of underwater cleaning methods with the antifouling paint coating on a

Special Activities

The following social and special activities have been arranged for members and guests attending the 1977 Spring Meeting:

AUTHORS' BREAKFAST -The authors' breakfast will be held each day of the meeting in the Pavilion Room at 7:30 a.m. for the authors on the current

ORIENTATION BREAKFAST will be held in the Gold Room at 8:00 a.m. on Wednesday, May 25. This breakfast is for registrants, spouses and guests. It will pro vide an opportunity to learn more about the meeting program and to answer questions regarding San Francisco. The president of the Society, Robert T. Young, will open the 1977 Spring Meeting at this time with his welcome WINE COUNTRY TOUR-An all-day tour, starting at 9:30 a.m. on Wednesday, of California's famous Napa Valley, producer of classic wines since 1858. Visits to at least two wineries, wine tasting and a call at picturesque Yountville, founded in 1870. PRESIDENT'S RECEPTION Society president, Mr. Young, will be host to all registrants and their spouses at this traditional social event. It will be held at 6:00 p.m. on Wednesday in the Roof Garden **OPTIONAL TOURS** have been arranged for Thursday, starting at 9:00 a.m. During registration hours a tour representative will be available to accommodate those wishing to take tours of San Francisco Bay Area, such as Muir Woods and San Francisco City Scenic Tour. **GOLDEN GATE LUNCHEON** will be held in the Gold Room on Thursday, starting at 11:30 a.m. Ladies and guests may join the registrants. Luncheon will feature the presentation of Society



citations and an address by Con- processing 200,000 tons of steel gressman Paul N. McCloskey Jr., member of the House Committee on Merchant Marine and Fisheries.

SAN FRANCISCO BAY CRUISE will be held on Friday, starting at noon. Board buses at the Fairmont Hotel for transportation to the 550-passenger Harbor Emperor for a two-hour guided tour and see some of San Francisco's most famous landmarks, including Golden Gate Bridge and Alcatraz Island.

FAREWELL BALL (dress is optional) will be held in the Vanderbilt and Terrace Rooms (general reception) and Grand Ball Room (banquet) on Friday, starting at 7:00 p.m. The grand finale of the week's activities will be a banquet with music by Ernie Heckscher's internationally famous dance orchestra.

The Host Section

The Northern California Section of SNAME has planned and will host this Spring Meeting. The officers of this Section are: William B. Swan, chairman; Murray M. Montgomery, vice chair-man, and David C. Pritchard, secretary/treasurer.

The special committees and their chairmen for the Spring Meeting are: 1977 Spring Meeting Steering Committee—Arthur J. Haskell, Technical Program— Nathan Sonenshein, Social Affairs -Richard M. Engelbert, Registration-W. Graham Fraser, Fund Raising-Morris Guralnick, Hotel Arrangements-Wilson Stackhouse and Robert Lamb, Finance -Henry Kozlowski, and Publicity -Eugene K. Pentimonti.

annually, the Western Hemisphere's longest drydock at 1,600 feet, and a 900-ton gantry crane. Currently under construction or on order at the new yard are three liquefied natural gas (LNG)

Navy.

carriers and three ultra large crude carriers (ULCCs). The world's largest shipyard also has under construction or on contract 14 vessels for the United States

Plan Reconstruction Of The Ezra Sensibar

Construction Aggregates Corporation, 120 South LaSalle Street, Chicago, Ill., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction of the hydro-barge Ezra Sensibar. Estimated actual cost of the

reconstruction is \$2.5 million. Bottom dump marine valves will

be installed. The 10,316-gross-ton hopper dredge will then be used in marine construction work, primarily along the U.S. East Coast or in the Gulf of Mexico. A shipyard was not indicated in the application.

The applicant is a wholly owned subsidiary of Sensibar Enterprises, Inc., and is engaged in marine and heavy construction work, particularly hydraulic and hopper dredging.

Almost everything on land and sea



Newport News Opens One-Half Acre School To Train Welders

The nation's most modern training facility for welders was recently opened at Tenneco's Newport News Shipbuilding, Newport News, Va.

The half-acre school, specifically designed for welding training, contains 140 stations, including two stations in a clean-room environment for training in nuclear welding, 96 for stick welding, 12 for semi-automatic welding, 18 for pipe welding, eight for carbon arc cutting, and six for training individuals in acetylene and propane burning.

The school also features X-ray equipment for testing welds and classroom space for facets of welding best taught by blackboard training.

Currently, the enrollment is 420 trainees, with a total of 60 instructors working three full shifts.

The school is located in the shipyard's newly completed 150acre Commercial Yard, which features an 11-acre all-weather steel production facility capable of

May 1, 1977

Three Yards Each Receive \$1 Million To Develop Plans For Destroyers

From a group of 13 interested shipbuilders, the Naval Sea Systems Command (NAVSEA) has selected three shipyards to assist in development of contract plans for the DDG-47 Aegis guidedmissile destroyer program: Bath Iron Works Corporation, Bath, Maine; General Dynamics Corporation, Quincy (Mass.) Ship-

building Division; and Ingalls Shipbuilding Division, Litton Industries, Inc., Pascagoula, Miss. These "technical characterization studies" awards — valued at \$1 million per company—resulted from Requests for Proposals (RFP) issued late last year. All three shipbuilders are expected to compete for detail design and construction of the new DDG-47class of Navy vessels. The contract for the lead ship is expected to be placed in early summer 1978.

Borg-Warner Corp. York Division Names Port Electric Supply

Ed Toale, manager of Port Electric Supply Corp., Refrigeration Division, has announced a marine refrigeration and air-conditioning distributor agreement with York Division, Borg-Warner Corp., York, Pa.

York — a leader in marine refrigeration and air-conditioning for over a half a century — and

We hope you'll never need an emergency night number, but if you do, here are eight you can count on.



Port Electric, one of the largest and most diversified marine and electrical speciality houses in the United States, offer the maritime industry the expertise of nearly 75 years.

The Port Refrigeration Division carries an extensive York inventory for immediate shipments throughout the United States and around the world.

For literature on all Port Electric Refrigeration products, write Ed Toale, Port Electric Refrigeration Division, 155-157 Perry Street, New York, N.Y. 10014.

U.S. Navy Approves LM2500 Contract For Iranian Destroyers

The U.S. Navy has approved a contract between General Electric Company's Marine and Industrial Projects Department and Litton Industries that will provide 16 LM2500 marine propulsion modules. The modules will be installed in DD-993 class destroyers that have been ordered by the Iranian Navy from the U.S. government.

The destroyers for Iran will be similar to the highly successful DD-963, Spruance-class ships now in production for the U.S. Navy. Each Spruance-class destroyer built by Ingalls Shipbuilding Division in Pascagoula, Miss., is powered by four LM2500 marine gas turbine modules, each producing 21,500 horsepower.

Recently, GE's Marine and Industrial Projects Department delivered the last of 120 modules to support the U.S. Navy's 30-

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Marine Drilling Awards Bethlehem-Beaumont Drill Rig Contract

Bethlehem Steel Corporation's shipyard, Beaumont, Texas, has received a contract to build a 275foot jackup drilling rig for Marine Drilling Company of Corpus Christi, Texas.

The rig will be the latest in a long line of drilling vessels built by the yard for James C. Storm. Ralph A. Leaf, general man-

ager of the Beaumont Yard, said that work on the rig will begin immediately, providing jobs for more than 250 employees over the course of construction. Mr. Leaf said scheduled completion of the vessel is October 1977.

The mechanical diesel rig will have a maximum drilling capacity of 25,000 feet in up to 250 feet of water. The rig will be built in accordance with U.S. Coast Guard regulations, and will be classed by the American Bureau of Shipping.

This latest jackup rig for the Storm interests will be operated in the Gulf of Mexico, Mr. Leaf said.



Cayman Island Oil Transfer Terminal To Start Operations—Will Cut U.S. Costs



SIGNING CEREMONY - Affixing their signatures to the lease agreement for the Little Cayman oil transfer operations, were, left to right: (seated) Vassel Johnson, Cayman Islands financial secretary; Capt. Harold E. van der Linde, head of Cayman Energy, Ltd.; Gerald Waddington, attorney general for Cayman Islands, and John Abberly, attorney for Captain van der Linde. (Standing) Capt. Charles Kirkconnel, ExCo member for communications works and local administration, and **Craddock Ebanks**, MLA member. Also present at the signing (but not shown) was **Ralph Long** of Washington, D.C., legal counsel for Harris Oil Corporation, one of the stock-holders of Cayman Energy, Ltd.

The first transfer of crude oil from VLCCs and ULCCs to smaller tankers off Little Cayman Island in the British West Indies will take place in the near future. This operation will be the start of what is planned to be a millionbarrel-a-day oil transshipment complex aimed at supplying U.S. Gulf and East Coast ports.

Planning for this facility has been underway for the past six years, and was culminated in

oil from the Arabian Gulf to 30,000-70,000-dwt tankers. Storage facilities on shore for 10-million barrels of crude oil and a two-ship berth will be constructed on 3,200 acres leased for 99 years by Cayman Energy.

This island is strategically located for this operation — it is about 800 miles closer to U.S. refineries on the Gulf Coast than other transshipment terminals. Also, Mr. Smith stated that only 120yards offshore the water depth plunges to more than 600 feet. This provides for a short trestle leading out to dolphins for mooring. Captain van der Linde estimates that this location will reduce the cost of shipping oil to the U.S. by 8 to 10 cents per barrel. The facility will be available to all oil companies on a nonexclusive basis.

month and a guaranteed \$3.6 million the first year. Cayman Energy, Ltd. is headed

by Captain van der Linde, who has been involved in oil transportation for many years. A grad-uate of the U.S. Merchant Marine Academy, he has served as a ship's master, was operating manager for U.S. Bulk Carriers, founded Penn Shipping Company, was president of Worldwide Transport, a Continental Oil Co. tanker company, and founder of his present company, Transportation Concepts and Techniques, Inc.

American Club Elects Board Of Directors

The American Steamship Owners Mutual Protection and Indemnity Association (The American Club) has announced the election of two new members to its board of directors. Joining the club's governing body were Bruce A. McAllister, president, McAllister Brothers, Inc., and Martin F. Ytuarte, executive vice president, Prudential Lines, Inc. Adolph B. Kurz, president of Keystone Shipping Co., was reelected chairman. Norman Scott, president of American President Lines, Ltd., was reelected deputy chairman. John H. Cassedy, president of

Shipowners Claims Bureau, Inc., was elected secretary, and Louis J. Gusmano of Kirlin, Campbell & Keating was appointed counsel. Other directors elected were George C. Halstead, president,

Alcoa Steamship Company, Inc.; Herbert A. Crompton, treasurer, Trinidad Corporation; Thomas J.





Robert H. Splan

William J. Klauberg, vice president-Eastern Division of United States Lines, has announced the appointment of Robert H. Splan as general manager-South Atlantic Region. He will be based at the Lines' office in Atlanta, Ga., and will report directly to the Division vice president in New

York. Mr. Splan will be responsible for all of the Lines' activities in the Southern area of the country, including port operations in Jacksonville, Savannah, Charleston and New Orleans. In addition, sales offices and agents in Miami, Tampa, Mobile, Memphis, Dallas and Houston will be under his jurisdiction.

Mr. Splan was previously West Coast Division general sales manager located in Oakland, Calif., before his current appointment. He joined the company in 1974. Previous shipping experience includes positions as manager of special accounts for Sea-Land Service, and a number of execuive assignments for that company, including California sales manager for the Far East Division and sales management positions in Denver and Charleston areas. He is a graduate of San Jose State University and holds a Bachelor of Science degree in industrial management.

March by the signing of an agreement by the Cayman Islands government and Cayman Energy, Ltd., an offshoot of Capt. Harold E. van der Linde's firm of Transportation Concepts and Techniques, Inc. of New York, N.Y. The announcement of the operation was made recently in New York by Clyde Smith of Transportation Concepts and Techniques, Inc.

The initial phase of the project calls for the offshore transfer of

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The Cayman Islands government will receive a royalty paid on a per barrel of oil transferred basis, with a minimum fee per



WHAT IT WILL LOOK LIKE - Aerial view of the portion of Little Cayman, retouched by an artist, showing the entire oil transfer complex. The international engineering and construction firm of Stone & Webster is the managing contractor for project. Note oil-spill containment booms around tankers in foreground.

Smith, president, Farrell Lines Incorporated; John J. Ervin, executive vice president, Trinidad Corporation: Carl Swenson, executive vice president, Farrell Lines Incorporated; John T. Di Palermo, treasurer, American President Lines, Ltd.; J. Donald Kenny, vice president, secretary, general counsel, American Presi-dent Lines, Ltd.; John I. Alioto, president, Pacific Far East Line, Inc.; Sal P. Tarantino, executive vice president, Pacific Far East Line, Inc.; Joseph W. Dickover. vice president and general manager, States Steamship Company; Edward J. Kettel, assistant treasurer, Atlantic Richfield Company; Charles Kurz II, vice president, Margate Shipping Company; Spyros Skouras, president, Prudential Lines, Inc.; Edward P. Walsh, president, Waterman Steamship Corporation; and Erik F. Johnsen, president, Central Gulf Lines, Inc.

The Association's board of directors actively participate in all of The American Club's business, attending monthly meetings, approving claim settlements, consulting with its investment advisor and determining operating policies. The American Club is managed by Shipowners Claims Bureau, Inc., and is the only mutual protection and indemnity club in operation in the United States. Marine International Inc.

United States Lines' 15,000mile Tri-Continent Containerliner Service provides 38 fast vessels traveling between Europe, the East and West Coasts of the United States, Panama, Hawaii, Guam, and Far East and Southeast Asian ports.

Barber Steamship Names

Senner Executive VP

E.J. Barber, chairman of the board, Barber Steamship Lines, Inc., New York, N.Y., announced the appointment of Charles R. Senner as executive vice presi-

dent. Mr. Senner will have responsibility for Barber Blue Sea Service to the Far East, Atlanttrafik Express Service to Australia and New Zealand, and Nordana Line to the Mediterranean. Prior to joining Barber Steamship Lines, Mr. Senner was president of Boise-Griffin Steamship Company, Inc., and vice president Liner/Tramp Division of States

Our new ELAC LAZ 100 is a professional six-inch recording echosounder specially priced for crew and work boats. It provides accurate navigation information in

shallow and deep water to 340 fathoms using patented Greyline recording and nine overlapping ranges with varying initial sounding depths. On the three shallow ranges (14, 24, or 34 fathoms) navigation soundings are shown in large-scale detail, where one inch on paper equals just 2.5 fathoms. Completely selfcontained, the LAZ 100 has a regulated Salaa ah **sala ma**sala ah sa power supply . 1 10 drawing only 30 watts. A digital indicator or scope unit is optional.

Which ever way you look at it, value means only one thingthat you get what you pay for. And nobody gives you more value than ITT Decca Marine. Value that makes spending extra worth extra ... and value that's guaranteed.

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Sperry Vickers Names Charles Smith Vice President



Charles F. Smith

Sperry Vickers has appointed Charles F. Smith vice president of business development and government affairs for its Interna-tional Group. Mr. Smith will be located at the firm's Troy, Mich., World Headquarters.

Prior to his latest appointment, Mr. Smith had spent four years as vice president-Europe. He also served as vice president and general manager of Sperry Vickers, Canada, and as managing director-Europe.

Mr. Smith holds a B.Sc. degree and an M.Sc. degree from Queens University in Kingston, Ontario. He is a registered professional engineer.

Sperry Vickers, a division of the New York-based Sperry Rand Corporation, is a leading producer of hydraulic components for inplant machinery, mobile equipment, aircraft, and marine applications

cuzzi water-jet propulsion pumps made of corrosion resistant cast iron.

This is the biggest single sale to a foreign government in the company's almost 20-year history. Uniflite, however, is the largest builder of fiberglass boats for the U.S. Navy, having sup-

early 1960s, including more than 500 of the PBR river patrol boats for use in Vietnam. It has also atories (UL) attesting to the sold military and nonmilitary strength and fire retardance of special-purpose patrol craft 23 to the hulls, the only boats that 53 feet to numerous foreign coun- merit this label. tries and to U.S. state and municipal governments.

All Uniflite boats are of fireplied more than 2,000 such craft retardant fiberglass construction,



gines driving through 14-inch Ja- 14 to 56 feet in length since the and its recreational and commercial craft are all classified and

> For more information, contact Al Hill, Commercial and Military Sales, Uniflite, Inc., P.O. Box 1095, Bellingham, Wash. 98225.

Uniflite, Inc., Sells **6 Corsair Patrol Boats** To Union Of Burma

Six 32-foot high-speed fire re-tardant fiberglass Corsair river patrol boats, similar to the U.S. Navy's PBRs, have been sold to the Ministry of Defense of the Union of Burma for a contract price of \$606,000 by Uniflite, Inc., military, commercial, and recreational boat manufacturer headquartered in Bellingham, Wash.

James J. Doud, Uniflite executive vice president and general manager, said the company has received an export license from the U.S. State Department for this order. State Department approval is required whenever a product on the U.S. munitions list is sold to a foreign country. The vessels will be shipped to Rangoon within 10 months with spare parts, but not including any military equipment.

The Corsair-class boats built only by Uniflite are water-jet propelled for speeds up to 25 knots, even in shoal or weed-filled rivers or coastal waterways. They draw 18 inches, have a beam of $11\frac{1}{2}$ feet, and are powered with twin Detroit Diesel 200-hp en-

May 1, 1977

Located at Swan Island Ship Repair Yard, we've been handling major ship repairs and conversions for more than 40 years. Largest of the three drydocks today is 661'x 114'. Another now under construction will measure 992'x 192' and be the largest drydock on the U.S. Pacific Coast.

Through efficient management, maintenance of a productive labor force and ongoing modernization of facilities, we continue to keep our costs exceptionally low. Our savings mean a direct savings to you with no sacrifice in quality.

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University Of California Plans To Build Large Oceanographic Vessel

A new oceanographic research vessel has been designed and is to be built for the prestigious Scripps Institution of Oceano- research ships and two research graphy of La Jolla, Calif. The 170-foot, twin-screw vessel is to

fleet that have served their useful life.

Scripps Institution of Oceanography is the oceanographic division of the University of California, San Diego, and has been in continuous operation for over 72 years. Scripps operates seven platforms (one of the platforms is the R/P FLIP). Their fleet

nautical miles at sea. The University of California was designated the nation's seventh Sea Grant College, and has a staff of over 270 who enjoy worldwide reputation for excellence in oceanographic research.

The prime requisite of the design for this vessel is "versatility," since the kaleidoscopic range of experiments conducted by the re-

signing for experiments which involve net towing, hydrographic casts, seismic tows, deepsea coring, anchor placement, deepsea array placement, dredging, and acoustical observation for geological, biological, bacteriology, chemical, meteorological and oceanographical disciplines, the vessel is outfitted with other special fittings for projects such as towing the 355-foot FLIP, a sparshaped laboratory that is erected at sea.

"The fierce competition for the scarce research dollar has led to the evolution of this new breed of oceanographic vessel - seaworthy, simple, handy, fast and efficient," says Rodney E. Lay, the project manager of the de-sign firm Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Boulevard, Jacksonville, Fla. 32225.

"Since the vessel is similar to a very successful RFM&A de-sign, the R/V Columbus Iselin, built in 1971 for the University of Miami's Rosenstiel School of Marine & Atmospheric Science under a grant from the National Science Foundation, this new design has in effect the advantage of a full-scale mock-up that has been model-basin tested, autec range tested, and most of all, tested by mother nature," says Mr. Lay.

The general arrangements of the vessel are divided into divisions whose locations are of course dictated by function, living/berthing, laboratories, machinery and control.

The living/berthing is designed

More Lift. All Electric. All LeTourneau.

When it comes to long-radius lifting capacity, no other manufacturer quite compares with LeTourneau. Take our unique PCM-120 AS variable radius crane. This rugged, dependable, proven workhorse lifts 50-tons off a 120' boom. Provides 1200 Ft. tons of lift. Plus you can rely on a compact machinery house for a space-saving swing. Optional boom lengths from 60' (18288mm) to 120' (36576mm). Construction to DNV, ABS and API specifications and the assurance that comes only with the name LeTourneau. For details on our PCM-120 AS Crane, or for information on our line of 80,000 lbs. (36288Kg) to 500,000 lbs. (226800Kg) capacity pedestal, gantry or mobile heavy lift cranes, write: Marathon LeTourneau Company, P. O. Box 2307, Longview, Texas 75601 or call (214) 753-4411. Subsidiary of Marathon Manufacturing Company.



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be built to replace other existing spends approximately 1,200 days research vessels in the Scripps at sea and logs up to 150,000 such design. In addition to de-**The LeTourneau Difference:**



Marathon LeTourneau-developed heavy lift cranes serve the offshore industry, marine construction and dockside operations with proven superiority of more than seven million hours in all kinds of hostile environments.

24

around single staterooms for the crew of 12, and 13 scientists. Fully air-conditioned for comfort, the rooms are located where noise and motion are minimal.

1,856 square feet of laboratories are provided, including spaces designated "ocean" laboratory, "dry" laboratory, hydrographic "wet" laboratory, lounge (really a schoolroom/battleground for discussing the doy's findings) discussing the day's findings), STD laboratory, upper laboratory, instrument laboratory and a gravitometer laboratory.

These laboratory spaces are fully outfitted with the tools of the oceanographic trade — benches, chemical hoods, computers, and electronic devices. The design and juxtaposition of these spaces is carefully scrutinized by the scientists who will use them.

Many of the partition bulk-heads of the major laboratory areas are designed to be portable. so the maximum versatility of room arrangements are available to scientists. Also, the decks of these spaces and others are fitted with flush fittings that allow heavy equipment to be bolted at numerous locations.

Other laboratory support spaces "glory hole." The "glory hole" is a 42-inch-diameter tube extending from the 01 deck down through the bottom of the ship

amidship, the purpose of which is to lower special instruments through the sea's interface in a reasonable protected location with least motion.

The exterior decks are laid out again with versatility in mind, including a large sloped stern ramp and flush watertight hatches.

The control area for the vessel encompasses the pilothouse, chart room and after control station. The vessel can be operated from the normal pilothouse position or from the after control station, which is in effect the "nerve center" for all operations of the vessel. The man at this after center has a full view and command control of the ship, and all deck functions.

The main propulsion system consists of two remote controlled Caterpillar D398 diesels, producing 1,700 shaft horsepower through 3.98 to 1 ratio Fernholt & Girsten reduction gear/controllable-pitch mechanisms. The propellers are of special design, controllable-pitch, 6-foot 6-inch diameter and of stainless steel. This propulsion package produces full power speed of 14.5 knots and a sustained sea speed of 13.5 knots. The front power take-offs of each of these engines drive four hydraulic pumps through a Twin Disc four pump mount power take-off. These hydraulic pumps are all electrically con-engine started out trolled and supervised from the after control station, with alternate control points at numerous locations in the ship. The pumps provide power to the bow thruster, trawl winch, electric cable winch, hydrographic winch, deck 12 or 16 cylinders cranes, "A" frame, hydro boom and several "power" stations. Electrical power is provided by two General Motors 8V-71T generators producing a total of 400 kva of electrical power at the various voltages required for power and scientific use. The bow thruster is a 360degree trainable and retractable Schottel S-103LVS, controllable from the pilothouse and the after control station. The thruster will be used in conjunction with the controllable-pitch propellers for precision positioning required in "hovering" at specific locations. Also, the c-p propellers can be declutched, allowing the vessel to travel and maneuver using this bow traction unit alone. A chilled-water air-conditioning system consists of two Carrier Transicold chill-water plants capable of 40 tons of refrigeration. The system serves not only the purpose of keeping the quarters and laboratories cool under tropical conditions, but additionally handles the large cooling requirements of the ship's electronics and computers — the demand of this electronics sometimes requiring cooling even when the vessel is in a heating cycle.

machinery consists of a hydraulically operated stern "A" frame for trawling, launching and retrieving oceanographic equipment over the stern of the vessel; a hydraulically operated hydro boom for launching and retrieving equipment over the vessel's side; three deck cranes ranging in capacity from 3.5 tons to 16 tons, and two Markey hydrographic research winches and one Western Gear trawl winch.

The electronic "brains" of the vessel consists of the following: (1) Sperry MK127X band radar; (2) Sperry MK 16AX56-6 radar; (3) Ametek Straza MX7A Zaxis interface doppler speed log; (4) Model 210 Ocean Applied Research Automatic Direction Finder; (5) Tracor Navigator II Omega receiver; (6) Sperry MK27 gyrocompass system; (7) Precision depth recorder by Cornel

(8) Felcor 210 B wind speed direction sensors and indicators; (9) ITT Mackay transceiver; (10) Gifft Weather Facsimile Receiver/Recorder, and (11) Satellite Navigator MX702B-HP by Magnavox.

The Satellite Navigator plots the vessel's precise position by electronically communicating with satellites that are in "parking" orbits over the earth and solving Corporation, Model FPG-512H; the complex equations necessary.



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Jurong Converts Bulk Carrier To Great Lakes Ore Carrier

In November 1976, Jurong Shipyard Limited of the Republic of Singapore signed a major conversion contract, valued at \$4.5 million, with Nipigon Transport Ltd. of Canada for jumboizing a bulk carrier, the M/V Lake Nipigon, from 22,000 dwt to 25,000 dwt for Great Lakes and St. Lawrence River service.

A main feature of the conversion was the jumboization of the vessel with an additional 202 feet of parallel midbody. The new vessel is 729 feet 7 inches long and has a breadth of 75 feet.

The Lake Nipigon arrived at the yard on November 20, 1976, carrying her last transoceanic bulk cargo of cement kinker from

ATLAS RADARS

and TANKERS.

Japan. After completion, she left the yard at the end of March this year for Canada.

In his remarks at the christening ceremony of the vessel, the chairman of Nipigon Transport Ltd., Howard F. Andrews, reported that the Lake Nipigon would spend her time in the international movement of iron ore and grain. She will transport highgrade iron ore from Sept-Iles, Quebec, on the Gulf of St. Lawrence, some 900 miles into the lower Great Lakes. She will then proceed in ballast north to Lake Superior. There, she will pick up grain and move it out to either the Canadian or American side of the St. Lawrence River. Part of the grain will be processed for consumption in North America, and part will be transshipped around the world.

Other people attending the christening

5

ceremony of the vessel included the Canadian High Commissioner to Singapore, R.K. Thomson, Mrs. R.K. Thomson, and the chairman of Jurong Shipyard Limited, Tan Teck Chwee.

Bethlehem Announces Promotions -John Estes To Beaumont Yard -Sherman Perry To Singapore Yard



John C. Estes

The promotions, effective May 1, of John C. Estes and Sherman C. Perry to general managers of Bethlehem Steel Corporation shipyards were announced in Bethlehem, Pa., by William C. Brigham, vice president in charge of shipbuilding.

Mr. Estes will become general manager of the Beaumont, Texas, shipyard and Mr. Perry will become president and general manager of Bethlehem Singapore Private Limited. Mr. Estes will succeed Ralph A. Leaf, whose retirement has been announced. Mr. Perry will succeed Mr. Estes as president and general manager of the shipyard in Singapore.

A native of Birmingham, Ala., Mr. Estes received a Bachelor of Science degree in mechanical engineering from the University of Texas in 1946. He served in the U.S. Navy from November 1943 to June 1946 and again from February 1952 to December 1953, attaining the rank of lieutenant.



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30			

Starting his career in shipbuilding in 1946, Mr. Estes joined Bethlehem Steel in 1949 at the Beaumont facility as a design engineer. After he returned to the yard in December 1953 from naval duty, he became assistant chief of design in 1954 and chief of design in 1958. About 11/2 years later he became chief engineer, and in November 1971 he was named assistant to general manager of the Beaumont Yard.

Two years later, Mr. Estes was appointed president and general manager of Bethlehem's shipyard in Singapore.

He is a member of The Society of Naval Architects and Marine Engineers, American Society of Mechanical Engineers, and is a licensed professional engineer in Texas.

Mr. Perry, a native of White Sulphur Springs, W. Va., joined Bethlehem Steel in 1942 at its former Fairfield, Md., shipyard, where hundreds of Liberty ships were produced during World War II.

He was transferred to the corporation's shipyard at Sparrows Point, Md., in 1945, where he worked with planning activities. He became a supervisor in production planning in 1951, and then held various management positions in the yard, becoming assistant general superintendent in 1968. A year later, he was transferred to the Baltimore Yards as assistant chief planner.

In 1971, Mr. Perry was assigned to the Singapore facility as assistant to general manager and was promoted to assistant general manager in 1975, the position he held until his appointment as president and general manager of the Singapore Yard.

Norwegian Firm Invests





SNAME Issues Call **For Technical Papers** For 'Propellers 78'

The Society of Naval Architects and Marine Engineers has announced that a second symposium on propellers is being planned by Panel M-16 (Modernization of Propulsion Shaft Sys-

and Research Program. The symposium is planned for either June 7 and 8, 1978, or June 14 and 15, 1978, with the earlier date being preferred, in the Newport News/Norfolk, Va., area under the auspices of the Hampton Roads Section of the Society. In order to develop the program and detailed planning, the

tem) of the Society's Technical Society has issued a call for papers. Papers on the following subjects are particularly desired, but other related topics are not excluded: propeller strength, analytical procedures, experimental data and correlation of design and experience as these subjects apply to fixed-pitch propellers, controllable-pitch propellers, contrarotating propellers, overlapping

propellers, shrouded propellers, highly skewed propellers, and cycloidal propellers; metallurgical properties; failure criteria and economic costs, and construction, maintenance and repair.

Anyone interested in preparing a paper should notify the Society at 74 Trinity Place, New York, N.Y. 10006, by June 1, 1977. Authors will be notified of the acceptance of their paper by July 1, 1977. A draft of the complete paper by October 1, 1977, will be required.



Nav-Com, Inc. **Names Provenzano VP-Engineering**



The engineering department of Nav-Com, Inc., a marine electronics distributor located at 2 Hicks Street, North Lindenhurst, N.Y., is now headed by Jack Provenzano, one of the country's foremost electronic engineers specializing in the design and development of navigation and communication equipment for commercial and recreational vessels. A graduate of Lowell Technical Institute, Mr. Provenzano has developed marine electronics for AT&T's High Seas Radio Stations. He comes to Nav-Com from Communication Associates, Inc., where from 1973 to the present. he served as senior project engineer, assistant chief engineer, and senior chief engineer. A loran receiver, developed under his direction and using his designs, recently won the "National Marine Electronics Association Award for the Best Loran Receiver in the Industry." Mr. Provenzano's duties at Nav-Com include the supervision of the engineering staff responsible for equipment installation and service, plus establishing and maintaining the highest level of test procedures and quality assurance. In addition, he will direct the engineering aspects of Nav-Com's unique consumer protection program which ensures that every piece of equipment is properly installed, operating to its fullest capability, appropriate for the vessel, and suited for the job to be done. Mr. Provenzano will also supervise the service provided under the terms of Nav-Com's optional Extended Limited Warranty which protects equipment beyond the terms of the manufacturer's warranty.

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Tampa Ship Repair Delivers Candies Barge —Keel-Laying Follows

Tampa Ship Repair & Dry Dock Co., Inc., Hooker's Point, Tampa, Fla. 33601, a division of The American Ship Building Company, launched a 350-foot by 100foot by 20-foot deck barge, the O.C. 350, on February 16, 1977, and delivered it the next day. The barge, owned by Candies Towing Company of Des Allemands, La., will join the Candies fleet, which primarily services the offshore oil industry.

Marine Management Systems, Inc. Receives \$190,000 MarAd Contract

Marine Management Systems, Inc., 300 Broad Street, Stamford, Conn. 06901, is developing a fully automated ship data system for the U.S. Maritime Administration (MarAd) under a recently awarded \$190,000 contract, it was announced recently. The announcement was made

by Eugene D. Story, president of a variety the Stamford-based firm which registers.

specializes in computerized management systems for the international marine transportation industry. Implementation of the system is scheduled by the end of 1977.

Mr. Story said that his company is automating the data entry and file maintenance portion of MarAd's existing ship data system, which until now has entailed the manual collection of ship characteristics information from a variety of ship publications and registers.

With a substantially improved data entry capability, MarAd will be able to expand its current data base of vessel characteristics which includes all merchant vessels in the world, 1,000 gross registered tons or more.

"The use of newly automated data from ship classification societies, such as Lloyd's Register, the American Bureau of Shipping, and Det norske Veritas, will vastly improve the accuracy of the data stored and will streamline the data entry process," he stated.



Shown left to right, are: K. Fraser, project manager; Ernest A. Upmeyer III, vice president Electric Fuels Corporation, and Donald J. Main, vice presidentmarketing and sales, Tampa Ship Repair & Dry Dock Co.

On February 18, Tampa laid the keel for a 450-foot by 82-foot by 30-foot bulk coal barge. The owner, Electric Fuels Corporation, a subsidiary of Florida Power Corporation, plans to use the barge to carry coal into their Crystal River, Fla., plant. The cost of the barge will be in excess of \$5 million.

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New Hydraulic Hoist Literature From Gearmatic

The GH-85 Hydraulic Hoist recently introduced by Gearmatic Co. Ltd. provides equipment manufacturers with a simple, compact unit for a wide range of hoisting applications.

pact unit for a wide range of hoisting applications. With line pulls of up to 8,570 pounds (3,887 kilograms), and line speeds of up to 329 fpm (100 m/min.), the GH-85 weighs in at only 740 pounds. Line storage capacity is 738 feet (225 meters), and the hydraulic motor is rated at 60 US gpm at 2,500 psi. Optional hydraulic motors are also available.

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For complete literature write A. McIntyre, Gearmatic Co. Ltd., 7400-132nd Street, Surrey, B.C. V3T 4X4, Canada.

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SNAME Chesapeake Section Hears Paper **On Analysis Of Advanced Naval Vehicles**



Pictured above at the Chesapeake SNAME meeting, left to right: Walter G. Schmid, Membership Committee; P. Payne, discusser; Capt. Richards T. Miller, USN (ret.), Awards Committee; William D. O'Neil, author; Frank Sellars, Section chairman; Reuven Leopold, Section vice chairman, and Adm. Willis Barnes, NAVSEC.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held its fourth meeting of the 1976-77 season at the Ramada Inn in Bethesda, Md. The subject of the meeting was a talk on the analysis of advanced naval vehicles.

Presentation of the paper entitled "Advanced Naval Vehicles —Who Needs Them?" followed a social hour and dinner. The author of the paper was William D. **O'Neil,** Staff Specialist for Naval Vehicles and Mines, Office of the Director of Defense Research and Engineering. The author presented his views on the three questions which must be answered in assessing any advanced naval vehicle proposal. These questions isfactory answers. are: — Can it be done? — If it can be done, how much will it riod took place.

cost? — How much would it be worth?

> Most of the paper dealt with the question, "How much would it be worth?" The author presented his suggestions for answering this question and noted that part of the question of worth can be addressed by the question, "What is it for?" He also noted that 95 percent of the time, the question "What is it for?" generates one or more of the following five basic answers: (1) Carrying helicopter (or V/STOL aircraft); (2) ASW; (3) It goes fast; (4) Replacing the conventional surface ship, and (5) There is a firm military requirement. In most cases there are not very sat-

At the conclusion of the presentation, a lively discussion pe-

Hitachi Zosen Names Norimasa Ishii Manager Kanagawa Shipyard



Norimasa Ishii

Norimasa Ishii, manager of the shipbuilding department and hull outfitting department of Hitachi Zosen's Sakai Shipyard, has been named manager of the Kanagawa Shipyard.

He replaces Giichi Miyashita, who will take office as senior managing director of Tomioka Machinery Co., Ltd., a Hitachi Zosen affiliate specializing in the manufacture of machinery for pulp and paper plants.

The Kanagawa Shipyard specializes in the construction of small craft, including hydrofoils, and the repair of medium-size ships. The yard also contains fabrication facilities for various land plants, steel structures and indus- a month each year starting in trial machinery, including pulp and paper machines, towers and Mr. Roper. He also stated that vessels for chemical and petro- the contract with El Paso will chemical plants, refuse incinera- commence in January or Febru-

Norfolk Ship Orders 950-Foot Drydock

From Brazilian Yard

Norfolk Shipbuilding & Drydock Corp., Norfolk, Va., has ordered a 950-foot floating drydock to help fulfill a long-term contract involving the annual drydocking and repair of liquefied natural gas (LNG) carriers. This will be one of the largest drydocks of its kind in the world.

Ishikawajima do Brasil Estaleiros S.A. (Ishibras) will build the drydock with delivery scheduled for late December 1978, according to John L. Roper III, president and chief executive officer of Norfolk Shipbuilding.

The drydock will be moored alongside a new 1,030-foot pier the company is building at its Berkley, Va., plant, situated on the southern branch of the Elizabeth River.

The LNG vessel servicing contract is with El Paso Marine Co., which has nine of the carriers under construction in U.S. and French shipyards.

The ships will be used to carry LNG from Algeria to terminals in Maryland and Georgia. The vessels will be about 940 feet in length.

It is expected that each of the nine El Paso vessels will be in the shipyard for approximately the spring of 1979, according to tion plants, bridges and sky- ary 1979 and continue for six

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RELIABILITY – The Sternlign utilizes five tilting pads to support the tailshaft. This design, which is also used widely in industry, allows the Sternlign to always maintain exact alignment with the tailshaft. Since misalignment is the largest cause of bearing wear and failure, the Sternlign provides a reliability never before available.

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Reliability and serviceability are two of the many unique features of the Waukesha Sternlign Tailshaft Bearing. Write for our free Sternlign Catalog W6A or call your Waukesha Bearings representative to get all the details about Sternlign Tailshaft Bearings.

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years. According to Mr. Roper, the drydock will have a lifting capacity of 54,250 tons, and will be fitted with automatic cleaning and painting arms along with a system of sensing and deflection instrumentation. The keel for the drydock will be laid in June. J.J. Henry Co., Inc., New York, N.Y., naval architects, has designed the facility.

Mr. Roper stated that the drydock's construction is expected to take about 15 months, with the towing time from the Ishibras yard, Rio de Janeiro to Norfolk taking about 45 days.

National Cargo Bureau **Promotes Capt. Reed**

National Cargo Bureau has announced the promotion of Capt. B.F. Reed to senior surveyor in the Port of New Orleans, La. Captain Reed will continue to serve under the jurisdiction of Capt. Robert C. Dobson, deputy chief surveyor, east Gulf Coast. Captain Reed has been employed in the New Orleans office of the Bureau since 1970. His prior experience was as operations manager of E.S. Binnings, Inc., and his sea-time was with Gulf and South American Steamship Company.

Maritime Reporter/Engineering News



Robert E. Apple **Named President Stanwick Company**

The Stanwick Corporation has announced the appointment of Robert E. Apple as president of the Stanwick Company, a division located in Norfolk, Va.

Mr. Apple, who is chairman of the Los Angeles Section of The Society of Naval Architects and rector led the Litton team in win-

Marine Engineers, has over 25 years of experience in the maritime industry. His last position was chairman of the board of the Hydrofoil Corporation of America. Prior to that, he was president of Harbor Marine Industries, a complex of two shipyards and a marine engineering firm. Previously, he was vice president of Advanced Projects for Litton Ship Systems, and as project di-

ning the billion-dollar competition for the General Purpose Amphibious Assault Ship, LHA. Prior to his six years with Litton, Mr. Apple was assistant to the president of the naval architectural firm of M. Rosenblatt & Son, Inc. Mr. Apple is a graduate of the U.S. Naval Academy, and also has a master's degree in mechanical engineering. During his years in the U.S. Navy, he was project

engineer for the machinery de-

sign of the DDG-2 class, DLG-6 class, DLG-16, and DE-1033 class of destroyers, and the first nuclear destroyer and cruiser, DLGN-25 and the CGN-9.



Mr. Apple is a member of the American Society of Naval Engineers and formerly a Class A consultant to the National Security Industrial Association. He has authored numerous technical papers, and was a major contributor to the SNAME T&R Bulletin 3-22, "Reliability and Maintainability Engineering in the Marine Industry."

izes in developing the supporting elements of complex systems, especially commercial, maritime and naval applications. Supporting elements include maintenance subsystems, manning requirements, training programs, spare parts control, and technical information and operation manuals. The company is particularly recognized for its ability to design spartan but highly effective maintenance programs for commercial





Overbeke-Kain Company Names Ronald McClurg



Ronald McClurg has been named chief engineer of the Overbeke-Kain Company, Cleveland, Ohio, according to J.A. Bole, president. Mr. McClurg, a five-year gradu-

ate of the Kent State School of Architecture, joined Overbeke-Kain as chief draftsman in September 1976. His eight-man department includes draftsmen, checkers, and project engineers.

Overbeke-Kain manufactures all types of marine closure products including weathertight and waterproof doors, side ports, hatches, scuttles, and deck hardware. Es-tablished in 1948, Overbeke-Kain is recognized as one of the industry's largest independent producers of closures for both naval and commercial type ships, in-cluding the newer LNG (liquid natural gas), the super oil tankers, and nuclear vessels.

Navy Awards \$968,000 **Fiberglass Patrol Boat**

ments since the mid-1960s.

Widely used in Vietnam, the PBRs have an 11-foot 6-inch beam and 18-inch draft and are powered by twin Detroit Diesel 6V53N engines rated at 210 hp each driving through Jacuzzi model 14YJ water-jet propulsion pumps of special corrosionconsists of two 50-caliber machine and sport fishing boats, 28 to 42

guns forward and a single 50-caliber machine gun aft. The boats will be outfitted with armor, radio, and provision for radar.

Uniflite, which later this year marks its 20th anniversary, is the largest builder of fiberglass boats for the U.S. Navy. It is also a leading manufacturer of fireresistant construction. Armament retardant recreational cruisers

feet, and produces a broad line of commercial boats and specialpurpose craft for use as fire, police, ambulance, excursion, school bus, and enforcement boats. The company has a second plant in Swansboro, N.C., on the Intracoastal Waterway.

For more information, contact Al Hill at Uniflite, Inc., P.O. Box 1095, Bellingham, Wash. 98225.

Introducing The Magnificent New Magnavox Satellite Navigator

Never before has there been a marine navigation system so useful, so easy to operate, and so reliable.

The Magnavox MX 1102-NV Satellite Navigator is the first commercially available satnav system to employ a microprocessor, the computer on a chip.

This means the MX 1102-NV brings a new high performance level to all-weather satellite navigation. Here's why:



Automatic self-test isolates any fault down to The system functions automatically throughthe circuit module level for quick at-sea replacement. Self-contained battery power takes over and an alarm notifies the operator when mai power fails, with no loss of system function.

tomatic or manual. Even set and drift are computed and applied automatically.

Compact, **Easy to Mount**

The receiver, microprocessor and display are contained in a single cast aluminum housing nc larger than a portable tv set. It may be mounted on a table, bulkhead or suspende overhead without modification.

Unparalleled Reliability.

Contract To Uniflite

The U.S. Naval Sea Systems Command has awarded two separate contracts with an aggregate value of \$968,000 for the construction of fiberglass patrol boats, one for the development of a prototype 11-meter (36-foot) high-speed diesel craft to Uniflite, Inc., headquartered in Bellingham, Wash., according to James J. Doud Jr., Uniflite Executive vice president and general manager.

The 11-meter Sea Fox patrol boat will have a deep-vee hull and special shallow-draft propulsion system powered with twin Detroit Diesel 6V92TA engines rated at 450 hp each. It will be adaptable for transportation of special forces or as a small gunboat. The prototype will undergo complete evaluation by the Navy, following delivery scheduled for December 31, 1977. Value of this contract is \$493,000.

The other award is for five 31foot PBR Mark II river patrol boats valued at \$465,000, scheduled for delivery in November 1977. These are fiberglass, waterjet propelled, shallow-draft boats specifically designed for riverine warfare. Uniflite has built about 550 of these vessels for the U.S. Navy and several foreign governout the voyage. It computes and displays ship's position to within 0.1 NM using signals from six orbiting satellites. You need never touch it except to



enter two-digit number codes on the keyboard to call up special information on the display. You can learn to use it in a couple of hours. With direct readout of latitude and longitude, there's no need for special charts or manual computations.

Det Norske Veritas Approved.

The MX 1102-NV has met rigorous requirements for DNV Class Nav N approval. Nothing has been overlooked to ensure zero defects performance, from the use of high reliability components, environmental testing, factory burn-in testing, and finally months-long tests at sea.

New Navigation Information.

Much useful information is readily and clearly displayed on command...Great Circle and Rhumb line courses, heading to steer, distance run, distance to destination, time of future satellite fixes, course and speed made good, and gyro error compensation. Moreover, speed and heading input is au-

Culmination of Years of Experience.

The MX 1102-NV is the result of 15 years of Magnavox design and manufacture of satellite navigation equipment. It is backed by a worldwid service organization, on call anytime, anywhere.

Magnavox Government ai Industrial Electronics Co., 2829 Maricopa St., Torrance, Calif. U.S.A. 90503. Telephone $(213)\ 328-0770$ TELEX 674373.

May 1, 1977





ALMOST A CENTURY OF SERVICE

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A foundry and fully equipped shops for machine, pipe, plate, electrical, boiler and carpentry work are maintained to service all ship and barge repairs, on a 'round-the-clock basis.

U.S.C.G. accepted, certified welders available for pressure and exotic material welding.

PADD is centrally located in the heart of the N.Y.-N.J. port complexes within 3 miles of 9 major oil terminals.

A vast inventory of parts and equipment enables us to complete jobs in less time, thus minimizing extended layovers.





24 hours reliable Marine Assistance

California ASNE Reviews Automatic Position Control



At the March meeting of the Long Beach-Greater Los Angeles Chapter of The American Society of Naval Engineers were, left to right: H.I. Chatterton, publicity chairman; Dr. Maxwell C. Cheung, co-author and speaker; Joseph W. Lovett, program chairman; Nathan Friedland, co-author and speaker; Philip Finkelstein, Chapter chairman; Comdr. E.L. Jones Jr., USCG, secretary; Lt. Comdr. Richard J. Kinnear, USN, Chapter vice chairman, and Wesley L. Lovaas, treasurer.

The members who attended the regular monthly meeting of the Long-Beach-Greater Los Angeles Chapter of The American Society of Naval Engineers in March were rewarded by an evening of good fellowship, fine food, and an excellent technical paper by Dr. Maxwell C. Cheung and Nathan Friedland.

Following the social hour and the usual fine fare at the Ports O'Call Restaurant, the speakers were introduced by program chairman Joe Lovett. Nat Friedland and Max Cheung, co-authored the paper for the evening, titled "Automatic Position Control—An Advanced Mooring Concept."

Their paper presented a new development in the ancient art of mooring — automatic positioning. By means of a computer, either onboard or by radio link, the master of a deeply moored ship or platform receives insion within the allowable tensions of the mooring lines catenaries.

They described the requirements for deep mooring, pointing out the effects of platform size and configuration, water depth, bottom characteristics, sea and weather conditions, permissible excursion limits, and hardware limitations. Current spread mooring systems are also described, especially those of a composite configuration using both chain and wire rope mooring lines.

Their paper discusses the design procedures and automatic positioning program in considerable detail, together with examples of the computer program. They also describe the required hardware for both manual and automated systems. The computer output is shown to be used directly to adjust the mooring lines automatically in the fully

stant and simple information as to the optimum deployment of his mooring lines to suit changing weather and sea conditions. The computer print-out lists the modifications to be made to the lengths of each mooring line to maintain the prescribed limits of excur-

automated system.

The paper was enjoyed by all and elicited much discussion. Copies may be obtained by request, addressed to Comdr. E.L. Jones Jr., Eleventh Coast Guard District, 400 Oceangate, Long Beach, Calif. 90822.

Alnor Bulletin Describes

Diesel Exhaust Monitor

A new digital instrument for monitoring diesel engine cylinder exhaust gas temperature (EGT), the first device of its kind using a microprocessor to combine all the main EGT monitoring functions into a single, compact package, is being introduced by Alnor Instrument Company.

Designed primarily for marine applications and industrial use with compressor, pumping or power-generating diesels, the new system continually scans up to 32 engine cylinders at a rate of one zone per second, comparing the temperature of each cylinder against preset high and low limits, and against the most recent average temperature of all cylinders. At the same time, an illuminated display of .43-inch-high sevensegment LED readouts shows the number of each cylinder as it is scanned, the actual temperature of that cylinder, and the amount (degrees) by which this temperature deviates from the average cylinder temperature.

For an illustrated data sheet or other information, contact **Donald Fox**, Alnor Instrument Company, 7301 North Caldwell Avenue, Niles, Ill. 60648. Phone (312) 647-7866.

New Patterson-Kelley Compact Water Heater For Ships

Patterson-Kelley Company introduces the Compact II water heater, a high-capacity, semi-instantaneous unit that delivers 2 gpm to 264 gpm of 140° F water.

Compact II operates on steam, boiler water or heat-transfer fluids. A completely packaged heater, it is delivered for hook-up.

The heater is easily installed in tight places and can be mounted on bulkhead or ceiling. Compact II is small, sturdy and lightweight. The smallest unit weighs 690 pounds, the largest 1,720 pounds.

Compact II is constructed of SB-96 copper silicon, and all materials contacting domestic water are copper or copper silicon. The unit is available in a vertical or horizontal design.

Bulletin C-2 describes new P-K Compact II semi-instantaneous packaged water heater for ships. Capacities and dimensions are detailed, along with sizing instructions and specifications. Also included is a fixture capacity table. For a free copy, write **Robert S. Muth,** Patterson-Kelley Company, Division of HARSCO Corp., East Stroudsburg, Pa. 18301.

Maritime Reporter/Engineering News



LOOK INTO THE 3400s

... for economy, dependability, profit!

Caterpillar 3400 Series Marine Diesels are designed to fit easily into space-limited engine compartments. Even the more powerful V8 or V12 models, with a 65° Vee, can be installed in narrow confines once restricted to in-line engines.



to in-line engines.

Large displacement results in fast, smooth response and long engine life. Fuel consump-tion is low. Simplified design reduces maintenance and service time. The 3400s have all the quality, durability and dependability you expect from a Caterpillar engine.

Cat 3400 Series Marine Diesels are offered in six horsepower ratings (250 to 520 continuous) for propulsion...in six ratings (185 to 395 kW at 60 Hz) for auxiliary power.

Your Caterpillar dealer has more information on the compact 3406, 3408 and 3412 Engines ... and on the full range of back them. Give him a call.

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May 1, 1977

Drewry Report Reviews Car-Carrying Fleet

A sector of the shipping industry which has been experiencing buoyant conditions recently is that concerned with the transport of assembled (or built-up) motor vehicles — principally passenger cars, but also trucks and other commercial vehicles shipped by sea. Over the past two to three years, the car-carrying fleet,

which is a sizable one, has been fully employed, owners enjoying profitable freight rates. Yet world vehicle production and trade went into decline with the "Oil Crisis" and the onset of the economic slump, and have yet to recover to 1973 levels, as the latest study from H.P. Drewry (Shipping Consultants) Limited reveals.

Car-carrying capacity—which, in standard vehicle units is over 700,000 cars—was stretched by

This announcement appears as a matter of record only. April 6, 1977

\$4,189,000

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HOWARD, WEIL, LABOUISSE, FRIEDRICHS Incorporated the extension of vehicle trade to newer markets and a general lengthening of transport distances. The most important single factor was the growth of Japanese exports, notably to Western Europe and the U.S., but also to most other markets. Passenger car shipments alone rose from 1.4 million units in 1974 to 1.8 million in 1975 and some 2.4 million in 1976, and are still growing.

With the shift away from the North American market, firstly toward Western Europe and then to newer markets in Asia and Africa, the extension of world car trade has precipitated a large increase in the capacity of the car-carrying fleet. The Drewry study, entitled "The Growth of the Car-Carrying Fleet," reveals that there are over 350 ships in service which have been specially built, or converted, for the purpose of transporting complete assembled passenger cars and other vehicles on the longer ocean routes, and full details of the fleet are given in an appendix to the study, which lists car carriers with a capacity of 1,000 or more vehicles. In addition, there are many other smaller vessels, mainly specialized, operating on shortsea routes, or in coastal services, carrying cars.

A variety of ship types — including hybrid, or "Combo" car carriers—are actually utilized for car transport, and these are described in the study, issued as No. 52 in a series. The greater part of the deepsea fleet, however, comprises two distinct types. These are, respectively, car/bulk carriers fitted with portable decks and the fixed-deck car transporter (referred to in the Drewry study

Each sector of the fleet is reviewed in Part 2, commencing with short-sea types and ending with an assessment of the role of multipurpose cargo ships. The structure of the world fleet is fully analyzed in the study, in order to show its capacity, what sizes of ship are in operation, how old they are, and by whom they are owned or operated.

Extensive reference is also made, within the study, to the deployment of the deepsea fleet by type and how the available capacity represented by the different sections of the fleet has been utilized — particularly the changing role of the PCC, which employs roll-on/roll-off handling rather than the lift-on/lift-off methods used by car-bulk carrier operators.

The past growth of the fleet was supported by the extension of sea trade in built-up, fully assembled cars, and the 74-page study concludes with an extensive review of long-term trends in world car-production and trade, in order to assess the prospects for the fleet. Particular emphasis is placed on the North American market and sales of imported cars, and also on the ability of the Japanese car industry to increase export sales to this and other world markets. On the basis of visible trends within the industry - particularly increased local assembly—one conclusion is that the existing fleet, plus ships on order, will probably be adequate to meet the forecast increase in trade in built-up passenger cars, although much will depend on the shipment of vehicles in knockdown form.



"The Growth of the Car-Carrying Fleet," No. 52 in a series of reports on various aspects of shipping prepared by the Research Division of H.P. Drewry (Shipping Consultants) Limited, 34, Brook Street, Mayfair, London W1Y 2LL, England, is available at a single copy rate of \$75 (all overseas orders), or on a subscription basis \$275 (all overseas orders), for the series 51-60.

ITT Decca Marine To Distribute Teledyne New Loran C Receivers

L. Kaufman and C.D. Paget-Clarke, chief executives of Teledyne Systems Company and ITT Decca Marine, Inc., respectively, have announced the signing of an agreement between the companies whereby IDM will distribute in the United States two new Loran C Receivers now in production at Teledyne.

IDM is one of the largest distributors of marine electronics in the country, with an extensive dealer network, and both companies feel the introduction of these equipments timely in view of the rapidly expanding services of Loran C coverage provided by the U.S. Coast Guard for the use of all vessels.

Rutland Maritime Names Fernando I. Duque

Fernando I. Duque, a port operations specialist, has been appointed director of projects by Rutland Maritime Management Corporation, 17 East 45 Street, New York, N.Y. 10017.

Peter A. Holzer, president of the newly established through transportation consulting com-pany, said Mr. Duque will be responsible for RMMC's work on domestic and international projects involving cargo-handling methods and systems analysis of port and terminal operations.

The new RMMC official has specialized in developing more efficient systems for port and terminal operations since 1960, having most recently served with Maher Terminals, Inc., Elizabeth, N.J., as director of contract implementation.

Mr. Duque complements the RMMC staff with a wide base of experience ranging from operations line management to sophisticated planning and analysis for international transport systems, Mr. Holzer said.

Mr. Duque has also served as director of operations-planning for Prudential Lines and previously was associated with George G. Sharp, Inc., and Universal Terminal and Stevedoring Corporation.

A 1958 graduate of the U.S. Merchant Marine Academy, Mr. Duque served as a licensed deck officer. He holds an MBA degree in economics from New York University.

claims made for the stowage and handling rates of ro-ro. Design improvements to the larger vessels now report stowage factors approaching cellular ships and roll-off rates of 10,000 tons in a working day. Moreover, the success of the basic ro-ro hull has influenced naval architects to adapt the concept to other forms of sea transport such as barges

clude an examination of the and pontoons, and these will be studied at the conference.

The rapid advance in the size and scope of the ro-ro ship has raised questions of safety. Areas of concern to be stressed at the meeting include the unknown trailer load, the condition of the vehicles, and the attitude of the regulatory bodies toward the ships.

Ro-ro delegates will have the opportunity to see at first hand some of the latest developments in ro-ro technology and hardware which will be on display adjacent to the conference hall.

Full details about the conference may be obtained from R.A.B. Sim, Director, BML Business Meetings Limited, 2 Station Road, Rickmansworth, Herts WD3 1QP, England.



Ro-Ro 77 Scheduled For June 21-22, 1977 In London, England

This year's Ro-Ro Conference and Exhibition—Ro-Ro 77—will be held on June 21-22 in the London Hilton Hotel, London, England. The meeting will take place against a background of continued acceleration in international ro-ro traffic, with new ships increasing the world ro-ro cargo fleet by as much as 40 percent by the end of the year.

A comprehensive program of international speakers is now being finalized. The scope of the meeting will focus on every link of the ro-ro chain — the ships, the trailers, the linkspans, the berths—and various other aspects of ro-ro technology and trades.

Reflecting the interest shown at the very successful Ro-Ro 76 meeting, it is intended to include a panel session on the activity in the Mideast, providing a much needed opportunity for an open exchange of views between shipper, ship operator and the ports — bringing delegates up-to-date on the latest situation.

Papers in the ship design session of the conference will in-

May 1, 1977

Avondale Delivers Hydraulic Dredge Illinois— Flagship Of Great Lakes Dredge And Dock Fleet



The dredge Illinois, built by Avondale Shipyards, Inc., is now the flagship of the largest dredge fleet flying the American flag, Great Lakes Dredge and Dock Company.

On March 17, 1977, Avondale Shipyards, Inc. and the Great Lakes Dredge and Dock Company christened the new dredge Illinois at the Poydras Street Wharf in New Orleans, La.

The Illinois is a 27-inch hydraulic dredge classed by the American Bureau of Shipping and certified by the United States Coast Guard. It was built for Western Quarries and Construction Company.

Sponsor of the dredge Illinois was Mrs. Ruth E. Downs, wife of the president of Great Lakes Dredge and Dock Company. Richard Brunner, Avondale executive vice president, Engineering and Contract Services, greeted the guests and spoke at the commissioning. Also at the bottle-breaking were R.H. Roth, Great Lakes' chief mechanical engineer, and R.L. Jackson, Great Lakes' vice president and Southern Division manager.

The vessel has a gross tonnage of 1,417.23



panies. Great Lakes' stock is traded on the New York and Midwest Stock Exchanges.

In addition to its corporate headquarters in Chicago, the company maintains division and area offices in Union, N.J., Staten Island, N.Y., Towson, Md., Tampa, Fla., New Orleans and Morgan City, La., Oakland, Calif., Cleveland, Ohio, and Chicago. A permanent staff of over 200 is divided between these locations. Hourly employees bring the total to over 2,000 men and women.

The dredge Illinois typifies the company's philosophy that the best equipment, operated by the best personnel does the best work. Great Lakes is constantly designing and building new, efficient equipment and making improvements on existing plant. In the 1973-77 period alone, it will have invested over \$40 million in capital improvements.

ASNE Delaware Valley Section Hears Paper On Salvage Methods



Attending the ASNE Delaware Valley Section meeting, from left to right: Larry Millman, Seacor; Capt. Jerry Jones, Philadelphia Naval Shipyard; Comdr. Kurt A. Gustafson, USN, Philadelphia Naval Shipyard, presenter; Capt. Ed Kaune, Philadelphia Naval Shipyard, and Dick Watson, J.J. Henry Co., Inc.

Approximately 35 members attended the recent meeting of the Delaware Valley Section of the American Society of Naval Engineers at the Officers' Club in the Philadelphia Naval Base. Comdr. Kurt A. Gustafson of the Philadelphia Naval Shipyard made a very interesting presentation entitled "Developments and Trends in a Changing Salvage Environment." A brief abstract of the paper follows

and a net tonnage of 1,417. The hull is of welded steel construction, 220 feet in length by 56 feet wide by 12 feet 6 inches deep.

The dredging ladder is 100 feeet long with design provisions for a 20-foot extension for a maximum length of 120 feet, and is supported by hull trunnions and an "A" frame and gallows frame. Two 600-horsepower cutter motors, shafting, bearings, cutter, 34inch suction pipe and a 1,200-horsepower electric-driven submersible dredge pump are mounted on the ladder. The ladder is raised and lowered by an electric-driven ladder hoist winch with a 375-horsepower motor.

The main dredge pump is 7,200 horsepower at 303 rpm and is driven by two 3,600bhp diesel engines. The discharge pipe is 27-inch.

Dredging position is achieved and maintained by using two 85-foot spuds with hoists or underwater fairlead with wires, anchor, and hoists aft, and using two anchor booms with wires, anchors, and swing/anchor hoists forward. Control of the dredge position and ladder dredging depth is from the Lever Room Control Console.

A 2,400-kw diesel generator set furnishes the main electrical power. Control of the main pump and generator diesel engines and monitoring of the operation of all main and auxiliary machinery is from the Engine Room Control Console.

Commissioning of the hydraulic dredge Illinois marks another important event in the 87-year history of Great Lakes. She takes her place as the flagship of the largest dredge fleet flying the Stars and Stripes.

At the christening of the dredge Illinois in New Orleans, from left: Richard Brunner, executive vice president, Engineering and Contract Services, Avondale Shipyards, Inc.; Fred Hazard, vice president and general superintendent, Great Lakes Dredge and Dock Company; Mrs. J.A. Downs, sponsor and wife of the president of Great Lakes; P.R. Dickinson, vice president and secretary, Great Lakes, and W.L. Colnon, executive vice president, Great Lakes Dredge and Dock Company.

This fleet, consisting of 19 dredges (hydraulic, clamshell and dipper), 12 tugs, 38 dump barges, 4 drill boats and over 150 support vessels, has a replacement value in excess of \$200 million.

As its name suggests, the company was founded on the Great Lakes. Its corporate headquarters is still maintained in Chicago, Ill., but the "bull's-eye" insignia is a familiar sight to ports and waterways of the world. Argentina, Venezuela, Panama, Trinidad, The Netherlands Antilles, San Salvador, Canada, Saudi Arabia and Dubai are all countries with navigational improvements by Great Lakes.

Although primarily a dredging contractor, Great Lakes is also active in the many types of marine construction. Subaqueous rock blasting and pipelines, breakwaters, land reclamation, docks, pile driving and bridge substructures are also Great Lakes undertakings.

The company's revenues in the last decade approach one-half billion dollars. Its dividend record to its approximately 4,000 shareholders is unbroken since Great Lakes went public in 1920. It has never failed to complete a project, and maintains excellent financial and bonding relationships with the country's major banks and insurance comthe paper rono no.

Recent developments in the shipping and ocean industry have resulted in new problems that the salvor faces in the completion of future salvage tasks. Changing complexity of chemical cargoes, commercial submarine use, and an increasing demand for petroleum products are major changes resulting in demands for new salvage "tools." Improvements in surface platforms include the new U.S. Navy Fleet Ocean Tug and the Alcoa Seaprobe, a deep-ocean recovery ship used by the Navy. Many improvements in salvage equipment have been made, including a Large Object Salvage System and Deep Drone System designed and developed for the recovery of Navy submarines and commercial submersibles.

New Engelhard Booklet Lists 30,000 Products

A 52-page booklet has been published by Engelhard Minerals & Chemicals Corporation, listing the firm's more than 30,000 products.

The pocket-size booklet contains a roster of the ores, metals and minerals marketed worldwide by Engelhard's Philipp Brothers Division; the precious metals refined and fabricated by the Engelhard Industries Division; and the nonmetallic minerals mined and processed by the Minerals & Chemicals Division. The alphabetical listings run the gamut from abatement equipment to zirconium sponge.

To obtain a copy of Engelhard's Product Listing, write to **Paul Byrne**, Engelhard Industries, 2655 U.S. 22, Union, N.J. 07083.

Maritime Reporter/Engineering News

British Technical Committee Presents Clipper Ship Painting To American Bureau Of Shipping

A painting of the clipper ship Flying Cloud, which established a speed record on her maiden voyage from New York, N.Y., to San Francisco, Calif., was presented to the American Bureau of Shipping by the society's British Technical Committee at its recent annual meeting in London recent annual meeting in London.

Accepting the painting from committee member E.F. Pointon, managing director of Texaco Overseas Tankship Ltd., was Robert **T. Young**, ABS chairman and president. The painting, a water color by **K.I. Griffin**, will hang in the newly appointed reception area of the London office of the international ship classification society. The London office, lo-cated at Winchester House, 77 London Wall, is the main ABS office in the United Kingdom, and is also the office of the Principal Surveyor for Western Europe.



Robert T. Young (left), ABS chairman and president, accepts painting of clipper ship Flying Cloud from **E.F. Pointon**, managing director of Texaco Overseas Tank-ship Ltd., at the annual meeting of the ABS British Technical Committee in London. Painting will hang in the London office of the international ship classi-fication society. fication society.



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The Flying Cloud was built by Donald McKay, East Boston, Mass., in 1851 for packet operator Enoch Train of Boston. Prior to entering service, she was sold to a group of owners that included Moses Grinnel, a member of the first board of managers of the American Shipmasters Association, which was the forerunner of the American Bureau of Shipping. The ship was 221 feet long, displaced 2,783 tons, and bore three masts. On her maiden voyage, she sailed from New York to San Francisco in 89 days 21 hours, establishing a record.

COMSAT Brochure Describes Mobile Terminal Units For Satellite Communications

MARISAT mobile terminal units for satellite communications are described in a brochure issued by COMSAT General Corporation, the manager of the MARISAT System. The compact, solid-state unit includes tele-printer and telephone for fast and reliable communications serving the shipping and offshore industries worldwide. The brochure provides dimensions, operational features and technical data on these terminal units, which include a fully stabilized 4-foot antenna and associated control console. They can be bought or leased from COMSAT General, or from its sales and service agents located in major ports of the world.

For a copy of the brochure and additional information, write or call Hale Montgomery. COMSAT General Corporation, 950 L'Enfant Plaza S.W., Washington, D.C. 20024, tele-phone (202) 554-6010.

May 1, 1977

Crandall Upgrades Docks In Two Canadian Yards

Two Nova Scotia shipyards are upgrading their railway drydocks with significant programs of new construction and rebuilding.

At Pictou, Ferguson Industries Limited is replacing all but 48 feet of its 2,000-long-ton cradle with a new structure, and has lifted most of its 35-year-old track for re-railing.

Dartmouth Marine Slips of Halifax Shipyards, part of Hawker-Siddeley Canada Limited, is completing the building of a new all-steel cradle of modern design for its No. 6 railway drydock, hauling capacity of 3,000 long tons, and is re-railing the track after 36 years of service.

The design and other assistance are provided by Crandall Dry Dock Engineers, Inc., 21 Pottery Lane, Dedham, Mass. 02026. Both installations were designed by Crandall at the onset of World War II for the Canadian Government.

General Steamship, Ltd. Names Hale President,

Turner Vice President

Harry H. Scott, president of General Steamship Corporation, Ltd., San Francisco, Calif. 94119, has announced executive changes in their subsidiary company, General Steamship (Chartering) Ltd. Robert V. Hale was named president, and Lee B. Turner, formerly chartering manager, was named vice president.

Mr. Hale, previously affiliated with Kaiser Trading Company, joined General Steamship in 1974. He is a graduate of Maine Maritime Academy and holds a law degree from the University of San Francisco.

Mr. Turner joined the company in March of 1975, having been employed by Evans International Trading Company in Portland, Ore., and previously with A.A. Whitehead (Shipbrokers) Ltd., and Glover Bros. (London) Ltd. Mr. Turner attended Oxford University.





Barge-Mounted Ammonia Production Plant Designed By Gotaverken And Haldor Topsoe



From the left, Torsten Soderstrom, head of Gotaverken's Industry Division, Dr. Haldor Topsoe, Copenhagen, and Erland Wessberg, managing director of Gotaverken, with a model of the barge-mounted ammonia production plant. The plant can be built in Sweden by Gotaverken and from there towed to an offshore gas source.

Together with the Danish engineering company Haldor Topsoe self is built into the center sec-A/S, Gotaverken has carried out tion of the barge, most of the detailed project work for a floating ammonia production plant. This plant can utilize deposits of auxiliary equipment on the 'tween natural gas which would not otherwise be economical to exploit, and can be located in the vicinity of areas needing nitrogen fertilizers produced from ammo-

The processing installation itcomponents being on the upper

supporting concerning steam and electric power, and only seawater and air are used in the process

deck and lower deck. The production plant is self-

Strong · Durable · Economical · Dependable

Superior Strength AQUAMET 18 is twice as strong as Naval Brass and Grade 2 carbon steel

Cost-Saving Durability AQUAMET 18 has excellent corrosion resistance for long, maintenance-free service. Its excellent toughness reduces the chance of fracture.

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Long Service Dependability AQUAMET 18 has an excellent combination of strength, hardness, toughness and corrosion resistance to offer you dependable, economic service for fish and work boats of all kinds.

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nia. Project work has advanced so far that the building of an ammonia production plant could be started at Gotaverken about one year after the order was received. The two companies involved are also cooperating on projects for other types of production plant vessels.

The ammonia production plant in question has a capacity of 1,000 tons/24 hours, that is to say it is typical in size for a modern, land-based ammonia production plant. It is built on a barge with main dimensions of approximately 381 feet by 243 feet, subdivided into three sections for the processing plant, storage facilities and living quarters. The barge is anchored by means of a single point mooring system above a source of gas in the bottom of the sea.

The design and general arrangement of the barge has been made up by Gotaverken, while the processing plant has been designed by Haldor Topsoe A/S. This plant follows the same principles as those used in a landbased installation, but has been modified to a certain extent in order to make it suitable for installation on a barge. For example, the overall height of the production plant is being kept to a minimum, free liquid surfaces are being decreased, etc.

apart from natural gas.

Four tanks are built into the rear section of the barge for storage of the ammonia at atmospheric pressure and at a temperature of -33 °C. Apart from the design of its hull, this section of the barge corresponds to that of a medium-sized ship for the transport of gas.

The project assumes that ammonia transport vessels of 10,000-20,000 deadweight tons will load up with ammonia at the floating production plant about every other week.

The third module of the barge includes living quarters and service facilities. In one deckhouse there are single cabins, each with a shower and toilet, for about 70 people, as well as canteens, dayrooms and other recreational facilities.

In the rear of the barge, there is an electrically powered steering propeller. This is used to keep the barge in its desired position so as to facilitate the mooring alongside of the ammonia vessels.

Onboard the barge, there are also workshops, storage tanks for diesel oil, fresh water, helicopter fuel, etc., two cranes for the loading of supplies, stocks of chemicals, extensive firefighting equipment, lifesaving equipment, etc.

Halifax Will Host World Fishing Exhibition

The international World Fishing Exhibition, scheduled for Halifax, Nova Scotia, Canada, from August 31 to September 7, 1977, has already succeeded in attracting more than 100 exhibitors from 16 nations.

The exhibition marks the first North American venue for this binennial trade show, inaugurated in London in 1963. The exhibition has previously been held in Britain, Ireland, Spain and France.

By every current indication, the Halifax Exhibition will be the most successful yet staged. Show organizers, Industrial and Trade Fairs Limited of England, attribute a large part of the pre-exhibition success to the cooperation received from the administration of the Development, Fisheries, and Tourism departments of the Province of Novia Scotia.

Although the eight-day exhibition will follow the usual pattern of "admission by invitation only," on trade days this will present no problem to bona fide fishermen and people of the industry who are being given the opportunity to obtain complimentary tickets. Because of the significant public interest being demonstrated regionally, the exhibition will be opened to the public on September 3, 4 and 5.

The eighth World Fishing Exhibition is sponsored by the Federal Government of Canada, the Provincial Government of Nova Scotia, the City of Halifax, the City of Dartmouth, the Halifax Chamber of Commerce, and World Fishing Magazine.

marine oil and gas transmission lines, compressor and pumping stations, coastal and offshore marine terminals, dock and harbor projects, industrial facilities, and petroleum plants.

An employee of Brown & Root since 1950, Mr. Heffler was graduated from the University of Houston with a B.S. degree in mechanical engineering. He has more than 32 years of engineer-

in the management of Engineering Division operations. In addition to organizing and directing operations of various engineering discipline departments, he also has supervised and participated in the design and construction of numerous heavy industrial facilities.

1964, Mr. Knight has served as project engineer, project man-

tensive work involving land and ing experience, including 18 years ager, department manager, and company officer. A graduate of Texas A&M University with a master's degree in civil engineering, his experience includes working with large-scale digital computer analysis of offshore structures, dynamic response analysis of structures and foundations, and planning and con-Since joining Brown & Root in struction of offshore drilling and production platforms, marine terminals and submarine pipelines.



Brown & Root, Inc. **Names Three Executives**

W.B. Pieper has been named group vice president of Brown & Root's Petroleum and Chemical Group, according to president and chief executive officer Thomas J. Feehan.

Mr. Pieper, formerly senior vice president and chief engineer of the Houston, Texas-based subsidiary of Halliburton Company, also has been elected a director of Brown & Root, and serves as a member of the firm's Operating Committee.

In other changes, Walter E. Heffler succeeds Mr. Pieper as senior vice president and chief engineer, and Tommy E. Knight advances from senior vice president, marine engineering to senior vice president of project operations. Mr. Heffler formerly was senior vice president, engineering operations.

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Presented At SNAME LOS Andeles Meeting

A graduate of Rice University with a degree in civil engineering, Mr. Pieper has more than 20 years' experience with Brown & Root in design and construction engineering of both U.S. and international projects, including exAt extreme left and right Sperry M12A Radar displays. Center, Sperry Gyropilot stand with follow-up helm unit and 24-inch wooden wheel, pump selector switch, steering mode selector switch, heading selector, and non-follow-up controller. Forward of stand is Sperry MK37 Gyrocompass.



Sperry hydraulic steering cylinder (under tie bar) for activating rudder.



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May 1, 1977



For more than 30 years we have been supplying cooling equipment for inboard marine engines-heat exchangers, engine and transmission your ships. oil coolers, charge-air coolers and many other items. And recently we extended our range, so we can now supply equipment for engines rated at more than 1000 kW. heat exchangers.

Write or 'phone today for full details of the Bowman equipment suitable for your ship, But that is only half of the Bowman story; we also supply coolers for many and keep cool-stem to stern! of the thousand and one other units on E.J. Bowman n B6 4AP, Deck winches, net hauling gear, England. Telex: 339 239. Telephone: 021-359 5401. emergency generating sets, fire pumps -these are just four of the many different applications for which we have recently supplied oil coolers and BOWMAN





GIFT TO WEBB - Stanley Factor, supervisor, Design & Construction Engineering, presents a contribution on behalf of Atlantic Richfield Company to Webb Institute of Naval Architecture, received by Rear Adm. C.N. Payne, USN (ret.), for the Institute.

Henschel Announces

Automatic Whistle-Timer

Automatic control of signaling by the ship's whistle in conditions of reduced visibility is provided by the new Henschel Whistle Timer. Designed to comply with Coast Guard's Rules of the Road (CG169), the various combinations of long and short blasts are selected by means of a six-position switch. Pressing the AUTO pushbutton activates the Automatic Whistle Timer, which immediately begins and continues to sound the selected whistle code.

The Henschel Whistle Timer operates from the ship's standard 115 Vac, 60Hz power; consumes less than five watts. Solidstate digital circuitry provides precise timing of the signals.



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May 1, 1977

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But that is only half of the Bowman story; we also supply coolers for many of the thousand and one other units on Deck winches, net hauling gear, emergency generating sets, fire pumps -these are just four of the many different applications for which we have recently supplied oil coolers and heat exchangers.

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Paper On Technical Aspects Of Ocean Mining Presented At SNAME Los Angeles Meeting



Attending the Los Angeles Metropolitan Section, SNAME, meeting were, left to right: John S. Hollett, Papers chairman; William A. Hood, secretary-treasurer; Frank A. Kuntz, vice chairman; Dr. and Mrs. John E. Halkyard, speaker and guest, and Raymond J. McKinnon, publicity.

At its regular monthly meet- esses. They deter many from acting, the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers invited Dr. John E. Halkyard, Kennecott Explorations, Inc. to present a paper on the "Technical Aspects of Ocean Mining." Although the subject matter was not entirely new to many of those attending, his treatment of it was both frank and intriguing. His major contribution, and one of significance, was the emphasis he placed on the realities of the situation as it stands today.

"The role of nodules in the world resource picture," he said, "represents a potential source of nickel, copper, cobalt, molybdenum and manganese. The magnitude of such deposits is sufficient to meet the nickel demands of the United States for over 100 years." It is enticing to consider the prosect of such tremendous wealth just lying there on the ocean floor processing and mining. His evalfor the taking. Only those with the foresight, technical capabilities and the economic resources needed will ever be able to do so. Dr. Halkyard is the engineering head of the Ocean Mining Laboratory of the San Diego-based firm. That the nodule deposits are actually there, no one any longer doubts. How to identify them as potential sites from the depths of the ocean floor and convert them into satisfactory returns on the tremendous investments necessary are yet another thing. Many engineering schemes have been devised in proposing it. The hazards of the environment itself, as well as the complicated production methods needed, seem formidable obstacles to overcome. "Metallurgical processing techniques have already been demonstrated to be economically feasible," he said. "Estimates of mining profitability are primarily dependent on two variables, those being investment and operating cost of mining programs, and the sales revenues expected from the marketing of these products."

ing. Yet, Dr. Halkyard assured his listeners the feasibility of such an enterprise to mine the ocean depths is clear. Many firms may have the capabilities already, but few if any are willing to proceed with the task. The limitations impeding the pursuit of such an apparently attractive opportunity are both economic and political. Worse yet, these same two considerations seem incapable of being separated. It becomes a quirk of our times that the aspirations of men for a sharing of the wealth of the oceans pose such stringent limitations on their being able to accomplish it. It is simply no longer practical for any independent organization to attempt to do so alone.

Dr. Halkyard made no startling disclosures. His emphasis, as a scientist, encompassed the technological areas of exi oration.

ing the membership was Peter Zink, representing the Publicity Committee for STAR of the Northern California Section, SNAME. He attended to announce their sponsorship of the 1977 National Spring Meeting to be held in San Francisco. The theme for the meeting has been chosen as one most likely to be of general interest to all, "Energy Research In The Oceans." This is the first time there will be a combining of the Society's Spring Meeting with the recently inaugurated Ship Technology and Research (STAR) Symposium on May 25-27, 1977.

Navidyne Satellite **Navigation Brochure**

A new four-page, full-color brochure on satellite navigation is available from Navidyne Corporation. The illustrated brochure describes Navidyne's ESZ-3000 Satellite Navigation System, a microprocessor-based global navigation aid which uses signals from the U.S. Navy's TRANSIT satellites to provide precise, allweather navigational data. The flag with Norwegian crews.

document includes complete technical specifications on the new SATNAV, along with a description of system operation, available outputs and user options. Copies of the new brochure are available at no charge from A. Clifford Barker, Navidyne Corporation, 408 Industry Drive, Hampton, Va. 23661.

Norwegians Order Two 320,000-DWT Tankers **From Japanese Yard**

Norway's Sig. Bergesen D.Y.

Shipping Co. recently announced the ordering of two diesel-propelled tankers of 320,000 metric deadweight tons each from a yard in Japan. The ships are the largest ordered by any shipping company since the world shipping crisis began several years ago. A spokesman for Bergesen said the orders had been placed in Japan because no Norwegian yard was equipped to build such large vessels. But the new ships would be operated under the Norwegian



From what Dr. Halkyard had to say, the challenges are real, as are the risks and the constraints. The latter introduce serious delays in the decision-making proc-

uation of the economic potential for a satisfactory return, however, was impressive. It was well presented in the light of current world needs. The shortages he cited in our own supplies of metals were foreboding; the worst of these, nickel. His estimates of the opportunities prevalent in the nodule deposits on the ocean floor as a means for sustaining these needs, enticing. Yet, he inferred, neither the engineer nor the economist alone can successfully meet them.

The ultimate deterrence then is the political aspect. Dr. Halkyard declined to discuss this facet of the problem, and perhaps wisely so. As he explained, it becomes a question tangled in the spheres of political influence and international discussions on the Law of the Sea. For resolution, many firms have had to wait. Others have teamed up in consortia to spread the risks and to emphasize the international scope of such projects. Many governments are involved. Only after they have all finally had their say will the marine engineering firms eventually move out in their ships to mine the untold riches the oceans have deposited there for the good of all men.

Another guest speaker address-

May 1, 1977

If you won't be satisfied until you're assured highest production ...

Check out Clemco . . . most imitated blast machine in the world. The dual air inlet allows pressurization speeds unobtainable by any other design, while a true, unrestricted piping system guarantees free air flow with the least loss from air friction. Also expect strictly accurate abrasive metering and quality manufacturing throughout fully complying with ASME and National Board Codes. New catalog tells more and features fully accessorized packaged systems with widest range of individual units.



2177 Jerrold Ave.—San Francisco, CA 94124

Hillman Delivers Exxon Towboat With 40-Foot Eye Level Pilothouse

The M/V Exxon Lake Charles was delivered recently by Hillman Barge and Construction Company, Brownsville, Pa. 15417. This is the third of five such towboats being constructed by Hillman Barge for Exxon Company, U.S.A. The first two are the Exxon Louisville and the Exxon Memphis, the former delivered in June 1976, and the latter in October 1976. Both towboats are performing beyond expectations.

The Exxon Lake Charles differs from the first two vessels in that the pilothouse is 8 feet higher to provide necessary visibility because of a special tow with which it will be used. The 40-foot eye level together with large windows assure the pilot almost unrestricted vision in all directions. The location of all controls, navigational aids, and

other systems were optimized to easy access. Other conveniences include a concealed toilet and a range-refrigerator-sink combination.

Engineered for maximum strength and elimination of vibration and fatigue failure, the 120-foot by 34-foot hull draws 81/2 feet. as do the Exxon Memphis and the Exxon Louisville. The raising of the afterdeck by 24 inches and continuous welding on both sides of the framing lend additional strength.

Two interconnected steering rudders and four interconnected flanking rudders create high maneuverability by providing free water flow in and out of the two Avondale four-blade stainless-steel propellers. Controlling the rudders is an air over hydraulic system designed by Hillman in conjunction with Wabco and Weinman Pump of Pittsburgh, Pa. Separate hydraulic units operate each rudder system and can, at full engine power, move each system from hard-over to hardover in 13 seconds.

With the Fairbanks Morse eight-cylinder, Model 38D8-1/8 engines turning at 750 rpm, up to 2,670 hp are generated. The engines also move through Western Model RH-27 reverse and reduction gears with a 3.77:1 ratio.

Driven by Detroit Diesel Model 6-71 engines, two Lima 125-kw generators supply 440, 220, or 110-volt a-c power for all onboard systems, while a General Electric "Pan-A-Trol" switchboard and motor control center controls and distributes the power.



M/V Exxon Lake Charles, designed and built by Hillman Barge and Construction Company, is the third of Hillman's new class of towboats for Exxon Com-pany, U.S.A. The towboat has an 8-foot higher pilothouse than the first two boats for visibility because of a tow with which it will operate.

In addition, a National Marine Service "Tugmonitor" oversees all main engine and auxiliary operations, assuring location of possible problems throughout the vessel. This system is composed of a main control panel in the engine room, remote stations in the pilothouse and main deck stateroom, and a galley alarm bell.

Just as the hull was designed to obtain maximum efficiency without sacrificing equally important low operating costs, so the superstructure adheres to similar considerations with its attention to environmental aspects, such as soundproofing and efficient access.

Strategic sound barriers deter the pene-



tration of machinery noise to crew living quarters. Comfort, convenience, and minimum upkeep were considered with the design of the service areas, lounge, galley/messing area, and double stateroom with private bath in the main deckhouse. Four additional double staterooms with two semiprivate baths are in the upper deckhouse. Closets have been built into each stateroom.

All crew stateroom and pilothouse decks are covered with commercial carpeting; vinyl linoleum covers all other decks in living areas. In keeping with the vessel's fireproof construction, walls are paneled with U.S. Gypsum "Novoply," and ceilings tiled with acoustical fiberglass.

MARCO Receives Orders For Two 108-Foot Crabbers

Orders for two 108-foot crab boats have been received by Marine Construction and Design Co. (MARCO), 2300 West Commodore Way, Seattle, Wash. 98199.

The owners of the vessel scheduled for completion first are Harold Clausen, managing skipper, and partners Kaare Ness and Henry Svasand. The vessel's name is to be Nordic Star.

The other vessel, to be named West Point, is owned by Peter Haugen (also the captain), with Kjell Fjortoft and Jack Lowman as partners.

Owners of both vessels are all veteran Pacific Northwest fishermen.

Since 1968, MARCO has constructed 24 all-steel crabbers and crabber/trawlers ranging from 94 to 120 feet in length.

DAPTCO Awards Contract To Quality Equipment To Build Two Offshore Supply Vessels

Quality Equipment, Inc. of Houma, La., a division of Pott Industries of St. Louis, Mo., recently announced a contract with DAPTCO Marine of New Orleans, La., for the construction of two 180-foot by 38-foot by 14foot supply vessels.

The multipurpose vessels will be designed with special liquid mud, calcium chloride and dry mud tanks so that they can work just about any place in the world.



Max Harding, president of Quality Equipment (second from left), watches J.D. Freeman sign a contract for two offshore supply vessels as other members of DAPTCO Marine's board of directors look on. Standing from left to right: Jimmy George, Mr. Harding, Red Patrick, and Albert Hebert.

With new 12-645 E6A engines and Reintjes 3:1 gears, these vessels will be expecting a free-running speed in excess of 12.5 knots. A double anchor windlass will be bringing



in a total of 3,000 feet of $1\frac{1}{4}$ -inch chain and 2,000-pound anchors.

DAPTCO Marine and Quality Equipment are both members of the Offshore Marine Service Association (OMSA).

De Laval Offers Booklet On Lube Oil Purification

Data on the need for diesel lube oil purification aboard ship and on offshore installations, its cost justification and the benefits of purification are discussed in a new booklet, "Diesel Lube Oil Purification," now available from The De Laval Separator Company.

Control of contamination that occurs in diesel lube oil, and a practical schedule for maintaining purification equipment, should increase operating hours, according to the booklet. These actions will reduce downtime for cleaning, decrease maintenance costs by reducing the frequency of overhaul and repairs, and reduce total oil costs by extending the useful life of oil.

The alternatives in keeping diesel engines properly lubricated and costs down are frequent oil changes, or intermittent or continuous purification. A number of factors are listed for consideration in justifying the cost of oil purification through centrifuging —specifically detergent-dispersal oils. Recommended, also, are desirable centrifuge operating practices to maintain crankcases in the cleanest practical condition.

To obtain copies of booklet SA-1699, write **Robert Wimmer**, The De Laval Separator Company, Poughkeepsie, N.Y. 12602.

May 1, 1977





Port Manager Nanaimo To \$35,000

An exciting opportunity exists for a top flight generalist who has strong administrative and management skills with this active and successful port in this city of 50,000 on Vancouver Island's east coast.

The Port Manager is responsible to the Nanaimo Harbour Commission for the efficient and profitable provision and operation of all services and facilities in the port. Revenues, which reached a record \$2.2 million in 1976, are derived primarily from the operation of a three-berth assembly wharf which has 65,000 sq. ft. of warehouse space and 40 acres for lumber storage and which is used primarily for the export of lumber, pulp and paper products.

The successful candidate will be strong on people management skills, be results oriented, have good analytical skills, be an effective communicator and able to grasp a wide range of activities from construction projects to cargo handling and business promotion. Previous port experience is not a pre-requisite, though certainly an advantage as would be experience in a construction or engineering environment, public administration, business management, shipping or traffic functions.

Interested candidates should reply, in confidence, to



(604) 685-0261

N.Y. Metropolitan SNAME Honors John Livingston -Hears Paper On 'Design Of Reheat Turbines'



Shown at March meeting of the New York Metropolitan Section of SNAME were, left to right: Ulysses Niatas, co-author; John C. Daidola; Nicola F. Pergola; Robert T. Young, president, SNAME; Rear Adm. L.V. Honsinger, past president, SNAME; John A. Livingston; Robert G. Mende, SNAME secretary; Arnold M. Stein; Ralph C. Christensen; Rear Adm. C.N. Payne; David A. O'Neil; Frank Conlow, co-author, and Neil E. Reddy.

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers held its March meeting at Fraunces Tavern in lower New York City. The chairman, Arnold Stein, formally opened the meeting after an enjoyable social hour and dinner. Seated at the dais were Neil Reddy, David O'Neil, Robert Mende (secretary of the Society), Rear Adm. L.V. Honsinger (past president of the Society), Robert Young (president of the Society), John Livingston, Arnold Stein, authors Ulysses

ered design considerations and showed the evolution of the ReHeat HP-IP turbine from the Navy Series-Parallel HP-IP design. Other design considerations of a ReHeat turbine are also presented.

A cursory justification of reheat, along with an example of its application was given. It was shown that reheat turbine design is well within the state-of-the-art and that the use of reheat by the marine industry will be enhanced.



Boise-Griffin Names Grant

VP-Finance And Administration

The board of directors of Boise-Griffin Steamship Co., Inc., announced the appointment of Joseph T. Grant as vice president of finance and administration.

Boise-Griffin Steamship Co., Inc., is located at One World Trade Center, Suite 3811, New York, N.Y. 10048.

R/V Deepsea Miner Equipped With 70-Foot-High Enclosure

ing is engineered to withstand 100-knot winds with a 2x safety factor.

Supervisor Franke feels that her work for Dome East Corp. has the positive effect of breaking down occupational sex segregation. She finds that Dome East is an imaginative corporation in the new and fast-growing field of space-frame structures technology. "It's important to know that the building is well-engineered and expertly fabricated before you go out in the field 3,000 miles away to put it together. The first day on the site,' she commented is always the hardest. You get started at 8 o'clock in the morning with 12 workers who may have no experience with a woman supervisor. You have to show them quickly that you know what you are doing and can organize the assembly operation. By the end of the first day, they get over any apprehension they may have, and we become a very effective team which can set new erection time records for large structures, as we did on the Deepsea derrick enclosure."

Ms. Franke's field experience in the past three years includes work on over 10 other Dome East projects in New York, Chicago, Tampa, Indianapolis, and other cities throughout the United States. Ms. Franke studied history at Vassar and architectural design at Massachusetts Institute of Technology, and has done work in research and development of molded building components. She gets personal satisfaction from working in the field, "where engineering is translated into action." She commented, "Gender-identified work is becoming a thing of the past especially in innovative companies. The essential issue, of course, is whether or not one can get the job done."



East Corporation. Under her direction, 12 union shipyard workers installed the world's largest derrick enclosure aboard the R/V Deepsea Miner II.



Dome East Corporation, 325 Duffy Avenue, Hicksville, N.Y. 11801, just completed design, engineering, fabrication and installation of the world's largest derrick enclosure. It is now in use aboard the R/V Deepsea Miner II sailing out of California.

The structure is a 52-foot-diameter, 70foot-high combination Triaspan vertical space frame cylinder and geodesic dome, which provides weather protection for a unique 55-foot-high gimbal-mounted derrick aboard the ship. The computer-controlled derrick holds a pipe which extends to the ocean floor, a depth of up to three miles, where it will pick up metal-rich nodules from the sea floor. This project is part of the research and development of deepsea mining by Deepsea Ventures Inc., in Gloucester, Va.

Erika Franke, age 27, supervised the site construction for Dome East, using a crew of 12 union shipyard workers at Northwest Marine Iron Works, Portland, Ore. Under her direction, the space-frame was assembled for installation on the ship in four days - record time for such a large spaceframe structure. The complete structure weighs under 20,000 pounds and is constructed with aluminum struts, aluminum hubs, aircraft hardware and a vinyl-onpolyester membrane suspended in light tension from the frame. It was constructed from the top down, using a 12-ton crane to lift it row-by-row as it was assembled. When completed on the dock, the entire building with membrane was lifted 70 feet in the air over the derrick onto the ship and welded to preset anchor pads on the deck. The build-

May 1, 1977

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Nominations Are Open For Shepheard Award

Nominations are being accepted for the second annual Rear Ad-miral Halert C. Shepheard Award for Achievement in Merchant Marine Safety.

The award is given either for a single outstanding contribution to merchant marine safety, or for dedication to, and constructive participation in, activities associ-

WEEKS

period of time. Nominees may inoperators, naval architects and marine engineers, ship repairers, shipbuilders, and those associated with ship operations, government,

or marine associations. The award was established by the American Institute of Merchant Shipping (AIMS) in 1976, in honor of the late Rear Ad-

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ated with maritime safety over a the United States Coast Guard as Chief, Office of Merchant Maclude such individuals as ship rine Safety, and was internationally acclaimed for his work in the field. The award is administered by the American Bureau of Shipping (ABS).

Nominations should be submitted to Rear Admiral Halert C. Shepheard Award, c/o Robert T. Young, Chairman and President, American Bureau of Shipmiral Shepheard, who served in ping, 45 Broad Street, New York,

N.Y. 10004. The deadline for receipt of nominations is September 1, 1977. The award will be presented at the annual ABS Board of Managers dinner in November.

The 1976 recipient of the award, which consists of a Steuben crystal eagle, a leather presentation book, and a citation, was John L. Horton, manager, Marine Division of Cleveland-Cliffs Iron Company, Cleveland, Ohio.

Maritime Administration Names George Bornkessel **To New Orleans Post**



F.X. McNerney, Director of the Maritime Administration's Central Region, announced that George T. Bornkessel has been named Region Port Development Officer in the Office of Port and Intermodal Development in New Orleans, La.

In his new assignment, Mr. Bornkessel is responsible for initiating, developing, and conducting programs to promote the development and utilization of ports and port facilities; conducting Region port emergency planning; promoting the National Defense Executive Reserve Program; developing internal plans for con-tinuity of government; and coordinating these activities with other MarAd offices, Federal agencies, state and local entities and counterpart activities in commerce transport activities. The Central Region extends from the Gulf of Mexico to the northern borders of Nebraska, Iowa, and Kentucky (comprising 12 Gulf and central Mississippi River Basin States, plus western Florida). Until recently, Mr. Bornkessel served as manager, Southern Division of United Brands Company (successor to the United Fruit Company). As manager, Southern Division, Mr. Bornkessel supervised activities of manager of terminal and vessel operations, breakbulk banana stevedoring operations, breakbulk general cargo operations, and ro/ro general cargo stevedoring in various Gulf ports. Previously, he served in various other capacities over a period of 35 years for the United Fruit Company. He is a graduate of the State University of New York Maritime College, and currently holds a master's license in the merchant marine.



Western Tug & Barge Adds Sixth Tug To Fleet



Christening the Siegfried Tiger, the sixth tug in Western Tug & Barge fleet, is Mrs. Peggy Olson, wife of E. Whitney Olson (right), vice president of the Willamette-Western Marine Services Group, and Rees B. Williams Jr. (left), vice president and general manager of Western Tug and Barge Corporation.

A seagoing tugboat officially joined the fleet of tugs in San Francisco Bay on March 16, when it was christened into service by the Western Tug & Barge Corporation, headquartered at 135 Cutting Boulevard, Richmond, Calif. 94804. Mrs. Peggy Olson, wife of E.W. Olson, vice president of the Willamette-Western Marine Services Group, of which Western Tug is a division, christened the tug engine. in ceremonies at Pier 7, Embarcadero, San Francisco, behind the Waterfront Restaurant where a reception was held after the chrissented at the ceremony by its tening. president, Arthur A. Riedel Jr.

Rees B. Williams Jr., vice president and general manager of Western Tug, said the vessel, designated "Tug M/V Siegfried Tiger," will perform general towing and ship-assisting duties, plus coastwise towing. The "Tiger" is the sixth tug belonging to Western, and is the first one with oceangoing capabilities. It is 95 feet long and its twin screws are powered by a 2,000-horsepower

The parent organization, Willamette-Western Corporation of Portland, Ore., was also repre-

Literature Describes Wager Photoelectric **Smoke Indicator**

A new Wager Photoelectric Smoke Indicator System, particularly suited to monitoring diesel and gas turbine emissions, detects and measures accurately the opacity of smoke exhaust with no interference to readings from ambient light. All readings are to within 2-percent accuracy on a scale of 0-100 percent. Readouts are displayed on two scales, 0-100 percent and 0-20 percent, with additional scales available for even more precise readings. Smoke opacity measurement is

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Literature with specification detail will be supplied on request, addressed to Robert H. Wager III, Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928.

Alter Company Names Gardner Manager **Barge Operations**



Alter Company, 2333 Rockingham Road, Box 3708, Davenport, Iowa 52808, has announced the appointment of Sam C. Gardner as barge operations manager. Mr. Gardner's service with the Midwest barge line began February 14, 1977.

The company is a major carrier of bulk cargoes on the inland waterways and operates docks at LaCrosse, St. Paul, and Davenport. An affiliate, Azalea Fleet, Inc., offers fleeting and harbor services in New Orleans, La.

Mr. Gardner's previous employer was Marine Loss Control, Inc. of St. Louis, Mo., where he was a marine surveyor from 1973 until he joined the Alter Company.

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"Mr. Rasmus brings to PFEL a broad background in both the private and government maritime sector," Mr. Tarantino said, add-

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May 1, 1977

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Dr. Francis Named Kings Point Engineering Chief And USMS Captain



Dr. Gerald P. Francis

Dr. Gerald P. Francis has been appointed head of the Department of Engineering at the U.S. Merchant Marine Academy, Kings Point, N.Y. He has concurrently received the rank of captain, U.S. Maritime Service.

A 1958 graduate of the University of Dayton, Captain Francis later earned a master's degree and awards for professional and a doctorate in mechanical

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Shown at the joint SNAME/CIME meeting, left to right, are: S.T. Mathews, technical program coordinator, and D.H. Gray, chairman, Eastern Canadian Section, SNAME; Capt. G.L. Edwards; and two representatives of the Canadian Institute of Marine Engineers, Ottawa Branch.

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2-BUDA, Model 6-LD-468, Diesel Engine 6 cylinders, 100 BHP, Marine, Gardne Denver, centrifugal Pumps, Bronze, hor zontally split case, 1000 GPM, 280' head, 6 suction and 5" discharge.

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10"

10"

2"

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Overall Stroke	Rod Diameter	Retracted Length	Action
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8″	11/2 "	20"	double
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