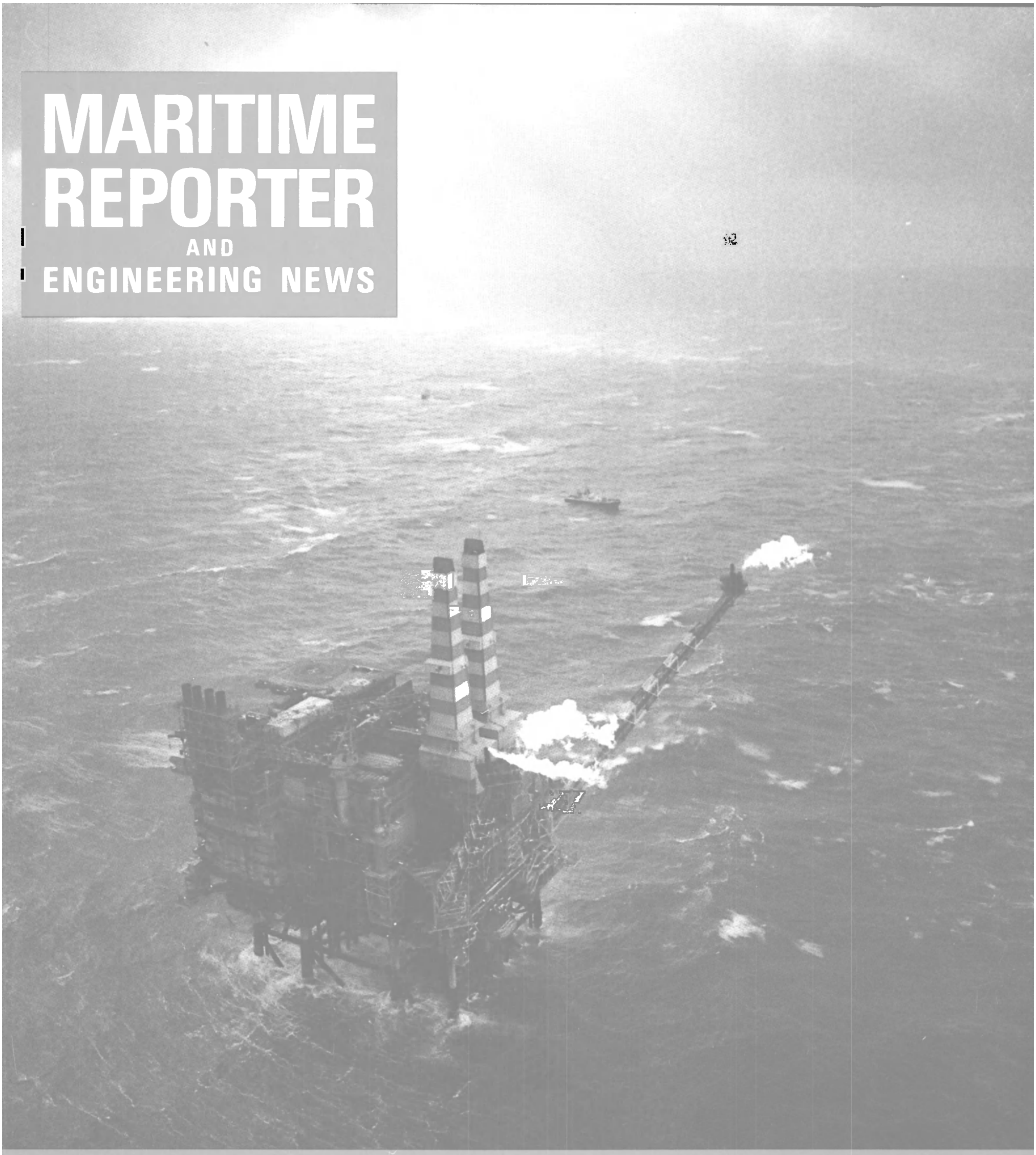
MARITIME REPORTER
AND
ENGINEERING NEWS



The 'Brae A' platform on site in the North Sea

Preview –
Oil Spill Conference

●

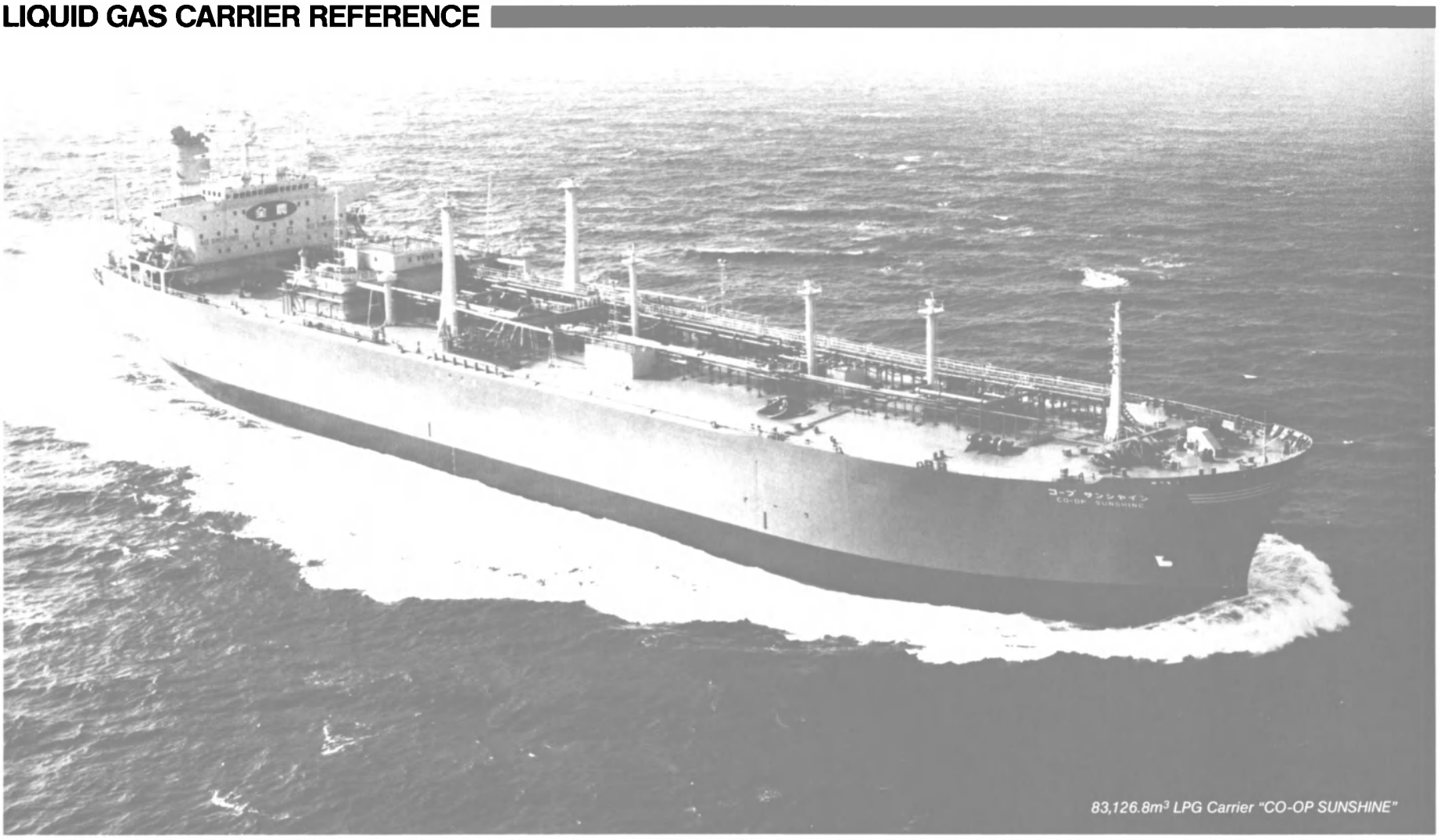
AWO Report

(SEE PAGE 4)

OFFSHORE GOTEBORG '85

FEBRUARY 15, 1985

LIQUID GAS CARRIER REFERENCE

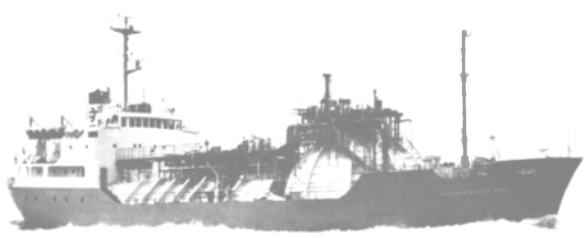


83,126.8m³ LPG Carrier "CO-OP SUNSHINE"

Yes, we can supply 7 different kinds of liquid gas carriers– 2 for LPG and 5 for LNG.

The variety is an excellent reason to bring your requirements for a liquid gas carrier to Hitachi Zosen. But it isn't the only reason.

Consider experience. Hitachi Zosen has put 9 LPG carriers with independent prismatic tanks into service since 1962. Two of them have a capacity of 100,000m³, ranking them among the world's largest LPG carriers. We have also finished work on an LPG carrier with semi-membrane tanks.



1,000m³ experimental LNG carrier

Hitachi Zosen and CBI developed the energy-saving HZ-CBI spherical tank system. In addition, a licensing agreement with Gaz-Transport SARL, McDonnell Douglas and Technigaz SA enables us to supply LNG carriers with GT/STD, GT/MDC and Technigaz membrane tanks.

Finally, consider performance. It is proven through testing and evaluation using a 1,000m³ experimental ship with a prismatic independent tank and a spherical tank. That's also an excellent reason for getting in touch with a Hitachi Zosen representative at one of the addresses below. He can tell you all about our 7 liquid gas carriers and all about the single source of supply.

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Hitachi Zosen

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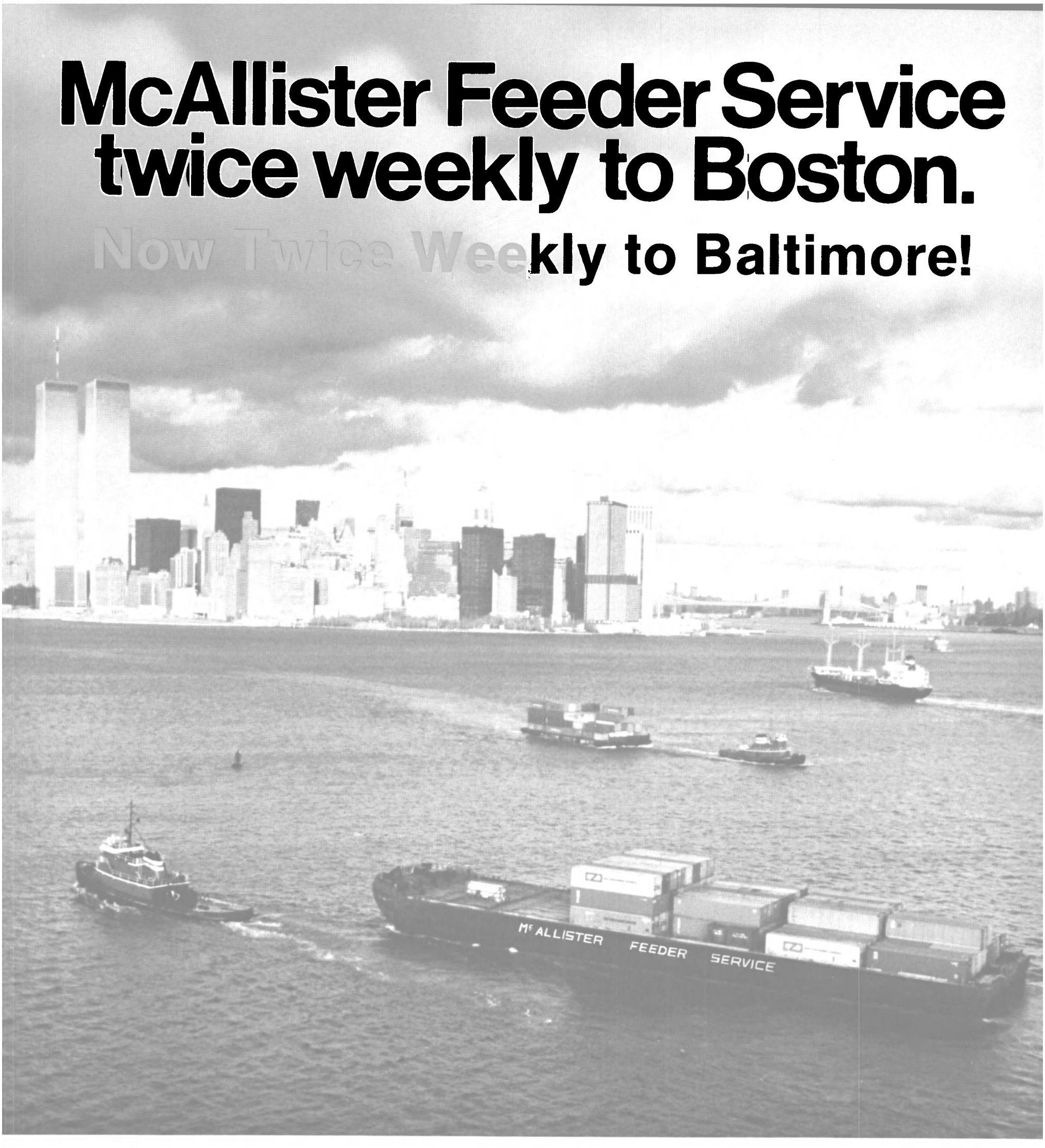

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ON THE COVER

Imi-Tech Awarded $300,000 In Navy Research Contracts

The Department of the Navy has awarded Imi-Tech Corporation of Elk Grove, Ill., two research and development contracts valued at more than $300,000. The first contract involves adapting the company's Solimide® foam, a flexible, fire-resistant polyimide insulating material, for use in submarine hull construction. The second involves modifying the basic Solimide polyimide technology to produce a high-temperature coating for use in naval aircraft.

Solimide foam was chosen by the Navy for its outstanding fire safety and lightness, in combination with its excellent insulating qualities and durability. Developed in part under a research grant from NASA, it is now in use in a wide variety of applications, including acoustical and thermal insulation, as fire barriers, vibration damping, and in cryogenic applications.

Seeking a thermal insulator and a water vapor barrier that is also flame-resistant and light, the Navy selected Solimide foam for development as a submarine hull insulation. Unlike other materials currently in use, polyimide foam will not contribute to flame spread in a submarine fire, and it produces extremely low levels of smoke and combustion gases in a fire. In addition, at one-fifth to one-tenth the weight of currently used materials, the weight saving, and thus performance improvement, is significant.

For further information on Imi-Tech and its products,

Circle 18 on Reader Service Card

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

Two More U.S. Lines Containerships Delivered Early By Daewoo Yard

With the recent delivery of the United States Lines containerships American Virginia and American Kentucky, Daewoo Shipbuilding and Heavy Machinery Ltd. has reached the halfway point in fulfillment of the largest merchant ship contract ever awarded. The Korean shipyard is carrying out a $570-million order from USL to build 12 containerships, the biggest in the world.

Both ships departed from Daewoo's Okpo shipyard in January and, like the four USL vessels completed last year, were delivered ahead of schedule.

"Carrying out a contract of unprecedented size has put our design, engineering, and construction skills to the test, and we are proud that each of the ships completed so far for U.S. Lines has been delivered ahead of schedule," said Daewoo Shipbuilding president **In-Kie Hong.**

United States Lines will use the American Virginia and American Kentucky, along with the previously delivered American New York, American New Jersey, American Maine, and American Alabama, in its recently inaugurated bi-weekly, round-the-world container service, which will become weekly when all 12 ships have been delivered.

Designed by the New York-based naval architects C.R. Cushing & Company, Inc., the American New York Class containerships have a capacity of 2,129 FEUs in the holds and on deck. The vessels are powered by fuel-efficient Hyundai/Sulzer diesels that give them a service speed of 18 knots.

Whitey Introduces New Severe Service Valve —Literature Available

Whitey Co. of Highland Heights, Ohio, is offering free literature on a new severe service on-off valve that is now available from the company. The valve is rated to 10,000 psi (68,900 kPa) and meets ANSI B-16.34 Class 4500. Valves supplied with Monel stems meet N.A.C.E. MR-01-75 for sour gas service.

Designated the "HNB," the rugged new valve also provides high flow capacity. The 0.250-inch orifice allows a flow coefficient (Cv) of 0.86. Other features include a union bonnet design and a blowout proof stem for safety, a non-rotating Stellite ball tip for repetitive shut-off without galling, and 316 stainless-steel construction for corrosion resistance. An adjustable, three-piece packing provides a positive stem seal. In addition, the threads are above the packing to insure long cycle life in non-lubricating systems. All valves are 100 percent factory tested for function, shut-off and external leakage.

For further information and a free copy of the literature on the new severe service valve from Whitey Co.,

Circle 44 on Reader Service Card

Reverse Osmosis Water Production Literature Available From Marland

Marland Environmental Systems, Inc., manufacturers of SweetWater Reverse Osmosis Water purification units and pre- and post-filtration systems, have published an eight-page technical brochure describing its reverse osmosis process.

Included with the technical data are membrane diagrams and crop sections, illustrations describing the osmotic and reverse osmotic processes and a fully detailed flow diagram. Explanations of pre and post-filtration problems and solutions, feedwater flow rates, brackish water capacities and seawater capacities are among the technical data included.

Shown and described is Marland's complete SweetWater line of water production units, systems, and products.

For a free copy of the brochure, "Designed Reverse Osmosis Water Production Systems,"

Circle 43 on Reader Service Card

Circle 167 on Reader Service Card ➔

Loftus Succeeds Graham As Vice President-Sales For Moran Towing

Thomas E. Moran, chairman and president of Moran Towing and Transportation Company of New York City, has announced the retirement of **Lloyd R. Graham** as vice president of marketing and sales, and the election of **Robert M. Loftus** to that position.

Lloyd R. Graham

Robert M. Loftus

Mr. **Loftus,** a 1953 graduate of the State University of New York Maritime College at Fort Schuyler, joined Moran after service in the merchant marine and the Navy, where he held the rank of lieutenant commander. He started with the company in the sales department, was named sales manager for New York Harbor in 1964 and sales manager in 1977. He also held the position of vice president-construction and repair, and most recently was president of the joint venture Moran-Crowley Environmental Services Company.

Mr. **Graham** has been with Moran for 19 years, and is well known in the New York maritime community. During his 27 years in the industry he has served as a director of the Maritime Association of the Port of New York, a governor of the Port of New York Propeller Club, treasurer of the Downtown Athletic Club, and a director of the Friends of the Seamen's Church Institute and Security Bureau Inc.

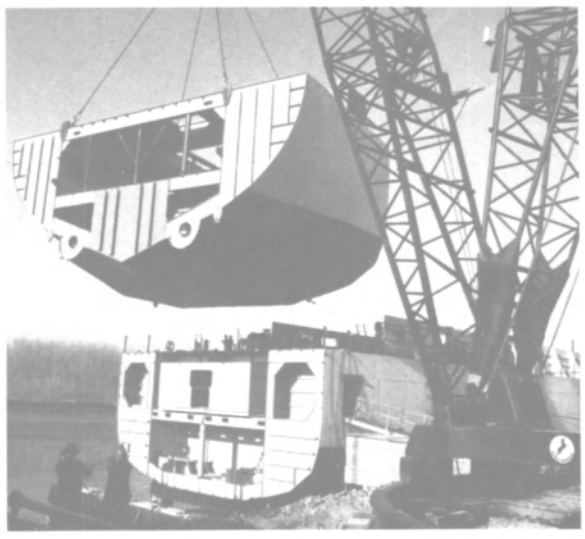
Coburn Appointed Area Manager For Sea-Land— Martin Named Port Manager

Sea-Land Service, Inc., has announced the promotion of **Tom Coburn** to area manager, and the naming of **Jay Dee Martin** as port manager in Anchorage, Alaska.

Mr. **Coburn** will oversee sales and marketing in Alaska's Railbelt, and will supervise Sea-Land's Railbelt area operations. For the past two years he has served as port manager. A 13-year Sea-Land veteran, Mr. **Coburn** has worked in sales, marketing, and operations in Anchorage, Seattle, Dallas, and Oakland. He will report directly to **Doug Tipton,** general manager-Alaska.

Mr. **Martin** will supervise Sea-Land's land and vessel operations, maintenance, and office administration at the company's Anchorage Terminal. Prior to joining Sea-Land, he served as regional sales director for a major nationwide trucking company. He brings with him more than 10 years of sales and operational management experience.

Gulf Coast Trailing Dredge Under Construction At Twin City Shipyard



Construction of a 4,000-cubic-yard hopper dredge is progressing on schedule at Twin City Shipyard (TCS) in St. Paul, Minn. The 8,000-bhp vessel for Gulf Coast Trailing Company of New Orleans is being designed and constructed by TCS using the latest modular and zone construction methods.

TCS is using state-of-the-art, computer-aided drafting and steel fabrication programs. Modules weighing up to 125 tons are fabricated and assembled in the yard's large erection hall, moved out by hydraulic walkers, and lifted into place using a heavy-lift Ring Horse crane (photo).

Twin City has become one of the leading U.S. yards in the design and construction of hopper dredges and dump scows, in addition to its standard line of hopper barges, deck barges, and Portabarges™.

Laviola And Adelman Named Corporate Vice Presidents At M. Rosenblatt & Son Firm

Carmine Laviola

Edward Adelman

Lester Rosenblatt, chairman of M. Rosenblatt & Son, Inc., naval architects and marine engineers with headquarters in New York City, has announced the recent promotions of two long-time key employees to vice presidential positions.

Carmine Laviola, formerly assistant design manager for the Eastern Division, is now a corporate vice president and has been promoted to design manager in charge of detail design activities in the company's six Eastern and Gulf Coast offices. He has been employed by MR&S for 33 years, is a licensed professional engineer, and holds a bachelor of civil engineering degree and a master's degree in business administration from the City College of New York.

Prior to serving as assistant design manager for the past 12 years, Mr. **Laviola** headed the Hull Scientific Section, and had successively more senior assignments in the hull structural and hull arrangements departments.

Edward Adelman, formerly assistant vice president, has been named a corporate vice president and promoted to the position of assistant manager of the firm's six Western Division offices. He has been with Rosenblatt for 32 years, the last 16 of which have been on the West Coast as assistant manager of the San Francisco office. In addition, he has held various other engineering and management positions including assistant to the president. He is a graduate of the City College of New York, where he studied engineering and business administration.

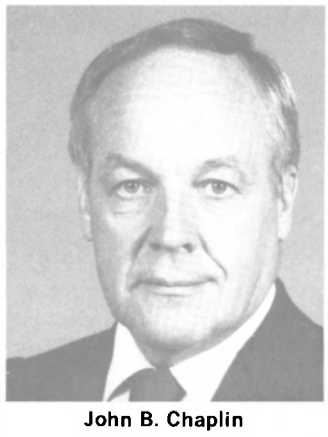
Portland Port Commission Approves Conversion Of Sternwheeler Portland

In a long-awaited action, the Port of Portland (Oregon) Commission gave its approval for Port staff to establish a project in an amount not to exceed $2.4 million for conversion of the sternwheel steamer Portland to an excursion vessel.

This action authorizes staff to initiate design consultant selection procedures and an operator selection process. It is contemplated an investment by the Port itself will attract greater interest by a private operator, who would share in the capital investment of the project plus operation of the vessel.

Emphasis by the Port Commission on conversion of the Portland is in keeping with the Port's stated priority or management value of stimulating a strong local economy. Research has revealed the importance of the steamer to the local tourism industry as well as the convention business in the greater Portland area.

Chaplin Appointed Vice President-Development For Bell Aerospace Textron



John B. Chaplin

John B. Chaplin, formerly vice president of engineering at Bell's New Orleans Operations, has been promoted to vice president for development of Bell Aerospace Textron.

He began his career with Bell in Buffalo in 1962, and was named program director for surface effect ships. In 1969, with the transfer of Bell's ACV/SES activity to New Orleans, he was appointed director of engineering, New Orleans Operations, and in 1981 was promoted to vice president of engineering. He led the Bell engineering team that successfully produced the winning design for the first Minesweeper Hunter (MSH) for the U.S. Navy.

Mr. **Chaplin** is also vice president of Bell Halter Inc., the manufacturing facility for Bell Aerospace where the Landing Craft Air Cushion (LCAC) are being built for the Navy, and where the lead ship for the MSH program will be produced. He has been associated with the development of air cushion technology since 1957, and was involved in all of the early pioneering work. He has been a member of the SNAME Marine Systems-1 Panel (high-speed surface craft) since 1962, and has served as a member of the AIAA Technical Committee on Marine Systems since 1968.

Szczypinski Named Vice President Of Techmatics

Joseph Maurelli, chairman and president of Techmatics, Inc., has appointed **Walter S. Szczypinski** as vice president of the engineering services company located in Arlington, Va. He joined the firm after 25 years of commissioned service in the U.S. Navy as an engineering specialist. He has filled a wide range of engineering and management positions associated with the design, acquisition, and maintenance of naval ships.

Most recently, Mr. **Szczypinski** was cruiser manager, Aegis Shipbuilding Program, responsible for the procurement, construction, and testing for the 27-ship Ticonderoga (CG-47) shipbuilding effort. Prior to that, he was technical director for the Spruance (DD-963) Class program, and also held key production and planning positions in naval shipyards.

A graduate of the U.S. Naval Academy, he holds mechanical engineering and naval engineer MS degrees from MIT and an MBA from Boston University.

Falk Signs License Agreement With Renk For Reverse-Reduction Drives

The Falk Corportion of Milwaukee and Zahnraderfabrik Renk AG of Augsburg, West Germany have announced the signing of a license agreement for reverse-reduction drives. Falk will have exclusive manufacturing, sales, and distribution rights in the U.S. for the Renk Series AWS drives. In addition, the two companies have agreed to form a cooperative pact for the purpose of pursuing custom design marine propulsion drives primarily for Naval applications in the U.S.

For years, Renk and Falk have demonstrated design, manufacturing, and application excellence in marine main propulsion gear drives. The combined strengths of both companies will enhance the product offering to the marine industry, both in standard and custom design drives.

The Falk Corporation, a subsidiary of Sundstrand Corporation, is a leading producer of standard and custom design gear drives and flexible couplings. Renk is a subsidiary of GHH (Gutehoffnungshutte), one of the largest engineering groups in Europe, and is known worldwide for its special-purpose marine propulsion gears, custom design industrial gears, military tank transmissions, and commercial bus transmissions.

For free literature on Renk Series AWS drives,

Circle 11 on Reader Service Card

Warren Named Operations Vice President For Costa Line Cargo Services

Ralph Warren has been promoted to vice president/operations at Costa Line Cargo Services, Inc. of New York. He will be in charge of vessels and terminal operations and has been associated with the company, which is general agent for Costa Line and Red Sea Navigation Line, since 1980. He previously spent 18 years with American Export and Farrell Lines.

Mitsui Delivers Bulk Carrier To Kohoi Shipping Of Hong Kong

The 68,082-dwt bulk carrier Century Progress was delivered recently by the Tamano Works of Mitsui Engineering & Shipbuilding Company, Ltd. to Kohoi Shipping Company of Hong Kong. Built to Lloyd's Register of Shipping classification, the new bulker has an overall length of 730.7 feet, beam of 105.6 feet, depth of 60 feet, and full-load draft of 43.5 feet. Propulsion is by a Mitsui/B&W 6L67GBE diesel engine with a maximum continuous output of 13,000 bhp at 123 rpm. Trial speed was 16.5 knots. In addition to the fuel-efficient main engine, the vessel is fitted with a Mitsui Integrated Duct Propeller for additional fuel savings.

Cargo space is divided into seven holds, of which No. 4 can also be used for ballast water so that deep-draft sailing can be achieved during inclement weather. Holds No. 2 and No. 6 can also be used as ballast tanks for adjusting air draft while in port.

With the exception of certain areas of side shell plating, the upper deck part and the double bottom area, including upper and lower hoppers, are constructed of high-strength steel to reduce hull weight. Bottom and waterline areas of the hull are coated with a self-polishing type paint to reduce frictional resistance and save fuel.

The main engine has sufficient operating, control, and monitoring systems to qualify for the UMS notation by Lloyd's register. Navigation instruments include a Loran C receiver and a Decca Navigator.

W.A.I.T.! Alloy Identification Kits Introduced By Fenner —Literature Available

"W.A.I.T.!" (What Alloy Is That!) is the title of a new four-page color brochure on alloy identification kits for non-destructive testing from Fenner & Associates, Inc. of Houston, Texas.

The publication explains that the W.A.I.T.! series of non-destructive portable alloy identification spot test kits are based upon the electrographic extraction of metal atoms from a surface and subsequent chemical reaction that develop specific color checks.

A few drops of an acidic electrolyte are placed upon the surface of the suspect test sample serving as the anode, and covered with a piece of filter paper. The wet spot on the filter is covered by an aluminum block that acts as the cathode. Current is allowed to flow through the system for a brief period of 30-60 seconds, anodically dissolving a small amount of the test metal for identification and depositing it upon the filter paper. The filter paper is then treated to determine the presence of metallic ions by reactions with chemical reagents. These chemical reactions produce definite color spot tests that are characteristic for each specific metal ion.

Five different kits for different needs are described, and the brochure says the Research and Development laboratory will soon be introducing new alloy identification systems.

Advantages listed for W.A.I.T.! kits are: no delay—know in minutes; low cost—accurate results; portable—safe; simple—no chemical training needed; complete instruction book; non-destructive—less than 0.05 mil consumption of metal alloy; and solution refills—replacement parts available.

The contents of each specific portable test kit are listed, and the entire assemblage is featured in a color photograph on the cover.

For a free copy of the W.A.I.T.! brochure from Fenner & Associates,

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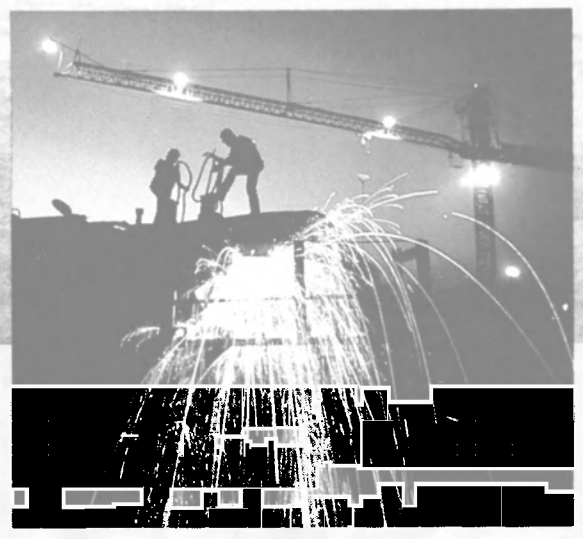
NINE BETTER COMPANIES



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The name is Midland. Nine respected companies, united by a commitment to superior water transportation services.

A name you should remember for your water transportation needs. Nine better companies are the one best system.

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Midland/Port Allen Marine New construction. Mid-river repair. Dry dock work. Barge cleaning. Painting. Offshore drilling structures. Machine shop work.

Midland/Walker This Midland company offers a full-service shipyard, a fuel and supply depot, fleeting and towing services to traffic on the Ohio, Mississippi, Tennessee and Cumberland Rivers.

Midland/Red Circle Pioneered the use of notched barges to offer blue water barging at a cost far lower than cargo ships.

Midland/Eastern Terminals Modern dry bulk terminals in Huntington and Kenova, West Virginia and Tampa, Florida.

Midland/Boston Towboat The oldest company in the system, providing tug service in Boston Harbor for over a century.

Midland Can Save You Money. Whether you use all nine companies or just one, you'll get a cost competitive approach to your business. And the untiring, dependable service you expect from America's leading water transportation system.

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(513) 721-4000

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Tracor Awarded $16-Million Contract For Automated Communications System

Tracor Applied Sciences, Inc., a subsidiary of Tracor, Inc., has received a $16-million contract from Waterway Communications System, Inc., according to an announcement by Tracor group vice president **William C. Moyer.**

The contract covers construction and installation of a new, automated radiotelephone communications system that will provide voice and data services for vessels operating on the Mississippi, Ohio, and Illinois Rivers, as well as on the Gulf Intracoastal Waterway, with incidental coverage extending to tributaries of these waterways and to the offshore waters of the Gulf of Mexico. WaterCom's direct-dial telephone system will begin service in 1986.

The system will provide subscribers with a high-quality communications service that permits a barge operating company to stay in touch with its vessels. A subscriber need only dial the individual telephone number to reach the vessel 24 hours a day.

Tracor's Electronics Systems Division in Rockville, Md., will be responsible for the project, under the direction of ESD vice president **Robert G. Shuster.** Work will be performed at Rockville and at ESD's New London, Conn., facility.

Circle 50 on Reader Service Card

St. Pé Succeeds Erb As President of Ingalls Shipbuilding Division

Gerald J. St. Pé, an executive at Ingalls Shipbuilding division of Litton Industries for the past 20 years, has been elected president of the division, located in Pascagoula, Miss. He succeeds **Leonard Erb,** a senior vice president of Litton, who will continue in his position as the corporate group executive responsible for Litton's marine activities.

For the past 10 years Mr. **St. Pe** has served as Ingalls Shipbuilding division vice president responsible for industrial and public relations. In addition to the presidency of Ingalls, he has been elected a corporate vice president of Litton.

Mr. **Erb,** who joined Litton in 1964 and has served in senior management positions in several of the company's divisions, has been president of Ingalls since 1975. He has announced his plans for retirement during 1985, but will continue to serve Litton as a senior consultant on shipbuilding matters.

Ingalls is a leader in the design and construction of U.S. Navy cruisers, destroyers, and assault ships. With a work force of about 11,000, the division currently has contracts for the production of 10 Aegis guided-missile cruisers of the Ticonderoga Class, and the lead ship in the Navy's new LHD amphibious assault ship program.

Connors Named Manager Of Southeast Asia Region For Crosby Valve & Gage

Michael L. Tiner, vice president-marketing for Crosby Valve & Gage Company of Wrentham, Mass., has announced the opening of a new Singapore Regional Office, which will enhance worldwide distribution of the company's products.

William A. Connors has been appointed manager for the Southeast Asia Region. He has been a Crosby employee since 1977, having held various operations and sales-related positions. He moves to Singapore from Crosby Valve Ltd., where he served as sales manager of the company's Canadian operation.

In addition to his sales responsibilities, Mr. **Connors** will serve as a liaison for commercial activities with Crosby's Australian and Japanese licensees, as well as the company's joint venture in India.

Stomieroski Named Director-Marketing For Waukesha Engine

Charles M. Stomieroski

Charles M. Stomieroski has been appointed director-marketing for the Waukesha Engine Division, Dresser Industries, Inc. He will be responsible for customer services, marketing services, applications engineering, government marketing, and product management.

Mr. **Stomieroski** holds a BS degree in mechanical engineering, and has been with the Dresser Clark Division of Dresser since 1947. His most recent assignment there was manager-gas compressor market.

Waukesha Engine, a division of the Dallas-based Dresser Industries, is a manufacturer of heavy-duty industrial diesel and gas engines for the marine, power generation, petroleum, and off-highway markets.

FMC Offers Brochure On High-Capacity Centrifugal Pumps

A six-page brochure that explains the features of the high-capacity "DEB line" of centrifugal pumps is available from FMC Coffin® Turbo Pump Division, FMC Corporation. The brochure includes the two highest capacity Turbo Pumps offered by FMC: the Type DEB 16, with pump capacity to 1,100 gpm, and the DEB 22, with pump capacity to 1,800 gpm.

The two-stage, high-speed, diffuser type pumps are designed for general boiler feed service, in-plant cogeneration systems and wherever a high-speed characteristic is desired. The DEB line meets applications in these industries: chemical, pulp and paper, packaging, meat, dairy, beverage and food processing, utilities, oil and gas, waste management and marine, among others.

The pumps are engineered with matched pump, turbine and complete controls in one unit. Impeller and turbine wheel are mounted on a single shaft for high efficiency and low maintenance.

Under FMC's 24/24 Program, the pumps are warranted for two years from date of shipment. Once installed, FMC will respond to emergencies within 24 hours of receiving an emergency service call.

For a free copy of the brochure from FMC Corporation,

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King Carl Gustaf XVI of Sweden (to the left of the tower on the right) at the last Offshore Goteborg Trade Fair on opening day

OFFSHORE GOTEBORG '85

International Trade Fair And Conferences

Gothenburg, Sweden—February 25-March 1

Offshore Goteborg '85, Sweden's third offshore exhibition and conference, will be held February 25 to March 1 in the Swedish Trade Fair Foundation's Exhibition and Congress Centre at Gothenburg. It is expected to be even larger and more comprehensive than its two predecessors held in 1981 and 1983.

At Offshore Goteborg '81, 527 companies were represented on 134 stands, and there were some 14,000 visitors. At Offshore Goteborg '83, 676 companies, exhibiting on 233 stands, attracted 16,400 visitors from 39 countries. More than 2,500 delegates took part in the two conferences.

It is already clear these figures will be exceeded by this year's event, not only because of the success of the earlier exhibitions but also because of active and growing cooperation between East and West—most notable between the USSR and the Scandinavian countries—in the Barents, Laptev, Kara, and Siberian Seas, with Japan also becoming increasingly interested in arctic offshore exploration.

Political tension in Central America and the Middle East, which has cast a shadow over two of the world's most important sources of petroleum products, must inevitably focus even greater attention on operations in northern, and especially arctic, waters, where Swedish technology has always been preeminent.

To meet this upsurge of interest, the Swedish Trade Fair Foundation has under way a major program of reconstruction and expansion, both in exhibition space and other facilities, all to be completed in time for Offshore Goteborg '85, which will be the first show to benefit from them.

A total of 20,000 square meters of stand space will be provided by replacing the existing Hall A with a much larger hall with 4,100 square meters of stand space and a roof height of 10.3 meters (almost 34 feet). Congress facilities will include seven large lecture halls for up to 900 people, and a number of smaller rooms for conferences, meetings, and receptions—all provided with the latest telecom systems, including simultaneous translation.

The new Sara Hotel Gothia will form part of the reconstructed complex, standing beside the main entrance, with its lobby opening onto the 600-foot-long gallery overlooking and connecting exhibition Halls A, B, and C.

Offshore Goteborg '85 exhibition and conference will cover every aspect of offshore technology, including such recent developments as icebreaking tankers, ice-borne and seaborne refineries and methanol plants, planning and management of the sea bed, remote radio control of hydraulically operated valves on seabed wells, problems connected with seabed permafrost, and icescouring of the ocean floor.

International Conferences

"Advantage Offshore," the third international conference to be held as part of Goteborg '85, will open at 1:00 pm Monday, February 25, with speeches by **P.G. Gyllenhammer,** president of AB Volvo, and by the conference chairman, **Fred H. Atkinson,** head of the Offshore Division of Lloyd's Register of Shipping. During the four days of the conferences there will be 18 sessions, at which a total of 84 papers will be presented. Two additional sessions will comprise discussions by panels of experts. On Tuesday evening from 6:00 to 10:00 there will be a special conference organized in cooperation with Trygg-Hansa, where topics of particular interest to a Nordic audience will be discussed.

The first main conference session on Monday afternoon will present an overview of oil and gas market developments, and will attempt to relate these developments to plans for Norway, the North Sea, and other areas around the world. The session chairman will be **Gunnar Agfors** of Swedish Petroleum Exploration AB, with Prof. **Jan Stefenson** of Chalmers University of Technology, Gothenburg, as cochairman.

A keynote paper titled "Oil and Gas Market and Likely Price Developments—View from IEA" will be delivered by **Herman Franssen,** chief economist to the International Energy Agency, France. Other speakers will present views from Norway and Southeast Asia. In par-

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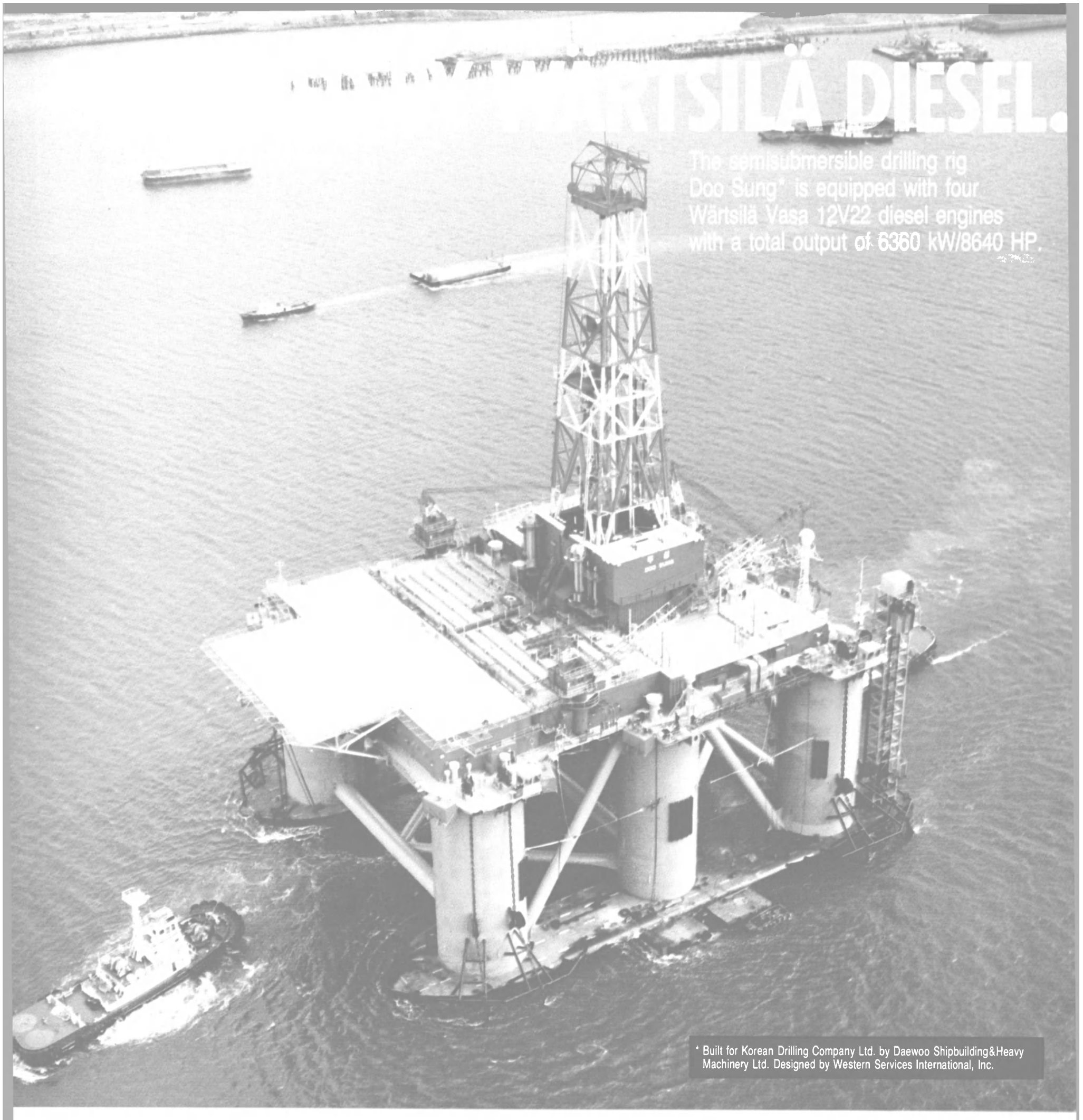

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Offshore Goteborg

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ticular, **Odd S. Haraldsen** of the Norwegian Ministry of Oil and Energy, and **Ole-Jacob Kvinnsland,** managing director of Noroil, will speak for Norway; **Michael Morrow,** managing director of Petroleum News SEA, Hong Kong, will cover the Southeast Asian scene, while Dr. **Tongchat Hongladaromp** and **Pratkal Oudomugsorn,** respectively governor and deputy director of the Petroleum Authority of Thailand, will deal with oil exploration and production in their country.

Of the following conference sessions, three will be devoted to Deep Diving and two each to Station Keeping, Computer Applications, and Offshore Lifts. Ten single sessions will cover a wide spectrum of subjects relevant to the surveying of ocean areas; to the design, construction, commissioning, operating, maintenance, and safety of platforms and pipelines; and to project planning and administration.

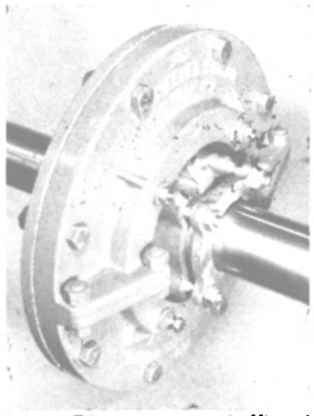
Conference Highlights

Sessions on Deep Diving—Operations on Tuesday morning, chaired by **Oistein Martinsen** of Stolt-Nielsen Seaway Contracting A/S, Norway, and on Deep Diving—Equipment on Wednesday morning, chaired by Dr. **Bjorn H. Hjertager,** head of research at the Chr. Mikkelsen Institute, Norway, will be rounded off on Wednesday afternoon by a panel discussion on Deep Diving—Divers or ROVs?

Panel members will include: **O. Chr. Andersen,** manager, diving technology, Statoil, Norway; **Bernard Debano,** project manager, Comex Services, France; Dr. **Hans Ornhagen,** senior researcher, FOA 58, Sweden; Capt. **Bob Fitch,** Stena (UK) Ltd.; **Don McGregor,** manager, Stolt-Nielsen Seaway Contracting A/S, Norway; **Norman Chambers,** Sub Sea Offshore Ltd., U.K.; and **Rolf Asplund,** managing director, SUTEC, Sweden. Chairman of the panel debate will be **Erik Hultmark,** director of the National Marine Resources Commission, Sweden.

A session on Tuesday morning entitled Onboard Computer Systems will deal with practical applications including the training of offshore installation teams, dynamic positioning in survey operations, process control, and computer-assisted design. The chairman will be **Ralph Norrby** of KaMeWa AB, Sweden.

The first of five papers will be one from **Roger Bostrom** of ASEA, Sweden, on an integrated process control and monitoring system. **R.T.C. Austin** and Dr. **P.E. Duncan** of John Brown Offshore Structures Ltd., U.K., will discuss the installation of an offshore structure and the use of portable microcomputers for analysis and training.



On Wednesday afternoon, under the chairmanship of **R. Lewis Ridings,** Lewis Technical Services, Inc., U.S., the subject will be Computer Analysis in the Offshore Industry. A total of six papers will describe new roles for computers in supervision and control, in preventive maintenance, in integrated management systems yielding new kinds of information, and in solving technical problems too complicated to be attempted by traditional methods of calculation.

Among the speakers will be **David Lloyd** of Racal-Norsk Ltd., U.K., who will discuss artificial intelligence systems applied to the offshore industry, while **Alan Jardine** of P.A. Computers and Telecommunications, U.K., will present a paper entitled Computers and the Leading Edge.

In what promises to be an extremely interesting session on Tuesday morning, six papers will be presented to show how the flexibility afforded by floating and semisubmersible structures can reduce capital expenditure and lead times for offshore oil and gas production plants. Advances in design may enable marginal fields to become economically viable.

This session, chaired by **Arne Berglie,** technical director of Gotaverken Arendal AB, Sweden, will include a paper from **Peter Metcalf** of Canocean Resources (UK) Ltd. titled Commissioning and Maintenance of Subsea Systems. **Bernard Barthelemy** of Coflexip, Norway, assisted by **Christophe Perrenati** of Coflexip, France, will present a paper on Flexible Risers for Early Production and Testing Vessels. **Paul E. Sullivan,** chief engineer of Murdock Engineering Company, U.S., will speak on high-technology elastomeric devices, and **Hans Petter Jacobsen,** principal surveyor of Det norske Veritas, Norway, will wind up the session with some observations on the classification and certification of floating production systems.

Eivald M.Q. Roren, executive vice president of Det norske Veritas, will chair a special session on Tuesday morning that will focus on methods and technology for periodical inspections. The economy and safety aspects of system surveys will also be covered. Among papers to be presented at this session are Deep Sea Production Systems—Trends in Surveillance and Repair, from **Bjorn Husemoen** of Kongsberg Vapenfabrikk, Norway, and Quality Assurance through Verification, from **Bjorn Blaker,** head of offshore activities at DnV.

On Tuesday afternoon Prof. **Tom Floden,** associate professor at the University of Stockholm, will preside over a session at which papers will be presented on new methods in three-dimensional seismic surveying, developments in airborne surveillance systems, and the interpretation of data.

In a paper on new methods for 3-D seismic data acquisition, **M. Brink,** head of R&D at the Geophysical Company of Norway A/S, will consider how two separate streamers towed by a single vessel can collect data from two adjacent lines in one pass, and the advantages of using two vessels to circumvent obstructions and save time. **Cdr. Staffan Kvarnstrom** of the Swedish Coastguard Service will read a paper titled Aerial Surveillance of Coastal Waters—New Airborne Systems Developed by the Swedish Coastguard.

During morning sessions on Wednesday and Thursday a total of 10 papers will describe different positioning, anchoring, and mooring systems. **Pontus Clason** of GVA, Sweden, and **Ingvar Rask** of SSPA, Sweden, will discuss Resonance of Semisubmersible Mooring Systems Due to First Order Wave Forces. **Kaj Wendel** of Chalmers University of Technology, Sweden, will examine the use of probability analysis in the dimensioning of anchoring systems. A paper from **D. Kypke** of Brown & Root (UK), **S. Guy** of Heerema Ltd., U.K., **J. Chivvis** of Conoco (UK) Ltd., and **L. Bystrom** of SSPA, on successful installation of the first tension-leg platform in July 1984 in the Hutton Field of the North Sea, is likely to be of particular interest.

A panel session on Wednesday morning will discuss the relative merits of steel and concrete for plat-

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form fabrication, and the next generation of platforms for very deep waters. The session will be chaired by **Hans Lindgren,** managing director, SSPA Maritime Consulting AB, Sweden. Participants will include: Prof. **S. Bernander,** SKANSKA, Sweden; **J. Brian Cook,** engineering manager of Shell (UK) Exploration and Production; Dr. **Svein Fjeld,** vice president-technology and products, A/S Veritec, Norway; **Andrew F. Hunter,** supervisor marine engineering, Conoco Inc., U.S.; **Sven Plahte,** vice president-technology and projects, Norsk Hydro A/S, Norway; and **Jay B. Weilder,** senior vice president, Brown & Root Inc., U.S.

Four papers will be presented on Wednesday morning to highlight the supreme importance of materials administration for any prospective supplier of hardware to the offshore industry, and to provide guidance on how material of the right quality can be made available in the right quantity at the right place and time. Prof. **Dag Ericsson** of Resuradministration Dag Ericsson AB and Chalmers University of Technology, Sweden, will chair the session. He will also deliver a paper on Materials Administration—A Top Management Philosophy. Papers on similar themes will be presented by **Sven Eigil Hoberg** of Bedriftsokonomisk Institute, Norway, and **Hans M. Daastol** of Norsk Hydro, Norway, while **Lars Backman,** export manager of Wermex, Sweden, will describe his company's endeavors to become a competitive supplier to the offshore industry through materials administration.

Two sessions on Wednesday will be devoted to seven papers and a discussion of problems and solutions in the design, construction, and use of floating cranes and sheerlegs and their associated slings. The implications for the design of structures to be lifted will also be considered. The chairman for both sessions will be **Peter H.B. Mitchell,** consulting naval architect of Brown & Root (UK) Ltd.

Among papers to be presented will be one on lifting considerations in the design of heavy offshore modules, by **I.R. Horgan,** senior manager-structural and marine engineering at Brown & Root (UK) Ltd. The design of very large cranes for offshore construction will be examined by **Bruce A. Copp,** chief project structural engineer at Clyde, U.S., while naval architect **Ulrich Dischler** of Neptun, West Germany, will discuss economies in direct costs and time achieved by using advanced floating sheerlegs for inshore and offshore erection of assemblies before moving to site.

The subject of marine pipelines will be dealt with on Wednesday afternoon under the chairmanship of **Malcolm Mitchell,** engineering manager of Hamilton Bros. Ltd., U.K., who will also offer a paper, in conjunction with Dr. **Raj Jain** and **Stephen Williams** of Brown & Root Engineering Ltd., U.K., on the Esmond pipeline, the first to be laid in the Dogger Bank area of the North Sea. The line passes through a treacherous environment, requiring extensive hindcast, plus mathematical modelling. A number of new design concepts for stability, cathodic protection, mechanical connectors, and pipeline crossings will be discussed.

Peter Hinstrup, head of the Offshore Department of DHI, Denmark, and **Helge Gravesen,** senior hydraulic engineer of Ramboell og Hannemen, Consulting and Planners A/S, Denmark, will speak on Submarine Pipeline Design. **Johan Peter Schwartz** of Seanor Engineering A/S, Norway, will discuss deepwater flowlines and alternative methods of installation, tie-in, and repair. **Max Eliasson** of Sydgas, Sweden, will speak on Sweden's access to North Sea gas via the Oresund Pipeline. Dr. **W.J. Supple** and **J.P. Kenny** of the U.K., and **T. Thronsen** of Saga Petroleum, Norway, will deliver a paper on The Potential of J-Lay for the Troll Field.

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form emergency systems, and new methods of breaking down evacuation systems into separate steps.

A paper from **I. Ciarambina, S. Messina,** and **R. Rubina** of Snamprogetti S.p.A., Italy, will describe onshore and offshore plant safety procedures, with experience gained from both manned and unmanned platforms that may lead to development of an integrated software program for system analysis. **Magne Torhaug,** chief engineer of A/S Veritec, Norway, will speak on safety and available analyses of subsea production systems.

A paper will also be presented by **Scott Little** of Shell Canada Resources Ltd., who was a member of the Offshore Safety Task Force that researched and prepared a comprehensive report on the status of offshore operational safety on the East Coast of Canada. The recommendations in this report have provided valuable guidance for industry and governmental/industry coordination. Mr. **Little** now chairs the safety subcommittee of the East Coast Operations Management Committee, OOD/CPA.

Erik Jeppe Magnusson, head of research at ESAB AB, Sweden, will take the chair on Thursday morning when six papers on the vital topic of welding and steel selection will be presented. Among them will be one from Prof. **Herman S. Wintermark** of Oslo on metallurgical backgrounds for modern structural steel used in offshore and Arctic applications. Submerged arc welding will be covered by **Svein Tandberg** of ESAB A/S, Norway. The practical application of explosive welding technology to the fabrication of offshore pipelines will be the subject of a review by **Ingemar Persson,** head of R&D at Exploweld, Sweden.

Under the chairmanship of **Alistair Fleming,** Clyde Project manager for Britoil plc, U.K., papers on hook-up and commissioning will be presented on Thursday morning by **J. Barry Saunders,** Beatrice "C" construction manager, Britoil plc, who will set the scene by showing the relationship of the hook-up and commissioning phase to the design, procurement, and construction work. **Mike Barden,** director of the Taywood Santa Fe Morecambe Bay Project, will address the broader and more fundamental management planning required. **David Odling,** sales and marketing director of AOC International Ltd., U.K., will concern himself with forms of contract, productivity trends, and work quality, and with some ideas on necessary changes to make this phase more cost effective. Finally, **George Pillans,** senior surveyor, Lloyd's Register of Shipping, will discuss the statutory requirements for final approval and certification.

Sven Erik Rawall of Stena AB, Sweden, will preside over a session on Thursday morning during which four papers will cover the multi-disciplinary techniques involved in the servicing of undersea wells. Messrs. **Berthier** of TGP, France, and **D. Lebouteiller** of Comex Services, France, will deliver a paper on The SWIM System—A New Subsea Well-Servicing and Maintenance System Operated from a DSV.

A paper from **Rene Quin** of Total Marine Norsk A/S, Norway, and **A. Wilson** of Total Oil Marine plc, U.K., will describe a scheme for emergency repairs to the twin gas pipelines from the Frigg Field to St. Fergus, as well as a technique known as "cold tapping" for repairing pipelines or adding connections to existing pipelines under water.

EMS Development Wins Three Contracts Totaling $19 Million

EMS Development Corporation of Farmingdale, N.Y., has been awarded three contracts for magnetic silencing of naval vessels. The systems to be supplied will provide protection against underwater magnetic mines. Total of the three awards is almost $19 million.

The contracts were from: the U.S. Naval Surface Weapons Center ($16,375,000) for 10 sets of range equipment; the Brazilian Navy ($2,031,000) for one set of range equipment; and from Bath Iron Works ($552,000) for three sets of shipboard equipment.

Roland Named President Of Amoco Transport Company

Edwin J. Roland has been appointed president of Amoco Transport Company, a transportation subsidiary of Standard Oil Company (Indiana). He will be responsible for Standard's ocean transportation fleet carrying crude oil and petroleum products. He joined Amoco Transport in 1983 as vice president of engineering and construction, following 10 years of active duty with the U.S. Coast Guard.

Mr. **Roland** holds a bachelor's degree in science engineering from the U.S. Coast Guard Academy, and a master's degree in nuclear engineering and naval architecture/marine engineering from the University of Michigan.

NKK Acquires Control Of Fuji Diesel Company

Nippon Kokan (NKK) has recently acquired Fuji Diesel Company from Fuji Electric Company Ltd. by purchasing more than half of the company's 5.4 million shares. Fuji Diesel, headquartered in Tateyama City south of Tokyo, manufactures some 50 engine models in a power range of 850 to 9,000 bhp at 380-5,000 rpm.

"NKK's decision to acquire control of Fuji Diesel is based on its plans to augment its line of large diesel power plant engines by adding small- and medium-sized units," said **Minoru Hashimoto,** president of NKK America Inc., NKK's U.S. subsidiary based in New York. "NKK has long been active in a wide range of low-, medium-, and high-speed diesel engines for ships," he added.

An engine manufacturer of long experience, Fuji Diesel recently increased its competitiveness in the production of medium- and small-capacity engines, enabling it to sustain a major export market share, according to NKK.

Heidenreich Forms New Company Seeking Ship Investment Opportunities

Per Heidenreich has formed Heidenreich Marine Enterprise Inc. in Greenwich, Conn. This new company will be seeking investment opportunities in ships through leveraged buyout financing and equity funding from investors attracted by appreciation in ship values and tax benefits.

Mr. **Heidenreich** resigned recently from Stolt-Nielsen Inc., where he was executive vice president responsible for a fleet of 40 ships. From 1977 to 1981 he was a director of Fearnleys A/S in Norway. Prior to that in 1975-76 he was president of Stolt-Nielsen, Japan.

He has 16 years of experience in the international maritime industry in Norway, Japan, and the U.S. He will also act as advisor to shipping companies, shipyards, and financial institutions.

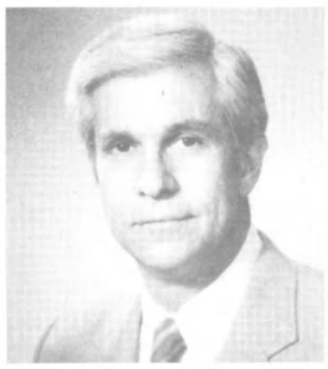
Tano Awarded $2.4-Million Coast Guard Contract For Electronic Control Systems

Tano Corporation, a Rexnord company, has been awarded a $2.4-million contract by the U.S. Coast Guard to manufacture electronic engine control systems for four high-endurance cutters.

The contract calls for the New Orleans-based company to supply an engine room console, pilothouse console, two bridge wing consoles, two local engine room panels, and a variety of components and sensors for each of the 378-foot ships. The existing fleet of 12 high-endurance cutters is scheduled for complete overhaul during the next few years under the Coast Guard's Fleet Revitalization and Modernization Program.

Delivery of the control systems to designated shipyards is scheduled for early 1986 through early 1987.

Riley-Beaird Promotes James E. Oliver



James E. Oliver

James E. Oliver has been promoted to manager, Maxim® Silencer Products. Starting with Riley-Beaird in 1960, his Maxim experience has been as sales engineer, applications engineer, product manager, and senior engineer, special projects. His new responsibilities include marketing and engineering of all Maxim Silencer Products. These include industrial silencers, catalytic converters, and heat recovery equipment.

He has a Bachelor of Science degree from Louisiana State University.

Bru Succeeds Amoss As Chairman Of CASO

William B. Bru, chairman, president, and chief executive officer of United States Lines, Inc. has been elected chairman of the Council of American-Flag Ship Operators (CASO), succeeding **W.J. Amoss Jr.,** president and CEO of Lykes Bros. Steamship Company.

Prior to his present position at U.S. Lines, Mr. **Bru** served as president and CEO of Diamond Head Corporation, and was chairman of that firm when he left. He was also at Sea-Land Service for 12 years in various management positions, resigning as general sales manager of European services.

FMC Offers Compact Turbine-Driven Centrifugal Boiler-Feed Pump —Literature Available

A compact, single-stage centrifugal boiler feed pump, with pump capacities to 400 gpm and total head to 406 psig, is now available from FMC Coffin® Turbo Pump Division, FMC Corporation. Overall dimensions, length-width-height, are just 32 inches by 23 inches by 32 inches. Designed type "IND," this diffuser-type, turbine-driven pump is ideal for applications with low to medium water consumption.

The IND features a highly efficient, single-stage design. The impeller and turbine wheel are mounted on a common, alloy steel shaft to provide longer wear, less maintenance and a lower initial cost
than multi-stage systems. Also featured is an automatic recirculating system, which automatically pipes the natural leakage past the inboard wearing ring back to the suction source.

The pump is equipped with an automatic control valve and constant pressure regulator. Lined into the control system is a protective automatic excess back pressure trip that provides complete protection against any excessive rise in casing exhaust pressure. The turbine is provided with a steam strainer, turbine casing sentinel valve, overspeed governor, and a combined trip and throttle valve. Housing is rigid, one-piece cast steel.

Positive lubrication is assured by means of a self-contained oil system consisting of oil splash rings, a large oil sump and oil cooler assembly. An exclusive oil dam feature is incorporated into the bearing retainers so that a small reservoir of oil is continually maintained in each main bearing retainer assembly. This not only provides a reserve oil supply, but also allows for instant start-up.

Other specifications include: liquid temperatures to 300 F (149° C); maximum suction pressure, 75 psig; steam inlet pressure to 600 psig, with initial temperature to 650° F TT and exhaust pressure to 60 psig.

For a free brochure and further information on the Coffin Type "IND" turbo pump,

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Discussing paper at recent meeting of The Society of Marine Consultants are (L to R): Capt. **J.C. Musser,** executive director; **Virgil Rinehart** of MarAd, author; Capt. **G.P.S. Bhalla,** Society member from India; and Executive Committee chairman **Alfred Stanford.**

Society Of Marine Consultants Reviews Arctic Oil Transportation

At a recent luncheon meeting of The Society of Marine Consultants held at the Whitehall Club in New York, a large turnout of members and guests heard a presentation on the transportation of oil from the arctic. The speaker was **Virgil Rinehart,** director of the Office of Advanced Ship Development and Technology, U.S. Maritime Administration.

Concentrating on the carriage of crude oil from the arctic to the continental U.S., he reviewed the historic voyages of the tanker Manhattan through the Northwest Passage in the early 1970s, and the subsequent development of the Trans-Alaska pipeline linking the North Slope with the port of Valdez on the South Coast.

Based on industry estimates of large volumes of as yet undiscovered oil in the region and the maximum capacity of the pipeline, Mr. **Rinehart** foresees additional utilization of tankers in the trade, not from the pipeline's southern terminal at Valdez but directly from the producing fields in the Arctic.

Touching on the subject of the possible export of Alaskan oil to Japan, he personally doubts that it will occur, as the inevitable result would be the loss of American tonnage and jobs. However, he said that the maritime industry would be unwise to rely entirely on government regulation to protect its interest in the Alaskan oil trade.

Capt. **Arthur Smith,** who commanded the Manhattan on the Northwest Passage voyages, pointed out that tanker transportation directly from the oil fields was feasible, and that the decision to build the pipeline was made on political not economic considerations.

In addition to the many members and guests from the New York area, Society members in attendance included Capt. **C.P.S. Bhalla** from New Delhi, India, and Capt. **Gerd Blunck** from West Germany.

New Diving Service Firm Formed By Richard Smith

Richard G. Smith has announced the recent formation of RS Marine Diving Enterprises, Inc. in Northport, N.Y. The new firm is a fully insured diving service company, providing all phases of underwater ship repair, ultrasonic inspection, maintenance, construction, and salvage work in Greater New York Harbor and adjacent waterways.

Mr. **Smith,** diving manager, has a background of 15 years in a supervisory and diving capacity in the industry. The company will perform on projects such as underwater welding, cutting, and repair of ships' hulls; salvage, heavy marine construction, pipeline assembly, demolition, and underwater photography.

Aboussie Named Sales Manager At Ingram Barge

Ingram Barge Company has announced the appointment of **David A. Aboussie** to the position of sales manager. He will be headquartered in Ingram's St. Louis office, and will be responsible for the sales of the company's dry cargo fleet, with primary emphasis on the grain industry.

Ingram has been adding covered hopper barges to its fleet to increase its participation in the dry cargo markets, expecially grain, in order to establish a consistent operating pattern on the Upper Mississippi River.

For the past 12 years, Mr. **Aboussie** has been employed by Memco and Federal Barge Lines as grain sales manager and import sales manager.

Amor And Frayling Named Vice Presidents For Lister Diesels

Two changes in top management positions have been announced by **James A. Kolinski**, president of Lister Diesels Inc. of Olathe, Kan.

J. Leo Amor has been appointed vice president marketing services. He will be responsible for all internal sales activities including sales administration, parts sales and service, advertising, and market planning. His former position was vice president sales-distribution.

Peter Frayling moves to the position of vice president sales-engines. He formerly served as vice president sales-OEM. He will now be responsible for all external engine sales.

Lister manufactures a line of air-cooled diesel engines covering the power range of 2.5 to 195 bhp. The company also markets a line of recently introduced generating sets under the Hawkpower brand; power outputs are 3 to 130 kw. The Hawkpower line is the responsibility of **Philip Cantrill**, vice president sales-generator sets.

Diehl Named Chairman Of Ingram Barge Company

Neil N. Diehl, former president of Ohio Barge Line (OBL) and Mon-Valley Transportation Company, will make Nashville his base of operations in his new capacity as chairman of Ingram Barge Company, which recently purchased substantially all of the marine assets of United States Steel and its Ohio Barge and Mon-Valley subsidiaries.

Under Mr. **Diehl's** direction, Ingram is assuming OBL's handling of all the long-term contracts and other requirements of U.S. Steel. As part of the ownership change, OBL's Dravosburg, Pa., base will continue to operate as an Ingram Barge facility, staffed by former OBL employees, providing essentially the same customer service as heretofore.

In its new role of handling all of U.S. Steel's "northern" business, Ingram Barge will work closely with Warrior & Gulf Navigation Company to accommodate the steel company's marine transportation needs.

J.J. Henry Firm Relocates New York Headquarters

J.J. Henry Company, Inc., a leading firm of naval architects and marine engineers, has relocated its New York City headquarters from Two World Trade Center to 40 Exchange Place, New York, N.Y. 10005. The new telephone number is (212) 635-4000.

Moe Appointed General Manager At Alaska Division Of Sea-Land

Peter Moe

Peter Moe has been named general manager, continental U.S., for the Alaska Division of Sea-Land Service, Inc., the largest U.S.-flag carrier of containerized ocean cargo. He comes to the company's Seattle office from Sea-Land's biggest port facility at Elizabeth, N.J., where he served as manager, Eastern Region, North American Pacific Division.

A 14-year veteran with Sea-Land, Mr. **Moe** has held a series of sales, marketing, and operations management positions in all of the company's five major divisions. He began as a sales representative in the Mediterranean Division, progressing to management positions in the Atlantic and Pacific Divisions before his recent promotion.

Navy Buys 11 More Ships For Ready Reserve Fleet At Cost Of $82.5 Million

The U.S. Navy has awarded contracts valued at a total of some $82.5 million for the purchase of 11 commercial cargo ships that will be assigned to the Ready Reserve Fleet. Lykes Bros. Steamship Company will sell five breakbulk ships—the Dolly Turman, Frederick Lykes, Howell Lykes, Mason Lykes, and Velma Lykes—at a total cost of $21,250,000. Farrell Lines will provide one LASH vessel, the Austral Lightning, for $9.2 million, which includes 73 LASH barges and 24 40-foot and 52 20-foot containers.

One purchase contract was awarded to a foreign-flag ship operator, Barber Steamship Lines Ship Management Inc., an affiliate of Barber Steamship Lines, for five RO/RO ships at a cost of $52 million. This price, however, includes an estimated $20 million to upgrade the Barber ships to meet American Bureau and Coast Guard standards. The refurbishing work will be performed by Bethlehem Steel's Sparrows Point shipyard near Baltimore. Barber must hand over its five ships no later than November this year.

The Grapple (ARS-53), a steel-hulled rescue/salvage vessel, built for the Navy, was launched recently by Peterson Builders.

Peterson Yard Launches Another Rescue/Salvage Vessel For Navy

Peterson Builders, Inc. (PBI) of Sturgeon Bay, Wisc., recently launched the fourth 255-foot, steel-hulled rescue/salvage vessel for the U.S. Navy. Christened Grapple (ARS-53), she is the culmination of a three-year construction project supplying the Navy with these new Safeguard Class vessels.

These ships possess upgraded mission-essential equipment and systems to perform the diversified missions that will be assigned to them. These can include salvage, rescue and retrieval, patrol duties, firefighting, and support/supply services to the fleet. Extensive diving operations are accomplished using the ships' diver life support air system, the finest in the Navy.

Mrs. Patricia Allen was the sponsor for the Grapple; her mother, **Mrs. Charles E. Mason,** assisted her as matron of honor. The sponsor's husband, **Richard V. Allen,** an internationally recognized authority on foreign policy and national security affairs, was the principal speaker at the launching ceremony. Other speakers included Capt. **William C. Pfister,** USN, NavSea program manager for all auxiliary and special-mission ships; Capt. **Paul M. Robinson,** USN, Sturgeon Bay Supervisor of shipbuilding; and **Ellsworth L. Peterson,** president of PBI.

The Grapple will join her sister ships previously launched at PBI—Safeguard, Grasp, and Salvor. Successful operational and heavy-lift tests have been completed recently for the lead ship of the class, the Safeguard, and she is scheduled for spring 1985 commissioning by the Navy.

Boeing Sells Jetfoil To Canadian Company For Marine Research

Island Research and Development Corporation of Victoria, British Columbia, has ordered a Boeing Marine Systems Jetfoil hydrofoil for use in marine research tasks. The approximate value of the sale is $24 million. Jetfoil is Boeing's trade mark name for its computerized hydrofoil.

The Jetfoil, scheduled for delivery in June this year, will be used for the extension of conventional research into various aspects of oceanography, pollution control, bottom mapping, bottom material classification, and geophysical measurements for IRDC clients. High-speed acoustic data-gathering techniques will also be pursued for various governmental clients.

The Jetfoil is considered an ideal platform for oceanographic research tasks because of its high speed and ability to operate comfortably in rough water. It features a fully submerged foil, automatic computer control, and waterjet propulsion. IRDC plans to outfit its Jetfoil with research test equipment following delivery. Operating and maintenance crews for the research vessel will be provided by Island Jetfoil Corporation of Victoria. That company also commences Jetfoil passenger service between Seattle, Victoria, and Vancouver in March this year.

Boeing Jetfoils are operating in commercial passenger service between Hong Kong and Macao, in the Sea of Japan, in the Canary Islands, and across the English Channel. Boeing has also sold Jetfoils to the Republic of Indonesia for coastal patrol service.

New York SNAME Meeting Hears Paper On Shipboard Computers

A recent meeting of the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers heard a paper titled "Selection Considerations for Shipboard Computer Hardware." The authors were **Albert C. Song,** vice-president-micro/mini systems, and **Donald F. Logan,** vice president-marketing, both of Marine Management Systems, Inc.

The paper covered considerations in the selection of shipboard computer hardware for various management functions. Factors such as required computational and storage capacity, environment, service, communications, and software compatibility with other computers were discussed. The paper also included reference to industry case studies, and discussed the subject of classification approval procedures.

In summary the authors expressed the following conclusions: "A new era of shipboard computer application appears to be emerging in the maritime industry. The past five years may be looked on as one of testing applications as well as evaluating the acceptability of the new microcomputer for shipboard use. The majority of the major shipowners have accepted the fact that such systems are necessary for efficient management of their vessels; the question is how to go about implementing such systems. The first step is to gain an understanding of the necessary elements and the options open to covering them.

"In the long run, successful applications will depend on the shipowner making the necessary commitment of his own resources, not just the purchase of systems but in his own personnel. This starts with a commitment by management to identify what the actual requirements are, committing to a plan to meet them, and also committing the necessary internal staff to carry it out."

For a copy of the paper and additional information on shipboard computer hardware and systems,

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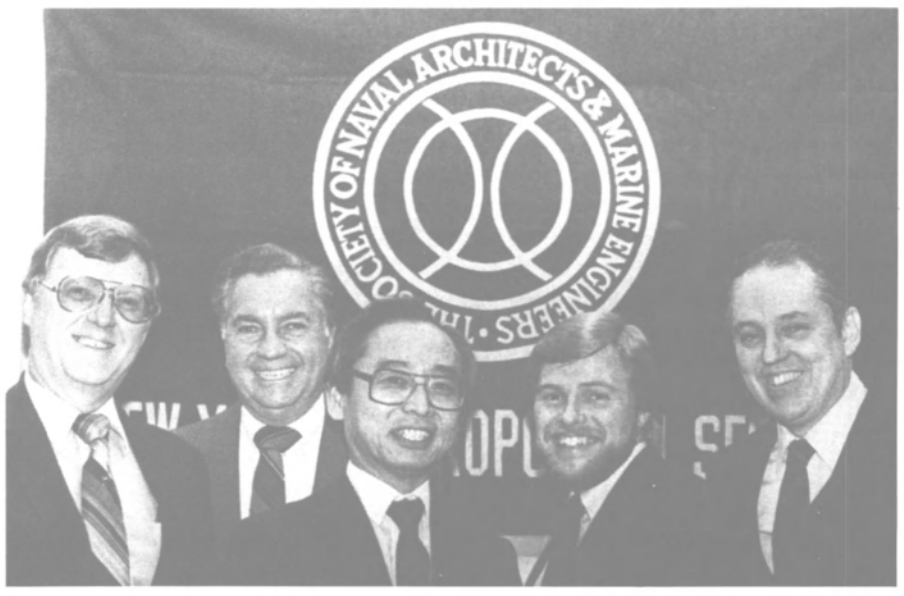

Principals at recent New York Section SNAME included (L to R): **John H. Higginbotham,** vice chairman; **Daniel Savitsky,** Papers Committee co-chairman; **Albert C. Song,** author; **Donald F. Logan Jr.,** author; and **William H. Garzke,** chairman.

MarAd Approves Sale Of Delta Line To U.S. Lines

The Maritime Administration has given its approval for United States Lines, Inc. to acquire the ships and other assets of Delta Steamship Lines, Inc. Under the agreement, USL will buy the 11 existing Delta ships and will charter the three being built at the Odense Shipyard in Denmark for Crowley Maritime Corporation, Delta's parent company.

Instead of a cash transaction, USL is giving Crowley Maritime 366,000 shares of a new Class B preferred stock issued by McLean Industries, USL's parent organization. The stock has a par value of $100 per share.

The MarAd approval requires that USL continue Delta's subsidized services between the U.S. and South America, but on a reduced basis. Along with the Moore McCormack fleet purchased by McLean Industries last year, the acquisition and charter of the Delta ships makes United States Lines the dominant American-flag liner operator in the Central and South American trades.

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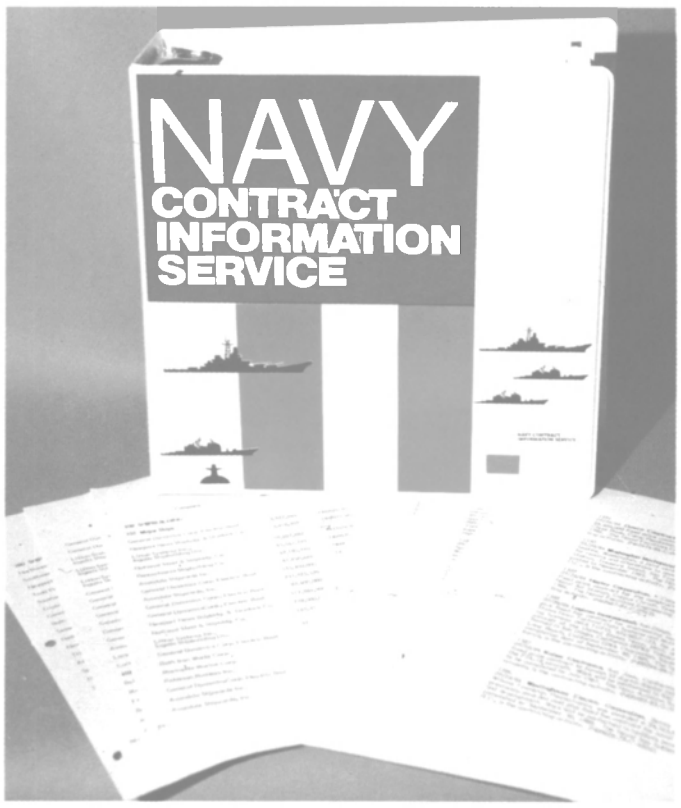

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The Rowan Gorilla III departs Belle Chasse, La., on a journey of more than 2,000 miles to the east coast of Canada for drilling off Nova Scotia.

Third Rowan Gorilla Drilling Rig Delivered By Marathon LeTourneau

The Rowan Gorilla III departed from Belle Chasse, La., recently bound for the east coast of Canada where the drilling rig will operate under contract to Mobil Oil Canada, Ltd. offshore Sable Island, Nova Scotia. The new unit is the third in a series of the largest self-elevating jackup rigs built to date by Marathon LeTourneau Offshore Company for Rowan Companies, Inc. of Houston. The first unit has been working successfully offshore Sable Island for the past year under contract to a Husky/Bow Valley joint venture, while the second recently arrived in the North Sea.

The Gorilla rigs are of a new and heavier class intended to drill up to 30,000 feet in water depths up to 328 feet in any ice-free hostile environment in the world. In less hostile environments, they are capable of drilling in water depths of more than 400 feet. These 15,000-ton units require twice the amount of fabricated steel used in the previously largest jackups. At 297 feet long by 292 feet wide, Gorilla Class rigs are nearly 40 percent larger than the Marathon LeTourneau 116 Class jackups.

Construction of the Rowan Gorilla III was completed at Marathon's Vicksburg, Miss., shipyard, with materials purchased by both the builder and the owner from manufacturers located in 33 states throughout the U.S. For example, the rig stands on structural steel plate and tubular parts made in Ohio, New York, Wisconsin, Massachusetts, Pennsylvania, Florida, Illinois, and Texas, all purchased by the shipyard. Owner-furnished equipment that Rowan purchased to perform the drilling functions was manufactured in many of these same states, plus others.

When Gorilla III left Belle Chasse it was towed by the Smit London, a 22,000-bhp oceangoing tug owned by Smit Tak International Towage and Salvage Company of Rotterdam. The journey took approximately 20 days, and brought the rig from the Gulf of Mexico around the Florida peninsula and up the U.S. and Canadian east coast to Nova Scotia. During the voyage the tug received propulsion assistance from the operation of the Gorilla III's twin 112-inch propellers in Kort nozzles driven by eight electric motors with 6,800 hp total output.

The Gorilla III is the 23rd rig in Rowan's offshore fleet. During its 60 years of experience in the contract drilling business, the Houston company has drilled more than 7,000 oil and gas wells throughout the world.

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General Electric	Transformers & SCRs
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PUMPS: Houston Systems, Lovejoy, Marlow, Peerless, Roper, S&N Pumps	

Federal Barge Lines Acquired By Midland Affiliated Company

Houston Natural Gas Corporation (HNG) has announced the completion of the sale for $39,750,000 of Federal Barge Lines, Inc., United Barge Company, and Marine Equipment Company to Midland Affiliated Company. Federal, United, and Marine Equipment are wholly owned subsidiaries of HNG's Pott Industries; Midland Affiliated is a wholly owned marine subsidiary of Eastern Gas and Fuel Associates.

The sale is part of HNG's restructuring program begun earlier in 1984, in which HNG announced it would dispose of all non-oil and gas related operations.

Houston Natural Gas is a diversified energy company involved primarily in the transmission and sale of natural gas and in oil and gas exploration and production. Boston-based Eastern Gas and Fuel is the parent organization of several energy-related companies engaged in coal production, natural gas distribution, and inland marine transportation.

Morris Guralnick Firm Awarded Two Contracts For Conversion Designs

Morris Guralnick Associates, Inc. (MGA) has been awarded two contracts under which the San Francisco-based firm of naval architects and marine engineers will assist with the engineering and design phase in the conversion and modification of two ships to be operated by the Military Sealift Command.

The first contract, awarded by Continental Maritime of San Francisco, Inc., calls for MGA to prepare the designs, studies, construction drawings, and other data required in converting the former American President Lines containership President Monroe to an Auxiliary Crane Ship (T-ACS-2).

Under the second contract, placed by Northwest Marine Iron Works of Portland, MGA will assist the Oregon shipyard in modifications to be made to the USNS Observation Island (T-AGM-23), a former Mariner Class freighter that has been converted into a missile tracking ship.

Modifications to the President Monroe include removal of all conventional cargo gear and replacement with three sets of twin pedestal cranes, each crane with a lifting capacity of 30 metric tons. Accommodations will be expanded to carry 89 persons, and two new 1,640-kw diesel generators will be installed to power the increased electrical load.

Changes on the Observation Island include addition of a deckhouse to increase personnel accommodations, upgrading of electronic systems, installation of two evaporators, and raising the height of the stack.

Navy Awards NASSCO $14 Million For Overhaul Of Tank Landing Ship

National Steel and Shipbuilding Company of San Diego (NASSCO) has announced that a contract option for approximately $14 million has been exercised by the U.S. Navy for the regular overhaul of the tank landing ship USS Bristol County (LST-1198).

A contract awarded by the Navy in 1982 provided for the regular overhaul of the tank landing ship USS Tuscaloosa (LST-1187), with options for similar overhauls of four additional LSTs—Cayuga, Frederick, Peoria, and Bristol County. Each option has been exercised separately; with the exercise of all options, the total value of the contract is approximately $80 million.

The Bristol County has arrived at NASSCO and is scheduled for redelivery to the Navy August 23 this year.

All five LSTs were built by the San Diego yard during 1967-72 as part of a 17-ship contract fulfilled for the Navy by NASSCO. The shipyard's current backlog is approximately $710 million, including the Bristol County.

OIL SPILL CONFERENCE

Prevention, Behavior, Control, Cleanup

Los Angeles, February 25-28

Mayor **Tom Bradley** will welcome more than 1,200 academic, government, and industry leaders to the 1985 Oil Spill Conference in Los Angeles February 25-28. Speakers from 35 countries will explore new ways to fight oil pollution at this ninth biennial meeting, which will be held at the Westin Bonaventure Hotel. It is sponsored by the American Petroleum Institute, the Environmental Protection Agency, and the U.S. Coast Guard.

Conference delegates can choose from 110 presentations that will spotlight the latest pollution response equipment and research. Topics scheduled include the case histories of several oil spills, new cleanup techniques and equipment, legal concerns, contingency plans for spills around the world, and a discussion of how oil affects the marine and inland environment.

A member of the Swedish Space Corporation will present a remote sensing system for maritime surveillance developed with the Swedish Coast Guard. Refinements to this technology include a scanning microwave radiometer that measures oil spill thickness. Future experiments with this system will be performed on the Space Shuttle.

Computers will take the stage when a U.S. Coast Guard speaker shows how portable computers can help salvage masters save stranded tankers, and a representative from the Institute for Water Research in West Germany discusses the computerized collection of data about more than 200 types of crude oil.

A variety of presentations will address the future use of chemical dispersants to combat oil spills. At one time dispersants were used cautiously or only in special circumstances. Now they are getting a second chance because of increased effectiveness and reduced toxicity. Discussions on dispersants will include their use for inland spills, comparisons between oil slicks applied with dispersants and those not, application of dispersants from boats, and the use of dispersants in southern California. One session will highlight the interagency dispersant decision process.

In-depth case histories of oil spill cleanup efforts will detail a pipeline rupture near Fresno, Calif., an oil barge discharge on the Arkansas River, the grounding and breakup of the cargo vessel Blue Magpie off the Oregon Coast, a gasoline spill from a ruptured pipeline in northern Idaho, and the removal of fuel oil spilled when an underground storage tank leaked in suburban New Castle County, Delaware.

The need for an international conference on oil spills was demonstrated by an oil well blowout six miles southeast of Santa Barbara in 1969. Tons of crude oil poured from offshore drilling Platform A, and winds drove the oil ashore, contaminating beaches, harbors, and rocky coastlines. Later that year members of the academic community, government officials, and industry leaders met at the first Oil Spill Conference in Los Angeles to share emerging technologies, innovative ideas, and test results. The Conference has been held every two years since then.

Equipment Demonstration

On Monday, Februrary 25, an Oil Spill Equipment Demonstration will be held in Long Beach Harbor. The program will feature the state-of-the-art offshore and harbor spill equipment and response systems available in southern California. Participants will be able to observe the equipment at close hand from the deck of a comfortable Catalina ferryboat.

The Long Beach program will consist of three phases:

- Execution of spill containment and removal operations at a marine terminal with boom, skimmers, vacuum truck, and response boats.
- Deployment of on-scene response equipment for exploratory drilling and production from an offshore supply boat with reeled boom, skimmers, and oil-water separator. Also included will be a helicopter boom deployment demonstration.
- Deployment of response equipment by two local cooperatives. This demonstration will include two dedicated response vessels augmented by rapid response boats, advancing and stationary skimmers, open-ocean booms, and dispersant applicant techniques from boats and aircraft.

The demonstration will be narrated by U.S. Coast Guard and industry representatives. The observation boat will have exhibits and information packages for all participants.

Following the Oil Spill Equipment Demonstration there will be a welcoming reception sponsored by the Conference organizers and exhibitors in the Exhibit Hall of the Bonaventure Hotel from 4:30 to 6:00 pm.

This year the Conference will again feature two luncheons. On Tuesday, February 26, **Kenneth Biglane** of the U.S. Environmental Protection Agency, the former chairman of the National Response Team, will give the principal address. On Thursday, February 28, Dr. **Reinhard Ganten** will be the main speaker. Dr. **Ganten,** director of the International Oil Pollution Compensation Fund during the recent Diplomatic Conference to revise the 1969 Civil Liability and 1971 Fund Conventions, will comment on that Diplomatic Conference.

A Hospitality Suite for spouses and children of delegates will be open from 8:00 to 10:00 am Tuesday through Thursday in the Los Cerritos Room of the hotel. Hostesses familiar with the Los Angeles area will be on hand to offer guidance on tours and other local attractions.

Exhibits by companies, organizations, institutions, and government agencies involved in the manufacture, sale, or use of equipment and professional or technical services will be open February 25-27 in the Exhibition Hall of the Hotel, one level below the lobby.

FINAL CONFERENCE PROGRAM
Tuesday, February 26

9:00 a.m. Sacramento/San Francisco Rooms
Plenary Session

Tom Bradley, Mayor, City of Los Angeles

Commodore **John W. Kime,** Chief, Office of Marine Environment and Systems, United States Coast Guard

Judith E. Ayers, Regional Administrator, Region IX, United States Environmental Protection Agency

Richard W. Kreutzen, 1985 Oil Spill Conference Chairman, American Petroleum Institute (Chevron USA, Inc.)

10:30 a.m.-5:15 p.m. Exhibit Hall Foyer
Tuesday Poster Session

Chairman: **John S. Farlow,** U.S. Environmental Protection Agency, Edison, New Jersey

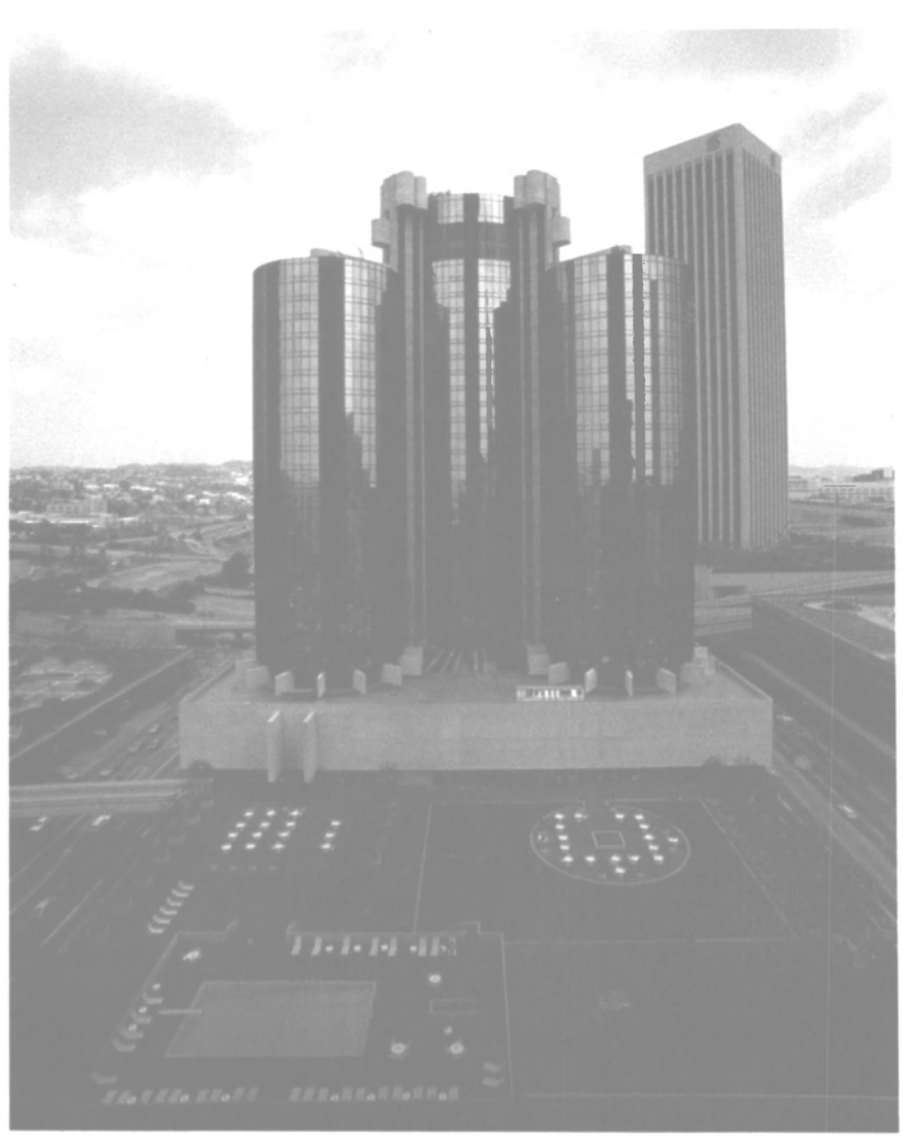
Vice Chairman: **William Keffer,** U.S. Environmental Protection Agency, Kansas City, Missouri

10:30 a.m.-11:15 a.m. Measures for Combating Oil Pollution at Coast and Sea in the Federal Republic of Germany

M. Wunderlich, Federal Institute of Hydrology, Koblenz, Federal Republic of Germany

10:45 a.m.-11:30 a.m. Considerations

(continued on page 32)



Right, the Westin Bonaventure Los Angeles—site for the 1985 Oil Spill Conference.

When it comes to Colt engine performance there's no substitute for genuine Colt replacement parts. Look alikes just don't stack up. Physical and material inferiority can result in premature engine failure and serious engine damage, causing expensive and lengthy downtime. And, today, we're creating a new parts and service network to better meet your Colt Pielstick* and OP engine maintenance needs. 24 hours a day. 365 days per year.

To minimize engine downtime, a new regional parts warehouse and fuel injection service center has been established in Reno, Nevada. In addition, our existing parts and service centers in Seattle, New Orleans, Norfolk and Beloit are being expanded and better equipped to meet your parts and service needs. Plus, a new computerized order processing and inventory control network, in all facilities, will put genuine replacement parts where you need them—when you want them.

For parts and service program details, contact Colt Industries, Fairbanks Morse Engine Division, 701 Lawton Avenue, Beloit, WI 53511. 800/356-6955.

* S.E.M.T.—Pielstick is a registered trademark of Societe d'Etudes de Machines Thermiques Paris, France.

Colt Industries

Fairbanks **Morse**
Engine Division

Oil Spill Conference

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for Treatment and Rehabilitation of Oiled Sea Otters
Robert A. Pastorok, Tetra Tech, Inc., Bellevue, Washington; **Jeanette A. Thomas,** Hubbs-Sea World Research Institute, San Diego, California
11:00 a.m.-11:45 a.m. Oil Spill Response Planning in Tropical Coastal Environments
Thomas G. Ballou, Charles D. Getter, Bart J. Baca, Research Planning Institute, Inc., Columbia, South Carolina; **Mohammad Al-Sarawi,** Kuwait University, Safat, Kuwait; **Cristine L. Vilardi,** Exxon Production Research Company, Houston, Texas
11:15 a.m.-12 noon Computer Simulation of the Effects of Oil Development on Seabird and Marine Mammal Populations
R. Glen Ford, Ecological Consulting, San Diego, California; **Michael L. Bonnell,** Center for Marine Studies, University of California, Santa Cruz, California
2:00 p.m.-2:45 p.m. Strategic Planning for Large and Small Oil Spills in New England
Harilaos N. Psaraftis, J.D. Nhyart, Massachusetts Institute of Technology, Cambridge, Massachusetts
2:30 p.m.-3:15 p.m. A Transportable Spill Information Management System: A Case Study
John A. Murphy, Dean H. Dale, Murphy Information Services, Edmonds, Washington; Lieutenant Commander **Dennis J. Sigrist,** NOAA/OAD, Seattle, Washington
3:00 p.m.-3:45 p.m. A Method for Site Specific Planning for Dispersant Use
Bart J. Baca, Charles D. Getter, Thomas G. Ballou, Research Planning Institute, Inc., Columbia, South Carolina; **June Lindstedt-Siva,** Atlantic Richfield Company, Los Angeles, California
3:30 p.m.-4:15 p.m. Estimating Dispersant Effectiveness Under Low Temperature and Low Salinity Conditions
James R. Payne, Charles R. Phillips, Mark Floyd, Greg Longmire, Jose Fernandez, Science Applications, Inc., La Jolla, California; **L. Michael Flaherty,** U.S. Environmental Protection Agency, Washington D.C.
4:00 p.m.-4:45 p.m. Swedish Oil Combat Program, TOBOS '85
Carola Lehtinen, Swedish Environmental Research Institute, Stockholm, Sweden
4:30 p.m.-5:15 p.m. Waterborne Trade of Petroleum in the Wider Caribbean Region
Lieutenant **Jane R. Ditto,** U.S. Coast Guard, Washington, D.C.

10:30 a.m. — Santa Anita Room

Session A: Equipment I

Chairman: Captain **Peter C. Lauridsen,** U.S. Coast Guard, Portsmouth, Virginia
Vice Chairman: **Dr. Lewis R. Brown,** Mississippi State University, Mississippi State, Mississippi
New Concepts in Spraying Dispersants From Boats
Tom E. Allen, Halliburton Services, Duncan, Oklahoma
An Experimental High Pressure Waterjet Barrier
K.M. Miekle, H. Whittaker, F. Laperriere, Department of the Environment, Ottawa, Canada
Ecumoire II: Evaluation of Three Oil Recovery Devices Offshore
Georges Peigne, CEDRE, Brest, France
Combustility and Incineration of Beaufort Crude/Seawater Emulsions
D. Kretschmer, J. Odgers, University Laval, Quebec, Canada

10:30 a.m. — San Gabriel Room

Session B: Underground Spills

Chairman: Dr. **John Lamping,** Standard Oil Company (Indiana), Chicago, Illinois
Vice Chairman: **Harold Pecunia,** Peterson Maritime Services, Inc., New Orleans, Louisiana
Groundwater Abatement Alternatives for Removal of Organic Containments
Paul M. Yaniga, Groundwater Technology, Chadds Ford, Pennsylvania
Groundwater Protection Through Early Detection of Hydrocarbon Leaks
L.F. Donaghey, Chevron Research Co., Richmond, California
Containment and Removal of Fuel Oil from Groundwater Beneath a Densely Populated Housing Development
Joseph T. McNally, Craig G. Robertson, Ned E. Wehler, R.E. Wright Associates, Inc., Middletown, Pennsylvania
North La Crosse Underground Fuel Oil Spill
Brad Erikson, Wisconsin Department of Natural Resources, La Crosse, Wisconsin
Case Study—Identification and Initial Recovery of Jet A Fuel Underlying an Airport Tank Farm
Kenneth M. Ries, The Greyhound Corporation, Phoenix, Arizona
Investigation and Cleanup of Fuel Tank Leaks in the San Francisco Bay Area—A Regulatory Strategy
Don M. Eisenberg, Adam W. Olivieri, Peter W. Johnson, California Regional Water Quality Control Board, Oakland, California

10:30 a.m. — San Diego Room

Session C: Case Histories

Chairman: **Robert J. Meyers,** Exxon Shipping Company, Houston, Texas
Vice Chairman: **A.C. Cormack,** Petro-Canada, Don Mills, Canada
The Grounding of the M/T Tifoso, 1983: A Test of Bermuda's Contingency Plan
Anthony H. Knap, Thomas D. Sleeter, Bermuda Biological Station, Ferry Reach, Bermuda; **Idwal Wyn Hughes,** Department of Agriculture and Fisheries, Botanical Gardens, Bermuda
Case History of a South Holland Oil Spill
Antonius M. Kleij, Jozef M. Gubbens, Office of Regulations for Soil Protection and Waste Management, The Hague, The Netherlands
The Katina Oil Spill 1982—Combatting Operation at Sea
W. Koops, Rijkswaterstaat, North Sea Directorate, Holland; **F.J. Sanders,** Rijkswaterstaat, South-Holland Directorate, Holland; **J.M. Gubbens,** Provincial Governments of South Holland, Holland
The Tanker Assimi—A Case History
Terence M. Hayes, International Maritime Organization, London, England, UK
Management of the Uniacke G-72 Incident
S.D. Gill, Canada Oil and Gas Lands Administration, Ottawa, Canada; **C.A. Bonke,** Shell Canada Resources, Calgary, Canada; **J. Carter,** Martec Ltd., Halifax, Canada

12:00 Noon
Sacramento/San Francisco Rooms

Luncheon

Kenneth Biglane (U.S. Environmental Protection Agency), the former National Response Team Chairman

2:00 p.m. **San Diego Room**

Underground Spills
(A Panel Discussion)

Chairman: Dr. **Gerald Bresnick,** Standard Oil Company (Indiana), Chicago, Illinois

Panel Members:
Penelope Hansen, U.S. Environmental Protection Agency, Washington, D.C.
Robert McVety, Florida Department of Environmental Resources, Tallahassee, Florida
David Conway, American Petroleum Institute (Marathon Oil Company), Denver, Colorado
Dr. **Larry Canter,** University of Oklahoma, Nor man, Oklahoma
David Miller, Geraghty and Miller, Inc., Syosset, New York

2:00 p.m. **Santa Anita Room**

Session D: Equipment-II

Chairman: **John Riley,** U.S. Environmental Protection Agency, Washington, D.C.

Vice Chairman: **Kenneth M. Meikle,** Environmental Protection Service, Ottawa, Canada

Simulation Tests of Portable Oil Booms in Broken Ice
Isao Suzuki, Yoshlhisa Tsukino, Masamitsu Yanagisawa, Institute of Ocean Environmental Technology, Ibaraki, Japan.
Ohmsett Tests of a Rope Mop Skimmer in Ice Infested Waters
J.S. Shum, M. Borst, Mason & Hanger-Silas Mason Co., Inc., Leornardo, New Jersey
Ohmsett Tests of Toscon Weir Skimmer and Gravity Differential Separator
Donald C. Gates, Kevin M. Corradino, Mason & Hanger-Silas Mason Co., Inc., Leonardo, New Jersey
Standardizing Boom Test Procedures
M. Borst, H.W. Lichte, Mason & Hanger-Silas Mason Co., Inc., Leonardo, New Jersey
Design Considerations for a Large Sweep Width Skimming System
Marshall J. Crocker, Halliburton Services, Duncan, Oklahoma

2:00 p.m. **San Gabriel Room**

Session E: Fate and Effects I

Chairman: **George Kinter,** National Oceanic and Atmospheric Administration, Rockville, Maryland

Vice Chairman: **Richard Griffiths,** U.S. Environmental Protection Agency, Edison, New Jersey

Effects of Oil and Chemically Dispersed Oil in Sediments on Clams
Jack W. Anderson, Steven L. Kiesser, Dennis L. McQuerry, Gilbert W. Fellingham, Battelle, Sequim, Washington
Seasonal Response of Spartina Alterniflora to Oil
Steven K. Alexander, James W. Webb, Jr., Texas A&M University at Galveston, Galveston, Texas
Factors Affecting the Persistence of Stranded Oil—An Example From the Low Energy Coasts
Edward H. Owens, Woodward-Clyde Oceaneering, Aberdeen, Scotland, UK
The Effects and Implications of Oil Pollution in Mangrove Forests
Lieutenant **Clayton W. Evans,** U.S. Coast Guard, Washington, D.C.

3:30 p.m. **Santa Anita Room**

Session F: Equipment III

Chairman: **J. Stephen Dorrler,** U.S. Environmental Protection Agency, Edison, New Jersey

Vice Chairman: **Dr. Gerd Kleineberg,** U.S. Coast Guard, Groton, Connecticut

A Simple Remote Sensing System for the Detection of Oil
R.H. Goodman, J.W. Morrison, Esso Resources Canada Limited, Calgary, Canada
Early Experiences With a Single-Vessel Offshore Spill Cleanup for Offshore Spill Cleanup
William J. Dalton, Offshore Devices, Inc., Peabody, Massachusetts; **A.J. Heikamp, Jr.,** Loop, Inc., New Orleans, Louisiana
Special Skimmer for Subsurface Oil Recovery
Roy W. Hann, Jr., Texas A&M University, College Station, Texas; **Paul L. Malter,** Henningson, Durham, & Richardson, Austin, Texas
Fiber-Optical Measurement of Mechanically and Chemically Dispersed Oil in Water
Jan Nilsen, Norwegian Hydrodynamic Laboratories, Trondheim, Norway

3:30 p.m. **San Gabriel Room**

Session G: Fate and Effects-II

Chairman: **Charles Sieber,** U.S. Coast Guard, Washington, D.C.

Vice Chairman: **Thomas Allen,** Halliburton Services, Duncan, Oklahoma

Effects of Petroleum on Algal Blooms in Lake Maracaibo
Gustavo Parra-Pardi, Emery A. Sutton, ESCAM, Caracas, Venezuela; **Nelson E. Rincon,** Petroleos de Venezuela, Caracas, Venezuela
Partitioning of Oil in Nearshore and Surf Zone Areas
Erich R. Gundlach, Timothy W. Kana, Research Planning Institute, Columbia, South Carolina; **Paul D. Boehm,** Battelle New England Marine Research Laboratory, Duxbury, Massachusetts
Freshwater Oil Spill Considerations: Protection and Cleanup
Bart J. Baca, Charles D. Getter, Research Planning Institute, Inc., Columbia, South Carolina; **June Lindstedt-Siva,** Atlantic Richfield Company, Los Angeles, California
Mangroves Leaf Tissue Sodium and Potassium Ion Concentrations as Sublethal Indicators of Oil Stress in Mangrove Trees
D.S. Page, E.S. Gilfillan, J.C. Foster, J.R. Hotham, L. Gonzales, Bowdoin College Marine Research Laboratory, Brunswick, Maine

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Oil Spill Conference

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9:00 a.m.-4:45 p.m. Exhibit Hall Foyer

Wednesday Poster Session

Chairman: **John S. Farlow,** U.S. Environmental Protection Agency, Edison, New Jersey

Vice Chairman: **H.W. Lichte,** Mason & Hanger-Silas Mason Co., Inc., Leonardo, New Jersey

9:15 a.m.-10:00 a.m. The Use of Large Scale Outdoor Marine Model Ecosystems to Assess the Fate & Effects of Crude Oil and Dispersant Treated Crude Oil
J. Kuiper, Division of Technology for Society TNO, Den Helder, The Netherlands

9:45 a.m.-10:30 a.m. Large Scale Continuous Flow Exposure System for Studying the Fate & Effects of Chemically and Physically Dispersed Oil on Benthic Communities
Robert S. Carr, Jerry M. Neff, Paul D. Boehm, Battelle, Duxbury, Massachusetts

10:15 a.m.-11:00 a.m. Experimental Long Term Oil Exposure on Rocky Shore Mesocosms
Torgier Bakke, Kai Sorensen, Norwegian Institute for Water Research (NIVA), Oslo, Norway

10:45 a.m.-11:30 a.m. Tropical Oil Pollution Investigations in Coastal Systems (TROPICS)
Charles D. Getter, Bart J. Baca, Thomas G. Ballou, Melvin S. Brown, Research Planning Institute, Inc., Columbia, South Carolina; **Anthony H. Knap, Richard E. Dodge, Thomas D. Sleeter,** Bermuda Biological Station for Research, Inc., Ferry Reach, Bermuda

11:15 a.m.-12 Noon Review and Evaluation of Leak Detection Methods for Underground Storage Tanks
Shahzad Niaki, John Broscious, IT Corporation, Pittsburgh, Pennsylvania

2:00 p.m.-2:45 p.m. STOPOL: A Recovery Unit Suited to Explorations and Production Operations
Michael Angeles, Societe Nationale Elf Aquitaine, Pau, France; **Maurice Cessou,** Institut Francais du Petrole, Vernaison, France; **Alain Debry,** Total-Compagnie Francaise des Petroles, France

2:30 p.m.-3:15 p.m. Design Improvements in a Sonic Burner for the in-Situ Combustion of Oil Spills
John N. Koblanski, Ocean Ecology Ltd., Vancouver, British Columbia

3:00 p.m.-3:45 p.m. Automatic Sample Taking Oil Tracker Buoy
Karl Dieztel, Aquaphysik, Krefeld, West Germany

3:30 p.m.-4:15 p.m. Cleaning Rocks and Coastal Structures
J. Quinquis, C. Auger, J. Croquette, CEDRE, Cedex, France; **C. Bocard, G. Castaing,** Institut Francais du Petrole, Cedex, France; **P. Lassus,** IFREMER, Paris, France

4:00 p.m.-4:45 p.m. The Oil Spill Slide Rule to Predict the Fate of an Oil Spill
Wierd Koops, Rikjswaterstaat North Sea Directorate, Rijjkswijk, The Netherlands

9:00 a.m. Santa Anita Room

Session H: Cleanup Operations I

Chairman: **William C. Park III,** Mobil Oil Corporation, New York, New York

Vice Chairman: Lieutenant (Junior Grade) **Mark Torres,** U.S. Coast Guard, Washington, DC

Innovative Response Techniques for Major River Systems
Andrew R. Teal, Esso Resources Canada Limited, Calgary, Canada

Trends in Stranded Tanker Salvage
Lieutenant Commander **John S. Clay,** U.S. Coast Guard, Washington, D.C.

First German Oil Spill Handbook for Hamburg
Dirk-Uwe Spengler, Environmental Branch Amt Fur Umweltschutz, Hamburg, Germany

A Northern Idaho Gasoline Spill and Cleanup Using Streambed Agitation
Nathan A. Graves, Kennedy/Jenks Engineers, Tacoma, Washington

9:00 a.m. San Gabriel Room

Session I: Dispersants I

Chairman: **Bruce Blanchard,** Department of Interior, Washington, D.C.

Vice Chairman: **Ann Hayward Rooney,** Scientific Environmental Associates, Inc., Virginia Beach, Virginia

Federal Region II—Contingency Planning for a Dispersant Decision Process
Lieutenant (J.G.) **Robert F. Corbin,** U.S. Coast Guard, Governors Island, New York; **Gary L. Ott,** NOAA Scientific Support Coordinator, Governors Island, New York

Dispersants: Comparison of Laboratory Tests and Field Trials with Practical Experience at Spills
J.A. Nichols, H.D. Parker, International Tanker Owners Pollution Federation Limited, London, England UK

Advance Planning for Dispersant Use/Non Use
J.P. Fraser, Shell Oil Company, Houston, Texas

9:00 a.m. San Diego Room

Session J: Contingency Planning-I

Chairman: **Alexander Morozov,** International Maritime Organization, London, England, UK

Vice Chairman: **E.D. Parker,** Marathon Oil Company, Houston, Texas

An Environmental Assessment and Oil Spill Response Plan for the Humber Estuary (UK)
Jane F. Appelbee, Institute of Offshore Engineering, Edinburgh, Scotland, UK

Integrated Plans for Integrating Dispersant Use in California
Robert Pavia, National Oceanic and Atmosphere Administration, Seattle, Washington; Commander **Lindon A. Onstad,** U.S. Coast Guard, Long Beach, California

Marine Pollution Contingency Planning-Recent Changes in the UK Organization
Rear Admiral **Michael L. Stacey,** C.B., Department of Trade, London, England, UK

The Value of Resource Protection Plans Under Actual Oil Spill Situations
G. Bruce Sutherland, Oregon Department of Environment Quality, Portland, Oregon

10:30 a.m. Santa Anita Room

Session K: Cleanup Operations II

Chairman: Captain **James L. McDonald,** U.S Coast Guard, Governors Island, New York

Vice Chairman: Dr. **Edward Gilfillan,** Bowdoin College, Brunswick, Maine

Recovery of Viscous Emulsions From a Firm Sandy Beach
P.R. Morris, B.W.J. Lynch, J.F. Nightingale, D.H. Thomas, Warren Spring Laboratory, Hertfordshire, England, UK

Assessment of Three Surface Collecting Agents During Temperate and Arctic Conditions
Pamela Pope, Sohio Alaska Petroleum Company, Anchorage, Alaska; **Al Allen,** Spiltec, Anchorage, Alaska; **William G. Nelson,** University of Alaska, Anchorage, Alaska

A Computerized "Information System on Crude Oils"
Michael and **Hildegard Krutz,** Institute for Water Research, Dortmund, Federal Republic of Germany

Marshland Rebuilding Techniques with Spartina Alterniflora After Singular Seasonal Oil Spills
Lieutenant **Dan Watton,** U.S. Coast Guard, Boston, Massachusetts

10:30 a.m. San Gabriel Room

Session L: Dispersants II

Chairman: Rear Admiral **Michael L. Stacey,** C.B., Department of Trade, London, England, UK

Vice Chairman: **L. Michael Flaherty,** U.S. Environmental Protection Agency, Washington, D.C.

The Significance of Dispersed Oil Droplet Size in Determining Dispersant Effectiveness Under Various Conditions
A Lewis, D.C. Byford, P.R. Laskey, British Petroleum Company Limited, Middlesex, England, UK

The Effect of Crude Oil Composition on Dispersant Performance
Gerald P. Canevari, Exxon Research and Engineering Company, Florham Park, New Jersey

Recent Advances on Dispersant Effectiveness Evaluation: Experimental and Field Aspects
J.P. Desmarquest, J. Croquett, F. Merlin, CEDRE, Cedex, France; **C. Bocard, G. Castaing, C. Gatellier,** Institut Francais du Petrole, Cedex, France

A New Approach in Enhanced Biodegradation of Spilled Oil: Development of an Oil Dispersant Containing Oleophilic Nutrients
Robert D.E. Bronchart, Jan Cadron, Alain Charlier, Alain Gillot, Willy Verstraete, Labonfina, Bruxelles, Belgium

10:30 a.m. San Diego Room

Session M: Contingency Planning II

Chairman: **Harald Celius,** Continental Shelf Institute, Trondheim, Norway

Vice Chairman: Dr. **Jack Gould,** American Petroleum Institute, Washington, D.C.

Accidental Marine Oil Pollution: French Policy and Response
Capitaine de Vasseau **Alain Beraud, Jean-Claude Sainlos,** Mission Interministerielle de la Mer Paris, France

Offshore Oil Production in the Baltic Sea: A Coastal Sensitivity Study
Caroline L.F. Webb, Texaco Technologie Europa GMBH, Hamburg, Federal Republic of Germany

Louisiana Offshore Oil Port Computerized Oil Spill Contingency Plan
John J. Gallagher, Spill Control Analysts Inc., Greenwich, Connecticut; **A.J. Heikamp,** Loop, Inc., New Orleans, Louisiana

Containment Strategies for Marine Oil Spills in Nearshore Waters
E.H. Owens, Woodward-Clyde Oceaneering, Scotland, UK; **H.H. Roberts, S.P. Murray,** Coastal Studies Institute LSU, Baton Rouge, Louisiana; **C.R. Foget,** Woodward-Clyde Consultants, Walnut Creek, California

12:00 Noon Exhibit Hall

No-Host Luncheon

2:00 p.m. San Diego Room

Damage Assessment (A Panel Discussion)

Chairman: **Robert Landers,** U.S. Environmental Protection Agency, Washington, D.C.

Vice Chairman: **Kenneth Biglane,** Environmental Consultant, Washington, D.C.

Panel Members:

Mary Walker, U.S. Department of Interior, Washington, D.C.

John Robinson, National Oceanic and Atmospheric Administration, Seattle, Washington

Dennis Lundblad, Washington Department of Ecology, Olympia, Washington

Dr. **Ruthann Corwin,** Oceanic Society—San Francisco Chapter, San Francisco, California

Dr. **Edward Yang,** Battelle Memorial Institute, Washington, D.C.

William Ross, U.S. Environmental Protection Agency, Washington, D.C.

Dr. **James P. Marum,** American Petroleum Institute (Mobil Oil Corporation), Princeton, New Jersey

2:00 p.m. Santa Anita Room

Session N: Prevention I

Chairman: **John Archer,** International Tanker Owners Pollution Federation Ltd., London, England, UK

Vice Chairman: **Edward Tennyson,** Minerals Management Service, Reston, Virginia

A Case History Illustration of EPA's Region VI Spill, Prevention, Control and Counter Measures Program
Gerald L. Almquist, Roy F. Weston, Inc., Dallas, Texas; **Robert G. Forrest, Charles A. Gazda,** U.S. Environmental Protection Agency, Dallas, Texas

Protection of the Martine Environment from Hydrocarbon Pollution—An Integrated Planning Approach for Oil Terminals
Alan Sann, Edward C. Wayment, SANTOS Limited, Adelaide, South Australia

Monitoring an Oil Spill Experiment with the Swedish Maritime Surveillance Systems
Olov Fast, Swedish Space Corporation, Solna, Sweden

Approaches to Oil Spill Risk Assessment for Marine Vessel Operations
Louis J. Painter, Donald R. Haley, Chevron Research Company, Richmond, Virginia

2:00 p.m. San Gabriel Room

Session O: Dispersants III

Chairman: **Rawley Jenkins,** British Petroleum International Limited, London, England, UK

Vice Chairman: Dr. **Gordon Lindblom,** Exxon Chemical Company, Houston, Texas

Dispersant Tests in a Wave Basin
M.R. MacNeill, R.H. Goodman, J.B. Bodeux, K.E. Corry, B.A. Paddison, Esso Resources Canada Limited, Calgary, Canada

Aerial Application of Dispersants-Comparison of Slick Behaviour of Chemically Treated Versus Non-Treated Spills
Rainer G. Lichtenthaler, Per S. Daling, Central Institute for Industrial Research, Oslo, Norway

Halifax '83: Sea Trial of Oil Spill Dispersant Concentrates
S.D. Gill, Canada Oil and Gas Lands Administration, Ottawa, Canada; **R.H. Goodman,** Esso Resources Canada Ltd., Calgary, Canada; **J. Swiss,** Dome Petroleum Canada, Calgary, Canada

3:30 p.m. Santa Anita Room

Session P: Prevention II

Chairman: Captain **George F. Ireland,** U.S. Coast Guard, Boston, Massachusetts

Vice Chairman: **Leon Kazmierczak,** Sun Oil Company, Radnor, Pennsylvania

GAOCMAO—Industry's Approach to Co-Operative Spill Response in The Arabian Gulf
P. Bernard Ryan, Gulf Area Oil Companies Mutual Aid Organization, Bahrain

Oil Spill Pollution—The North Sea Experience of Cooperative Measures
Jonathan Side, Charles Herd, Wells Grogan, Institute of Offshore Engineering Heriot-Watt University, Edinburgh, Scotland, UK

Natural Resource Protection in California
Captain **Edward A. Simons,** California Department of Fish and Game, Sacramento, California

3:30 p.m. San Gabriel Room

Session O: Modeling/Mapping

Chairman: **Sharon O. Hillman,** Sohio Alaska Petroleum Company, Anchorage, Alaska

Vice Chairman: Dr. **Harold Weiss,** Texaco, Inc., Beacon, New York

North Aleutian Shelf Sea Otters and Their Vulnerability to Oil
Robert L. Cimberg, VTN Oregon, Wilsonville, Oregon; **Daniel P. Costa,** Long Marine Laboratory University of California, Santa Cruz, California

Scientific Response to the Blue Magpie Spill
Robert Pavia, D.L. Payton, J.A. Gait, National Oceanic and Atmospheric Administration, Seattle, Washington

Sensitivity Mapping: An Aid to Contingency Planning on Southern African Shores
Lynette Frances Jackson, Steven Richard Lipschitz, Sea Fisheries Research Institute, Roggebaai, Republic of South Africa

Resource Mapping and Contingency Planning PTP Pipeline Facilities, Panama
Erich R. Gundlach, Research Planning Institute, Columbia, South Carolina; **Estudios Ambientales,** Panama; **Geoffrey Moss,** PetroTerminal de Panama; **John Janssen,** Fairbanks, Alaska

Real Time Application of an Oil Spill Motion Prediction System
V.R. Neralla, S. Venkatesh, Atmospheric Environment Service, Ontario, Canada

Oil Spill Modeling—A Tool for Clean-Up Operations
Dorte Rasmussen, VKI Water Quality Institute, Horsholm, Denmark

Thursday, February 28

9:00 a.m. Catalina Ballroom

Tank Vessel Puerto Rican Incident (A Panel Discussion)

Chairman: Rear Admiral **Sidney A. Wallace,** U.S. Coast Guard (Retired), Chairman, Marine Ecology Committee, Maritime Law Association of the United States, Washington, D.C.

Panel Members:

Jack R. Mortenson, Clean Bay, Concord, California

Dr. **Jerry Gait,** National Oceanic and Atmospheric Administration, Seattle, Washington

Captain **Kenneth Bishop,** U.S. Coast Guard, Alameda, California
Edward Simmons, California Department of Fish and Game, Sacramento, California
Captain **Charles Glass,** U.S. Coast Guard, Alameda, California
Alice Berkner, Bird Rescue Research Center, Berkley, California

9:00 a.m. **Santa Anita Room**

Session R: Economic and Legal I

Chairman: **Timothy Fields, Jr.,** U.S. Environmental Protection Agency, Washington, D.C.
Vice Chairman: **Gerard P. Canevari,** Exxon Research and Engineering Company, Florham Park, New Jersey
Implementation of MARPOL 73/78
Yoshio Sasamura, International Maritime Organization, London, England, UK
Tanio Spill—A Case History Illustrating the Work of the International Oil Pollution Compensation Fund
Mans Jacobsson, International Oil Pollution Compensation Fund, London, England, UK
Patterns and Trends in Reported Small Oil Spills
Gary A. Yoshioka, Andrew J. Franzoni, ICF Inc., Washington, D.C.; **K. Jack Kooyoomjian, Terry L. Eby,** U.S. Environmental Protection Agency, Washington, D.C.; Lieutenant **Glenn A. Wiltshire,** U.S. Coast Guard, Washington, D.C.
Developing Marine Pollution Response Capability in the Wider Caribbean Region
Lieutenant **James D. Spitzer,** U.S. Coast Guard, International Maritime Organization, Santurce, Puerto Rico

9:00 a.m. **San Gabriel Room**

Session S: Laboratory Tests I

Chairman; **Ira Wilder,** U.S. Environmental Protection Agency, Edison, New Jersey
Vice Chairman: Dr. **Clayton McAuliffe,** Chevron Oil Field Research Company, La Habra, California
Ecological Effects of Oil Versus Oil + Oil Dispersant on the Littoral Ecosystem of the Baltic Sea
O. Linden, A. Rosemarin, Swedish Environmental Research Group, Karlskrona, Sweden; **A. Lindskog, C. Hoglund,** Swedish Environmental Research Institute, Stockholm, Sweden; **S. Johansson,** Asko Laboratory, University of Stockholm, Stockholm, Sweden
Effects of Diesel Oil on Commercial Benthic Algae in Norway
Tor Bokn, Norwegian Institute for Water Research, Oslo, Norway
The Effects of Dispersants and Oil on Subtropical and Tropical Seagrasses
Anita Thorhaug, Jeffry Marcus, Greater Caribbean Energy and Environmental Foundation, Inc., Miami, Florida

9:00 a.m. **San Diego Room**

Session T: Experimental Spills I

Chairman: Lieutenant Commander **Dennis D. Rome,** U.S. Coast Guard, Novato, California
Vice Chairman: **James Parker,** Industrial Marine Service, Inc., Norfolk, Virginia
A 100 Tonnes Experimental Oil Spill at Halten Bank, Off Norway
Rolf Lange, The Norwegian Research Council for Science and The Humanities, Oslo, Norway
Experiments on Natural and Chemical Dispersion of Oil in Laboratory and Field Circumstances
Gerard A.L. Delvigne, Delft Hydraulics Laboratory, Delft, The Netherlands
Field Experiments with Dispersed Oil and a Dispersant in an Intertidal Ecosystem: Fate and Biological Effects
Hubert Farke, Dietrich Biome, Institut fur Meeresforschung, Bremerhaven, Federal Republic of Germany; **Norbert Theobald,** Deutsches Hydrographisches Institut, Hamburg, Federal Republic of Germany; **Klaus Wonneberger,** Universitat Oldenburg, Oldenburg, Federal Republic of Germany
Compositonal Changes in Dispersed Crude Oil in the Water Column During a Nearshore Test Spill
David S. Page, Edward S. Gilfillan, Judith C. Foster, Erin Pendergast, Linda Gonzalez, Donna Vallas, Bowdoin College Marine Research Laboratory, Brunswick, Maine

10:30 a.m. **Santa Anita Room**

Session U: Economic and Legal II

Chairman: **Marc Shaye,** Spill Control Association of America, Southfield, Michigan
Vice Chairman: **Ronald C. Denoville,** Crawford and Company, Atlanta, Georgia
An Analysis of Oil Spills During Transport
Robert A. Walter, Ronald C. DiGregorio, U.S. Department of Transportation, Cambridge, Massachusetts; **K. Jack Kooyoomjian, Terry L. Eby,** U.S. Environmental Protection Agency, Washington, D.C.
The Responsibilities of Underwriters in Casualties Threatening Oil Spillage
J.J. Gallagher, Lamorte Burns & Co., Inc., Greenwich, Connecticut
A Review of Federal and State Law Concerning Reportable Discharges of Oil
David A. Bruce, Gary A. Yoshioka, Alison Condie, ICF Inc., Washington, D.C.
Legal Contingency Planning for Oil Spills
Douglas K. Mertzel, State of Alaska, Juneau, Alaska; **James S. Mattson,** Key Largo, Florida

10:30 a.m. **San Gabriel Room**

Session V: Laboratory Tests II

Chairman: **Conrad Kleveno,** U.S. Environmental Protection Agency, Washington, D.C.
Vice Chairman: **Eleanor Swett,** Offshore Devices, Inc., Peabody, Massachusetts
Enhanced Biodegradation of Oil
Gerd Halmo, SINTEF, Trondheim, Norway
Field and Laboratory Studies on the Toxicities of Oils to Mangroves
Lai Hoi Chaw, Feng Meow-Chan, Universiti Sains Malaysia, Penang, Malaysia
The Effects of Chemically and Physically Dispersed Oil on the Brain Coral—Diplora Strigosa (DANA), A Summary
Anthony H. Knap, Sheila C. Wyers, Richard E. Dodge, Thomas D. Sleeter, Harold R. Frith, S. Robertson Smith, Clayton B. Cook, Bermuda Biological Station for Research Inc., Ferry Reach, Bermuda

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10:30 a.m. **San Diego Room**

Session W: Experimental Spills II

Chairman: Dr. **June Lindstedt-Siva,** Atlantic Richfield Company, Los Angeles, California
Vice Chairman: **Patrick O'Brien,** Chevron USA, Inc., San Francisco, California
Tidal Area Dispersant Experiment, Searsport, Maine: An Overview
Edward S. Gilfillan, David S. Page, Sherry A. Hanson, Judith C. Foster, Janet Hotham, Donna Vallas, Erin Pendergast, Sandy Hebert, Sheldon D. Pratt, Ray Gerber, Bowdoin College Marine Research Laboratory, Brunswick, Maine, and University of Rhode Island, Kingston, Rhode Island
Comparative Fate of Chemically Dispersed and Untreated Oil in the Arctic: Baffin Island Oil Spill Studies 1980-1983
Paul D. Boehm, William Steinhauer, Adolfo Requejo, Donald Cobb, Suzanne Duffy, and **John Brown,** Battelle New England Marine Research Laboratory, Duxbury, Massachusetts
The Baffin Island Oil Spill (BIOS) Project: A Summary
Gary A. Sergy, Environment Canada, Edmonton, Canada
Field Experiments on the Effects of Oil and Dispersant on Mangroves
Charles D. Getter, Thomas G. Ballou, Research Planning Institute, Inc., Columbia, South Carolina

12:00 Noon **Sacramento/San Francisco Rooms**

LUNCHEON

Dr. **Reinhard H. Ganten,**
Past Director of the International Oil Pollution Compensation Fund

2:00 p.m. **Santa Anita Room**

Session X: Training

Chairman: **William Leek,** Chevron USA, Inc., San Francisco, California
Vice Chairman: Lieutenant Commander **Edward G. Rosenberg,** U.S. Coast Guard, Yorktown, Virginia
Results of a Full-Scale Surprise Test of Sun's Major Spill Response Plan
Leon J. Kazmierczak, Sun Company, Inc., Radnor, Pennsylvania; **Thomas A. Crawford,** Sun Refining and Marketing Company Marine Operations, Aston, Pennsylvania
An Inland Oil Spill Control Course: A Need Perceived and Met
Joe R. Callaway, John W. Burkholder, Peter F. Olsen, The Texas A&M University System, College Station, Texas
Venezuelan National Oil Spill Training Program
Carlos Sordelli, Edificio Petroleos de Venezuela-Avenida Libertador, Caracas, Venezuela; **Nelson Garcia,** Edigicio Maraven de Petroleos de Venezuela, Caracas, Venezuela

2:00 p.m. **San Gabriel Room**

Session Y: Extreme Weather Response

Chairman: **Manuel H. Sirgo, Jr.,** Texaco USA, Inc., Houston, Texas
Vice Chairman: Dr. **John P. Bennington,** Standard Oil Company (Indiana), Chicago, Illinois
Unique Disposal Techniques for Arctic Oilspill Response
James J. Swiss, Dome Petroleum Limited, Calgary, Canada; **Donald J. Smrke,** University of Western Ontario, Ontario, Canada; **William M. Pistruzak,** Geotech Ltd., Calgary, Canada
An Overview of a Field Guide for Arctic Oil Spill Behavior
Robert Schulze, Environmental Consultant, Inc., Elkridge, Maryland; **Ivan Lissauer,** U.S. Coast Guard, Groton, Connecticut
In Place Burning of Prudhoe Bay Crude in Broken Ice
Nelline K. Smith, Anibal Diaz, Mason & Hanger-Silas Mason Co., Inc., Leonardo, New Jersey
Arctic Spill Response Improvements—A 1985 Review of Arctic Research and Development Efforts
Sharon O. Hillman, Sohio Alaska Petroleum Company, Anchorage, Alaska

2:00 p.m. **San Diego Room**

Session Z: Inland Spills

Chairman: Dr. **Idwal W. Hughes,** Department of Agriculture and Fisheries, Hamilton, Bermuda
Vice Chairman: **J. Kenneth Adams,** Mineral Management Service, Metairie, Louisiana
Revegetation of the Arctic Tundra After an Oil Spill: A Case History
Judith Brendel, Alyeska Pipeline Service Company, Anchorage, Alaska
A Major Oil Barge Pollution Incident on the Arkansas River
Robert G. Forrest, David Lopez, Richard C. Peckham, Frank J. Gorry, U.S. Environmental Protection Agency, Dallas, Texas
A Case History: Oil Spill onto the Prado Flood Control Basin—A Freshwater Wetlands Cleanup
Lieutenant **Jack A. Kemerer,** U.S. Coast Guard, Hamilton Air Force Base, California; **Nancy Hendrickson,** SPER Division Roy F. Weston, Inc., San Francisco, California; **Robert Mullinaux,** U.S. Environmental Protection Agency, San Francisco, California
Oil Spill Cleanup and Habitat Restoration, Little Panoche Creek, California
Emily M. Pimentell, Tetra Tech, Inc., San Francisco, California, **John E. Cromwell,** Tetra Tech, Inc., Pasadena, California
Response to the Mobil Oil Spill Incident
William C. Park III, Mobil Oil Corporation, New York, New York
An Estuarine Oil Spill Incident in the United Kingdom
N. Mitchell, B. Pyburn, W.J. Syratt, P.D. Holmes, BP International, London, England, UK

FAIRNESS, SIMPLICITY AND ECONOMIC GROWTH

Joseph Farrell, President

The American Waterways Operators, Inc.

Recently, then Secretary of the Treasury **Donald T. Regan** released for public scrutiny the Treasury Department's report to the President proposing "tax reform for fairness, simplicity and economic growth."

I doubt that any individual would quibble with the objectives set forth in the title of Secretary **Regan's** report, which examines, in some 700 pages, the present tax system, and makes sweeping recommendations for change in that system to further those admirable goals.

Fairness, simplicity and economic growth are indisputably laudable aims, and the concept of a tax system based upon these principles would seem to have near universal appeal.

It is important to question just exactly what Secretary **Regan** means by this high-minded document; and, perhaps more significantly, why has this document not been publicly and ardently embraced by members of Secretary **Regan's** own party and Administration, and particularly by the Secretary's previously friendly backers in big-business.

I would like to speculate on upcoming legislation in the 99th Congress affecting improvements to the inland waterway system and the financing of those improvements, and to examine the merits of such legislation.

I cite Secretary **Regan's** tax reform proposal at the outset to underscore what I believe to be the premier issue regarding the taxation process generally, and the issue of proposed higher waterway user fees in particular. That issue is fairness.

But first, the upcoming battle over increasing user fees to finance necessary improvements to the nation's waterway system will be fought on much the same turf, will feature pretty much the same principals, and will center on essentially the same issues in the 99th Congress as was the case in the 98th Congress.

The Administration has not provided us with its specific proposals regarding the financing of inland waterway improvement projects as this is written. But it is a relatively risk-free conjecture that the Administration will aggressively seek new and higher user fees from the water carriers to fund any improvements when it finally does deliver a budget to the 99th Congress. In the Congress, bills have already been introduced, or will shortly be introduced, which essentially restate the proposals contained in initiatives which were considered in the 98th Congress.

I know that the particulars of these bills, which essentially propose once again initiatives which were ultimately unsuccessful in the previous session, are well known to members of the transportation fraternity. The rather more philosophical questions which underlie both the Administration's position on the matter of user fees and the majority congressional position on the subject, which differ markedly, deserve our careful attention.

Here the questions of fairness and intent ought most appropriately to be raised. Specifically, what exactly is the intent of the higher user fee proponents, and is the philosophical premise upon which their intentions rest both fair and sound? In order to reach an informed conclusion about this question, it is worthwhile to look at the higher user fee proponents and to examine their arguments.

But first, let us have a look at ourselves—to clarify just who the commercial water carriers are, and to define exactly our mission for the reader. Throughout the forthcoming congressional debate, it is imperative to remember that the commercial water carriers are, collectively, far more than merely a group of business enterprises dedicated solely to generating profits for the principals who control them. It is important to recognize that we serve the nation, at the same time we serve our own commercial interests. That is true of all the transportation modes. We sell a service, not a product.

And, beyond merely the commercial prosperity made possible by our work, please consider the vital link the waterway industry has always played in the movement of armament and materiel in time of emergency and international conflict. In addition, our rivers and harbors are national treasures. They need maintenance and repair. The men and women who work the rivers and man the harbors work to enhance this treasure. That fact needs recognition.

Despite all this, there are those who argue that we—the commercial navigation industry—should pay for all needed repair, expansion, improvement and maintenance of the waterway system, regardless of who benefits from the system, regardless or regional economic sustenance, regardless of protection of life and property afforded by this work.

Therefore, the upcoming debate on Capitol Hill will center on the strength of the postions of those who hold that higher user taxes are an appropriate vehicle of debt retirement as well as a trumped up safeguard against pork barrel boondoggles, pitted against those who argue that our industry's activities are in the national interest with a national beneficiary/constituent base, and that it is inappropriate to add further user taxes onto the already overburdened shoulders of such industries as the commercial water carriers. Who will win this debate is uncertain.

What is quite certain—indeed unequivocal—is that the treatment that the various segments of the transportation community receive, and have come to expect, from the federal government is neither fair, simple nor conducive to the promotion of economic growth. There is no debating that fact.

Consider the case of the airline industry. In that industry there is a user tax. But airline user taxes take the form of a direct tax on the real user of airline services—the customer. The airline user tax manifests itself as a tax on individual tickets. It is a tax which is inescapable—all direct, or real, users of the service provided must pay this tax.

The federal government softened the blow greatly in extracting user taxes from the airline industry by insuring that these taxes could be directly passed along to the consumer. It seems only fair to expect the federal government to extend a similar treatment to our industry. The user taxes we now pay in the reality of today's marketplace cannot be directly passed along to our customers. The reality of overcapacity and underutilizations of the waterway system serve to insure that our carriers must absorb the cost of higher user taxes themselves.

Yet, in considering still higher user taxes on the inland water carrier industry, nobody in government seems the slightest concerned with the simple fact that for us these taxes are not recoverable, we must absorb them—and we simply can't afford it.

Consider also the case of the trucking industry. A few years ago, members of the Administration took a look around for some revenue enhancements—called "taxes" by most folks—and hit upon the idea of levying a huge user tax on the trucking industry. This user tax was to manifest itself in two forms, as a tax on fuel and as a tax on the vehicle itself, the truck. The tax took the form of the Surface Transportation Assistance Act which was passed by the Congress and signed into law in 1982.

Proponents of these taxes, which were exhorbitant considering the real financial condition of the trucking industry at that time, initially turned a deaf ear to the screams of outrage which emanated from the organized trucking lobby in response to the proposed tax increase.

After all the applause had died down, somewhat more sober elements in the Administration and in the Congress began to look at the real condition of the trucking industry as opposed to its outdated reputation as a bloated, protected special interest. These more sober elements rather quickly came to realize—ex post facto—that the fat cut by the truck tax bill was not fat or excess at all, but rather vital flesh and lifeblood.

The trucking companies were being hit at just the wrong time. The Motor Carrier Act of 1980 had deregulated the trucking industry and this deregulation wreaked bloody havoc on the motor carrier community. Whatever one might think about the philosophical efficacy of deregulation, there is no question that an industry, regulated by government from it's infancy, suddenly thrust into a "free market" environment is going to suffer considerable dislocation in transition. This certainly happened to the truckers. What also happened to the truckers at precisely the same time was a full-blown recession. Products were not moving and as a consequence, trucks were not rolling.

Eventually, responsible people in government looked at their handiwork and realized that they had made a very grievous error, and rescinded a fair amount of the tax. Why is a similar courtesy not extended to the inland water carrier industry? Rather than taking a responsible and reasoned look at the economic plight of the water carrier industry in the course of deliberations about the efficacy of user taxes, some elements in government propose still higher taxes on our industry at a time when we are in an economic predicament at least analagous—really far worse—than our brothers in the airline and trucking industries.

Proponents of higher user taxes on our industry must explain why similar consideration is not given to our economic condition when the government considers higher user fees as was extended to the airline and trucking interests if the financial condition of those industries is pertinent to the debate over the advisability of extracting higher user fees from the airlines and the truckers, why is it not pertinent to the debate over higher user taxes in

Excerpted from a speech to the National Coal Association Seminar On The 99th Congress and National Transportation Policies on Monday, February 25, 1985, by Joseph Farrell, president, The American Waterways Operators, Inc.

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our industry? The answer is that the government dispenses its largesse selectively, and that is not always proper.

While on the subject of government largesse, let us consider the case of the railroad industry. Consider specifically, Conrail. I am happy to report to you that things are going fine. Things are going so well, in fact, that Conrail has emerged from the protective warmth of mother government's apron and—with a little push from mom—has decided to go out into the world and seek his fortune on his own.

The next time someone tells you how much it will cost to send your children to college, remember and be thankful that you were not called upon to raise baby Conrail to his majority. Or perhaps more accurately, try to forget that you actually did help raise the little railroad to manhood—despite the fact that mother government claims full credit for Conrail's performance. And make no mistake about it, his performance has been remarkable. A straight "A" student, if you will. Certainly baby Conrail concentrated in one of the more marketable disciplines on his way to maturation. So marketable is baby Conrail that he is now up for sale—at the firesale price of about 1.2 billion dollars.

Mother government is considering only selected bids for baby. At present, there are only three remaining bidders for Conrail: the Marriott Corporation, the Allegany Corp. and the Norfolk and Southern Railroad. This last bidder, the Norfolk and Southern Railroad is considered by the same mother government who is offering baby Conrail for sale—different branch—as a "revenue inadequate" railroad.

Mother government is really pulling a fast one on the American public in the whole Conrail episode. The total federal bailout of the previously strapped railroad cost 7.2 billion dollars—you paid.

What's more, last year Conrail showed a profit of one half billion dollars. This money was not returned to you in consideration of the 7.2 billion dollars you earlier provided baby Conrail for his upkeep, maintenance and basic business education.

Despite baby Conrail's profitability last year mother government gave our boy an allowance of 300 million dollars.

And here is the real kicker: For whichever bidder ultimately is successful in obtaining baby Conrail, there is a bonus that in the world of business is really too good to believe. Conrail comes without liability, without debt, without obligations of any kind to the purchaser. Without any program for repayment of your 7.2 billion dollars. Mother government can really dole out the goodies when it comes to her favorite son.

But enough of the saga of Conrail. Let's have a look at some other railroads which also receive a fair amount of consideration, not to say largesse, from the federal government. All four are deemed by the federal government as revenue inadequate. Keep that in mind as we examine the real financial condition of these companies. Financial data on these companies is readily available—they are publicly held. What that data reveals makes for a hard case for those who suggest that these railroads are not revenue adequate. The data reveal them to be highly profitable enterprises by any conventional business yardstick.

Witness the financial condition of CSX Corp. in taxable years 1981-1983, CSX Corp not only paid no federal tax whatsoever, on profits of 1.75 billion dollars, but received rebates of taxes paid in earlier years or sold "excess" tax benefits to the extent that the corporation actually got money back from the federal government. Even more difficult to substantiate in light of the government's position on the revenue inadequacy of CSX Corp., is that supposedly strapped corporation's near magical ability to come up with 1.06 billion dollars to purchase Texas Gas Resources, parent company of one of the nation's largest independent barge companies with which CSX Corp. directly competes—an acquisition which I believe is in direct contravention of the Panama Canal Act which expressly forbids such monopolistic mergers.

(continued on page 40)

Marine Insurance. If it's Greek to your company, you could be in for a big surprise.

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Leaving aside the acquisition and monopoly issue which is now before the courts, where did a revenue inadequate corporation get 1.06 billion bucks to buy another company? And perhaps more pertinently, why does such a company get a rebate check from the federal government? Why does it pay no federal income tax?

Consider the Santa Fe Southern Pacific Corp., another railroad judged to be revenue inadequate by the government, despite profits in taxable years 1981-1983 of 1.5 billion dollars, on which the company paid absolutely no federal income tax and yet was sent a very substantial rebate check by that same government.

Then witness the Burlington Northern—yet another revenue inadequate railroad with tidy profits in the 1981-1983 taxable period amounting to 1.7 billion dollars. Again, no tax. Again, a substantial rebate.

Witness also Norfolk Southern Corp. which as mentioned is one of the finalists in the contest to purchase Conrail. Needless to belabor the point—Norfolk Southern is, of course, revenue inadequate. This despite profits in taxable years 1981-1983 of a respectable 574 million dollars.

The question one unfamiliar with the rarified practices of government might ask is: If I correctly understand the determination of revenue inadequacy to mean an inability to make basic costs, how come these supposedly revenue inadequate companies are at the same time so profitable and flush with cash that they are buying barge lines, bidding on baby Conrail and generally behaving like robust, healthy businesses?

A more pertinent question might be: If I correctly understand the ruinous financial condition of the inland barge industry, how come these companies are not, at least for a time, put behind the benevolent apron of mother government rather than made subject to still higher user taxes in their time of need? Above all, where is the fairness in all this?

The answer is that all three questions are, while legitimate, inherently naive. **Jack Kennedy** provided the answer to all three of them at once in a brief quip: "Life is unfair." Actually, it has taken 20 years for another Harvard Man—this one a Republican—**Donald T. Regan,** to use the forum of a Cabinet-level office to address in a broader, more philosophical sense, these same questions. The Secretary of the Treasury calls for fairness and simplicity across the board in our tax system. This includes the transportation system. And that system includes the inland water carriers.

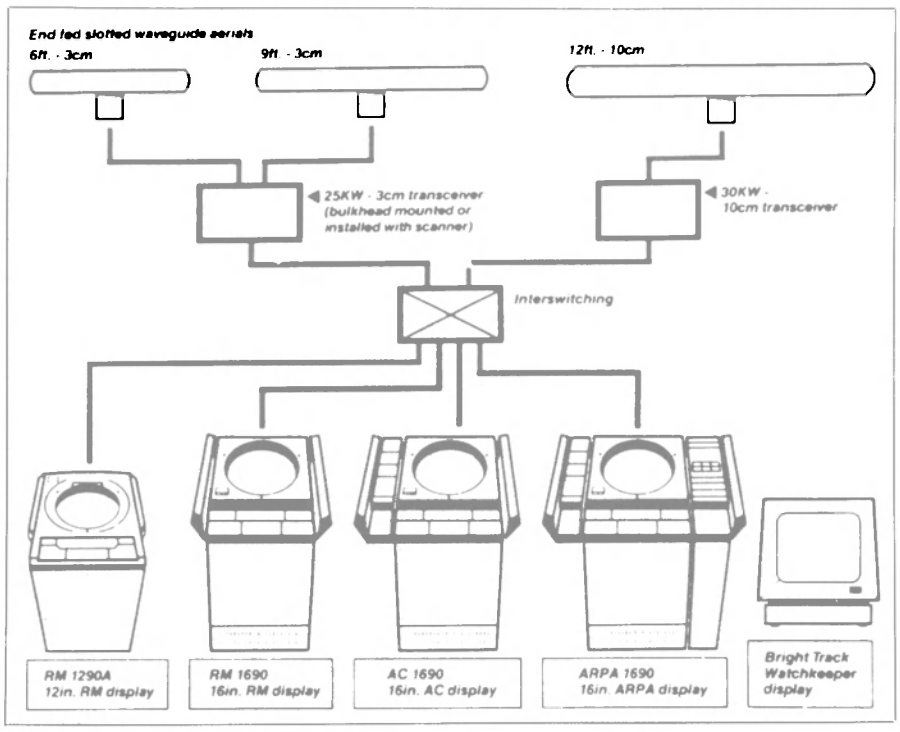
In a fair system, a company cannot be revenue inadequate and flush with cash at the same time. In a fair system, a company should not be on the ropes financially and yet be asked to pay still higher user taxes at the same time. It's just not defensible.

Our national leadership must recognize the severity of our industry's plight, and consider the crucial role we play in the transportation system and the overall economy. Laws and regulations must be directed at protecting the public and nurturing the industry, and not at inhibiting it any further. In a study on the financial performance of 15 of the nation's leading barge companies conducted by Arthur Andersen & Co., the combined revenue declines were well in excess of 10 percent between 1980 and 1982. From operating profits of about $125 million in 1980, the companies lost nearly $30 million in 1982. The losses in 1983 were in excess of $40 million, and the downward trend continues. This study focused on the major companies, and does not address the economic problems faced by the smaller companies, many of which have been forced to close their doors over the past two years.

In light of this gloomy data, it is up to the higher user fee proponents to explain how their proposals are consistent with the goals of promoting a tax reform system predicated on fairness, founded in simplicity and dedicated to promoting economic growth; a goal which, assuredly, all fair minded people would agree is both desirable and long neglected.

Fairness, simplicity and economic growth. We agree with Mr. **Regan,** that these should be the watchwords.

New Racal-Decca Problem-Solving Electronics Unveiled



Being one of the oldest names in a business doesn't prevent one company from also being one of the newest.

At a reception in New York City, Racal Marine Inc. introduced several new entries in radar and navigation electronics, continuing a new product thrust underway at the company for the past two years. The new products carry the Racal-Decca brand name, one that links the long tradition of Decca with new product innovations of Racal.

The past few decades of maritime history have been fundamentally influenced by the huge impact of navigation electronics, especially radar and positioning systems. A key figure in this history has been Decca, one of the old British names in radar.

During the past few years, the firm has been quietly going about the business of rejuvenating several major lines of business under new British corporate ownership.

Decca's parent company, Racal Electronics Plc, acquired Decca Ltd. four years ago, including part ownership of the American company, ITT-Decca Marine. Since then, Racal has secured complete ownership of the U.S. company. Racal Electronics Plc is a multinational electronics manufacturing company headquartered near London, and is one of the largest makers of non-military marine electronics in the world.

Reflecting the effect of the Racal involvement in Decca operations, the U.S. company was recently renamed Racal Marine Inc. Products are still marketed under the Racal-Decca name.

Since acquiring Decca, several new product developments have been underway. Beginning in 1983, these have been introduced at an accelerating pace. Rather than introducing variations on a single technological theme, Racal has introduced new developments in several areas, each targeted at the unique needs of buyers in the market. Company representatives report this needs-based approach has replaced the largely technology-based approach characteristic of earlier developments.

In early 1983, for example, Racal tackled the classic tradeoff between price and performance in smaller commercial class and pleasure boat radars. By combining new design and production technologies, the company was able to introduce a line of 48-mile 5-kw radars (Models 170, 270, 370) reported to be in price ranges previously populated only by shorter range 3-kw radars. As a result, these have become attractive backup radars in several commercial applications.

For an entirely different market area, Racal introduced a new radar designed specifically for river operations. The RR1260 River Radar uses statute mile calibration, lower power requirements and lower pricing to meet the special needs of the American river operator.

Racal has directly addressed the task of creating a new daylight viewing radar for commercial maritime applications. Racal's color radar—called Bright Track—uses color raster video with only one target color—the familiar amber—to simplify and clarify the picture. In addition, automatic target track plotting gives collision avoidance information and helps pinpoint weak targets through clutter. Since Bright Track was first introduced, there has been an American price reduction resulting from the worldwide strength of the U.S. dollar.

Racal has also used technological advances to attack the unique business problems of ARPA systems that are becoming mandatory for 10,000+ ton ships over the next four years. Known as Master Radars, the modular design radar system can be started as a 16-inch radar system and upgraded in stages to add AC (Anti-Collision true motion) and ARPA capabilities when needed. Because of the multiple uses of the systems, design and production economies have resulted in a lower priced ARPA system to satisfy IMO minimum standards. This approach also gives vessel owners more flexibility regarding the best time to upgrade to ARPA.

Racal has also introduced an integrated worldwide navigation system, the MNS (Marine Navigation System) 2000, incorporating Decca Navigator, Omega, Transit Satellite Navigation and Loran C in a single low-cost unit. The system automatically selects the best navigation system for current conditions, and can use one navigation source to update and refine information from others. The navigation system interfaces with other equipment, such as ARPA systems, autopilots and position plotters, and is designed to be upgraded to add the Global Positioning System when it becomes operational in the latter part of this decade.

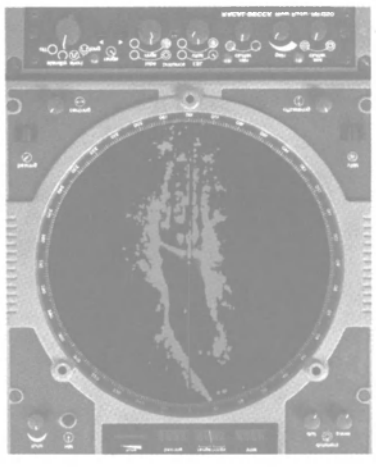
For large ship deep-sea applications, Racal also makes ISIS (Integrated Ship Instrumentation System), an automatic monitoring and alarm system for overall ship operation, and super-adaptive autopilots that reduce fuel consumption by selectively ignoring short term course deviations.

Though it's hard to predict future new product developments, and company spokesmen are understandably hesitant to comment publicly on unreleased products, new developments of color raster daylight viewing radar are expected for larger commercial applications. And since one of Racal's corporate strengths is a service network approaching 1,000 locations worldwide, more developments in electronics targeted to the needs of worldwide big ship operators can be expected.

Complete, full-color product literature is available, at no cost, for each of the new units described in this article. For free copies,

Circle 17 on Reader Service Card

Racal Marine senior management introduce new radars and navigation electronics at New York reception (L to R): **Bob Burns,** executive vice president, sales and marketing; **Eric Tyler,** president; **David Peacock,** chairman of the board, Racal Marine Ltd; **David Paculaubo,** deputy managing director, Racal Marine Radar Ltd.



Racal Decca River Radar (photo-center) is designed and optimized for river operations only. Bright Track radar (photo-right) has color raster video for full daylight viewing.

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Wartsila Delivers Combination Tanker 'Tavi' To Neste Oy

The Turku shipyard of Oy Wartsila Ab recently completed the 19,999-dwt crude oil/chemical/products tanker Tavi (shown above), first of two ordered by Neste Oy, the Finnish national oil company. The vessel was delivered less than 14 months after keel-laying.

The Tavi is built to Lloyd's Register of Shipping classification +100 Al, Chemical Tanker, +LMC, UMS, IGS, Ice Class 1A. She is an IMO type II/III chemical tanker for worldwide trading of crude oil, oil products, and type II/III chemicals including benzene, styrene nonomer, caustic soda, caustic potaska, molasses, urea, white spirits, solvents, and alcohol. The cargo list comprises 72 different chemicals most widely transported by sea.

The tanker has an overall length of about 528 feet, beam of 76 feet, depth to upper deck of 46½ feet, and design draft of 33 feet. Propulsion is provided by a Wartsila/Pielstick 6PC4.2L-570 diesel engine coupled through a reduction gear to a KaMeWa controllable-pitch propeller. The engine has a maximum continuous output of 9,776 bhp at 400 rpm. The ship is also fitted with controllable-pitch bow thruster driven by a 1,000-kw electric motor. Three Wartsila-Vasa 6R22HF auxiliary diesels are direct-coupled to Stromberg 935-kva alternators. Main and auxiliary engines, boilers, and inert gas generator are all able to run with one kind of fuel on board—3,500 sec Redwood at 100 F.

The hull is divided, by two longitudinal and 11 transverse bulkheads, into 10 center tanks and eight side tanks for cargo, six side tanks for water ballast, and two slop tanks. Transverse bulkheads are stiffened by corrugating; longitudinal bulkheads are smooth in the center tanks with stiffeners in the side tanks. Center tanks are coated with pure epoxy; cargo side tanks are coated with zinc silicate.

Each cargo tank is fitted with a Thune Eureka deepwell pump. For cargo heating, 18 Sunrod heaters are installed on the main deck. One Maritime Protection inert gas generator is installed in a deckhouse aft. The generator has a capacity of 3,300 cubic meters per hour with a maximum pressure of 0.2 bar.

Despite being a ship less than 150 meters (492 feet) and of less than 20,000 dwt, the design of the Tavi incorporates some of the more severe requirements applicable to larger vessels. These include damage stability, segregated ballast water tanks, crude oil washing, and the inert gas system.

SweetWater RO Unit Selected For Antarctic Expedition By British

Peter A. Malcolm, Marine Co-Ordinator of "In the Footsteps of Scott," a British expedition to the Antarctic, has selected the SweetWater 400 RO (reverse osmosis) unit as the onboard water supply for this historic, two year voyage.

Bob Daniels, president of Marland Environmental Systems, makers of SweetWater Systems stated: "I'm excited and proud that the British have chosen a SweetWater RO Water Purification unit. SweetWater systems are dependable workhorses, capable of delivering a continuous supply of pure, clean potable water, from any ocean in the world, even under adverse conditions, such as found in the Antarctic."

SweetWater units are complete purification and water production systems. The main frame and the precise pre- and post-filtration components necessary for the RO membranes to function at maximum level are included.

The SweetWater 400 unit will be installed in a converted Islandic trawler recently used for oil pollution control. It will be reconditioned to meet Lloyd's standards of an Ice Class III vessel for this expedition.

For further information and a free SweetWater brochure,

Circle 12 on Reader Service Card

Second Marginal Oilfield Conference Set For April 11-12 In London

The Marginal Oilfield Development and Tanker Conversion Conference organized by Lorne & MacLean Marine of Herts, England, will be held at the Cafe Royal Hotel in London April 11-12, 1985. This second international two-day meeting will discuss the technical and economic viability together with political motivations for the development of marginal oil fields.

Prominent international operators, system designers, and economists, all leading experts in their field, will present papers at the conference. Topics will include concept feasibility, economics, service experience, safety and security, maintenance and repair aspects, finance, subsea production systems, and more.

For further information on the conference, contact Lorne & MacLean Marine, 34/36 Apsley End Road, Shillington, Hitchin, Herts SG5 3LX, England; telex 826715 AERO G.

BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. **If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 689-3266.**

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Flexaust Company, 11 Chestnut St., Amesbury, MA 01913
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Squire-Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, NY 11231
Flakt AB, Box 8862, S-40272, Gothenburg, Sweden
Marlo Coil/Nuclear Cooling, Inc., P.O. Box 171, High Ridge, MO 63049
Stal Refrigeration AB, Butangsgatan 16, S 601 87 Norrkoping, Sweden

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

ANODES—Cathodic Protection
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Federal Harco, P.O. Box 40310, Houston, TX 77240
The Platt Bros. & Co., Box 1030, Waterbury, CT 06721

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

BEARINGS—Rubber, Metallic, Non-Metallic
Grant Manufacturing & Alloying, Inc., 600 Schoolhouse Rd., Souderton, PA 18964
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Thomson-Gordon Limited, 3225 Mainway, Burlington, Ontario, Canada L7M 1A6
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

BLASTING—Cleaning—Equipment
Aqua-Dyne Inc., 2208 Karbach St., Houston, TX 77092
Aurand, 1270 Ellis St., Cincinnati, OH 45223
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
CLEMCO, P.O. Box 7680, San Francisco, CA 94120
E.I. DuPont De Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
Key Houston Division of Jacksonville Shipyards, 13911 Atlantic Blvd., Jacksonville, FL 32225

BOILERS
B&D Marine and Industrial Boilers, Inc., P.O. Box 5702, North Charleston, SC 29406
Combustion Engineering, Inc., Windsor, CT 06095
Foster Wheeler Boiler Corp., 110 S. Orange Ave., Livingston, NJ 07039

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

BROKERS
S. Danoff U.S.A. Ltd., 2050 Coral Way, Miami, FL 33145
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Western Maritime, 701 B Street, San Diego, CA 92101

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

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

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

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

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

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Cornell-Carr Co. Inc., 63 Main St., Monroe, CT 06468
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

COMPUTERIZED INFORMATION SYSTEMS
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Maritime Data Network, Ltd., 102 Hamilton Ave., Stamford, CT 06902
Veson Systems, 29 Broadway, Suite 1002, New York, NY 10006

CONDENSERS
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American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
ASEA, Inc., 4 New King St., White Plains, NY 10604
Autronica Marine USA, 280 Industrial Pkwy., Neathvale, NJ 07647
Barringer Research, 304 Carlingview Dr., Rexdale, Ontario, Canada M9W 5G2
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Ergon, Inc., P.O. Drawer 1639, Jackson, MS 39205
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Grumman Aerospace, 111 Stewart Ave., Bethpage, NY 11714.
Indikon Corp., 26 New St., Cambridge, MA 02138
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
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Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Marine Safe Electronics, 37 Staffern Drive, Concord, Ontario, Canada, L4K 2X2
Maritime Protection A/S, Box 100, N-4620 Vagsbygd, Norway
Megasystems, Inc., 1075 N.W. 58th Street, Boca Raton, FL 33431
Nav-Vue, Inc., P.O. Box 1175, Huntsville, TX 77340
Offshore Technology Corp., 578 Enterprise St., Escondido, CA 92025
Pandel Instruments Inc., 2100 N. Hwy. 360, Grand Praire, TX 75050
Propulsion Systems, Inc., 21213 76 Ave., Kent, WA 98032
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway

COUPLINGS
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SKF Steel, 201 Tower Lane, P.O. Box 745, Avon, CT 06001

CRANE BUMBERS
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ASEA Stal-Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
HIAB Cranes & Loaders Inc., 258 Quigley Boulevard, New Castle, DE 19720
Machinoexport, 35 Mosfilmovskaya Ul., 117330 Moscow, U.S.S.R.
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202

DECK MACHINERY—Cargo Handling Equipment
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Murdock Engineering Company, P.O. Box 2278, Irving, TX 75061
Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118

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General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360
Haynes Corporation, P.O. Box 179, Jackson, MI 49204
Illman Jones, 1111 Green Island Rd., American Canyon, CA 94589
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637

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Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Granges Repair Service GMBH, U.S. Rep: Field, Wigham and Co., Inc., 200 Middleneck Road South, P.O. Box 2123, Great Neck, NY 11021
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166

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ELECTRONIC SYSTEMS
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EMULSIFICATION SYSTEMS
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S/S Research & Development Inc., 1050 State St., Perth Amboy, NJ 08862

ENGINE TEST EQUIPMENT
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MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

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FENDERING SYSTEMS—Dock & Vessel
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Walter Kidde, Walter Kidde Dr., Wake Forest, NC 27586

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Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716
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Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
MacGregor-Navire Internatinal, Box 8991, S-402 74 Goteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

HEAT EXCHANGERS
Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
American Standard Inc., Heat Transfer Div., Buffalo, NY 14240
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

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Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Gulf International Divers, P.O. Box 1342, Gretna (New Orleans), LA 70052
Pacific Maine Services, TLX: 664540 seaserv, Long Beach, CA 90802
Petrochemical Services, Inc., 3820 Dauphine St., New Orleans, LA 70117
Petroferm Marine, Route 2, Box 280, Amelia Island, FL 32034
Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France
Seaward Marine Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Seaward International, 5409 Beamon Rd., Norfolk, VA 23513 TX: 710-881-1182
Taylor Diving & Salvage Co. Inc., 701 Engineers Rd., Belle Chasse, LA 70037

HYDRAULICS
Aeroquip Corp., 1130 Maynard Road, Jackson, MI 49202
Cunningham Marine Hydraulics Co., Inc., 201 Harrison St., Hoboken, NJ 07030; 2030 E. Adams St., Jacksonville, FL 32204, TX: 710-730-5224
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood, NJ 07607
Hydra-Dynamics, Inc., 2141 Greenwood Ave., Wilmette, IL 60091
Washington Chain & Supply, Inc., P.O. Box 3646, Seattle, WA 98124

INERT GAS—Generators—Systems
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, NJ 07039
Maritime Protection A/S, N. American Agents, American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

INSULATION—Cloth, Fiberglass
Bailey, Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, NY 11231
Duracote Corp., 350 North Diamond St., Ravenna, Ohio 44266
Superior Energies, Inc. P.O. Drawer 386, Groves, TX 72619
Waco Inc., 5450 Lewis Rd., P.O. Box 836, Sandston, VA 23150-0836

INSURANCE
Adams & Porter, 510 Bering Dr., Houston, TX 77057-1408
Adams & Porter, 1 World Trade Center, Suite 8433, New York, NY 10048
Wm. Keith Hargrove, Inc., 1300 Post Oak Blvd., Suite 2050, Houston. TX 77056
MGA International, 419 Park Avenue South, New York, NY 10016
United States P&I Agency, Inc., 80 Maiden Lane, New York, NY 10038

JOINER—Watertight Doors—Paneling
Advanced Structures Corp., 235 W. Industry Ct., Deer Park, NY 11729
Bailey Distributors, Inc., 74 Sullivan St., Brooklyn, NY 11231
Masonite Commercial Division, Dover, OH 44622
Megadoor Inc., 441 Lexington Ave., Suite 903, New York, NY 10017
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

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

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., P.O. Box 2148, Hollywood, FL 33022
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, FL 33164
Phoenix Products Company, Inc., 4769 North 27th Street, Milwaukee, WI 53209

LINE BLINDS
Stacey/Fetterolf Corp., P.O. Box 103, Skippack, PA 19474

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
A-C Brake Co., 308 E. College St., Louisville, KY
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663

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

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

MOORING SYSTEMS
Murdock Machine & Engineering Company of Texas, P.O. Box 2278, Irving, TX 75061
Samson Ocean Systems, Inc., 99 High Street, Boston, MA 02110

NAME PLATES—BRONZE—ALUMINUM
Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 11356
American Systems Engineering Corp., P.O. Box 4265, Virginia Beach, VA 23454
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, MD 20015
Art Anderson Associates, 148 First St., Bremerton, WA 98310
B.C. Research, 3650 Wesbrook Mall, Vancouver, B.C. Canada V6S 2L2
Del Breit inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.A.C.I., Inc., 1815 No. Fort Myer Dr., Arlington, VA 22209
C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211
C.T. Marine, 18 Church Street, Georgetown, CT 06829
Phillips Cartner & Co., Inc., 203 So. Union St., Alexandria, VA 22314
Century Engineering, inc., 32 West Rd., Towson, MD 21204

Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandoll Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, WA 98148
C.R. Cushing, 18 Vesey St., New York, NY 10007
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
Fleetweather Ocean Services, Inc., Rd. #2, Box 260, Hopewell Junction, NY 12533
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, NY 11050
Gibbs & Cox, Inc., 119 West 31st Street, New York, NY 10001
John W. Gilbert Associates, Inc., 66 Long Wharf, Boston, MA 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hamilton Cornell Associates, Box 188, Snug Harbor Station, Duxbury, MA 02331
J.J. Henry Co., Inc., 40 Exchange Place, New York, NY 10005
Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921
HydroComp, Inc., 10 Cutts Road, P.O. Box 865, Durham, NH 03824
Intramarine, Inc., P.O. Box 53043, Jacksonville, FL 32201
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, MD 21227
J.L. Konopasek & Associates, 3523 Scrimshaw Dr., Jacksonville, FL 32217
James S. Krogen & Co., Inc., 3333 Rice St., Miami, FL 33133
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, NY 10048
McLear & Harris, Inc., 28 West 44 Street, New York, NY 10036
Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, OH 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, NY 11746
Marine Power Associates, 4475 Mission Blvd., Suite 235, San Diego, CA 92109
Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030
George E. Meese, 194 Acton Rd., Annapolis, MD 21403
R. Carter Morrell, 715 S. Cherokee, Bartlesville, OK 74003
NKF Engineering Assoc., Inc., 8150 Leesburg Pile, Vienna, VA 22202
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
New England Engineering & Marine Services, Rt. 2, Box 50, York, ME 03909
Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean-Oil Internatinal Engineering Corporation, 3019 Mercedes Blvd., New Orleans, LA 70114
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, FL 33156
S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, FL 33316
SEACOR Systems Engineering Associates Corp., 19 Perina Blvd., Cherry Hill, NJ 08003 (Publications Division at Cherry Hill location)
STV/Sanders & Thomass, Inc., 1745 Jefferson Davis Hwy., Arlington, VA 22202
George G. Sharp, Inc., 100 Church St., New York, NY 10007
Simmons Associates, P.O. Box 760, Sarasota, FL 33578
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
J.F. Stroschein Associates, 666 Old Country Rd., Garden City, NY 11530
Richard R. Taubler, Inc., 610 Carriage La., Dover, DE 19901
Timsco, 622 Azalea Road, Mobile, AL 36609
Tracor Hydronautics, Inc., 7210 Pindell School Rd., Laurel, MD 20707
Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744

NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., Buckwheat Bridge Rd., Germantown, NY 12526
Anschutz & Co., GmbH, Postfach 6040, D-2300 Kiel 14, West Germany
Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080
British Telecom International, The Holborn Centre, 120 Holborn, London EC1N 2TE
CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614
COMSAT World Systems, 950 L'Enfant Plaza, S.W., Suite 6151 Washington, DC 20024
Cybernet International, Inc., 7 Powder Horn Dr., Warren, NJ 07060
A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
General Electric Company, Mobile Communications Division, Lynchburg, VA 24502
Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 9 Hoyt Drive, Newburyport, MA 01950
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Mackay, 441 U.S. Highway #1, Elizabeth, NJ 07202
Japan Radio Co., Ltd., Akasaka Twin Tower, 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, Japan U.S. Rep: 405 Park Ave., New York, NY 10022
King Radio Corporation, 400 North Rodgers Rd., Olathe, KS 66062
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Kongsberg Vopenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 1453 Pinewood St., Rahway, NJ 07065
Lorain Electronics Corp., 2307 Leavitt Rd., Lorain, OH 44052
Magnum Distributors Inc., 1000 S. Dixie Hwy. #3, Pompano Beach, FL 33060
Micrologic, 20801 Dearborn, Chatsworth, CA 91311
Nav-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navigation Sciences Inc., 6900 Wisconsin Ave., Bethesda, MD 20815 TX: 705999
Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164
Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033
Raytheon Marine Co., 676 Island Pond Road, Manchester, NH 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Robertson Autopilot, 400 Oser Ave., Happauge, NY 11738
Servo Corporation of America, 111 New South Road, Hicksville, NY 11802
Simrad, Inc., 2208 N.W. Market St., Suite 600, Seattle, WA 98107
Sperry Corporation, Great Neck, NY 11020
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067

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

OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Biospherics Incorporated, 5001 Forbes Blvd., Lanham, MD 20801
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
A.W. Chesterton Co., Middlesex Industrial Park, Rt. 93, Stoneham, MA 02180
Chugoku Marine Paints (U.S.A.) Inc., 1290 Ave. of Americas, New York, NY 10104
CLEMCO, P.O. Box 7680, San Francisco, CA 94120
"CONSOL" manufactured by Contact Paint & Chemical Co. Inc., 200 S. Franklintown Rd., Baltimore, MD 21223
Dampney Company, Inc., 85 Paris St., Everett, MA 02149
Devoe Marine Coatings Co., P.O. Box 7600, Louisville, KY 40207
Drew Ameroid Marine, One Drew Chemical Plaza, Boonton, NJ 07005
E.I. DuPont De Nemours & Co., Inc. Nemours Bldg., Rm. N-2504-2, Wilmington, DE 19898
DuPont Co. MPS , Room X40750, Wilmington, DE 19898
Eureka Chemical Company, 234 Lawrence Avenue, So. San Francisco, CA 94080
Farboil Company, 8200 Fischer Rd., Baltimore, MD 21222
Glidden Coatings & Resins, Architectural & Maintenance, 925 Euclid Ave., Cleveland, OH 44115
Hempel Marine Paints, Inc., Foot of Currie Ave., Wallington, NJ 07057; 6868 NorthLoop East, Suite 304, Houston, TX 77028; P.O. Box 10265, New Orleans, LA 70181
International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
Jotun Marine Coatings Inc., 840 Key Hwy., Baltimore, MD 21230
Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NJ 07650
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale, CA 91203
Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143
Sermatech International, 4401 SermeTel Dr., Moss Point, MS 39563

PIPE-HOSE—Cargo Transfer Clamps, Couplings, Coatings
Amermarine International, P.O. Box 9205, Dundalk, MD 21222
Deutsch Metal Components, 14800 S. Figueroa St., Gardena, CA 90248
Hydro-Craft Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063
Selkirk Metalbestos, Box 19000, Greensboro, NC 27419
Tioga Pipe Supply Co. Inc., 2450 Wheatsheaf La., P.O. Box 5997, Philadelphia, PA 19137

PLASTICS—Marine Applications
Hubeva Marine Plastic, Inc., 390 Hamilton Ave., Brooklyn, NY 11231
Norton Chemplast, 309-150 Dey Rd. Wayne NJ 07470

PLYWOOD
Simpson Timber Co., Third and Franklin, Sheton, WA 98584

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Amarillo Gear Co., P.O. Box 1789, Amarillo, Texas 79105
Aquamaster Inc., 4125, 9th Avenue N.W. Seattle, WA 98107
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, LA 70150
Bergen Diesel Inc., 2110-10 Service Rd., Kenner, LA 70062
Bird-Johnson Company, 110 Norfolk St., Walpole, MA 02081
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Capitol Gears, 349 N. Hamline Ave., St. Paul, MN 55104
Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
Colt Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520
Combustion Engineering, Inc., Windsor, CT 06095
Coolidge-Stone Vickers, Inc., 56 Squirrel Rd., Auburn Hills, MI 48057
Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788
Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340
Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505
George Engine Company, Inc., Lafayette, LA
General Motors, Electro-Motive Division, LaGrange, IL 60525
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Isotta Fraschini S.p.A., c/o Italian Aerospace Industries (U.S.A.), Inc., 1235 Jefferson Davis Hwy., Suite 500, Arlington, VA 22202
KHD Canada Inc., 180 Rue de Normandie, Boucherville, Quebec J4B 5S7, Canada
KaMeWa, P.O. Box 1010, S-68101, Kristinehamn, Sweden
KaMeWa, 1800 West Loop So., Suite 1620, Houston, TX 77027
Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323
M.A.N.-B&W Diesel, 2 Ostervej, DK-4960 Holeby, Denmark
MTU of North America, One E. Putnam Ave., Greenwich, CT 06830; 10450 Corporate Dr., Sugarland, TX 77478; 2945 Railroad Ave., Morgan City, LA 70380; 180 Nickerson St., Seattle, WA 98109; 1730 Lynn St., Arlington, VA 22209
MWM-Murphy Diesel, 12 Greenway Plaza, Suite 1100, Houston, TX 77046
Mapeco Products, Inc., 20 Vesey St., New York, NY 10007
Maritime Industries Ltd., 6307 Laurel St., Burnaby, B.C., Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
National Marine Service Louisiana, Inc., 222 Bayou Rd., Belle Chasse, LA 70037
North American Marine Jet P.O Box 1232 Benton, AR 72015
Omni Master Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670
Penske GM Power, Inc., 600 Parsippany Road, Parsippany, NJ 07054
Penske GM Power, Lodi N.J., 180 Rt. 17 South, Lodi, NJ 07644
Inland Water Propulsion Systems, Inc., 580 Walnut St., Cincinnati, OH 45201
Propulsion Systems, Inc., 21213 76 Ave. So., Kent, WA 98032
SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France
Schottel of America, Inc., 8375 N.W. 56 St., Miami, FL 33166
Karl Senner, Inc., P.O. Box 10055, New Orleans, LA 70181
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Stewart & Stevenson Services, Inc., P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers, Dept. Diesel Engines, CH-8401 Winterthur, Switzerland
Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, OH 45414
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, NJ 08650
Ulstein Trading Ltd. A/S, N-6-65, Ulsteinvik, Norway
Voith Schneider America, 159 Great Neck Rd., Ste. 200, Great Neck, NY 11021
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647
WABCO Fluid Power, an American-Standard Company, 1953 Mercer Rd. Lexington, KY 40505
Wartsila Power Inc., 5132 Taravella Rd., P.O. Box 868, Marrero, LA 70072
Waukesha Engine Division, Waukesha, WI 53187

PUMPS—Repairs—Drives
Allweiler Pump Inc., 5410 Newport Dr., Rolling Meadows, IL 60008 TX: 270-0444
Cunningham Marine Hydraulics Co., Inc., 201 Harrison St., Hoboken, NJ 07030; 2030 E. Adams St., Jacksonville, FL 32204, TX: 710-730-5224
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans LA 70127
Ingersoll—Rand Pump Group, Dept. B—346, Washington, N.J. 07882
Jim's Pump Repair, 48-55 36th St., Long Island City, NY 11101
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Sims Pump Valve Co., Inc., 1314 Park Ave., Hoboken, NJ 07030
Transamerica Delaval, Pyramid Pump Div., P.O. Box 447, Monroe. NC 28110
Vita Motivator Company, 200 West 20th St., New York, NY 10011
Warren Pumps Division, Bridges Avenue, Warren, MA 01083
Wilden Pump & Engineering Co., 22060 Van Buren St., P.O. Box 845, Colton CA 92324

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, NY 11231

ROPE—Manila—Nylon—Hawsers—Fibers
A.L. Don Co., Foot of Dock St., Matawan, NJ 07747
American Mfg. Co., Inc., Willow Avenue, Honesdale, PA 18431
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
DuPont Co., KEVLAR Aramid Fiber, Room G-15465, Wilmington, DE 19898
Samson Ocean Systems, Inc., 99 High Street, Boston, MA 02110
Tubbs Cordage Company, P.O. Box 709, Orange, CA 92666
Tubbs Cordage Co., P.O. Box 7986, San Francisco, CA 94120-7986
Vermeire N.V. Industripark Zwaarveld, B-9160 Hamme, Belgium TX: 21687
Wall Industries, Inc., P.O. Box 560, Elkin, NC 28621

SANITATION DEVICES—Pollution Control
Davit Sales Inc., P.O. Box 232, Jefferson Valley, NY 10535
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
FAST Sewage Systems, Div. of St. Louis Ship, 611 East Marceau St., St. Louis, MO 63111
Golar Metal A/S, P.O. Box 70, 4901 Tvedestrand, Norway
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Marine Moisture Control Co., Inc., 60 Inip Dr., Inwood, L.I., NY 11696
Marland Environmental Systems, P.O. Box 501, Great Falls, VA 22066
National Sanitation Foundation, P.O. Box 1468, Ann Arbor, MI 48105

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

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

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Crane Packing Company, 435 Regina Dr., Clarksberg, MD 20734
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470

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

SHIPBUILDING EQUIPMENT
Cockatoo Dockyard Pty. Ltd., P.O. Box 1139, North Sydney, NSW 2060, Australia TX: 72086
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, FL 33156
Total Transportation System Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 248, N 5201, Os, Norway

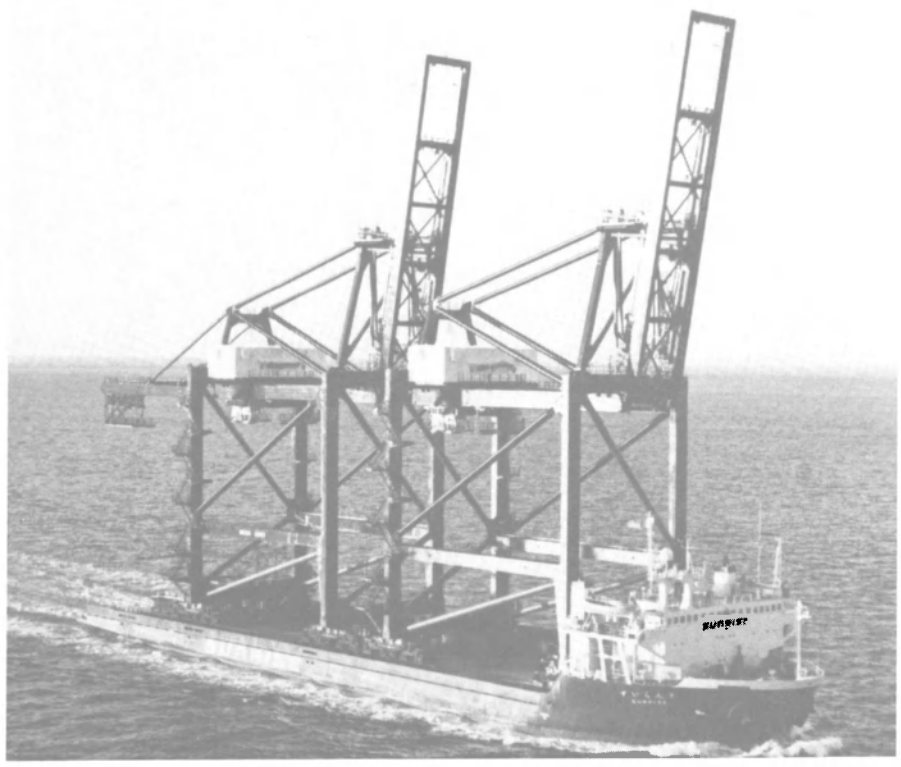
SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, OH 45042
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
United States Steel Corp., Christy Park Plant, 2214 Walnut St., McKeesport, PA 15132
Welded Beam Company, P.O. Box 280, Perry, OH 44081

SHIPBUILDING—Repairs, Maintenance, Drydocking
Amsterdam Drydock Company, Post Box 3006, 1003 AA, Amsterdam, Holland
Arsenale Triestino San Marco Shipyard, Trieste, Italy, U.S. Rep: Marine Technologies & Brokerage, 33 Rector St., New York, NY 10066
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valpariso, Chile, S.A.
Astilleros Balboa, S.a., c/o Jackson Marine Corp., 17 Battery Place, New York, NY 10004
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, LA 70150
Bardex Hydronautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA 93116
Bath Iron Works Corp., 700 Washington St., Bath, ME 04530
Bender Shipbuilding & Repair Co., Inc., P.O. Box 42, Mobile, AL 36601
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
Burmeister & Wain Skibsvaerft A/S, P.O. Box 2122, Refshaleoen-1015 Copenhagen K-Denmark
Burrard Yarrows Corporation, P.O. Box 86099, North Vancouver, B.C., Canada
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Geneva, Italy
Chesapeake Shipbuilding Inc., 710 Fitzwater St., Salisbury, MD 21801
Conrad Industries, P.O. Box 790, Morgan City, LA 70380
Curacao Drydock Company Inc., 26 Broadway, Suite 741, New York, NY 10040
Daewoo International (America) Corp., 437 Madison Ave., New York, NY 10022
Daewoo Shipbuilding & Heavy Machinery Ltd., Ayangri, Changsung-PO Koje-Kun, Kyungnam, Korea
Davie Shipbuilding Ltd., P.O. Box 130, Levis, Quebec, Canada G6V6N7
Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London, Republic of South Africa
Dravo Marine Equipment Company, Neville Island, Pittsburgh, PA 15225
Dubai Drydocks, P.O. Box 8988, Dubai, United Arab Emirates—U.S.A. Agents: Keppel Marine Agencies, Inc., 26 Broadway, New York, NY 10040, 6240 Richmond Ave., Houston, TX 77057
Eastern Marine, Inc., P.O. Box 1009, Panama City, FL 32401
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, OR 97208

Sea-Land Cranes Complete Trip From Japan To Port Of Tacoma

The journey that recently brought two mammoth container cranes from Japan to the Port of Tacoma, Wash., represent a milestone in construction of Sea-Land's new container facility there. Their successful voyage marked the first time that fully erected cranes of this size were transported across the Pacific Ocean.

The two cranes (shown), which stood 280 feet above the deck of the heavy lift ship Sunrise and weigh 1,200 tons each, were built by Hitachi, Ltd. of Japan. Two additional Hitachi cranes are scheduled to be delivered to Tacoma in March this year.



The voyage took 47 days, as the Sunrise took a southernly route to avoid storms. By comparison, containerships traveling the more direct great circle route normally take 10 days to travel from Japan to Tacoma. In spite of its chosen route, the Sunrise still encountered some severe weather, including a typhoon with winds of up to 50 knots.

Once docked at the Sea-Land site, the cranes were rolled off the Sunrise onto temporary rails stretched from the vessel's stern, which were perpendicular to the permanent rails on the concrete wharf. When the cranes were positioned over the wharf's rails, the cranes were jacked up, their wheel rotated 90 degrees, and lowered onto the permanent rails.

The Port of Tacoma is in the process of building a $6-million intermodal yard that will match its present yard as having the closest proximity to shipside container unloading operations on the U.S. West Coast. Sea-Land expects to handle at least 120,000 FEUs of containers in the new yard during the first year of its operation. The intermodal yard will be available for use by other shippers as well.

New Radiotelephone From Si-Tex

The new 855 transceiver from Si-Tex is rugged, reliable and fully synthesized and makes available all USA and International VHF marine channels plus seven USA weather channels and one Canadian. With 55 transmit and 63 receive channels you never have to change crystals wherever you operate.

Emergency channel 16 activates instantly when the CH-16 priority button is pressed with the unit in receive mode. The second press restores previous channel selected. Squelch control eliminates annoying background noise when no signal is present. At the touch of a button, microprocessor control scans all weather channels and locks automatically on the strongest signal.

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General Thermodynamics Offers Free Literature On 300-A BMEP Balancer

General Thermodynamics Corporation of Plymouth, Mass., has published free literature on the model 300-A BMEP Balancer that is used to equalize the cylinder load of any multicylinder internal combustion engine equipped with individual fuel adjustments.

The publication, which contains a photograph of the balancer, describes it as being designed to fit the standard indicator valve. It is quickly connected and sealed with slightly more than hand tight torque. When the indicator valve is opened, the pressure gauge will come to a reading, gently. The pointer is steady and will stay fixed as long as the cylinder load isn't changed. Keeping the engine load constant, readings are taken for each cylinder, then fuel adjustments are made either up or down until all cylinders yield the same pressure reading. Each cylinder is then delivering equal power.

Along with the application, the operation and construction of the BMEP Balancer are also discussed, and some of its main characteristics are listed, such as: steady, accurate, repeatable, reliable, requires no maintenance, fits standard indicator valve, and easy to use.

For a free copy of the literature on General Thermodynamics' model 300-A BMEP Balancer,

Circle 21 on Reader Service Card

Worthington Offers Free Publication On Fire-Fighting Monitors

The tremendous increase in drilling and production platforms around the world has caused the petroleum industry to place new emphasis on protecting lives and equipment from the hazards of fire. This need has caused equipment manufacturers to search for better pumps and fire monitors for optimum placement of water at platform fire locations.

In tests of the effects of pump pressures and fire nozzle shapes on water trajectories, a Worthington team compared various combinations of nozzles (with cone and parallel configurations), monitors, and pumps. A report on the result of these tests has recently been published in an issue of "Power & Fluids" (Vol. 10/No. 2) by Worthington Division, McGraw-Edison Company, of New Jersey.

The first part of the 20-page color publication is devoted to an article titled "Fire-fighting monitor research aids offshore oil field safety," by **Anthony Lukes,** London area sales manager of Worthington International Inc., and **Victor Carrell,** an engineer at Worthington-Simpson Ltd., England. The article points out that in the middle 1970s, when the petroleum industry began developing specialized craft for offshore fire-fighting duties, followed by radically different seagoing units such as the emergency support vessel (ESV) IOLAIR, built for British Petroleum, it became apparent at the preliminary design stage that there was a lack of firm and reliable data on which to base the design of fire-fighting equipment to meet their needs. For this reason, Worthington-Simpson and its associates decided to conduct tests with full-size equipment to accurately define the state-of-the-art and to advance it if possible. These tests are said to have produced findings that promise more effective marine fire-fighting devices and may contribute to onshore technology as well.

The article, which is illustrated with photos, profile of rig layout, etc., lists the test objectives and discusses the designing of the test rig, test nozzles, pressure measurements, measuring jet trajectory, test procedure, total number of tests carried out, nozzle shapes, trajectories at different flow rates and pressures, pressure drops and velocity through the monitor, and conclusions drawn from the tests.

The last part of the "Power & Fluids" issue presents Part I of a paper by **Igor Karassik,** chief consulting engineer for Worthington, titled "Centrifugal pump application . . . the next milestone (VFD)." The paper discusses the advantages and benefits of variable-frequency drives (VFD), long-range developments, and conclusions.

The cover of the pamphlet features a striking photograph of the unusual vessel ESV IOLAIR, described as the world's largest fire engine, which can provide a number of emergency services for North Sea oil production platforms.

For a free copy of the above issue of "Power & Fluids" from Worthington,

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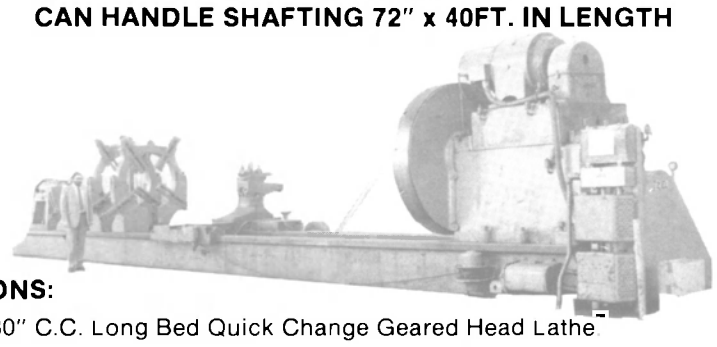

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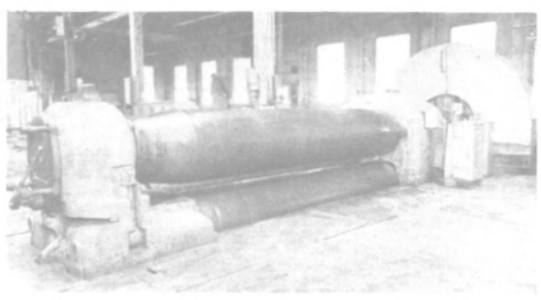

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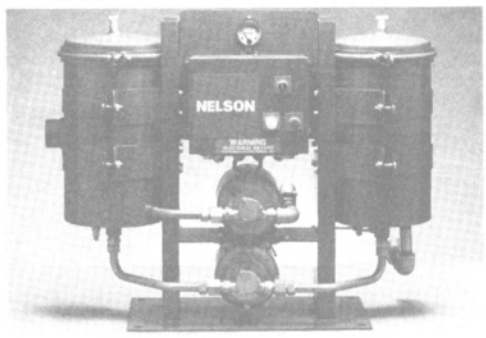
Nelson Industries Introduces 'Bilge Boy' Oily Water Separator —Literature Available



Nelson Industries, Inc. of Stoughton, Wis., is offering free new literature on the Bilge Boy™, a 150-gph (568 liter) oily water separator that the company is introducing. The unit carries U.S. Coast Guard approval and is IMO-approved as well.

The compact Bilge Boy measures 27 inches tall by 17.5 inches wide by 36 inches long, and weighs only 150 pounds (dry). Measurements include plumbing connections and mounting skid. Installation is very simple, requiring only three standard plumbing connections and one electrical. The unit is supplied complete with control panel and 50 C motors. A monitor is not supplied, but is compatible with all models now on the market. Electrical requirements are 120 volt AC, 8 amps maximum.

In USCG tests, the Bilge Boy proved extremely efficient in removing oil, having a maximum effluent of 1.5 ppm, which is well below the 15 ppm needed for approval. The design is two-stage, using a unique gravity stage (patent pending), followed by a coalescent cartridge for the final stage.

When installed according to Nelson's instruction, the gravity stage removes 99.9 percent (1,000 ppm) of all oil from the bilge water. This gives extremely long element life as very little oil reaches the cartridge to foul the element.

This model also offers the most economical price on the market as a result of the efficiency of the gravity separation stage and suction side only application. The unit is now being sold with the promise that the operator does not pay for it until it works to his satisfaction.

The first test unit has been in service onboard the Alliance Prince since March of 1984 without problems.

The Bilge Boy is compatible with Ameroid OWS and Nalso 2865 cleaners. Based on lab tests similar to the USCG test, there is minimal loss of efficiency when using these cleaners.

This unit complements the previously approved 600-gph regenerative model. A higher capacity two-stage gravity and coalescent model will be available late in 1985. The entire product line will be marketed through Nelson Winslow Marine Distributors.

For copies of the literature from Nelson Industries,

Circle 16 on Reader Service Card

Bulker 'Sanko Amaryllis' Delivered By Hitachi Zosen

The 37,705-dwt bulk carrier Sanko Amaryllis was completed recently at Hitachi Zosen's Hiroshima Works and delivered to Persus Shipping Company of Japan.

Built to dual classification by the American Bureau of Shipping and Nippon Kaiji Kyokai, the handy-size bulker has an overall length of 580.7 feet, beam of 93.2 feet, depth of 50.7 feet, and full-load draft of 35.8 feet. The main engine is a fuel-efficient Hitachi/B&W 6L60MCE diesel with a maximum continuous output of 8,600 bhp at 98 rpm. Maximum trial speed was 16.767 knots.

Four 25-ton deck cranes and wide openings for the ship's five hatches facilitate cargo handling.

Metallizing Co. Of America Introduces MOGUL HK-400 Gun —Literature Available

Metallizing Co. of America, Inc., Sullivan, Ill., has introduced an all-new metallizing gun, the MOGUL Enclosed Arc Spray Gun Model HK-400. Lightweight and highly maneuverable, the new gun is said to enable the user to do many more metallizing repairs in less time than with older, obsolete guns.

The MOGUL HK-400 features lightweight-flexible cables resulting in easier handling. Absolute precise front wire guide alignment is assured because of preset design, and the resulting streamlined air flow guarantees concentrated spray patterns.

The new gun weighs less than four pounds (1.8 kg), and the Metallizing Company of America states that on-site spraying for corrosion protection is easier than ever with the extra-light, efficient, highly advanced MOGUL HK-400. For steel and stainless steel, 14-ga.-diameter wire is recommended; 11-ga.-diameter is possible if wire is soft drawn.

For more information on the MOGUL HK-400 metallizing gun,

Circle 15 on Reader Service Card

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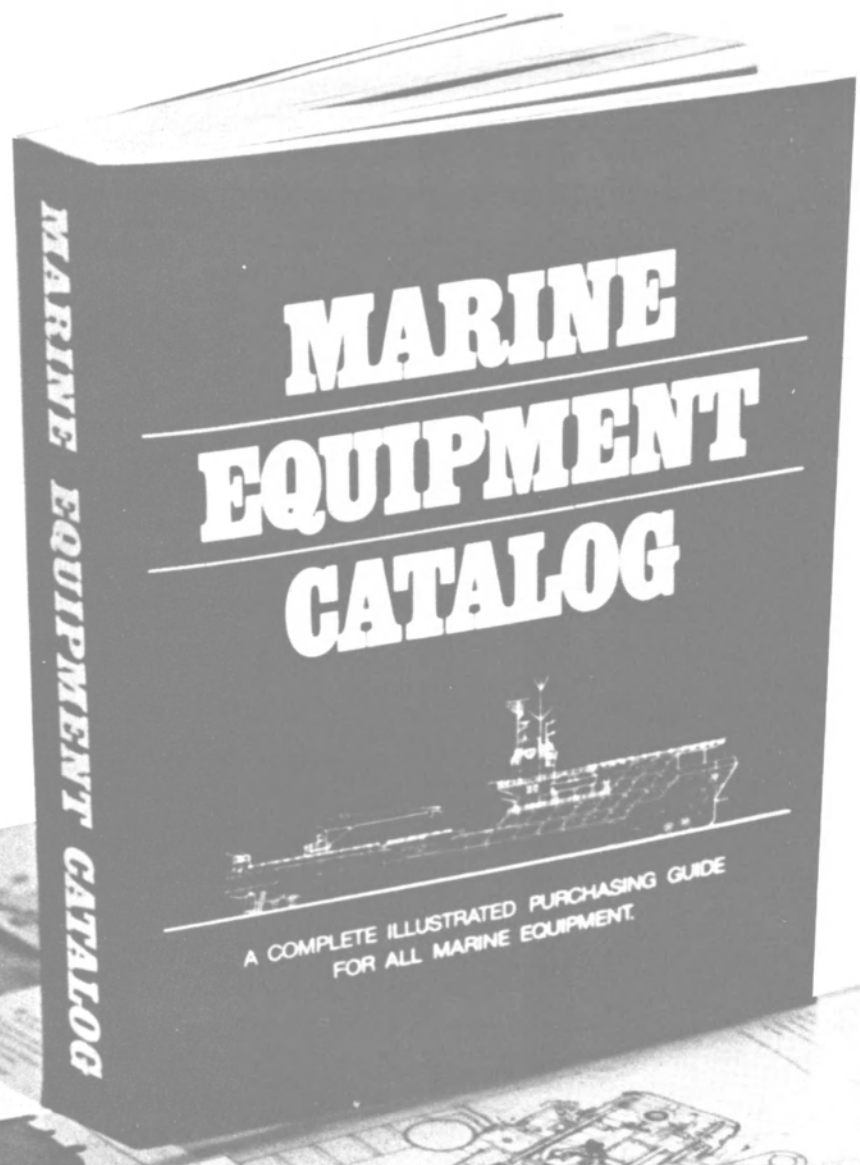

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I. Introduction
- A. Historical pattern of naval ship procurement
- B. Market drivers—military needs, technical obsolescence, budget constraints, etc.
- C. Impact of technology
  1. Unit ship cost has risen vastly since 1960
  2. Systems more important than platform
  3. Electronics systems particularly growing in sophistication
  4. Weapons are increasingly more lethal and accurate
- D. Several important controversies
  1. Surface ship usefulness being questioned
  2. DOD trying to promote competition in procurement
  3. Insufficient work to support shipbuilding industry

II. Description of Current Players
- A. Shipbuilders
  1. Major surface combatants—Bath, Ingalls, Todd-LA
  2. Submarines—Newport News, GD-Electric Boat
  3. Carriers—Newport News
  4. Amphibious ships—Lockheed, Ingalls, Avondale
  5. Auxiliaries—GD-Quincy, NASSCO, Avondale, Tampa, Beth Steel-Sparrows Pt., Pennship
  6. Small ships—Peterson, Marinette Marine, Bell-Halter, Todd-Seattle, Tacoma, others
  7. Patrol boats, landing craft and service craft—Boeing, Swiftships, Atlantic Marine, others
- B. Ship systems manufacturers
  1. Machinery—GE, Westinghouse, DeLaval, Colt
  2. Ordnance and Electronics—RCA, Litton, Sperry, GE Hughes, IBM, Raytheon, FMC, Honeywell, Rockwell, Gould, ITT, Interstate Electronics, Motorola, Sanders, Magnavox, Singer, GD-Pomona, Lockheed, Martin Marietta
- C. Engineering services
  1. Naval architects—AME, Adtech, Arinc, CASDE, D&P, Geo. Sharp, Gibbs & Cox, JJ Henry, JJMA, M. Rosenblatt, NKF, RAM
  2. Systems integration—Vitro, BBN, Booz Allen, C Cubed, Calculon, Columbia Research, EG&G, Essex, Milcom, ORI, Syscom, TRW, Westinghouse
- D. Summary of recent work distribution
  1. Top 200 contractors
  2. Top 50 ship system awards
  3. Top NAVSEA, NAVELEX, MSC engineering contractors

III. Procurement Process
- A. Organizations in DOD which impact on procurement
  1. OSD, SECNAV, CNO—how they relate
  2. Material Command—role of "Competition Czar"
  3. NAVSEA—role of SEA 06, 05, 02, PMS's—and SEA 08
  4. NAVELEX—role of PME's
  5. Planned reorganization, creation of Naval Combat Systems Command
  6. MSC—contracting office for T-ships
- B. The formal PPBS cycle
  1. Why introduced, how it works, is it effective
  2. Role of various DOD components, OMB, Congress
- C. NAVSEA's seven phase acquisition process
  1. Tied to PPBS cycle
  2. Provides points at which design is frozen (supposedly!)
  3. Makes early program entry important
- D. Recent variants to acquisition process
  1. Two step procurement
  2. Build/charter

IV. Projected Market
- A. Five year plan—analysis of business impact in 100 industries
- B. Analysis of major future ship programs
  1. DDG 51—lead ship decision imminent for 29 ship ($20-30 billion) program, three contenders
  2. SSN 21—new submarine for 1990's, two contenders
  3. LPDX or modified LSD-41—amphibious ship planned for late 1980's
  4. AE, AG, AOE, AR—auxiliaries planned, maybe conversions
  5. TAO, TAGOS—follow flight to be competed
  6. MSH –opportunities for subcontractors, second source expected
  7. Service craft—lots of opportunities
- C. Analysis of major ship systems now being procured or planned
  1. Ship mechanical systems -LM 2500 gas turbines (GE), reactor plants (GE, Westinghouse), diesel engines (Colt, Isotta-Fraschini), pumps (Worthington), condensers (DeLaval)
  2. Electronics—Aegis (RCA, Raytheon), control systems (Litton, GE), ASW systems (IBM, GE, EDO, Gould, Hazeltine, Raytheon, Honeywell), radar (Raytheon, ITT-Gilfillan, Sperry, Cardion Electronics), SUBACS (IBM), navigation systems (Rockwell, Litton, Racel Decca), integrated radio room (RCA)
  3. Ordnance—Vertical launch system (Martin Marietta, FMC), torpedoes (Gould, Hughes, Honeywell), ASW stand-off weapon (Boeing), close-in-weapons system (GD), missiles (GD, McDonnell Douglas, Lockheed, Raytheon)
- D. Engineering services required in FY 1985
  1. Conceptual feasibility studies
  2. Preliminary design –repair ship (AR)
  3. Program design and engineering support—LOE contracts
  4. System integration support
- E. Opportunities these programs offer
  1. Prime contracts—numerous opportunities available, emphasis on competition will help
  2. Subcontracts—many opportunities open to electronics firms, steel fabricators, pump manufacturers, machine shops and engineering firms
  3. Foreign firms—offset deals are very important
- F. Sensitivity to future events
  1. Budget constraints—deficit will present increasing problem
  2. Surface ships—vulnerability big issue, could impact plan

V. Contracting Rules and Procedures
- A. Federal acquisition regulations and DOD FAR supplement—provides complete set of rules
- B. Contracting Methods
  1. Advertised procurement
  2. Negotiated procurement
  3. Types of contracts—fixed price, CPIF, CPAF, etc.
- C. Source selection process—path followed to award contract
- D. Set asides—small businesses, minority firms, labor surplus area
  1. Relevant rules
  2. How rules are implemented in NAVSEA
  3. Meaning to potential competitors
- E. Specifications
  1. Federal specifications, military specifications
  2. Qualified products list
- F. Buy American requirements
  1. Buy American Act
  2. Burns-Tollefson amendment
  3. Special legislative provisions—e.g., FY 1985 rules on LSV procurement
  4. Specialty metals restrictions
  5. Trade Agreements Act of 1979
- G. Defense cooperative agreements
  1. Memoranda of understanding
  2. Special agreement with Canada
  3. How foreign firms can utilize these agreements to sell into DOD programs

VI. Points Of Marketing Contact
- A. Navy Contacts—OPNAV, NAVMAT, NAVSEA, NAVELEX, MSC, SPCC, others
- B. Prime contractor contacts for subcontractors
  1. Shipyards—purchasing liaison
  2. Systems, equipment manufacturers—purchasing liaison
- C. Engineering and design firms—point of contact for early program contact

Appendix A Detailed description of plannning and acquisition process
B Relevant DOD contracting forms
C Detailed breakdown of 1985 and 1986 Navy ship procurement, weapon procurement, other procurement, and research, development, test and evaluation budgets.

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