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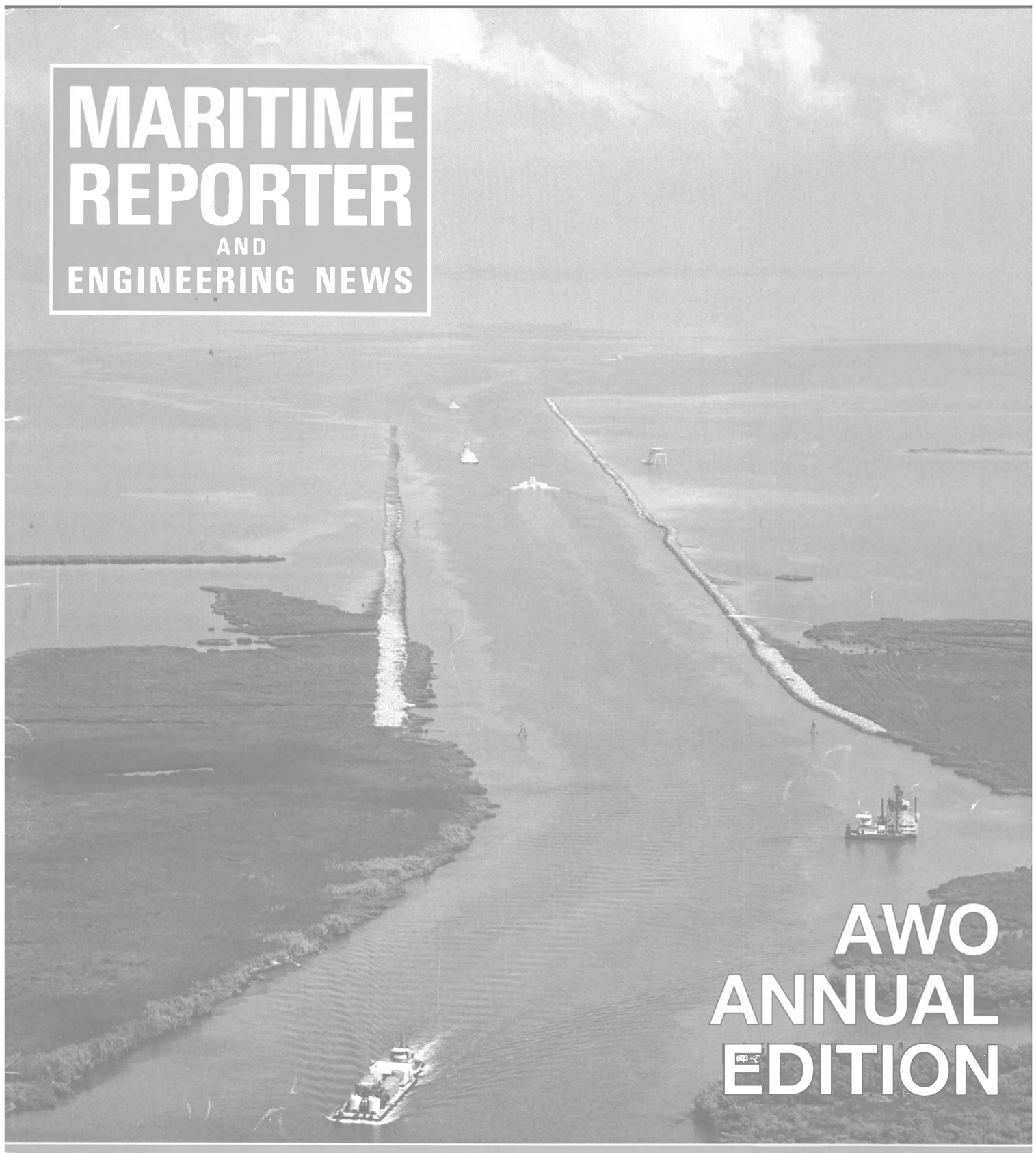

AWO ANNUAL EDITION

NAVIGATION-COMMUNICATIONS REVIEW

NAVAL TECHNOLOGY & SHIPBUILDING

MARCH 1991 ISSUE

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Coastal Tanker—Built by Jeffboat Shipbuilding, Jeffersonville, IN for Sun Transport, Aston, PA
Two (2) WAV 1850—4.5:1 Reverse Reduction Gears, Rexroth Remote Controls

BEINTJES
MARINE GEARBOXES

Amman

Built by Moss Point Marine

Two (2) Reintjes VAL 1850—4:1 Reduction Gears with Disconnect Clutch
Two (2) Berg type 630 D/4, Four (4) Bladed Controllable Pitch Propellers

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CONTROLLABLE PITCH PROPELLERS
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ON THE COVER

AWO ANNUAL—Aerial view of inland operations typical of those conducted by members. AWO members are part of an industry that operates more than 7,500 costal tugs and inland river towboats, and over 30,000 barges.

INSIDE

McDermott Subsidiary Receives $25 Million Pact For Chinese FPSU

Hudson Engineering & Project Management Corporation, a wholly owned subsidiary of McDermott Incorporated, has received a contract valued at about $25 million from Bohai Oil Corporation, a subsidiary of China National Offshore Oil Corporation in Beijing, for the engineering and procurement of all topsides oil and gas producing equipment for a planned floating production and storage unit (FPSU). The unit will be located near Shanghai in the Bohai Bay area off the coast of the People's Republic of China.

The floating production and storage unit is designed to separate oil from water and a small amount of gas from crude oil at a rate of 45,000 barrels a day, and to reinject seawater into the production wells. Capable of storing 52,000 metric tons of crude oil, the FPSU will be 689 feet long, with a beam of 108 feet and draft of 60 feet. Mechanical completion of the unit is scheduled for the summer of 1993.

MARITIME REPORTER and Engineering News

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Telefax: (212) 254-6271

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MARITIME REPORTER AND ENGINEERING NEWS

ISSN-0025-3448

No. 3 Volume 53

118 EAST 25th STREET
NEW YORK, N.Y. 10010
(212) 477-6700
Telex: MARINTI 424768
Telefax: (212) 254-6271

ESTABLISHED 1939

Maritime Reporter/Engineering News is published monthly by Maritime Activity Reports, Inc. Mailed at Second Class Postage Rates at Waterbury, CT 06701 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

Publishers are not responsible for the safekeeping or return of editorial material.

Member BPA
Business Publications Audit of Circulation, Inc.

Avondale Industries Joins International Shipbuilding Partnership

New Orleans, La.-based diversified shipbuilder Avondale Industries Inc. reported that it will form a pioneering joint venture with a German shipbroker and a Norwegian shipping group.

Avondale vice president of commercial ship marketing **Ron McAlear** said, "It brings together three key segments of the industry. We don't know of any other joint venture of its type."

Avgain Marine A/S, to be based in Oslo, Norway, will be an international broker of ship components, aiming to supply parts to its parents and to other shipyards worldwide.

Avgain will be equally owned by Avondale, broker Peter Gast Shipping GmbH, Hamburg, Germany, and Wilh. Wilhelmsen Ltd., also of Oslo.

In an industry marked for years by strong international competition, the project is described as a unique example of corporate cooperation in shipbuilding.

The project will allow Avondale to increase access to foreign suppliers of parts, pool its purchasing power and boost competitiveness in constructing commercial vessels.

Mr. **McAlear** said that Avondale hopes to cut expenses by purchasing parts through the joint venture. "A large component of our costs is materials," he noted.

Mr. **McAlear** also said sealift contracts have not been discussed in the joint venture, "but it would be a natural—we'd be pleased to discuss it."

U.S.-built ships have recently become more attractive on the international market, a spokesman said, adding that Avondale's ship prices are now more competitive.

For free literature on the facilities and capabilities of Avondale Industries,

Circle 15 on Reader Service Card

D'Alesio To Acquire Three New Tankers

The Livorno-based shipowner Gaetano D'Alesio is to acquire three new vessels for his tanker fleet.

Livorno's Fincantieri yards has received an order for two 393.72-foot, 11,500-dwt tankers to transport refined products. Construction of the two vessels, which are to be double-hulled and in line with the latest technology, is to begin the latter part of this year. Delivery of the first is scheduled for the first quarter of 1993, and the second toward the end of the same year.

The third vessel, which has already been purchased in Singapore, is a 10-year-old 574-foot, 37,182-dwt tanker which has been refitted at Mitsubishi's Tokyo yards during the last month and renamed Mauro D'Alesio.

The total of Gaetano D'Alesio's fleet will be raised to 27 with the acquisition of the three new tankers.

Chevron Awards Grootint $111 Million Contract For North Sea Platform

The Dutch company Grootint was recently awarded a $111 million contract by Chevron Corp., San Francisco, for construction of a 9,500-ton oil platform deck for the North Sea Alba oil field.

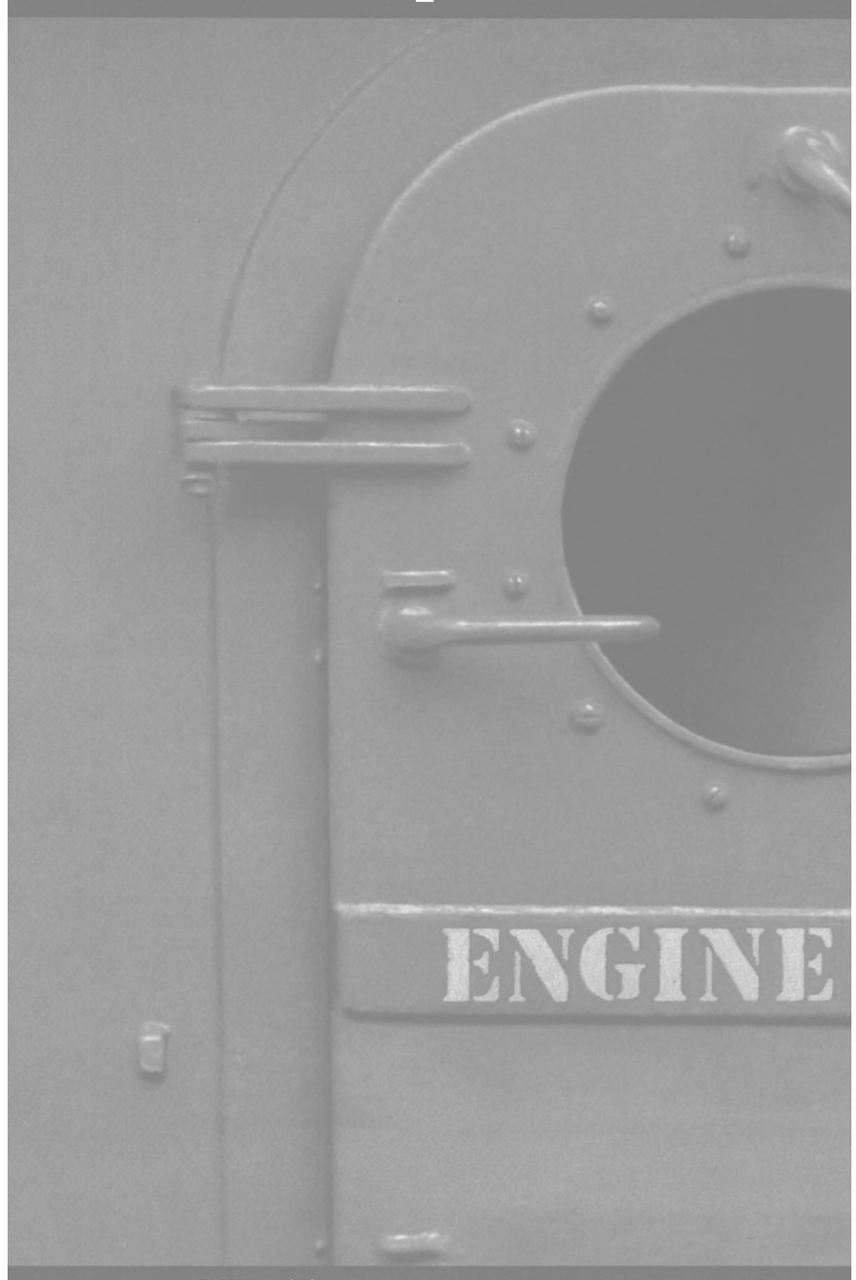
U.K. Government approval of the contract is required before Chevron can carry out plans to develop the Alba field. Approval is expected this month, a spokesman said.

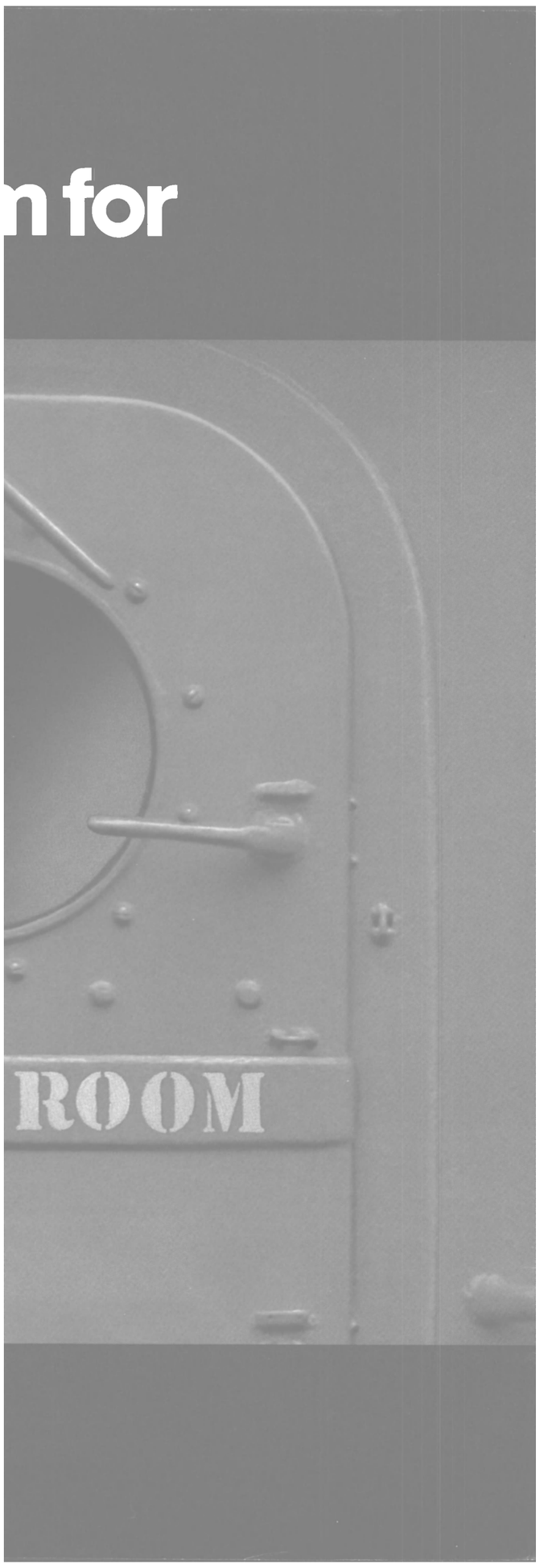
According to Chevron, which operates Alba, plans to develop the field involve a two-phase project to tap into its oil reserves. The Grootint contract is for the first-phase "Alba Northern platform," scheduled to be installed at sea in summer 1993.

Once it starts producing in late 1993 or early 1994, Chevron expects oil output from the Alba Northern platform to build to a peak rate of between 60,000 and 70,000 barrels a day. The second phase of development of the Alba oil field is expected to begin about five years after the first phase gets under way.

The Alba oil field, which is estimated to have recoverable oil reserves totaling more than 300 million barrels, is 130 miles northeast of Aberdeen in Scotland.

This is no room for compromise.

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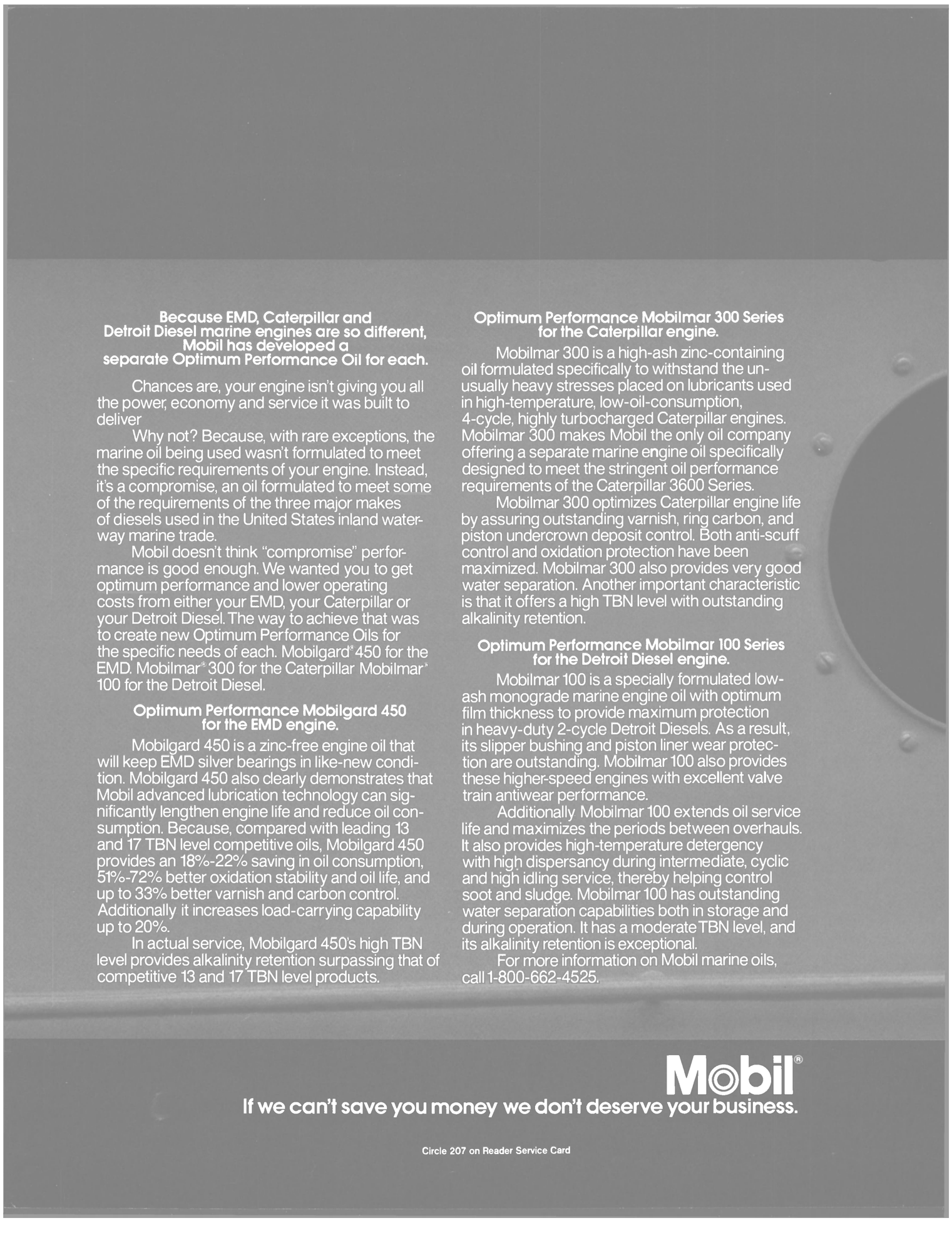

Because EMD, Caterpillar and Detroit Diesel marine engines are so different, Mobil has developed a separate Optimum Performance Oil for each.

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Mobilmar 300 optimizes Caterpillar engine life by assuring outstanding varnish, ring carbon, and piston undercrown deposit control. Both anti-scuff control and oxidation protection have been maximized. Mobilmar 300 also provides very good water separation. Another important characteristic is that it offers a high TBN level with outstanding alkalinity retention.

Optimum Performance Mobilmar 100 Series for the Detroit Diesel engine.

Mobilmar 100 is a specially formulated low-ash monograde marine engine oil with optimum film thickness to provide maximum protection in heavy-duty 2-cycle Detroit Diesels. As a result, its slipper bushing and piston liner wear protection are outstanding. Mobilmar 100 also provides these higher-speed engines with excellent valve train antiwear performance.

Additionally Mobilmar 100 extends oil service life and maximizes the periods between overhauls. It also provides high-temperature detergency with high dispersancy during intermediate, cyclic and high idling service, thereby helping control soot and sludge. Mobilmar 100 has outstanding water separation capabilities both in storage and during operation. It has a moderate TBN level, and its alkalinity retention is exceptional.

For more information on Mobil marine oils, call 1-800-662-4525.

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Circle 207 on Reader Service Card

Fincantieri Receives Products Carrier Contract Worth $53.5 Million

Ferruzzi group company Fermar, one of Italy's leading privately owned shipping operators, has placed a contract with the state-controlled shipbuilding organization Fincantieri for a 30,000-dwt products carrier. The newbuilding is reported to have commanded a price in the region of $53.5 million against an end-1933 delivery slot.

The contractual owner Fermar is among the group of Italian owners which is to operate a new 86,000-ton-capacity, double-skinned tanker design within the framework of the Petrotank pool.

Orders have been confirmed for at least two such vessels, including one for operation by Fermar, although a significantly longer-running series is contemplated. Production of the class will be concentrated at the Ancona yard in the North Adriatic.

For free literature detailing the facilities and capabilities of Fincantieri,

Circle 48 on Reader Service Card

Icebreaker/Passenger Ferry To Be Built By Marystown Yard In Newfoundland

This spring, Marystown Shipyard in Newfoundland is expected to start construction of a combined icebreaker and passenger ferry, with backing from Swedish icebreaking expertise.

The provincial Department of Works, Services and Transportation ordered the $20 million vessel to link Fogo Island off the northern coast with the main island, a trip that covers about 15 nautical miles. The newbuilding will replace a conventional ice-strengthened ferry which requires support from a Canadian Government icebreaker in February-March, when local temperatures can fall to minus 20 degrees C.

GVA Consultants of Gothenburg has supported design work on the new vessel and compiled the lines plan and advised on all ice-specific machinery and systems.

Specifications call for a speed of 1.5 knots through ice one meter thick, six knots in 0.5 meters of ice and 11 knots in open water.

In order to meet this requirement, twin propellers coupled via gears to separate diesel engines are to be installed. In summer, the ship can run on a single propeller backed by angling the rudder to make optimum use of engine power.

Delivery of the newbuilding is scheduled for spring 1992 from the Marystown yard, which has built several ice-strengthened ferries in the past.

For free literature detailing the facilities and capabilities of Marystown Shipyard,

Circle 39 on Reader Service Card

Jeffboat To Build Luhr Bros. Towboat

Robert W. Greene, president of Jeffboat, located at Jeffersonville, Ind., recently announced the award of a contract by Luhr Bros. Inc. of Columbia, Ill., for the construction of a 170- by 48- by 11-1/2-foot twin-screw towboat.

The 7,200-hp boat will be powered by Caterpillar 3612 diesel engines and Lufkin marine gears, driving 118-inch propellers. The boat features an isolated deckhouse and Jeffboat-designed Kort nozzles. Planned delivery is for the first quarter of 1992. Jeffboat is currently building 30,000-barrel and 10,000-barrel inland river service tank barges and both open and covered hopper barges.

Luhr Bros. is one of the United States' largest marine construction firms, with dredging, lock and dam construction operations and aggregate production. Luhr currently operates 20 boats and 200 barges. This new contract will provide Luhr with a sister vessel to the M/V Alois Luhr delivered by Jeffboat in 1985.

For free literature detailing the inland vessel building services of Jeffboat,

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Evergreen To Move Base From Seattle To Tacoma

One of the world's largest containership lines, the Taiwanese shipping company Evergreen Marine Corp., is shifting its U.S. Pacific Northwest operations from Seattle to Tacoma, Wash., in June of this year.

One of the largest lines operating on trans-Pacific routes, the company will move from Harbor Island in Elliott Bay to a vacant container terminal along the Port of Tacoma's Blair Waterway.

Five containerships are operated by Evergreen in a weekly service linking the Far East with the U.S. and Canadian Pacific Coast. The separate round-the-world services of the company do not call in the Pacific Northwest.

Trinity Marine Receives Over $138 Million In Navy Contracts

Halter Marine, Inc., Moss Point, Miss., a member of the Trinity Marine Group, recently received two contracts worth more than $138 million from the U.S. Navy.

The first contract is for the detail design and construction of two T-AGS-60 Class oceanographic survey ships with an option for a third ship. Total value of the program , including the option, exceeds $100 million.

The second contract, an option exercised by the Navy, worth about $38 million, involves the construction of seventeen 78-foot all-aluminum fast patrol boats. All of the boats will be built at Equitable Shipyards, Inc., New Orleans, La., a sister shipbuilding company of Halter Marine in the Trinity Marine Group.

The Navy and Halter had previously signed contracts totaling $16.4 million in September 1989 and April 1990 for the construction of eight 78-foot fast patrol boats (PFC) for use by the Philippine Government. Two of the eight boats have been delivered.

The PFC is a new design by Halter Marine. Each boat is 78 feet long, with a 20-foot beam, full-load draft of 5 feet 7-1/2 inches. Each is powered by two Detroit Diesel 16V92TAB, 1,400-bhp engines driving submerged four-blade dynamically balanced propellers through ZF BW255 reverse/reduction gears in inclined shafts.

Commenting on the T-AGS-60 contract, **John Dane III**, president of the Trinity Marine Group, said the program will span four years and will provide direct shipyard employment for up to 400 people, including subcontractors and other indirect employment. He added that the economic and technical support will be provided by the Trinity Marine Group corporate office in Gulfport, Miss. Equitable Shipyards and another Trinity shipyard will provide cut steel and some steel fabrication.

T-AGS-60, the first of the new multipurpose oceanographic ships will be the USNS Pathfinder, and T-AGS-61 will be the USNS Sumner.

Mr. **Dane** said in recent years Halter has won more contracts for this type of design procurement than any other shipbuilder in the U.S. He cited the company's experience in the design and construction of ships for similar naval missions such as T-AGOS-13 to 18, oceanographic surveillance ships, T-AGS-51 and 52, hydrographic survey ships, and AGOR-23, an oceanographic survey ship.

Tne new class of ship will have a displacement of 4,700 tons, a diesel-electric propulsion system and a length of 328-1/2 feet and will be capable of performing oceanographic survey operations in coastal and deep ocean areas.

Halter Marine will complete the detail design and construction of the first T-AGS-60 Class ship within 36 months, with the second and third ships delivered in subsequent six-month intervals.

For free literature detailing the shipbuilding and ship-repairing services of the Trinity Marine Group,

Circle 101 on Reader Service Card

Meyer Werft Delivers Fourth Gas Carrier In Series Of Six For USSR

Meyer Werft of Papenburg, Germany, recently delivered the 15,000-cubic-meter LPG/ammonia carrier Skulte to AKP "Sovcomflot," Moscow.

The 518-foot-long by 70-foot-beam newbuilding, named after a place in the Gulf of Riga, is the fourth ship in a series of six gas carriers for the USSR. Upon completion of the series by autumn of this year, the yard will have built a total of 45 liquefied gas tankers.

Like the other ships in the series, the Skulte is owned by "Sovcomflot" and will be operated on their behalf by Latvian Shipping Co. of Riga.

The vessel is propelled by one MAN B&W Diesel two-stroke main engine, type 6L50MCE, developing 5,820 kw (7,920 hp) at 141 rpm; the propeller speed is 141 rpm. The main engine is capable of burning heavy fuel oil up to IF 380 (3,500 sec. Redwood I).

Electrical power is supplied by three MAN B&W Diesel generating sets, 2 x type 8L 23/30 and type 6L 23/30, with A. van Kaick generators having a capacity of 2 x 1,025 kw and 770 kw. The diesel engines are designed to operate on HFO IF 380.

Unattended operation of the machinery space is possible in compliance with the regulations.

For free literature detailing the shipbuilding facilities and capabilities of Meyer Werft,

Circle 25 on Reader Service Card

The gas plant on the Skulte enables the ship to cool down, warm up or maintain all cargoes at any requested working temperature. With a total pump capacity of 1,500 m^3/h, the time of discharge is about 10 hours.

The first oilfield boat to be built by SMI as the oilfield market revives will be a sister ship to Gilbert Cheramie Boats' M/V Erika Lynn, shown above, which was the last oilfield boat built by SMI after the market downturn.

Service Marine To Build 145-Foot Utility Boat For Gilbert Cheramie Boats

Gilbert Cheramie, president of Gilbert Cheramie Boats, Inc., and **T.R. Hensley**, president of Service Marine Industries, Inc. (SMI), recently signed a contract for the construction of a 145-foot by 36-foot by 11-foot 6-inch utility boat. The new vessel will be a sister ship to the Erika Lynn, the last oilfield boat built by SMI after the downturn in the oilfield market. Delivery is scheduled for early September 1991.

The new boat has a capacity for 1,192 barrels of liquid mud, 113,552 gallons of fresh water, 31,466 gallons of fuel oil, 380 long tons of dock cargo on 2,790 square feet of deck space, and quarters for 18 persons.

Mr. **Cheramie** and his son, **Brian**, operate one of the largest utility boat fleets in the Gulf of Mexico. Started in 1955, the company's fleet has grown to 20 boats, the last two of which were built by SMI.

Service Marine Industries is a full service shipyard in Amelia, La. For the past five years the company has been building large U.S. Coast Guard-approved dinner/excursion boats, having recently launched an 800-passenger, 175-foot dinner/excursion boat, the M/V Odyssey. This sleek, megayacht-style boat, owned by Odyssey Cruises, will start operation from Navy Pier in Chicago next month.

In announcing the new contract, Mr. **Hensley** said that SMI is receiving other inquiries for oilfield boats and that he expects to start another oilfield supply boat in the near future. SMI is currently marketing a new 220-foot by 45-foot by 18-foot OSV that has been designed for handling cargo to deepwater drilling rigs and production platforms. Mr. **Hensley** added that SMI would continue to market and build the shallow-draft passenger vessels in addition to oilfield boats.

For free literature on the facilities and capabilities of Service Marine Industries,

Circle 34 on Reader Service Card

Sperry Gyrocompass System Receives NMEA Product Award

Sperry Marine was honored at the annual banquet of the National Marine Electronics Association (NMEA) when the association presented its 1990 Products Award to the Sperry Marine gyrocompass system.

The NMEA jury of industry sales and technical personnel bestows the honor annually on marine electronic products of outstanding performance and reliability. The Sperry Marine gyrocompass has received the NMEA award every year since the award was instituted.

Sperry Marine manufactures a complete line of marine gyrocompasses including the MK-37 for large vessels, and the SR-50, SR-100, SR-120/130, and SR-220 for vessels requiring smaller gyros.

In other company news, a subsidiary of Sperry Marine Inc., Sperry Marine Ltd. of Wokingham, U.K., was recently awarded a contract by the Royal Navy of Oman to expand and modernize the existing vessel traffic system which Sperry Marine installed in the Strait of Hormuz in 1982. The multimillion-dollar upgrade was ordered by the Royal Navy of Oman to extend coverage over a greater area of the Strait.

Sperry Marine Inc., a leading developer and manufacturer of marine navigation, control and communication equipment, is a subsidiary of Newport News Shipbuilding, a Tenneco company.

For further information and free literature from Sperry Marine,

Circle 31 on Reader Service Card

Three Carriers Begin Full Container Service Between Singapore And Australia

Full container service between Singapore and Australia has been established by three carriers, Nippon Yusen Kaisha of Japan, Lloyd Trestino di Navigazione SpA of Italy, and Regional Container Lines Ltd. of Thailand.

The three lines will share space on two vessels being utilized in the new service, known as the Australia South Asia service, which offers a direct shuttle between Sydney and Melbourne and Singapore at 15-day frequencies.

The lines said that southbound transit time will be 12 days to Sydney and 15 days to Melbourne. Sailings from Sydney to Singapore will take 14 days; voyages from Melbourne will take 11 days.

The U.S. Coast Guard has rated its 47-foot motor lifeboat prototype "A-plus" for its rescue of four fishermen after their ship sank in 20-foot seas while under tow off the coast of Oregon, where the prototype is undergoing testing.

New Prototype Rescue Vessel, Built By Textron Marine For USCG, Credited With Saving Four Lives

The performance of the U.S. Coast Guard's new motor lifeboat averted greater tragedy during an ill-fated rescue mission off Oregon's Columbia River recently, in which a Coast Guardsman and two fishermen were lost. The new prototype vessel, built by Textron Marine Systems (TMS) in New Orleans, is credited with saving the lives of four survivors of a fishing vessel which sank in 20-foot seas while under tow by another Coast Guard vessel off the coast of Oregon.

Six people were rescued within minutes of the sinking, and the new lifeboat then rushed to the aid of the five-man crew of a Coast Guard inflatable boat that had lost power and was drifting into breakers.

The 43-foot prototype, delivered last August to the Coast Guard National Motor Lifeboat Training School in Ilwaco, Wash., had been undergoing testing in the seas off the Pacific Northwest coast as a successor to the current generation of motor lifeboats.

Lt. Comdr. **Daniel Neptun** of the Cape Disappointment Coast Guard Station in Ilwaco, praised the $2.3 million prototype as being instrumental in preventing a greater loss of life. "It performed superbly," he said.

The new aluminum-hull lifeboat, which can withstand high seas and is capable of performing a 360-degree roll and righting itself within 30 seconds (see MARITIME REPORTER/Engineering News, September 1990, page 23), can also pitch or lunge bow first, or flip end-over-end 360 degrees into a swell and still right itself within 30 seconds. The vessel can sustain speeds of 28 knots and has a range of 220 nautical miles.

To protect its four-person operating crew and give them improved visibility, the motor lifeboat has an enclosed bridge. The old rescue vessels the lifeboat is replacing have open bridges, requiring the crew to be strapped into place.

The 1988 Coast Guard contract with Textron Marine included an option for five additional motor lifeboats. Textron Marine officials expect the USCG to exercise its option to purchase the five preproduction models later this year. The contract value of the five craft is more than $4.5 million. Total production of the motor lifeboat at Textron Marine may reach 100 craft if the Coast Guard decides to replace its current rescue fleet.

For free literature on the facilities and capabilities of Textron Marine Systems,

Circle 33 on Reader Service Card

Amoco Names Roland VP, Operations Planning And Transportation

Amoco Corporation, Chicago, Ill., recently announced that **Edwin J. Roland** has been named vice president, operations planning and transportation for Amoco Oil Company.

In his new position, Mr. **Roland** will have responsibility for all planning, scheduling and transportation of crude oil supply and refined products within the Amoco system.

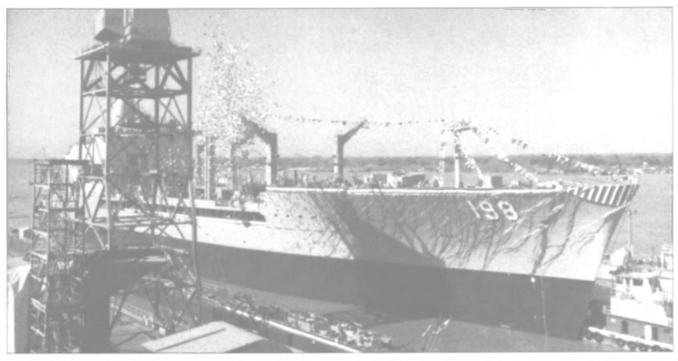
Mr. **Roland** has been president of Amoco Transport Company, Amoco Corporation's marine transport division, since 1984.

Prior to joining Amoco, Mr. **Roland** worked for Conoco in the marine transportation area. He also served 11 years in the U.S. Coast Guard.

Avondale Christens 10th In Series Of 16 Auxiliary Fleet Oilers Under Construction For U.S. Navy

The 10th in a series of 16 auxiliary fleet oilers under construction for the U.S. Navy by the Shipyards Division of Avondale Industries, Inc., was christened the USNS Big Horn (T-AO-198) in ceremonies held recently at the yard. The vessel is scheduled for delivery this fall.

The Big Horn and her sister ships in the T-AO Class are 667 feet long with a beam of 97 feet and a maximum draft of 36 feet. Their primary mission is to transport bulk products from shore depots to combatants and support forces underway. The ships also deliver limited fleet freight, cargo water, mail and personnel.



The USNS Big Horn, which bears the name of a mountain, river and a valley located in the state of Wyoming, will transport bulk products from shore depots to combatants and support forces under way. Her ability to deliver at sea enables U.S. Navy ships to operate indefinitely without returning to port for fuel.

Show above at the christening of the USNS Big Horn at Avondale Industries, left to right: Rear Adm. **Tim M. Jenkins**, USNR Commander, Military Sealift Command-Atlantic (Mobilization); Capt. **Joseph F. King**, USN Deputy Commander Amphibious, Auxiliary, Mine and Sealift Ships Directorate, Naval Sea Systems Command; Mrs. **John C. Donahue III**; Capt. **John C. Donahue III**, USN Supervisor of Shipbuilding, Conversion and Repair, New Orleans; the Honorable **Kathy Karpan**, Secretary of State, State of Wyoming; Mrs. **Nan Schroll Thorne Fogel**, matron of honor; Mrs. **Ann Schroll Simpson**, sponsor; Miss **Susan Lorna Simpson**, maid of honor; the Honorable **Alan K. Simpson**, U.S. Senator, State of Wyoming, principal speaker; **Albert L. Bossier Jr.**, chairman, president and chief executive officer of Avondale Industries; and Miss **Tiffaney Marie Chiasson**, flower girl.

The USNS Big Horn has a cargo capacity of 183,500 barrels of oil in 18 cargo tanks and is capable of simultaneously receiving, storing, and discharging two separate grades of cargo fuel. All cargo pump and valve operations, and the ship's segregated ballast system are manipulated from the Cargo Control Center, located in the aft superstructure with an overview of the entire underway replenishment deck.

Powered by twin 10-cylinder, medium-speed Colt-Pielstick diesel engines, the Big Horn is capable of service speeds of 20 knots, with im-

proved directional stability, ease of control and mission reliability under combat conditions.

Avondale Industries, an employee-owned company headquartered in New Orleans, is one of the nation's leading marine fabricators. In addition to its shipbuilding operations, Avondale specializes in boat and landing craft (LCAC) construction and is a major marine repair contractor for commercial and U.S. Navy vessels. It is also involved in the modular construction of components and plants for a variety of land-based industries.

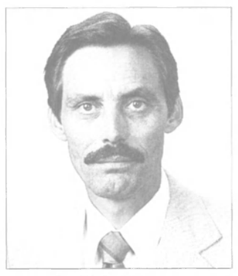
For free literature on the facilities and capabilities of Avondale,

Circle 35 on Reader Service Card

Metro Machine Wins Phased Maintenance Pact Worth $46.9 Million

Metro Machine, Norfolk, Va., was recently awarded a $46.9-million contract by the Naval Sea Systems Command, Washington, D.C., for the phased maintenance program for the amphibious assault ships (LPH Class) homeported in Norfolk.

Walker Boat Names Hopper Chief Estimator



David A. Hopper

Walker Boat Yard, Inc., Paducah, Ky., recently announced that **David A. Hopper** has joined the company as chief estimator.

Mr. **Hopper** will report to **Robert P. Herre**, general manager, and has responsibility for the estimating department activities.

Prior to joining Walker Boat Yard, Mr. **Hopper** served 15 years in various levels of management with St. Louis Ship, and most recently as director of operations for an independent towing company.

Paddlewheeler Launched By Freeport Shipbuilding

Freeport Shipbuilding, Freeport, Fla., recently launched the paddlewheeler Sandy Hook Lady for a New Jersey owner. She is the latest in a series of paddlewheel-driven passenger vessels. It's been six years since Freeport Shipbuilding delivered its first true paddlewheeler and already, the firm has 20 similar vessels to its credit.

The vessel was built for owners Capt. **Ron Santee** and his son, **Ron Jr.** of Atlantic Highlands, N.J.

Also being built by the yard is the 76- by 32-foot passenger vessel Jack London Commodore for a California owner. Due for completion this month, the Jack London Commodore is certified to carry 450 passengers.

Other work underway at Freeport Shipbuilding includes the construction of the 124-foot all-aluminum megayacht Webb Tide II and the 110-foot steel megayacht Alpha Centauri.

For free literature detailing the boatbuilding facilities of Freeport Shipbuilding,

Circle 7 on Reader Service Card

Brazil Merchant Marine Deregulation Spurs Orders For 2 New Containerships

At least one Brazilian liner operator has been prompted to contract for two new containerships as a result of merchant marine deregulation measures announced recently in Brazil.

Alianca recently signed contracts with Maya shipyards of Rio de Janeiro to build two full containerships with a capacity of 2,000 twenty-foot equivalent units each at a cost of $130 million for the pair.

The first ship is scheduled for delivery in late 1992.

Contract Modification Worth $19.1 Million Awarded To Electric Boat

The Electric Boat Division of General Dynamics, Groton, Conn., recently received a $19.1-million contract modification for omnibus engineering and technical services associated with the SSBN-726 Ohio Class submarine program.

Atlantic Marine Launches Casino Riverboat 'Emerald Lady'

Atlantic Marine, Inc., Jacksonville, Fla., recently launched the 201-foot, 1,000-passenger casino riverboat Emerald Lady for Steamboat Casino River Cruises, a leading developer of riverboat gambling in Iowa.

The Emerald Lady is the second of three dining/casino riverboats Atlantic Marine is constructing for Steamboat Development Corporation. The first vessel, the Diamond Lady is due for delivery this month. The sternwheel-driven, twin-screw Emerald Lady has an overall length of 201 feet, beam of 46 feet and draft of seven feet. She is powered by two Caterpillar 3412 diesel engines totaling 1,342 hp.

Featuring four decks, two casinos, two dining areas, three lounges, a children's activities area, gift shop and full-service galley, the Emerald Lady is patterned after the most successful sternwheelers of the late 1800s, the Hudson and Queen City. She will service three Iowa ports-of-call—Keokuk, Fort Madison and Burlington. She is expected to be delivered in April 1991.

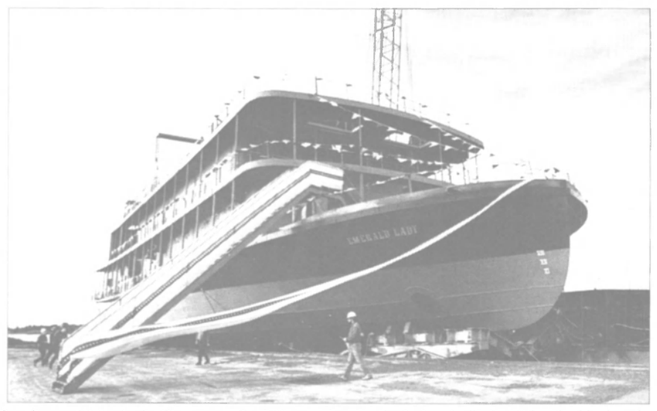
The third of the three-vessel contract, the Golden Lady, will be slightly larger than her sisters at 227 feet and is expected to be delivered in June 1991.

For free literature detailing the shipbuilding services of Atlantic Marine,

Circle 9 on Reader Service Card

EMERALD LADY
Equipment List

Main engines (2)	Caterpillar
Propellers	Michigan
Thrusters	Schottel
Generators	Caterpillar
Thruster engines	Hydraulic
Reduction gears	Twin Disc
Engine controls	Mathers Micro Commander
Steering system	Control General
Capstans	McElroy
Coatings	International Paint
VHF radios	Standard
Radar	Furuno
Compass	Ritchie

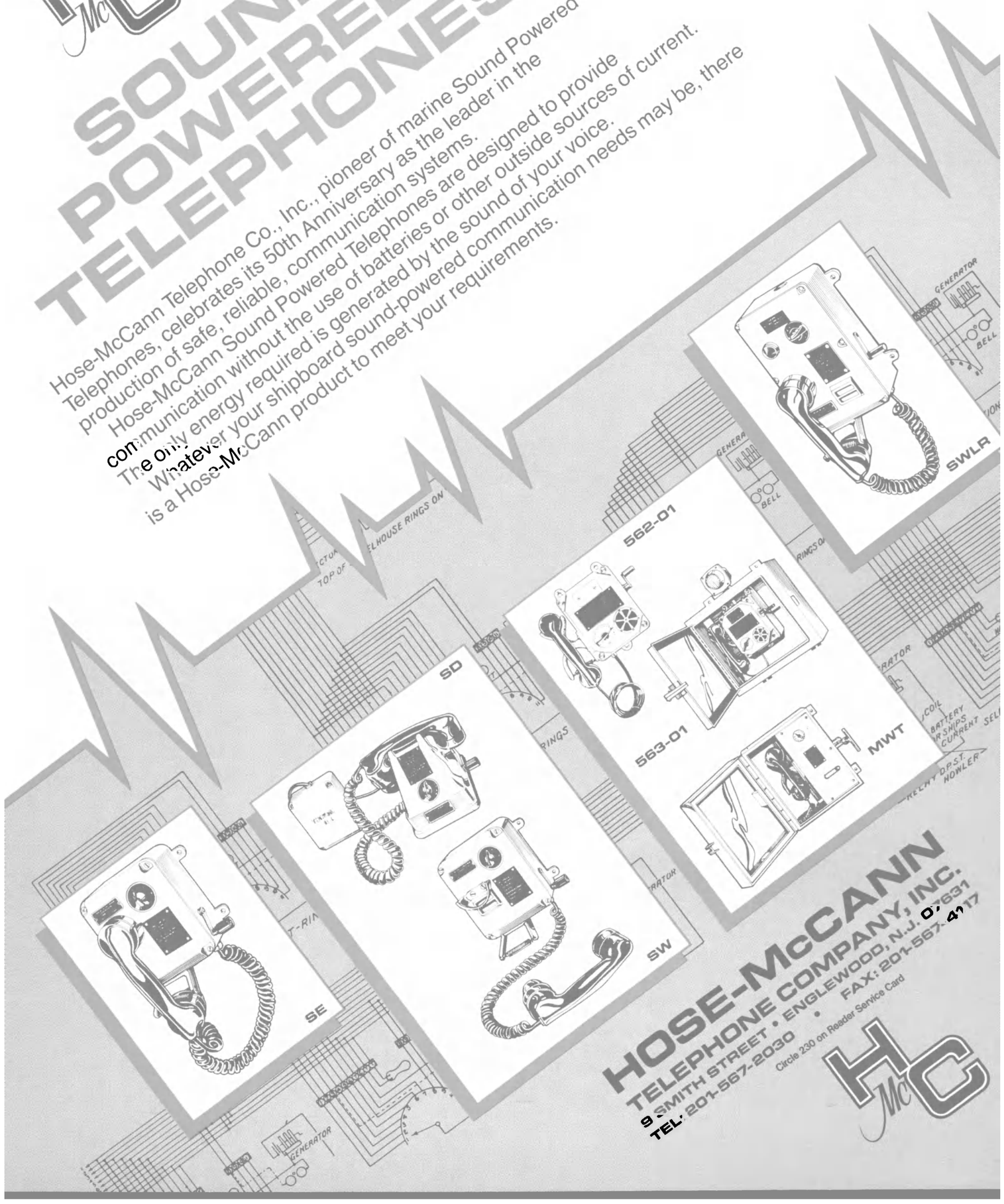


The Emerald Lady is the second of three riverboats being built by Atlantic Marine for Steamboat Casino River Cruises.

SOUND POWERED TELEPHONES

Hose-McCann Telephone Co., Inc., pioneer of marine Sound Powered Telephones, celebrates its 50th Anniversary as the leader in the production of safe, reliable, communication systems.

Hose-McCann Sound Powered Telephones are designed to provide communication without the use of batteries or other outside sources of current. The only energy required is generated by the sound of your voice. Whatever your shipboard sound-powered communication needs may be, there is a Hose-McCann product to meet your requirements.



Ingalls Awards Baldt Contracts For Anchor, Chain And Hardware

Baldt, Inc. has been awarded four contracts for approximately $1,000,000 by Ingalls Shipbuilding for manufacturing anchor, chain and hardware for four ships being constructed for the U.S. Navy. The announcement was made by **Philip J. Carcara**, president of Baldt.

Baldt will manufacture two 40,000-pound USN stockless anchors, 26 shots of 3-1/2-inch USN stud link chain and hardware for LHD-4 being constructed in Pascagoula, Miss., during 1991 to complete the first contract.

The additional contracts involve three DDG-51 vessels to be constructed for the U.S. Navy by Ingalls. Baldt will manufacture 4,000-pound USN LWT anchors, 9,000-pound USN stockless anchors, and 1-7/8-inch USN stud link chain, plus hardware, at their facilities in Chester, Pa., to fulfill the contract.

Baldt is a leading manufacturer and supplier of mooring system components for the marine, offshore industries, and specialized industrial applications. Baldt manufactures grades 2, 3, oil rig quality, and marine/railway chain in sizes from 3/4-inch to 4 inches.

All of Baldt's products are certified to meet regulations of the American Bureau of Shipping, Lloyd's Registry, Det norske Veritas, the U.S. Navy and the American Petroleum Institute.

For more information about Baldt's products and services,

Circle 44 on Reader Service Card

Marine Industries Mobilizes Large RO/RO Barges

Marine Industries Northwest Inc. of Tacoma, Wash., recently performed overhaul and activation repairs aboard two large RO/RO barges for a New York corporation.

The former SeaWay Express RO/RO barges City of Seward, and Resurrection Bay, each measure 487 feet long with a 104-foot beam and 20-foot depth. The barge capacity totals over 300 FEU RO/RO trailers combined on three cargo decks. Each of the three cargo decks is configured in 10 traffic lanes which provide over 1 acre of wheeled chassis parking space.

Primary overhaul work consisted of hull steel structural repairs above and below deck, curbing lane repairs, and fabrication of new stern ramp kingposts. Ballasting modifications were made to the heel and trim hydraulic-operated thrusters, and cooling system heat exchangers. Electrical repairs consisted of renewal of deck lights and conduit runs, overhaul of three generators, and electrical control panel relocations.

Activation work consisted of readying the vessels for passage through the Panama Canal. Canal items incorporated into the barges were done to facilitate line handling and piloting requirements. These items included installation of special bitts and chocks to accommodate wires employed by the canal lock locomotives and maneuvering tugs, temporary pilot lookout shelters, and sanitation facilities.

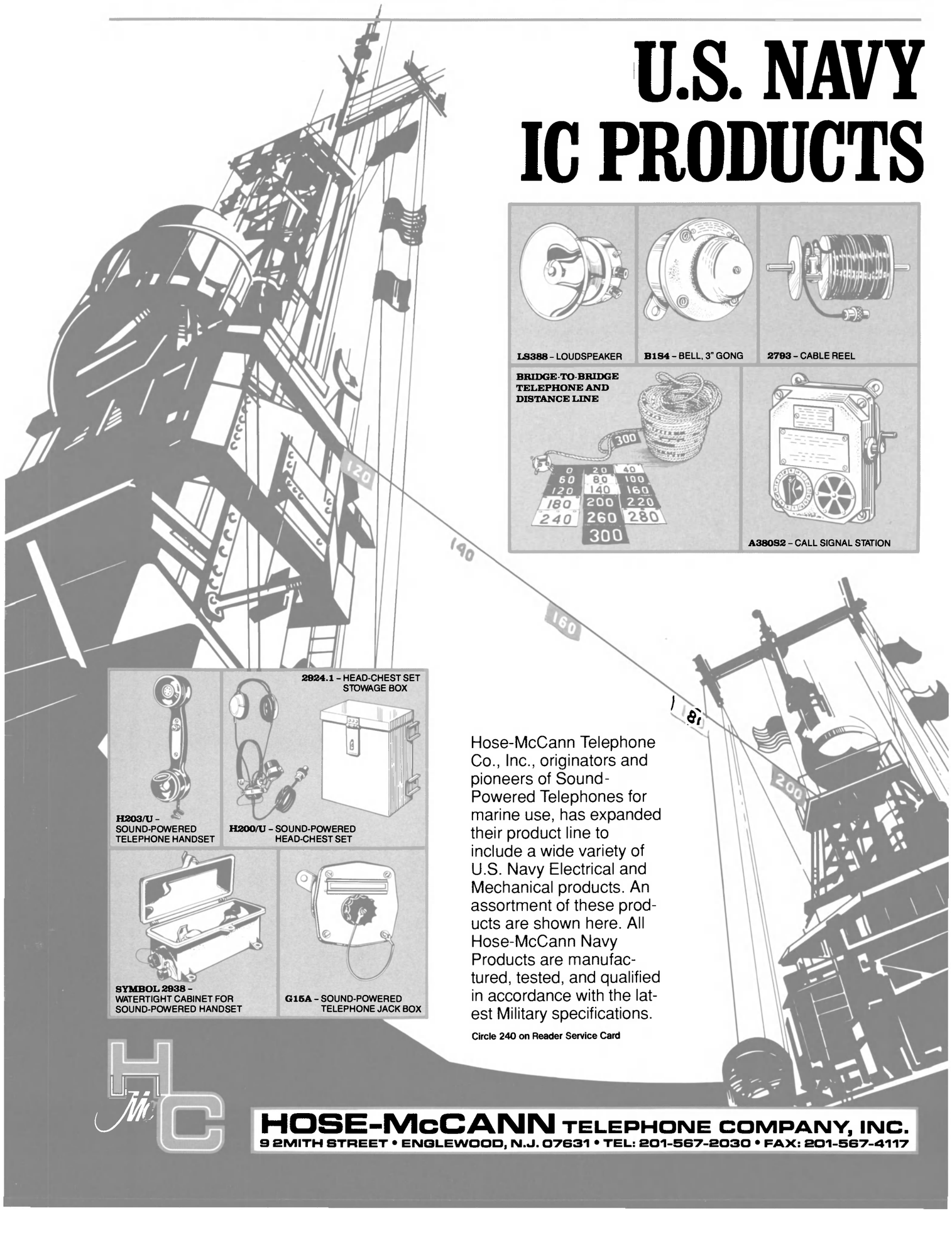
The 487-foot-long RO/RO barge Resurrection Bay undergoing mobilization work at Marine Industries Northwest Inc. in Tacoma, Wash.

Marine Industries Northwest Inc., based in Tacoma, Wash., is a full service shipyard serving the Pacific Northwest, specializing in the conversion/repair work for barges, tugs and coastal freighters to ABS and USCG standards. Plant facilities include five acres of harbor waterfront property containing approximately 1 acre of covered fabrication and shop areas, over 800 feet of pier berthing space, and a 600-ton marine railway.

For free literature on the facilities and capabilities of Marine Industries Northwest,

Circle 12 on Reader Service Card

U.S. NAVY IC PRODUCTS



LS38S – LOUDSPEAKER

B1S4 – BELL, 3" GONG

2793 – CABLE REEL

A38OS2 – CALL SIGNAL STATION

H203/U – SOUND-POWERED TELEPHONE HANDSET

2924.1 – HEAD-CHEST SET STOWAGE BOX

H200/U – SOUND-POWERED HEAD-CHEST SET

SYMBOL 2938 – WATERTIGHT CABINET FOR SOUND-POWERED HANDSET

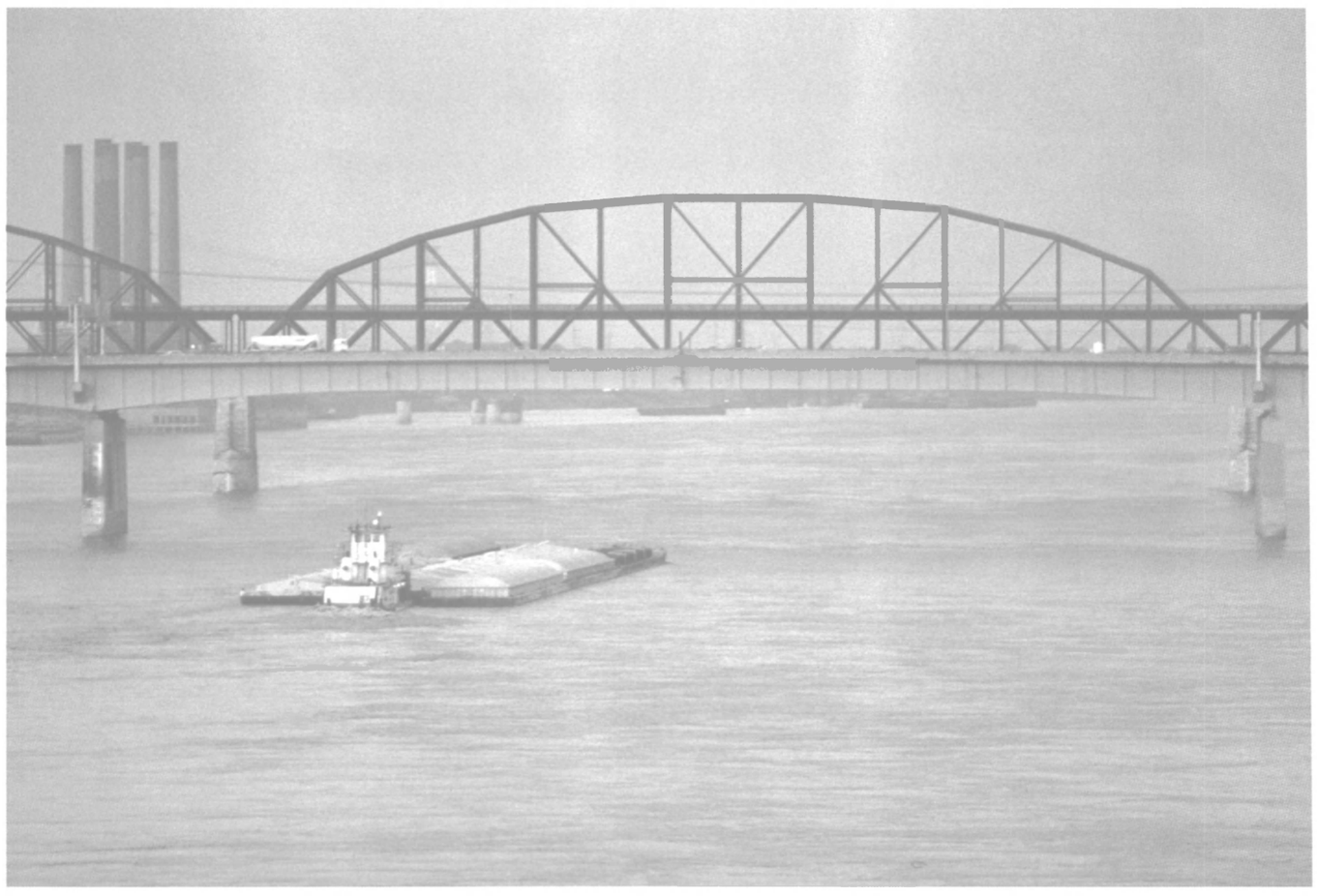
G15A – SOUND-POWERED TELEPHONE JACK BOX

Hose-McCann Telephone Co., Inc., originators and pioneers of Sound-Powered Telephones for marine use, has expanded their product line to include a wide variety of U.S. Navy Electrical and Mechanical products. An assortment of these products are shown here. All Hose-McCann Navy Products are manufactured, tested, and qualified in accordance with the latest Military specifications.

Circle 240 on Reader Service Card

HOSE-McCANN TELEPHONE COMPANY, INC.
92 SMITH STREET • ENGLEWOOD, N.J. 07631 • TEL: 201-567-2030 • FAX: 201-567-4117

The Voice Of America's Towing & Barge Industry



The American Waterways Operators, the national trade association of the inland and coastal tug and barge industry, will hold its annual meeting and spring convention on April 4-5, 1991, at the Ritz-Carlton Hotel in Washington, D.C. All AWO members, including directors, designated representatives, alternates, committee members, directors emeritus, and other individuals from AWO member companies are encouraged to attend the spring convention. Qualified representatives of tug and barge industry companies or shipyards who are interested in AWO membership may attend the meeting by special arrangement by contacting AWO headquarters.

Founded in 1944, AWO represents an industry that operates a fleet of over 7,500 coastal tugs and inland river towboats, and over 30,000 barges. AWO's member companies, more than 300 in all, are located along the banks of all major U.S. waterways, and on the shores of the Atlantic, Pacific and Gulf Coasts.

Several hundred key towboat and barge industry leaders are expected to attend the spring convention, which will provide an excellent opportunity for members to be briefed on pertinent issues confronting the association and the industry, and to more deeply involve themselves in the ongoing efforts of AWO. Along with the usual convention activities, there are several other events planned.

Of particular interest, the American Waterways Shipyards Conference will hold a seminar on "Environmental Compliance in the 90s—For Small and Medium-Sized Shipyards," Wednesday, April 3, from 1-5 p.m., the afternoon prior to the convention. The seminar will provide registrants with an overview of Federal environmental regulations and will focus on such issues as the Clean Air Act, pending legislation in the 102nd Congress, understanding liabilities and penalties, storm water drainage, hazardous waste disposal, and enforcement of EPA hazardous waste requirements, among other issues. Registration for this seminar is separate from the convention.

On Thursday, April 4, the following AWO committees and conferences will meet: Legislative, Regulatory, Health, Safety and Training, Public Affairs, and AWSC. The annual meeting, featuring the election of association officers, will take place from 5-6 p.m., followed by a reception from 6-7:30 p.m.

On Friday, April 5, 1991, the day gets underway with a breakfast meeting at 7:30 a.m. with guest speaker **Robert M. Teeter**, president of Coldwater Corporation, a consulting and research firm specializing in public opinion analysis and public affairs. Mr. **Teeter** served as senior adviser to the Bush For President campaign, where he developed and coordinated research, policy development, speech writing and advertising. Following the campaign, Mr. **Teeter** served as Co-Director for the Office of the President-Elect. He continues to work with President **Bush** and senior members of his administration.

The board meeting begins at 8:30 a.m. on Friday, April 5, with a discussion of key industry issues and association initiatives including the 1991 membership development program, an update on working groups involved in developing positions on key operational issues, environmental initiatives, a briefing on the Inland Waterways Users Board, and other matters. This meeting also marks the first full meeting with AWO's newest conference, the Towboat & Harbor Carriers Conference.

For further information about the AWO Annual Meeting and Spring Convention, call **Angela Todd**, assistant vice president membership and events planning, at (703) 841-9300.

Teamwork, Creativity And Determination

By Joseph Farrell, President
American Waterways Operators

Joseph Farrell

On May 22, 1944, the Certificate of Incorporation of The American Waterways Operators was filed with the Secretary of State of Delaware. It asserted, among other things, that AWO's purpose was, "To promote harmonious and friendly cooperation among all waterway operators; and gather and disseminate information for their benefit." Later the certificate proclaimed in a flourish of admirable bravado that, "The Corporation (AWO) shall have perpetual existence." These extracts from its charter give the reader some idea of why AWO was formed. However, reading the charter and first minutes of AWO meetings regrettably yield no real insights into AWO's early persona. Its true character is obscured by the stiff and formal business prose of those times.

I have thought a great deal about today's AWO, now a national trade association which would indeed be unrecognizable to its founders. I'd like to share my thoughts about AWO with you.

The association is well respected, we are told. It has built a considerable record for effectiveness. It keeps its eye on the dollar, not spending foolishly. It jealously guards staying lean, relying on teamwork, creativity and determination to succeed. All rather admirable qualities, I think. But what is more important to know is what animates today's AWO, what gives it its cachet.

The first quality which sets AWO apart is the extraordinary involvement of its members. Members possess remarkable knowledge of the issues enabling them to provide AWO with its essential direction through informed decision making, and consistently constructive oversight. AWO's future well-being is insured because its members are heavily invested in that future.

Just four examples of recent events illustrate clearly that member involvement.

In 1990, ten of the association's senior leaders spent months gathering and analyzing information which has produced a strategic plan which charts the way for at least the early years of the decade. Another group of leaders have put their mark on the largest membership campaign in AWO's history, a two-year effort with an ambitious goal of bringing 50 members on board.

And, side by side with these accomplishments is an unprecedented program designed to assist the Department of Transportation . . . at the department's request . . . as it embarks on conducting studies and promulgating new regulations spelled out in the Oil Pollution Act of 1990. Fully 51 AWO members are working in eight small groups, each one set up to produce a comprehensive report necessary for issue resolution.

Anyone would agree that all this represents astonishing member involvement!

Taking on the tough ones, head on, is another AWO trait. For example, the association in early January approved and adopted a guiding set of environmental principles that state, in part, "AWO members are dedicated to continually improving operations in an effort to eliminate environmental incidents and to reduce environmental hazards to an absolute minimum."

The association is completely committed to policies and practices which will maximize marine safety and environmental protection. These principles solidify and articulate that commitment within the barge and towing industry. Just as importantly, they let the American people know that our industry welcomes public attention to our performance, and that our member companies have seized the initiative to do better.

The principles emphasize prevention, responsibility, safety, training, cooperation, and environmental stewardship. Our goal is zero environmental incidents, coupled with the economic viability of our industry. A strong industry with a solid environmental reputation is our intent.

Another example. "We are simply spilling too much oil in the water." So said AWO's witness before the June meeting of the National Academy of Sciences Marine Board on hull construction issues relating to oil spill prevention. Members of the audience of engineers, scientists and professional ship managers, startled by the candor of that statement, later proclaimed AWO's testimony ". . . the most objective we've heard." That kind of candor has become a hallmark of this association.

Yet another. Two years ago AWO, speaking for inland carriers and responding to inquiries from Senators putting together a Federal drought relief bill, said that the industry did not want to be included in the relief bill. "You don't go to the government for a handout when things get tough," said inland barge line executives. [An official of the Association of American Railroads, corresponding with AWO after reading a news account of this incident wrote, "This rivals the biblical dream of the lions lying down with the lambs!"] Finally, in the waning days of the 101st Congress, Senators and Congressmen received letters from AWO's members which asked them to " . . . support Coast Guard user fees of $10 million to $12 million." The letters said that the industry doesn't like asking for user fees but ". . . we expect to do our fair share in reducing the Federal deficit."

Doing what is right . . . a second trait of AWO . . . has built for the industry's national trade association a reputation of incalculable value. Gaining and preserving the trust of Federal officials opens wide the doors of success.

There are seemingly a hundred reasons why a venture cannot work, or should not even be tried. But AWO always searches for that one way that will produce a victory. For example, in the lengthy and emotion-filled debates leading up to the Oil Pollution Act of 1990, AWO scored on behalf of the industry by sending Members of Congress a technical plan view of a coastal and an inland barge, alongside a plan view of the huge . . . by comparison . . . Exxon Valdez. Sometimes a picture really is worth a thousand words!

We also improved the painful Coast Guard user fee package somewhat by blanketing Congress with our press release on the industry losing millions of dollars because of the steep rise in diesel fuel prices after Iraq invaded Kuwait.

Finding the way. Taking sensible, manageable risks. A third characteristic of AWO. There is no doubt that recent years have been extraordinarily challenging. Though the future is always somewhat hidden in the mists, I expect no letup in the challenges. But as long as our members maintain a hold on AWO's affairs, as long as we preserve our reputation for telling it as it really is, and as long as we fuel our efforts with large doses of ingenuity, AWO will continue to flourish.

A New Approach To Issue Advocacy

By Thomas A. Allegretti, Vice President, Operations
American Waterways Operators

Thomas A. Allegretti

Issue advocacy is the heart and soul of what a trade association does. A good trade association effectively promotes policies and programs which are beneficial to its members' interests, and it protects and defends its members from governmental initiatives which are harmful or senseless. At its essence, that is why companies voluntarily elect to belong to a trade association, and fund it with monies that could otherwise be funneled directly back into a company's bottom line. The return which trade association members expect on this investment is professional and effective issue advocacy.

There is nothing terribly new about this. The relationship between a trade association and its members, and the expectations that generally accompany membership, have been in place for many years. But there is something fresh about the modern criteria which define effective advocacy. In the not too distant past, a trade association could evaluate its success by the special interests of its members, and the extent to which federal laws and regulations promoted or constrained those special interests. That no longer is, nor should be, the sole measure of effective advocacy and a successful trade association.

The contemporary yardstick by which trade associations should be judged is much more complex. It includes the special interest measure as only one piece of a larger mosaic. And, that mosaic is largely defined by a broader vision and a longer range perspective. AWO tries to pursue its advocacy with the federal government with that vision and perspective in mind.

A modern outreach program to the federal government—the Congress and the Executive Branch—must be grounded by an overriding principle of honesty and integrity in an association's work. Credibility is the keystone of effective issue work.

Sometimes a modern advocacy program will result in industry positions which do not return to the members the maximum economic advantage that would result from a position which is hammered out with the special interest criterion as the driving force. AWO understands the allure of special interest advocacy. But we believe the cost it bears—diminished credibility and

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lost opportunities to forge a constructive relationship with the federal government—is too high. Does that mean that AWO no longer promotes policies and programs beneficial to its members, or protects and defends them from harmful or senseless government action? Not at all. But it does mean that the development of positions within AWO will be tempered by reason, candor, self-examination and the dictates of sound policy. It also means that the association needs to have the courage to recommend to its members issue positions not to their maximum economic advantage, even when it is unpopular to do so.

AWO's charge to represent the industry with the federal government is vast, encompassing the Congress, and the Executive Branch from the Department of Transportation and the U.S. Coast Guard to the Environmental Protection Agency, U.S. Army Corps of Engineers, the Occupational Safety and Health Administration, the Office of Management and Budget and the White House. It also includes liaison with the national and local media, in recognition of their substantial impact on the development of federal activities.

AWO has methodically and persistently constructed a modern program of outreach to the federal government. It embodies all the necessary ingredients: thorough analysis before position development, reasonable positions forged with a view beyond pure economic advantage, a creative approach to the process of advocacy and a determination to get the job done. The times demand no less.

AWO's outreach program seeks to achieve more than simply near-term success on a particular issue. It seeks to recast the federal milieu in which we operate. There are three principal components to that effort.

It begins with a critical look at ourselves. In September 1990, the board of directors approved the report of the study group on marine safety issues, which set in motion a series of eight separate analytical efforts which will produce reports and recommendations for the board's consideration about how this industry does business today, and where improvements might be made in the future. Within this exercise are issues which have long been considered inviolate within the towing industry, and the willingness to look inward is an important measure of the industry's character. The magnitude of the effort alone is unprecedented in the association's history, drawing on the expertise of over 50 individual AWO members.

The second leg of the tripod is an effort to approach the federal government more in a spirit of partnership than one of confrontation. While AWO will never shrink from staunchly opposing misguided federal initiatives, we find that first developing reasonable industry positions, and then encouraging candid dialogue with government and on-allied interests, often reveals broader areas of common interest than it does fundamental chasms. An outreach during 1990, for example, to the leadership of the Coast Guard that the towing industry be brought into the process of implementing the Oil Pollution Act was warmly embraced by the leadership of that agency, and produced early, tangible results in coordinating AWO's activities with those planned by the Coast Guard. Moreover, AWO completed extensive research in 1990 on the federal rulemaking process which has identified new, promising opportunities for greater industry/government coordination, and which dispelled some long-held misunderstandings that stifled needed dialogue.

Finally, AWO has worked in tandem with the leadership of the Towing Safety Advisory Committee to help that group upgrade the value of its advice to the Department of Transportation and the Coast Guard. The components of the program that will allow TSAC to achieve that end are many and diverse. They include an effort to ensure that TSAC direct its primary attention to meaningful issues that deserve high-level focus in both industry and the Coast Guard. They also seek to provide TSAC with a much earlier role in the development of agency proposals, indeed at the conceptual level, to ensure that these proposals already have the benefit of industry thinking when they appear in the *Federal Register* as Notices of Proposed Rulemaking.

AWO believes that trade associations and industries which hope to be successful in the 1990s will find the linchpin to that success to be their reason and vision. AWO's modern program of outreach to the federal government recognizes that reality and seeks to build on the association's longstanding program of effective advocacy.

Congressional passage of the Oil Pollution Act and the reauthorization of the Clean Air Act have set in motion a series of studies and rulemakings which have the potential to fundamentally change the way the barge and towing industry does business. These projects will seek to implement the intent of Congress that a new standard of care be instituted in the marine transportation business, and will collectively serve as the building blocks of the new regulatory regime under which tugboat, towboat and barge owners will operate. There is nothing prescient about the prediction that the operational system which emerges from this process will be substantially different from that which exists today. There is an element in that eventuality which is at least partly, and understandably, disquieting. But if the industry pursues a modern approach to the federal government in its advocacy, there is little to fear, because we will be joint and influential architects of the new edifice.

The Environmental Wave: Successes And Challenges

Dena L. Wilson, V.P., Legislative Affairs
American Waterways Operators

Dena L. Wilson

In many respects, 1990 can be summed up as the year that began the Decade of the Environment, evidenced by enactment of major federal legislation reauthorizing the Clean Air Act; the Oil Pollution Act; safer transportation of hazardous materials, along with numerous state initiatives. AWO and its members actively participated in the debate which shaped these measures, and will continue to participate now and in the future.

While the Exxon Valdez oil spill was the impetus for much of the visibility and notoriety given the water transportation industry over the past few years, AWO member commitment to the environment predates that event. The association and its membership have long been committed to demonstrable policies and practices designed to make meaningful contributions to marine safety and environmental protection.

One distinct example of this commitment is AWO's participation in a midcontinent program wherein officials of the Fish and Wildlife Service, EPA, and state environmental agencies have been traveling aboard towing vessels periodically for two years, at the industry's initiative. This program has resulted in a major leap in mutual understanding through this up-close and personal experience and exchange between these groups, which previously had a history of conflict. Both have learned from the experience, and a new mutual respect has evolved. With the assistance of a handful of AWO member companies, the EPA has produced a videotape for the use of vessel personnel on how to avoid and minimize the environmental impact of their operations, and still operate safely. And, beginning in 1991, handouts will be given to vessels passing through locks at particularly sensitive times for the environment—informing vessel masters of the need for special caution at selected times—and asking for input from industry concerning fish and wildlife activity in these areas of operation. One other tangible result of this has been the relative ease in reaching consensus on mitigation plans for parts of the upper Mississippi River. This proactive initiative has application throughout the industry.

AWO members have sought to enhance in-house activities as well. Accordingly, the evolving AWO seminar program will focus more and more on heightening awareness of environmental education and environmental protection, as AWO member companies institute plans to ensure compliance and accountability. Federal and state initiatives have provided the impetus in many cases; yet the industry shares the deep concern of the American people to strive for the elimination of pollutants through tough company policies, strong crew training and relentless oversight.

Significantly, in early January, the AWO Board of Directors adopted a guiding set of environmental principles that state, in part, "AWO members are dedicated to continually improving operations in an effort to eliminate environmental incidents and to reduce environmental hazards to an absolute minimum."

As AWO president **Joseph Farrell** said concerning the association's adoption of the environmental principles, "The principles emphasize prevention, planning, responsibility, safety, training, cooperation, and environmental stewardship. Our goal is zero environmental incidents, coupled with economic viability of our industry. A strong industry with a solid environmental reputation is our intent."

Recently, AWO has faced perhaps greater challenges than ever before in carrying out its legislative agenda in the area of the environment. After 15 years, federal oil pollution prevention, liability, cleanup and compensation legislation is finally the law of the land. The debate over this legislation became linked by many in Congress and the media to the intense public outrage over oil spills and the industry's apparent liability to prevent them. Finally, too, sweeping legislation reauthorizing the Clean Air Act was enacted, affecting virtually every industry in the U.S.

In the context of such monumen-

(continued)

tal legislation—certain to have unprecedented ramifications for the tug and barge industry—the association was not intimidated or apologetic. AWO, in developing strategy on legislative and regulatory issues, began by establishing objectives to allow the industry to retain credibility and participate in the process. AWO's strategy focused on credibility trying to make improvements in the legislation which would enable its members to continue in the business of transportation without sacrificing environment protection.

The new law reauthorizing the Clean Air Act requires the Environmental Protection Agency to establish national standards for emissions from marine tank vessels. The barge industry will not be exempt from regulation if its emissions significantly contribute to a deterioration of health or the environment; yet the language adopted by Congress clearly requires cost-benefit to be a factor in determining the extent of cargoes which will be regulated. This provision, in our view, will help to depoliticize the process of identifying legitimate sources for regulation.

With respect to the Oil Pollution Act of 1990, overall this new law has many positive aspects. It is the first comprehensive plan, taking into consideration liability, cleanup, safety, hull configurations, penalties, and other preventive measures. It inspires prevention, and crew training, legislating guidelines for oversight by management. AWO's legislative objectives were clear as the bill went to conference between the Senate and the House of Representatives: development of a reasonable schedule phasing out single hull tank barges; improvements in the language so that "good samaritans" and cleanup contractors would not be precluded from providing assistance; and a distinction in minimum liability limits between small barges and tankers. These objectives were achieved.

Although it is far too early to predict the longer term impact of its provisions on the marine transportation of petroleum and petroleum products, serious problems, however, have already arisen from the absence of federal preemption of state oil spill laws, overwhelmingly defeated by Congress.

The omission of federal preemption . . . in essence the failure of the bill to prevent states from establishing laws and regulations similar to, or in addition to, the requirements set forth in the federal act . . . encourages an increasing number of states to impose unlimited liability, an "uninsurable risk."

Reputable barge owners may refuse to service states with unlimited liability, thus opening up the market to less capable "gypsy operators." Further, several states are demanding that vessel operators comply with unique state certification requirements, despite more than adequate federal requirements in this area; thus far, the domestic and international marine insurance community will certify only federal requirements.

Will the effects of increased transportation cost, distorted and interrupted transportation patterns, rising insurance costs, reduced vessel availability and delayed payments for damages to spill claimants allow for the eventual mitigation of the onerous provisions of the act? These questions will begin to be answered within the next few months.

The lessons of the past few years will not be forgotten, nor will AWO's commitment to improving the environment. The coming years will bring equal or greater challenge; the barge and towing industry intends to meet those challenges with credibility and integrity. Recently, AWO has sought out members of the national environmental community to begin a dialogue to more constructively work together. Certainly, there are differences in perspective between environmental interests and water transportation executives. But, there is no better way to narrow those differences . . . to work toward consensus . . . than to open channels of communication. ■

Effects On The U.S. Fishing Industry By The Anti-Reflagging Act Of 1987

Act Likely To Eliminate All Foreign Rebuilding Of U.S. Fishing Vessels

Unregulated fishing and concern for depletion of fish stocks relied upon by coastal fishermen across the nation resulted in attempts to ensure control of the U.S. fishing industry by Americans (i.e., Americanize the industry) as early as 1971. These Americanization efforts continued under the Magnuson Fishery Conservation and Management Act, which was passed in 1976. The Magnuson Act established exclusive U.S. management of fisheries out to 200 miles off our shores and gave priority to U.S. fishermen and vessels for receiving fish quotas within the 200-mile limit.

Although the Magnuson Act led to increasing American control of our fishing industry through U.S. fishery management, several concerns developed among fishermen, shipbuilders, and others over some remaining barriers to the Americanization process. One concern was that the existing American control requirements for licensing a corporate-owned vessel under U.S. flag were minimal. These requirements allowed, for example, a company's stock to be totally owned by foreigners. A second concern was that foreign owners could merely reflag their foreign-built fish-processing vessels as "vessels of the United States" and operate within the U.S. fishery, thus gaining first priority to process fish caught by U.S. fishing vessels. Third, although before the act any vessels catching fish had to be built in the United States, these vessels retained their U.S.-built status and resulting fish-catching privileges even if they were later substantially rebuilt abroad so that they were essentially new vessels. Fishermen and others told us that many owners were rebuilding vessels abroad because doing so was less costly than rebuilding in the United States.

To address these concerns, the Anti-Reflagging Act was signed into law on January 11, 1988. Its provisions include the following:

• It established more stringent American control requirements for corporations licensing vessels under the U.S. flag by requiring that the controlling interest in the vessel, as measured by a majority of voting stock, be owned by U.S. citizens. In assessing if a vessel is in fact controlled by Americans, it also required that a variety of factors be considered from the Shipping Act of 1916 that could lead to foreign control, such as the existence of foreign financing.

• ***It required fish-processing vessels entering the fisheries after the act was passed to be U.S. built.*** Foreign-built fish-processing vessels already operating in the fisheries must be licensed to process fish only and are not permitted to catch or harvest fish. This action eliminated the ability of new entrants to reflag foreign-built or foreign-owned fish-processing vessels so as to gain priority access to U.S. fishery resources.

• It prohibited owners from participating in the U.S. fishing industry with vessels built abroad.

The act also contained several grandfather clauses to protect the financial interests of owners who had become involved in U.S. fisheries under the previous conditions of law. For example, the granfather clauses allowed an owner, if certain conditions were met, to operate fish-processing vessels used in the fisheries prior to the act without regard to where the vessels were built or to the new stock ownership requirement. Also, under certain conditions, an owner could continue with foreign-rebuilding plans without jeopardizing the vessel's right to participate in the fisheries.

The act's American control provisions have had little effect on ensuring U.S.-citizen control of fishery operations. Under the Coast Guard's interpretation of the act's grandfather clauses, vessels that meet applicable conditions are permanently exempt from the act's American control provisions. According to the Chief of Vessel Documentation, nearly all of the vessels licensed for the U.S. fishery at the time the act was passed could likely be grandfathered and, as a result, could be resold to foreign-owned companies that do not meet the new, more stringent conditions. The Coast Guard's interpretation was challenged in court by several U.S. fishing and shipbuilding groups.

Prior to the Anti-Reflagging Act, for a vessel to be documented to fish in American waters, corporate ownership had to meet several citizenship standards. For example, the chief executive officer and the chairman of the board of directors had to be U.S. citizens. Also, the number of non-citizens on the board of directors could be no larger than a minority of the number of directors necessary to constitute a quorum. Notwithstanding these requirements, however, the law allowed 100 percent of the corporation's stock to be foreign owned.

The Anti-Reflagging Act made the American control requirements more stringent for fishery participation by requiring that the majority of voting stock be owned by U.S. citizens. As discussed above, it also added the American control conditions of the Shipping Act of 1916. But under the Anti-Reflagging Act's grandfather clauses, vessels are exempt from these requirements if either of two conditions was met before July 28, 1987: (1) The vessel was licensed under U.S. law and operated as a fishing, fish-processor, or fish-tender vessel in the navigable waters of the United States or the 200-mile zone established by the Magnuson Act, or (2) the vessel was being purchased for such purposes. Thus, a foreign-owned company whose vessel was operating in U.S. waters prior to July 1987, or that had a contract to buy a vessel to do so, could continue to operate or carry out its plans after passage of the act.

The Coast Guard believes that under the act's wording these grandfather exemptions apply to the vessel, not to the vessel owner. Under that interpretation, a vessel that meets the grandfather conditions has a permanent exemption from the new American control requirements. This means that the vessel can be bought and sold repeatedly without losing fishery privileges, regardless of whether the new owner is a corporation with totally foreign-owned voting stock or other arrangements that offer potential for foreign control.

This interpretation is significant for the U.S. fishing industry because of the large number and percentage of vessels that apparently meet the act's grandfather exemptions. According to the Chief of Vessel Documentation, a total of about 29,000 vessels were licensed for catching fish, and were therefore U.S. built, at the time the act was passed in 1987; and nearly all of them could likely be grandfathered for American control requirements under the act by virtue of the past fishing within the 200-mile limit. By contrast, he estimated 2,000 new vessels constructed and documented for the fisheries in the two years following passage of the act are subject to the new American control conditions.

This interpretation is also significant for the groundfish industry off the coast of Alaska. About 86 percent of the vessels we reviewed would likely meet the American control grandfather exemptions. According to the Coast Guard's Chief of Vessel Documentation, the lives of these vessels could be extended almost indefinitely by periodic rebuilding in the United States.

In addition, the Chief estimated that about 800 of the 29,000 vessels in the United States, licensed for fish catching when the act was passed, meet the grandfather exemptions and are well suited for rebuilding or conversion into factory trawlers or other types of relatively large vessels that now dominate groundfish operations in Alaska. Thus, any number of these vessels could, at any time in the future, enter the Alaska groundfish fleet without needing to meet the new American control provisions.

Several U.S. fishing and shipbuilding groups have filed a lawsuit to overturn the Coast Guard's interpretation. These groups contend, in part, that the grandfather clauses should apply to the vessel's owner, not to the vessel itself. Under this interpretation, vessels that were sold would continue to be eligible for participation in U.S. fisheries only if the new owners met the American control requirements.

In contrast to the Anti-Reflagging Act's American control provisions, which may have little impact on U.S. control of the fishing industry, its prohibitions against foreign rebuilding are likely to have a significant effect. While much foreign rebuilding continued after the act under its grandfather clauses, the period for delivering rebuilt ships to the owners ***ended on July 28, 1990.*** Because future rebuilding in foreign shipyards will result in the vessels' ***ineligibility*** for U.S. fishery privileges, owners who desire to rebuild their vessels will likely choose to do so ***in U.S. shipyards.***

Peterson Builders Sign NSRP Cooperative Agreement With Navy

Peterson Builders, Inc. (PBI) of Sturgeon Bay, Wis., has signed a three-year cooperative agreement with the U.S. Navy to become the Lead Yard in Industrial Processes in the National Shipbuilding Research Program (NSRP). **James Rogness** of PBI Industrial Engineering has been assigned the position of NSRP Program Manager and Technology Advocate.

The NSRP, under the auspices of The Society of Naval Architects and Marine Engineers (SNAME), is a cooperative effort of industry, government, and academia to perform shipbuilding research and development. Eight panels of experts in various aspects of shipbuilding meet several times each year to discuss technical issues, monitor progress of current research and select projects for future research.

Over the next three years, PBI Industrial Engineering will be responsible for managing $4,000,000 worth of research and promoting the exploration and adaptation of new technologies in the areas of production planning; process control and improvement; fabrication, fitting and accuracy control; measurement and inspection methods; material development; metallurgical and corrosion studies; welding processes and techniques; flexible automation; surface preparation and coating; data analysis; and composite materials.

Gulf Copper To Provide Facility, Services For FPSO Conversion

Gulf Copper & Manufacturing Corporation, Port Arthur, Texas, recently signed a contract with Oceaneering Production Systems, a division of Oceaneering International, Inc., Houston, Texas, to provide facility and services to convert the tanker Baltimore Sea to a Floating Production Storage and Offloading (FPSO) vessel. This multimillion dollar project will include installation of crude oil process equipment, six-point mooring systems, a helideck, and refurbishment of the vessel's marine systems. The ship arrived on February 1 and is expected to be in the yard through this summer.

Gulf Copper is upgrading a new deep-draft pier near the existing facility. The first phase of this project is expected to be completed and available this spring. It will include 1,000 feet of bulkhead dock suitable for either ship or drill rig berthing.

Gulf Copper is very active in the current ship activation program for the Maritime Administration in support of U.S. activities in the Persian Gulf and was one of the first yards to activate two ships simultaneously.

For free literature detailing the Gulf Copper's facilities and services,

Circle 51 on Reader Service Card

MAN B&W Diesel Moves To New USA Headquarters

MAN B&W Diesel, Inc. recently moved its USA headquarters to 17 State Street, New York, N.Y. 10004. The telephone number is (212) 269-0980, telefax number (212) 363-2469.

Located at the new office are **Claus Windelev**, president, **Edward A. Waryas**, director, business development, and **Lars K. Thomsen**, manager, spare parts sales and service.

MAN B&W Diesel, Inc. is a subsidiary of MAN B&W Diesel, one of the world's leading manufacturers and designers of diesel engines. The product line consists of two-stroke slow-speed engines and four-stroke medium-speed engines both for generator set and propulsive application.

Recent noteworthy sales include a slow-speed engine for Matson Navigation, genset reengining for Sea-Land and large-bore medium-speed engines for Chandris and Crystal Cruise Lines.

For free literature on engines manufactured by MAN B&W Diesel,

Circle 17 on Reader Service Card

CUMMINS-POWERED TUG Mowachaht Brave, built by Alberni Engineering & Shipyard Ltd. at Port Alberni, B.C., is shown towing bundles of logs together containing nearly 400,000 cubic feet of timber—no small task. But chores are made less challenging by the Cummins KT19-M turbocharged diesel engine that powers the tug at Gold River, B.C., where the vessel is hard at work every day of the week for Canadian Pacific Forest Products Ltd. The company's project engineer estimates that the Cummins KT19-M installation in the 14-foot-beam tug enables the Mowachaht Brave to move its log tows about a third faster than its predecessor tugs.

For free literature on Cummins engines,

Circle 24 on Reader Service Card

Chevron Awards Bluewater Export Terminal Contract In $1 Billion Kutubu Project

Chevron has awarded the oil export terminal contract in the ambitious $1 billion Kutubu petroleum development project in Papua, New Guinea, to Bluewater Terminals.

A single point mooring export facility, which will operate in waters 25 meters deep (about 82 feet) approximately 50 kilometers offshore, is to be supplied by Bluewater.

Delivery of the unit, to be a standard Bluewater design that accommodates tankers of up to 150,000 dwt, is scheduled for January 1992, ready for field startup in mid-1992.

Jacksonville Shipyards Awarded $2.5 Million To Repair Pemex Ship

Jacksonville Shipyards, Inc. (JSI), Jacksonville, Fla., has been awarded its largest contract since reopening, worth about $2.5 million, to repair the Petroleos Mexicanos S.A. (Pemex) ship Cantarell, which was damaged by an explosion last year. The aft end of the 46,486-dwt LPG carrier was affected, and substantial rebuilding is required to restore the ship to full operating capability. The project, which is expected to take up to two months to complete, will involve work in the engineering spaces and steel renewal.

Pemex received bids from an international group of competing yards before selecting the recently reopened Jacksonville yard. The contract was signed in Mexico City in January, and work commenced last month.

According to a spokesman for the company, JSI is actively bidding on a number of projects, some in the cruise ship sector, from both domestic and foreign owners.

For free literature detailing the repair facilities of JSI,

Circle 96 on Reader Service Card

Hellenic Shipyards Wins $11 Million Order For Tanker Repair Work

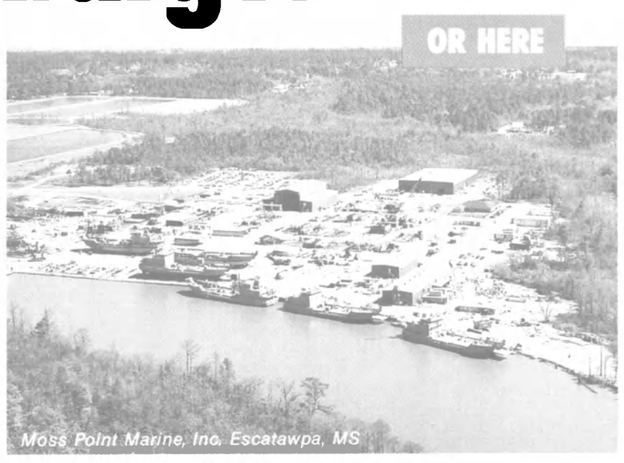
An order worth more than $11 million for refit work on three vessels belonging to Paris-based European Navigation company has been won by Hellenic Shipyards of Skaramanga.

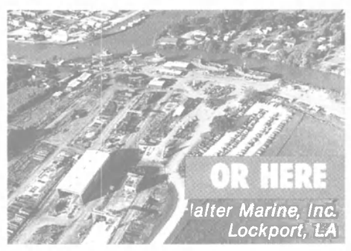
Work at the Greek yard includes steel renewals, pipework and sandblasting on three 135-dwt tankers.

For free literature on the facilities and capabilities of Hellenic Shipyards,

Circle 50 on Reader Service Card

We can build your next boat or barge.





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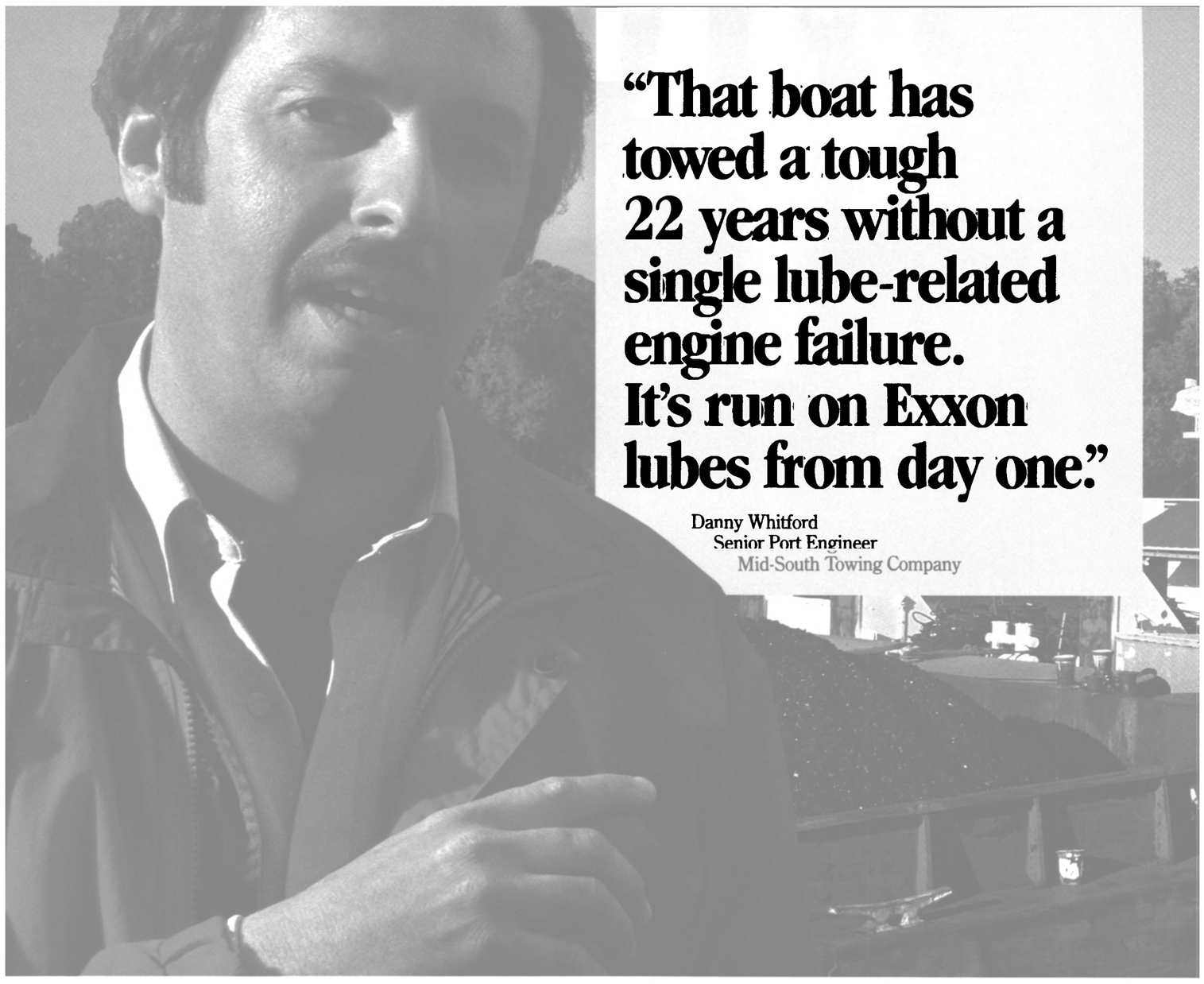


He's not talking pleasure cruises.

He's talking 22 years of hard, honest work—often 24 hours a day, 7 days a week. He's talking 165,000 hours per engine on the original crankshafts. He's talking engine performance so outstanding on all 12 boats in the Mid-South fleet, Whitford calls it "abnormally good"!

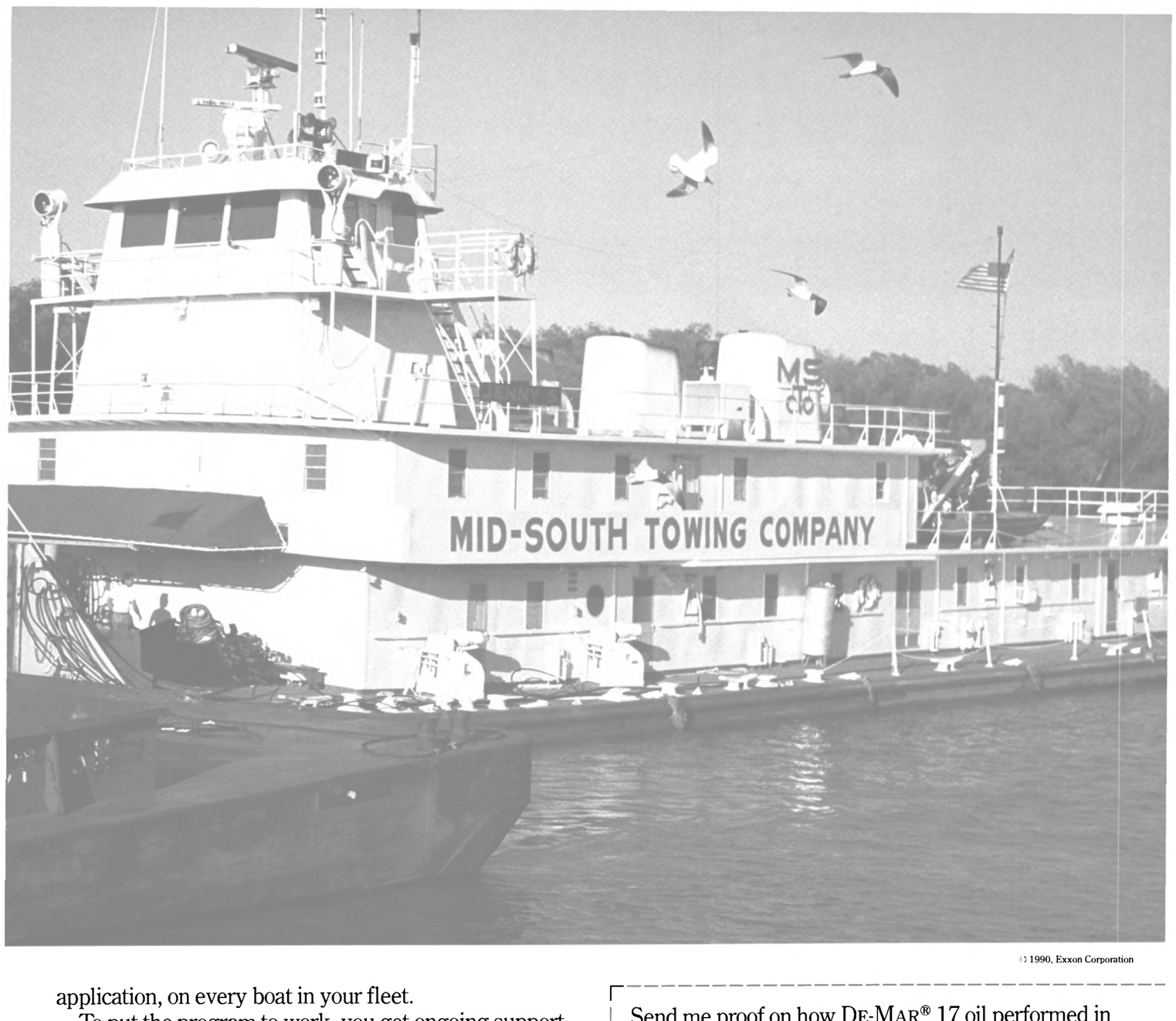
And he's crediting the Exxon difference—for helping Mid-South's uncompromising maintenance program make its boats more productive from day one.

That difference is the Exxon Marine Lubrication Program—a unique collection of top-notch products and services for the shallow-draft marine industry. It helps Mid-South get maximum work from every boat, every day. It can do the same for your fleet.

Start with DE-MAR® 17 zinc-free heavy-duty engine oil. Its superior formulation provided such remarkable protection from engine liner and ring scuffing in Detroit Diesel's severe 6V92TA test, Detroit Diesel put the results in writing—saying DE-MAR 17 is "the first product of this type to pass." The proof gets even sweeter. Because it's also approved for all EMD engines. And recommended for the Caterpillar 3600 series.

Fact is, this Generation 5 API CD/CD-II quality oil is formulated for exceptional performance in *all* mains and auxiliaries. One oil, no matter what you're running. And it's supported by EXXGARD® Oil Analysis, featuring easy Quickdraw sampling. To help you catch problems before they catch you up a creek without an engine.

For more complex problem-solving, Exxon provides the computerized Equiptrak Reporting system. It summarizes long-term trend data on your equipment, your fleet *and* your industry. To help you manage with savvy. And our Marine Lubrication Chart gives you easy reference to the recommended lubes for every



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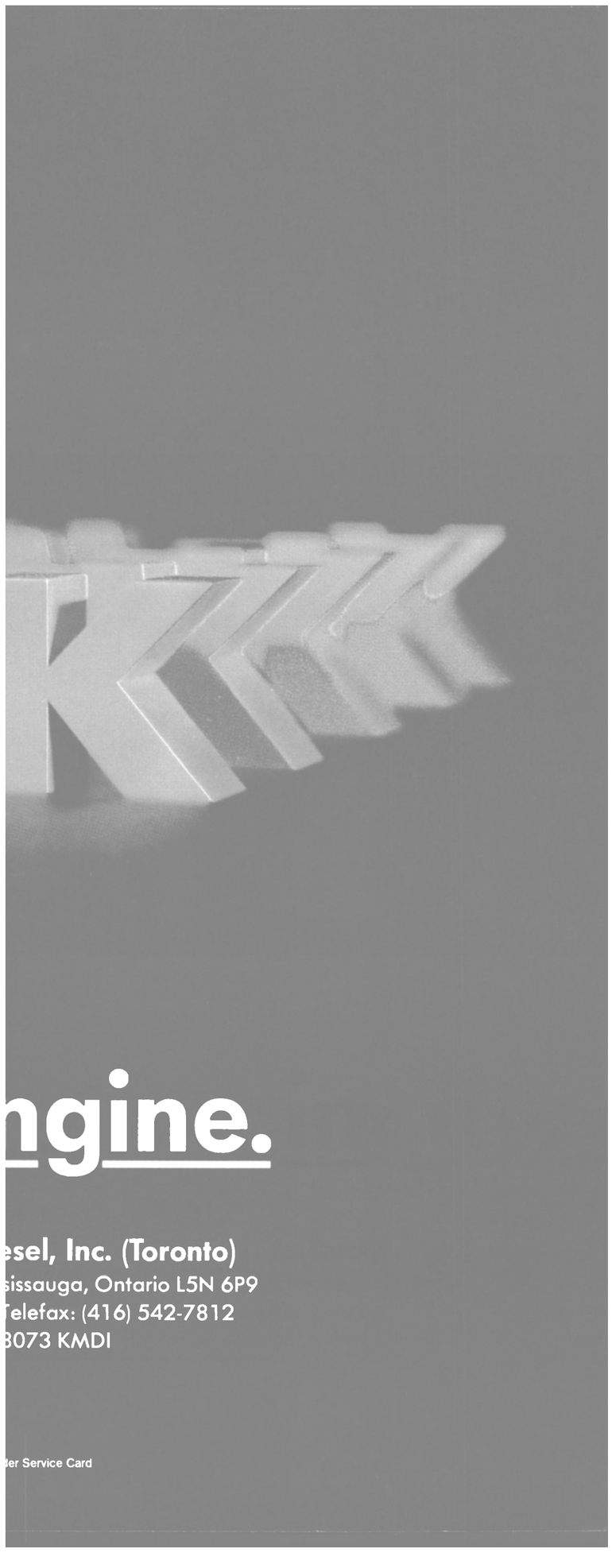

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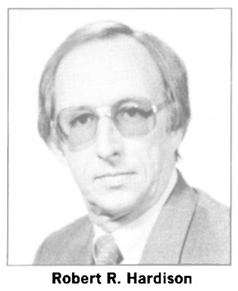
Newport News Names Hardison VP, Quality



Robert R. Hardison

Newport News Shipbuilding president **Edward J. Campbell** recently named **Robert R. Hardison** vice president, quality. Mr. **Hardison** will be responsible for all quality assurance and inspection functions for the company.

Mr. **Hardison** replaces **L. R. Sorenson Jr.**, who retired as quality vice president January 1, after 32 years with the company. Mr. **Sorenson** also had held vice president positions in ship construction and repair, labor relations, and submarine construction.

Mr. **Hardison** previously was director, quality for the shipyard. He joined the company as an apprentice in 1958, graduated in 1962, and then worked as a laboratory technician, engineer, and test engineer, before being named manager for nondestructive testing in 1973. He became director, quality in 1980.

Avondale Boat Division Licensed To Construct High-Speed Hovercraft

Avondale Industries, Inc. recently announced that its Boat Division has been appointed the U.S. licensee for the AP1-88 amphibious hovercraft. The AP1-88 is a high-speed passenger hovercraft and freight-carrying air-cushioned vehicle designed by the British Hovercraft Corporation. The vessel has previously performed effectively in regular passenger service and operation in the U.K., Canada, Scandinavia and Australia. Variants are also in service for the U.S. Navy and the Canadian Coast Guard.

The craft is designed for high reliability, with a rugged welded hull structure, a simple transmission and air-cooled diesel engines.

Albert L. Bossier Jr., chairman and chief executive officer of Avondale, said, "The signing of this agreement is in line with our strategy to expand our resources and expertise in marine fabrication into additional commercial applications."

British Hovercraft Corporation Limited is a Westland Aerospace Company and a member of Westland Group Plc.

Avondale Industries, Inc., headquartered in metro New Orleans, is one of the nation's leading marine fabricators.

For free literature detailing Avondale's vessel construction services,

Circle 57 on Reader Service Card

$15-Million Order To Atlantis Engineering To Build Small Boxship

Atlantis Engineering & Construction, a subsidiary of Neptune Orient Lines (NOL) was recently awarded a $15-million contract to construct a 650-TEU containership for Wood Line Singapore.

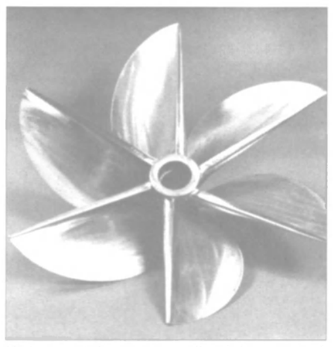
In addition, according to one report, the yard is also expected to sign a second contract to construct a 4,500-dwt products carrier for Neptank Bunkering Services Pte. Ltd., a bunkering services company, which is owned by NOL.

Rolla Introduces New Surface Piercing 'Super Propellers'

Rolla SP Propellers SA, Balerna, Switzerland, producer of a wide selection of high-performance propellers, has recently introduced a fast new sophisticated geometry intended for surface piercing applications. Now produced in three special models, REXPSC 90/91-5, -6 and -7, they are said to be the largest investment cast steel propellers in the world.

The latest application of model REXPSC 90/91-6, six-blade version on a 34-ton deep V hull with twin 1,840-hp diesels and propellers in surfacing condition gave a speed of 56+ knots, and overall performance as to planing time, cruise condition, reverse and off design conditions that, according to Rolla, can be considered exceptional.

Philip M. Rolla, the managing director, personally studied, developed and designed the new innovative project.



Nicknamed 'super propellers' because of the maximum 32.3-inch diameter, the new propellers, intended for surface piercing, are investment cast in 17-4-PH and ERO stainless steel, available in 5, 6, 7 blades.

Technical specifications: type, REXPSC 90/91-5, REXPSC 90/91-6, REXPSC 90/91-7; manufacturing method, investment casting; construction materials, stainless steel, 17-4-PH, ERO; blades—5, 6, 7; description, 15 degree cleaver; diameters, up to 32.3 inches (820 mm); pitches 42 inches to 46 inches; hub, any bore; splines, Z 33, Z 36; application, surface piercing; design, Rolla SP Propellers; construction, Rolla SP Propellers.

For further information,

Circle 59 on Reader Service Card

Clark-Reliance Names Figgie General Manager

Matthew P. Figgie, assistant director of manufacturing of the Clark-Reliance Corporation, has been named general manager of the company, according to the firm's president **Harry E. Figgie III**.

Clark-Reliance Corporation, located in Strongsville, Ohio, manufactures a variety of products for the control and measurement of fluids in the processing and power industries.

Mackay Awarded Pact For Matson Boxship Being Built At NASSCO

Mackay Communications has been awarded a substantial contract to provide communication and navigation products for the Matson Navigation Co.'s new Hawaii II Class, U.S.-flag container vessel under construction at National Steel & Shipbuilding Co. (NASSCO), San Diego, Calif.

Under the contract, Mackay will supply Inmarsat satellite communications terminal for voice, data and facsimile, MF/HF radio station for SITOR/Telex and SSB with selective calling, VHF radiotelephones for Vessel Traffic System and Bridge-to-Bridge, automatic radio direction finder, PA/Talkback system and TV/Entertainment cable distribution system. Mackay products are manufactured in Raleigh, N.C., and supported by 12 service/installation depots in the U.S. and an extensive agency network in 85 countries. Mackay's marine operations department and marine sales division are located in Elizabeth, N.J.

For free literature detailing Mackay Communications products,

Circle 100 on Reader Service Card

TOWFISH SCANS SEABED—This equipment is most at home under the sea. Developed by Bathymetrics of Bath, southwest England, for Marconi Underwater Systems, it uses acoustic transducer arrays which enable the phase and amplitude of sonar signals to be measured. This technique allows the seabed topography to be measured very accurately and in considerable detail, producing 256 depth values on either side. During a survey, seabed features are continuously displayed in a "waterfall" or in contour mode, at the rate of some 1,500 soundings per second, on a color graphics screen on the host craft. At the same time attitude data, such as heave, roll, pitch and heading and also the position of profiles are recorded on tape. The system, which was primarily made for operation using a towfish, was designed to be portable and flexible in deployment and operation. It can be used from a wide range of craft.

NAVAL TECHNOLOGY & SHIPBUILDING

a special supplement to

MARITIME REPORTER AND ENGINEERING NEWS

MARCH 1991

UPDATE ON U.S. NAVY SHIPBUILDING & REPAIR:

Navy Requests $25 Billion For Shipbuilding, Fleet Maintenance & Repair For FYs 92-93

By Jim McCaul, President
IMA Associates, Inc.

The budget request sent to Congress on February 4 provides a picture of changing priorities and increasing fiscal constraints in Navy spending.

$16.9 Billion For Shipbuilding

The Navy has asked for $8.6 billion to build 12 ships in FY 1992 and $8.3 billion for 11 ships in FY 1993. The program calls for one SSN-21 Seawolf Class submarine in each year. General Dynamics-Electric Boat Division of Groton, Conn., is currently building the lead ship in this new class of attack submarine. Five Aegis destroyers are budgeted for FY 1992, four in FY 1993. Bath Iron Works, Bath, Maine, and Ingalls Shipbuilding, Inc., of Pascagoula, Miss., compete for work in this program. Expenditures for sealift ships (taking into account funds remaining from previous years) are now budgeted at $1.6 billion over the next two years. These and other details are shown in Exhibit 1.

Over the next six years, the Navy plans to order 58 new ships. These include a new aircraft carrier in FY 1995 and seven Seawolf submarines. Plans call for 22 Aegis destroyers over the six-year period. A new class of amphibious ships is planned beginning FY 1995. Details are shown in Exhibit 2.

Long-Term Outlook Good For Ship Repair

The U.S. Navy plans to spend $7.8 billion for active fleet ship maintenance over the next two years. Another $275 million will be spent on reserve fleet maintenance.

Active fleet maintenance plans call for nine overhauls and 145 short term availabilities in FY 1992—17 overhauls and 124 short term availabilities in FY 1993. Details are shown in Exhibit 3.

Despite near term reductions in activity, the long term outlook for ship repair still looks good. Spending for Navy ship maintenance and modernization has tripled over the past 15 years. There is no reason to expect a precipitous change in this trend. Ships require regular maintenance and continued upgrading—and the U.S. Navy is not about to disappear. Even allowing for a smaller future fleet, maintenance of Navy ships will provide a continuing business base over the next decade.

$9.9 Billion For Equipment Procurement

The Navy has requested $5 billion in FY 1992 and $4.9 billion in FY 1993 to fund procurement of ship support equipment, communications and electronics equipment, ordnance support equipment, spares and repair parts. The budget figures include the cost of equipment procurement and installation. Details are shown in Exhibit 4.

Funds for ships support equip-

Naval Technology & Shipbuilding cover: USS Arleigh Burke (DDG-51), first of the Navy's new Aegis destroyer class. See story page 41. **Above:** Carrier battle group in Atlantic on maneuvers.

Exhibit 1 Navy Shipbuilding and Conversion Budget
FY 1990 - 1993

	FY 1990 QTY	FY 1990 $	FY 1991 QTY	FY 1991 $	FY 1992 QTY	FY 1992 $	FY 1993 QTY	FY 1993 $
NEW CONSTRUCTION								
TRIDENT	1	1,138.1	1	1,298.0	-	-	-	-
CARRIER REPLACEMENT	-	-	-	-	-	-	-	852.0
SSN-688	1	801.9	-	-	-	-	-	-
SSN-21	-	586.3	1	1,781.7	1	1,903.2	1	2,161.1
DDG-51	5	3,517.8	4	3,145.1	5	4,335.3	4	3,479.5
MCM	3	349.4	-	-	-	-	-	-
MHC	2	249.8	2	203.8	2	231.1	2	222.2
LSD-41	1	226.4	1	240.0	1	245.1	1	250.8
LHD-1	-	34.6	1	958.1	-	-	-	-
TAGOS	1	182.6	-	-	-	-	1	149.9
SEALIFT	-	375.1	-	900.0	-	-	-	201.4
AOE	1	388.2	-	-	1	540.1	-	-
OCEANOGRAPHIC RESEARCH(AGOR/TAGS)	3	310.6	-	-	2	129.8	2	213.9
LCAC	(12)	269.8	(12)	267.5	(12)	265.9	-	-
PATROL BOATS (SOF)	(7)	77.7	-	-	-	-	-	-
USCG ICEBREAKERS	1	274.8	-	-	-	-	-	-
USCG PATROL BOATS	(12)	79.3	-	-	-	-	-	-
SUBTOTAL	19	8,862.4	10	8,794.2	12	7,650.5	11	7,530.8
ESCALATION	-	-	-	-	-	524.9	-	-
CONVERSION/ACQUISITION								
CV-SLEP	1	643.2	-	-	-	-	-	-
MOORED TRAINING SHIP	(1)	226.2	-	-	-	-	-	-
ENTERPRISE REFUEL/ MODERNIZATION	1	1,403.9	-	-	-	-	-	-
SERVICE CRAFT	-	49.9	-	75.4	-	15.5	-	199.5
LANDING CRAFT	-	10.2	-	10.4	-	-	-	-
OTHER COSTS	-	278.2	-	328.8	-	456.3	-	567.6
AO JUMBO	1	39.7	-	-	-	-	-	-
SUBTOTAL	3	2,651.3	-	414.6	-	471.8	-	767.1
TOTAL: SCN	22	11,513.7	10	9,208.8	12	8,647.2	11	8,297.9

Note: Numbers in parentheses ( ) not counted in totals.
Source: Department of Navy

Exhibit 2 Six-Year Shipbuilding Plan
FY 1992 - 1997

NEW CONSTRUCTION	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997
CARRIER REPLACEMENT	-	-	-	1	-	-
SSN-21	1	1	1	1	2	1
DDG-51	5	4	3	3	4	3
LX	-	-	-	1	-	1
MHC	2	2	1	-	-	-
MHC (V)	-	-	-	1	-	2
AR	-	-	-	-	1	-
LSD-41	1	1	-	-	-	-
TAGOS	-	1	1	2	-	-
ARS	-	-	1	-	2	-
AOE	1	-	-	-	-	-
OCEANOGRAPHIC RESEARCH	2	2	2	1	-	-
LCAC	(12)	-	-	-	-	-
TOTAL: SHIPS	12	11	9	10	9	7

Note: Numbers in Parentheses ( ) not counted in totals.
Source: Department of Navy

Exhibit 3 Active Forces Ship Maintenance Budget
($ in millions)

	FY 1990	FY 1991	FY 1992	FY 1993
SHIP DEPOT LEVEL REPAIR	$2,920.9	$2,402.0	$2,489.9	$2,918.6
DEPOT LEVEL SUPPORT	179.4	181.9	291.1	264.6
IMA	361.5	475.2	461.8	451.8
INACTIVATIONS	192.2	358.6	519.1	340.7
TOTAL: SHIP MAINTENANCE	3,654.0	3,417.7	3,761.9	3,975.7
NO. OF SHIP OVERHAULS (UNITS)	19	13	9	17
SHIP OVERHAUL BACKLOG (UNITS)	2	-	3	3
NO. OF SRAs (UNITS)	100	66	81	72
NO. OF PMAs (UNITS)	55	52	64	52

Source: Department of Navy

Exhibit 4 Budget for Replacement and Modernization Equipment FY 1990-93
(in millions of $)

EQUIPMENT TYPE	FY 1990	FY 1991	FY 1992	FY 1993
SHIPS SUPPORT	$3,507.1	$1,388.2	$1751.7	$1,549.0
COMMUNICATIONS & ELECTRONICS	1,467.0	1,771.8	2,443.6	2,265.2
ORDNANCE SUPPORT	695.8	481.8	549.8	763.3
SPARES & REPAIR PARTS	408.5	518.0	515.4	568.1
TOTAL	$6,078.4	$4,159.8	$5,260.5	$5,145.6

Source: Department of the Navy

ment are budgeted to be $1.8 billion in FY 1992 and $1.5 billion in FY 1993. Among major items to be procured are gensets, submarine propellers and equipment for firefighting, pollution control and underway replenishment. Included in this budget are some long lead items for nuclear reactors and propulsors associated with new submarine construction.

A budget of $2.4 billion is requested in FY 1992 and $2.3 billion in FY 1993 for communication and electronics equipment. For modernizing frontline ASW units, Navy has requested $192 million in FY 1992 and $143 million in FY 1993 for procuring SQQ-89 surface ASW combat system backfits. Additionally, $331 million in FY 1992 and $363 million in FY 1993 is budgeted to procure BQQ-5 upgrades and communication backfits.

Ordnance support equipment is budgeted at $550 million in FY 1992 and $763 million in FY 1993. This includes $47 million in FY 1992 and $199 million in FY 1993 to procure the latest equipment for backfit into early production Aegis cruisers. Sixty-four million and $82 million in FY 1992 and FY 1993, respectively, is budgeted for one MK-41 vertical launch system in FY 1992 and two MK-41 vertical launch systems in FY 1993; $57 million in FY 1992 and $77 million in FY 1993 is budgeted to continue the modernization of MK-117 fire control systems.

For spares and replacement parts, $515 million is budgeted in FY 1992 and $568 million in FY 1993.

New IMA Report Available

IMA has just prepared an in-depth analysis of U.S. Navy ship maintenance, repair and modernization. The 200-plus-page report assesses future business opportunities and analyzes key competitor's market position. It includes details for FY 1992 and 1993 scheduled ship maintenance and equipment purchases—and provides an extensive data base on contract awards over the past eight years. Information in the report reflects the new budget sent to Congress on February 4, 1991.

The report is available for $575. To order, contact IMA Associates, Inc., 2600 Virginia Ave., NW, Suite 901, Washington, D.C. 20037; telephone: (202) 333-8501; or fax: (202) 333-8504.

ASNE 5th Annual Naval Logistics Symposium

'LOGISTICS: CHALLENGES IN A CHANGING ENVIRONMENT'

March 12-14, San Diego, California

The San Diego Section of the American Society of Naval Engineers (ASNE) will host the Fifth Annual Naval Logistics Symposium in San Diego, Calif., March 12-14, 1991. The theme of the three-day event will be "Logistics: Challenges in a Changing Environment."

Cosponsored by the Naval Sea Systems Command, Naval Supply Systems Command, and Space and Warfare Systems Command, the symposium is expected to draw several hundred logistics professionals to the Town and Country Hotel in San Diego, site of the event.

Dozens of presenters will address ship maintenance, process improvements, CALS initiatives, and supply support programs. The technical presentations will focus on current success stories and future challenges.

Key speakers include: Vice Adm. **Peter M. Hekman Jr.**, USN Commander, Naval Sea Systems Command; **Richard Vortmann**, president/CEO National Steel & Shipbuilding Co.; Rear Adm. **Edward S. McGinley**, USN, CINCPACFLT Maintenance Officer; Rear Adm. **Robert Ailes**, USN Commander, Space and Naval Warfare Systems Command; and Rear Adm. **R.M. Moore**, USN Assistant Commander, Inventory and Systems, Naval Supply Systems Command.

The symposium will also feature a number of exhibitors who will be displaying their products and services in the spacious exhibit hall. There is still exhibit space available. Those parties interested in exhibiting should contact **Bill Curry** at (619) 524-2648.

For further information on the symposium, contact: ASNE, 1452 Duke Street, Alexandria, Va. 22314-3458; telephone: (703) 836-6727.

LOGISTICS SYMPOSIUM SCHEDULE

Tuesday, March 12

1 p.m.—Exhibit hall opens; Ribbon cutting ceremony and early registration desk open.

5 p.m.—Social hour—exhibit hall cash bar.

Wednesday, March 13

7:30 a.m.—Registration desk open.

8:15 a.m.—Welcome: Capt. **G. Gaines**, USN, Commanding Officer, NAVSEACEN-PAC and Rear Adm. **Lowell J. Holloway**, USN, president, ASNE.

8:30 a.m.—Keynote address by Vice Adm. **Peter M. Hekman Jr.**, USN, Commander, Naval Sea Systems Command.

SESSION I SHIP MAINTENANCE

Moderator: **Anthony J. Ruffini**, Columbia Research Corp.

9 a.m.—"Aircraft Carrier Maintenance Program," by Capt. **Richard Holmes**, USN; Comdr. **Warren Roberts**, USN; and **Michael Knight**.

9:40 a.m.—"Improved Shipboard Systems Maintenance Support," by **Peter Donovan, Douglas Jedlicka**, and **J. Duncan Peterson**.

10:20 a.m.—Coffee break.

10:40 a.m.—"Fleet Self-Sufficiency and Progressive Maintenance," by **Jean Gehlhausen**.

11:20 a.m.—"FFG-61 Prototype Digital Technical Library," by Capt. **Charles A. Vinroot**, USN; **Jeffrey Orner**.

Noon—Luncheon. Speaker will be **Richard H. Vortmann**, president and CEO, NASSCO.

SESSION II PROCESS IMPROVEMENTS

Moderator: **Robert Calogero**, NAVSEA.

1:45 p.m.—"Total Quality Management—A Key Tool for the 90s," by Capt. **Dennis K. Kruse**, USN.

2:25 p.m.—"Customer Focus Improves Missile Maintenance," by **Donald S. Taylor**.

3:05 p.m.—Coffee break.

3:25 p.m.—"Computer Aided Maintenance Planning," by **Jim C. Nelms**.

10:05 a.m.—Coffee break.

10:25 a.m.—"Automated Maintenance Management for Small Craft," by **Keith C. Van Hook** and **Sviatislav S. Seteroff**.

11:05 a.m.—"Technical Information Support in Production," by **Robert Calogero.**

Noon—Luncheon. Speaker: Readr Adm. **R.M. Moore**, USN, Asst. Commander, Inventory & Systems, NAVSUP.

SESSION IV SUPPLY SUPPORT PROGRAMS

Moderator: **William N. Curry**, NAVSEACEN-PAC

1:20 p.m.—"Romis Material Management System (MMS)," by **Frank Smith** and **Sheryl Wright**.

2 p.m.—"GFE Provisioning Streamlining," by **Lawrence Hanagan** and **Connie Gragan**.

2:40 p.m.—"Royal Australian Navy Readiness Based Sparing," by **James Cobb**.

3:20 p.m.—Closing remarks—**Clifford G. Geiger**, NAVSEA 04.

3:45 p.m.—Adjourn.

4:05 p.m.—"Integrating Requirements for Effective Logistics," by **Darrel R. Lowery**.

4:45 p.m.—Adjourn.

5 p.m.—No host bar open exhibit hall.

6 p.m.—Reception and banquet—speaker invited Adm. **Charles R. Larson**, USN, Commander in Chief, U.S. Pacific Fleet.

Thursday, March 14

7:15 a.m.—Registration desk opens.

8 a.m.—Administrative remarks.

8:15 a.m.—Keynote address: Rear Adm. **Robert H. Ailes**, USN, Commander, Space and Naval Warfare Systems Command.

SESSION III CALS INITIATIVES

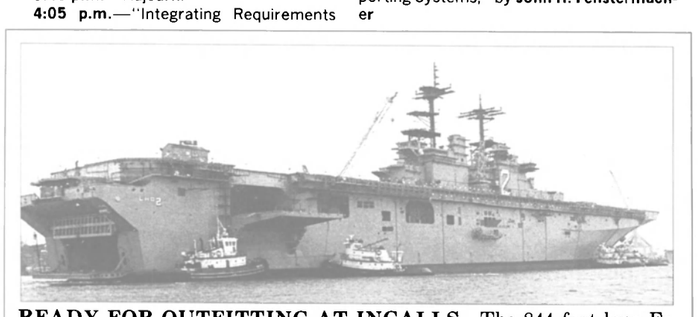
Moderator: **Dave M. Altwegg**, NAVSEA.

8:45 a.m.—"Engineering Technical Information Systems," by **David D. White** and **Martin N. Nyman**.

9:25 a.m.—"Selective Management Reporting Systems," by **John H. Fenstermacher**

LOGISTIC SYMPOSIUM EXHIBITORS

Bailey Company
CACI, Inc.-Federal
Carson Industries, Inc.
Cla-Val Company
Cunico Corporation
Enerquip, Inc.
Envisions
FMC Corp., Naval Systems Div.
George Sharp Inc.
Huntron Instruments, Inc.
IBM Corporation
ISA
Information Handling Services
Kamatics Corporation
Keystone Valve
National Standards Assoc.
Navelex San Diego
Naval Ship Weapon Sys. Engineering Sta.
Newport News Shipbuilding
Optical Publishing
Prosser Enpo Industries, Inc.
Seacor
Solar Turbines Inc.
Sun Microsystems
Supervisor of Shipbuilding, Conversion & Repair
VOLT/Alphanumerics
VSE Corporation
Wang



READY FOR OUTFITTING AT INGALLS—The 844-foot-long Essex (LHD 2), second in a series of Wasp Class multipurpose amphibious assault ships being built by Ingalls Shipbuilding division of Litton in Pascagoula, Miss., is guided to her outfitting berth following launch. The vessel was launched at nearly 75 percent complete, weighing approximately 29,000 tons. LHD 2 was christened Essex at the shipyard, with Mrs. **Lynne Cheney**, wife of Secretary of Defense **Dick Cheney**, breaking a bottle of champagne across the ship's bow.

For free literature on the facilities and capabilities of Ingalls Shipbuilding,

Circle 30 on Reader Service Card

MAJOR NAVY CONTRACTS

(Compiled by Maritime Reporter Staff)

General Electric Company, Government Electronic Systems Division, Moorestown, N.J., was awarded a **$110,800,000** cost-plus-fixed-fee contract modification for AEGIS installation and test support for five DDG-51 class destroyers. Work is expected to be completed in January 1996. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-89-C-5146).

General Dynamics Corp., Electric Boat Division, Groton, Conn., was awarded a **$765,000,000** fixed-price-incentive contract to construct one Ohio class submarine, SSBN 743. Work is expected to be completed in August 1997. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-91-C-2120).

Bath Iron Works Corporation, Bath, Maine, was awarded a **$72,489,781** cost-plus-award-fee contract for lead yard services for Arleigh Burke-class Aegis destroyers. Work is expected to be completed in November 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-91-C-2800).

Metro Machine Corporation, Norfolk, Va., was awarded a **$46,866,671** cost-plus-award-fee contract for the Phased Maintenance Program (PMP) for Landing Platform Helicopter (LPH) class ships homeported in Norfolk, Va. Work is expected to be completed in November 1995. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-91-C-8506).

Ingalls Shipbuilding, Inc., Pascagoula, Miss., was awarded a **$28,685,706** firm-fixed-price-with-performance-incentive contract for regular overhaul of the USS Peterson (DD-969). Work is expected to be completed in April 1992. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-H-8168).

General Dynamics Corporation, Groton, Conn., was awarded a **$19,095,000** cost-plus-fixed-fee contract modification (option) for omnibus engineering and technical services for Ohio Class submarines. Work is expected to be completed September 30, 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-90-C-2115).

General Electric Company, Government Electronic Systems Division, Moorestown, N.J., was awarded a **$58,400,000** cost-plus-fixed-fee contract modification for Aegis installation and test support for five CG-47 Class cruisers. Work is expected to be completed in January 1995. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-87-C-5600).

Unisys Corporation, Shipboard and Ground Systems Group, Great Neck, N.Y., was awarded a **$17,316.292** cost-plus-fixed-fee contract for continued engineering support services for Deep Submergence Systems Programs. Work is expected to be completed in September 1995. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-90-C-6012).

Unisys Corporation, Great Neck, N.Y., was awarded a **$9,940,759** firm-fixed-price contract for nine Aegis Guided Missile Director Mark 82 Mod O with Director Control Mark 200, Mod O units. Work is expected to be completed in March 1994. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-90-C-5142).

Ingalls Shipbuilding Inc., Pascagoula, Miss., received a **$500.9-million** option to build two Arleigh Burke Class (DDG-51) destroyers. The Naval Sea Systems Command, Washington, D.C., awarded the contract.

General Dynamics Corp., Electric Boat Division, Groton, Conn., was awarded a **$14.9 million** contract to provide SSN 21-class submarine propulsion plant support. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-91-C-4195).

Bath Iron Works Corp., Bath, Maine, was awarded a **$513.5-million** contract to build two Arleigh Burke Class (DDG-51) destroyers. The Naval Sea Systems Command, Washington, D.C., awarded the contract.

Southwest Marine Inc., San Diego, Calif., has received a **$5.8-million** contract for the material readiness upgrade of USNS Observation Island, a Military Sealift Command missile range instrumentation ship. The Military Sealift Command, Washington, D.C., awarded the contract (N00033-91-C-3070).

$1.5 Billion Navy Contract Awarded Johns Hopkins

A $1.5 billion Navy contract for research and development on strategic, tactical and electronics systems has been awarded to Johns Hopkins University, Baltimore, Md.

PROPOSALS/BIDS

The *Commerce Business Daily* lists notices of proposed government procurement actions, contract awards, sales of government property, and other procurement information. The following is a brief listing of some of the proposed government contracts available.

BIDS DUE MARCH 22 for **Selected Restricted Availability (SRA) of USS Stephen W. Groves (FFG-29).** Sol. N62670-91-R-0010. The project will include hull, machinery, electrical, electronics and piping work. Solicitation is being extended to bidders in Jacksonville, Florida, area. Contact William T. Show at (904) 246-5741, Office of Supervisor of Shipbuilding, Conversion and Repair, P.O. Box 20158, Mayport Naval Station, Jacksonville, Fla. 32228-0158.

BIDS DUE MARCH 22 for **drydocking and repair of U.S. Coast Guard cutter Hudson (WLIC-801).** Furnish all necessary labor, materials, equipment and services to drydock and repair USCGC Hudson. This availability is restricted geographically to those locations that can be reached via the Atlantic Intracoastal Waterway, or similarly protected waterways and involve no open ocean transits during any portion of the vessel's voyage from its homeport in Miami Beach, Fla. Contact Diane Tolliver, contract specialist at (212) 668-3376 or Sharon D. Hayes Hunter, contracting officer at (212) 668-3377, Office of Commander, USCG Maintenance & Logistics Command Atlantic (vpl) Bldg. 400, Section M, Governors Island, N.Y. 10004-5085.

BIDS DUE APRIL 16 for **Phased Maintenance Availabilities (PMAs) and Docking Phased Maintenance Availabilities (DPMAs) of LSDs/LLPDs-Norfolk.** Sol. N00024-91-R-8535. Prepare and accomplish the repair and alteration of the USS Raleigh (LPD-1), USS Austin (LPD-4), USS Portland (LSD-37) and USS Pensacola (LSD-38) during scheduled PMAs and DPMAs. The performance of the effort will be in the Norfolk, Va., homeport area. Contact R.A. Allen at (703) 602-7714, contracting officer or Lt. Cmdr. J. Baker at (703) 602-7715, Office of Commander, Naval Sea Systems Command, SEA 0291, Washington, D.C 20362-5101.

BIDS DUE MARCH 19 for **Drydocking Planned Restricted Availability (DPRAV) of the LCU-1649.** Drydock work and mechanical repair. The geographical area of this solicitation is restricted to the vessel's homeport area, Norfolk, Va. Contact Jim Albertson at (804) 396-7664, Office of the Supervisor of Shipbuilding, Conversion and Repair, P.O. Box 215, Portsmouth, Va. 23705-0215.

U.S. Yards Awarded Navy Ship Repair Pacts

Several U.S. shipyards have recently been awarded U.S. Government, military and Navy ship repair contracts.

On the East Coast, Moon Engineering, Portsmouth, Va., was recently awarded a $2,757,597 contract by the Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va., for work on the USS Scott (DDG-995).

Boston Graving Dock Corporation, East Boston, Mass., was awarded a $526,988 contract for the regular overhaul of Caisson #1 by the Supervisor of Shipbuilding, Conversion and Repair, Boston, Mass.

On the West Coast, San Francisco, California-based Service Engineering Co. was awarded a $1,328,279 for the FY91 phased maintenance availability of the USS Samuel Gompers (AD-37).

Continental Maritime, San Diego, Calif., was awarded a $582,230 contract for the regular overhaul of the LCU-1630.

NASSCO, also based In San Diego, was awarded a $2,409,736 for the Selected Restricted Availability of the USS Vincennes (CG-49).

Al Larson Boat Shop, Terminal Island, received contracts totaling over $3.9 million. One contract worth $3,379,569 was for the repairs and alterations to the USS Prarie (AD-15). A second contract worth $547,715 was for the regular overhaul of four LCM-8 Class vessels.

BIW Awarded $72.5-Million Contract For Lead Yard Services

Bath Iron Works (BIW), Bath, Maine, was recently awarded a $72.5-million contract by the Naval Sea Systems Command, Washington, D.C., for lead yard services associated with the DDG-51 Arleigh Burke Class guided-missile destroyer program.

'Arleigh Burke,' First Aegis Destroyer, Conducts Weapons Trials In Atlantic

The new Aegis destroyer Arleigh Burke (DDG-51), the lead vessel in what has been termed the U.S. Navy's ship of the 21st century, continued to live up to its advance billing when it recently engaged in weapons trials in the North Atlantic.

Featured on this month's cover of the "Naval Technology & Shipbuilding" section, the Arleigh Burke was designed and built by Maine's Bath Iron Works. The ship has been described by Defense Secretary **Richard Cheney** as the "cutting edge of technology." Her advanced radar and weapons systems can automatically track and guide weapons to multiple targets at the same time.

"Under very difficult weather conditions, Arleigh Burke performed exactly the way she was designed," said Commander **John G. Morgan**, the ship's prospective commanding officer. "She not only met, but exceeded several design expectations," he asserted.

Following summer acceptance trials, the 8,300-ton, 466-foot Burke will enter the fleet after a July 4 commissioning in Norfolk. Bath Iron Works has eight additional Burke Class ships under contract.

Ingalls Receives $28.7-Million Contract To Overhaul Destroyer

Ingalls Shipbuilding Inc., division of Litton Industries, was recently awarded a $28.7-million contract to overhaul the U.S. Navy destroyer USS Peterson (DD-969).

Saab Marine Level Gauges For Navy Oilers

The Swedish company Saab Marine Electronics has supplied level gauging systems for 18 U.S. Navy supply tankers (T-AO Class). The project, which started back in 1981, was concluded last year.

The U.S. Navy rarely accepts equipment manufactured in neutral countries. In most cases, orders are placed with U.S. manufacturers and, in some cases, with suppliers from other NATO countries. In this case, however, no other manufacturer, according to Saab Marine Electronics, could meet with the high demands which were to be put on the level gauging system. The use of radar technology for the level gauging was specified for the oilers. Saab Marine Electronics received the order based on its leading position in the market for the last 15 years.

"We have put a lot of effort into adapting the system to U.S. Navy standards, not to mention the work with the extensive documentation required," said **Anders Roos**, manager of the marine division of Saab Marine Electronics.

"The U.S. Navy always puts the highest of demands on the equipment on board its ships," said Mr. **Roos**. "We are very proud of the confidence that the U.S. Navy has shown in us in letting us deliver the level gauging systems throughout the entire class of ships."

The levels are measured by means of a radar transmitter, which is placed on top of each tank. The transmitter emits a narrow radar beam twice every second, which is reflected towards the liquid surface and picked up by an antenna. The frequency difference between the emitted and received signal is exactly proportional to the measured distance. The level is calculated with an accuracy of ±5 mm. There are 33 transmitters on each ship and all are connected to a central computer.

Most of the oilers have been constructed at Avondale Shipyards Division, Avondale Industries, Inc., outside of New Orleans. The first two level gauging systems were delivered in 1983, another two in '84, five more in '86 and one in '87. The final delivery of eight systems, worth about $4 million, was made last year.

For free literature detailing Saab Marine Electronics level gauging systems,

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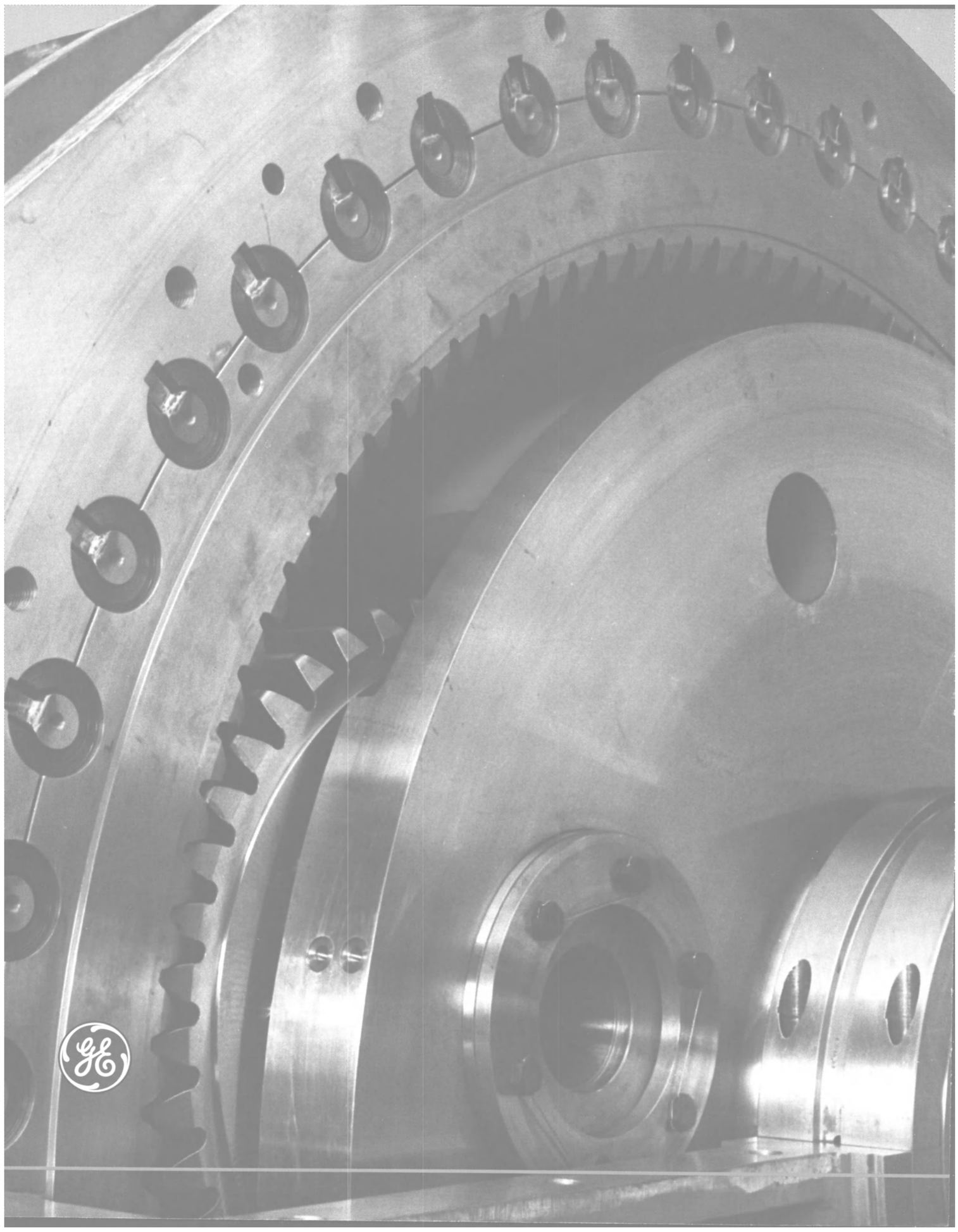
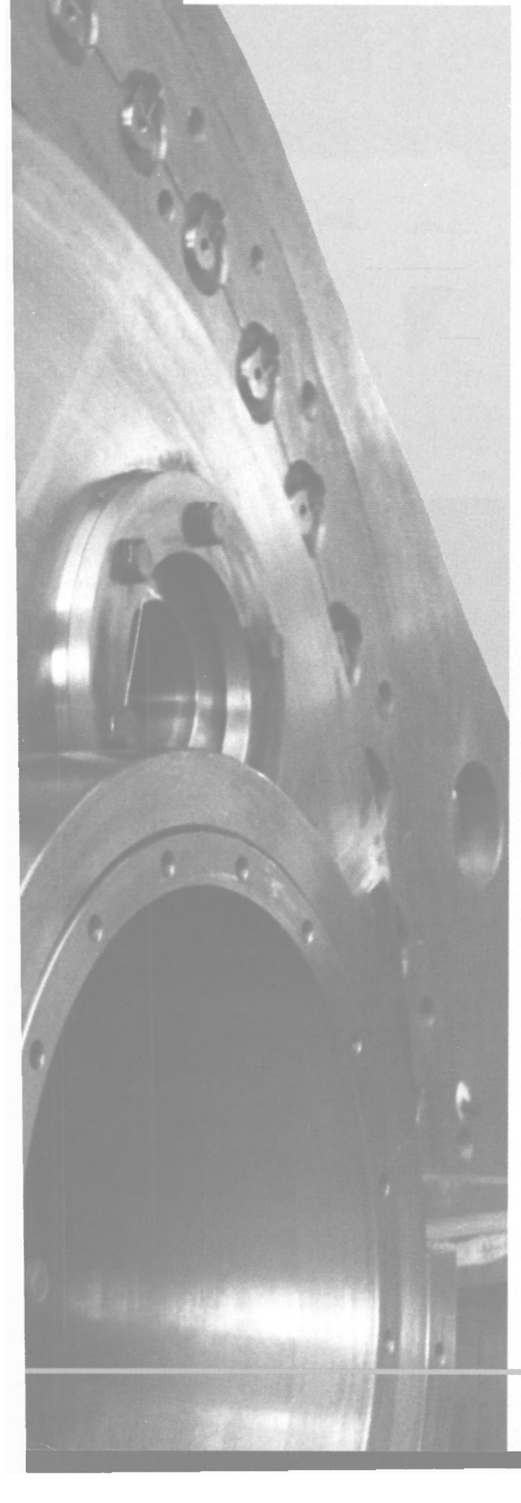




Epicyclic Gears

"GE and RENK join forces to bring this advanced technology to the U.S. Navy."

Gary Mowers
Manager - Gear Engineering
Lynn, Massachusetts

Searching The World

Globalization. Working with other world leaders to develop innovative ideas. "It's nothing new to GE," Gary said. "The Company knows this is the best way to incorporate the latest advances into our products and systems. While GE has designed, manufactured and delivered epicyclic gears to the Navy, we wanted to enhance our technical base. So we entered into a technology transfer agreement with the German gear manufacturer RENK TACKE. Their experience in epicyclic gears encompasses over 800 industrial, marine and naval applications."

"GE will manufacture epicyclic gears in the world's finest gear facility right here in Lynn," Gary explained. "In this way, the Navy will benefit from over 30 years of RENK epicyclic gear experience, as well as over 75 years of GE engineering and manufacturing experience producing propulsion and ships service systems for America's fleet."

Quiet Running

Our objective is to produce quiet, reliable, light weight, high power density epicyclic gears. According to Gary, this goal is within reach. "GE has the newest technology that's right for today's Navy. Now we are combining it with noise and vibration advancements we pioneered for propulsion systems aboard almost every class of ship and submarine in the fleet, including the latest generation of hardened and ground gears for Arleigh Burke destroyers. An important reason we are working with RENK is that their epicyclic gears offer unique noise reduction features."

Clusters Of Technology

While other companies only make gears, GE makes complete propulsion systems. "GE is using systems integration to harness multiple technologies to make the next generation of Navy ships a superior force," Gary continued. "For example, our epicyclic gears will be integrated into the advanced electric drive propulsion system, which we were contracted to develop for the Navy in the coming years. Beyond epicyclic gears, GE is leading the way with Propulsion Derived Ships Service, Intercooled Regenerative Gas Turbines and other advanced technologies."

A Proud Tradition

"The Navy is a valued customer" Gary concluded. "We offer unparalleled expertise in the design, manufacture and test of totally integrated propulsion and ships service power systems. It's the GE difference. The successful application of advanced epicyclic gearing is a mission we share with the Navy. As in the past, we will accomplish this mission."

GE People:
Qualified, Committed, Proud

Circle 310 on Reader Service Card

GE Naval & Drive Turbine Systems

PBI Launches MCM-10, USS Warrior, Seventh in Series Of 11 For Navy; Lays Keel For MCM-12, USS Ardent

The 224-foot wooden mine countermeasure ship MCM-10 was recently launched at the yard of Peterson Builders, Inc., Sturgeon Bay, Wis.

The sponsor of the ship, **Penelope L. Nyquist**, wife of Vice Adm. **John W. Nyquist,** christened the ship Warrior. Her daughter, **Andrea Nyquist**, assisted her as maid of honor.

The Honorable **Toby Roth**, U.S. Representative for Wisconsin's Eighth Congressional District, gave the keynote address. Additional speakers during the Navy ceremony were Rear Adm. **Robert E. Traister**, USN, Deputy Commander for Surface Combatants, Naval Sea Systems Command, Washington, D.C.; Vice Adm. **John W. Nyquist**, USN, Assistant Chief of Naval Operations (Surface Warfare) Washington, D.C.; and Capt. **Neil Collins**, USN, Sturgeon Bay Supervisor of Shipbuilding. **Ellsworth L. Peterson**, president of Peterson Builders, gave the welcome address.

The Warrior is the seventh MCM launched at PBI in a series of 11 MCM ships contracted with the U.S. Navy. Peterson Builders is one of the few remaining shipyards with the expertise, facilities and knowledge to construct large wooden ships today. PBI is entering its fifth decade of minecraft ship construction and has built minecraft for 13 different navies around the world.

The mine countermeasure ships accommodate a crew of 81, and are the Navy's largest wooden hulled ship. A wide variety of special skills, equipment and materials are utilized in laminating the ship's major structure from large timbers of Douglas fir, white oak and Alaskan cedar.

The MCM incorporates modern mine countermeasure technology into a specially designed platform which includes low magnetic signature diesel engines, a precise electronic navigation system, a mine-hunting and classification sonar, and a mine neutralization system.

The MCM mission is to clear the bottom and water volume of mines in coastal and offshore areas. Production of the MCM ships is underscored by an extensive array of tests for shock, noise, vibration and magnetic signature. As a product of dedicated effort and resources, the MCM will fulfill an important role in the long-standing objective to maintain the nation's mine countermeasure capability.

Overall length of the MCM ships is 224 feet. Draft is 11 feet 3 inches and beam measures 38 feet 11 inches. Full load displacement of the ships is 1,250 tons. The MCM is powered by four diesel engines rated at 600 hp per unit. They are equipped with a 350-hp bow thruster, and electric power is furnished by three 60-Hz, 375-kw generators.

MCM-1 Avenger, the lead ship of this new MCM Class built at PBI, is deployed to the Persian Gulf. MCM-3 Sentry and MCM-5, delivered in 1989, are homeported in San Diego, Calif., and Newport, R.I., respectively. MCM-6 Devastator was commissioned in October 1990 and is now homeported in Mayport, Fla., along with MCM-8 Scout which was commissioned in December 1990. MCM-9 Pioneer was launched in Sturgeon Bay in August 1990, and MCM-10 Warrior was launched this past December at the builder's yard. Peterson also has contracts for MCM-11 Gladiator, MCM-12 Ardent, for which the keel was recently laid at the yard, MCM-13 Extrous and MCM-14 Chief, with deliveries scheduled for 1992-1994.

For free literature on the facilities and capabilities of Peterson Builders,

Circle 32 on Reader Service Card

MCM-10, USS Warrior being launched at Peterson Builders in Sturgeon Bay, Wis.

Shown above during the christening and launching of the seventh MCM built at PBI for the U.S. Navy, left to right: Capt. **Neil Collins**, USN, Sturgeon Bay Supervisor of Shipbuilding; **Ellsworth L. Peterson**, president, PBI; **Andrea Nyquist**, matron of Honor; **Penelope L. Nyquist**, sponsor; and Vice Adm. **John W. Nyquist**, USN, Assistant Chief of Naval Operations (Surface Warfare), Washington, D.C.

James N. Miller Signs Swath Ocean Agreement

James N. Miller & Sons of St. Monans, Fife, Scotland, has signed an exclusive agreement with Swath Ocean International to build their range of small waterplane area twin-hull (SWATH) vessels for the European market.

Swath Ocean and Miller's also envision adding into their agreement the outfit of the Swath Ocean Regency and Super-Regency high-speed RO/RO ferries at the McTay Marine Shipyard in Bromborough near Liverpool. Miller's and McTay's are commonly owned by Mowlem Regional Construction Company, a part of the John Mowlem PLC Group.

The vessels—originally designed by Swath Ocean in 1979—are renowned in the U.K. for their advanced seakeeping capabilities compared to monohulls and multihulled vessels, including catamarans.

Orders are currently under negotiation for the Swath 2000 and 4000 models. James N. Miller is due to start work on these vessels in early 1991 with plans underway to extend the agreement to cover the Regency and other classes in the near future.

The recently announced steel-hulled Regency and Super-Regency high-speed RO/RO ferries marketed by Swath Ocean are 1,600 and 2,300 tons, respectively, and can carry 125 to 247 vehicles plus 450 and 750 passengers at respective service speeds of 38 and 35 knots employing Rolls Royce 2C Spey marine turbines.

The Swath Ocean agreement will increase Miller and McTay's current product range which includes tugs, passenger vessels, fishing boats, pilotboats and catamarans.

For free literature on the facilities and capabilities of James N. Miller,

Circle 37 on Reader Service Card

For further information and free literature on Swath Ocean,

Circle 36 on Reader Service Card

GE Technical Services Receives $350 Million Inmarsat Satellite Order

Inmarsat will acquire four communications satellites of its next generation type, Inmarsat-3, under a $350 million contract signed recently in London with GE Technical Services.

A total of $700 million will be involved for Inmarsat to put the satellites into operation, which could be followed by order options for five more.

The first use of spot beams to direct communications power to areas where it is most needed will begin with the introduction of the satellites in 1994. Eight times greater power than is now available will be provided, as well as the capacity for each satellite to handle up to 650,000 telephone and telex calls a day—10 times greater than the present Inmarsat-2 spacecraft.

Inmarsat predicts that by the end of the decade there will be 1 million terminals in use worldwide of which more than 100,000 are expected to be maritime.

White Fleet Charters Kvaerner Reefers In $30 Million Deal

Great White Fleet, the chartering arm of leading fruit company Chiquita Brands, has chartered three former Polly Peck refrigerated carriers recently acquired by Norway's Kvaerner group in a deal worth $30 million over two years.

Options for annual extensions for a maximum of three additional years are also included in the charters, which relate to newbuildings purchased from PPI Del Monte Fresh Produce.

Tundra King, the first of the vessels, delivered at the end of January, began sailing immediately for the Great White Fleet. Upon delivery from their Spanish builder, the other reefers—Tundra Queen and Tundra Princess—will enter their charters.

Ulstein Hatloe Delivers Polar Research/Passenger Vessel To Rieber Shipping

Ulstein Hatloe A/S of Ulsteinvik, Norway, recently delivered the 5,129-gt combination research/passenger ship Polar Circle to Rieber Shipping Company Polar Circle.

With a length of 300 feet, the Polar Circle can accommodate a total of 120 passengers and crew in 65 cabins. She has a 96-seat restaurant, three lounges, library, and bar.

For research work, the vessel is fitted with dry and wet laboratories, a helideck and hangar aft.

Propulsion equipment includes twin Bergen Diesel main engines, rated at 4,020 hp at 750 rpm, Ulstein propellers and Renk-Tacke marine gears.

The Polar Circle is also fitted with two Leroy Somer shaft generators, each with an output of 1,980 kw, as well as auxiliary and emergency generators.

Other equipment includes Valmet Automation engine room systems, deck cranes from Hagglunds, JRC satcom equipment, and MacGregor-Navire cargo and provisions hatches.

Based upon previously built Rieber Shipping Antarctic vessels, the Polar Circle has the capability to break 3 feet of ice at three knots and a range of 4,000-5,000 nautical miles.

For free literature detailing the shipbuilding and vessel repairing services of Ulstein Hatloe,

Circle 3 on Reader Service Card

Amoco, China Sign Joint Agreement To Undertake $500 Million Oil Project

A joint-venture agreement between Amoco Corp and China was recently signed to develop an oil field in the South China Sea. The project is expected to cost around $500 million and produce 50,000 barrels of oil a day, a spokesman for the company said.

Amoco's chairman and chief executive officer, **Richard M. Morrow**, said: "Since discovering the field in 1987, Amoco has conducted extensive evaluations in this South China Sea area, which will enable us to overcome challenges presented by conditions such as deep water, adverse weather, relatively heavy oil and complex reservoir properties."

China, at 24 billion barrels, has the world's 10th-ranked oil reserves, just behind the U.S. with 25.8 billion. China was the No. 6 producer in the world in 1989, with output of just over 1 billion barrels.

Since China opened the country to foreign exploration in 1980, at least 31 companies have spent more than $1 billion exploring for oil.

The field would require horizontal drilling, subsea wells and floating production systems, Mr. **Morrow** said.

Amoco was granted a 49 percent share in the venture, which was signed in Houston by Amoco and the China National Offshore Oil Corp.

Norwegian Partners Buy Six Soviet-Owned Carriers For Over $100 Million

In a deal worth more than $100 million, a Norwegian partnership consisting of bulk and gas carrier specialist Havtor A/S and Oslo-based shipbroker Steensland, has bought six Soviet-owned gas carriers.

Previously operated by the Latvian Shipping Company under the Cyprus flag, the 12,000-cubic-meter vessels will now be transferred to the Norwegian International Ship Register (NIS). The vessels will be manned by Norwegian officers, but under an agreement with Latvian Shipping they will continue to employ Soviet ratings.

Havtor will be responsible for the technical and commercial management of five of the ships, while Steensland will manage the sixth vessel.

The six gas carriers, which can handle cargoes down to a temperature of -48 degrees C, were the first series of six ships built by Germany's Papenburg yard for Latvian Shipping in the mid-1970s.

Sources Of U.S. Oil Imports And U.S. Oil Companies' Role In The Mideast

Before the Organization of Petroleum Exporting Countries (OPEC) rose to power in the 1970s, U.S. oil companies had a major role in both the ownership and operation of oil production facilities in the Mideast. Since then, that role has diminished greatly as the governments of the region have assumed ownership of their national oil industries. Today, there are essentially no American-owned production facilities in the area, although U.S. companies own or hold a partial interest in some Mideast refineries and petrochemical plants and several thousand Americans still work in the oil industry in the region.

The Saudi Arabian Oil Company (commonly called Saudi Aramco) is a corporation wholly owned by the Saudi Arabian government that is the sole producer of oil and natural gas in that nation.

Aramco was a partnership among Chevron, Exxon, Texaco and Mobil. It had its origins in an exploration agreement signed in 1933 by Standard Oil of California (or Socal—Chevron's predecessor company) and the Saudi government. After five years of futile efforts, exploratory drilling finally found commercial quantities of oil in 1938, but large-scale oil production commenced only in the post World War II period. From less than 20,000 barrels per day (b/d) before 1944, Saudi production rose to 500,000 b/d by 1950 and to 3.5 million b/d by 1970. In 1980, Saudi production peaked at 9.6 million b/d, following which it fell once more as high oil prices reduced international demand.

Beginning in 1973, Saudi Arabia bought out the ownership interests in Aramco of the American oil companies. The takeover was an amicable and orderly process that proceeded over an extended period. Beginning with the acquisition of a 25 percent share in 1973, Saudia Arabia's government increased its share to 60 percent in 1974 and eventually to 100 percent in 1980, when it paid for substantially all of Aramco's assets.

Today, of Saudi Aramco's 43,000 employees, only about 2,500 are Americans. The company also draws on the expertise of another 2,000 or so resident Americans on loan from U.S. oil companies.

Most of the Mideast oil industry assets formerly owned by U.S. companies were transferred to the Mideast countries during the 1970s. While in some cases (Algeria, Iraq and Libya), the transfer was accomplished by expropriation, in most others (Saudia Arabia, Iran, Kuwait, Abu Dhabi and Qatar) it took the form of gradually increasing "participation" agreements that extended over a number of years.

American companies still own some assets in the area. For example, Texaco owns a refinery (and a 50-percent share in the crude oil production that supplies it) at Mina Saud in the Neutral Zone between Saudi Arabia and Kuwait. That facility, with a capacity of 50,000 b/d was closed down immediately after the Iraqi invasion and the 45 or so U.S. citizens who worked there were evacuated. Amerada Hess has a small share in some oil fields in Abu Dhabi, amounting to about 9,000 b/d. Conoco has an equity interest in oil fields in nearby Dubai which produce 110,000 b/d. Mobil has 50 percent ownership of a refinery at Yanbu in Saudi Arabia, with a capacity of 250,000 b/d, as well as a petrochemical plant there. It also has a smaller share in other operations in Saudia Arabia, including a lubricating oil refining plant. Exxon also owns shares of petrochemical plants in Saudia Arabia and Abu Dhabi. These operations employ several hundred Americans.

In summary, the role played in the Mideast by the U.S. oil industry as a whole and the value of the physical assets owned by U.S. oil companies today are both far smaller than they were 20 years ago.

Oil Supply Data

Sources Of U.S. Oil Imports

Before The Embargo Of Iraq/Kuwait Oil

The Persian Gulf supplied 25.3 percent of the crude oil and petroleum products imported into the United States from January to July 1990: 8.2 percent from Iraq, 14.8 percent from Saudia Arabia, and 1.2 percent from Kuwait. Small amounts also came from Oman, Qatar and the United Arab Emirates.

OPEC nations outside the Middle East—Venezuela, Nigeria and four others—provided 29 percent. Canada, Mexico and other non-OPEC nations outside the Middle East supplied the remainder.

After The Embargo

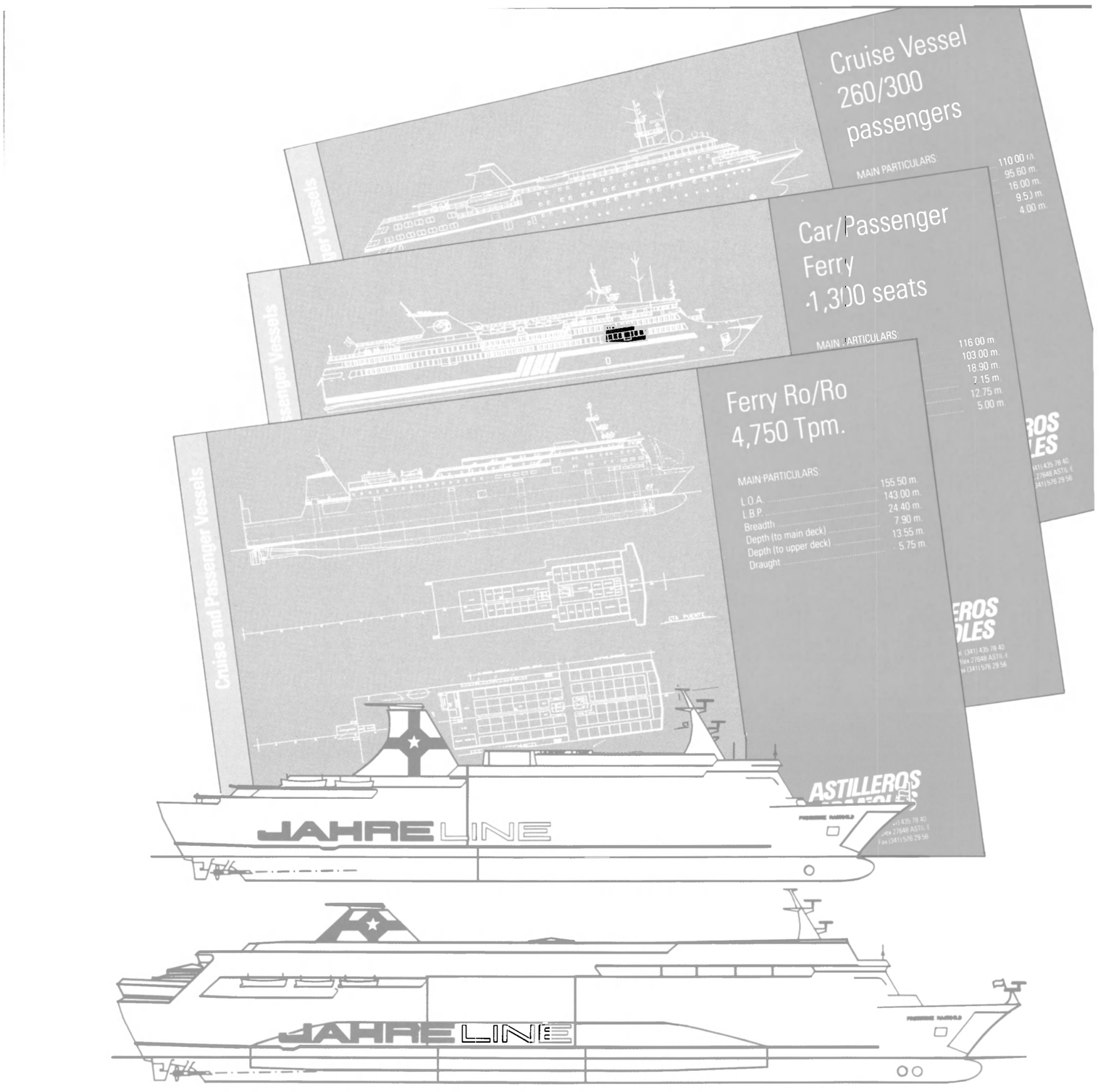
According to the most recent information available, Persian Gulf petroleum imports to the United States fell during the months immediately following the early August 1990 United Nations' embargo of Iraqi and Kuwaiti supplies. However, because total U.S. imports also fell, there was only about a 2 percent drop in the Persian Gulf share of that total. The decline in Persian Gulf imports was gradual, in part because petroleum supplies that left Iraq and Kuwait before the embargo arrived at U.S. ports during August and September. Also, during this same period, Saudi Arabia, among other Persian Gulf countries, took steps to increase daily production.

Thus, Persian Gulf imports averaged 23.4 percent of total U.S. imports during September and October 1990. Of this amount, 20.7 percent came from Saudia Arabia, 2.3 percent from Iraq, 0.2 percent from Kuwait and 0.2 percent from Oman.

In addition, OPEC nations outside the Middle East—Venezuela, Nigeria and four others—provided 29.9 percent in September and October. Canada, Mexico and other non-OPEC nations outside the Middle East supplied the remainder.

From January to July 1990, U.S. petroleum imports, as a percent of domestic deliveries, reached 50 percent, the highest seven-month level in history. During September and October 1990, imports dropped to about 42 percent of domestic demand. The reasons for the decline include a drop in oil use because of higher world oil prices and a weaker economy plus a drawdown in inventories during a period of reduced availability of supplies.

Japan and Western Europe also rely on the Persian Gulf for a substantial portion of their oil imports. In 1989, Japan, which imports virtually all of its oil, imported a 4.4 percent of its oil from Iraq, 6.8 percent from Kuwait and 15.8 percent from Saudia Arabia. In 1989, Western Europe, which imports about 75 percent of its oil, imported 8.9 percent of its oil from Iraq, 4.7 percent from Kuwait, and 11 percent from Saudia Arabia.



Cruisers: we're on the move

When Norwegian shipowner I/S Jahre Line wanted to re-build its 16.600 GRT ferry Princesse Ragnhild -a major conversion job involving lengthening and upgrading- they came to Astilleros Españoles.
This contract strengthened our position in the international cruise-ship market for conversions and newbuildings.
New expertise, new prefabricated cabin shops of the highest standards, new technologies and craftsmanship underlie our strong marketing drive aimed at new and interesting cruiser newbuildings.

The designs are ready.
Call on us.

ASTILLEROS ESPAÑOLES

For further information
Padilla, 17
28006 Madrid, Spain

Tel. (341) 435 78 40
Telex 27648 ASTIL-E
Fax (341) 576 29 56

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The Shipbuilders of Spain

NAVIGATION & COMMUNICATIONS EQUIPMENT

—A Review—

Recent technological breakthroughs and advancements in electronics, computer-controlled systems and software, and the introduction of Inmarsat satellite communication services have led to the development of a number of new innovative marine navigation and communications products.

More powerful, more compact ARPAs, radars, integrated bridge systems, mobile satellite telephone systems, GPS plotters, EPIRBs, etc., with state-of-the-art cost-effective features continue to be introduced onto the marine market by major electronics suppliers from around the world.

In an effort to sort out some of the numerous choices, the editors of MARITIME REPORTER have asked a number of major electronics manufacturers and suppliers to report on their latest navigation and communication products. The following review is based on information received as of press time.

For More Information

To receive free literature describing any of the high-tech products detailed in this review, circle the appropriate Reader Service Number listed for each company using the postage-paid card bound into the back of this issue.

AT&T

AT&T recently unveiled a new family of secure telecommunications products tailored to meet the specific requirements of customers who handle sensitive but unclassified government information.

The new product line, AT&T STU-III Secure Communications Products, 2000 Series, addresses three overlapping applications in the communications security market. It embraces both secure voice and data capabilities with an innovative modular design which is easily adaptable to individual customer needs.

AT&T's STU-III 2000 Series includes a secure voice device to protect sensitive conversations, a secure data device to secure data or facsimile transfer, and a secure voice/data terminal incorporating both voice and data functions.

Each device in AT&T's STU-III 2000 Series of secure telecommunications equipment may be used by departments of federal, state and local governments, law enforcement agencies, and selected corporations and academic institutions.

For free literature detailing AT&T's STU-III, Series 2000, Secure Communications Products,

Circle 62 on Reader Service Card

ALDEN ELECTRONICS

Alden Electronics, Westboro, Mass., is introducing the Alden Satfind-406 EPIRB (Emergency Position Indicating Radio Beacon).

Alden's 406 EPIRB transmits the location and identity of equipped vessels in distress anywhere in the world to shore locations via the COSPAS-SARSAT orbiting satellite system. Alden's EPIRBs are available in two basic models: Category 1 features an automatic release mechanism which deploys the EPIRB before it reaches a depth of four meters. The Category 2 version is deployed manually.

The Alden Satfind-406 EPIRB contains a powerful transmitter operating at both the standard 121.5 MHz and the new 406 MHz frequencies to alert Search and Rescue personnel. Combined, Alden reports the two frequencies can reduce the search area by 20 times that which was possible with older EPIRBs. This provides faster and more accurate location and recovery.

The Satfind-406 EPIRB meets U.S. Coast Guard, Canadian and COSPAS-SARSAT specifications and is approved for use on commercial and recreational vessels.

Armand Bouchard, manager of marine sales at Alden, stated: "The Satfind-406 EPIRB complements the Alden line of Marinefax and Faxmate recorders in that it helps assure safety at sea for commercial vessels or private yachts. Like the Marinefax and Faxmate, the Alden Satfind-406 EPIRB will be manufactured at Alden's Westboro, Mass., facility and sold through Alden's marine electronics dealer distribution network."

For free literature detailing the Satfind-406,

Circle 61 on Reader Service Card

COMSAT

COMSAT Mobile Communications, Washington, D.C., recently announced the completion of its second Inmarsat Coast Earth Station (CES) at Southbury, Conn., which now enables COMSAT to serve both the Atlantic Ocean Region-East (AOR-East) and Atlantic Ocean Region-West (AOR-West) within Inmarsat's new four-ocean region coverage area. COMSAT claims to be the only Inmarsat signatory offering this service.

COMSAT said that the additional ocean region will allow it to offer improved service that will result in greater reliability and less congestion, expanded Atlantic Ocean Region coverage, and the development of new services for maritime, aeronautical and international land mobile customers.

"Ships located in the Atlantic Ocean should decide which AOR satellite is most appropriate for their operations and then notify their shore-based contacts of the appropriate ocean code to use," said **James Jancso**, COMSAT Mobile Communications' vice president of operations.

Vessels operating with the AOR-East satellite can be reached by dialing the 871 ocean area code before the ship's number. The AOR-West ocean area code is 874. Mr. **Jancso** said that if the wrong area code is dialed, callers will receive a recorded message that the ship is not operating with that satellite.

COMSAT Mobile Communications, a business unit of COMSAT Corporation is based in Washington, D.C., and provides maritime, aeronautical, and international land mobile satellite communications.

For free literature detailing the communications services of COMSAT,

Circle 86 on Reader Service Card

ELECTRONIC MARINE SYSTEMS

Electronic Marine Systems, Rahway, N.J., has introduced the "Chart Viewer," a new U.S.-made portable charting instrument. The Chart Viewer shows a precisely detailed reproduction of NOAA charts, with buoys, depth markings and drop down menus on a flat screen display. According to Electronic Marine Systems, the unit holds a complete database of all navigational aids which can be easily updated using Chart Viewer's interactive software. After connecting Loran, GPS or Satnav receivers to the Chart Viewer, it shows own

ship position and movements across the NOAA charts.

For free literature detailing the Chart Viewer,

Circle 63 on Reader Service Card

FURUNO

Furuno USA, Inc., South San Francisco, Calif., recently introduced the GP-1500 GPS navigator/plotter, a unique combination of the company's LP-1000 track plotter and Furuno's GPS receiver technology. The GP-1500 has a high resolution seven-inch flat screen CRT and a sophisticated second-generation dual channel receiver with eight-state Kalman filter for reliable fixes and multiplex tracking of up to five satellites. Voyage planning can be either from waypoint to waypoint, or as many as 10 different routes consisting of up to 10 waypoints each can be stored in the memory. Memory capacity is 99 waypoints, 1,800 track points and 1,524 event marks, with four different event symbols for maximum navigation flexibility. In addition, the GP-1500 provides 600 trackpoints and 508 event marks on plug-in RAM cards and utilizes Furuno's factory digitized charts on ROM cards.

Plot scales are continuously adjustable from 0.14 to 360 nm and plot interval can be set in either time or distance units. Ship's track is calculated on two separate pages, each of which can have different range scales, and either page can be displayed at the flip of a switch. Other standard features include autopilot output, cross-track steering indicator, 17 lines of on-screen nav data, menu-driven operation, 100-knot tracking velocity, audio/visual alarms for arrival/border/XTE, highly accurate clock/calendar, backlit tactile keyboard, and the ability to display water depth and temperature on screen with appropriate optional sensors.

The GP-1500 has an extensive self-test program and provides data input/output in both NMEA and CIF formats, as well as accommodating RS232C peripherals.

For free literature detailing the new GP-1500 from Furuno,

Circle 64 on Reader Service Card

HENSCHEL

Henschel Inc., a subsidiary of SPD Technologies, has announced its microprocessor-based shipboard announcing systems have been selected for use aboard the next two nuclear-powered aircraft carriers, USS John C. Stennis (CVN-74) and USS United States (CVN-75). The system includes microphone stations, power amplifiers, and control panels, and provides general announcing, aviators announcing and flight deck announcing systems. Emergency alarms are integrated into the system and include general quarters, chemical, collision, flight warning and flight crash alarms.

The Henschel announcing system is designed to electronically enhance sound quality and intelligibility under both routine and adverse ship operating conditions. In the case of aircraft carriers, increased intelligibility is necessary because of the particularly difficult acoustic conditions found in the immense hangar and flight decks of these ships.

The Stennis and the United States, under construction at Newport News Shipbuilding, will be the fourth and fifth ships to receive this system. Previously, identical systems were selected for CVNs 72 and 73, providing an excess of 15,000 watts of audio power. A smaller system is being delivered to the USNS Harkness (T-AGS-32) providing 200 watts. Regardless of system size, the Henschel systems offer full design features including: enhanced speech quality, overload protection, built-in test features, simple expandability, and modular architecture for quick repairs.

For free literature detailing Henschel products,

Circle 87 on Reader Service Card

HOSE-MCCANN

Hose-McCann Telephone Co., Englewood, N.J., a pioneer in marine sound-powered telephones, recently celebrated its 50th anniversary as a leader in the production of safe, reliable, state-of-the-art communication systems.

This New Jersey-based corporation fills equipment needs of vessels

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NAV/COM REVIEW

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throughout the U.S. and the world's leading maritime nations.

Hose-McCann's entire product line, which includes sound-powered telephones, navigation light panels, audible and visual signaling devices, and a full array of U.S. Navy Symbol Number Items, is manufactured and tested in accordance with the latest military specifications. Where applicable, Hose-McCann products comply with National Electrical Safety Code requirements, are accepted by the U.S. Navy and Coast Guard.

One notable product line offered by Hose-McCann is the Series 9500 telephone system, which was developed specifically for the maritime industry. The Series 9500 is a completely modular, sold-state digital system. It can provide up to 32 shore trunks and as many as 128 stations.

At sea, the Series 9500 performs as a PBX, while on shore as a PABX.

For free literature detailing the Hose-McCann product line,

Circle 88 on Reader Service Card

ICOM MARINE

ICOM Marine, Bellevue, Wash., recently introduced a new 24-nautical mile radar, the MR-40, designed for mid-size commercial boats and recreational craft.

All required information is shown on a bright 9-inch green phosphor CRT with multiple pulse lengths. Four selectable intensity levels let you read all indicators clearly, day or night. View up to 37 nautical miles.

With ICOM's large "Omni-Knob" selector, you can quickly move the EBL (Electronic Bearing Line), VRM (Variable Range Marker) Cursor, and range functions.

A high performance slot-array antenna, featuring a durable magnetron with stable 3 kw (PEP) output power and high sensitivity give you 24 nautical mile range. For even longer targets you can use the center shift function to expand measurement range up to 37 nautical miles.

Unlike conventional marine radars, the MR-40 gives you north-up display capability by connecting a flux gate compass sensor. Head-up display, showing your bow point direction, is also available with the touch of a button.

Even when you're not observing the CRT display, if islands, landmasses, ships or other objects enter a preset alarm zone, beep tones warn of potential collisions. You can also connect an external bell or buzzer for a louder off-bridge alarm.

For more information on ICOM's MR-40 radar,

Circle 65 on Reader Service Card

IDB COMMUNICATIONS

Since August of 1990, IDB Communications has fulfilled the requirements of the U.S. government and the worldwide media for reliable, portable communications links from the Persian Gulf. On January 1, 1991, IDB introduced yet another solution by becoming the first non-signatory carrier to be allowed to access Inmarsat, the satellite system covering the world's four major ocean regions.

Since that time, IDB has become a major distributor of portable Inmarsat "flyaway phone" terminals to the government and media, providing equipment, satellite time, transmission service and personnel as needed for integral communications links from the Persian Gulf War.

CNN is one of IDB's major media clients in the Gulf, accounting for the highest usage by far. IDB's other "flyaway phone" clients in the Gulf include NBC, Tokyo Broadcasting System and CBS.

Each "flyaway phone" user is assigned a unique access number, the same kind of code used by ships, for indentification by Inmarsat. Signals from the Gulf are being routed via the Indian Ocean Region satellite to OTC in Perth, Australia, and then via international long-distance carriers to their end country.

IDB Communications Group, Inc., based in Los Angeles, is a lead-

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NAV/COM REVIEW

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FURUNO

Furuno USA, Inc., South San Francisco, Calif., recently introduced the GP-1500 GPS navigator/plotter, a unique combination of the company's LP-1000 track plotter and Furuno's GPS receiver technology. The GP-1500 has a high resolution seven-inch flat screen CRT and a sophisticated second-generation dual channel receiver with eight-state Kalman filter for reliable fixes and multiplex tracking of up to five satellites. Voyage planning can be either from waypoint to waypoint, or as many as 10 different routes consisting of up to 10 waypoints each can be stored in the memory. Memory capacity is 99 waypoints, 1,800 track points and 1,524 event marks, with four different event symbols for maximum navigation flexibility. In addition, the GP-1500 provides 600 trackpoints and 508 event marks on plug-in RAM cards and utilizes Furuno's factory digitized charts on ROM cards.

Plot scales are continuously adjustable from 0.14 to 360 nm and plot interval can be set in either time or distance units. Ship's track is calculated on two separate pages, each of which can have different range scales, and either page can be displayed at the flip of a switch. Other standard features include autopilot output, cross-track steering indicator, 17 lines of on-screen nav data, menu-driven operation, 100-knot tracking velocity, audio/visual alarms for arrival/border/XTE, highly accurate clock/calendar, backlit tactile keyboard, and the ability to display water depth and temperature on screen with appropriate optional sensors.

The GP-1500 has an extensive self-test program and provides data input/output in both NMEA and CIF formats, as well as accommodating RS232C peripherals.

For free literature detailing the new GP-1500 from Furuno,

Circle 64 on Reader Service Card

HENSCHEL

Henschel Inc., a subsidiary of SPD Technologies, has announced its microprocessor-based shipboard announcing systems have been selected for use aboard the next two nuclear-powered aircraft carriers, USS John C. Stennis (CVN-74) and USS United States (CVN-75). The system includes microphone stations, power amplifiers, and control panels, and provides general announcing, aviators announcing and flight deck announcing systems. Emergency alarms are integrated into the system and include general quarters, chemical, collision, flight warning and flight crash alarms.

The Henschel announcing system is designed to electronically enhance sound quality and intelligibility under both routine and adverse ship operating conditions. In the case of aircraft carriers, increased intelligibility is necessary because of the particularly difficult acoustic conditions found in the immense hangar and flight decks of these ships.

The Stennis and the United States, under construction at Newport News Shipbuilding, will be the fourth and fifth ships to receive this system. Previously, identical systems were selected for CVNs 72 and 73, providing an excess of 15,000 watts of audio power. A smaller system is being delivered to the USNS Harkness (T-AGS-32) providing 200 watts. Regardless of system size, the Henschel systems offer full design features including: enhanced speech quality, overload protection, built-in test features, simple expandability, and modular architecture for quick repairs.

For free literature detailing Henschel products,

Circle 87 on Reader Service Card

HOSE-MCCANN

Hose-McCann Telephone Co., Englewood, N.J., a pioneer in marine sound-powered telephones, recently celebrated its 50th anniversary as a leader in the production of safe, reliable, state-of-the-art communication systems.

This New Jersey-based corporation fills equipment needs of vessels

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ing supplier of transmission services for radio, television, data and voice communications via satellite and fiber optics.

For free literature detailing the communications services of IDB,

Circle 89 on Reader Service Card

KELVIN HUGHES

Over three years ago, U.K.-based Kelvin Hughes launched its new "Concept" range of navigational radar systems. At that time the "Concept" High Refresh (HR) range comprised of True and Relative motion systems with 12-inch (HR2000 R and T) or 16-inch (HR3000 R and T) monochrome displays, a full ARPA system with a 16-inch (HR3000 A) monochrome display, 10kw and 25kw "X" band and 30kw "S" band transmitters along with 1.8m. 2.4m and 3.9m antennas, turning mechanisms and interfaces for a variety of compasses.

While retaining their original specifications, including the high definition display screens, the systems have been changed. Today, the "Concept" range has been expanded and improved to contain a number of new features of benefit to the mariner. These include the introduction of a color monitor display, Electronic Switching Unit, Upmast transmitters, improved turning mechanisms and new software facilities.

Notable improvements to the Concept series include:

- The Monitor Expansion Unit (MEU), which allows up to six monitors to be remote sited from the main display at convenient locations.
- The Electronic Switching Unit, which is capable of interswitching up to a maximum of six separate Concept transmitter/receiver units and six Concept radar display units. The ESU allows for any one of the displays to become master of, and display the information from, any of the transmitter/receiver units.
- The introduction of upmast transmitters which lowers system purchase costs and installation time.
- Improvements to software facilities including Navigation Systems Interface, which enables external information from ship's navigation system to be fed into the Concept systems and displayed on screen, and External Mapping, which allows the storage of up to 200 screen generated maps.

For free literature detailing the Kelvin Hughes Concept Radar Series,

Circle 90 on Reader Service Card

KODEN

Koden's new GTD-2200 GPS track plotter combines the accuracy and range of satellite positioning with the features and convenience of a bright, seven-color graphic display.

The built-in Koden GPS receiver features parallel processing of the signal data, which can increase reception by up to four hours a day over multiplexed systems. And it eliminates the delay built into sequential GPS receivers, so that any change in speed is instantly displayed on the screen.

It also has the unique ability to convert lat/long into their corresponding Loran TD readings.

The plotter features a high-resolution nine-inch color screen, with plug-in chart cards to display the outline of surrounding land areas. Key positions on the chart (such as buoys, fishing equipment or navigational hazards) can be highlighted on the chart (and saved for future use), with seven different symbols, and 100 numbers per symbol for up to 700 different settable points.

For free literature detailing Koden International's GTD-2200 GPS track plotter,

Circle 66 on Reader Service Card

KRUPP ATLAS ELEKTRONIK

New navaid developments from Krupp Atlas Elektronik include a type-approved extension to the 7600-8600 Series of Rasterscan radars, the Atlas 8600 NAV. Designed for either stand-alone or integrated use, it provides a comprehensive range of integrated radar, ARPA and navigation display functions.

In conjunction with an adaptive

radar-controlled autopilot and INS configurations, the system permits automatic route planning and control functions. Selection of up to three different positioning sensors, including GPS, is also possible with direct display of lat/long grids on the radar screen. Own-ship position in lat/long is also displayed.

Up to 65 video maps of 60 elements each can be stored, and other features include manual acquisition of up to 20 targets and automatic tracking with target data readout, including CPA and TCPA. Guard zones and limitation lines for automatic acquisition and tracking of up to 40 targets can also be set.

Other new developments include an advanced bridge Nautical Consulting and Information System, the NCIS 1800. Comprising a keyboard display terminal and a series of user-oriented software modules, the system is designed for both on and off-line use. Typical applications include voyage preparation and planning, voyage monitoring and recommended procedures for emergency operations, including search and rescue; input and coding of weather data in addition to stability-monitoring computations is also possible.

For free literature detailing Krupp Atlas Elektronik's 7600-8600 Series of rasterscan radars or NCIS 1800,

Circle 67 on Reader Service Card

LITTON SPECIAL DEVICES

Litton's Special Devices division, Springfield, Pa., has delivered its 4,000th Emergency Rescue Beacon to its exclusive sales distributor, Koden International, Inc., Norwell, Mass. The EPIRB can help rescuers to locate maritime ships, pleasure craft, fishing vessels or other vessels in distress.

The rescue beacon is a self-contained aid that can automatically transmit an emergency signal at 121.5 MHz and 406 MHz to polar-orbiting satellites which relay the data to ground stations for high accuracy calculation of a craft's locations.

The rescue beacon is compactly designed, measuring 28 inches high and 12 inches in diameter and weighing 25 pounds, including the deployment mechanism.

The rescue beacon has received Canadian, Australian, and U.S. government approval for use on all marine vessels registered in their respective countries.

Litton Special Devices division is a unit of Litton's Servo Components group.

For free literature detailing EPIRBs from Litton's Special Devices division,

Circle 68 on Reader Service Card

LYNGSO-VALMET MARINE

One of the main principles behind the Integrated Ship Control System from Lyngso-Valmet Marine Company of Denmark is to reduce the workload of the ship's crew through a high degree of computer automation.

The aim is to achieve a very high degree of safety in machinery operation, as well as navigation and lookout. Consequently, all tasks relating to the ship's operation can be carried out with four levels of redundancy, from full computer automation through semiautomatic and hardwired operation to manual/local control.

The interface between man and machine is extremely important. An operator can control the ship's machinery from the Visual Display Unit by using the keyboard and trackball. The Visual Display Unit and keyboard are called the Ship Control Station.

Any mimic picture requested is displayed on screen, with full graphics and color. All mimic pictures are produced in a display processor, and all "activities" are shown as real-time functions.

The Integrated Ship Control System contains the autopilot, control of main engine(s), maneuver coordinator, alarm, monitoring, power management, control for ancillary machinery, as well as other required on board functions.

To integrate all the automation and navigation systems, a large amount of computer power is needed. The ISC is delivered to the shipyard in accordance with ISO 9001 QA Standards, which means that the project management is strictly controlled, with specific rules for the Factory Acceptance Test, Harbor Acceptance Test and Sea trial Acceptance Test.

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For more information on Lyngso-Valmet Marine's Integrated Ship Control System,

Circle 69 on Reader Service Card

MAGELLAN

Building on the success of its GPS NAV 1000, Magellan Systems Corporation, a leading manufacturer of GPS receivers for the boating market, has introduced the NAV 1000 Plus for commercial use.

Portable, mountable and able to be connected to a wide variety of navigation equipment, the Plus offers the next generation of NAV 1000 technology. Its innovative features maximize the accuracy of the U.S. Government's Global Positioning System (GPS).

Innovations include the Plus's delivery of rapid position updates (read-outs of current positions in latitude and longitude) by adjusting for the user's position every 2-1/2 seconds. The Plus's flexibility of use is further extended by a dataport, which allows the Plus to transmit navigation information in National Marine Electronics Association (NMEA) code (0183) to autopilots, video plotters and radar systems.

When used in conjunction with its bracket mount and external antenna, the NAV 1000 Plus offers excellent versatility—stand alone or portable GPS navigation information.

Operating as a permanent or backup GPS receiver, the NAV 1000 Plus is lightweight, completely waterproof.

For free literature detailing Magellan equipment,

Circle 70 on Reader Service Card

MAGNAVOX

Magnavox Advanced Products & Systems Co., Torrance, Calif., has introduced a new six-channel GPS navigation receiver which provides an extraordinary range of features. The new Magnavox MX200 GPS Navigator is designed specially for the professional navigator, and offers the highest possible levels of navigational accuracy and reliability at a competitive price.

The multi-channel continuous-tracking architecture of the MX200, according to Magnavox, provides important advantages over sequencing and multiplexing GPS receivers currently on the market. The Magnavox receiver uses six independent channels to track signals from all available GPS satellites simultaneously. The result is faster acquisition times, more precise and responsive position and speed measurements, and better receiver sensitivity. This translates into improved accuracy and more reliable performance.

The MX200's large, crisp backlit double super-twist LCD screen provides extraordinary brightness, resolution and contrast. It can be set for day or night-time viewing at the touch of a single button.

The MX200 uses multiple screens to show as much or as little navigational data as desired. At a glance, the navigator can view precise position information, course and speed over ground, set and drift, waypoint steering information and a visual graphic display of cross-track error.

The MX200 stores up to 200 waypoints and 20 different routes. You can program 20 different visual and sound alarms for conditions such as off-track and danger zones.

The MX200 is capable of receiving and processing differential navigation data from shoreside reference stations to remove various sources of error and enhance fix accuracy. In this manner, accuracies of better than 5 meters can be obtained. Differential navigation techniques are expected to be widely used in Vessel Traffic Systems and other applications where a higher degree of accuracy is required.

For further information on the MX200,

Circle 71 on Reader Service Card

MARINE SAFETY INTERNATIONAL

MarineSafety International (MSI) of Kings Point, N.Y., is offering a three-day tug-barge boat handling course designed for three or four trainess. Simulator exercises have been selected to provide maximum experience in: channel keeping in wind and current: docking and undocking; handling the speical forces induced by shallow water, channel banks, passing vessels; emergency boathandling; and working in waterways with ranges. The instructor can modify the exercises or the schedule to better fit each trainee's needs and experience level. Each course module consists of a discussion and briefing, one or more simulator exercises and a debriefing.

The objective of the course is to reduce the risk of groundings or collisions by providing captains and mates with the opportunity to practice and analyze their responses to challenging boathandling, traffic, environmental and accidental situations.

The course, which can be conducted by an MSI instructor or senior captain selected by a customer and assisted by MSI, will use a bridge simulator with tug controls, instruments, radar and communications, etc., with a full-color 240-degree azimuth, day-night visual scene. The simulator will create the feeling of a 2,200-hp tug pushing or with a 54,000-barrel barge on its hip or a 4,000-hp tug in notch with a 100,000-barrel barge. Simulated geographic areas will include both U.S. East and West Coast locations.

Courses are conducted at MarineSafety-CAORF, U.S. Merchant Marine Academy, Kings Point, N.Y. 11024. Two sessions are available: 8 a.m.-5 p.m. daily or 3-10 p.m. daily.

To discuss full details and the most convenient dates for training, call **Tom Garrigan** at (516) 773-5603, or,

Circle 91 on Reader Service Card

MIDLAND INTERNATIONAL

A three-in-one marine alert/communicator system, model 78-400 Power Max Loud Hailer, has been introduced by Midland International, Kansas City, Mo.

The 78-400 is a high-power loud hailer and pager, eight-function fog horn and intercom all in one compact unit. The hailer function delivers 120 watts of peak power. From its front panel, the operator can control optional speakers to sound either forward or aft, or simultaneously. The same speakers will also amplify received voice information from another vessel or craft not equipped with a hailer.

The Fog horn/notifier is multifunctional. Four Fog 400 Hertz alerts are available for power boat underway; power boat stopped; sailboat, fishing boat, towboat; and vessel under tow. In addition, the unit's custom computer-type microprocessor generates "bell" sounds for Vessel at Anchor and Vessel Aground, plus a "yelping" for Coast Guard and water patrol craft; and manually controlled tone blast of any duration.

For free literature detailing Midland's 78-400 Power Max Loud Hailer,

Circle 73 on Reader Service Card

MOBILE TELESYSTEMS

Mobile Telesystems, Inc. (MTI), Gaithersburg, Md., develops, manufactures and services a series of satellite communications terminals operating exclusively with the INMARSAT network.

MTI's customer service is backed by its worldwide service team, consisting of fully trained, authorized representatives in over 25 countries available 24 hours a day, seven days a week.

One product offered by MTI is the MCS-9120 satellite communications system. With the MCS-9120, dial any number in the world from the telephone on-board your vessel and you are connected in a matter of seconds. The transmission is instantaneous, clear and distortion-free.

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In addition, any office equipment compatible with a telephone line can be used with the MCS-9120 (such as telex, facsimile or computer).

The MCS-9120 features worldwide transmission capability characteristic of short-wave radio with the privacy found in cellular telephones. The MCS-9120 provides the capability of a fully integrated telecommunications network, customized to meet specific requirements.

For free literature detailing Mobile Telesystems' MCS-9120 satellite communications system,

Circle 55 on Reader Service Card

NAVAL ELECTRONICS

Tampa, Florida-based Naval Electronics Inc.'s MK20/22 Marine TV Antenna now feeds a brand new "Head-End" amplifier system. The new 3000 series of cassette amplifiers splits the TV spectrum up into several bands. Each band has its own amplifier with a high dynamic range "AGC" automatic gain control. This greatly improves system performance through lower noise and reduction of ghosting. A unique cascade filtering system incorporated in the 3000 series further reduces noise and the possibility of ghosting. For convenience, each amplifier "plugs in" to a cassette amplifier cabinet.

Naval Electronics has developed a computerized method of designing custom systems to meet exact customer requirements. This design service is free. Using the ship's "general arrangement drawings," and after consulting with the customer regarding special requirements, Naval Electronics' design team is able to quickly submit a proposal complete with engineering drawings, materials list and, pricing including installation if required.

On installment, Naval Electronics provides a troubleshooting diagram to help quickly isolate any faults that may occur.

In the past 15 years, Naval Electronics has become a world leader in MATV systems for use at sea. The company's antennas are in use by all NATO navies and are the replacement standard with the U.S. Navy and U.S. Coast Guard.

For free literature detailing Naval Electronics' products,

Circle 74 on Reader Service Card

NORCONTROL

Norcontrol A.S. Horten, Norway, offers its 4th generation ARPA and Navigation system—DataBridge 2000A. It has been developed to comply with the proposed future requirements for IMO/IHO. The system is designed for the rough marine environment and employs proven state-of-the-art technology to insure high quality, reliability and performance. The Norcontrol concept of modular technology ensures flexibility and adaptability to customer specified navigation equipment and functions. Easy and safe operation is handled by "direct addressing" softkey keyboard, a high resolution color display and separate alphanumeric data display. The DataBridge 2000A complies with international and local regulations of marine authorities and meets rules and requirements set forth by all major classification societies.

Radar picture presented on high resolution color display allowing true daylight viewing aslong with night time use. Digital signal processing significantly reduces clutter using CFAR circuitry, scan-to-scan and sweep-to-sweep correlation.

Manual and automatic tracking of 50 targets is offered. Total area tracking out to 55 nautical miles.

Dedicated keys control essential functions with less frequency used

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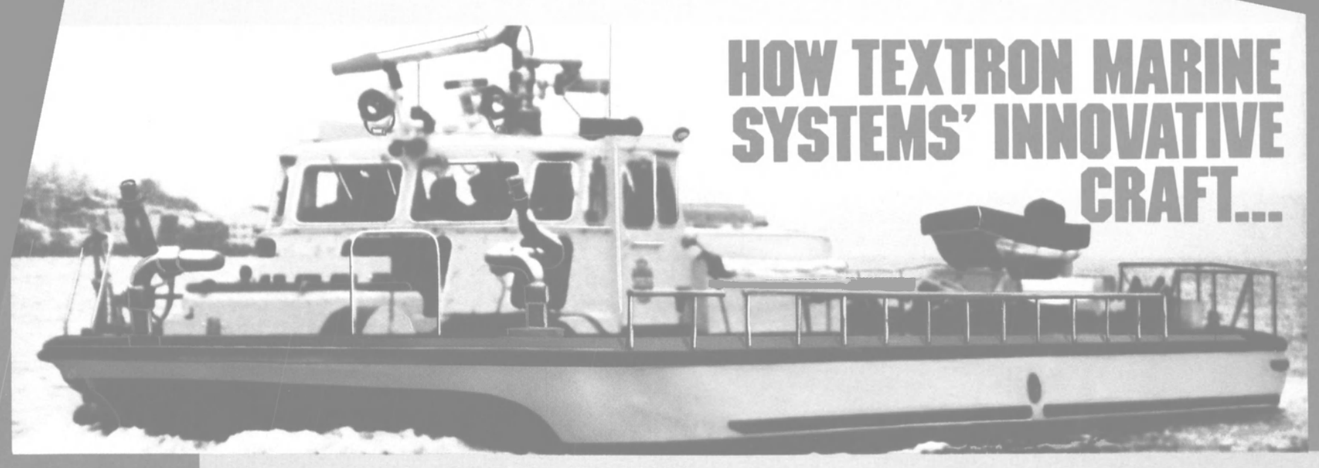
TEXTRON Marine Systems

Division of Textron Inc.



HOW TEXTRON MARINE SYSTEMS' INNOVATIVE CRAFT...

SOLVE TRANSPORTATION NEEDS...

AND GIVE NATURE A NEEDED LIFT.

From the first operational Surface Effect Ship (SES) Fireboat built in the United States, to the design of an air cushion water taxi for the Potomac, to a family of Utility Air Cushion Vehicles (UACV) supporting oil and gas operations in the marshlands, our innovative marine products serve commercial and military interests worldwide. But there's more to Textron Marine Systems' craft than meets the eye.

For example, the SES Fireboat will add a new dimension to fire suppression, search and rescue operations, security and pollution monitoring in New York City's harbor. Designed to conquer gridlock in cities like Washington, the air cushion water taxi will decrease travel time between airport and central city without making any environmental waves. And when Textron Marine Systems' UACV inadvertently crosses over bird nests during oil exploration in Gulf Coast areas, it does not destroy the eggs.

These are some of the ways Textron Marine Systems' technology serves society and protects nature.

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features available through a menu-driven softkey system.

Navigational features include fairways, radar maps, parallel index lines, trial maneuver, position input from fixed targets and navigation receivers, drift calculation, VRM/EBL and reference position.

Onboard system training is supported by four different built-in simulator scenarios.

DataBridge 2000A has sophisticated built-in on-line monitoring and off-line test programs as well as a full set of audible and visual alarm and monitoring functions are included.

For free literature detailing the DataBridge 2000A from Norcontrol,

Circle 75 on Reader Service Card

C. PLATH

C. Plath, Hamburg, a division of Litton Industries, Inc., recently introduced a new generation of gyrocompass, autopilots and speed logs.

The recently introduced Navipilot V autopilot has a specially designed LCD display with plastic foil keyboard and electro-luminescent illumination complies with the latest ergonomical standards. The Navipilot V is suitable for connection to a gyrocompass and magnetic compass and Loran-C/GPS, with continuous output of magnetic compass heading. In case of a gyro failure, all electronic equipment such as radar, satnav, satcom, etc., are fed corrected heading by magnetic compass.

The new Navigat XII gyrocompass is well-suited for desk console mounting on a bridge. This gyrocompass is suitable for ships of all types and provides a follow-up speed of 25 degrees per second. The master compass and power supply are delivered with prefabricated cables with plugs and terminal boards, which facilitates the installation works and saves costs. The Navigat XII also contains automatic switchover to 24V DC in case of main power failure.

For free literature detailing the Navipilot V or Navigat XII from C. Plath,

Circle 76 on Reader Service Card

RH TRADING

RH Trading, the dealer organization of the Radio Holland Group, offers the following new equipment:

The newly FCC approved Sailor remote controlled SSB Radio, Model T-2130. This SSB is part of the new generation "Compact 2000" series of communication equipment, with the quality and performance that Sailor is known for.

This is another step in the direction of a complete GMDSS package for Sailor. Some noteworthy features of the unit are its compact, rugged construction, 250-watt PEP transmitter, programmable quick select channels and scanning facilities, multiple function remote control capability, and fully prepared for future duplex, digital selective calling, scrambling, and automatic radio telex options, which features will be available soon.

The new JMC GPS, model GP-202, is a low priced, user friendly, five-channel multiplexed receiver system. It includes arrival and cross-track alarm features and NMEA 0183 output for Video Plotters or other navigation equipment.

Another new navigation product is the JMC F-830 Navigation Sounder, which uses eight-inch thermal paper and meets IMO specifications for shipboard navigation. The frequencies 28, 38, 50 and 200 KHz are switchable.

For free literature detailing the marine electronic equipment offered by RH Trading,

Circle 102 on Reader Service Card

ROBERTSON

Robertson Tritech A/S acquired Disc Navigation A/S in January 1990. The original business idea behind Disc Navigation was to develop a product that could replace traditional sea charts.

Robertson believed that this acquisition would complement their manufacturing experience and that they could further develop the Disc Navigation concept. Initially, product development would be directed into two areas. One would be to

incorporate updated official sea charts into Robertson's steering and navigation range of products. Equally important, additional product development would allow the system to satisfy the requirements for fully integrated bridge systems, the so called "one-man bridge."

Robertson's Disc Navigation can display approved electronic sea charts and is central to the fully integrated system. Sensors for Disc Navigation System are standard electronic instruments which also operate as stand-alone units.

On board the M/S Polar Circle, a combination cruise/research vessel operated by Rieber Shipping A/S of Bergen, Norway, the Disc Navigation System receives and displays all moving targets from two independent anti-collision ARPA radars.

In addition, the Disc Navigation System is interfaced to a gyrocompass, speed log, Decca Navigator, Loran C, GPS, wind speed and direction sensor, and an echo sounder.

It is also possible to interface the system to a Standard A or Standard C satellite communication system for automatic updating of the official sea charts.

The navigator can plan a detailed sailing route on the Disc Navigation System. The system, which checks the sailing route, continuously surveys all moving targets and automatically sounds an alarm if the distance to other vessels or their courses are about to result in a dangerous situation in relation to the planned course.

For free literature detailing Robertson products,

Circle 92 on Reader Service Card

SEA

SEA Inc., of Mountlake Terrace, Wash., a unit of Datamarine International Inc., has introduced the SEA 330, a 300-watt single sideband radio system. Providing 1.6-30 MHz coverage, the SEA 330 SSB radio system is comprised of a stowable transceiver, the SEA 1630 antenna tuner, and up to four control terminals, all operating from a 24 volt power source.

Utilizing the same "SEAbuss" operating system pioneered in the award-winning SEA 322 SSB radio, the SEA 330 makes use of intrasystem communication accessed via control terminal keypad commands. Display annuciators clearly illustrate radio status as system components talk back and forth, providing instant frequency and data recall.

For complete details and technical specifications of the SEA 330,

Circle 79 on Reader Service Card

SINGAPORE TELECOM

Singapore Telecom is a provider of telecommunications services and the telecommunications authority in Singapore.

Singapore ranks as the world's 12th largest investor in INTELSAT, the 118-member global satellite communications organization. The country is also the 12th largest investor in INMARSAT, the International Maritime Satellite Organization comprising 59 members. Two satellite earth stations provide 2,180 circuits linking Singapore to 56 countries.

As a strategic location for shipping, Singapore has become a major center for maritime communications. It is linked to the Pacific Ocean INMARSAT satellites, providing effective and economical ship-to-ship and ship-to-shore communications.

The Singapore Coast Earth Station offers automatic connection around the clock for ship-to-shore, ship-to-ship and shore-to-ship communications. In addition to standard services like telephone, telex, Maritime telex letter, telegram, facsimile and data transmission, Singapore Telecom now has telex group call and packet switch services.

For free literature detailing Singapore Telecommunications' services,

Circle 93 on Reader Service Card

SIMRAD

Simrad, Inc., Lynnwood, Wash., is offering Anritsu's RA-722UA and RA-723UA radar. These Anritsu radars represent the latest in radar

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technology. A new high-speed microprocessor provides even further improvement on Anritsu's well-established reputation for superior target detection and definition.

Some of the standard features of the Anritsu radar systems include 15-inch high-resolution monochrome display; eight-level quantization; and such target detection techniques as High Sensitivity (AVS), Echo Stretch Function, Automatic or Manual Sea Clutter (STC) Control.

The RA-722UA, which has 10 kw of power, and the RA-723UA, with 25 kw of power, feature a large 15-inch monochrome picture, with automatic or manual target plotting, off-centering of the radar picture, a guard zone with alarm, and picture expansion of a selected area.

For free literature detailing the Anritsu models RA-722UA and RA-723UA or any other equipment offered by Simrad,

Circle 54 on Reader Service Card

SPERRY MARINE

For over 80 years, Sperry Marine has been a leading supplier of navigation equipment to the world's merchant and naval fleets. Sperry Marine remains in the forefront of marine navigation technology with its award-winning Voyage Management System (VMS) series of advanced integrated navigation and control systems.

Sperry Marine's VMS, the heart of the company's Integrated Bridge System (IBS), provides the superior navigation performance and features required for cost-effective, safe ship operations. High performance route control, electronic chart, and command information modules provide the backbone of Sperry Marine's standard VMS.

A high accuracy position module (S-Fix) integrates all navigation position data to provide the "best fix" possible.

A Navigation Workstation (NWS) module, incorporated in the VMS command station, or installed in a stand-alone computer workstation, enhances planning and electronic chart creation and editing.

Sperry Marine's VMS satisfies all international classification group "One Man Bridge" guidelines for navigation equipment. More importantly, the VMS significantly increases the watch officer's effective command time. Whether a vessel is sailing under a traditional or one man watch the shipowner/operator and crew can be assured that their vessel's navigation safety is maximized.

For free literature detailing Sperry Marine's Voyage Management System and Integrated Bridge System,

Circle 81 on Reader Service Card

STANDARD COMMUNICATIONS

Miniaturization has come to Standard Communications line of Horizon marine radios with the introduction of the new HX230S "shirt pocket-sized" subcompact five-watt VHF handheld radio.

The HX230S, like all Horizon scanning radios, may be programmed by the user to scan exactly the number or combination of channels desired. Or the user may push the P-scan button to give priority to channel 16 button to immediately bring it up. A large LCD display makes the selected channels easily visible.

Simple controls give the HX230S easy access to all U.S., Canadian and international channels, as well as 10 weather channels. A push button gives the user instant access to 10 weather channels. The radio also includes a special battery-saving circuit which saves vital battery life.

An optional voice scrambler is available for the Horizon HX230S for users who want communications security.

For further information on this and other Horizon marine products,

Circle 82 on Reader Service Card

TRIMBLE NAVIGATION

Trimble Navigation, Sunnyvale, Calif., offers the Acutis® GPS, a complete three-channel GPS receiver and antenna integrated into a

weatherproof case that mounts like an antenna.

The California firm also offers the NavTrac GPS, which is built around an advanced three-channel GPS receiver and a small graphic display. The NavTrac simplifies every aspect of navigation from positioning and steering to route planning.

The Acutis uses the industry standard NMEA-0183 output so it can interface with other plotters, chart plotters and satnavs, and can be installed within minutes. This versatility allows the Acutis to be moved from vessel to vessel. It is built around an advanced three-channel design that's capable of tracking up to eight satellites at once, even when subjected to severe acceleration.

The Acutis GPS is an economical way to upgrade to GPS navigation equipment without requiring installation of additional instruments or learning a new system.

The NavTrac GPS comes standard with differential GPS capability, course and speed functions which can be custom configured, a new graphic GPS satellite coverage screen, and a display which shows all satellites in view relative to your position.

The NavTrac is now available in five languages including French, German, Japanese, Spanish and English. For European users, a Decca coordinate conversion system is also standard.

For free literature on these and other Trimble Navigation products,

Circle 94 on Reader Service Card

WATERCOM

Since service to the inland marine industry began in 1986, WATERCOM has installed hundreds of telephone fax and data units on vessels navigating America's inland waterways.

John G. Smith, WATERCOM's vice president, sales and service, said, "Companies are increasingly discovering that WATERCOM gives better communications capabilities and costs them less than marine operators. That translates to better bottom line profits regardless of the size of the towing operation."

With WATERCOM, callers dial numbers directly; there is no need for an operator to complete the call. Waiting to make connections is virtually eliminated, and the system offers improved clarity and privacy. It also offers modem and facsimile data transfer capabilities.

Business calls are billed on an itemized usage statement. Personal calls made by crew members must be made collect, billed to a third party or charged to a credit card. The company never sees a bill for them. Incoming calls are the dialing party's responsibility.

WATERCOM is reportedly the only direct dial, delay free, continuous communications system on the water. The system serves more than 4,000 miles of America's waterways.

For free literature detailing WATERCOM's services,

Circle 83 on Reader Service Card

WESMAR

Bothell, Washington-based Western Marine Electronics (WESMAR) offers the SS390 Series Video Sounder/Sonar, combining the benefits of vertical sounding with 360-degree underwater scanning. These units have true stabilized soundomes, according to the company, that allow gravity to hold the transducer in place against pitch and roll. WESMAR's is said to be the only video sounder that has a stabilized transducer. The soundome is installed through the hull, which allows much longer ranges and greater display resolution.

According to WESMAR, the SS390 scans vertically below a vessel like conventional depth sounders, but, unlike other units, it plumbs waters from 25 to 1,300-foot depths with equal clarity. Sea bottom conditions can be determined by colors alone—greens and yellows being soft, oranges and reds being hard to rocky.

In sonar mode, the SS390s scan in a 360-degree radius at any angle. This is of particular advantage when making way through new waters—you don't have to wait until an obstacle is dangerously beneath the boat to see it. You can search ahead and to the sides for good anchorages, fish habitats and navigation.

For more information about WESMAR's SS390 Video Sounder/Sonar,

Circle 84 on Reader Service Card

Hardigg's Rack-Mount Container Protects Electronic Marine Equipment In Transport/Storage

Hardigg Industries, Inc. of South Deerfield, Mass., offers a rack-mounted model container designed to protect off-the-shelf equipment during storage, transport and operation. With this container, it is possible for off-the-shelf rack-mounted equipment to be used in rugged field environments.

The container provides shipping protection and also acts as an operational case, as equipment can be used while inside the protective case. Double-entry—both front and back—makes enclosed equipment easily accessible. An inner shield is also available that will prevent electro-magnetic and radio frequency interferences with sensitive equipment.

Hardigg Industries is a leader in the technology of shipping container design. The company now manufactures a line of over 200 rotationally molded shipping containers that are airtight, watertight, and dent-resistant, offering maximum protection for fragile, expensive equipment.

For further information and free literature on products from Hardigg Industries,

Circle 10 on Reader Service Card

Tidewater Reports Improved Profits

U.S. support vessel operator Tidewater has reported improved third quarter profits.

For the three months to December 31, consolidated net earnings were $11 million, or 38 cents per share, compared to $500,000, or 1 cent per share, for the corresponding period a year ago.

The New Orleans, La.-based group said revenues rose $9.9 million to $64.4 million for the quarter. **John Laborde**, Tidewater chairman, attributed the increase to improved rates and utilization over the last two quarters.

Zidell Returns Full-Swing To Barge Construction Business

After a seven-year shutdown in barge production, Zidell Marine Corporation (ZMC) is back full-swing in the barge construction business.

A new 3,500-ton-capacity grain barge, the BMC 480, was recently launched at Zidell's facility in Portland, Ore. The 273-foot by 42-foot by 15-1/2-foot barge slid down Zidell's newly renovated launchways and into service for Brix Maritime Corporation, transporting grain on the Columbia River between Almota, Wash., and Portland.

Zidell Marine Corporation has a second grain barge partially completed and a 302-foot by 76-foot by 20-foot ABS loadline deck barge started.

For free literature on the facilities and capabilities of Zidell Marine Corporation,

Circle 11 on Reader Service Card

Marine Hydraulics International Performs Extensive Navy, Commercial Ship Repairs

Marine Hydraulics International, Inc. (MHI), a full service ship repair facility located in the Port of Norfolk, Va., providing repairs and conversions to both commercial and naval markets, continued its growth during 1990, reporting an increase in commercial sales of 85 percent during the year.

During 1990, MHI accomplished several capital property improvement projects allowing multiple vessels to be berthed at its facility. Bulkhead improvements, service expansion and dredging were conducted. Water depth at the facility extends to a depth of 27 feet at mean low water and the facility is located at a 1,100-foot turning basin. MHI also added the services of a 150-ton crawler crane.

In the fall of 1990, MHI achieved a milestone, berthing two U.S. Navy vessels at one time—the frigate USS Bowen (FF-1079) and the salvage ship USS Grapple (ARS-53).

However, perhaps the company's most challenging job was the repairs and conversion performed on the tank landing ship USS Boulder (LST-1190). The work included the complete removal of the No. 1 main reduction gear pinions, bull gear, gear casing and bearings. The No. 2 reduction gear was precision in-place machined to return the thrust bearing to original manufacturer's tolerances. Two main propulsion diesel engines were replaced and two additional engines realigned to original design parameters. Halon firefighting capability was installed throughout the vessel. Extensive main switchboard modifications were made in conjunction with the installation of an upgraded shore power system. Major structural modifications and shell repairs were made in conjunction with ballast tank repairs and preservations.

In mid-January, MHI delivered its first drydock repair package on a Maritrans, G.P., tank barge. The package entailed steel and piping system repairs, vapor recovery system component installation and complete interior and exterior blasting and coating.

Vessels of up to 3,850 long tons can be drydocked in the firm's 326- by 81-foot floating dock. Larger vessels can be berthed for topside repairs. MHI intends to be positioned to offer its services for the deactivation and repair of RRF vessels following Desert Storm deployments.

For free literature including a VHS format video tape detailing the capabilities of Marine Hydraulics International,

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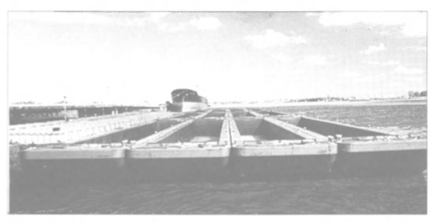
Equitable Completes 37-Barge Contract For Indiana Michigan Power



Twelve of 37 coal-carrying hopper barges built by Equitable Shipyards, Inc., Madisonville, La., pictured on the Mississippi River in New Orleans, prior to their departure to the Indiana Michigan Power Co., Ft. Wayne, Ind.

Equitable Shipyards, Inc., Madisonville, La., a member of the Trinity Marine Group, has completed a $6.5-million contract with the delivery of the last of 37 coal-carrying barges to the Indiana Michigan Power Co. (I&M), Ft. Wayne, Ind.

The new vessels, 175 feet long by 26 feet wide by 11 feet in depth, will replace barges in the fleet of the American Electric Power System (AEP), headquartered in Columbus, Ohio, which is one of eight AEP operating company subsidiaries.

Construction of the barges began in the summer of 1990 and all were completed within the calendar year.

For free literature detailing the vessel building and repairing services of the Trinity Marine Group,

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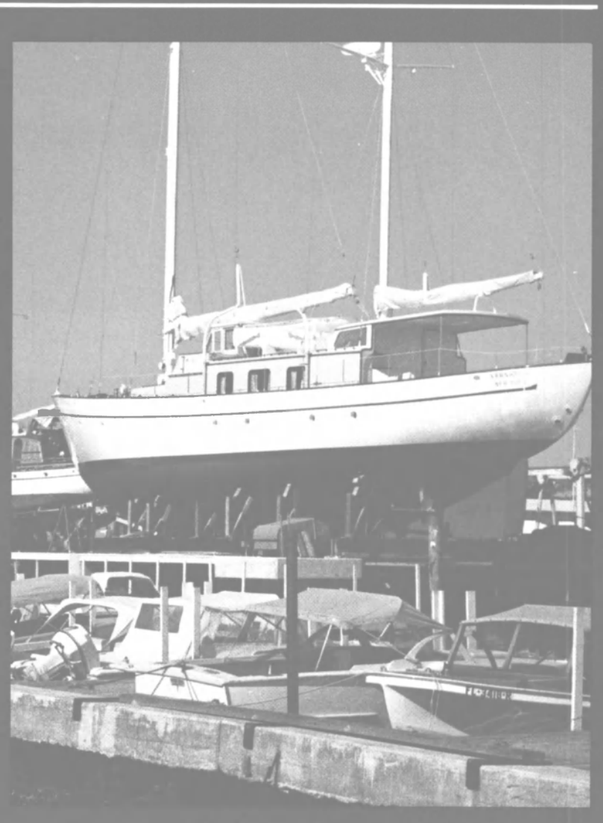

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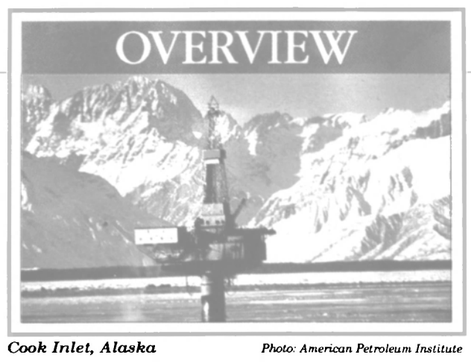

Cook Inlet, Alaska *Photo: American Petroleum Institute*

Energy And Economic Security

Mideast War Underlines The Vital Need To Increase Domestic Oil Production In The U.S.

The war in the Mideast has once again underlined oil's pivotal role in the maintenance of a healthy world economy. We depend on oil for much more than land and air transportation. It heats our homes, drives our agricultural industry, and serves as a vital ingredient in everything from sulfa drugs to dishwashing detergents. In the words of energy consultant **Daniel Yergin,** "At the end of the twentieth century, oil was still central to security, prosperity and the very nature of civilization."

The threat of potential disruptions in supply has highlighted the strong links between energy policy and economic security and has focused the world's attention on effective ways of ensuring that ample, affordable energy supplies are available for the future.

For the past four decades, oil has filled the bulk of the world's energy needs. Because a barrel of crude oil contains more energy more compactly and more inexpensively than any other fuel, oil will continue to hold the dominant role in meeting the world's energy needs for years to come. Even though oil's share of total international energy use has declined from 48 percent to 39 percent since the early 1970s, world oil consumption is as high as it has ever been—growing world demand for energy means 10 million more barrels of oil are now connsumed every day than 18 years ago.

Because of the bulk of the world's known oil supplies lie in the politically unstable Mideast, oil consumers worldwide have sought ways of limiting their dependence of this perennially troubled region. Since Iraq's August 2, 1990, invasion of Kuwait, this search has taken on new urgency.

Following the Arab oil embargo in 1973-74 and the Iranian revolution in 1979, many nations that were fortunate enough to have their own energy resources, including the United States, successfully cut their dependence on oil from the Mideast. Their efforts focused not only on increased oil production, but also on greater conservation and increased reliance on alternative fuels, including natural gas and nuclear power.

As a result of these combined efforts the world's reliance on oil from the Mideast was reduced. And the efforts to increase oil production around the world resulted in more oil available to U.S. consumers from more stable areas outside the Mideast.

But conservation cannot, in and of itself, eliminate the need for oil. As the economy and the population grow, total energy use is expected to increase. The U.S. Department of Energy (DOE) projects that, even as newer, more energy efficient technologies replace less efficient equipment, oil will still provide 38 percent of America's energy in the year 2030—not much less than the percentage it provides today.

Nevertheless, Americans have made encouraging progress in energy conservation over the past two decades. The primary reason Americans became more energy efficient was the increasing cost of energy. As energy prices rose in the early 1970s, energy efficiency began to improve. In the following decade, improvement accelerated as higher energy prices led to wider use of new, more energy efficient technologies. Then the improvement slowed in the mid-1980s as energy prices declined.

However, further gains in conservation are still possible. According to DOE, by the year 2010, an additional 20 quadrillion BTUs of energy (at a cost of over $100 billion) could be saved each year by improving energy efficiency.

Alternative Fuels

Using fuels other than oil is also a frequently advocated strategy—and one that can work. Since the 1970s, natural gas, coal and nuclear power have replaced some of the energy once provided by oil, usually in generating electricity. Many nations continue to develop these sources of energy. The United States could do more today, but many alternatives to oil—particularly coal and nuclear power—are not politically or environmentally acceptable.

For example, more than a decade has passed since the last nuclear powerplant was planned for construction in the United States. In contrast, nations such as France and Japan are moving rapidly ahead. Nuclear power now provides 74 percent of France's electricity. It provided only 4 percent in 1970. And Japan is planning to provide almost all of its electricity through nuclear power by the year 2000.

Nevertheless, America's energy industry is committed to providing the fuels of tomorrow. Many petroleum companies are actively involved in the search for new and better ways to meet our transportation needs. Fuels such as natural gas, alcohols, electricity, and hydrogen show promise for the future.

Increased Domestic Energy Production

"Today, and for some years to come, oil will remain the world's single most important source of affordable energy."

Given that fact, nations around the world are stepping up their efforts to locate and produce domestic oil and natural gas supplies—which are frequently found and developed in tandem. Alone among energy-producing countries, the United States, has taken an opposite tack—placing increasing amounts of land off-limits to exploration for new oil and gas fields.

As a result of these growing restrictions new fields are not being developed and domestic oil production is declining rapidly—now about 1.5 million barrels a day lower than in 1985. Increased imports are making up the difference.

Shortly after World War II, only 8 percent of the oil our country used came from overseas. As recently as 1985, we imported only 31.5 percent of our oil. For 1990, however, that figure actually exceeded 50 percent in some months. DOE predicts that by the year 2000, imports will make up nearly two-thirds of America's supply.

The United States is frequently written off as a source of new energy supplies, but the facts suggest otherwise. According to the U.S. Geological Survey (USGS), 49.4 billion barrels of oil and 399.1 trilllion cubic feet of natural gas remain to be discovered in the United States. And, as energy prices change and the technology for producing these supplies improves, those numbers may grow. Increased domestic energy production could be an option here, if the most promising lands were open to energy exploration and production.

A tiny sliver of land on the coastal plain of the remote Artic National Wildlife Refuge (ANWR) in Alaska has been identified by the Department of the Interior as "the best single opportunity to increase significantly domestic oil production." It may hold as much a 9.2 billion barrels of oil. This would supply an average of over one million barrels of oil a day for 20 years. Peak production from an oil field that size could reach nearly 2 million barrels a day, equivalent to nearly one-third of domestic production in the year 2005.

The entire coastal plain encompassed 1.5 million acres of land, an area about the size of South Carolina. But at most only 15,000 acres—an area about the size of Wash-

(continued page 68)

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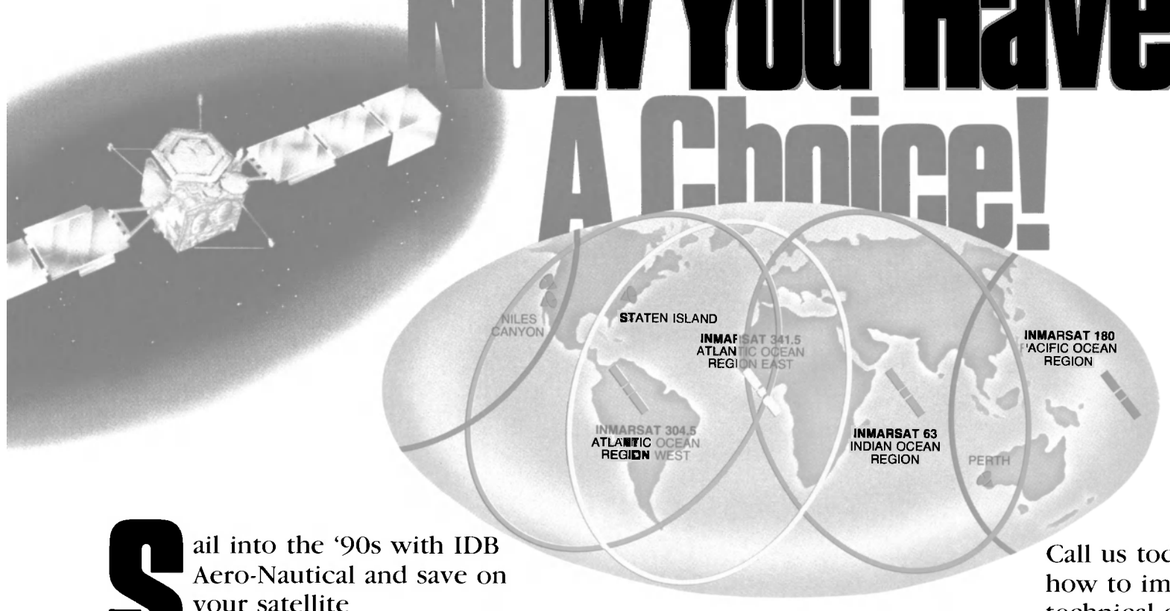

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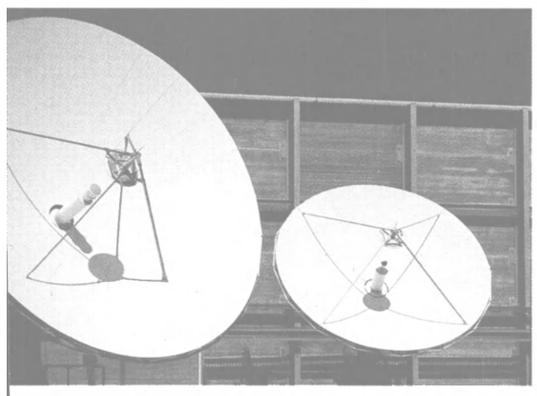

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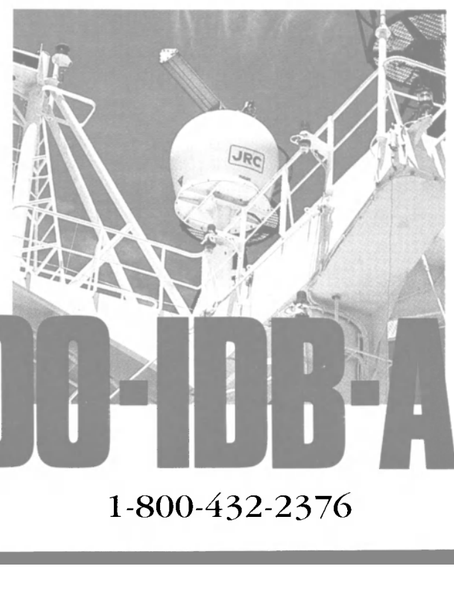

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Circle 274 on Reader Service Card

Energy Security

(continued from page 66)

ington's Dulles International Airport—would be affected by exploration and production activities. The industry's strong environmental record in the nearby North Slope Oil fields of Alaska demonstrates that oil production can be carried out without harm to the arctic environment. Nevertheless, the area the Department of the Interior calls the "most outstanding petroleum exploration target in on onshore United States" remains closed to exploration. Congress must approve opening ANWR before any work can begin.

Offshore

Even more substantial supplies of oil and gas lie offshore our nation's coasts—as much as 32 billion barrels of oil and 228 trillion cubic feet of natural gas according to government estimates. Here again, government moratoria on exploration and production have put the most promising areas off limits.

Yet, America's oil industry has been operating off our coasts for decades, and despite some small impacts, the record has been generally excellent. Since 1975, for example, when current offshore safety regulations went into effect, about one-thousandth of one percent of the oil production from off shore lands under the control of the federal government has been spilled. The amount of oil entering the ocean from naturally occurring seeps is many times higher.

The record of the offshore industry convincingly demonstrates that oil can be produced domestically without serious harm to the natural environment. And it can greatly improve the nation's economic well-being, providing jobs and income as well as consumer products. The WEFA Group, and independent economics consulting firm, has estimated that developing ANWR alone would provide the nation with 735,000 jobs and raise the gross national product by $50.4 billion by 2005. And offshore oil fields have already made a major economic contribution. Since 1954, when federal offshore leasing began, 28,000 wells have been drilled off our nation's coasts. They yielded 8 billion barrels of oil and 85 trillion feet of natural gas and generated $90 billion in payments to the federal treasury. Conversely, in 1989 payments for foreign oil amounted to nearly $50 billion. The import toll for 1990 will be much greater.

A Realistic Approach To Energy Security

In a nationally televised address, President **Bush** vowed that "Americans must never again enter any crisis—economic or military—with an excessive dependence on foreign oil."

Conservation, alternative fuels and increased domestic energy production here at home will all help address the problems posed by oil imports from the Mideast. Each of these options should be used, with an eye towards both their benefits and their costs. Progress in conservation and alternative fuels will help reduce our import needs over the long term. In the meantime, tapping our own petroleum resources is a common sense way of limiting imports from unfriendly or unstable sources of supply. Americans have petroleum resources here at home that are less costly than continued imports from insecure sources and that can provide a more secure energy future. The decision to develop them is ours.

Viking Fender Co. Celebrates Anniversary—Introduces New Workboat Fendering System

At left, a Viking Fender Company bow fender and, at right, a stern fender. Viking specializes in tug fendering for ship docking, barge handling and submarine handling applications.

Viking Fender Co., a leading manufacturer of marine fendering on the East Coast, recently celebrated the company's 10th anniversary and announced the development of a "Small to Medium Size" Workboat Fendering System.

In order to meet the demand in the shallow-draft workboat market, the company's Research and Development Division designed a modular fendering system tailored to light workboat, crewboat and supply vessel requirements. Of primary concern in the design were competitive price, ease of installation, and extreme durability. The company believes that, with these features, Viking fendering systems offer an excellent value as compared with molded rubber fenders.

This new system joins the company's line of standard and custom fenders for all purposes—ship docking, barge handling and submarine handling. Viking also carries a complete line of pier and terminal bumpers and bow fender systems for use under severe conditions.

For further information, contact Viking Fender Co. direct at 50 Church St., Sea Bright, N.J. 07760; phone: 908-530-6600, or fax: 908-530-6866.

Port Of Portland Names New Executive Director

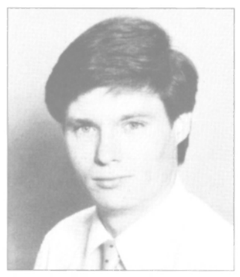
The Port of Portland Commission recently announced the selection of State Senator **Mike Thorne** as its new executive director. Senator **Thorne** replaces **Bob Woodell**, who resigned in December 1990.

Mr. **Thorne** was recommended to the full Port Commission by a four-member search committee at a specially held meeting.

Port Commission president **Robert Ames** pointed out that, Mr. **Thorne's** involvement in trade and transportation issues over the last dozen years will be enormously useful in helping to expand the port's $100-million-a-year business."

Mr. **Thorne** has served in the Oregon Senate for 17 years and, as a member of the Oregon Legislature, chaired the Senate Committees on Agriculture and Natural Resources and Trade and Economic Development. In 1985, he chaired the Ways and Means Committee.

Watercom Promotes Gassman To Supervisor, Customer Service



Robert J. Gassman

Robert J. Gassman has been promoted to supervisor of the customer service department of Watercom, **James D. Robinson**, vice president of systems operations, has announced.

In his new position, Mr. **Gassman** is responsible for prompt customer service, supervising employees on three shifts, and administration of the department. Watercom's customer service department handles all customer questions, training and calling assistance needs.

Watercom is a leader in the field of communications for vessels navigating more than 4,000 miles of American inland waterways. The company's direct-dial telephone system offers facsimile and data transmission capabilities, credit calling for crew members, low night and weekend rates, and many other services.

Watercom is a registered trademark of Waterway Communications System Inc.

For more information and free literature on Watercom equipment and services,

Circle 27 on Reader Service Card

TANO Introduces Mil-Spec VME Modules —Literature Available

TANO Marine Systems, New Orleans, La., has developed a family of Mil-Spec VME microprocessor modules for large-scale, software-based control systems.

The new TANO/VME microprocessor family includes both a military series and a ruggedized commercial series, according to **Guy Hardwick**, TANO vice president of marketing and quality assurance.

TANO has designed six different VME modules: a high-performance CPU or main processor board; a serial I/O module; a memory board; a Local Area Network (LAN) board; CRT graphic controller board; and TDAC board.

TANO, a controller systems supplier, designed the family of VME modules for its own use and is now offering them to original equipment manufacturers. They support Ada software as well as other high-level languages.

For free liteature detailing the new family of Mil-Spec VME modules,

Circle 6 on Reader Service Card

AESA Delivers World's Largest Tuna Purse Seiner

Spanish state-owned shipbuilder Astilleros Espanoles S.A. (AESA) recently delivered what is believed to be the world's largest tuna purse seiner.

Built by Hijos de J Barreras, part of AESA, and named the Albacora, the tuna purse seiner is 334 feet long and will be operated by Albacora Company in the Indian Ocean from her base at Seychelles. The Albacora has a 3,000-cubic meter frozen hold capacity and the tuna will be frozen in 26 fish tanks by a Grasso refrigeration system. Six compressors with unit capacities of 103,000 kCal/hr cool the brine which is circulated around the tanks. She is powered by an 8,084-bhp main propulsion plant and designed for operation by a crew of 28.

A helipad above her wheelhouse will carry a helicopter for spotting tuna schools.

AESA's Barreras yard has two other 1,900-cubic-meter-capacity tuna purse seiners scheduled for delivery in 1991 and will also complete a series of 10 130-foot stern trawlers for Moroccan owners. The Moroccan fishing vessels will have a hold capacity of 350 cubic meters and be powered by Deutz MWM engines totaling 1,160 bhp.

For free literature detailing the building services of AESA,

Circle 98 on Reader Service Card

Panama Canal Installs Marine Fendering System From Solidur Plastics

Solidur Plastics Co., Delmont, Pa., supplied an Ultra-High Molecular Weight Polyethylene (UHMW-PE) marine fender system for the locks at the Panama Canal to protect oceangoing ships from the damaging impacts of bumping into the lockwalls.

Jorge Quijano, chief of the Locks Division, Panama Canal, said, "We needed fendering to protect the ships rather than the lockwalls. Once a ship enters Panama Canal waters, the captain relinquishes control of his vessel to our pilots. Therefore, we are responsible for any damage incurred during the transit . . ."

Mr. **Quijano** recalled, "We considered a variety of other fender systems before we met with the engineers at Solidur Plastics. Then, we visited the locks of the St. Lawrence Seaway in both Montreal and Massena, N.Y., to inspect their plastic application. After the Canadian visit, our engineers working with Solidur's engineers designed our new fender system."

The fenders installed on the canal's lockwalls are modular "sandwich" designs which combine hard timber with UHMW-PE, an industrial grade plastic that provides an impact and abrasion resistant, stick-less buffer between the vessel and lockwall.

An incoming ship moving through the locks under its own power is assisted by locomotives which help the ship steer into the lock chamber. With some clearances between lockwall and hull as little as 1-1/2 feet, rubbing against the fenders is unavoidable. The UHMW-PE block sandwich provides a low-friction surface that allows the vessel to slip by the fenders. Sticking or gouging usually incurred by less effective systems is eliminated.

For free literature detailing UHMW-PE from Solidur Plastics,

Circle 97 on Reader Service Card

Micronautics Offers Free Literature On Tide Predicting Software

Micronautics, Inc., Rockport, Maine, a firm which produces industrial grade seagoing software, is offering free literature on "TIDE.1 Rise & Fall," a program for IBM PCs that predicts tides over 3,600 locations around the U.S. and Canada.

TIDE.1 and TIDE.2, a companion product which predicts floods, ebb and slacks of tidal currents, are in extensive use on ships and in offices around the country, according to Micronautics. Among its clients, Micronautics lists Arco, Exxon, Mobil, Union Oil, Princess Cruises, Army Corps of Engineers, U.S. Navy, U.S. Coast Guard and numerous federal, state and local agencies. A major segment of its market are independent marine consultants. Port authorities and pilots are also among its users.

Micronautics, which has been selling both software products for two years, has expanded its coverage to South America. Operation Desert Storm has also prompted interest in the Persian Gulf.

For free literature detailing the software of Micronautics,

Circle 53 on Reader Service Card

AWO's South Region Elects New Directors

The Southern Region of American Waterways Operators (AWO) recently held a meeting in New Orleans, La., where it elected its officers and directors for 1991.

Steve Golding of Ole Man River Towing, Inc., was named chairman, and **Jack Binion** of Hollywood Marine, Inc., was elected vice chairman.

Mark Buese, Dixie Carriers, Inc., **Larry Daily**, Canal Barge Co., Inc., **Jesse Gunstream**, Higman Towing Co., **Billy Harbison**, Arkansas River Co., **Hank Hilliard**, Southwestern Barge Fleet Service, Inc., **Mark Lamb**, Barge Transport Co., Inc., and **Dave Lunceford**, Exxon Shipping Co., were all elected directors for the Southern Region. Named as alternates were **Dale Breedlove**, Conoco, Inc., Southern Division, and **Ed Grimm**, Houston Marine Services, Inc.

RGB Spectrum Announces New Flexible Scan Converter

RGB Spectrum, Berkeley, Calif., a leading manufacturer of videographic products and workstations and graphic displays, has introduced the new RGB/Videolink® 1450AX auto-sync scan converter that transforms high resolution computer graphics to television format. The model 1450AX automatically synchronizes to any computer signal with a horizontal scan rate from 21.5-80.0 kHz.

According to the manufacturer, Model 1450AX is one of the lowest priced scan converters on the market to automatically accept the full range of computer and workstation signals, including PCs, Mac IIs and workstations from Sun, DEC, HP/Apollo, IBM, Silicon Graphics and others.

The new model is the latest product in RGB Spectrum's line of video scan converters, which incorporate anti-aliasing, full 24-bit color processing and real time operation. Essentially a dedicated image processor, the RGB/Videolink accepts full screen, non-interlaced RGB input, provides genlock, sync generation and encoding to output broadcast quality (NTSC RS-170A or PAL) video. A proprietary filter eliminates flicker in the video signal.

The 1450AX provides composite (NTSC or PAL), RGB, S-Video and Betacam/M II outputs. It also features a linear keyer for overlaying live video with computer graphics.

According to **Bob Marcus**, president of RGB Spectrum, "The Model 1450AX allows a company with a wide range of computers and workstations to address virtually all of its scan conversion requirements. Applications include video taping, video projection and teleconferencing." For further information and free literature,

Circle 16 on Reader Service Card

Bethlehem-Sabine Yard Reports Increase In Business Volume

Bethlehem Steel Corporation's Sabine Yard on Pleasure Island had a significant increase in business volume in the last two quarters of 1990, according to **Raymond F. DeVinney**, general manager of the Bethlehem yard.

The City of Port Arthur's drydock, which is operated by Bethlehem, has been fully booked since June 1990. Mr. **DeVinney** reported that 19 ships were drydocked during 1990, resulting in tolling fees to the Port of Port Arthur of nearly $250,000.

Firm bookings for drydockings extend well into the first quarter of this year and yard administration personnel are negotiating for second quarter 1991 bookings.

Mr. **DeVinney** said continued strong market demand is the key factor in the yard's 1991 favorable business outlook.

For free literature on the facilities and capabilities of Bethlehem Steel,

Circle 18 on Reader Service Card

Walport USA Announces New Video Safety Service

Robert E. Negron, managing general partner of Walport USA (WUSA), Elizabeth, N.J., has announced a new safety service.

Short 45-second safety-awareness clips will be inserted prior to popular video movies that are in the Walport video service. The crew will then have the opportunity to see the safety clips in an entertaining resistance-free atmosphere, which should leave lasting impressions.

Some 40 safety topics will be covered, from wiping an oil slick on deck to leaving a knife in the galley sink. A minimum of dialogue is used, and multinational actors are employed to have universal appeal to all seamen.

Mr. **Negron** also announced the signing of a distribution agreement for the U.S. with Video-Tel world, renown producers of full-length safety videos. The three most current being "Industry at War"—how to defend your vessel against drug traffickers, produced in conjunction with U.S. Customs, "Alcohol Beware"—alcohol advice to seafarers produced in conjunction with Mobil Oil, and "Dead Ahead"—AIDS advise to seamen.

For further information and free literature from Walport USA,

Circle 19 on Reader Service Card

Port Of Tacoma Unveils $450-Million Terminal Development Plan

Trade volumes through the Port of Tacoma could triple during the next 20 years, according to an ambitious $450-million terminal development plan unveiled by the port recently. The port's comprehensive Blair Waterway 2010 plan is the result of an intensive eight-month study and outlines the largest marine terminal development program ever undertaken in the Pacific Northwest.

The development plan calls for the port to spend $450 million between now and 2010 on new shipping terminals, intermodal rail yards and equipment.

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ON
EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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The listings above are an editorial service provided for the convenience of our readers

Paul J. Quinn Named Sales Manager, Moran Towing And Transportation

Paul J. Quinn

Malcolm W. MacLeod, president and CEO of Moran Towing Corporation, has appointed **Paul J. Quinn**, sales manager of the subsidiary company, Moran Towing and Transportation Co., Inc.

Mr. **Quinn** joined the sales department at Moran in 1975. In his new position, he will supervise and serve customer accounts in the port area and be responsible for generating new business.

MagneTek Purchases Rights To IBM Electronic Bus-Transfer Technology

The completion of a license agreement for technology transfer between MagneTek Defense Systems and IBM Corporation is expected to contribute to new techniques for enhancing the survivability of critical electronic systems, both military and commercial.

Ed Rizzotti, senior vice president and general manager of MagneTek Defense Systems, recently announced that the military power-solutions company has entered into an agreement for the transfer of the Electronic Bus Transfer (EBT) technology developed and patented by IBM over the last several years.

The EBT is designed to effect a no-break transfer between asynchronous power sources. In fact, according to MagneTak it is the only technoology available which can provide a "seamless" transfer. This means that in critical applications, the electrical power loads (such as radars or computers) can be switched from one power source to another with virtually no disturbance to their operation. This switching may be required for load management or as a result of damage to the primary source. In today's military, which depends on its electronic systems for survival, such a

For further information about MagneTek Defense Systems,

Circle 49 on Reader Service Card

Aqua Signal Develops New Computer-Controlled Shipboard Lighting System

Aqua Signal AG of Bremen has developed a new computer-controlled lighting system which permits comprehensive, centralized control and dimming of the illumination on board seagoing vessels. The system makes it possible to create a tailor-made atmosphere—which is particularly important in the public areas of passenger liners—and also helps save energy and reduce costs.

A major part of this development is that new Aqua Signal technology makes it possible to dim four different types of lamps (batten luminaire fluorescent, tubular compact fluorescent, halogen and incandescent) simultaneously with just one switch.

The heart of the system is a control cabinet that contains all the active electronics elements. Light can be controlled manually (rotary or slide switches), remotely (infrared transmitter or daylight sensor), or electronically (by means of a PC).

The first passenger vessel to be equipped on a large scale with this new lighting technology was the Regal Princess of P&O Cruises.

For free literature detailing the lighting products and systems of Aqua Signal,

Circle 99 on Reader Service Card

Chris Marine Celebrates 10th Anniversary In Jacksonville, Florida

Chris Marine U.S.A., Inc., a service oriented company, provides onsite and in-shop machining, onboard overhaul, technical direction and engine performance evaluation for large slow-speed and medium-speed diesels as well as turbocharger repair, rebuild and service. An agreement has recently been signed with MAN B&W Diesel designating the Jacksonville, Fla., facility as an "authorized repair shop." Service is also available on Sulzer, Colt-Pielstick, Krupp MaK and many other makes of main propulsion and auxiliary diesels.

As the sole U.S. distributor for Chris Marine, A.B. of Malmo, Sweden, a complete line of specialized maintenance equipment is offered for the in-place grinding of cylinder cover seats, valves and valve seats, fuel injector seats, cylinder liner seats and custom honing machines for cylinder liner deglazing.

Kent Ekenberg, vice president and technical manager who has headed the operation for the past 10 years, recently announced the appointment of **Edward J. Skiba** as operations manager of the Jacksonville facility. Mr. **Skiba** will be involved with expansion of services, customer relations, logistics and technical direction at Chris Marine.

For more information and free literature, U.S.A.,

Circle 21 on Reader Service Card

IFC Awards First Superferry Subcontract To Allied Shipbuilders

Integrated Ferry Constructors Ltd. (IFC) of North Vancouver, the company set up to manage construction of a 470-car superferry for the B.C. Ferry Corporation, has awarded its first subcontract.

The subcontract was awarded by IFC to Allied Shipbuilders Ltd. of North Vancouver to build the forward end of the ship's hull.

The superferry will be built in sections, referred to in the shipbuilding industry as blocks, and is scheduled for delivery to B.C. Ferries in early 1993.

Sea-Land Promotes Meekin To VP, Pacific Division Operations

Sea-Land Service Inc., Seattle, Wash., recently announced the promotion of **Robert T. McMeekin** to vice president of operations for the Pacific Division.

Mr. **McMeekin**, who was most recently director of operations, will now be responsible for coordination of all divisional operations in North America and Asia. This includes marine and maintenance activities, vessel deployment design and direction as well as allocation and monitoring of all divisional equipment. His work also includes development of asset optimization strategies.

ABS Forms Technical Focus Group For Offshore Industry Worldwide

The American Bureau of Shipping, a major classification society and certifying authority for offshore drilling units and platforms, has formed a Technical Focus Group to promote and expand ABS services and capabilities to the offshore industry worldwide.

Established by ABS chairman **Frank Iarossi**, the formation of the Technical Focus Group for Offshore Projects is part of ABS 2000, a global restructuring plan designed to increase the depth, efficiency, and delivery of ABS services to clients around the world. ABS has also formed Technical Focus Groups for LNG projects and passenger/cruise ship projects.

The Offshore Engineering Focus Group will be headed by director **Steve McIntyre** and manager **David Jones**. Their home office will be ABS headquarters, now in Paramus, N.J., but scheduled for relocation to New York City this year.

For further information,

Circle 28 on Reader Service Card

BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. **If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.**

ABRASIVES
Chesapeake Specialty Products, Inc., 5055 Northpoint Blvd., Baltimore, MD 21219
Stan-Blast Abrasives, P.O. Box 968, 3300 River Road, Hawey, LA 70059
AIRBORNE ULTRA-SOUND INSTRUMENTS
UE Systems, Inc., 12 West Main Street, Elmsford, NY 10523
AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Adrick Marine Corp., 320 Cantor Ave., Linden NJ 07036
Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001
Stal Refrigeration AB, Butangsgatan 16, S-601 87 Norrkoping, SWEDEN
York Int'l, P.O. Box 1592-083G, York, PA 17405
BALLAST
Chesapeake Specialty Products, Inc., 5055 Northpoint Blvd., Baltimore, MD 21219
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031
Mineral Research & Recovery Inc., 4565 S. Palo Verde, Ste 203, Tucson AZ 85714
Queen City Iron & Steel, P.O. Box 7205, Charlotte, NC 28241-7205
BARGE BUILDING
Conrad Industries, P.O. Box 790, Morgan City LA 70381
BARGES—Leasing
McDonough Marine Service, 2300 Surekote Road, New Orleans, LA 70117
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201
BASKET STRAINERS
Beaird Industries, P.O. Box 31115, Shreveport, LA 71130
Cleveland Gear, 3249 E. 80 St., Cleveland OH 44104
BEARINGS—Rubber, Metallic, Non-Metallic
B.F. Goodrich, Marine Products Group, 6061 B.F. Goodrich Boulevard, Jacksonville, FL 32226
Kohlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Thomson Gordon Ltd., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6
Waukesha Bearings, P.O. Box 1616, Waukesha WI 53187
BOILER CLEANING
Thomas C. Wilson, Inc., 21-11 44th Ave., Ste. 1, Long Island City, NY 11101
BOILERS—Manufacturers
Aalborg Ciserv (Miami), Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312
BROKERS
Captain Astad Company, Inc., P.O. Box 350486, Ft Lauderdale, FL 33335
2900 Energy Centre, 1100 Poydras Street, New Orleans, LA 70163-2900
Diversified Marine Brokerage, 1201 Northern Blvd., Manhasset, NY 11030
Jack Faulkner, 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960
BUNKERING
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201
CHAIN
Baldt, Inc., 6 M. Butler St., Chester, PA 19013
Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
Washington Chain & Supply, P.O. Box 3645, Seattle WA 98124
G.J. Wortelboer Jr. B.V., Postbus 5003, 3008 AA Rotterdam, NETHERLANDS
CHEMICAL CLEANERS
Charlie Chemical & Supply, Inc., P.O. Box 4639, Greenville, MS 38704-4639
CHOCKING COMPOUNDS
ITW Philadelphia Resins, 130 Commerce Drive, Montgomeryville, PA 18936
CLAMPING—Pipe, Tubes, Hose
ZSI, 32497 Schoolcraft Road, Livonia, MI 48150
COMPACTORS
International Compactor, Inc., P.O. Box 5918, Hilton Head, SC 29938
A/S Vesta, Skudehavsvej 27, DK-2100 Copenhagen, DENMARK. Sales Agents: American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906, USA
COMPUTERIZED INFORMATION SYSTEMS
TIMSCO, P. O. Box 91360, Mobile AL 36691
CONDENSERS/SEPARATORS
Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
IMO Delaval Inc., P.O. Box 6550, Lawrenceville, NJ 08648
Wright Austin Co., 3250 Franklin St., Detroit MI 48207
CONTROL SYSTEMS—Monitoring
Autronica Marine USA, 234 Industrial Parkway, Northvale, NJ 07647
The Clark-Reliance Corporation, 16633 Foltz Industrial Parkway, Strongsville OH 44136
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062
MMC International, 60 Inip Dr, Inwood NY 11696
NAMCO Controls, 7567 Tyler Blvd, Mentor OH 44060
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Robertson-Shipmate, 400 Oser Avenue, Hauppage, NY 11788
TANO Marine Systems Inc., 4301 Poche Court West, New Orleans LA 70129
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
CRANES—HOISTS—DERRICKS—WHIRLEYS
The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101
Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood NJ 07607
Liebherr-Werk Nenzing GES.mbh, P.O. Box 10, A-6710 Nenzing, AUSTRIA
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
J.D. Neuhaus Hebezeugue GmbH, D-5810 Witten, GERMANY
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883
Reco Crane Co., 5734 Jefferson Highway, New Orleans LA 70181
Westmont Industries, 10805 Painter Ave., Santa Fe Springs, CA 90670
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201
CYROGENICS
Technigaz, Division of Bouygues Offshore, 3 rue Stephenson, 78884 St. Quentin en Yvelines, FRANCE
DECK MACHINERY—Cargo Handling Equipment
All Set Marine Lashing AB, P.O. Box 14112, S-161 14 Bromma, SWEDEN
Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
Seattle Crane & Equipment Co., Inc., 4403 20th Street East, Fife, WA 98424
Willem Pot b.v., P. O. Box 29102, 3001 GC Rotterdam, The Netherlands
DECKS
Boatlife, 205 Sweet Hollow Road, Old Bethpage, NY 11804
DEHUMIDIFIERS
L&C Associates, 216 Lafayette Rd., North Hampton NH 03862
DIESEL ACCESSORIES
Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Diesel America Inc., 5217 River Rd., New Orleans LA 70123
Gearhardt's Inc., P.O. Box 10161, Jefferson, LA 70181
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison IL 60101
DIESEL ENGINE—Spare Parts & Repair
Aalborg Ciserv (Miami) Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312
Alaska Diesel Electric, P.O. Box 70543, Seattle, WA 98107
Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005
Global Maritime Services, 247 SW 33 Court, Ft. . Lauderdale, FL 33315
Golten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
Grace Dearborn, W.R. Grace & Co., 300 Genesee Street, Lake Zurich, IL 60047
Hatch & Kirk, 5111 Leary Avenue NW, Seattle, WA 98107
KHD Canada, Inc., 4420 Garand, Ville St-Laurent, Quebec, CANADA H4R 2A3
Kim Hotstart Mfg Co., E 5724 Broadway Ave, P.O. Box 42, Spokane WA 99210
MAN B&W Diesel GmbH, Stadtbochstrasse 1, D-8900 Augsburg 1, GERMANY
MAN B&W Diesel, 50 Broadway, 18th Fl., New York, NY 10004
MTU of North America, 10450 Corporate Drive, Houston, TX 77478
Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, GERMANY
Pacific Rim Diesel, 570 Mercer St., Seattle, WA 98109
S.E.M.T. Pielstick, 2 Quai de Seine, Saint Denis, Paris, FRANCE 93203
Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166
DIVING & SALVAGE
H.J. Merrihue, P.O. Box 23123, New Orleans LA 70183
Muldoon Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731
Sea-Side Diving, 28612 Harper Ave., St. Clair Shores, MI 48081
DRY DOCKS-Design
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Marine Design Services, P.O. Box 928, Bonita CA 92002
MAN GHH Sterkrade, P.O. B. 110240, D-4200 Oberhausen 11, GERMANY
ELECTRICAL EQUIPMENT
Consolidated Switch Gear Inc. P.O. Box 8745, Mandeville, LA 70470-8745
L. F. Gaubert & Co., Inc., P. O. Box 50500, New Orleans LA 70150
MMC International, 60 Inip Dr, Inwood NY 11696
P.J. Plishner Marine/Radio Research Instrument Co., 584 N. Main St., Waterbury, CT 06704-3506
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116
ELECTRONIC DISPLAY
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY
ELECTRONIC ENCLOSURES
A&J Manufacturing, 14131 Franklin Ave., Tustin CA 92680
ELECTRONIC INFORMATION SUPPORT
Inventory Locator Service, 3965 Mendenhall Road South, Suite 10, Memphis, TN 83115
ENGINE TEST EQUIPMENT
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360
Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy TX 77449
EPIRBS
Alden Electronics, 40 Washington St., Westborough, MA 01581
EQUIPMENT—Marine
Byrne, Rice & Turner, Inc., 1172 Camp St., New Orleans LA 70130
Gladsky Marine, Garvies Point Road, Glen Cove, NY 11542
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
Ovako Steel Inc., P.O. Box 745, Avon, CT 06001
EVAPORATORS
Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK
Aqua-Chem, Water Technologies Div., P.O. Box 421, Milwaukee WI 53201
Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
FANS—VENTILATORS—BLOWERS
Carling Turbine Blower Company, 10 Nebraska St., P.O. Box 88, Worcester MA 01613
Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402
FASTENERS
Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02635
Non-Ferrous Bolt & Mfg Co., 4085 Nevso Dr., Suite C, Las Vegas NV 89103
FENDERING SYSTEMS/BUOYS—Dock & Vessel
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
Rowe Bumpers, Conveyor & Caster Corporation, 3501 Detroit Avenue, Cleveland, OH 44113
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook VA 22624
FUEL ADDITIVES, CONDITIONING
U.S. Borax/Industrial Chemicals, 3075 Wilshire Boulevard, Los Angeles, CA 90010
GALLEY EQUIPMENT
Cospolich Refrigerator Co., 949 Industry Rd., Kenner LA 70062
Gaylord Industries, 10900 S W Avery St, P.O. Box 1149, Tualatin, OR 97062
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
GANGWAYS, LADDERS
Coast Marine & Industrial Supply Inc., 398 Jefferson St., San Francisco, CA 94133
Rampmaster Inc., 9825 Osceola Blvd., Vero Beach, FL 32966
Sea Systems Inc., 65 Avco Road, Ward Hill, MA 01835
Westmont Industries, 10805 Painter Ave., Santa Fe Springs, CA 90670
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691
GEARS
IMO Delaval, Inc., P.O. Box 6550, Lawrenceville, NJ 08648
HEAT EXCHANGERS
Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK
Alfa-Laval Separation Inc., 2115 Linwood Avenue, Fort Lee, NJ 07024
Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
Thomas C. Wilson, Inc., 21-11 44th Avenue, Long Island City, NY 11101
HORNS/WHISTLES
Kohlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241
HOSE
HBD Industries, Inc., 1801 S. Railroad Street, Salsbury, NC 28145-0948
HYDRAULICS
Aeroquip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030
Del Gavio Marine Hydraulics Inc., 207 W Central Ave., Maywood NJ 07607
INCINERATORS
Teamtec A/S, P.O. Box 100, N-4912 Gjeving, NORWAY
A/S Vesta, 27 Skudehavnsvej, DK-2100 Copenhagen DENMARK. US Agent: American United Marine, 5 Broadway, Rte 1, Saugus, MA 01906
INSULATION
Soundcoat Company, 1 Burt Drive, Deer Park, NY 11729
JOINER—Watertight Doors—Paneling—Ceiling Systems—Decking
Cupples Products, 2650 S. Hanley Rd., St. Louis, MO 63144
GEC-Marconi Electronic Systems Corp., 550 S. Fulton Avenue, Mount Vernon, NJ 10550
IMAC AB, Berga Alle 1, S-252 55 Helsingborg, SWEDEN
U.S. Rep: Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031
Walz & Krenzer Inc., 1390 Mt. Read Blvd., Rochester NY 14606
KEEL COOLERS
R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307
LEGAL SERVICES
American Maritime Correspondents, One Embarcadero Center, Suite 330, San Francisco, CA 94111
John Jozwick, c/o Bryan, Schiffrin & McMonagle, First & Cedar Bldg., Suite 350, 2701 First Ave., Seattle WA 98121
LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
Carlisle & Finch, 4562 W. Mitchell Ave., Cincinnati OH 45232
The L.C. Doane Co., P.O. Box 975, Essex, CT 06426
Nautilus Equipment Ltd., P.O. Box 66, Station M, Halifax, Nova Scotia B3J 2L4, CANADA
Phoenix Products, 6161 N 64th St., Milwaukee WI 53218
LINE BLINDS
Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474
LOGISTICS
VL Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs MS 39564
QED, 4646 N. Witchduck Road, Virginia Beach, VA 23455
MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
Del Gavio, 207 W. Central Ave., Maywood, NJ 07607
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315
Golten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
MACHINING—On Site Repair
Furmanite, 535 London Bridge Road, Virginia Beach, VA 23454
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315
MARINE ACCOMMODATIONS
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
MARINE FURNITURE
Wilson & Hayes, 1601 Eastlake Avenue, East, Seattle, WA 98102
METAL PRODUCTS
Williams & Co., Inc., 901 Pennsylvania Avenue, Pittsburgh, PA 15233-1495
NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 11356
B.C. Research, 3650 Wesbrook Mall, Vancouver, B.C. CANADA V6S 2L2
CDI Marine Co., 9487 Regency Square Blvd., Suite 500, Jacksonville, FL 32225
CT Marine, 18 Church Street, Georgetown, CT 06829
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026
Crane Consultants, 15301 First Ave S., Seattle WA 98148
C.R. Cushing, 18 Vesey St., New York, NY 10007
Arthur D. Darden, 3200 Ridgelake Dr., Suite 403, Metairie LA 70002
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, 2611 Jefferson-Davis Highway, Suite 3000, Arlington, VA 22202
Diversified Technologies, 812 Live Oak Dr., Chesapeake VA 23320
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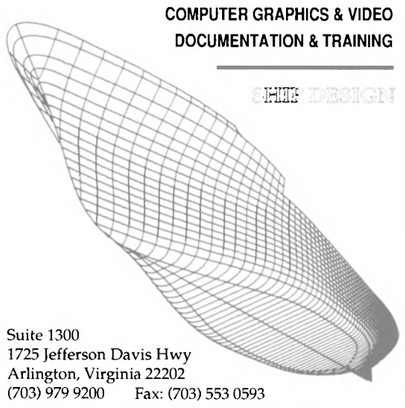

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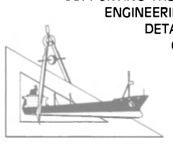

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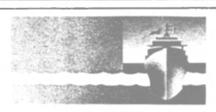

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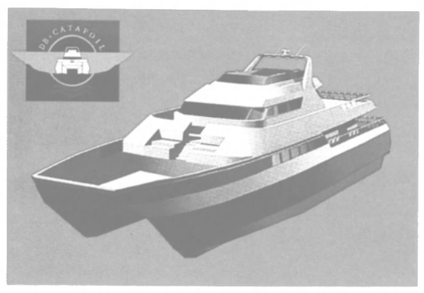
Deutz-Powered High-Speed 'Catafoil' Yacht Under Construction At T-Craft

The British industrialist Sir **David Brown** has decided to proceed with his project to create his ideal high-speed luxury yacht.

Sir **David** selected a high-speed catamaran hull form and specified water jet propulsion to give quiet and efficient operation coupled with superb maneuverability. After talking with most of the world's shipbuilders and high-speed craft designers and suppliers, he chose specialist designers Nigel Gee and Associates (NGA) to carry out this task. The resulting design is a combination of advanced hydrodynamic design, combined with elegant styling.

Nigel Gee explained: "Conventional theory showed that with the installed power available from high-speed turbocharged diesels, the highest speed we were likely to obtain with the catamaran configuration proposed was around 35 knots. Sir **David** insisted we achieve over 40 knots, and we finally were able to do that through the combination of the catamaran hull form with fully submerged hydrofoils."

Engines equal to the task of achieving over 40 knots, as Sir **David** insisted, were considered to be the Deutz MWM TBD 604B V16 high-speed turbocharged diesels. With a horsepower rating of up to 1,930 kw (2,630 hp) at 1,800 rpm, the 604B series has been in great demand throughout the world's yachting industry as a reliable, high-speed performer, backed by the attentive Deutz MWM service organization. Undeniably a space saver with precision engineering and the highest standards of components, the 604B has earned its credentials in two distinct marine markets: yachting and high-speed ferrying and excursion.



Artist's impression of the NGA-designed, Deutz MWM-powered Catafoil craft being constructed by T-Craft Limited of Cape Town.

The 118-foot-long planing catamaran is reportedly the largest foil-assisted vessel of this type built anywhere in the world. The hull and superstructure are manufactured from fiber reinforced plastic, with the superstructure and deck using foam sandwich construction.

The new vessel is being manufactured by T-Craft Limited of Cape Town. T-Craft has built a considerable reputation in the Southern Hemisphere over the past few years with their specialist range of medium-sized high-speed foil-assisted catamarans.

The design of the new yacht is now well advanced at Nigel Gee and Associates' new premises in Hamble, near Southampton, England, where the company has recently relocated. The move was necessary to allow expansion of NGA's staff to cope with an increasing order book for the design of high-performance craft for commercial, paramilitary and naval applications.

For free literature on the facilities and capabilities of T-Craft,

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For further information and literature on Deutz MWM engines,

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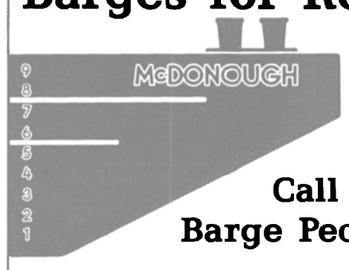

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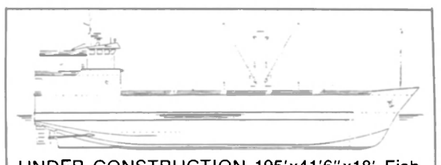

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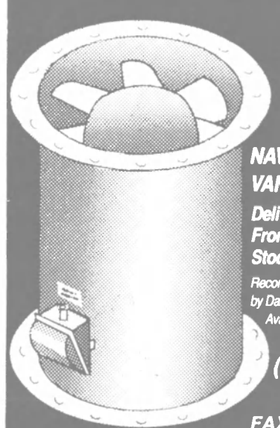

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Offshore deck barge.rigged with 6 to 8 point mooring system, sleep & feed 85 people and two cranes from 40 to 20 tons on the stern deck.

214 x 50 **support vessel** to sleep & feed 40 people and have a 20 ton crane on the rear deck
165 x 40 **support vessel** to sleep & feed 40 people and have a 15 ton crane on the rear deck.

Product oil tanker. Built 1970's Capacity: 3,000-25,000 MT/DWT Class: With standard and International classifications Societies Particulars: Standard Applications: Installation of IMCO, such like C.O.W., I.O.P.P., Higher pumping rate

Cargo ships. Built 1970 s Capacity: 1500-4000 HP Fittings: Towing facilities, offshore supply.

Offshore Supply Vessel Built: 1976 GRT: 400-600 LOA: 180-210 ft. Draft: 13-20 ft. MPE: one ship twin screw 3500 HP, I ship twin screw 6000BHP Bow thruster 400 BHP

Ship Docking Tug LOA: 100' Draft: 4-14.5' max. MPE: Diesel single screw or twin screw, 1800 HP min.

Sightseeing Dinner Cruise Passenger Capacity: 100 LOA: 90-100 MPE: required twin engines
32,500/35,000 DWT or Ore Bulker Built: 1973-1975 Geared for 7 yards buckets or gearless, 36' draft, 13 KTS, 5 year time charter plus purchase option

Twin or single screw tug 5,000 to 6,000 HP powered by GE or Alcoa diesels. Tug should have high bow.

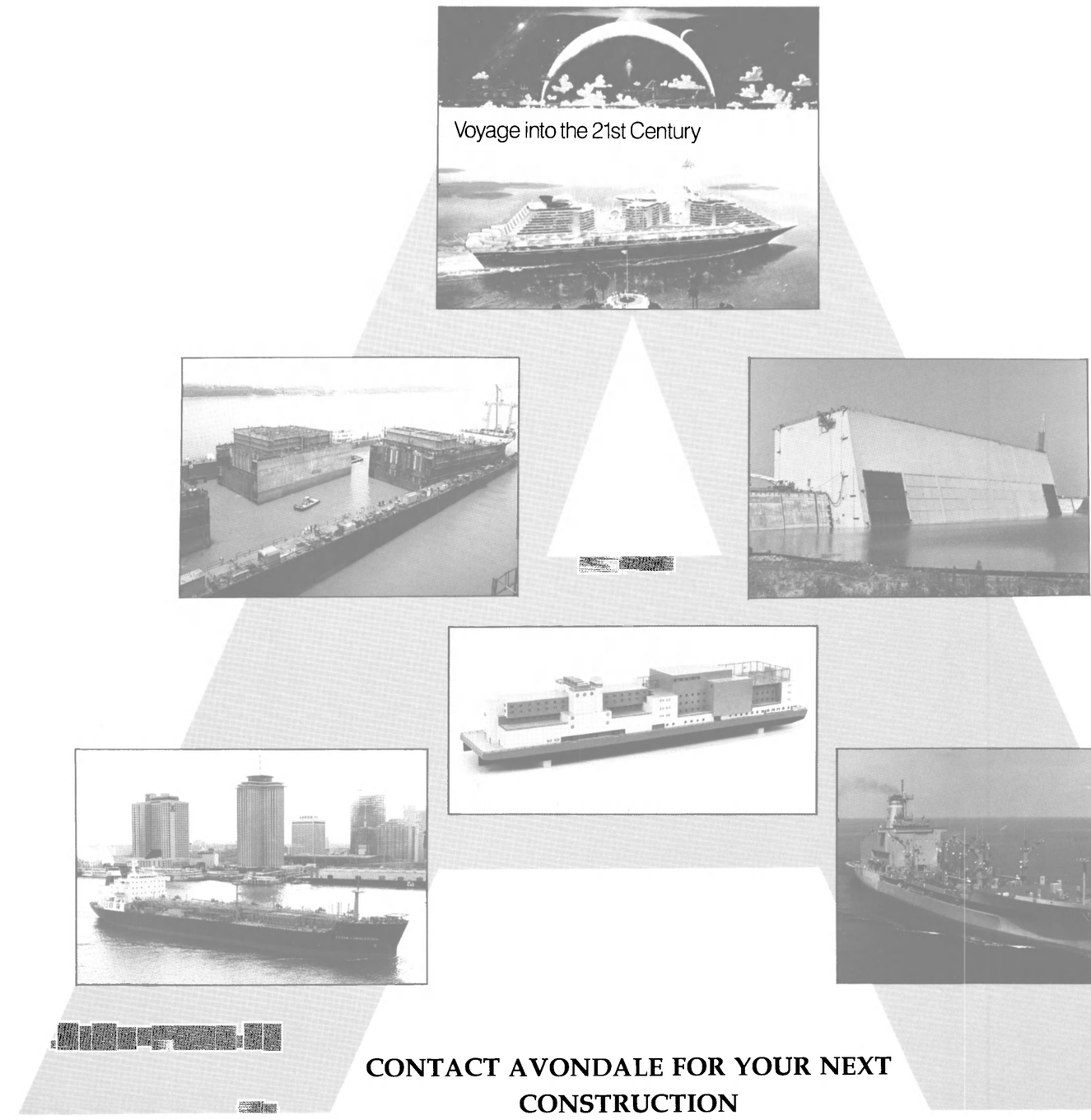
Open Hopper Barge to haul small stones 2 1/2 - 3" in diameter-7, 8 or 12,000 tons per load U.S. Flag

Pilot Boat GRT: 50 - 55' Draft: 4-6'

Off Bunker Barges (2) DWT range 3-5,000 ton. Capable carrying two products (fuel, oil and MDO/MGO)

Push Boat Built: 1976-1986 LOA: Approx. 75' x 30' Draft Loaded: 8' 6" max. MPE: 2 x GM 12V 149 or Caterpillar 398

RO-RO Approx. 250' long, 50' beam double deck to transport 40' trailer, and twin diesel (or similar for minimum 30' x 40' trailers and some 20' trailers



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