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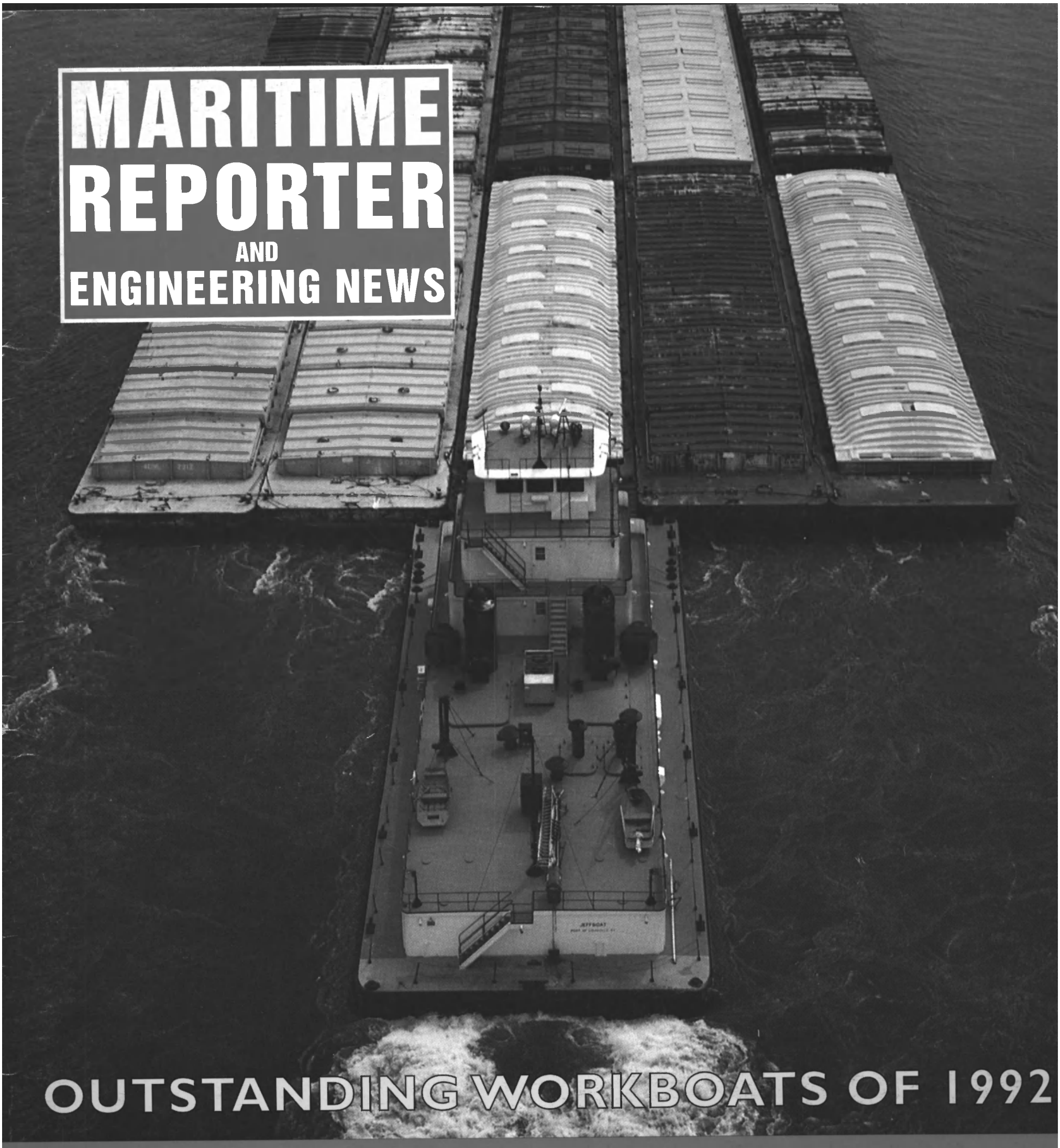
AND
ENGINEERING NEWS



OUTSTANDING WORKBOATS OF 1992

INTERNATIONAL
WORK BOAT SHOW
NEW ORLEANS , LA

SOUTHERN
BOAT BUILDING
A Review of 1992

NOVEMBER 1992

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ON THE COVER

The International Work Boat Show is scheduled for December 3-5 in New Orleans, La. See page 20 for the show preview.
Photo: Courtesy of American Commercial Barge Line Co.

INSIDE:

Westinghouse Wins Two Navy Sonar Contracts Worth $155 Million

Westinghouse Electronic Systems Group, Sykesville, Md., was recently awarded two Navy contracts totaling $155 million to provide ten AN/SQQ-89 anti-submarine warfare systems for installation onboard fleet destroyers. The contract includes engineering design tasks and options for additional systems which could extend work through the end of the decade.

The AN/SQQ-89 includes sensors that transmit, receive and process acoustic data for sonar operators. The system is designed to detect, track and classify submarines, as well as control torpedoes launched by the destroyer.

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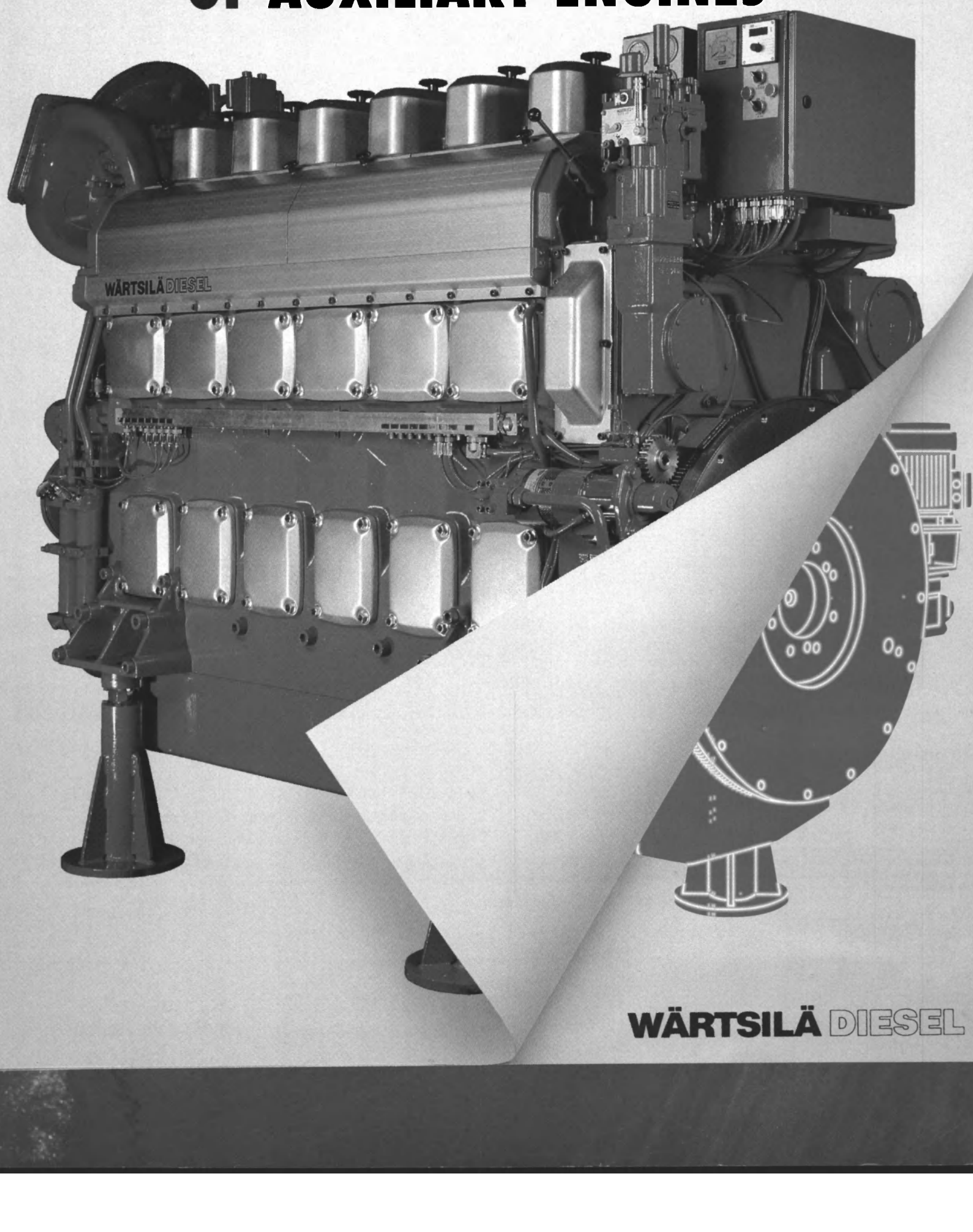
WÄRTSILÄ VASA

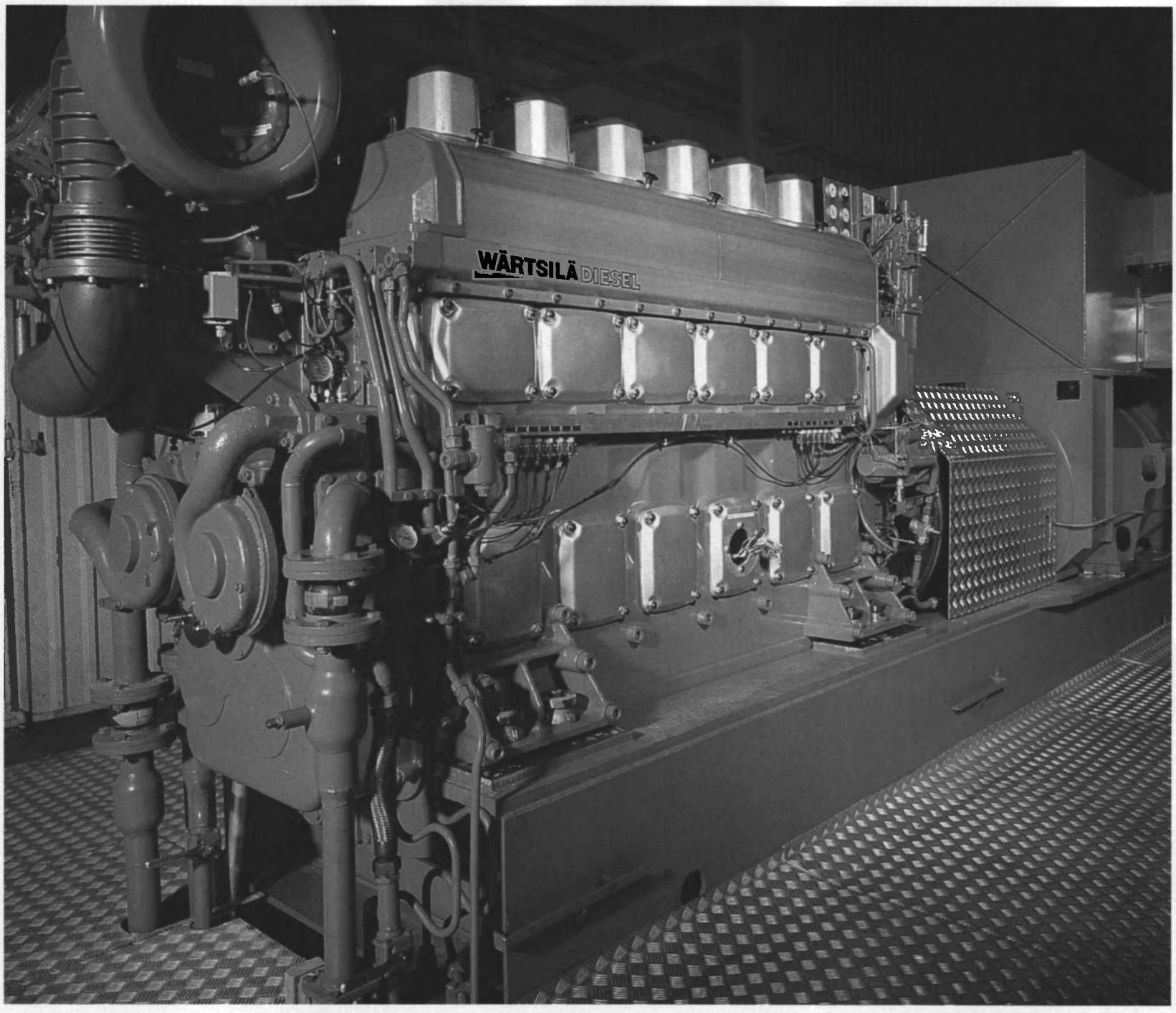
20

TURNING A NEW PAGE IN THE HISTORY OF AUXILIARY ENGINES



WÄRTSILÄ DIESEL

NEVER BEFORE HAVE BENEFITS THIS BIG BEEN OFFERED IN AN ENGINE THIS SMALL



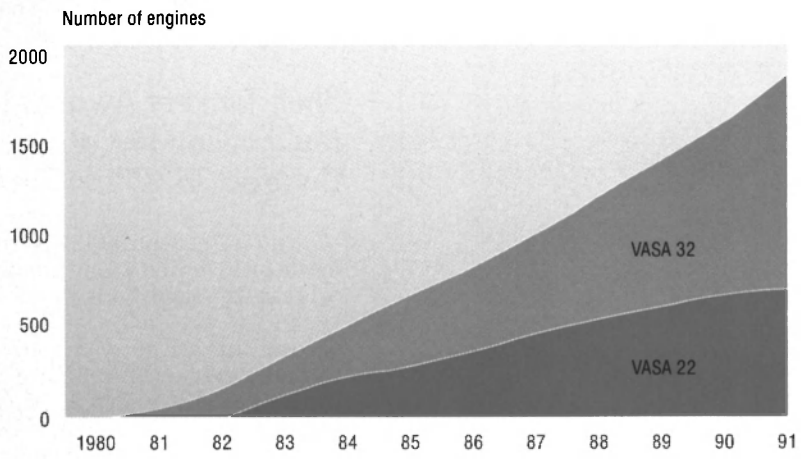
The auxiliary engine from Wärtsilä Diesel

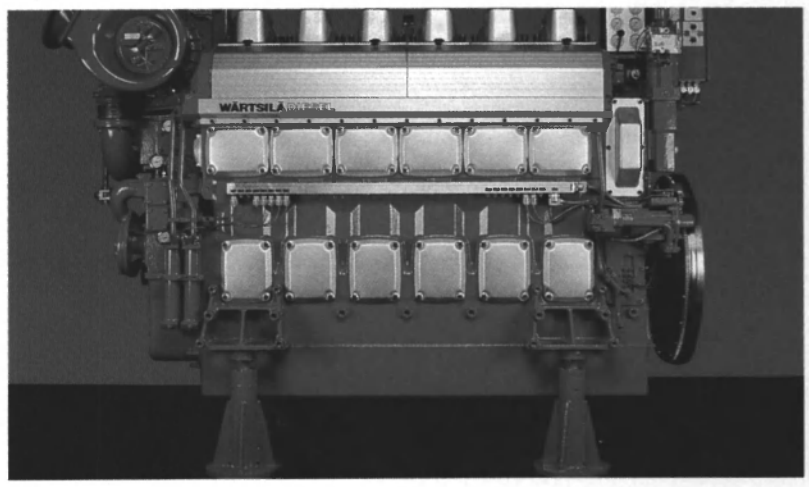
The introduction of the new Wärtsilä Vasa 20 auxiliary engine from Wärtsilä Diesel marks yet another milestone in the history of medium-speed heavy fuel engine technology. More important, however, is the fact that this unique combination of compact size, modern design and top performance offers more benefits for less cost than any other auxiliary engine has ever done before. The output range of the 4, 6 and 9-cylinder units is 520 –1,485 kW within the speed range of 720–1000 rpm, making the Vasa 20 suitable for a great variety of installations.

The core values offered by the Wärtsilä Vasa 20 are:

- **Based on the Wärtsilä Diesel heavy fuel technology**
- **Designed for easy installation**
- **Designed for low cost**
- **Optimized for low fuel consumption**

INTRODUCING THE NEW WÄRTSILÄ VASA 20 AUXILIARY ENGINE





Based on the Wärtsilä Diesel heavy fuel technology

The heavy fuel technology featured in the Wartsila Vasa 20 is based on Wartsila Diesel's thorough understanding of oil chemistry and on the company's vast heavy fuel experience which has been compiled over the years into an efficient know-how base.

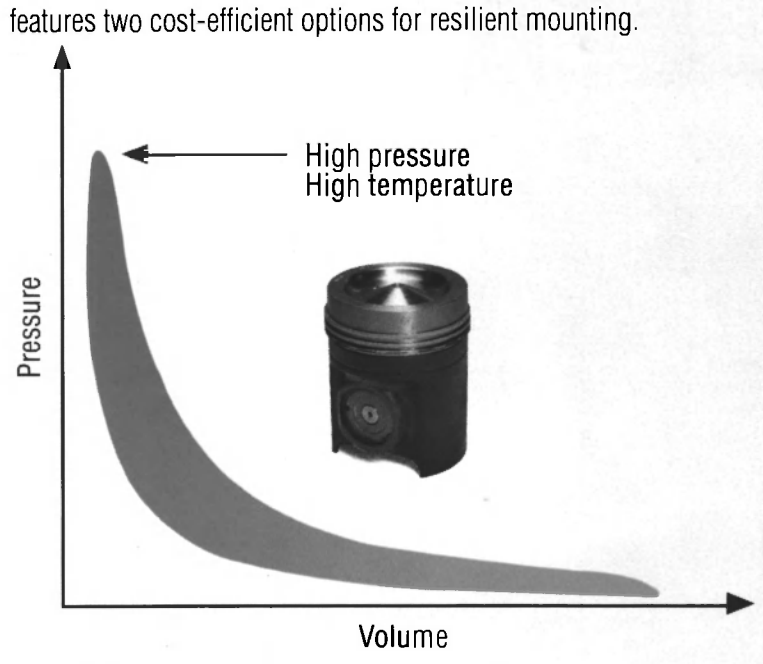
The Vasa 20 has been designed to operate on the lowest grade fuel types available. It operates on the very same fuel as the ship's main engine. Numerous feasibility studies prove this to be the most economical means of generating electricity onboard.

Designed for easy installation

The very rigid engine block of the Vasa 20 allows standard use of four-point support. Other features ensuring easy and secure installation include adjustable feet arrangement, small overall dimensions, a minimum number of external connections, a plug-in system for connection to the external control and monitoring systems. The engine also features two cost-efficient options for resilient mounting.

Designed for low cost

The new production technology has permitted minimizing the number of engine parts by maximizing component integration. This contributes to reduced maintenance and high reliability. The Vasa 20 is also designed for easy access to all parts of the engine that require service. It all adds up to low cost, reliability and good overall economy.



Optimized for low fuel consumption

High firing pressures combined with optimal cylinder dimensions and state-of-the-art engine components guarantee quick load response and good performance over the whole load range – and with remarkably low fuel consumption.

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Telex 810-9516386 wartsila marr, Telecopier +410-778 9107

New York Shipyard Corp. Completes Drydocking Of Two PRMMI Ships

New York Shipyard Corporation has announced that it has completed the scheduled drydocking and continued life extension program of two vessels managed by Puerto Rico Marine Management (PRMMI).

The two ships, Humacao and Guyana, each required about 100 tons of steel renewals. The bulk of the steel work was concentrated in the machinery spaces, which included the M1 tanks, tank tops in number one double bottoms and shaft alley. Other areas where steel renewal took place were on the container guides and various hatch cover repairs.

Also included in the drydocking were sea valve and boiler repairs, sandblasting and hull coating. The drydocking took about eight weeks to complete.

Another contract which New York Shipyard is presently carrying out is the drydocking of the U.S. Navy frigate USS Beary, for Phillyship. The shipyard will also perform such major hull items as shaft removal and installation of a new Prairie Air System; removal of the rudder and the rudder pintle for inspection; blasting and coating the hull; overhauling the sea vales and sea chests; and modifying the A Triple F Fire Fighting System.

For complete information on the facilities and services provided by New York Shipyard,

Circle 50 on Reader Service Card

Shell Tankers Awards Multimillion Dollar Contract To Wilton-Fijenoord

Wilton-Fijenoord of The Netherlands has been awarded a multimillion dollar contract by Shell Tankers for the conversion of the M/T Cardissa from a product tanker to a dynamic positioned shuttle tanker for operation in the NAM F3 field located in the Dutch sector of the North Sea.

Major activities to be carried out include structural steel work to accommodation areas and tanks; incorporation of bow and stern thrusters; extending deckhouses, engine rooms and control rooms; and rearrangement and modification of the vessel's ballast, cargo and firefighting systems.

The contract also calls for the installation of an integrated dynamic positioning (DP) system, an inert gas system, a crude oil washing system, bow loading/mooring facilities and an independent electric power plant, including generators, switchboards, etc.

An extensive refit of the existing vessel will also take place. Work is scheduled to begin in February 1993 and be completed by May 1993.

A definite contract amount had not been released as of press time.

For additional information on the capabilities and facilities of Wilton-Fijenoord,

Circle 52 on Reader Service Card

Johnson Appointed Senior Engineer Machinery For USS Great Lakes Fleet

James B. Sharrow, director, engineering at USS Great Lakes Fleet, Inc., headquartered in Duluth, Minn., has announced the appointment of **Richard K. Johnson** to the position of senior engineer, machinery for the company. The appointment follows the retirement of **Bruce E. Liberty**.

In his new position, Mr. **Johnson** will be responsible for the supervision and execution of all engineering functions related to the repair, maintenance and refurbishment of vessel propulsion machinery, boilers and mechanical equipment.

USS Great Lakes Fleet, Inc. is one of the larger carriers of dry bulk materials in the Great Lakes region.

Quality Standards At MIL Davie And The MIL Group Formally Recognized

The efforts made by MIL Davie and The MIL Group over the years were recently awarded when they received certification to the highest NATO quality standard, AQAP-1. **Don Wilson**, director general quality assurance at the Department of National Defense (DND), presented **Guy C. Veronneau**, president and chief executive officer of MIL Davie and The MIL Group, two certificates—one for MIL Davie and the other for The MIL Group—attesting their compliance with AQAP-1.

This important milestone constitutes for MIL a step toward its objective of becoming a world-class shipyard. Internationally recognized, AQAP-1 is the equivalent of several standards established by other standardization organizations.

This certification will represent a particular advantage to MIL in competition for future work, both military and commercial.

MIL Davie is a member of the MIL Group. The MIL Group is active in design engineering, program management, manufacturing, installation and life-cycle support in shipbuilding, defense, offshore and general industrial fields in Canadian and international market places.

Certificates presented to MIL Davie and The MIL Group. Shown at the presentation (from left to right) were: **Jim Williams**, president, MIL Systems Engineering Inc.; **Ken McCormick**, vice president, quality, MIL Davie and The MIL Group; **Don Wilson**, director general, quality assurance, DND; **Guy C. Veronneau**, president and CEO, MIL Davie and the MIL Group; **D.A. Vandevenne**, commanding officer, 2nd Canadian Forces Technical Services Agency; **W. Doering**, director, quality assurance operations, DND.

Johannessen Retires, Roland Named President Of Megapulse

Megapulse, Inc. of Bedford, Mass., a U.S.-owned small business, and one of the only designers and manufacturers of Solid State Loran-C Transmitters Systems, has announced that the company founder, Dr. **Paul R. Johannessen**, recently retired from the position of president of the company. He will remain as chairman of the board and vice president of research and development.

William F. Roland, (Captain, USCG, retired) succeeds Dr. **Johannessen** as president of Megapulse. During Mr. **Roland's** thirty-year Coast Guard career, he was involved in the design, development and installation of Loran-C systems. He brings to Megapulse not only his technical qualifications, but also his business management skills from six years as a sales manager for international sales of Power Plant Systems. Mr. **Roland** stated that he expects company growth to continue not only from the development of international acceptance of Loran-C, but also from expansion of Megapulse's product lines and services.

For more information describing Megapulse products,

Circle 59 on Reader Service Card

MarAd Awards $2.2 Million Contract To West State

West State, Inc., Portland, Ore., was recently awarded a contract worth $2,192,012 by the Maritime Administration. The contract is for repairs and deactivation to the Ready Reserve Force (RRF) breakbulk vessel SS Austral Lightning.

The work includes repairs necessary to meet classification specifications and regulations and is expected to be completed within 60 calendar days.

Intermarine USA Begins Construction Of Fourth Advanced Navy Minehunter

Intermarine USA recently laid the first layers of structural reinforcement in the hull mold for MHC-58, the fourth U.S. Navy minehunter under construction at Intermarine. Intermarine is a world leader in minehunter design and construction with 26 ships ordered or delivered.

Keel Laying of MHC-58 at Intermarine USA

Intermarine's advanced monocoque designs require no frames or keel and are reported to be exceptionally shock resistant. The first layers of the hull mold are built like stair steps to provide overlap of the material. The resulting build-up resembles a pyramid and is the equivalent of a keel in a conventional ship.

Following the completion of the hull, the mold will then be moved into a new 94,000 square foot addition, which will be ready for use in the spring of 1993.

The program to transfer Italian design and construction technology to U.S. Navy Mine Warfare shipbuilding programs began in 1986. Intermarine USA was established by the Ferruzzi group of Italy in 1987 to build these ships for the U.S. Navy.

For complete literature detailing the services and facilities of Intermarine USA,

Circle 18 on Reader Service Card

Malacrida Appointed Regional Sales Manager, For Wartsila Diesel

Karl F. Yannes, vice president, marine engines for Wartsila Diesel, Inc., has announced the appointment of **Bill Malacrida** as regional sales manager, marine engines, for the Southeastern U.S. Mr. **Malacrida** will be located in the company's Houston, Texas, office.

Mr. **Malacrida** brings over 20 years of marine industry experience to his new position and accordingly, will be responsible for marketing and sales of the extensive line of Wartsila Marine Products to customers, agents, designers and shipyards throughout the Southeast U.S. region.

Wartsila Diesel Group, headquartered in Helsinki, Finland, and Strasbourg, France, is a world leader in the manufacture of medium-speed diesel engines. With power outputs to 22,000 bhp, Wartsila Diesel engines are used worldwide as main and auxiliary power sources in oceangoing vessels and other marine applications. Worldwide logistic supportability is provided for all Wartsila Group products through 60 facilities located in 24 countries.

For free literature containing full information on the Wartsila Diesel line of engines,

Circle 87 on Reader Service Card

MHI Receives Order For Two Containerships From Evergreen

Mitsubishi Heavy Industries, Ltd. (MHI) has received a $169 million order for two 3,910-TEU containerships from Evergreen International S.A. of Panama. The ships are expected to be delivered in 1994.

MHI will build both ships at its Kobe Shipyard and Machinery Works.

A letter of intent was also received for three additional containerships of the same size from Evergreen.

Evergreen is currently executing a project to replace 20 ships with new ships. The order was a part of this project.

Prior to ordering from MHI, Evergreen had already ordered three containerships from Onomichi Dockyard in Japan. MHI and Onomichi will build a total of 10 ships as the first stage of Evergreen's replacement project.

Tidewater To Provide $65.5 Million In Marine Services To Alyeska

Tidewater, Inc., New Orleans, La., has announced that it has renewed and extended long-term contracts with Alyeska Pipeline Service Company of Anchorage, Alaska, with a total value of $65.5 million. The contracts cover the chartering of six Tidewater emergency response vessels through July 1998.

Tidewater's specially modified vessels are part of the Ship Escort Response Vessel System (SERVS) created by Alyeska to prevent and respond to oil tanker spills in Prince William Sound, Alaska. The five tug/supply vessels and one large tugboat escort tankers from the Port of Valdez through Prince William Sound to the Gulf of Alaska. They also assist laden tankers during emergencies by providing support and towing services and are equipped to handle initial oil spill response.

Tidewater owns and operates one of the largest fleets of vessels serving the international offshore energy industry and owns and operates one of the largest fleets of natural gas and air compressors in the United States. The company is in the container shipping business, owns a shipyard and has modest interests in domestic oil and gas operations, real estate and insurance.

For complete information on the services provided by Tidewater,

Circle 85 on Reader Service Card

MarAd Awards Over $15 Million In Contracts For Deactivation Work

The Maritime Administration has awarded over $15 million in contracts to various companies for deactivation work on Ready Reserve Force (RRF) vessels.

Service Engineering Co., San Francisco, Calif., received two contracts worth about $6.086 million. Both contracts involve deactivation and repair aboard the SS Meteor and the SS Comet.

West State, Inc., Portland, Ore., also received two contracts totaling $6,574,879 for deactivation and repairs aboard the Northern Light and the SS Cape Blanco.

Southwest Marine, Inc., San Pedro Division, Seaside, Calif., received a contract worth $2,682,273 for deactivation, hull damage repairs and various other repairs aboard the SS Cape Girardeau.

All work includes repairs necessary to meet classification specifications and regulations.

Demand For LNG Ships To Double World Fleet

A recent study by Ocean Shipping Consultants (OSC) forecasts an 87 percent increase in global demand for liquefied natural gas (LNG) carriers by the year 2005. If this prediction is realized, the corresponding rise in new construction orders would double the size of the world LNG fleet.

As a result of growing world demand, the LNG shipping and ship building industries will enjoy a corresponding boost. OSC reports that international LNG tanker employment will increase by 101 percent.

The study foresees a requirement for an additional 233 million cubic feet of LNG ship capacity beyond current orderbooks. This equates to an additional three to four LNG carriers of 4,414,312 cubic feet being built by 1995, a further 19 tankers in the late 1990s and 30 more vessels by 2005.

Bremer Vulkan Makes Takeover Bid For Stralsund Yard

The number of groups interested in acquiring the eastern German shipyard of Volkswerft Stralsund, once the world's largest producer of fishery vessels, has risen to four after a recent bid from Bremer Vulkan.

Also announcing their interests in Stralsund were two Norwegian groups and a management buy-out (MBO) proposal from Stralsund's management and Deutsche Maschinen-und Schiffbau, the parent of the east German shipyard.

Stralsund's orderbook includes four containerships for German owners, three cargo/passenger ships for the Hurtigruten line of Norway, 15 trawlers for British and Russian interests and four dredgers for Indonesia. The yard's workforce now stands at 3,139, compared to the 8,000 workers Stralsund once employed at its height.

Bremer Vulkan has stated its interest in acquiring additional shipbuilding capacity in the east and has recently taken over the Meeres-Technik-Werft (MTW) shipyard.

Norway Awards Additional $200 Million Contract For Tankers To AESA

Knutsen OAS Shipping, Haugesund, Norway, has augmented its original order of three North Sea crude oil tankers from Astilleros Espanoles (AESA), Spain's leading shipbuilding organization, with a $200 million contract for two more 125,000-dwt ships. The first deliveries are scheduled for 1994.

If Knutsen exercises the options for a sixth and seventh tanker, the value of the entire program would increase to $700 million.

The new double-hulled vessels will be among the most sophisticated in the North Sea shuttle carrier fleet. While the first three tankers will be fitted with MAN B&W low-speed diesel engines coupled to a controllable pitch propeller, the remaining vessels will incorporate a unique bank of generators delivering power to a single 16MW propulsion motor turning a fixed-blade propeller at 90 rev/min. This cycloconverter-based diesel-electric system is considered a flexible and economic solution to the rigorous demands of North Sea shuttle tanker operations.

The fourth and fifth tankers will also be among the first equipped to load crude oil by means of a submerged turret loading (STL) system, in addition to a standard bow loading station.

For additional free information on the services and facilities available from Astilleros Espanoles' shipyards,

Circle 6 on Reader Service Card

GAO Predicts Growth In Navy's Shipbuilding Costs

A General Accounting Office (GAO) report stated that their were more than $6 billion in Navy shipbuilding cost overruns during fiscal year 1991, and that future shipbuilding costs are likely to increase.

According to the GAO, the 54 ship construction contracts evaluated in the report had initial target costs of $27.1 billion. Of the $6 billion additional cost, the Navy's share is approximately $4 billion, with the shipyards picking up the remainder.

To make up for funding shortfalls, the Navy has previously transferred funds to ship construction accounts from other shipbuilding and procurement programs that were lower in priority, reduced or canceled.

However, for fiscal year 1992, the Navy was provided with over $463 million in additional funding by Congress, and given permission to transfer $1.5 billion among programs to make up funding shortages.

The GAO and Navy report that future ship construction costs will continue to rise as the number of vessels under construction falls and as the Navy loses its ability to accommodate cost fluctuations.

New P&O Cruise Ship To Receive MAN B&W Engines

MAN B&W Diesel, Augsburg, Germany, recently received a contract to manufacture eight large, four-stroke engines, with a total output of 57,430 kW (78,100 hp), for the 67,000-gt luxury superliner ordered earlier this year by U.K.-based P&O from Meyer Werft, Papenburg, Germany.

The ship is scheduled for delivery in March 1995 and will be 853 feet in length, possess a 105-foot beam and carry 1,975-passengers. Propulsion will be provided by two pairs of MAN B&W type L 58/64 diesel engines, arranged in a father-son configuration of one six-cylinder and one nine-cylinder engine generating a combined 39,750 kW (54,060 hp) and driving two variable-pitch propellers at a maximum speed of 24 knots. For shipboard mains supply and boost operation, four MAN B&W 6L 40/54 auxiliary engines with a total output of 17,680 kW (24,040 hp) will be used.

Meyer Werft delivered the luxury cruise liners MS Horizon, April 1990, and MS Zenith, March 1992, to Chandris Celebrity Cruises. Each ship was equipped with seven MAN B&W L40/45 type engines.

Up to this date, MAN B&W has sold 170 of its L 40/45, L/V 48/60 and L 58/64 family of large medium-speed diesel engines.

For additional free information about MAN B&W's family of medium-speed diesels,

Circle 90 on Reader Service Card

To receive more information about the shipyard services and facilities offered by Meyer Werft,

Circle 91 on Reader Service Card

United Scale Models Awarded $5.6 Million For Training Devices

United Scale Models, Inc., Houston, Texas, was awarded a $5.6 million contract to provide five devices designed to support the Taiwan Navy's mission to train its gas turbine technicians to maintain the LM 2500 gas turbine engines used aboard the PFG-2 guided missile patrol frigates. The contract, N61339-92-C-0122, was awarded by the Naval Training Systems Center, Orlando, Fla.

CSS Contract Opens New Horizons For PacOrd

A worldwide, $3.3 million prime contract with the Naval Engineering Center, San Diego, Calif., will allow PacOrd, Inc., a subsidiary of SPD Technologies, to expand its service capabilities in a number of fields, according to vice president and general manager of PacOrd, **Robert G. Hartsock**.

The contract contains provisions for removal, inspection, testing, repair, overhaul, restoration and installation support for EW systems on U.S. Navy ships, stations and shore facilities throughout the world.

PacOrd will provide life cycle support for the AN/ULQ-13 (V)1 countermeasures signals simulator (CSS) system and associated programs through a contract that calls for one base year and three option years building on the firm's years of experience in carrying out combat systems overhauls.

PacOrd is a subsidiary of the Philadelphia-based SPD Technologies. A full service combat system contractor supporting the U.S. Navy through private sector shipyards, DOD contracting agencies and OEM's, the company has one of the largest Master Ordnance Repair (MOR) capabilities in the nation, and is known for its diversity of expertise in all key areas of shipboard systems repair and overhaul.

SPD Technologies is one of the nation's largest designers and manufacturers of military circuit breakers and switchgear, and a leader in the development of advanced shipboard announcing systems.

Now you have a radar choice that makes good sense.

SIMRAD/ANRITSU RADARS

Anritsu radars provide the most modern design technology available anywhere, from advanced LSI circuitry, to super sensitive receivers, to patented clear picture circuits and they're available only from Simrad. That's good news because Simrad provides top quality support and service through one of the most extensive dealer networks in the business.

Five SIMRAD/Anritsu models cover the needs of commercial vessels, work boats, sport fishermen and yachts of all sizes. Our radars are available with screen sizes from 10" to 15" to neatly fit any pilothouse requirements, monochrome or color displays for total versatility, output powers from 4 to 25 kW for any range needed, and antennas from compact domes to 6' open arrays to meet any user demand. All models have extensive on-screen menus for easy customizing, simple and logical controls, dual VRM's and EBL's, offcentering, echo plot, multi-level quantization, auto tuning, guard zone, and all the other performance features you'd expect in first-class radars. Choosing a radar has now become much easier. SIMRAD/Anritsu. Radars that offer the highest performance, unsurpassed quality and reliability, backed by Simrad's unmatched dealer organization. For complete information on all SIMRAD/Anritsu radars, see any authorized Simrad dealer, or call toll-free 1-800-426-5565 for free full-color literature today.

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SIMRAD

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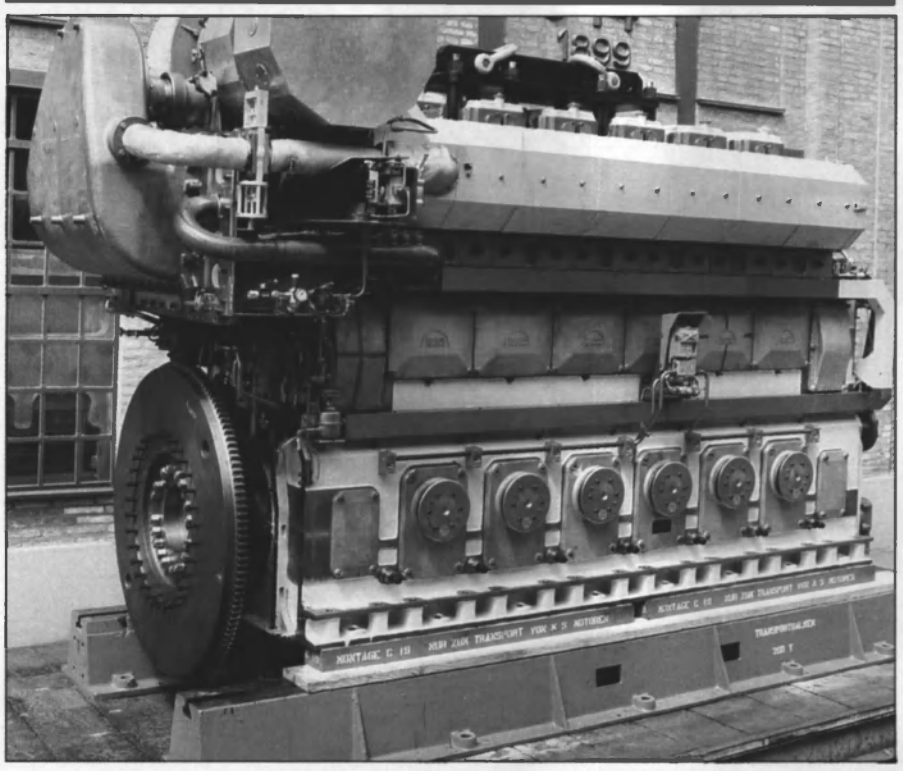


The new L 32/40 diesel engine

MAN B&W Diesel AG Introduces Newest Engine, The L 32/40

MAN B&W Diesel AG of Germany has introduced its newest four-stroke engine, covering the power range of 2,600 to 4,000 kW. This is a continuation of the medium-speed engine family, which includes: the L 40/54, L/V/48/60 and L 58/64. The company has placed its experience with the other engines, as well as design features into the L 32/40.

In addition to the proven features, the L 32/40 addresses two problems which shipowners face today, ecological requirements and fuel oil consumption.

Introduced with the L 32/40 is a special conceptual feature, separate camshafts for injection and charge air renewal resulting in:

-- Load dependent adaption of the valve timing and thus clean, low pollutant combustion from full power to the lower load ranges;

-- Operation at favorable specific fuel consumption irrespective of the fuel quality (182 g/kWh).

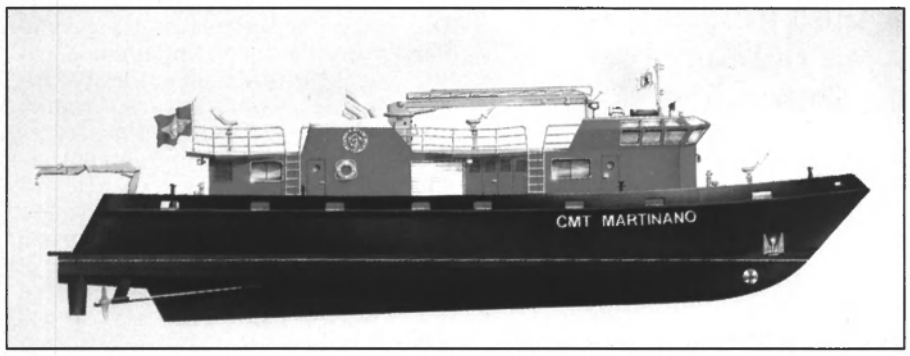
This concept reportedly permits a prompt reaction to environmental requirements without a large expenditure by utilizing an adjusting device.

MAN B&W reports that the new L 32/40 engine has a lube oil consumption of 1 g/kWh, a long service life of important wear parts permitting maintenance intervals of two years and a simple maintenance concept based on its large medium-speed engines.

For additional free information on the L 32/40 diesel engine from MAN B&W Diesel AG,

Circle 46 on Reader Service Card

No. of cyl.	Continuous rating 720/750 1/min		Dimensions			Weight
			L	W	H	
	kW	HP	mm			tons
6L	2640	3590	5600	2100	3890	34
7L	3080	4189	6130	2225	4150	38
8L	3520	4787	6660	2225	4150	43
9L	3960	5386	7190	2225	4150	47



The 107-foot, Fryco Inc.-designed fireboat for Sao Paulo, Brazil

Trinity's Equitable Yard Delivers Two 107-Foot Fireboats To Sao Paulo, Brazil

Utilizing a Fryco, Inc. of Houston design, The Trinity Marine Group's Equitable New Orleans, La., facility delivered two 107-foot fireboats to the municipality of Sao Paulo, Brazil, including the pictured (to the right) Comandante Cianciulli. Trinity executed the contract, from the laying of the keel on the first vessel to the delivery of the second, in 14 months.

The multi-mission vessels were also equipped with a modern trauma center, a decompression chamber for diver treatment, and equipped to support scuba and hard hat diving. All multi-mission equipment was supplied by Engineering Equipment Company of Chicago.

Both vessels are powered by twin 1,400 hp Detroit Diesel 16V92TA engines and utilize ZF BW-450 marine gears. The fireboats have a service speed of 15 knots and a continuous cruising speed of 13 knots.

Hull and cabins were constructed of steel, the vessels were built to ABS, +A1, +AMS, Harbor Service Fireboat Standards. The 107-foot by 25-foot boats have a displacement of 215 tons. The vessels are capable of delivering in excess of 10,000 gpm of water from a combination of monitors and hoses, the fire pumps powered by twin Cummins KTA19 engines. The boats also feature a spray curtain around their perimeter to protect them from extreme heat when fighting close-in fires or performing rescues.

Trinity delivered two fireboats in 14 months

The navigation controls are primarily Raytheon equipment. The vessels are equipped with trolling valves for the ZF Gears for maneuvering in tight spaces. With the assistance of the Magnum Bow Thruster by American Bow Thruster Co., the boats can turn 360 degrees in their own length.

Provided with tachometers, instruments and shaft tacks, the operator of each boat has a visual display of the basic instruments backed up by an elaborate monitoring system which provides early warning of system failure on any on of the six diesel engines, including bilge, fire and other alarms.

The fireboats have Kobelt air controls for the two pumping engines, as well as front PTO controls to select hydraulic drive for the Telesquirt ladder, anchor windlasses, bow thruster or HIAB crane. The Telesquirt ladder is hydraulically controlled from the base of the ladder and is used to direct a 750 gpm nozzle at a height of 85 feet off the water.

For more information on Trinity Marine,

Circle 162 on Reader Service Card

Brazilian Fireboat Equipment List

Main Engines	Detroit Diesel
Propellers	Sound Propeller Co.
Fire Pump Engines	Cummins
Generator Engines	Cummins
Alternators	Stamford
Autopilot	Raytheon
Radar	Raytheon
Loudhailer	Raytheon
SSB Radio	Raytheon
Digital Compass	Azimuth
Magnetic Compass	Ritchie
Depth Finder	Data Marine
Marine Gears	ZF
Nozzle and Hydraulic Ladder	Telesquirt
Fire Monitors	Skum
Sea Crane	Hiab
Bow Thruster	American Bow Thruster

Krupp MaK Diesels Ordered By Bender For Alaska Ferry

Krupp MaK Diesel, Inc., on behalf of their parent company, Krupp MaK Maschinenbau GmbH, has announced that it has received an order from Bender Shipbuilding & Repair Co., Inc. for the supply of two MaK 8M453C 4,000-hp, 600 rpm main propulsion engines and Lufkin reduction gears. The equipment is to be installed aboard the Alaska Marine Highway ferry, the M/V Taku, which is scheduled to be repowered at Bender.

Bender Shipyard received the repower contract despite the cost of having to bring the vessel through the Panama Canal and into the Gulf to carry out the work.

This is reported to be the second Alaska to be repowered with MaK M453 engines.

For more information on Krupp Mak diesel engines,

Circle 7 on Reader Service Card

Tencara To Build Advanced Composites Air-Cushion Ship

Tencara, a Montecatini company in the Ferruzzi-Montedison Group of Italy, and the Norwegian naval engineering firm, Cirrus Ship Design, have signed an agreement to construct a surface effect ship (SES) to be used in rapid passenger transport. This is reportedly the first time a ship of this type, designed for civil use, will be constructed with an extensive use of advanced composite materials rather than metal or fiberglass, using the same advanced technologies used for the "Moro di Venezia" boats.

This ship, which will be 188 feet long, will be capable of transporting 320 passengers at a speed of over 50 knots and be used on short-to-medium length routes of 100 to 120 miles.

The design for the new ship, called the SES Tencara Cirrus 120PL, has already been completed. Cirrus has provided the overall design, which has been optimized on the basis of weight reduction, according to Tencara. Tencara will be responsible for material selection and construction of the ship.

Ferruzzi-Montedison has one of the largest Italian presences in the U.S. with revenues of $5.4 billion and over 6,000 employees.

For more information on the marine services and facilities of Tencara,

Circle 15 on Reader Service Card

Boston Whaler Wins Contract From New York City Police Department

The Commercial Products Division of Boston Whaler, Inc. has received a contract from the New York City Police Department (NYCPD) for an all-aluminum 36-foot Defiance Model Patrol Boat.

Selection of the Defiance was made following an on-location demonstration, which proved that the customer's performance standards were achievable; and also because Boston Whaler was among the lowest bidders for the contract.

The Boston Whaler Defiance 36'.

Delivery of the vessel is scheduled for January 1993. According to Sgt. **Robert Jahrnes** of the NYCPD, the Defiance will be used in the waters around Manhattan. It is also reported to be the first Defiance model to be equipped with twin Detroit 671TI diesel engines.

With the purchase of the Defiance 36, the total number of Boston Whaler commercial boats in use in NYC is five. The department also has three 13-foot Utility Whalers and a 27-foot Challenger.

For free literature describing the services and capabilities of Boston Whaler,

Circle 17 on Reader Service Card

AVAILABLE AT ZIDELL
FOR SALE OR CHARTER

OCEAN DECK BARGES

Length	299'0"	302'0"
Beam	90'0"	76'0"
Depth	20'0"	20'0"
Deadrise	–	2'0"
Draft Light	2'7-1/2"	3'10"
Draft Loaded	15'10"	16'
Transverse Bulkheads	7	8
Length Bulkheads	3	1
No. Tanks	32	18
Rolled Bilge	–	24"
Curved Rake Bow	29'	49'
Long Flat Raked Stern	30'	50' Long Curved Rake
Deck Open Deck Area	25,284 S.F.	19,950 S.F.
Cargo: Deck Load	2,050 P.S.F.	2,500 P.S.F.
D.W.T.	9,604 LTSW	7,236 LTSW

Maltese Cross A-1 Deck Barges

TANKS

Steel Skid-Mounted Liquid Storage Tanks. 10 Available.

Coast Guard Approved
Capacity ..... 475 BBLS
Height ..... 7'0"
Width ..... 12'0"
Length ..... 32'0"
Piping ..... Single fill pipe and distribution.
Gravity Discharge.
Valves and Manifold included.

CRANES

Whirley Crane

Model & Type	Clyde 37 DE-145-20 Whirley Crane
Manufacturer	Clyde Iron Works
Capacity	200 Tons
Main Hoist	Certified Rating of 400,000 lbs. @ 47' Radius; 150,000 lbs. @ 150' Radius. (16 part rigging)
Whip Tackle	2 part, 40,000 lbs. @ Radiuses to 160' max.

Excellent Condition

LIFT TRUCKS

Two Taylor Lift Trucks, Model TE 220S

22,000 lbs. Basic Capacity at a 24" Load Center.

Cummins Diesel Engine Model 6BT developing 151 HP at 2500 R.P.M.

Taylor 3-speed Power Shift Transmission. Separate transmission oil cooler.

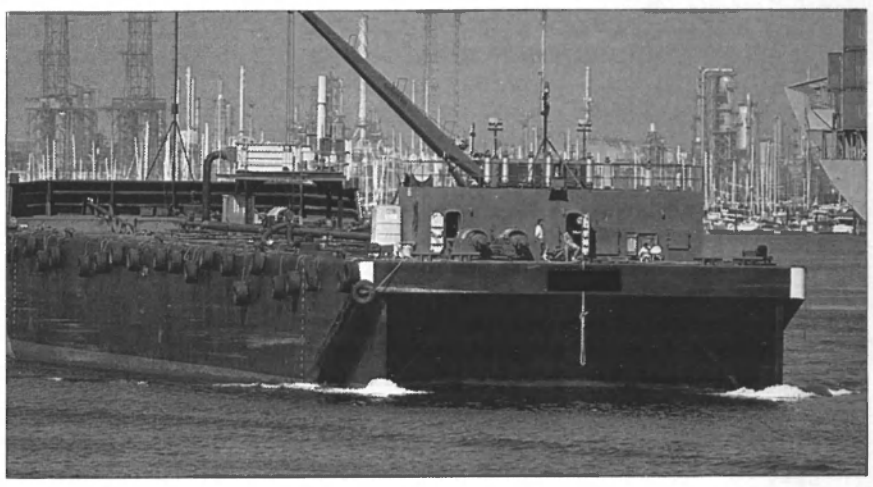
216" Lift Ultra View mast with an over-all lowered height of 168".

84" Wide Hydraulic side shift with 10" of total shift.

Fully enclosed cab with heater, defroster and front wiper.

MALTESE CROSS A-1 OIL TANK BARGE

Length	296'0"
Beam	60'0"
Depth	22'0"
Deadrise	6"
Number of Tanks	12
Total Tank Volumes at 95%	50,700 BBLS
Cargo Pumps	3 Rotary Twin Screw, Allweiler 231
Rating	1,500 GPM, 150 PSI, 1,200 RPM
Location	After Rake
Diesel Engines	3 Detriot Diesel 8V-71, 233 HP @ 1,800 RPM
Location	Engine Room on After Deck
Fuel Capacity	1421.3 Gal. Diesel
Fill & Discharge Connections	10" & 8"
Heating Coils	2" Sch. 80 Pipe Coils for Shore Steam Supply
Hull Plating	Side Shell 1/2", Bottom 7/16", Deck 1/2"
Deck Cargo Dwt. at Loadline	6761 LTSW



SPLIT TYPE SELF-DUMPING SCOWS

Length	180'0"
Beam	50'0"
Depth of Mid-Body	14'0"
Hopper Length	128 0"
Level Hopper Volume	1,421 cu. yd.
DWT @ d = 10.22 ft.	1,615 L.T.
Rake Lengths F. & A.	26'0"
Twin Skegs	
Stern & Fwd. Rake Decks Stepped up	2'0"
Engine GM 671	
Hydraulic Pumps 12 GPM & 75 GPM	
Time to Open (Fully Closed to Fully Open)	6 Min. 5 Sec.
Time to Close	4 Min. 34 Sec.
Hopper Angle Fully Open	53.78 degrees
Fuel Tank Capacity	445 Gal.
Hydraulic Cylinders (2 Fwd. & 2 Aft)	18" Diam. 120" Stroke
Plating	Side, 9/16", Bottom, 5/8" Hopper, 5/8"

ZIDELL MARINE GROUP

For additional information or to make an appointment to inspect, write or call:
Sam Replin or Jack Breshears
3121 S.W. Moody Avenue, Portland, Oregon 97201
Phone: 1-800-547-9259, In Oregon (503) 228-8691 Fax: (503) 228-6750

Circle 303 on Reader Service Card

Kockumation, Hitachi Zosen Sign Five-Year Cooperation Agreement

Kockumation AB and Hitachi Zosen Information Systems Co., Ltd. have signed a five-year cooperation agreement for marine loading instruments - in particular Kockumation's Loadmaster loading system.

Kockumation is a Swedish onboard marine computer systems specialist, and Hitachi Zosen Information Systems is a subsidiary of the Hitachi Zosen Corporation.

The agreement calls for both companies to coordinate their Far Eastern marketing activities in Japan, China, South Korea and Taiwan. The Loadmaster system will be sold under the brand name of Loadometer 1000.

For all Far Eastern sales the product will be produced in part by Kockumation in Malmo and final customization will take place at Hitachi Zosen Information Systems.

The agreement is also intended to cover future cooperation in the area of product development, as well as in the fields of production and marketing.

For further information,

Circle 10 on Reader Service Card

Von Minden And Walker Promoted At Krupp MaK,

Krupp MaK Maschinenbau GmbH has announced the appointment of **Rainer von Minden**, former vice president, to the position of president at Krupp MaK Diesel, Inc. Also **Chris Walker**, formerly a sales manager, was named to the position of vice president, new engine sales.

Mr. **von Minden** announced that **Steven Birdsall** joined Krupp MaK Diesel, Inc. in the new engine sales division.

Krupp MaK Diesel, Inc., headquartered in Mississauga, Canada, is responsible for sales, service and spare parts support for MaK engines throughout Canada, the U.S., Mexico, the Caribbean and parts of Latin America.

MarAd Awards Over $17 Million In RRF Contracts

The Maritime Administration has awarded the following contracts for work relating to vessels of the Ready Reserve Force (RRF).

Texas Sealift Terminals was awarded a contract worth $2,385,430 for providing layberth services for the Cape Isabel and Cape Inscription. The one-year contract provides for all layberth services, and also contains four one-year options.

A contract worth $4,105,882 was awarded to Norfolk Shipbuilding and Drydock Corp. for the deactivation of the SS Cape Domingo.

Colonna's Shipyard Inc. received a contract for deactivation work and repairs aboard the breakbulk vessel SS Gopher State.

Metal Trades Inc. received a contract for repairs and deactivation work on the SS Cape Douglas. The contract is worth $3,820,375.

A contract worth $3,485,916 was awarded to Gulf Offshore for voyage repairs and deactivation of the SS Diamond State.

Flow International To Acquire Spider Staging

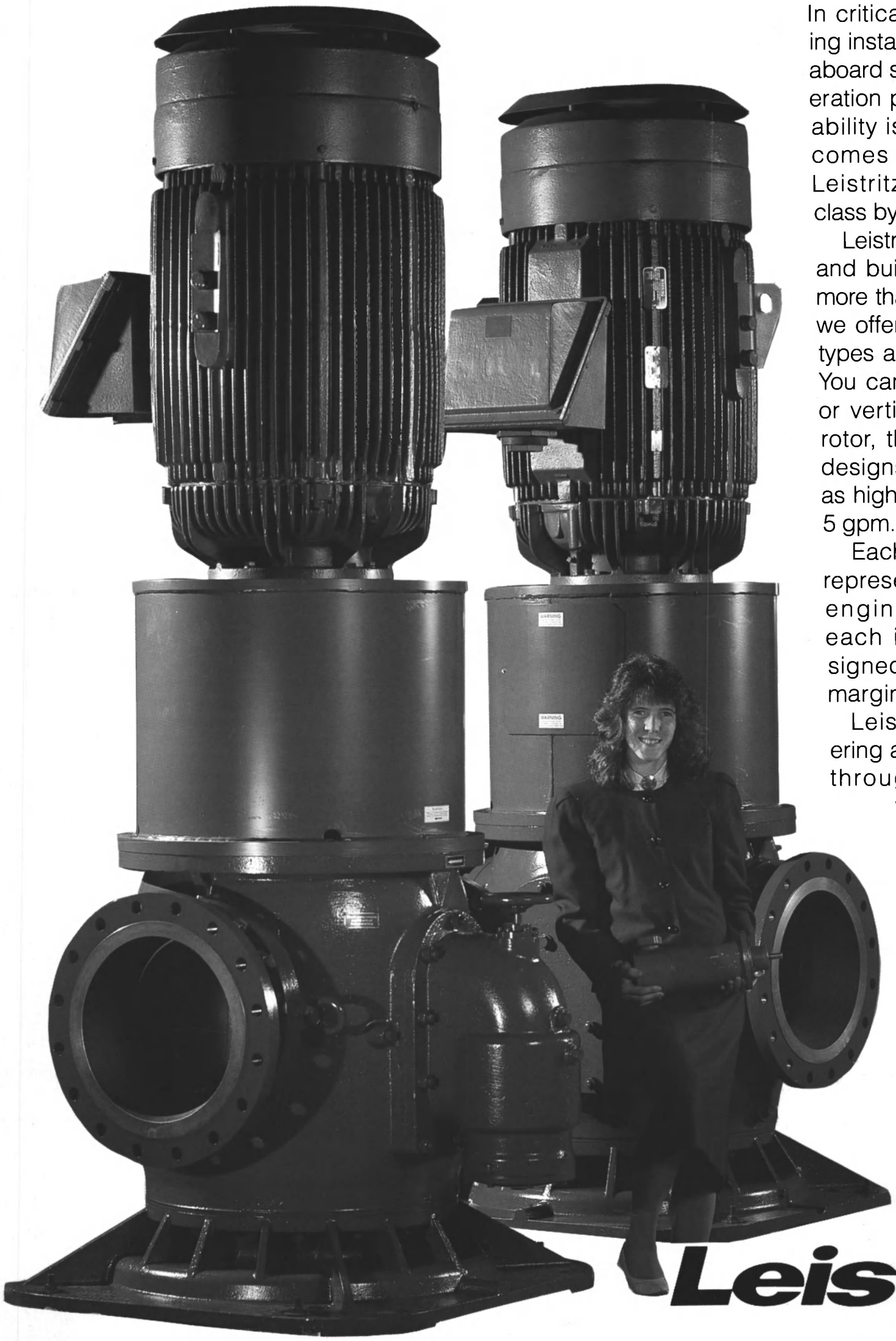
Flow International Corporation has announced that it has signed a definitive agreement to acquire all of the outstanding stock of Spider Staging Corporation in a move to improve the distribution and service network for its products.

Spider Staging Corporation, of Tukwila, Wash., is one of the leading suppliers of temporary and permanently installed power-driven scaffolding equipment to the maintenance and construction industries in the United States.

Operating through 16 branch locations, Spider Staging Corporation designs, sells, rents and services its equipment.

Flow International Corporation is one of the world's leading manufacturers of ultrahigh-pressure waterjets for industrial cutting, cleaning and Hydromilling services.

From the largest to the smallest...



Leistritz screw pumps for lube & fuel service.

In critical lube and fuel pumping installations—such as those aboard ships and in power generation plants—pump dependability is crucial. And when it comes to dependability, the Leistritz screw pump is in a class by itself.

Leistritz has been designing and building screw pumps for more than 65 years. And today, we offer the broadest range of types and sizes on the market. You can select from horizontal or vertical models; from two-rotor, three-rotor or five-rotor designs; and from capacities as high as 4500 gpm, down to 5 gpm.

Each Leistritz screw pump represents a no-compromise, engineered solution. And each is conservatively designed to give you an extra margin of reliability.

Leistritz operates engineering and service facilities throughout the world, and will work closely with you in providing expert application and installation assistance.

For further information on the *largest of all* screw pump programs, contact Leistritz today.

Leistritz Corporation
165 Chestnut Street
Allendale, NJ 07401
☐ 201-934-8262
FAX 201-934-8266

Circle 335 on Reader Service Card

Leistritz

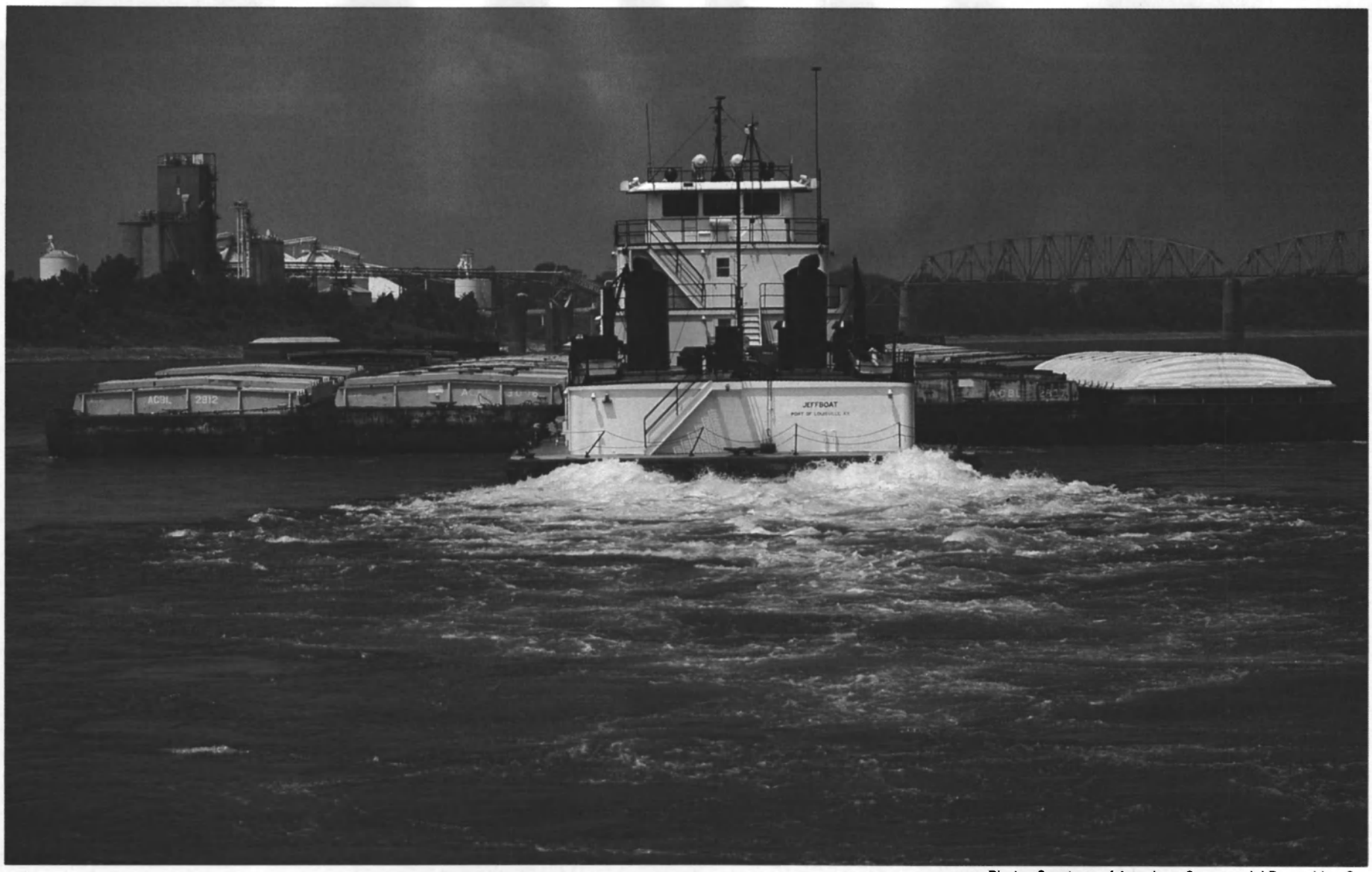


Photo: Courtesy of American Commercial Barge Line Co.

INTERNATIONAL WORKBOAT SHOW

14th Annual Show Scheduled for December 3-5, New Orleans, La.

Responding to continued growth, the 14th Annual International Workboat Show is being moved from the Louisiana Superdome to the new Orleans Convention Center, a building designed specifically to handle trade shows.

National Fisherman Expositions, Inc. of Portland, Maine, expects a strong turn out of more than 12,000 attendees, to examine the vast array of marine products and services on display in more than 700 booths for this year's show, which is scheduled to run from December 3-5 at the Louisiana exhibit hall.

"We are continually looking for ways to improve the quality of the show, and the marine community can count on a larger and more diverse event this fall" said **Stephen McDonough**, sales director for the show. "As a result, we felt the time was right to re-locate to the newest wing of the Convention Center. This bright, open facility gives all exhibitors high visibility and provides the buyers clear access to all exhibits. Also, outside and in-the-water boat displays may be available."

The show will again offer an educational seminar program useful to attendees from all walks of the marine field. Starting on Friday December 4 at 10:30 a.m., the seminar "Workboat Power" is being offered.

In this first session, industry experts will discuss various propulsion options available to operators of shallow-draft vessels. Among the planned topics of discussion are turbine engines, Z-drives, air-cooled diesels and waterjets. Plus, a look at the advancements in engine electronics and other ongoing and anticipated developments in diesel engine technology will be discussed.

Also on Friday, starting at 2:30 p.m., is the seminar entitled "Designing for Speed: Future Trends in Three Markets." Patrol boats, crewboats and ferries are three classes of vessels that require speed to fulfill their mission. A panel of leading design experts is scheduled to discuss hull, power and weight considerations in developing new vessel designs for the 1990s. Included in the session will be performance reports on new designs and on recently constructed boats, as well as discussion of improvements operators may see in design, power and construction by the year 2000.

The final session is scheduled for Saturday, December 5, starting at 10:30 a.m., entitled "GPS and Workboats." GPS (Global Positioning System) units are now being installed on workboats. GPS can provide a fixed-position accuracy of 100 meters anywhere in the world. This accuracy improves to three to five meters when GPS is used in conjunction with other differential techniques, such as Loran. Experts will explain what GPS and differential GPS (DGPS) are, and how this extremely accurate, all-weather positioning system works. The discussion will also detail the benefits of GPS to operators of vessels plying the inland and coastal waters.

For more information on the International Workboat Show, contact: National Fisherman Expositions, Inc., P.O. Box 7437, Portland, Maine 04112-7437. Tel: (207) 772-3005; FAX: 207-772-5059.

Schedule Of Events

Saturday, December 4

10:30 a.m. to noon: "Workboat Power." Experts discuss current and future propulsion options, including a review of specific equipment and engine electronics.

2:30 to 4 p.m.: "Designing for Speed: Future Trends in Three Markets." Experts discuss the hull, power and weight considerations in developing new patrol boats, crewboats and ferries. Includes performance report on new designs and a look forward at projections for construction by the year 2000

Saturday, December 5

10:30 a.m. to noon: "GPS and Workboats." A look at how Global Positioning System (GPS) units are being installed on workboats. Discussion will explain what GPS and differential GPS (DGPS) are, and it

will detail the benefits of GPS to operators of vessels plying the inland and coastal waters.

International Workboat Show Exhibitors

A

Aalborg Ciserve Houston, Inc.
ACR Electronics Inc.
Advanced Industrial Products Inc.
AE Clevite Inc.
Air Compressor Energy Systems Inc.
Alabama Shipyard
Alaska Diesel Electric
Allied Shipyard
Allied-Signal Inc.
American Air Filter/Snyder General Corp.
American Boat Inc.
American Bureau of Shipping
American Diesel Engineering Co.
Rice Propellers/American Int'l Marine
American Manufacturing
American Marine Corp.
American Safety Technologies
American Vulkan Corp.
American Waterways Operators (AWO)
Ameron Coatings
Appleton Marine Inc.
Aquadrive Systems
Aquatics Unlimited
Archway Lighting Supply Inc.
Aries Marine & Industrial Sales
Atlantic Marine Inc.
Atlantic Marine Inc.—Mobile
AT&T High Seas Radiotelephone Service
Avondale Industries,Harvey
Avondale Industries, Westwego
Avon/Imtra Corp.

B

Baton Rouge Marine Electrical Service
Baylor Generator/Motor Group
Bayou Marine Electronics
Frank L. Beier Radio Inc.
Bender Shipbuilding
BF Goodrich
Bio-Concepts Inc.
Bird Johnson Co.
Blackburn Marine
Blohm + Voss AG
Bludworth Bond Shipyards
BOATRACS Inc.
Bourg Dry Dock & Service
Bozeman Distributors
Braden Winch Div. of Paccar
Branton Industries
Breaux Petroleum Products
Buckner Generator and Armature Service
Byrne, Rice & Turner

C

Canadian Consulate General
Carboline Co.
Carderock Division
The Carlisle & Finch Co.
Caterpillar Inc.
Cato Oil & Grease Co.
Centrico Inc.
Cetrek Wagner
Chemidry of America, Inc.
Chevron USA Inc.
The Cline Company
CMP Coatings
C N F Inc.
Coastal Electric Supply
Coastal Engineering Corporation
Coastal Wire & Cable
CoastDesign
Columbian Rope Co.
ComNav Autopilots
Computational Systems Inc.
COMSAT Maritime Services
Conrad Industries Inc.
Cooper Bearing Co.
Corn Island
Corrosion Block Inc.
Cospolich Refrigerator Company
C. Plath North American Division
Crosby Group
Crowe Rope Co.
Cummins Engine Co.
Custom Hydraulic Components

D

Dana Corporation Boston Ind. Products Div.
Datatronics Inc./Rivertronics Inc.
Deansteel Manufacturing
Deere & Company
DeHart Marine Electronics
Demaree Inflatable Boats
Devoe Coatings
Diesel & Gas Turbine Publications
Diesel Source Inc.
Donovan Marine Inc.
Dreyfus Supply & Machinery
Duramax Marine Div. of Johnson Rubber

E

Eagle Control Systems
Eastern Shipyards
Eaton Corporation/Airflex Div.
Echotec
Economy Boat Store
EMT Electronics
Encon Management
Envirovac
E R L Inc.
Eureka Chemical Co.
Examco

F

Fairbanks Morse Engine Div.
Falk Corp.
F&B Rubber
Fehr Bros Industries
R.W. Fernstrum & Co.
Fire Protection Training Division
First Thermal Systems
Fisherman Wholesale Marine Supply
FISH EXPO 1993
Fleetguard Marine
Freeman Marine Equipment Inc.
Frotronics Inc.
Furuno USA Inc.

G

Galley Equipment Corp.
L F Gaubert & Co.
German & Milne
Gilkes Inc.
Glassmaster Co. Industrial Products Div.
Globe Marine
Goldin Industries
G.P. Marine Flex
Green Marine & Industrial Equipment
Guardian Filter
The Guest Co.
Gulf Coast Fabrication
Gulf Electroquip
Gulf Engine & Equipment
Gulf Engineering Co.

H

Haley Marine Gears
Hall & Stavert
Hammonds Fuel Additives
Hannay Reels
Hardy Insurance Co.
Hatch & Kirk
Haynes Corp.
Haz Mat Response Tech
HBM River Plant
Henschel
Hernandez Mattress
Hoechst Celanese
Holset Engineering Co.
Hopeman Brothers
Houma Armature Works & Supply
Houston Marine Training Services
Hull Electronics
Hyde Products
Hydradyne
Hynautic Division

I

Ian-Conrad Bergan
ICOM America
Imo Industries
Inland Rivers Ports and Terminals
Insulations Inc.
International Paint
International Ship Repair
International WorkBoat Show 1993
Inventory Locator Service
ISCOLA Inc.
ITW Philadelphia Resins Corp.

J

Jamestown Metal Marine Sales
Jane's High-Speed Marine Craft
Jastram Engineering
J.C. Marine Diesel
Johnson & Higgins Insurance
Johnson Pump of America
Johnston Brothers
Jotun Valspar Marine Coatings
Jukova Ltd.

K

Kahlenberg Bros.
Kamewa AB
Kaydon Corp.
Kenwood US Corp.

Kiene Diesel Accessories
Kobelt Manufacturing Co. Ltd.
Koden International Inc.
Koldwave-Heat Exchangers Inc.
Kreiter Geartech
Krupp MaK Diesel Inc.
Kvichak Marine Industries Inc.

L

Lake Charles Diesel
Lario Pumps
LeBlanc & Associates
LEEVAC Shipyards
Lemoine's Marine Refrigeration
Loos & Co.
LSU Firemen Training Program
LV Petro

M

Mackay Communications
Magellan Systems Corp.
The Mallard Group Inc.
MAN Marine Engines
Marine Development Corp.
Marine Industries Corp.
Marine Propulsion Inc.
Marine Spill Response Corp.
Maritime Reporter & Engineering News
Maritime Services Corp.
Maritime Systems Designs
The Mart Corp.
Mather Controls
Matrix Desalination
Julian A. McDermott Corp.
McElroy Machine & Mfg. Co. Inc.
M & D Distributors
J.H. Menge & Co.
Mercury Marine
Metritape Inc.
Michigan Wheel Corp.
Midland Manufacturing Corp.
Miffco
William F. Miller & Associates
M.I.T. International
M & L Industries
MMC Intl. Corp.
Mobil Oil Corp.
Moore Engineering Services Co.
Buzz Morley Jr. & Associates
Moxie Media Inc.
Munro Petroleum & Terminal Corp.
Munson Manufacturing Inc.
Frank W. Murphy Mfr.
Mustang Meta Corp.

N

Naiad Marine
Napier Co (Arbroath) Ltd.
National Assn. of Passenger Vessel Owners
National Fisherman Expositions
National Magnetic Sensors
National Maintenance & Repair
National Oceanic & Atmospheric Admn.
Nelson Division
Newmar
North American Marine Jet Inc.
NREC Power Systems Inc.

O

Offshore Marine Service Assn.
Offshore Marine Supply Co.
Oil Mop Inc.
Oil Stop Inc.
Government of Ontario
Orkot Engineering Plastics Inc.

P

Paccar Winch Division
Pacific Coast Marine Industries Inc.
Parker Hannifin Corp./Racor Div.
W.W. Patterson Co.
Penn Troy Machine
Perko Inc.
Phoenix Fuel Systems
Phoenix Products
Pilot Marine Products
Porta Phone Co.
Poscon Inc.
Power Systems Specialists
Powerway (Div. of Covington Diesel)
Precision National Plating Services
Prime Mover Controls
PRS Paint
P&S Diesel Service
PYI Inc.

Q

Quality Shipyards

R

Raychem Corp.
Raytheon Marine Co.
Refco Sales Inc.
Revere Supply Co.
The Rexroth Corp.
Richard's Galley Equipment
Robertson Marine Electronics
Robertson Marine Systems
Rolls Battery Engineering

S

Sample Brothers Inc.
Samson Ocean Systems
Scale Reproductions
Schoellhorn-Albrecht Machine Co.
Schuyler Rubber Co.
Science & Technology
SeaArk Marine
Sea-Fab Inc.
Sea Friendly Products
SEA Inc.
Sea Recovery Corp.
Sea Trac Offshore Services
Seaward International Inc.
Karl Senner Inc.
Serdi Corp.
Service Marine Industries Inc.
Service Pump & Compressor Inc.
Shearer & Assoc. inc.
Shell Oil Co.
Ships Machinery Intl.
Sigma Coatings
Simpson Power Products Ltd.
Simrad Inc.
SI-TEX Marine Electronics Inc.
Skipper Hydraulic Inc.
Skipperliner Marine
Skookum/Rope Master-Ulven
Smart Boat Inc.
Solidur Plastics Co.
Sorb"Ant"
Sotec
Sound Propeller Services
Southland Steel & Supply
Southwest Abrasives & Equipment Co.
Sperry Marine Inc.
Spinner II
Spurs Marine Manufacturing Inc.
Spyderco Inc./Golden Promotions
Stam Supply Inc.
Standard Communications Corp.
Star Power Services Inc.
Stewart & Stevenson Services
Sturdy Marine
Superior Energies Inc.
Swath Ocean International Ltd.
Systron Donner Safety Systems Div.

T

Taylortec Inc.
Telcor Instruments
Temco
Textron Marine Systems
Tharrington "Doodles" Machine Works
Thermoquip Inc.
Thomas Pump & Machinery Inc.
Tonan America
Trellex Morse
Trimble Navigation
Trinity Marine Group
Turbine Specialties
Twin Disc Inc.

U

Ulstein USA Inc.
Ultra Poly Inc.
Underwood Sales Co.
Unitor/Grace Dearborn
U.S. Coast Guard Marine Safety Office

V

Vapor Mark IV
Viking Fender Co.
Viking Life-Saving Equipment
Viking Maritec
Voith Transmissions
Volvo Penta North America Inc.

W

Robert H. Wager Co.
Wagner Hydraulic Steering
Walker Boat Yard
Wall Industries
Wartsila Diesel
Waterway Communications System
Waukesha Bearings
Wellington Puritan
Western Branch Metals Inc.
Western Detroit Diesel-Allison
Willard Marine Inc.
Williams Detroit Diesel-Allison
Wynn Enterprises

Z

ZF Industries
Zodiac of North America

Aqua Signal Names Baass Executive Vice President

Aqua Signal Corporation, Batavia, Ill., has appointed **Gerhard M. Baass** as executive vice president to manage its marine lights business in North America.

Mr. **Baass** was executive vice president of ZF of North America, Inc. for 10 years. ZF is a major supplier of marine transmissions and automotive drive train components.

Aqua Signal is one of the world's leading suppliers of ship lighting systems including navigation lights, search lights, interior and exterior lighting for commercial vessels, motor boats and yachts, naval ships and offshore platforms.

The main production facility is in Bremen, Germany.

For detailed information on Aqua Signals lighting products,

Circle 32 on Reader Service Card

High Seas Maritime Services Opens In Houston, Texas

The president of High Seas Maritime Services, **Jim P. Stevens**, has announced the company's grand opening in Houston, Texas.

High Seas Maritime Services deals with brokerage and chartering, heavy lift transportation, ocean towage and worldwide ship delivery.

The company's address is P.O. Box 842275, Houston, Texas 77284-2275; tel: (713) 859-8242; fax: (713) 463-7842.

For more information,

Circle 33 on Reader Service Card

MEDphone And IDB Pact To Offer New Lifesaving Service Via Satellite

MEDphone Corporation and IDB Mobile Communications, a joint venture of IDB Communications Group, Inc. and Teleglobe International (U.S.), Inc., announced a new alliance that will offer a lifesaving service which delivers emergency medical assistance and treatment for cardiac arrest victims worldwide—wherever satellite communication is available— on ships, drilling rigs and other remote locations.

Utilizing IDB's link with the International Maritime System (INMARSAT) and Medphone's patented products, physicians can remotely interact on site in an emergency—to monitor and provide two-way communication. In case of cardiac arrest, the physician can rapidly jump-start the victim's heart. MEDphone's services are also available via cellular and conventional telephone hook-up.

IDB Mobile Communications, based in Rockville, Md., markets maritime and land-mobile satellite communications services to users including commercial shipping fleets, fishing vessels, pleasure cruises, oil rigs and tankers, and remote land operations. IDB Communications Group, Inc. is a leading supplier of transmission services for radio, television, data and voice communications via satellite and fiber optics.

For more information,

Circle 37 on Reader Service Card

Canadian Navy Verifies Thordon Bearings' Success In New Patrol Frigates

Thordon Compac bearings were back-fitted to the Halifax in May 1992 because the traditional rubber stave "A" bracket bearings, which were originally fitted to the vessel reportedly did not meet the Canadian Navy's specifications for acoustics or friction.

The Canadian Navy has since reported that sea trials and sound range tests, at all power levels, have demonstrated that the Thordon Compac bearing has eliminated all bearing related acoustic problems. Since the tests were successful, Thordon has been specified for all 12 of the frigates.

Thordon says that the results have confirmed its tests, which were significantly lower in terms of start up and running friction for Compac as compared to rubber.

Thordon Compac bearings are reported to have low friction, long wear life, excellent loading patterns and endurance in adverse conditions.

For complete details on the Thordon Compac bearing,

Circle 41 on Reader Service Card

Bender Awarded $4.25 Million Contract For S.S. Equality State

Bender Shipbuilding & Repair Co., Inc. Mobile, Ala., has been awarded a contract worth $4,251,222 for the repair, test and deactivation of the auxiliary crane ship (T-ACS), S.S. Equality State.

The Equality State's mission is to provide a mobile discharge facility for non-self-sustaining containerships in ports without operational container discharge capabilities. The ship is equipped with six cranes arranged in three pairs. Each crane is capable of lifting a 20- or 40-foot container; each pair can lift an M-60 battle tank and four cranes working together can lift a 90-ton causeway.

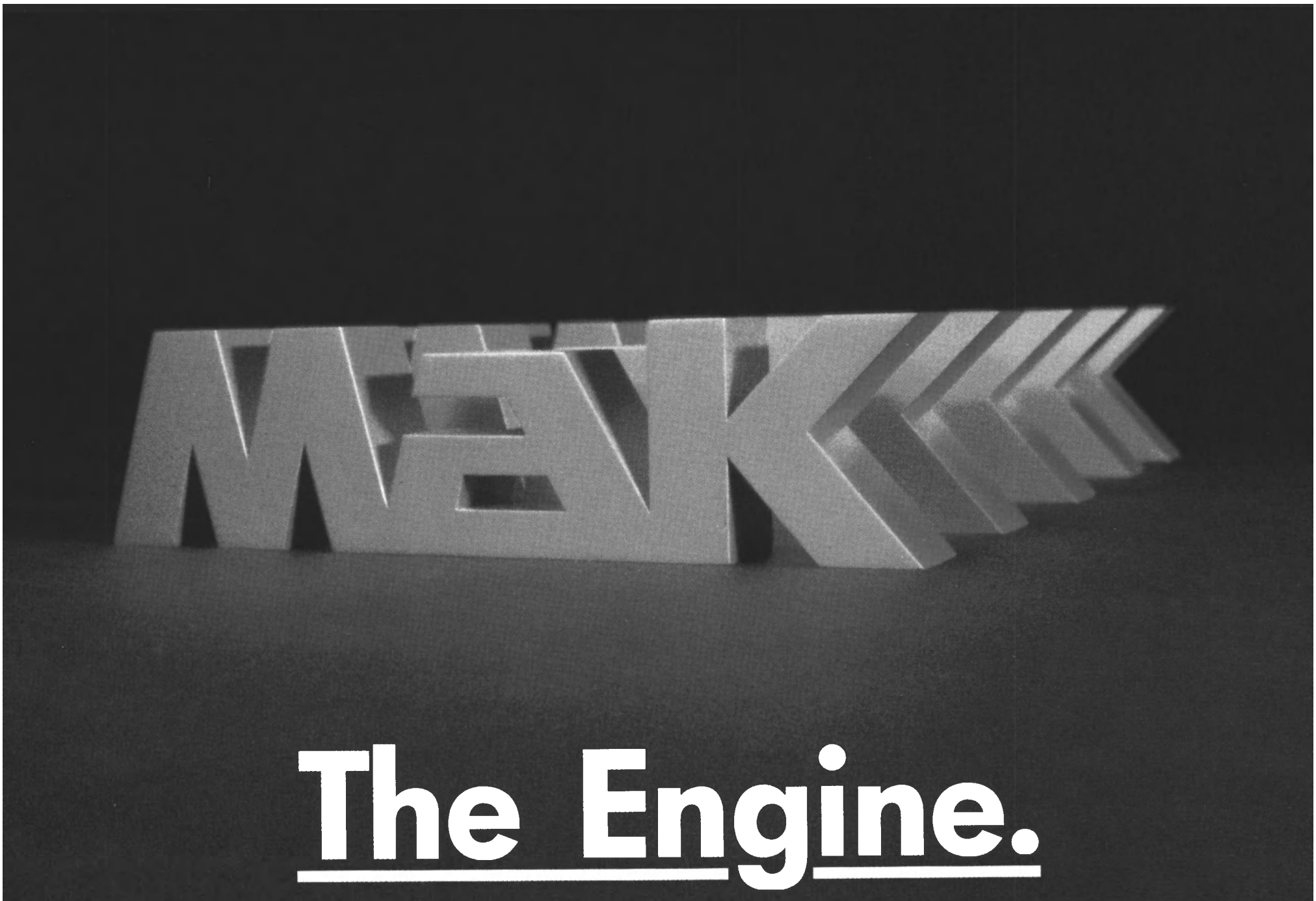
The Equality State is 668 feet long, has a beam of 76 feet and displaces about 25,660 long tons. When not in service the vessel is assigned to the Ready Reserve Force by the Maritime Administration.

Bender will perform the work in 120 days, employing 75 workers.

Bender is a full service shipyard that builds, converts and repairs vessels for commercial and governmental owners and operators.

For complete information on Bender's capabilities,

Circle 44 on Reader Service Card



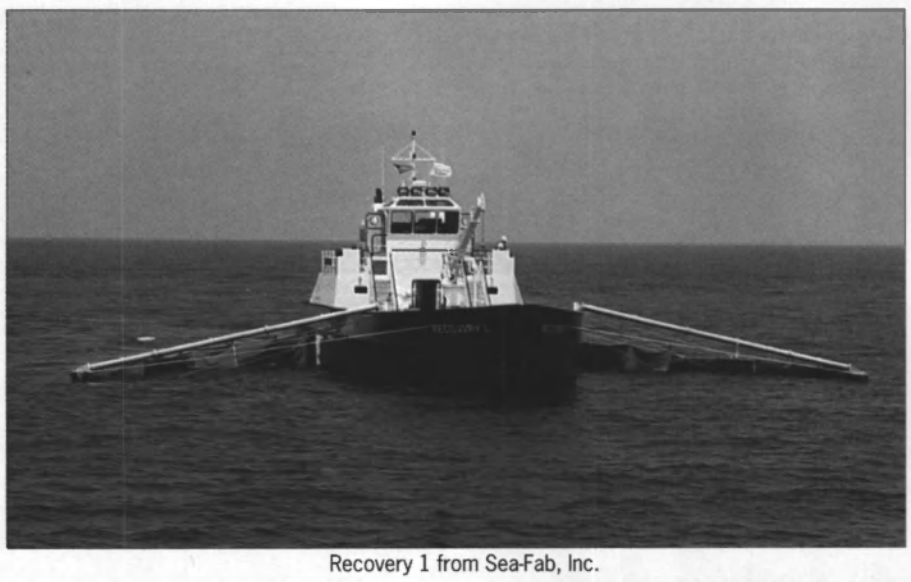
The Engine.

KRUPP MaK Diesel, Inc.
7555 Danbro Crescent
Mississauga, Ontario · L5N 6P9
Phone: 416-542-7810· Telefax: 416-542-7812

Circle 240 on Reader Service Card

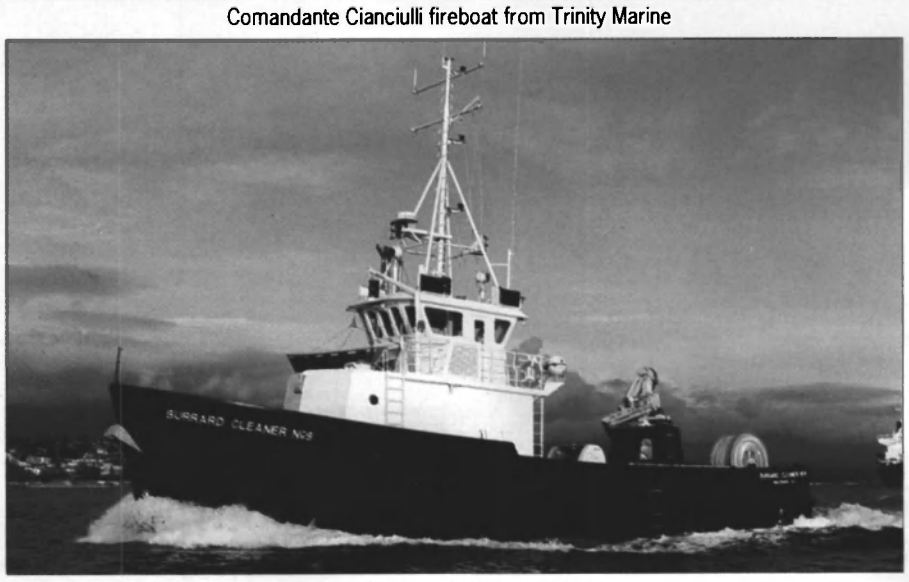
OUTSTANDING OF

M/V Loop Responder from North American Shipbuilding



Recovery 1 from Sea-Fab, Inc.

Comandante Cianciulli fireboat from Trinity Marine



Burrard Cleaner No. 9 from MARCO

The year's portfolio of out--standing workboats includes a variety of vessels, each one distinctive in both design and function, from the Voith Schneider propelled 155-foot-long M/V Loop Responder, reportedly the most powerful tug boat in the world, to the 26.5-foot-long fireboat from Workboats Northwest. Overall the list is fairly balanced regarding vessel types, as three fireboats, three towboats and two oil skimmers made the top thirteen. The list is rounded out with a tug, crewboat, a patrol boat, a shrimper and a pilot boat.

Due credit is given to the second-tier shipyards and the equipment suppliers involved in the creation of the best workboats of 1992.

RECOVERY I

SEA-FAB, Inc.

Circle 30 on Reader Service Card

SEA-FAB, Inc. delivered the 100-foot long oil skimmer Recovery I to Clean Coastal Waters, Inc. of Long Beach, Calif. The vessel has a beam of 28 feet and a depth of 11 feet, and weighs 98 tons.

The boat is propelled by a Caterpillar 3408 main engine, which drives a four-blade bronze propeller. The oil spill recovery vessel also features Wesmar T-50 thrusters and a hydraulic thruster engine; Isuzu C-240 generator engines, twin-disc, M4 516 reduction gears, 3:1 with a trolling valve, and a 20-kW, LIMA generator.

Designed by Grant and Grant Associates of Wilmington, Calif., the vessel also sports port and starboard doors which direct recovered oil to Lori skimmers. The boat's electronic gear includes: Raytheon's Ray-80 M56758 VHF-Radio and Raynav 580 loran; a Furuno 18300 radar; a Danforth Steel Boat Compass; and Furuno FAP 55 autopilot.

Additional equipment on the Recovery I includes: Mathers MMC engine controls; Jastram hydraulic steering controls; McElroy #7 Seine Winch from Alaskan Crane; four-inch Aquamet 17 shafting; Barnes/ 55CCE pumps from Blackmer Hand Pump; and two Isuzu QD100/4801 hydraulic power packs. The vessel's coatings were supplied by International Paint Co.

RECOVERY I
Equipment List

Main engine	Caterpillar
Thruster	Wesmar
Generator engine	Isuzu
Generator	LIMA
Engine controls	Mathers MMC
Steering controls	Jastram Hydraulic
Deck machinery	Alaskan Crane
Shafting	Aquamet
Coatings	International Paint
VHF Radio	Raytheon
Radar	Furuno
Compass	Danforth
Loran	Raytheon
Autopilot	Furuno
Pumps	Blackmer Hand Pump
Hydraulic Power Packs	Isuzu

LOOP RESPONDER

North American Shipbuilding Inc.

Circle 68 on Reader Service Card

The M/V Loop Responder, featuring twin Voith Schneider Propulsion (VSP) units of type 36G II/200 cycloidal propellers arranged side by side in the tractor configuration, is reported to be the most powerful tractor tug in the world. Designed

Al Mutaheda 1 shrimper from Bender Shipbuilding

WORKBOATS 1992

Outstanding Workboats of 1992

Vessel/Type	Main Engines	Builder
Recovery I/oil skimmer	Caterpiller	SEA-FAB, Inc.
M/V Loop Responder/tractor tug	Caterpillar	North American Shipbuilding
Comandante Cianciulli/fire boat	Detroit Diesel	Trinity Marine Group
Burrard Cleaner No. 9/oil skimmer	Caterpillar	MARCO Seattle
Elizabeth Dewey/towboat	Caterpillar	Avondale Industries
John P. Devaney/fire boat	GM	Textron Marine
Ashley Alyse McCall/crew boat	Cummins	Gulf Craft
Michael Luhr/towboat	EMD	Jeffboat
Al Mutaheda 1/shrimper	Caterpillar	Bender Shipbuilding
Puget Sound fire boat	Kodiak	Workboats Northwest
Miss Cynthia/pushboat	Detroit Diesel	Leevac Shipyards
SIS pilot boat	Detroit Diesel	Gladding-Hearn
Dauntless/patrol boat	Caterpillar	SeaArk

provide escort and emergency response to VLCC and ULCC tankers calling at the Louisiana Offshore Oil Port (LOOP) facility, the Loop Responder can achieve speeds of 14.5 knots and has demonstrated the capability to stop in less than its own length from full speed.

The Loop Responder measures 155 feet long, has a 51.5-foot breadth, with a displacement of approximately 1,670 long tons. The Voith Schneider propellers are directly driven by a 3,600 hp (2,650 kW) type 3608 Caterpillar diesel engine running at 1,000 rpm, through hydraulic and gear couplings. The tug can generate approximately 80 tons of bollard pull in the dynamic mode and up to 200 tons of bollard pull in the indirect towing mode, unique to Voith Schneider tractor tugs and necessary for escort vessel work.

Electrical power is provided by two 150 kW Detroit Diesel gensets and a Detroit Diesel unit provides hydraulic power. The towing winch is a Markey type DUSS-71 single drum hawser winch, designed to achieve braking capacity of 500,000 lbs. and a line retrieval of 200 feet/minute. The towing hawser supplied by Whitehill Manufacturing, Inc., is 1,000 feet of .75-inch diameter Spectra fiber synthetic hawser specially designed for high tensile, positive buoyancy and light weight. The vessel has two Nijhuis, split case horizontal water pumps of 1,000 hp driven off the front end of each main engine, stores 5,000 gallons of liquid firefighting foam onboard and has a Skum model PI-100 around the pump proportioning system and two Skum model MK-250EX/VR-250-DELF water monitors with a range of 425 feet at 170 psi delivering 7,500 gpm.

The Loop Responder also carries 3,000 feet of 48-inch oil spill containment boom on two separate hydraulic powered reels, has in-hull storage capacity and a separate pump room to handle 3,000 barrels

Jamaican patrol boat from SeaArk


Pushboat Michael Luhr from Jeffboat


Ashley Alyse McCall crewboat from Gulf Craft

Elizabeth Dewey from Avondale Industries

SES fireboat John P. Devaney from Textron

of recovered oil, a disperssant spray system including proportioning pumps valves and two 12-meter spray application arms. The vessel has two 10-ton at 30-foot radius Appleton hydraulic cranes and two eight-ton deck tuggers. The vessel is fully inspected as a towing vessel by the U.S. Coast Guard and carries certification as an Oil Spill Response Vessel (OSRV) under OPA'90 guidelines. The vessel has the capacity to carry 100,000 gallons of fuel, 15,000 gallons of potable water and 5,000 gallons of foam.

LOOP RESPONDER
Equipment List

Main engines	Caterpillar
Auxiliary and Gensets	Detroit Diesel
Propulsion units	Voith Schneider
Towing winch	Markey
Anchor windlass	Fritz Culver
Cranes	Appleton
Coatings	International
Firefighting	Skum
Radars	Furuno
Gyro	Sperry

ELIZABETH DEWEY

Avondale Industries, Inc.
Circle 71 on Reader Service Card

A Viking 2000 class towboat built by the Boat Division of Avondale Industries, Inc and designed by Viking Maritec, the M/V Elizabeth Dewey is 168 feet long and is operated by Western Kentucky Navigation Inc.

Designed to handle mixed cargoes on the Mississippi and other inland waters, the Elizabeth Dewey was built for approximately $7 million. Propulsion for the twin-screw Viking 2000 class vessel is supplied by a pair of Caterpillar 3612 diesels, rated at 6,800 hp at 900 rpm. The twin Cats drive two kort nozzled five-blade variable pitch stainless steel propellers via Reintjes WAV 4450 marine gears. Karl Senner, Inc. of New Orleans supplied the Reintjes reverse reduction gears with internal hydraulic propeller shaft brakes and two Rexroth pneumatic remote control systems.

Auxiliary power is provided by two 165 kW Caterpillar SR-4 generators driven by Caterpillar 3306Ts, which were supplied by Beckwith Machinery Company.

A unique feature of the vessel is its vibration isolated upper deck and pilothouse, which offers the crew a more comfortable ride and reduces stress on sensitive communication and navigation equipment. Viking Maritec reports that the Viking 2000 Class design offers the advantage of reduced lube oil consumption, 50,000 hours before engine overhaul, full ahead to full astern in eight seconds flat, and a large potable water capacity.

ELIZABETH DEWEY
Equipment List

Main engines	Caterpillar
Propellers	Avondale
Generators	Caterpillar
Generator engines	Caterpillar
Reduction gears	Reintjes
Engine controls	Rexroth
Capstans	Schoellhorn Albrecht
Deck winches	NABRICO
Coatings	International Paint
VHF radio, SSB radio	ICOM
Radar	Furuno
Pumps	Ingersoll Rand
Separator	Alfa Laval
Autopilot	Radio Zeeland
Steering controls	Control General
Fuel monitoring	Phoenix Fuel Sys.
GPS	Qualcom

COMANDANTE CIANCIULLLI

Trinity Marine Group
Circle 62 on Reader Service Card

Trinity Marine Group, utilizing its Equitable New Orleans, La., facility, delivered a 107-foot fireboat to Sao Paulo, Brazil, the Comandante Cianciulli. Designed by Fryco, Inc. of Houston, the vessel is also equipped with a modern trauma center, a decompression chamber for diver treatment, and equipped to support scuba and hard hat diving. All multi-mission equipment was supplied by Engineering Equipment Company of Chicago.

Powered by twin 1,400 hp Detroit Diesel 16V92TA engines driving through ZF BW-450 marine gears, the vessel has a service speed of 15 knots and a continuous cruising speed of 13 knots.

The steel-hulled and steel cabin vessel was constructed to ABS, +A1, +AMS, Harbor Service Fire Boat Standards. The 107-foot by 25-foot boat has a displacement of 215 tons. At sea trials the vessel delivered in excess of 10,000 gpm of water from a combination of monitors and hoses, the fire pumps powered by twin Cummins KTA19 engines. The vessel also features a spray curtain around its perimeter to protect herself from heat when fighting close-in fires or performing rescue operations.

The navigation controls feature all Raytheon equipment, including the Raytheon 10 kW, 48-mile 71 radar; 7001 autopilot; two Raystar 590 GPS navigators; Raytheon 82 loud hailer; and Raytheon 152, SSB radio. The vessel is equipped with Kobelt air controls and has trolling valves for the ZF Gears for maneuvering in tight spaces. With the assistance of the Magnum Bow Thruster by American Bow Thruster Co., the vessel can turn 360 degrees in her own length.

Provided with tachometers, instruments and shaft tacks, the operator of the boat has a visual display of the basic instruments backed up by an elaborate monitoring system which provides early warning of system failure on any on of the six diesel engines, including bilge, fire and other alarms.

The firefighter has Kobelt air controls for the two pumping engines, as well as front PTO controls to select hydraulic drive for the Telesquirt ladder, anchor winglasses, bow thruster or HIAB crane. The Telesquirt ladder is hydraulically controlled from the base of the ladder and is used to direct a 750 gpm nozzle at a height of 85 feet off the water. To fight chemical fires, the extended ladder nozzle can lay foam on the deck of a tanker or roof of a warehouse.

COMANDANTE CIANCIULLI
Equipment List

Main engines	Detroit Diesels
Propellers	Sound Propeller Co.
Fire pump engines	Cummins
Fire pumps	GS Aurora
Generator engines	Cummins
Alternators	Stamford
Autopilot	Raytheon
Radar	Raytheon
GPS	Raystar
Loud hailer	Raytheon
SSB radio	Raytheon
Digital compass	Azimuth
Magnetic compass	Ritchie
Depth finder	Data Marine
Marine gears	ZF, BW
Switch gears and panels	Con-Tech Power Systems
Lighting fixtures/switch boxes	Paul Luhn
Searchlights	ACR Electronic
Nozzle and hydraulic ladder	Telesquirt
Rewind reels	Hannay
Fire monitors	Skum, In-Mar Systems, Inc.
Sea crane	Hiab
Airhorns	Kahlenberg Bros. Co.
Engine and fire equipment	Kobelt
Line capstans	Ideal Windlass Co.
Compressors	Quincy Compressor
Liferaft	SMR Technologies
Refrigerated cooled units	Wilkerson Corp.
Bow thruster	American Bow Thruster
Marine charger	Lamarche
Machinery compartment fans	Hartzell Fan

Bremerton, Wa., fireboat from Workboats Northwest

Miss Cynthia from Leevac Shipyards

SIS pilot boat from Gladding-Hearn

BURRARD CLEANER NO. 9

MARCO Seattle

Circle 66 on Reader Service Card

A newly-designed oil spill recovery vessel from MARCO Pollution Control, one of the world's largest builders and designers of these types of vessels, was recently commissioned by a Canadian owner. Called the Burrard Cleaner No. 9, she is the largest oil recovery vessel serving Canada.

The steel-hulled vessel is 75 feet long, with a beam of 22 feet, six inches and a depth of nine feet, seven inches.

It is powered by a Caterpillar 3412TA diesel engine driving an Ulstein 370H 360-degree-rotatable Z-drive.

The vessel also has a MARCO T-80 stern thruster to assist in maneuvering in confined areas.

Recovered oil is held on board in a 500-barrel-capacity sump, from which a screw pump can discharge it to other vessels or storage units.

The Burrard Cleaner No. 9 features MARCO's Filterbelt recovery technology, the heart of the company's recovery systems. The filterbelt is a unique oleophilic belt that recovers all types of oil and debris under a wide variety of conditions.

The OSRV features MARCO's new 4000 Series technology, which incorporates a larger four-foot-wide filterbelt and 40 hp MARCO T-52 induction pump.

This new unit can process and remove oil from seawater at a rate of up to 10,000 gallons encountered seawater per minute.

The vessel was built at the West Coast Manly Shipyard in Vancouver under MARCO supervision for Burrard Clean Operations Ltd., a Vancouver, B.C., cooperative. The vessel is to be used to protect the waters of the Strait of Juan de Fuca.

BURRARD CLEANER NO. 9
Equipment List

Main engine	Caterpillar
Z-drive	Ulstein
Stern thruster	MARCO
Radar	Furuno
Filterbelt	MARCO
Boom reels	MARCO
Induction pump	MARCO

JOHN P. DEVANEY

Textron Marine

Circle 67 on Reader Service Card

Textron Inc.'s Textron Marine Systems division delivered the first of two Surface Effect Ship (SES) multipurpose fireboats to the New York City Fire Department, the John P. Devaney.

The 30-knot fireboat, in addition to enhanced fire suppression capabilities, provides search and rescue, security and patrol, and pollution control services. The SES is a waterborne, air-supported vessel with catamaran-like rigid side hulls, which uses a cushion of trapped air between the side hulls and flexible bow and stern seals to lift the center portion of the hull clear of the water, reducing drag and increasing efficiency and speed.

The John P. Devaney is 70 feet long with a beam of 20 feet, and has a stationary draft of five feet, four inches, and an air cushion draft of three feet, six inches.

The vessel is powered by two 445 bhp propulsion GM 8V 92 TI marine diesels, and features a 385 bhp lift and forward fire pump, and a 570 bhp midship fire pump. The fire pump has a capacity of 7,075 gpm at 100 psi.

Fire monitors for the vessel were supplied by Stange.

Navigation and communication equipment includes fire, police and Raytheon Ray-30 VHF/FM marine radios, loud hailer, Loran-C and Furuno radar.

A portion of the vessel's side hulls remain in the water to provide the craft with maneuverability and stability.

JOHN P. DEVANEY
Equipment List

Main engines	TI
Lift fan engine	GM
Fire pump engine	GM
Radio	Raytheon
Loud hailer	Raytheon
Radar	Furuno

ASHLEY. ALYSE MCCALL

Gulf Craft

Circle 72 on Reader Service Card

The Ashley Alyse McCall is a 160-foot by 30-foot aluminum crewboat from Gulf Craft, Inc.

The crewboat features both forward and aft steering stations in the pilothouse, which offers 360 degree visibility.

Powered with six Cummins model KT-19M diesel engines that generate 680 hp each at 2,100 rpm, the engines propel the vessel to a top speed of 24 knots.

Each engine is turning a 40-inch diameter propeller through a Twin Disc MG 518 reverse and reduction gear, with a reduction ratio of 2.5:1.

The vessel owner believes that the redundancy of the six engines has helped to eliminate the down time problems which are usually associated with an engine failure.

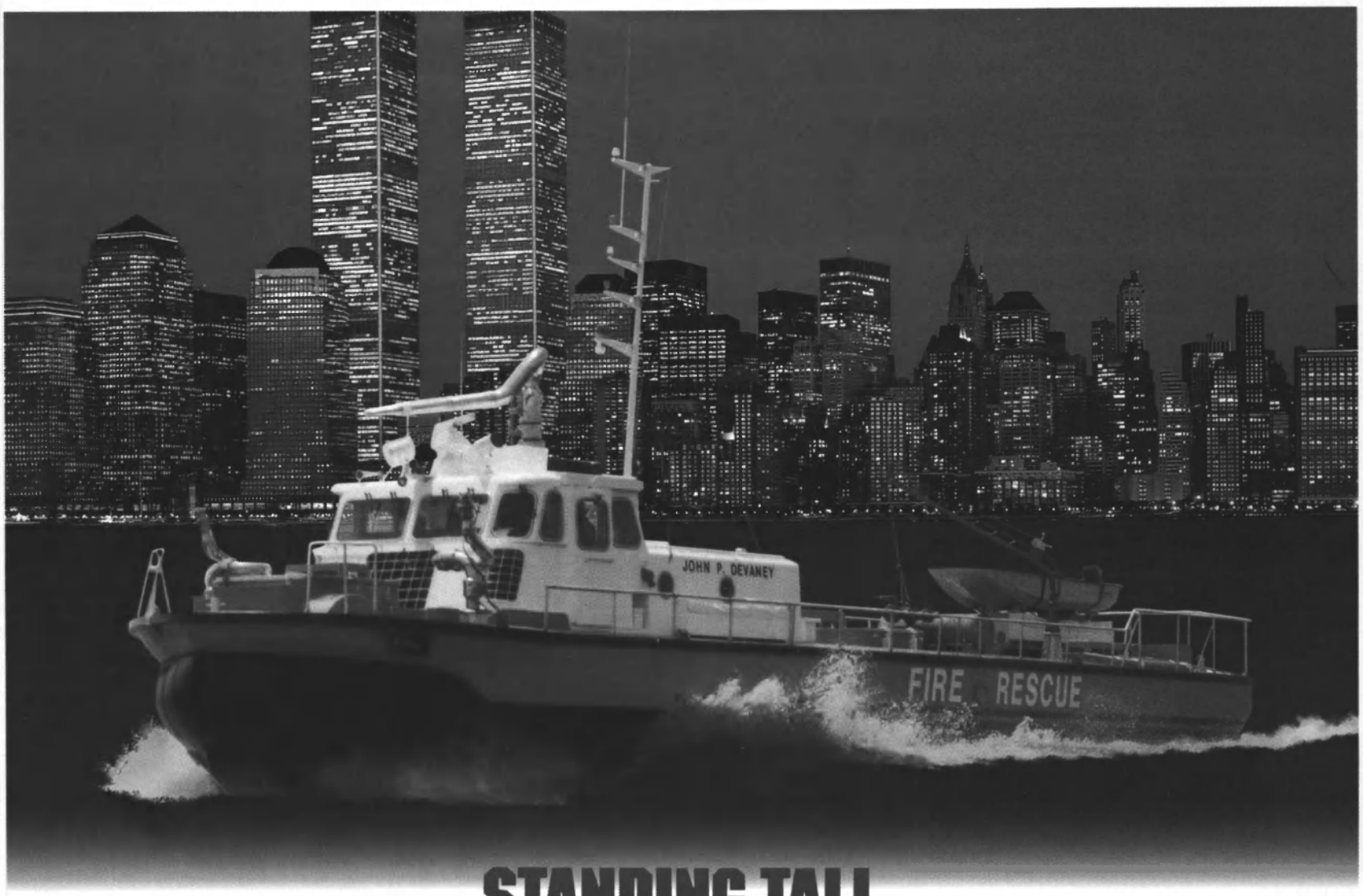
These vessels are capable of operating with one or two engines out, and with four rudders, maneuvering around the platform is no problem in the event of the loss of those engines.

The boat has the speed and capacity to service larger areas in the Gulf of Mexico, a condition existing because of the consolidation of oil company marine bases.

The vessel has USCG approval for 101 passengers and a deck cargo capacity of 180 long tons on its after deck.

In addition to deck cargo, the vessel is capable of offloading 43,000 gallons of water and 13,000 gallons of fuel oil, plus it has firefighting ability with its 600 gallon per minute fire pump and deck-mounted fire monitor.

Crew space power is provided by two 50 kW Detroit Diesel 4-71 diesel generators.



STANDING TALL IN THE BIG APPLE.

NEW SES MULTIPURPOSE FIRE & RESCUE CRAFT ESCORTS LEAD SHIP IN JULY 4TH TALL SAILING SHIPS PARADE.

While celebrating the past, New Yorkers got a view of the future when the first of two Textron Marine Systems' fire and rescue craft sailed up the Hudson River with the tall ships commemorating Columbus' voyage to America.

Built by Textron Marine Systems, the 70-foot craft, named for fire fighter, John P. Devaney, represents a new era in ship and pier fire fighting and harbor rescue. The new boats are the first additions to New York's fireboat fleet in 31 years.

A surface effect ship (SES) design, the craft rides on a cushion of air trapped between flexible bow and stern seals and rigid catamaran-style side hulls. This technology provides high-speed capabilities to respond nearly four times faster than conventional fireboats. Able to operate in extremely shallow water, the new SES craft reduces total fireboat inventory requirements. Other operating costs are kept low through fuel-efficient diesel engines and small crew sizes.

The craft is equipped with five monitors which deliver as much as 5,500 gallons per minute and are remotely operated from inside an enclosed wheelhouse by one crew member, using an automated fire-fighting system. Total crew requirements range from three in the wheelhouse to three to six on deck. Rescue equipment, navigational and communications aids and pumping systems on the new craft all represent the latest in fire-fighting technology.

Like New York, any harbor-based city benefits from swift response across water in emergency situations. Tall ships come and go, but New York City's SES fireboats will lead the way in keeping the harbor in safe hands well into the next century.

TEXTRON Marine Systems

Textron Marine Systems/Division of Textron Inc.

Textron Marine Systems, 6600 Plaza Drive, New Orleans, LA 70127-2584. Phone (504) 245-6600. FAX (504) 245-6634. Telex 6711199TMSNOLA

Circle 280 on Reader Service Card

ASHLEY ALYSE MCCALL
Equipment List

Main engines	Cummins
Generators	Lima
Reduction gears	Tonanco
Engine controls	Wabco
Steering controls	Gulf Craft
Shafting	Aquamet
Coatings	PRS Coatings

MICHAEL LUHR

Jeffboat

Circle 73 on Reader Service Card

Jeffboat built the 170-foot long by 48-foot wide twin-screw line haul pushboat, Michael Luhr, for Luhr Bros., Inc. The M/V Michael Luhr is equipped with two 16-cylinder EMD engines driving a Bird Johnson 110-inch propeller for propulsion, and two Detroit Diesel generators for ship service power. The EMD engines separately generate 3,400 hp, for a combined output of 6,800 hp.

Other equipment features of the Michael Luhr include Mathers engine controls, Jeffboat Z-slot steering controls and Scot Forge shafting. Electronic equipment includes VHF and SSB radio from Dataronics, and radar from Furuno.

The entire deckhouse is isolated from the hull, an innovation which Jeffboat pioneered. The design affords the crew the comfort of a vibration- and noise-free environment while in the quarters, galley and pilothouse. The vessel is utilized to move 30-plus barges of stone from the Luhr quarries down the Mississippi River. Luhr Bros., Inc. of Columbia, Ill., is a major contractor for construction and dredging projects for the Corps of Engineers.

The vessel was finished with coatings from Porter International.

MICHAEL LUHR
Equipment List

Main engines	EMD
Propeller	Bird Johnson
Switchboard	Power Panel
Generator engines	Detroit Diesel
Generator	Marathon
Reduction gears	Lufkin
Engine controls	Mathers
Steering controls	Jeffboat
Deck machinery	Capstan Schoellhorn Albrecht
Winches	W.W. Patterson
Shafting	Scot Forge
VHF radio, SSB radio	Datatronics
Radar	Furuno
Pumps	Ingersoll Rand
Coatings	Porter International

AL MUTAHEDA 1

Bender Shipbuilding

Circle 75 on Reader Service Card

Bender Shipbuilding constructed the Al Mutaheda 1 shrimper and shipped it, aboard a heavy lift cargo ship, to the Port of Shaiba, Kuwait. The vessel is the first of 10 to be constructed for the United Fisheries and Bubiyan Fisheries, both Kuwaiti companies. The balance of the fleet is to be shipped at the end of 1992, and the contract includes an option for 10 additional vessels.

The Al Mutaheda 1 measures 83 feet long with a beam of 24 feet, and has a full-load draft of eight feet.

Classified ABS, +A1 Fishing Service + AMS, the vessel is powered by a Caterpillar 3412T main engine, delivering 540 bhp at 1,800 rpm, with Twin Disc MG518 marine gear, 5:92:1 ratio. This drives a four-blade Kaplan Manganese Bronze propeller, operating in a Kort nozzle, to a top speed of 10 knots.

The boat's electric power is supplied by two Cat Model 3304 NA generator sets rated 50 kW at 1,500 rpm. Raytheon supplied much of the electronic navigation equipment, including a V82 Color Depth Recorder, SSB radio and VHF radio, G.P.S. and radar. Navigation system equipment is rounded out with a Robertson Shipmate AP45 autopilot and Intercom loud hailer.

Deck machinery includes a McElroy 620DD main winch, with five groove V-Belt drive from the main engine front PTO to an overhead line shaft and number 100 roller chain and sprocket drive to the winch pinion. The trynet winch is a McElroy 401E electric unit.

The net fish hold volume of the boat is 3,180 cubic feet in bale, and the vessel can also hold 21,840 gallons of fuel, 200 gallons of lube oil, and 5,280 gallons of fresh water.

AL MUTAHEDA 1
Equipment List

Main engine	Caterpillar
Propeller	Kaplan Manganese Bronze
Generators	Caterpillar
Autopilot	Robertson Shipmate
Depth recorder	Raytheon
SSB radio and VHF radio	Raytheon
GPS	Raytheon
Radar	Raytheon
Deck machinery	McElroy
Fishhold compressor/condensor	Carrier

PUGET SOUND FIRE BOAT

Workboats Northwest Inc.

Circle 77 on Reader Service Card

Workboats Northwest delivered this 26.5-foot by 9.5-foot fireboat to Bremerton, Wash., home of the Puget Sound Naval Shipyard.

The vessel, which was also designed to act as a floating pumping station and as a search and rescue boat, is constructed complete with a dive door and the swimmer-safety feature of a waterjet drive.

Basic power for the vessel is provided by a 460-cubic-inch, 355 hp Kodiak gasoline engine driving a single 2,500 gpm Berkeley pump. The boat's valving system directs water flow to propulsion and firefighting systems.

A relatively shallow-draft vessel, the boat will speed to better than 33 mph with the Berkeley steerable water jet. Bow thrusters from Workboats Northwest allow the boat to hold its position or maneuver in restricted areas.

Bow-mounted fog nozzles provide a heat screen. The unnamed boat can help fight marine and shorefront fires with a bow-mounted monitor capable of delivering up to 1,200 gpm.

As a floating pumping station for fighting shorefront fires, water is pumped through an aft hydrant with two 2.5-inch or one five-inch standard Stortz connections to supply water to shore-based fire apparatus, or to fill water tenders where landside hydrants are not available. The boat also carries a 20-gallon Class B foam system.

Wheelhouse furnishings include Morse controls, Kodiak engine instrumentation and alarm systems, and electronic gear such as GPS, video sounders, radars, radio telephones, loud hailers and full fire siren and light system.

PUGET SOUND FIRE BOAT
Equipment List

Main engine	Kodiak
Water jet	Berkeley
Fire pumps	Berkeley
Bow thruster	Workboats Northwest
Controls	Morse
Engine instrumentation	Kodiak
Alarm systems	Kodiak

MISS CYNTHIA

Leevac Shipyards, Inc.

Circle 79 on Reader Service Card

Leevac Shipyards, Inc., founded in 1913, delivered the Miss Cynthia, an inland pushboat measuring 72 feet long with a 26 foot beam and a draft of 8.5 feet, to Higman Barge Lines, Inc.

The vessel, which features bottom, hull sides and main deck plating of one-half inch, is powered by two Detroit Diesel 8V-149TI engines, which together deliver 1,480 hp. That power will enable the operator to maneuver the company's new 297.5- by 54- by 12-foot barges. Higman Barge Lines transports more than 45 million barrels of petroleum products annually. The engines are electronically controlled and drive 72-inch, S/S Bird Johnson propellers. The pushboat is also outfitted with Twin Disc MG-520 6.11:1 gears.

Miss Cynthia is capable of carrying 20,000 gallons of fuel, 10,000 gallons of water and 400 gallons of lube oil.

Electric power is supplied by two Cummins 6B, 50 kW KATO generator engines. The boat was manufactured with Skipper Hydraulics' mechanical over hydraulic steering controls, and is fitted with electronic equipment such as: two Standard Triton VHF radios; one Stephens SEA 222 SSB radio; and an Anritsu 721 radar. It also sports a six-inch Ritchie compass. The vessel, which features York air conditioning, Fernstrum coolers and four flanking rudders, was coated by Ameron.

MISS CYNTHIA
Equipment List

Main engines	Detroit Diesel
Propellers	Bird Johnson
Generator engines	Cummins
Engine controls	Detroit Diesel
Steering controls	Skipper Hydraulics
Deck machinery	Nabrico
Coatings	Ameron
VHF radio	Standard Triton
SSB radio	Stephens
Radar	Anritsu
Pumps	Barnes fire/bilge and ballast
Air conditioning	York
Coolers	Fernstrum

SIS PILOT BOAT

Gladding-Hearn

Circle 83 on Reader Service Card

Gladding-Hearn Shipbuilding, the Duclos Corp., delivered the SIS 39-foot pilot boat to Charleston Branch Pilots.

The vessel is used to ferry crews from downtown Charleston, S.C., to Wando Terminal in Mt. Pleasant, in addition to transporting pilots to ships. The trip, normally made overland, will save an estimated 30 minutes.

The all-aluminum vessel was designed by C. Raymond Hunt Associates of Boston.

Extra heavy chine bars protect the deep-V hull when maneuvering alongside submarines and the independently-mounted 350-gallon fuel tank prevents overboard spills in the event of hull damage.

The SIS is powered by a 350 hp Detroit Diesel 8V-92NA engine and can reach a top speed of 20 knots. The vessel features heating and air conditioning, seating for six in the wheelhouse, a roof-boarding platform and pilot-rescue platform off the transom.

One of the most notable improvements is the SIS's reduced noise levels.

A combination of older and new technologies, which have been adapted from the yard's catamaran ferries, has reduced the sound levels in the wheelhouse to 78 decibels. The boat includes metal sheathed, high-density sound-absorbent insulation underdeck and against the engine room bulkheads and an air intake system that reduces engine noise.

The boat is also equipped with very heavy duty, sound-absorbing engine mounts and a hospital-grade exhaust system.

SIS PILOT BOAT
Equipment List

Main engines	GM Detroit Diesel
Propellers	Michigan
Engine controls	Morse
Generator controls	Northern Lights
Steering system	Teleflex Seastar
Radar	Furuno
VHF	ICOM
Depth sounder	Datamarine
Compass	Ritchie
Loud hailer	Raytheon
Sewage system	Raritan

JAMAICAN PATROL BOAT CG-121

SeaArk Marine
Circle 88 on Reader Service Card

Designed and equipped for patrol duties off the coast of Jamaica, SeaArk Marine delivered a 40-foot Dauntless Class vessel, the CG 121, to that country's government.

The high speed patrol boat is equipped with two Caterpillar 3208TA diesel engines, which together are capable of generating 850 hp to power the boat to a top speed of 28 knots.

The Caterpillar engines, controlled by Morse engine controls, drive Columbian Bronze propellers, via Aquamet shafting.

The vessel is the first in a series of deep vee hulls to be produced by SeaArk.

The boat was designed by C. Raymond Hunt Associates.

The aluminum coastal patrol vessel is outfitted with electronic equipment including a Raytheon R40X radar, Raytheon V400 depthsounder and ICOM VHF and SSB radios.

The boat has a beam of 14 feet, and a draft of four feet, four inches. The Dauntless vessel has a fuel capacity of 250 gallons, and when cruising at 22 knots the boat has a range of over 400 nautical miles.

CG-121 Equipment List

Main engine	Caterpillar
Propellers	Columbian Bronze
Reduction gears	Twin Disc
Engine controls	Morse
Steering controls	Teleflex
Shafting	Aquamet
Coatings	Ameron
VHF and SSB radios	ICOM
Radar	Raytheon
Compass	Danforth
Depthsounder	Raytheon
GPS	Magellan
Air conditioner	Aqua Air
Battery charger	Newmar
Siren/P.A.	Whelen

Sigma Coatings Relocates To Larger Facility

Sigma Coatings has moved its operations to 1401 Destrehan Ave. in Harvey, La., just a few miles from its previous site. The new location will reportedly double the space of the previous site, which provides additional space for storing finished goods, laboratories and administration offices. The new facility has also allowed Sigma to expand its production in order to keep in line with growing sales levels.

Sigma Coatings USA is part of a global network which covers 57 countries servicing marine, offshore and industrial facilities. Sigma's corporate headquarters are located in the New Orleans area with a full network of offices and warehouses throughout the USA to better serve local distribution needs.

For more information on Sigma Coatings,

Circle 96 on Reader Service Card

MacGregor-Navire To Supply Insulation System For Polish-Built Reefers

MacGregor-Navire's Reefer Engineering Product Division has been awarded a contract to supply its recently introduced LE insulation system to a series of four refrigerated cargo vessels being built by Gdansk Shipyard, Poland, for Dole Fresh Fruit Inc. of Costa Rica.

The panels used in the LE system have tight interlocking joints, specially designed to provide a smooth surface and a tight seal between each panel. The sealed joint arrangement makes the LE system ideal for applications where nitrogen is used to provide controlled atmosphere conditions. If inspection of the side shell should need to be performed the LE system can also be dismounted easily using a screwdriver.

The LE system is the latest development from MacGregor-Navire's Reefer Division, which is able to provide complete refrigeration engineering service, from the supply and installation of provision rooms to reefer ship outfitting.

For more information describing the LE system,

Circle 99 on Reader Service

The Cost Of Removing Redundant Oil Rigs In Norwegian And British Sectors

By Marcus Gibson, Journalist

The crucial decision affecting the cost of removing Norway's North Sea oil rigs, which oil operators had been expecting from an all-powerful Oil Ministry committee during the week of September 21, has been put off until early 1993 and transferred to the Norwegian Parliament, the Storting, says ministry spokeswoman **Marit Ytreeide.**

Insiders suggest that the committee realized that the costs were going to be so great - under Norwegian law the taxpayer must foot around 80 percent of the bill - that only the Storting could take the decision and vote the necessary funds.

Norway's oil operators had been bracing themselves for the ministry's verdict on the first of 50 oil platforms to be decommissioned, Elf's Northeast Frigg, due to be dismantled next year. The extent of the disposal ordered by the ministry has a critical bearing on the final bill. Officials may demand either the basic option: steel deck and jacket to be cut down to 55 meters (180.4 feet) below sea level to ensure safe navigation for shipping and to comply with International Maritime Organization (IMO) guidelines; or, the far more costly course of insisting on the rig's entire removal except for its seabed template. Mrs. **Ytreeide** confirmed that the Frigg decision would broadly govern the decommissioning of the remaining rigs, hence the operator's avid interest.

Latest estimates of the huge cost of cutting up Norway's 50-odd North Sea oil production platforms when they become redundant are put at Norwegian Krone (Nkr)38 billion ($6.4 billion), according to **Olav Fjellsa**, economist and decommissioning expert at the Norwegian Petroleum Directorate in Stavanger. But getting rid of them will present the industry with a technological as well as financial headache.

Mr. **Fjellsa** said: "Norway's deepwater concrete platforms in the Statfjord and Gullfaks fields, by far the world's heaviest, will be extremely expensive to remove: around Nkr1 billion to Nkr1.5 billion ($168.1 million to $252.2 million) each. Several are at least 100 times heavier than the Eiffel Tower, and removing some of them may be beyond the capabilities of existing technology."

Dismantling the huge subsea structures will be a formidable undertaking. "The removal of rigs of this size has never been attempted before," Mr. **Fjellsa** said. "Refloating in 30-meter (98.4-foot) waves and high winds will be difficult and dangerous, especially if concrete sections suddenly slip free under pressure from the clay on the seabed. They could rocket to the surface like champagne corks."

The 1.5 million-ton Gullfaks C platform, towed out in May 1989, is the heaviest object ever moved by man. The Troll platform, due on site in 1996, will weigh even more.

The burden on the Norwegian taxpayer is likely to be substantial. Under the Petroleum Act of 1985, the Norwegian state must pay around 80 percent of rig removal costs, the rest by the operating company. Assistant Director **Leer Berg**, responsible for legal affairs at the oil ministry, says "companies are forbidden to include hypothetical costs of removal in their current accounts."

Since operators in the Norwegian sector already pay 85 percent oil revenue tax on their activities, the precise moment when it becomes more efficient for an operator to pay for the removal of a rig, rather than pay tax, will be a delicate one.

Hans Frisak, Elf's spokesman in Stavanger, says the bill for partial removal of Northeast Frigg will be Nkr80 million ($13.4 million), complete removal, including cementing and plugging the well-heads, Nkr180 million ($30.3 million), and far more if the disposal of the 6-well template is envisaged.

If the basic option, or partial removal, is chosen for every rig in the Norwegian sector, says Mr. **Frisak**, Elf estimates that the likely overall bill could surpass Nkr40 billion ($6.7 billion).

Recently **Knut Daehlin**, former chairman of Norway's Petroleum Law Commission, said the Norwegian continental shelf had only one percent of the total platform population worldwide, but nearly 20 percent of global removal costs.

Also watching closely are Norway's politically vociferous environmentalists. The Stavanger-based group Bilona has already protested, and halted, at least temporarily, Elf's proposal to sink the **F**rigg platform in 3,281 feet of water.

(continued on page 36)

(continued from page 35)

Yet dumping at sea is by far the cheapest and most practical solution, says **Steve Preston**, director of Heerema Engineering in the U.K., the company which installed 75 percent of the North Sea's 400 platforms. Heerema has removed small rigs from the Gulf of Mexico and the Dutch sector of the North Sea.

"Deep-sea burial is the preferred option," said Mr. **Preston**. "Removing the rigs and cutting them up piecemeal on land is too costly," he continued, recommending a deep-water site found off the coast of Greenland. "In the Gulf of Mexico, American operators towed away dozens of obsolete rigs and sank them in deep water where they became artificial reefs, greatly enhancing marine life," he added.

Mr. **Preston** informed the Offshore Northern Seas Conference in Stavanger three weeks ago that the multi-billion rig removals market predicted to emerge in the mid-Nineties was unlikely to arrive until 2000 and beyond.

"My view is that the market won't happen unless changes are made to industry legislation to allow operators to reduce costs," he told delegates. "Platform owners will use the cost argument against disposal, claiming the task is too expensive or technically difficult." Instead, Mr. **Preston** thinks Heerema "will start bidding for removal contracts in four to five years time." But until then, he says, removals will be a rare event.

Mr. **Preston** points out that under present IMO regulations, U.K. taxpayers and the predominantly American operators face an even bigger bill in the British sector than Norway.

In the deeper, northern fields such as **Brent, Magnus** and **Murchison**, the cost of cutting up the steel platforms will be $100 million each, or $60 million for the shallower, southern rigs. Analysts currently discount any trade-off in scrap steel or a market in second-hand platforms.

Since 1986, London analysts County Natwest WoodMac have undertaken regular reviews of rig decommissioning costs in Europe. "One day," says its latest report, "more British civil servants will be employed planning rig disposals than planning new oilfields."

However, WoodMac's reports have been sharply criticized by oil industry executives who say the dates are premature and costs estimates excessive. WoodMac's **Stephen Halliday** now predicts that the main period for rig removal will be 2005 to 2015, suggesting that new ways will be found to extend the life of existing platforms.

In the Norwegian sector, the day of reckoning might be postponed if the Statfjord and Gullfaks oil platforms are linked to new fields and become part of the oil processing and transport infrastructure.

But not forever, comments Mr. **Fjellsa** of the Norwegian Petroleum Directorate. "In any case," he says, "the platforms cannot be left in place and they will eventually deteriorate and collapse."

Since 1979 the Statfjord field, the jewel in Norway's crown, has yielded Nkr175 billion ($29.4 billion) in revenue, a vital element in maintaining Norwegian living standards. In the 1980s the siting of Statfjord's giant rigs were events of national jubilation, but it is doubtful whether their removal will be a cause for much celebration.

Union Bay Shipbuilding Completes Rebuild Of Aleutian Rover

Union Bay Shipbuilding recently completed adding eight feet of beam to the 96-foot crab fishing vessel Aleutian Rover. The additional beam was added in the form of two four foot wide sponsons, each containing fuel and ballast tanks and voids. The sponsons were installed over the entire length of the vessel. A deck locker was constructed in the starboard fo'c'sle sponson, while the port fo'c'sle accommodations and balt freezer were expanded into the port sponson. The engine room was expanded into each sponson, providing foundations for pumps, compressors and parts stowage.

Union Bay lofted each piece of steel in preparation for numerical burning. The precut parts were then assembled into modules which were installed on the vessel in the shipyard's sidetrack facility. Argonaut Marine assisted with the numerical lofting, while the steel parts were cut at Farwest Steel's, Eugene, Ore., facility. The use of numerical lofting and preassembled modules minimized the time the vessel was in the shipyard and off the fishing grounds.

The Aleutian Rover following rebuilding at Union Bay Shipbuilding.

While in the yard, modifications were made to the vessel's rudder and bilge, exhaust, fuel, hydraulic, refrigeration and sea water circulation systems. The fish holds were expanded into existing wing tanks.

Harris Electric installed a Digi-Con ELF-160 electronic tank level monitoring system.

For further information on the capabilities and facilities of Union Bay Shipbuilding,

Circle 40 on Reader Service Card

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Towboats

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Covered, and
Tank Barges

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Project Co-ordination

Floating Entertainment
Complexes/
Special
Projects

Marine Engineering
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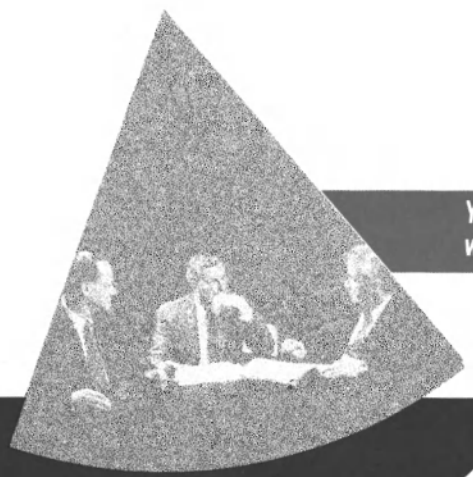
We provide complete project coordination for new construction, including Owner Representation and Regulatory Agency interface. Our engineers produce customized or off-the-shelf designs for towboats, barges or other special projects to meet your specific needs. Sophisticated ship hull characteristic computer software enables us to calculate a wide variety of studies quickly and accurately, which can save time and money.



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In independent testing and in field testing by several rope manufacturers, ACE polyester SeaGard ropes — 3-strand and braided — outlasted and out-performed ordinary polyester ropes by incredible margins, even under the most severe wet abrasion conditions.

Today, many rope manufacturers have found that they require a higher level of performance plus cost-effectiveness for the most demanding applications, such as: tethers for balloons, underwater surveillance systems, offshore oil rigging and transmission & distribution (T&D) lines. ACE polyester SeaGard meets these requirements. And, for the sailor who wants the best in performance, SeaGard ropes offer that certain added security plus easy, smooth handling.

For further information and test results, contact:
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Allied Fibers

Circle 329 on Reader Service Card

Allied Signal

WARTSILA DIESEL

Wartsila Targets Auxiliary Generator Market With M20

By Graeme MacLennan

Wartsila Diesel, building its engines in the most northerly manufacturing plant at Vasa on the Gulf of Bothnia, has consistently identified niches in the engine market and attempted to fill it with well-designed engines packing immediate appeal. Continuing this trend, the latest M20 series of engines appears set for a promising future.

Vasa has targeted the auxiliary generator market specifically with the engine, recognizing that there is now greater acceptance of faster-running sets, previously regarded as too delicate for burning poor grades of fuel.

With few exceptions every ship has two or more auxiliary generators, and higher speeds imply smaller, lighter and cheaper sets. These benefits are attractive to the shipbuilder who has influence of the choice of this power plant.

The design precepts for the new engine were the ability to burn the heaviest fuels likely to be offered, with maximum economy and infallibility, coupled with low first cost and ease of installation.

Wartsila placed high priority on its well-staffed fuel burning and development test laboratory which, over the years, has been responsible for so many advances in the field.

Environmental pressures have called for close attention to exhaust quality, and practical examples of catalytic treatment for NO_x reduction are already at sea in connection with Wartsila engines.

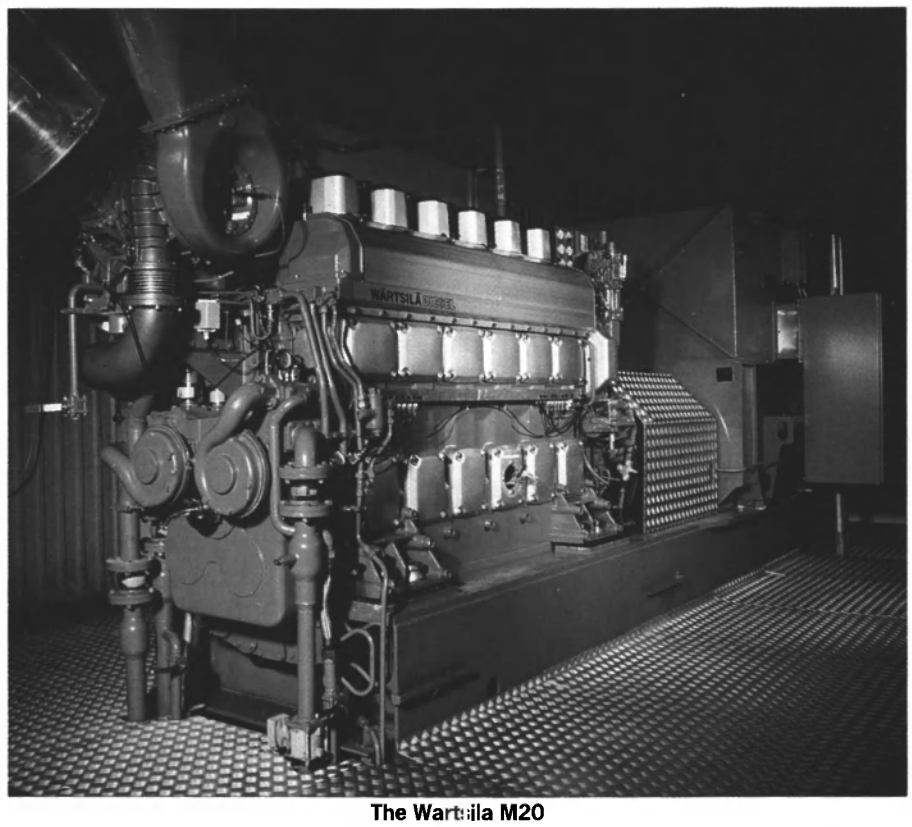
Automated production and quality control is today cheaper in relation to the man-hours spent in assembly.

Accordingly, the number of components has been greatly reduced, and much of the pipework is integral with the frame.

An auxiliary generator runs at constant speed and it is thus possible to proportion the cylinder dimensions for optimum performance in the light of latest turbocharging techniques.

The engines operate for long periods, often lightly loaded, and the fuel injection characteristics have been set so that the lowest point of the flat consumption curve occurs at part load. The pulse turbocharging system has been adopted for this reason, and also for its more rapid response to sudden increases of load, such as are frequent in this application.

The Vasa 20 engines will be offered with four-, six- and nine-cylinders and, with cylinder output ranging from 130 kW (177 bhp) at 720 rpm to 165 kW (224 bhp) at 1,000 rpm, and are suited for generators between about 480 and 1,300 kW.

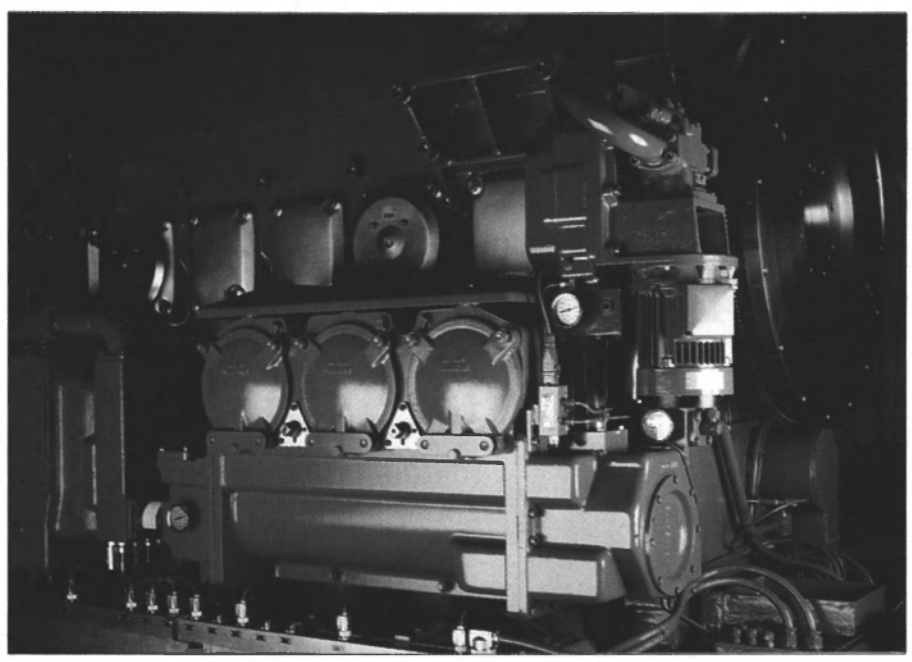


The Wartsila M20

Design Details

The frame and running gear have been proportioned for a firing pressure of 200 bar, well above that at which the engine is being introduced. The stiff cast iron frame carries the underslung crankshaft which has over-dimensioned crankpins and journals so as to make use of the thick pad oil film technology which has proved so successful in the Vasa 46 engines. The connecting rods have joints stepped almost vertically to allow them with their large bottom end bearings to be withdrawn through the cylinder bores.

Composite pistons, with steel crowns carrying the two gas and one scraper rings, and nodular cast iron skirts, pressure lubricated from within, work within non-hardened liners having loose anti-polishing rings inserted in the top, just above the tdc position of the upper ring.



The four-stud cylinder heads provide adequate space for gas flow, and are each associated with a so-called multi-duct which contains the transfer passages from the head to the air charge manifold in the frame, the exhaust pulse lines and the cooling water discharge. This stays in place when the cylinder head is removed, greatly reducing maintenance time and effort.

There are two cooling water circuits, each with its own circulating pump. The high temperature circuit serves the cylinder jackets and heads, and the low temperature one serves the air charge intercooler and oil cooler. The latter is arranged for inverse cooling, heating of the air charge, under electronic control when operating at part load on heavy fuel.

The lubricating oil cooler and a filter designed to suit the configuration are incorporated on the engine, together with the attached and motor-driven pumps. There is provision for driving additional pumps for other purposes at the free end of the crankcase.

In the interest of easy installation, the engine is as self-contained as possible with the minimum of external pipework and connections needed for fuel, exhaust, water, controls and alarms. There are two forms of resilient mounting, one with the flexible supports beneath the combined bedplate and the other with the mounts below the engine alone, and a flexible coupling.

The trend towards smaller ship's companies has implied lower possibilities for maintenance, and the design has kept in mind the reduction of effort necessary to undertake routing tasks.

For additional information on Wartsila,

Circle 159 on Reader Service Card

WARTSILA VASA 20 ENGINES
"The Auxiliary Engine"

Cylinders	4, 6 and 9 in-line
Cylinder Bore	200 mm
Piston Stroke	300 mm
Stroke:Bore ratio	1.5:1
Cylinder Output	130-165 kW
Speeds	720-1,000 rpm
Firing Pressure	160 bar

Electric Boat Receives $5.7 Million Navy Contract

General Dynamics Corporation's Electric Boat Division, Groton, Conn., has received $5.7 million from the Naval Sea Systems Command for a selected restricted availability on the U.S.S. Boston (SSN 703).

Navy Awards $5.3 Million To Moon Engineering For Maintenance Contract

Moon Engineering Company, Inc., Portsmouth, Va., was awarded a $5.3 million contract from the Navy for the phased maintenance availability of the U.S.S. Portland (LSD 37).

Life Cycle Engineering Awarded $10.1 Million Navy Contract

Life Cycle Engineering, Inc., Charleston, S.C., was awarded a $10.1 million contract by the Naval Surface Warfare Center, Carderock Division, Annapolis, Md., for engineering and technical support in the areas of ship condition and rapid assessment information development.

Bath Iron Works Receives $30.5 Million For DDG-51 Servicing

The Naval Sea Systems Command (NAVSEA) has awarded a $30.5 million contract to Bath Iron Works Corporation, Bath, Maine, to provide lead-yard class services on the Arleigh Burke Class (DDG 51) Aegis destroyers.

Norcontrol, Oceanroutes Sign Agreement For Weather Forecasting

Norcontrol Automation, has signed an agreement with Oceanroutes to integrate the latest weather forecasting technology into ships' bridge control systems.

The Orion onboard computer guidance system will be integrated into the BridgeLine system made by Norcontrol.

Selected routes will be transferred to Norcontrol's BridgeLine navigation system and presented as an overlay on true electronic charts and radar displays. The navigation system will automatically monitor and steer the ship on the optimum route.

Forecasts, including wind and wave conditions, are now available for 10 days ahead instead of three as in the past for ships receiving information via radio facsimile.

Norcontrol, a pioneer of modern navigation equipment, is a world leader in the development, supply and service of automation systems for all types of seagoing vessels.

Oceanroutes is one of the largest private marine weather forecasting companies in the world. More than 800 shipowners and operators use its optimum ship routing service, with about 1,200 vessels routed every month.

For more information,

Circle 100 on Reader Service Card

Barnstead Joins Phillyship As Director Of Corporate Marine Sales

Joel van Diepen, chairman of the board of Philadelphia Ship Maintenance Company, Inc., trading as Phillyship, has announced that **Ronald W. Barnstead** has joined Phillyship as director of corporate marine sales.

Mr. **Barnstead** has 17 years of experience in voyage repairs, and specializes in international marketing. He will oversee international sales for Phillyship's ten East Coast locations.

Phillyship is a ship and engine repair company with over 30 years of experience, operating out of all major ports from Boston to Jacksonville, and headquartered in Philadelphia.

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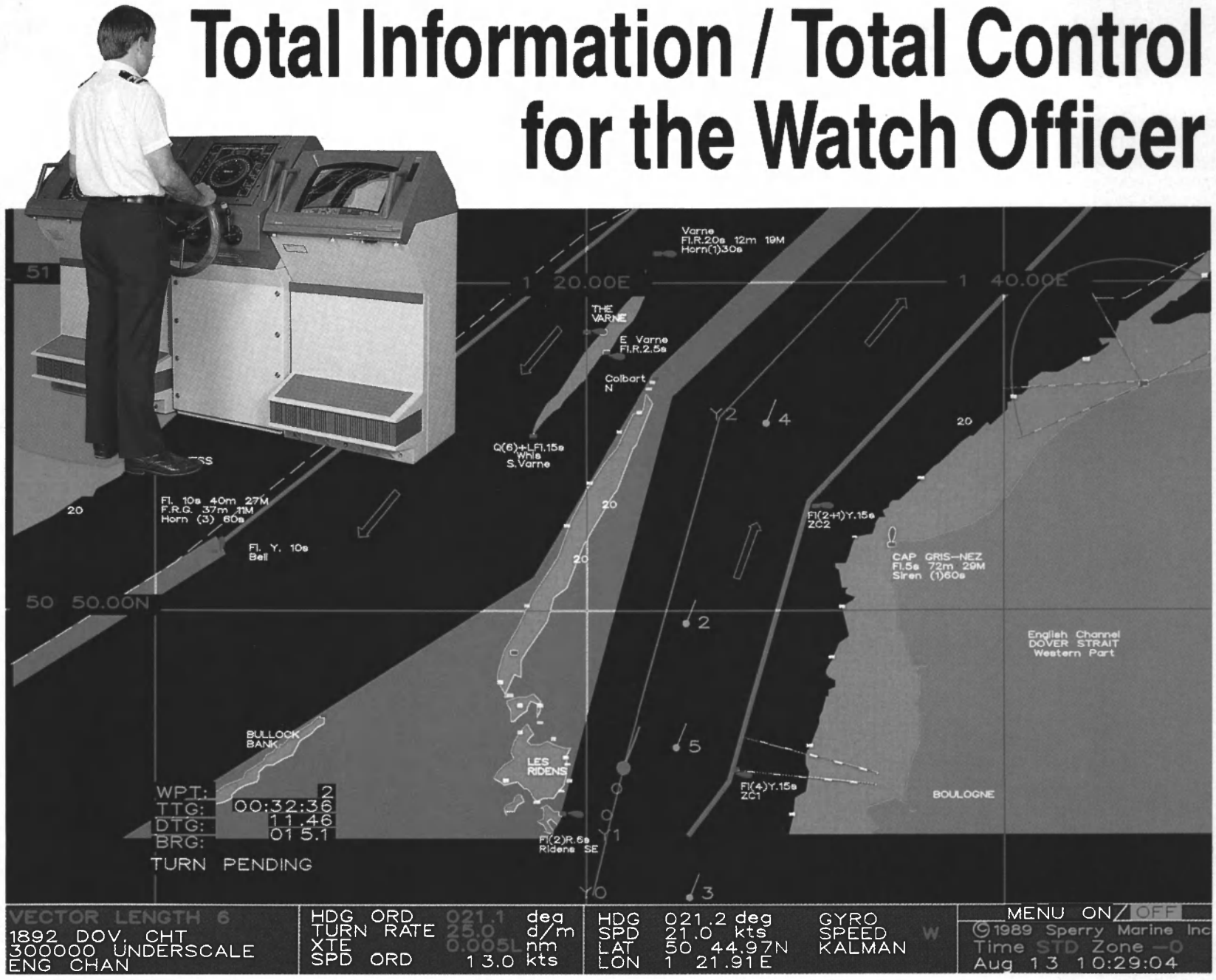
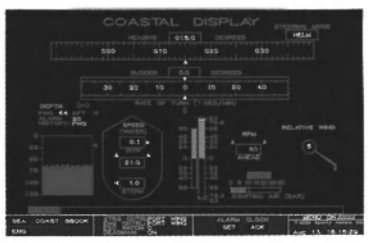
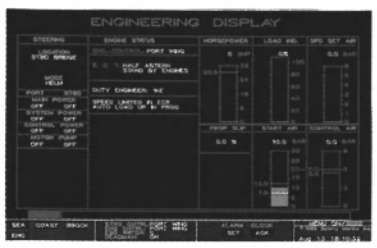


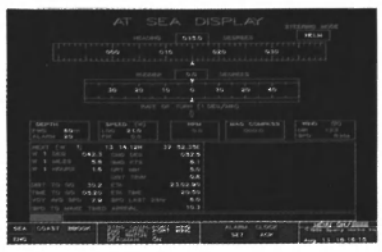
ELECTRONIC CHART



COASTAL DISPLAY



ENGINEERING DISPLAY



AT SEA DISPLAY

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TENNECO

Circle 277 on Reader Service Card

Chandris And OSG Form Joint Venture For Celebrity, Fantasy Cruise Lines

The Chandris Cruise Division and Overseas Shipholding Group Inc. (OSG) have signed an agreement to form a joint venture. The joint venture company, to be called Celebrity Cruise Lines Inc. will own and operate six cruise ships and will continue to be marketed under the names of Celebrity Cruises and Fantasy Cruises.

Celebrity will contribute six ships, including the Horizon and the recently delivered Zenith. OSG will contribute about $220 million to be used primarily to finance a planned expansion of the fleet.

Celebrity Cruise Lines Inc. will function as an equal joint venture of Chandris and OSG. There will be no change in the day to day management and operations of Celebrity Cruises or Fantasy Cruises or in existing cruise schedules.

OSG, one of the largest bulk shipping companies in the world, owns and operates a fleet of 65 vessels.

NWC Re-elects Laman, Christensen, Portiss And Cook At Annual Meeting

J.D. (Johnnie) Laman, marine and international operations manager for Dow USA, has been elected to a second term as chairman of the National Waterways Conference, Inc.

Also re-elected to new terms were **W. Richard Christensen**, vice president of Ashland Petroleum Co., as vice chairman, and **Robert W. Portiss**, director of the Tulsa Port of Catoosa, as first vice president. **Harry N. Cook** was named to his 15th term as president.

Two new members were also elected to the executive committee: **William F. Harbison**, president of Arkansas River Co., and **Thomas D. Murphree, Jr.**, sales and marketing director of Mid-South Terminal Co., Ltd.

Seventeen new members were elected to the organization's board of directors.

In 1993, the National Waterways Conference will hold its annual meeting at the Peabody Hotel in Memphis from September 22-24, 1993.

Port Of Seattle Approves Former Shipyard Purchase

The Port of Seattle Commission has approved the final terms of a deal to acquire a former shipyard which borders one of the port's major container shipping terminals. The site is reported to be one of the most suitable on the West Coast for container shipping or other maritime uses. The agreement comes less than a year after the port called for possible conversion of the site into a container terminal.

The purchase price for the 33-acre Lockheed Shipyard No.2 has been set at $9 million. The total purchase price also includes $2 million required for site clean-up as needed to comply with state and federal environmental laws.

The port anticipates seeing immediate revenue from existing and interim uses of the property. Part of the site has already been leased to American President Lines (APL). APL is using the site as a marshalling area for empty containers. Vessel which dock at existing piers are expected to generate interim revenues.

MarAd Awards $11.07 Million In Contracts To Two Shipyards

The Maritime Administration has awarded a contract worth $7,471,910 to Century Marine, Inc., Orange, Texas, for topside repairs on the Ready Reserve Force (RRF) vessel, SS Mount Washington, including renewal of over 900,000 pounds of steel in the vessel's cargo tanks. Blasting and epoxy coating the tanks will also take place. The work is expected to be completed within 210 calendar days.

A contract worth $3,600,990 has been awarded to Newport News Shipbuilding & Drydock, Newport News, Va., for deactivation of the RRF vessel Cape Nome.

New Government Financing For Vessel Construction

by James R. McCaul, President, IMA Associates, Inc.

Two recently passed laws provide a channel for financing vessel construction using federal funds. One supports tanker replacement. The other supports ferry construction. These two financing channels have until now been largely untapped by potential users - and we thought some details might be of interest.

Product Tanker Construction

The Oil Pollution Act of 1990 (OPA 90) prohibits the operation of single hull tankers in U.S. waters beginning January 1, 1995. The prohibition is phased in over a 20 year period. Taken into account in implementing the prohibition is the vessel's size and age. Exceptions are provided for vessels in certain uses. The long term impact on vessel attrition is shown below.

As a result of OPA 90, we estimate that 55 percent of the domestic product carrier tonnage now in operation will be forced out of service by 1998. This involves the mandated obsolescence of about 30 ships. To offset the economic consequences of OPA 90, a special financing facility has been established for replacing obsolete tankers. This financing facility has been made a subaccount in Title XI of the Merchant Marine Act of 1936. It provides for the Department of Transportation to guarantee obligations up to a maximum term of 25 years —for an amount not to exceed 75 percent of the construction cost to replace vessels which are mandated obsolete by the law.

Section 1104 B. (a) Notwithstanding the provisions of this title, except as provided in subsection (d) of this section, the Secretary, upon the terms the Secretary may prescribe, may guarantee or make a commitment to guarantee, payment of the principal of and interest on an obligation which aids in financing and refinancing, including reimbursement to an obligor for expenditures previously made, of a contract for construction or reconstruction of a vessel or vessels owned by citizens of the United States which are designed and to be employed for commercial use in the coastwise or intercoastal trade; or in foreign trade as defined in section 905 of this Act if—

(1) The construction or reconstruction by an applicant is made necessary to replace vessels the continued operation of which is denied by virtue of the imposition of a statutorily mandated change in standards for the operation of vessels, and where, as a matter of law, the applicant would otherwise be denied the right to continue operating vessels in the trades in which the applicant operated prior to the taking effect of the statutory or regulatory change;

(2) The applicant is presently engaged in transporting cargoes in vessels of the type and class that will be constructed or reconstructed under this section, and agrees to employ vessels constructed or reconstructed under this section as replacements only for vessels made obsolete by changes in operating standards imposed by statute;

(3) The capacity of the vessels to be constructed or reconstructed under this title will not increase the cargo carrying capacity of the vessels being replaced; and

(4) The Secretary has not made a determination that the market demand for the vessel over its useful life will diminish so as to make the granting of the guarantee fiduciary imprudent;

(5) The Secretary has considered: projected revenues and expenses associated with employment of the vessel; any charters, contracts of affreightment, transportation agreements or similar agreements or undertakings relevant to the employment of the vessel; other relevant criteria.

Under the provisions of subparagraph (4) the Secretary of Transportation must make a determination that there is insufficient market demand in order to deny a financing guarantee. This is in sharp contrast to the normal Title XI application which requires the applicant to demonstrate that there is a market for the vessel being guaranteed. Under OPA 90 vessel financing, the burden is on the government to demonstrate the tanker replacement would be imprudent.

We expect one or more independent operators will take advantage of this financing facility within the next year or two. It's possible that single hull older ships will actually acquire additional value because an obsolete ship is needed to obtain a Section 1104B financing guarantee. And since a loose contract of affreightment may be all that's necessary to support the financing application, this financing channel, utilizing the services of a third party, may be attractive to the oil majors.

Ferry Construction

A stated goal of the Intermodal Surface Transportation Efficiency Act, passed into law on December 18, 1991, is to produce "significant improvements in public transportation necessary to achieve national goals for improved air quality, energy conservation, international competitiveness and mobility for elderly persons, persons with disabilities and economically disadvantaged persons in urban and rural areas of the country." As part of the law, funding is provided to the Department of Transportation to carry out a program to construct ferries and ferry terminals.

Section 1064. Construction of Ferry Boats and Ferry Terminal Facilities—

(a) In General—The Secretary shall carry out a program for construction of ferry boats and ferry terminal facilities in accordance with section 129(c) of title 23, United States Code.

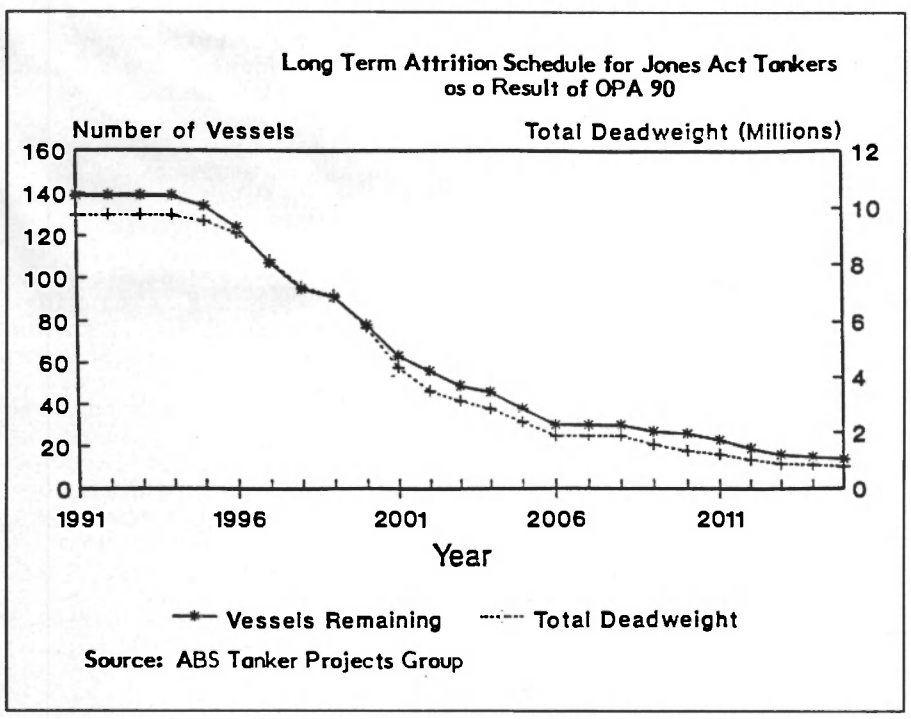
(b) Federal Share—The Federal share payable for construction of ferry boats and ferry terminal facilities under this section shall be 80 percent of the cost thereof.

(c) Funding—There shall be available, out of the Highway Trust Fund (other than the Mass Transit Account), to the Secretary for obligation at the discretion of the Secretary $14,000,000 for fiscal year 1992, $17,000,000 per fiscal year for each of fiscal years 1993, 1994, 1995 and 1996, and $18,000,000 for fiscal year 1997 in carrying out this section. Such sums shall remain available until expended.

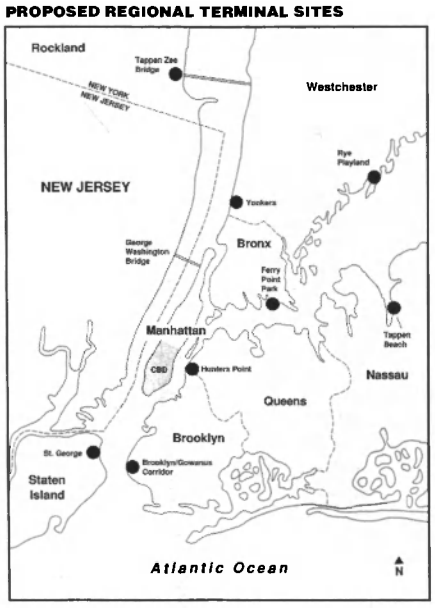
These federal funds could provide a financing source for a variety of ferry projects. Assuming all of the funds are made available, $100 million in federal assistance will be available for ferry and ferry terminal construction over the six year period.

Availability of Section 1064 financing has been recognized by key potential users. For example, New York State has indicated an interest in utilizing these funds for instituting new private ferry services in New York Harbor. In a recent request for proposals to start new ferry services, the State identified a variety of potential routes which could augment the existing ferry service in New York Harbor (see exhibits). In the solicitation the state identified Section 1064 as a potential source of ferry construction financing.

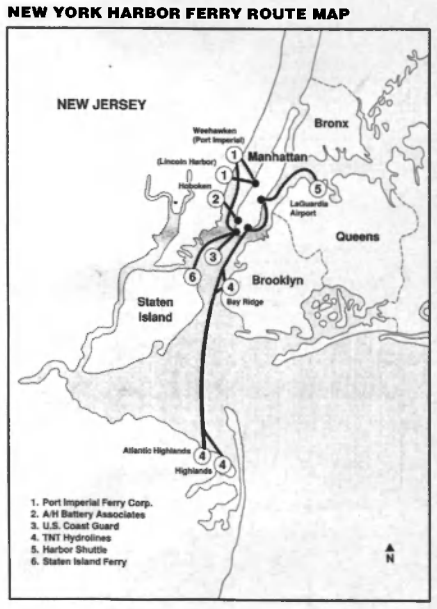
IMA performs market research and business planning services for clients in the industrial, marine and technology sectors. For further information on IMA's capabilities and experience, please contact ***Jim McCaul*** *at (202) 333-8501.*



PROPOSED REGIONAL TERMINAL SITES



NEW YORK HARBOR FERRY ROUTE MAP



SCLR Continues To Maintain Workload With Three New Contracts

The Service Company of Louis Rogers, (SCLR) Inc., headquartered in Port Canaveral, Fla., has announced that it continues to maintain its workload with the addition of three new contracts.

A contract worth $129,183 has been received by SCLR for the design, materials, fabrication and delivery of four aluminum brows for the Moored Training Ship 626 located in Charleston, S.C.

The second contract is for dockside availability of the NOAA ship Malcolm Baldridge. Work includes diesel engine repairs, winch overhauls, electrical and structural modifications. The initial work has a value of $283,528, with optional repairs worth $143,684.

The third award is for the deactivation of the USNS Marshfield. The contract involves towing of the vessel to and from the facility and preparing it for lay up in the MarAd Ready Reserve Force. The total value of this project comes to $583,419.

SCLR, Inc. has been issued a NAVSEA ABR for its Port Canaveral facility.

The company actively pursues contracts that can be accomplished within the port and at the same time maintain a large work force within the local area.

For complete details describing the services and facilities of SCLR,

Circle 84 on Reader Service Card

Richard Named General Manager Of Phillyship Of Wilmington, N.C.

Joel H. van Diepen, chairman of the board of Philadelphia Ship Maintenance Company, Inc., trading as Phillyship, has announced the appointment of **Terry Lee Richard** to the position of general manager of Phillyship of Wilmington, N.C.

Mr. **Richard** is a Navy veteran with expertise in nuclear engineering. An experienced foreman and hydraulic technical representative, he came to Phillyship from Dynamic Power Systems of Beaumont, Texas.

Terry Lee Richard

Headquartered in Philadelphia, Phillyship operates out of all major ports from Boston to Jacksonville. Phillyship's team of managers, engineers, technicians and craftsmen are available anytime to perform any shipboard repair, replacement or installation worldwide.

Sperry Marine Receives Order For Seven Additional MK-49 SINS Units

GEC Ferranti and Sperry Marine Inc. have announced that the U.K. Ministry of Defense has exercised an option for seven additional MK-49 Ring Laser Gyro Navigators. the option follows testing of the MK-49 at the North Pole.

The MK-49 was chosen in 1989 as the standard NATO Ship's Inertial Navigation System (SINS) to be installed aboard U.K. submarines, Dutch frigates and Spanish submarines and frigates. The MK-49 has also been selected for the Ship's Navigation Data System to be installed on all new construction Anzac frigates for Australia and New Zealand.

At the present time Sperry Marine has 77 MK-49s on order worldwide with options for an additional 22. Deliveries will continue through the year 2003.

For more information describing the MK-49 from Sperry Marine,

Circle 95 on Reader Service Card

SOUTHERN BOATBUILDING

Casino Boat Boom Keeps Yards Busy, Optimistic

By John R. Snyder

A little over a decade ago, shipyards located along the coastlines of Florida, Alabama, Mississippi, Louisiana and Texas were almost exclusively geared towards building support boats for the offshore market. Now, however, more than a decade after the slowdown in the oil patch began, a survey of many of these same yards reveals a much different story.

Successful Switch To Casino Market

An excellent example is Service Marine Industries, Inc. (SMI), which was heavily involved in workboat construction during the Gulf boom. Now, with the changes in the Gulf, SMI has successfully made the transition to being one of the leading builders of casino riverboats, gaming vessels and excursion/diner boats.

SMI is currently working on four 295- by 55-foot barge units for Grand Casinos, Gulfport, Miss., and a 1,200-passenger megayacht-style 210- by 68-foot casino boat for Harrah's. The Morgan City builder has also signed a contract to build a 210-foot gaming paddlewheeler for Harrah's and recently completed the two-story 295-foot Casino Magic for dockside gaming at Bay St. Louis.

According to **Tom Hensley** of SMI, the Morgan City firm is also building a sister to the 200-foot, 800-passenger Odyssey for Premier Yachts. The "Odyssey II," set for an April 1993 delivery, will operate out of Chicago, when the Odyssey is moved to Boston next year.

On the repair side, Mr. **Hensley** said that SMI has added a flare to provide degassing services to fuel barges, which has brought "a tremendous amount of work in the repair area" for the yard.

"Business is going to accelerate over the next couple of years," he continued. "All 15 licenses [in Louisiana] will be given out over the next several months. We're getting inquiries from potential customers in states all over.

"If this thing ever breaks loose, there won't be enough builders in Louisiana to build these [gaming] vessels. There will be plenty to keep everyone busy," stated Mr. **Hensley.**

Casino boat operations in Louisiana may get started as soon as January 1, 1993. According to the regulations, all the vessels must be newly constructed sternwheelers. As many as 15 new vessels may be built for Louisiana, with a maximum of six boats in one Parish. Originally restricted to Louisiana yards, this work can now be done by any boatbuilder with the capability.

Also eyeing the casino boat market is Bender Shipbuilding & Repair Co., Inc. According to **Linda Lewis**, marketing manager for Bender Shipbuilding, because of the new surge in gaming vessels in Mississippi and Louisiana, Bender is looking forward to building or converting vessels for riverboat/casino gambling.

Spread out along a mile-long stretch on the Mobile River, Bender has the ability to provide a wide range of new construction, conversion and repair services to the commercial and naval marine markets. Present construction includes the completion of a contract for ten 83-foot shrimp trawlers for Kuwaiti owners by December 1992. The Kuwaiti firms have an option for 10 additional vessels.

The Alabama shipbuilder is also building two 200- by 85-foot drill barges for Energy Service Co. (ENSCO) of Dallas, Texas, for use on

For additional information on these southern boatbuilders, circle the number corresponding to each on the Reader Service Card.

Yard	Reader Service Number
Atlantic Marine	104
Avondale Boat Div.	105
Avondale Harvey	106
Bender Shipbuilding	107
Bollinger Shipyard	108
Campbell Shipyard	109
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Trinity Marine Group	124

M/V Loop Responder from North American Shipbuilding

Lake Maracaibo in Venezuela. The order will be completed by the second quarter of 1993.

For domestic use as part of the 16-vessel national response fleet, Bender has launched four 210-foot oil spill recovery vessels for the Marine Spill Response Corporation (MSRC) of Washington, D.C. under a $50 million contract.

On the conversion side, Bender is in the process of a major reconstruction of a 220-foot oceanography research ship for the University of Hawaii's Undersea Research Laboratory, and was awarded a contract by the Jo Daviess Riverboat Venture of Chicago to convert the 205-foot ex-Monte Carlo from a dinner excursion boat to a casino riverboat.

To be called the Silver Eagle, the gaming vessel will be based in Galena, Ill., and operated by the owners of the Eagle Rock Resort.

Perhaps in anticipation of an increase in casino boat construction and tanker building, Bender is expanding its facilities by adding a new yard and increasing the size of its 535-foot drydock to 700 feet in order to accommodate Panamax-size vessels. The company has reached an agreement to purchase and reactivate the Bergeron Shipyard in Braithwaite, La.

Also looking towards the lucrative gaming vessel and double-hull tanker markets is McDermott Incorporated's Shipyards Division.

"We generally feel that there should be an upward trend in ship construction, particularly if the newer markets of double-hull tankers and casino/passenger vessel construction commence," said H. **Brinson Miles III**, McDermott's division manager. "This, however, will tend to be somewhat offset by the downturn in the U.S. Navy construction program," continued Mr. **Miles**. "We believe the repair market will be 'flat' with the lack of Gulf of Mexico oilfield activity," he added.

The Shipyard Operations division of McDermott Incorporated at Amelia, La., has been busy with a substantial amount of construction, repair and conversion projects for the Navy, offshore and research markets. Major construction and repair projects during the last 12 months at McDermott include four 234-foot SWATH T-AGOS vessels for the U.S. Navy; the overhaul, life extension and upgrade of two oceanographic research vessels for the Woods Hole Oceanographic Research Institute; two pipe laybarge rig-ups for Exxon; two power generation barges for Wartsila/Enron; a 4,000-ton production process deck for Mobil Oil; twelve 10,000-ton offshore bridges and one 7,500-dwt sulfur carrier for Freeport McMoran; one 24,000-dwt sulfur carrier for International Shipholding Corporation; two jack-up construction barges for Laing-GTM; and one phosphoric acid barge for Otto Candies, Inc.

"There is definitely an upward trend for the construction of new gaming vessels," said a spokesperson for Atlantic Marine, Inc., a Jacksonville, Fla., shipbuilder. "We feel that this trend will continue as more states legalize gambling."

Located on the banks of the St. John River, Atlantic Marine, which has delivered four gaming vessels to date, has been contracted to build a larger replacement vessel for the 600-passenger Alton Belle Casino.

The 222-foot, 1,000-passenger-plus, triple-deck casino riverboat will be similar in design to the Atlantic Marine-built Empress Riverboat Casino, which was delivered earlier this year to Des Plaines River Entertainment Group. Fully outfitted, the new vessel should cost about $12 million. The Alton Belle Casino, bought and converted at a cost of a little over $2 million, was one of the first gaming boats operating out of Illinois. The new "Alton Belle Casino" is scheduled to open in May 1993.

Another gaming vessel, John Connelly's $17-million President Casino, an integrated tug-barge unit built by Leevac Shipyards, recently opened in Mississippi. The vessel is permanently moored at the Broadwater Marina at the Broadwater Beach Resort in Biloxi, Miss.

Laid out alongside the Mermentau River near Jennings, La., Leevac Shipyards has delivered one other gaming vessel during the past 12 months—the 190-foot Casino Rock Island for Illinois operation—and has another, the 210-foot Players Riverboat Casino, under construction. Two small inland pushboats, the Miss Cynthia and Miss Marianne, round-out Leevac's order book.

Other work at the yard included inland tank barge repairs, a supply boat conversion, pressure tank barge repairs and torpedo weapon retriever repairs.

According to **Charles E. Burrell**, sales manager for Leevac, from the company's standpoint, the casino vessel market is still the most viable. "We expect to see vessels ordered for Louisiana and Missouri," said Mr. **Burrell**. The only stumbling blocks, according to Mr. **Burrell**, are the Louisiana courts, which might declare the Louisiana Riverboat Gaming Act unconstitutional, and the passage of a Missouri referendum scheduled to be voted on statewide on November 3, 1992.

Iowa's first riverboat casino, the 387-foot Dubuque Casino Belle, which was built by Patti Shipyards of Pensacola, Fla., was recently sold by Robert's River Rides to St. Charles Riverfront Station, a Missouri firm that is a subsidiary of Palace Station, Inc., of Las Vegas. St. Charles Riverfront Station is expected to moor the 3,000-passenger vessel on the Missouri River. During the summer, Roberts River Rides sold the 447-foot gambling vessel Casino Queen, also built by Patti.

Bids have been submitted by several Gulf Coast shipyards for the construction of New Orleans' first riverboat casino. The 400- by 90-foot vessel will carry about 3,500 passengers and is expected to cost about $35 million. To be called the Queen of New Orleans, the riverboat will be operated by Hilton Hotels Corporation and New Orleans Paddlewheels, Inc., and is expected to take more than one year to build.

Trinity's Washington Responder

Bender Shipbuilding's Alton Belle

Established in 1954, Steiner Shipyard, Inc., located at Bayou La Batre, Ala., has been a well known builder of fishing vessels for domestic and international customers. In recent years, however, Steiner has diversified its construction and engineering capabilities and it is reflected by the firm's order book. Steiner is building a 350-passenger high-speed ferry and a 40-foot debris collector for Caribbean clients, two 5,000-barrel oil recovery barges for a Maine customer, and five 70-foot deep-water shrimp trawlers for French Guiana.

Additionally, the Alabama builder is remodeling a 190-foot gaming/excursion vessel which it plans to offer for sale.

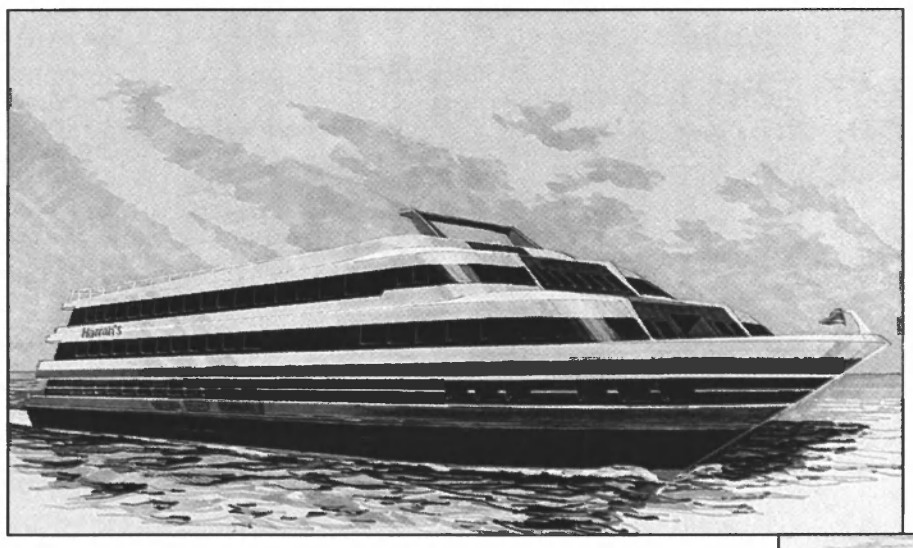
Steiner plans to concentrate its efforts on the markets it feels have the most potential—passenger/auto ferries, environmental workboats and excursion vessels.

On the Florida Panhandle at the Four-Mile River, Freeport Shipbuilding & Marine Repair, Inc., recently delivered the 65-foot, 150-passen-

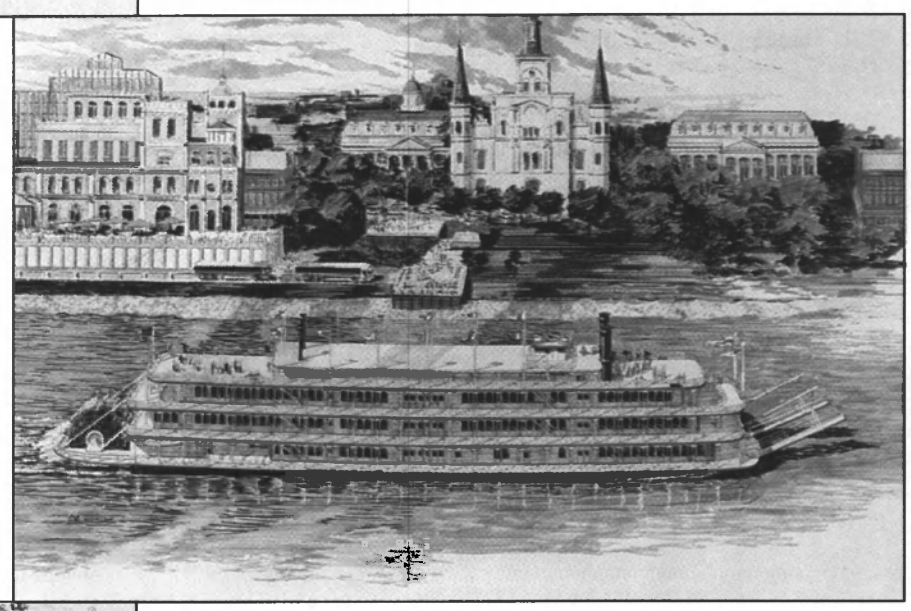
(continued on page 48)

CASINOS...CASINOS...CASINOS

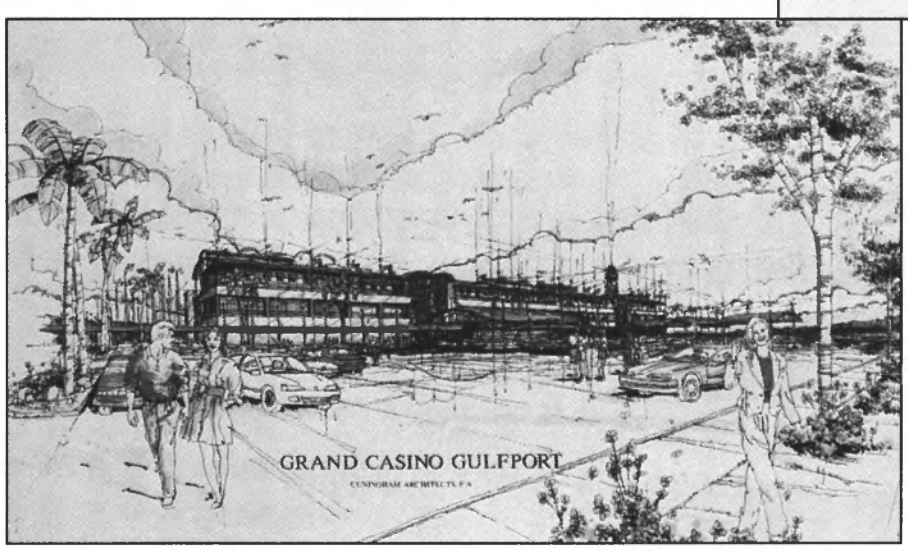
Floating Casinos of any Style or Size



Experience counts in building U.S. Coast Guard-approved casino boats.



With nine vessels built and three under construction, you can't find a more experienced builder. From Harrah's Illinois mega-yacht casino to a Louisiana riverboat casino, to Grand Casino's Mississippi floating casino, we build all sizes and styles.



Using our proven fast track construction methods, we'll build our design or yours in the least possible time.

Call Tom Hensley at (504) 631-0511 to discuss your casino requirements.

Service Marine Industries, Inc.

A Full Service Shipyard at Mile 88.5 West on the Intracoastal Canal
P.O. Box 3606, Morgan City, LA 70381
Telephone (504) 631-0511 • Fax (504) 631-0874 or (504) 631-0046

Southern Boatbuilding

(continued from page 46)

ger steel-hulled replica sidewheeler Barefoot Princess and the 127-foot custom charter yacht Star of America. Additionally, Freeport Shipbuilding also delivered the 70-foot aluminum coastal cruiser Sunquest I, the first model of a new line.

According to **Gail Murray** of Freeport Shipbuilding, the yard has experienced "an above normal amount of inquiries from serious clients" across a wide range of sectors — excursion boats, yachts, coastal cruisers.

On the repair side, some of the major work carried out at the Emerald Coast yard include repairs to the 64-foot passenger boat Captain Anderson II and 167-foot passenger vessel Star of Cincinnati.

Workboat, Patrol Craft & Barge Construction

With 11 shipyards in Louisiana, Mississippi, Pennsylvania, and Texas, the Trinity Marine Group (TMG) is a big player in the small ship market. Headquartered in Gulfport, Miss., TMG is headed up by president **John Dane III**, and is part of Trinity Industries, Inc., based in Dallas. TMG's Halter Marine, Inc., recently launched the $22-million M/V Mississippi, the largest and most expensive towboat ever built in the U.S. Under construction for the Corps of Engineers at the Halter Marine, Moss Point, Miss., yard, the 241- by 58-foot Mississippi will have a dual role—first as a working towboat and the second as a meeting hall, with accommodations for 78 passengers and quarters for Mississippi River Commission (MRC) members and its crew. Three Caterpillar 3606TA diesels will provide the main propulsion for the 7,000-hp towboat. Delivery is set for January 1993.

Patti Shipyard's Mississippi Belle

Also under construction at the Halter yard is the $50-million dustpan dredge Hurley for the Corps of Engineers. The 300-foot dredge was launched in late September and is scheduled for delivery to the Memphis District in July 1993.

TMG is also in the midst of a 12-vessel, $150 million contract for the MSRC. The 210-foot spill response ships are being built at three TMG yards — Halter-Moss Point, Halter-Lockport (La.) and Trinity-Beaumont (Texas).

TMG's order book cuts across a wide spectrum of markets, from yachts to oceanographic research vessels, from tugs to multimission environmental boats.

The environmental vessel market is also key for the Pascagoula, Miss., shipyard of Sea-Fab, Inc., which recently delivered two 100-foot oil spill recovery vessels to Clean Coastal Waters, Inc. (CCW) of Long Beach, Calif. The two skimmers, the Recovery I and Recovery II, are each equipped with port and starboard doors that direct recovered oil to the Lori Skimmers. Last year Sea-Fab delivered a response vessel to the Delaware Bay & River Cooperative of Lewes, Del.

North American Shipbuilding of Larose, La. recently delivered the M/V Loop Responder to owner/operator Edison Chouest Offshore, Inc. The tractor tug, reportedly the most powerful tug in the world, is outfitted with twin Voith Schneider Propulsion (VSP) units of type 36G II, allowing it to manuever in any direction. The vessel is designed to provide escort and emergency response to VLCC and ULCC tankers calling at the Louisiana Offshore Oil Port (LOOP) facility. At 155-feet long, the Loop Responder can reach a top speed of 14.5 knots and has demonstrated the capability to stop in less than its own length from full speed.

At Westwego, a suburb of New Orleans, the Avondale Boat Division has been awarded a contract to build another Viking 2000 Class towboat for Viking Maritec, Oakdale, Pa., an affiliate of the Vectura Group of companies. To date, Avondale has built three of the 168-foot vessels, which are owned by National Marine, also part of Vectura. The cost to build one of these highly sophisticated twin-screw vessels is about $7 million.

During 1992, Avondale Boat Divi-

sion delivered two Viking 2000 Class towboats and one 110-foot tugboat for E.N. Bisso of New Orleans.

Commenting on the market outlook, **Curt Chatelain,** marketing manager for Avondale Boat Division, said, "We think it looks quite good. We think there will be substantial gambling vessel activity in Louisiana and we expect to get a piece of that." Mr. **Chatelain** also said he expects Avondale to garner tug, barge and mini-tanker orders from U.S. and international customers in the near future.

West of New Orleans, Patterson, La.-based Gulf Craft, Inc., has delivered a wide range of craft during 1992, ranging from two 45-foot ship service boats to a 160-foot crew/supply boat. Six vessels are already earmarked for delivery next year, including two 100-foot crew/supply boats, a 100-foot whale watch boat, a 90-foot pleasure/fishing boat, a 65-foot dinner cruise boat and another 65-foot passenger boat.

Well known for its Surface Effect Ship technology in military applications, Textron Marine Systems (TMS), a division of Textron, Inc., based in New Orleans, recently completed the first of two SES fireboats for New York City. The 70-foot, 30-knot John P. Devaney was built under a $6.5 million contract and should provide the city with better firefighting capabilities in shallow-draft areas.

Earlier this year, the Lockport, La., yard of Bollinger Machine Shop & Shipyard, Inc. launched the USS Cyclone, the first of thirteen 170-foot patrol craft for the U.S. Navy. To be used for special warfare missions and coastal interdiction, the PCs will be assigned to the Special Boat Squadrons of the Navy's two Special Warfare Groups based in San Diego and Norfolk, Va.

One of the busier yards in the small workboat market is SeaArk Marine, Inc. The Monticello, Ark.-based company specializes in 18- to 50-foot aluminum patrol boats and workboats comprised by its Protector, Transporter, Surveyor, Navigator, Special Purpose and Utility Series.

SeaArk delivered 11 new aluminum workboats for use in the oil industry. Saudi Aramco took delivery of three 40-foot self-propelled Transporter model barges for oil field and spill-related equipment transfer operations in Dammam, Saudi Arabia; Mobil Oil Corporation accepted delivery of two 30-foot spill response vessels for its Chalmette, La., refinery, and a 23-foot Utility Roustabout for its East Boston Above Ground Storage Terminal on Chelsea Creek; and Phillips Petroleum received five 21-foot tri-hulled "Little Giants" for use at its Port Sulphur, La., facility. Other workboat customers over the last 12 months included the U.S. Army Corps of Engineers, EPA, U.S. Fish & Wildlife, the state of Kentucky, the U.S. Coast Guard, and the Jamaican Government.

The Monticello firm also introduced several new deep-vee hull designs with the assistance of C. Raymond Hunt Associates, naval architects and marine engineers. One, the Dauntless Series, comes in lengths from 28 to 44 feet, and a second, the Barracuda Series, ranges in size from 32 to 35 feet. A third, the Commander, varies from 21 to 25 feet.

One of the nation's premier inland builders of all types of barges, Jeffboat, Inc., recently launched the first of 100 hopper barges for the Marine Equipment Management Corporation (MEMCO), St. Louis, Mo. Situated on the Ohio river near Louisville, Ky., Jeffboat is also currently building three 3,600-hp towboats, as well as several covered hopper and double-skin barges for various customers.

The MEMCO project will consist of both rake and box hopper barges which will be used on the Mississippi waterways system.

Barge Repair Market

At Mile 355 of the Gulf Intracoastal Waterway near the busy Houston Ship channel, Galveston Shipbuilding Company (GSC), Galveston, Texas, is busy with a substantial amount of barge repair. According to **Linwood Boudreaux** of GSC, since the first of the year the company has completed repair and conversion work on close to 100 barges for various customers, with the largest being 300- by 54-foot inland chemical barges. Over the next nine to 12 weeks, GSC will be repairing its 550- by 105-foot graving dock.

At Morgan City, La., along the banks of the Atchafalaya River, Conrad Industries recently acquired additional waterfront property to expand its repair capability. Now with almost 2,000 feet of waterfront property, Conrad will be able to take on additional barge and vessel repair work even if its four drydocks (ranging in capacity from 900 to 2,400 tons) are being utilized. Conrad has also added extra dockside services such as electricity, water and gas utilities, as well as compressed air facilities.

The new expanded waterfront area is expected to be used to accommodate a number of LASH (Lighter Aboard Ship) barges, which will be repaired by Conrad under a major MarAd contract. Since last September, Conrad has repaired 87 LASHs for the government.

At present, the Morgan City-based yard has six LASH vessels undergo-

ing major repairs with an additional four awaiting such work.

"Historically, Conrad has been successful in selling its new construction barges and drydocks in international markets," said **Eddie J. Knope,** the firm's marketing director, "and we are actively pursuing increased levels of activity in this area."

Over the last 12 months, Conrad has built seven steel deck barges ranging in size from 220 to 120 feet, and an 82-foot liftboat. A 180- by 64-foot steel deck barge and 90- by 40- by 5-foot drydock are currently under construction.

Avondale's Harvey Quick Repair Division is located on the Gulf Intracoastal Waterway at Harvey, La., a suburb of New Orleans. The facilities include five drydocks, a machine shop, electric shop and propeller shop. The facility is able to service a complete range of vessels, from landing craft to small municipal service vessels, from industrial supply and crew vessels to towboats, tugs and all types of barges.

At the beginning of this year, Avondale Harvey completed the major conversion of the 250-foot dredge barge Ocean Carrier 3. A joint venture between Bean Dredging, Inc., Belle Chasse, La., and Weeks Marine, Inc., Cranford, N.J., the project involved extensive modifications, including the installation of three 20-cylinder engines, associated pumps, electrical switching gears, SCR units, motor controls and transformers. Additionally, Avondale Harvey installed a 111-ton, 104- by 44-foot deckhouse on the barge, covering the entire array of deck-mounted machinery.

Other major projects during the past year included the fabrication and installation of over 200 tons of steel sponsons and other associated conversion work on a dredge barge for Pine Bluff Sand & Gravel Company of Arkansas and the drydocking and extensive repairs to a 190-foot Single Point Mooring (SPM) Buoy.

Activity In The Southwest

One of Southern California's leading repairers of commercial and Navy vessels and a leading designer and builder of tuna purse seiners, Campbell Shipyards recently signed a contract to build a 65-meter (213-foot) twin-screw motor yacht. According to **Robert F. Allen,** president of the San Diego shipyard, it will be the largest yacht constructed in the United States in the last 56 years.

In the fourth quarter of last year, Campbell delivered its eighth Super Pacific Class tuna purse seiner. The single-screw Rio Mare, with a capacity of 1,600 meters^3, is owned by Trinity Alimentari of Italy. Super Pacific Class seiners have now been delivered to U.S., Korean, French and Italian owners.

Located on San Diego Bay, Swath Ocean Systems, Inc., is a leading builder of Small Waterplane Area Twin-Hull (SWATH) type vessels. The Chula Vista, Calif., firm currently has three vessels in various stages of production: a 65-foot SWATH 2000 Class pilot vessel for the Houston Pilot Association, due to be delivered December 1992; a 90-foot custom long-range SWATH Sportfisher to be launched in February 1993; and a 114-foot custom oceanographic research vessel being built for the Monterey Bay Aquarium and Research Institute, due to be launched in May 1994.

"Our outlook for the immediate future as well as the long term is solidly optimistic for new SWATH construction," said **Robin Brackenbury,** Swath Ocean marketing director. "In spite of the sluggish overall national economic climate, the SWATH vessel's outstanding stability qualities will increase its demand. We feel that the soon to be commissioned Houston Pilot Association vessel will greatly increase SWATH Oceans' exposure and consequently stimulate new contracts for construction," he stated.

American Commercial Applies For MarAd Title XI Guarantee

The U.S. Maritime Administration (MarAd) has received an application from American Commercial Lines, Inc., Jeffersonville, Ind., a subsidiary of CSX Corp., for a Title XI guarantee to refinance a portion of the Title XI debt on 22 river towboats and 204 river hopper barges.

Built by Grafton Boat Company, Inc., Houma Welders, Inc., and Jeffboat, Inc., the inland waterways vessels were all delivered between 1973 and 1977.

If approved by MarAd, the Title XI guarantee would total $12,534,000.

Union Bay Repowers 78' Catamaran, Golden Spirit

Union Bay Shipbuilding Corporation, Seattle, Wash., recently repowered the 78-foot catamaran, the Golden Spirit. The aluminum vessel was built in 1987 by Allen Marine in Sitka, Alaska, from a design by E.A. Drake Ltd. of Seattle. At that time the vessel was powered by two Detroit Diesel 8V-71 engines driving two Hamilton jets and developing 900 hp.

The vessel was recently purchased by Alaska Travel Adventures for wildlife tours out of Sitka. Modern Marine Design of Bellingham, Wash., was hired to design a power upgrade. The 8V-71's and Hamilton jets were left in place, and hull voids forward of the original engine rooms were converted to second engine rooms. A new MAN D2842 engine, developing 1,000 hp, was installed in each new engine room, driving a ZF BW-165 reduction gear, a tailshaft and a 40-inch propeller. The propellers were placed nine feet forward of the water inlets for the Hamilton jets, which were modified to straighten out the rotational component of the propeller wash. Spade rudders were also added.

The Golden Spirit after its repowering

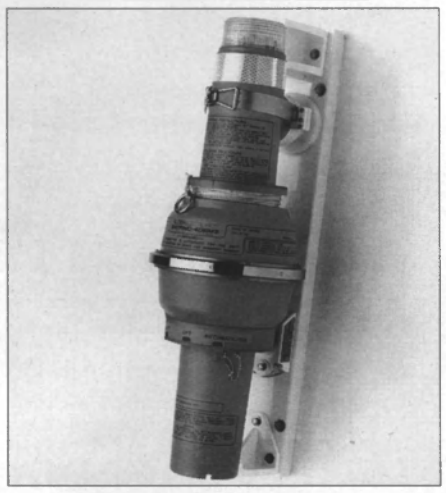
For information on the facilities of Union Bay Shipbuilding,

Circle 38 on Reader Service Card

Alden Satfind-406 EPIRB Wins Best Design Award

The Alden Satfind-406 EPIRB, from Alden Electronics, Inc., won an R & D 100 Award at the 30th annual awards banquet, which was held at the Museum of Science and Technology in Chicago.

The Alden Satfind-406 EPIRB was designed by MPR Teltech, Burnaby, B.C. It is a marine beacon that is automatically or manually released when a vessel sinks.

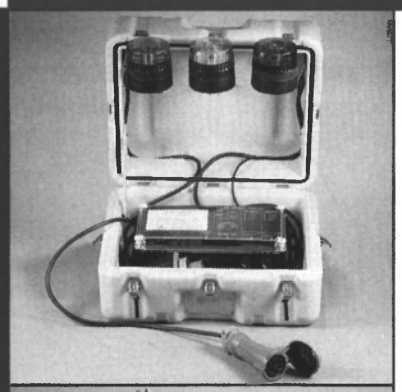

The Satfind-406 EPIRB

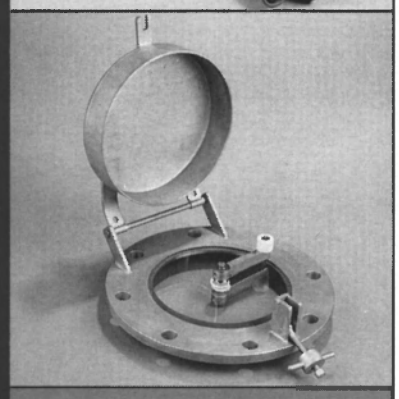
It transmits a digital signal at 406 MHz for a minimum of 48 hours at temperatures down to -20 degrees Celsius. These signals are picked up by polar orbiting satellites that relay the identity and location of the beacon to search and rescue authorities, normally within one hour. In its first year of use the product was used in 13 rescues.

For free information,

Circle 53 on Reader Service Card

Overfill Protection For Tank Barges





1. Portable Alarm Unit

- For loading at terminals with no shutdown system
- Built-in visual and audible power fail alarm
- Fully weatherproof
- Complies with U.S. Coast Guard Regulation 46 CFR 39.20-7(b) & 39.20-9(a)

2. Sight Glass

- Eight-inch full view glass with 50 sq. in. of wiped viewing area
- Aisi 304L stainless steel with teflon & viton seals
- Wiper element is simple to replace
- Complies with U.S. Coast Guard Regulation 46 CFR 39.20-3

3. Liquid Over-Pressure Relief Valve

- Simple construction, dead-weight principle
- Angled body design with flanged outlet for connection to recovery reservoir
- Patent applied for
- Competitive price
- Complies with U.S. Coast Guard Regulation 46 CFR 30.20-9(c)

These products will be on display at the International Work Boat Show, Exhibit #237.

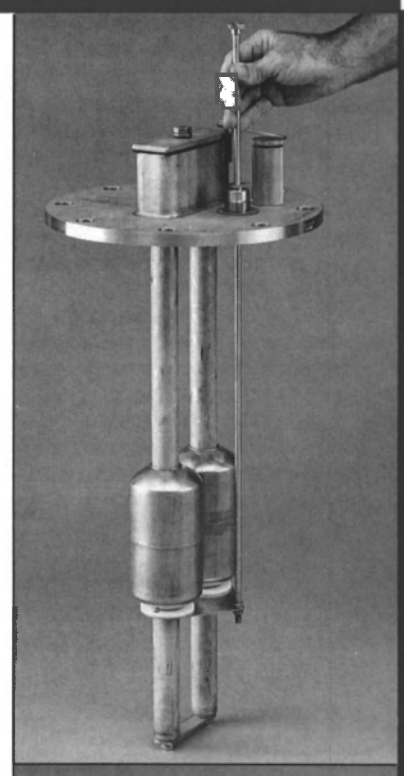
Full technical descriptions and engineering specifications are available upon request.

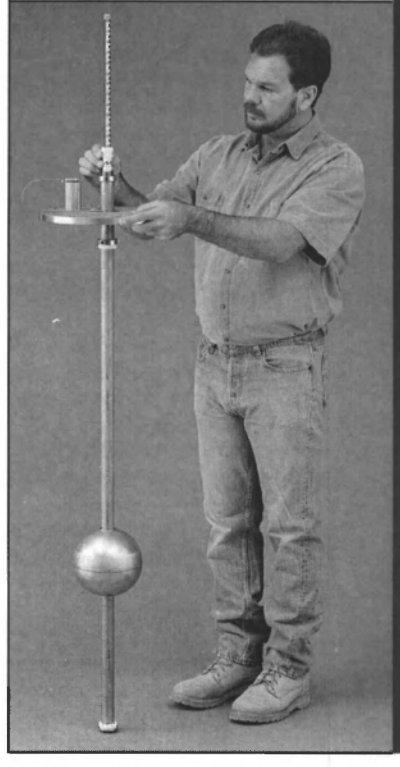
4. High Level & Overflow Alarm Sensor

- Aisi 304L/316L stainless steel construction
- Built-in test rod for pre-loading self-test
- Adjustable alarm points
- Electrical parts can be serviced while unit is in tank
- High quality, competitive price
- Complies with U.S. Coast Guard Regulation 46 CFR 39.20-7, 39.20-9, 153.408 and 153.409
- Complies with IMO BCH Code Rule 4.14, IBC Code Rule 15.19 and Solas 59-1.6

5. Magnetically Coupled Dipstick

- Strongest magnetic coupling available
- Aisi 304L/316L stainless steel with carbon reinforced fiberglass gauge rod
- Float engages gauge rod automatically
- Built-in specific gravity scale to adjust for float buoyancy
- Gauge rod has sealed-on clear teflon jacket to protect ullage markings and tri-colored reflective tape
- Complies with U.S. Coast Guard Regulation 46 CFR 39.20-3(b)





Bergan

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Ian-Conrad Bergan, Inc.
3409 Gulf Breeze Parkway
Gulf Breeze, Florida 32561, U.S.A.
Phone: (904)932-9388
Fax: (904)932-0504

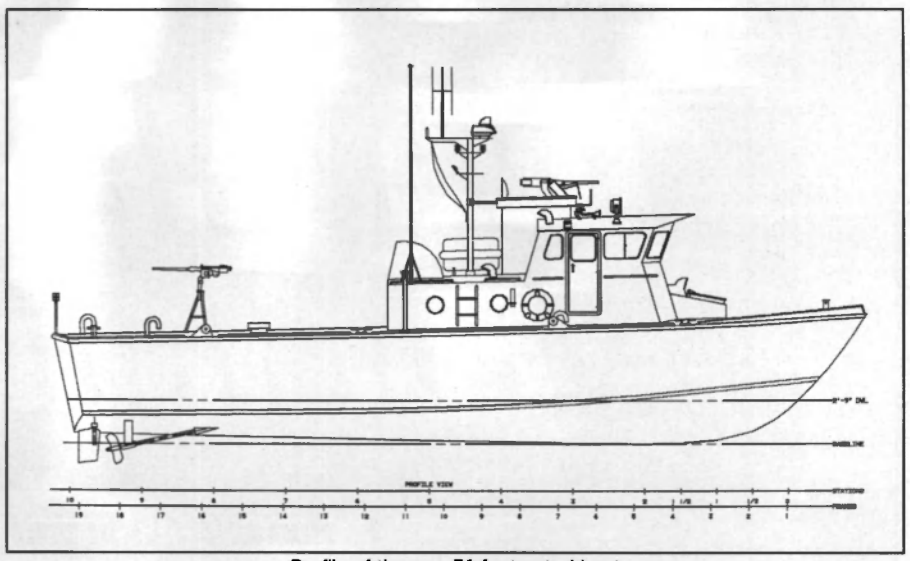
Peterson Builders Awarded $3.09 Million Contract To Build Five Patrol Boats

Peterson Builders, Inc. (PBI) has received a contract worth $3,090,659 for the construction of five 51-foot patrol boats. The five Aluminum-hulled boats will be constructed over the next 13 months for delivery to the Cape Verde Islands under the Foreign Military Sales (FMS) program. An option for three additional boats has also been included in the contract.

As part of the contract, PBI will provide initial crew training for the Cape Verde Islanders in the maintenance and operation of the boats, and classroom training materials for on-going training of future crews.

Ellsworth Peterson, president and general manager of PBI, expressed satisfaction at PBI's success at reentering the Navy small craft market.

While this is a small contract requiring only a few people, Mr. **Peterson** again reaffirmed PBI's intention to aggressively pursue additional patrol craft opportunities while expanding into the commercial arena. "Continued marketing and successes could affect the company's downsizing plans," he said.



Profile of the new 51-foot patrol boat

For complete information on the service, facilities and capabilities of Peterson Builders,

Circle 102 on Reader Service Card

Phoenix Products Introduces New Line Of Marine Floodlights

Phoenix Products Company, Inc., Milwaukee, Wis., has introduced a new line of heavy-duty, mercury vapor floodlights specifically engineered to withstand the rigors of marine service.

The new Phoenix Model MRS 60/400H floodlight line features copper-free, cast aluminum fixtures with a baked acrylic enamel finish that resists corrosion, therefore increasing the lifespan of the product.

This all-weather floodlight can be mounted in either a horizontal or vertical position depending on the customer's needs. The fixture measures 14 inches by 17 inches in size and weighs 50 pounds.

The new floodlight also comes equipped with a dual-axis beam allowing for unlimited positioning. Together, its beam and heavy-duty yoke combine to give the MRS 60/400H greater positioning rigidity in normal to stormy conditions.

Like most Phoenix products, the Model MRS 60/400H floodlight is impervious to saltwater. In addition, it is UL listed for both saltwater and hazardous applications and is accepted by the U.S. Coast Guard.

This year Phoenix Products is celebrating 100 years of service as a leading supplier to heavy duty marine and industrial lighting markets worldwide.

For more information detailing the MRS 60/400H floodlight or any other products offered by Phoenix,

Circle 80 on Reader Service Card

Scheiss-Defries Develops New Means Of Transfer For Shipbuilding Industry

In connection with the supply and installation of a 3,800-ton ring hull section transfer and launching system for Bremer Vulkan AG/Bremen, the specialist Scheiss-Defries GmbH/Dusseldorf has developed a new means of transfer.

Since various types of systems such as air and water cushion, walking or rail-borne transfer reportedly proved unable to meet the requirements for specific applications, Scheiss-Defries developed a system where heavy loads will be moved on specially coated slideways.

Loads of up to 4,000 metric tons will be carried by means of PTFE-pad equipped skids. These pads will slide on coated steel plates, assisted by a lubrication film of special biological grease.

The frictional index for this combination has been reported to be less than five p.c. under prevailing conditions.

Pulling and pushing of the loads will be made possible through the use of Scheiss-Defries hydraulic mover units.

Although the use of PTFE pads is widely known, the transfer system at Bremer Vilkan is reported to be the first of its size to be permanently installed in an industrial production facility.

For complete information on the transfer system developed by Scheiss-Defries,

Circle 93 on Reader Service Card

MSC Fabricates Rugged Interiors For North Pacific Fishing Fleet

Maritime Services Corporation (MSC), Hood River, Ore., has announced that it has added many new and repeat customers from the factory trawler fleet. Currently, MSC has crews working in Louisiana and Washington state to complete the interiors of two new factory fishing vessels.

MSC's extensive mix of interior components and skilled installation crews has reportedly earned many compliments from engineers that operate ferries on the Alaska Marine Highway System.

This fall MSC is fabricating a complete vessel interior from the steel up for a regular customer, American Seafoods of Seattle.

After performing design work at its Hood River headquarters, MSC moved a crew to meet American Seafoods' new vessel, the 206.7-foot American Champion, at the Equitable Shipyard in New Orleans, La.

For this project MSC is supplying and installing Novenco/HiPres ventilation systems, Norac Akerpanel softcore bulkhead systems and doors; Glamox marine lighting; Danacoustic marine ceilings; insulation throughout the vessel; galley; factory linings and stores; and furnishings and accommodations for ninety.

The Siberian Enterprise, being converted at Tacoma Boatbuilding Co. for Arctic Alaska Fisheries, will have MSC accommodations and furnishings.

MSC supplies and installs complete vessel interiors including full outfitting, galleys, windows, insulation and ventilation.

For further information,

Circle 94 on Reader Service Card

M/V Fides Launched By Flender Werft

The RO/RO and containership "Fides" was recently launched. The 178-meter-long ship, constructed for the Gimaldi Compagnia di Navigazione SpA of Naples, Italy, is powered by two Sulzer 8 ZA 40 S diesel engines. The power plants have an output of 5,760 each, and will propel the ship, via a control lable pitch propeller, to a service speed of 19 knots.

The RO/RO ship is designed for carrying cars, trailers, trucks, buses, containers and general cargo, which can be loaded via a quarter ramp as well as via a port side ramp.

The ship has accommodations for 32 crew members in single cabins as well as 12 passengers in double cabins. The vessel is scheduled to be christened and delivered in March 1993.

Atlas Gets $3 Million Hamburg Harbor Order

Under the project name "HydroCAD," a computerized hydrographic evaluation system is being procured for the Hamburg Harbor Survey Department.

The order, with a total value of approximately $3 million, was awarded to Siemens Nixdorf Infromationsystems AG and Atlas Elektronik GmbH of Bremen, Germany.

One of Europe's largest harbors, Hamburg Harbor is situated between the northern and southern arms of the Elbe River, making the harbor prone to severe silting. To keep the harbor running economically and safely, the silt deposits must be dredged and dumped elsewhere.

For the efficient use of dredgers and the most up to date information on the harbor's condition, accurate, frequent measurements which can be analyzed quickly are required.

The total water area of Hamburg Harbor is about 3,000 hectares, and must, on average, be surveyed more than twice per year.

At individual places where sedimentation rates are very high or where the underwater sand dunes change with the rise and fall of the tides, the surveying must be done much more frequently.

The survey tasks are subdivided into about 55 percent preplanned and 45 percent short-term. After each task, almost every day, a data quantity of up to 300,000 measurements arrive at the evaluation office, and it is no longer a question of whether a data processing system with powerful software should be procured, but when.

In the first stage of the project, survey vessels for Hamburg Harbor were equipped with high-performance systems from Atlas. With the placing of the order for the HydroCAD evaluation system, the second stage has now started.

For additional information on the HydroCAD evaluation system from Atlas Electronik,

Circle 165 on Reader Service Card

MHI Receives Order For Two Containerships From Evergreen

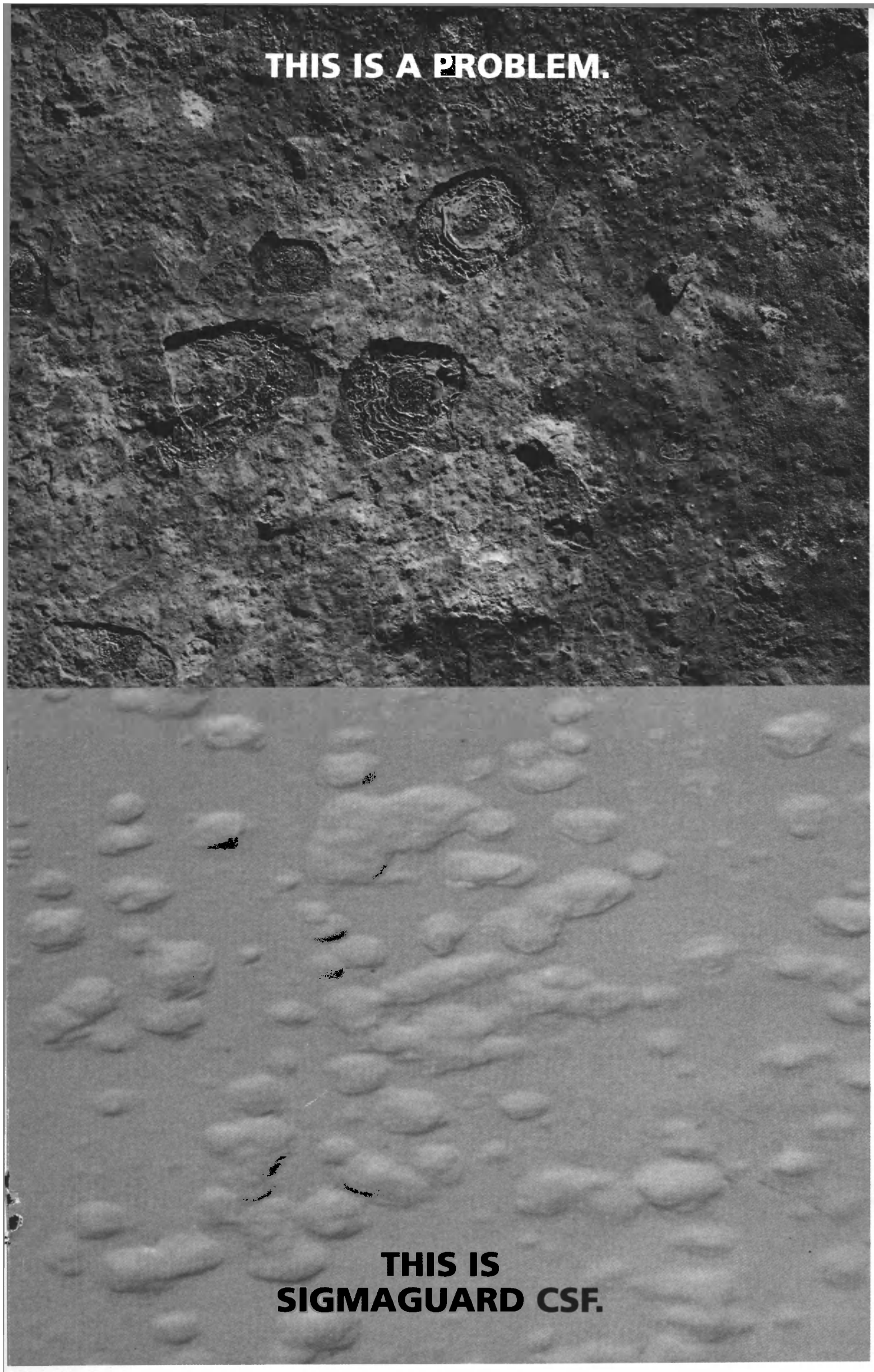
Mitsubishi Heavy Industries, Ltd. (MHI) has received a $169 million order for two 3,910-TEU containerships from Evergreen International S.A. of Panama. The ships are expected to be delivered in 1994.

MHI will build both ships at its Kobe Shipyard and Machinery Works.

A letter of intent was also received for three additional containerships of the same size from Evergreen.

Evergreen is currently executing a project to replace 20 ships with new ships. The order was a part of this project.

Prior to ordering from MHI, Evergreen had already ordered three containerships from Onomichi Dockyard in Japan. MHI and Onomichi will build 10 ships total as the first stage of Evergreen's replacement project.



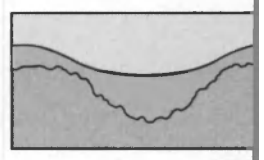
SIGMAGUARD CSF

The corrosion and pitting of a tank's steel structure is not just a surface problem. It goes much deeper than that.

Tanks and holds provide much of a vessel's strength so a weakened tank means a weakened ship.

Yet unprotected steel in your tanks is probably being eaten into right now by the acidic residue of crude oil cargoes which can cause rapid and ever deepening pits.

Only Sigmaguard CSF fills pits completely and smooths the surface at the same time. It doesn't shrink or cra so there's no way corrosion can continue unseen.



Remember, pitting is far more dangerous than it appears and in the worst case severe pitting can result in cargo loss and the risk of environmental pollution.

To stop the problem, simply choose Sigmaguard CSF. It's by far the best solution to your problem.

- Fills pits
- One coat
- Stops corrosion
- Solvent free
- Light colour for easy survey
- Long life

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THE RIGHT CHOICE

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Circle 272 on Reader Service Card

Polish Shipyards Get Ship Orders

Some recent orders have some Polish shipyards, particularly Gdynia Shipyard, Stocznia Gdanska, and Stocznia Szczecinska, looking optimistically to the future.

Recent orders include:

--Gdynia Shipyard, two 3,000 TEU containerships for Bernard Shulte and two 90,000-dwt tankers for Burwain Tankers;

--Stocznia Szczecinska, two 20,000 dwt containerships for Bernard Shulte, three 20,000-dwt containerships for Reederei Nord Kalus E. Oldendorf, Ltd.;

--Stocznia Gdanska, a 6,000-dwt reefer for Great White Fleet and four 10,620-dwt reefers for Dole Fresh Fruit Intl.

Poland suppliers look to profit from the new orders, particularly engine manufacturer H. Cegielski in Poznan, which is reportedly the largest two-stroke engine manufacturer in Europe, with New Sulzer and MAN B&W licenses.

Charles A. Narwicz Co. of Northport, N.Y., is agent for the three major yards and H. Cegielski.

For additional information on Polish Shipbuilding facilities,

Circle 164 on Reader Service Card

Thrustmaster To Supply Stern Thruster For RO/RO Barge 'Waialeale'

Thrustmaster of Texas, Inc., Houston, Texas, has announced that it has been awarded a contract to supply a radio-controlled stern thruster for use on the RO/RO barge "Waialeale." This equipment is a retrofit to the barge and is intended to facilitate easier docking and undocking of the barge.

The barge reportedly is not self propelled. It is normally towed between islands in Hawaii and is used for the transportation of cars and other general cargo.

The thruster system to be installed consists of an azimuthing thruster, a hydraulic power package and a radio control system. During normal vessel operations, the thruster will not be used and is stowed in the kicked-up position whereby the thruster is tilted completely out of the water. During docking operations, the thruster is kicked down into working position and is used for propulsion assistance, helping the tug in docking or undocking of the barge. Upon completion of the docking operation, the thruster is again stowed in the kicked-up position.

During normal docking operations, the thruster is controlled from the wheelhouse of the tug by the remote radio control panel. As a back up system, local controls are provided on the barge.

For free information describing Thrustmaster's line of thrusters,

Circle 58 on Reader Service Card

Puget Sound Pilot Boats Rebuilt In Port Townsend

Port Townsend Boat Works recently finished the complete rebuilding of the two pilot boats used by the Puget Sound Pilots. The two, 54-foot, fiberglass vessels are based at Port Angeles in the Straits of Juan de Fuca and had seen 18 years of heavy use.

One boat at a time was removed from service and stripped down to the bare hull.

A 6-foot by 3.5-foot, flush mount, foredeck hatch and an enlarged companionway into the engine room were built to allow easy removal of engines. Two rebuilt Cummins V903M V-8 diesels were then lowered onto new, reinforced engine beds using a fabricated, overhead engine room hoist.

New shaft bearings were added to stop vibration in the 200-hp motors which turn conventional screws via Twin Disc 509 2.5:1 gearboxes. New wiring and plumbing, oil-sump pumps, CO_2ire-suppression system, better ventilation and new fuel filtering reportedly brought the engine propulsion system up to modern standards.

The man-overboard retrieval system at the transom was fully redesigned with new drives, gearing and tracks to ensure smooth operation of the sliding stern-grid. The

Puget Sound pilot boat during its rebuild

apparatus is now operated from an aft control-console. The pilot house was refitted with hinging doors, new windows and ladders. Two helm stations in the pilot house and on the flying bridge use Solo (low friction) mechanical engine controls. The boats are now outfitted with modern, commercial, navigation and engine room instruments.

Port Townsend Boat Works is a full-service yard specializing in marine repair and conversion with complete machining, welding and woodworking facilities.

For complete information and free literature,

Circle 63 on Reader Service Card

John Oldani Named General Manager Of Fredeman Shipyard

John R. "Jack" Oldani has been named general manager of Fredeman Shipyard, Inc. Fredeman Shipyard has been in service for 3 years.

Mr. **Oldani** has been involved in marine management and the shipyard industry for 30 years. He has worked with the U.S. Corps of Engineers, Material Service Corporation where he was in marine construction and repairs. He was also chief marine engineer in charge of design and compliance for Lemont Shipbuilding and Repair Co. Mr. **Oldani** was chief marine engineer for Weaver Shipyard and Drydock Co., Inc. and served as vice president of engineering for Ocean Transport Corp. before joining Fredeman in 1990.

John Oldani

Fredeman Shipyard has become involved in the development and installation of vapor recovery systems for marine vessels.

For complete details on the services provided by Fredeman Shipyard,

Circle 97 on Reader Service Card

DuPont's "Starblast" XL Blasting Abrasive Approved For Use By U.S. Navy

DuPont has announced that its "Starblast" XL blasting abrasive has been approved for use by the U.S. Navy.

The product has been selected for its low-dusting capability and has been added to the Navy's Qualified Products List.

Dupont reports that its abrasive cleans faster, uses less material, reduces cleanup and disposal costs, has a low dust generation meaning greater productivity and can reduce equipment replacement costs.

Starblast is made from a blend of coarse and fine staurolite mineral particles.

According to studies conducted by DuPont, compared to Starblast, more than six times as much silica sand, almost four times as much coal slag and more than two times as much copper slag are required to clean the same area of metal to a near-white finish.

For complete information a free literature describing Starblast and its uses,

Circle 125 on Reader Service Card

Geissbuhler, Stearns Appointed Executive VPs At Miller Electric Mfg. Co

Robert L. Geissbuhler has been appointed executive vice president of domestic sales while retaining his responsibility for customer service at Miller Electric Mfg. Co., Appleton, Wis. The appointment was announced by **Kenneth L. Booher**, president and CEO of The Miller Group, Ltd. and Miller Electric Mfg. Co.

Mr. **Geissbuhler** began his welding career in 1946 as a welding instructor for the U.S. Army. He has been with Miller Electric since 1967.

James B. Stearns has been promoted to the position of executive vice president of Miller Electric and president of Miller Automation Inc.

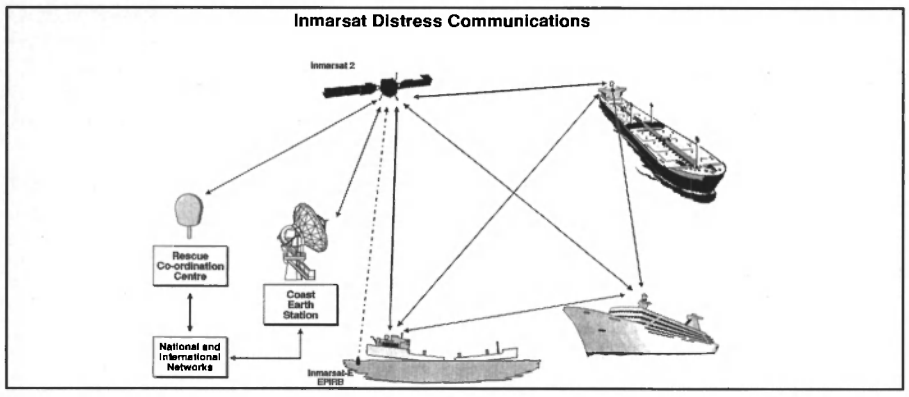
Mr. **Stearns** has served as vice president and general manager of Miller's International Division, and later senior vice president, sales. He has been with Miller since 1986. His welding industry career spans more than 20 years in technical and commercial capacities.

Mr. **Stearns** will retain his responsibility for international sales operations and will also be responsible for developing opportunities for growth and additions to The Miller Group.

Miller Electric is the principal entity of The Miller Group, Ltd. and a world leader in state-of-the-art arc welding power supplies and controls. Miller Automation Inc., Troy, Ohio, integrates arc welding equipment, robots, turntables and fixtures into a complete robotic arc welding cell.

For more information on the services offered by Miller Electric,

Circle 169 on Reader Service Card



Inmarsat Clears New Satellite Safety Beacon

Inmarsat has type approved the first satellite emergency position indicating radio beacon (EPIRB), developed for use with Inmarsat-E, a new, sophisticated global maritime distress alerting system.

The EPIRB was manufactured by the German aerospace company Dornier GmbH, designated the Dornier Mark IIc, and incorporates a Global Positioning System (GPS) receiver.

Inmarsat is the 65-member country cooperative that operates a global system of satellites to provide mobile communications for maritime, land mobile and aeronautical applications.

The Inmarsat-E system will use EPIRBs that are activated either manually or automatically when submerged in water. Inmarsat-E distress messages include system code, position in latitude and longitude, course, speed, nature of the distress, time of the last position update and time the EPIRB was activated.

"Inmarsat-E is thus the first satellite service that combines near instantaneous distress alerting with position information," said Captain **Jim Fear**, manager of Maritime Services Operations at Inmarsat.

EPIRB distress signals are transmitted via the Inmarsat geostationary satellite network and an Inmarsat-E coast earth station (CES) to a rescue coordination center (RCC), typically within one minute, enabling a rescue mission to be launched without delay.

To decode the EPIRB signals and forward them to the Inmarsat-E RCC, a digital receiver-processor is needed at the CES. The first such operational receiver-processor, also manufactured by Dornier, was commissioned in January of this year, at the Raisting earth station in Germany. It has been used for testing prototype EPIRBs since that time and will become fully operational when the first Dornier Mark IIs are registered with Inmarsat by their owners.

The receiver-processor in Niles Canyon, Calif., which will serve the Pacific and Atlantic-West Ocean regions, is expected to become operational within the next few months. Full Inmarsat coverage is expected during 1993, with receiver-processors operational in Perth, Australia, serving the Indian and Pacific Ocean regions; and Odessa, Ukraine, serving the Indian and Atlantic-East Ocean regions.

Once full global coverage is achieved, the system will meet the International Maritime Organization (IMO) carriage requirements for the global maritime distress and safety system (GMDSS) which went into effect in February 1992, for ships covered by the Safety of Life at Sea (SOLAS) Convention.

All SOLAS Convention ships (approximately 50,000) will need satellite EPIRBs by August 1, 1993, to meet GMDSS carriage requirements. With the type approval of the Dornier Mark IIc, and other manufacturers gearing up for production, the first of the new Inmarsat-E EPIRBs are expected to be on the market within the next few months.

ABB Supplies Electric Cargo Pump System On New Tankers For Neste

The Futura, the first of two 91,000-dwt crude/product carriers being built for Neste Shipping by the Turku New Shipyard of Kvaerner Masa-Yards was recently delivered, with the second scheduled for delivery in January 1993.

Both vessels are intended for the carriage of crude oil and oil products in seven cargo tanks.

The cargo system is equipped with electrically driven deepwell pumps, speed controlled by frequency converters. This pump system is reportedly being used for the first time aboard a crude oil tanker, whereas it was previously used only on product tankers and gas carriers. ABB Marine, Helsinki, engineered and supplied the AC frequency converters and the cargo pump control and monitoring system, as well as the complete machinery automation system.

For free literature on ABB Marine's products and systems,

Circle 12 on Reader Service Card

SeaArk Marine Introduces Its Barracuda Patrol Boat

SeaArk Marine, Monticello, Ark., recently introduced its new high-speed patrol vessel, the Barracuda. The 32-foot boat is specially designed for all-weather law enforcement and patrol assignments.

The craft is powered by twin Evinrude V-8 engines that give the Barracuda a top speed of more than 40 knots.

The highly maneuverable patrol boat is able to make 40-knot turns in as little as three boat lengths thanks to its deep vee and unique bottom wedge construction.

For additional free information about the Barracuda high-speed patrol boat from SeaArk Marine, or on other SeaArk products or capabilities,

Circle 19 on Reader Service Card

Nedlloyd's Hatchless Ships To Be Classed By Lloyds

Two new Nedlloyd vessels that are the world's first post-Panamax containerships to be built with continuous container cell guides running from below deck to four containers high above the weather deck are scheduled to be classified by Lloyd's Register.

Both of the containerships are only equipped with hatch covers over holds one and two.

The first of the 4,100-teu container ships is scheduled to be completed in 1994 by the Ishikawajima-Harima Heavy Industries' shipyard in Kure, Japan.

Kobe-based Mitsubishi Heavy Industries will deliver the second Nedlloyd vessel in 1995.

ASRY Drydock Installation Close To Completion

The recent installation by Arab Shipbuilding and Repair Yard (ASRY), Bahrain, of its two new floating drydocks involved a major civil engineering project costing $19 million.

The drydocks, purchased in the U.S. and towed to Bahrain through the Suez Canal, have inside dimensions of 827 feet by 148 feet and 745 feet by 134.5 feet.

Site preparation to the east of ASRY's 500,000-dwt graving dock required dredging to 59 feet and the removal of 56.5 million cubic feet of sand to provide dock berthing space and vessel approach depth.

The two docks will also be served by a quay wall of 1,476.4 feet in length, a 213.3-foot jetty and a special mooring arrangement consisting of concrete dolphins and shear pads to protect against wave forces.

For more information about the shipyard services available from ASRY,

Circle 145 on Reader Service Card

USCG Approves Blume Oil Discharge Monitor

Blume Worldwide Services, Scarsdale, N.Y., announced that its OILI-S1000 Oil Discharge Monitor (ODM) has received U.S. Coast Guard certification. According to Blume, OILI is one of the world's few multi-purpose on-line analyzers capable of measuring the total oil content of water.

OILI was developed by Blume's principals, Optec International, Helsinki, and has been tested in nearly 300 tanker ballast discharge monitoring installations worldwide. Other successful applications include discharge monitoring for offshore oil and gas platforms, refineries, and petrochemical plants.

Using the OILI automated system to optimize the cleaning process for discharge water marks a major step towards total environmental protection. The OILI-S1000 utilizes the infrared absorption technique, making it one of the few ODM meeting IMO-laboratory standards.

For additional free information about Blume Worldwide's OILI-S1000,

Circle 27 on Reader Service Card

Rolla's New Seven-Bladed, REXPSC90/91-7 Advanced Propeller Ready For International Market

The REXPSC90/91-7, from Rolla SP Propellers S.A., Balerna, Switzerland, is now making its debut in the international marine propulsion marketplace as the newest member of Rolla's state-of-the-art REXP family of advanced stainless-steel propellers.

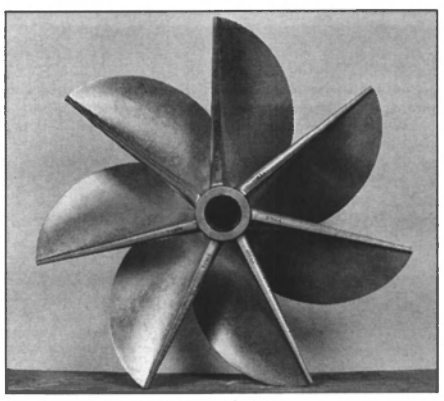
The innovative propeller was created by **Philip Michael Rolla**, an American designer of high-performance, surface-piercing propellers, to provide smoother and greater thrust at higher RPMs while incorporating a smaller prop diameter. Its reduced blade thickness assures hydrodynamic efficiency and the specifically proportioned rake ensures optimum maneuverability and hull attitude control.

The REXPSC90/91-7 was designed and constructed for large and extremely advanced surface drivers, particularly the Arneson ASD 12, 14 and 16 series of drives, and has the following characteristics: seven blades; 15 degree cleaver; up to 34.25-inch (870-mm) diameter; and pitch from 40 inches to 46 inches and with standard 31-, 33- and 36-tooth spline fitting.

In practice the following design points are possible with maximum 33.5-inch (850-mm) diameter, seven-bladed propellers at 50 percent submergence:

- 40 tons, 85 knots, two x 4,600 hp, 2,500 propeller RPM
- 50 tons, 50 knots, two x 2,000 hp, 1,400 propeller RPM
- 25 tons, 50 knots, two x 1,000 hp, 1,533 propeller RPM
- 40 tons, 40 knots, two x 1,000 hp, 1,150 propeller RPM

The REXP family of aerospace stainless steel propellers was conceived several years ago as a necessary evolution of an advanced joint study carried out by Rolla SP Propellers and Mr. **Rolla**. The REXPSC90/91-7 was the result of the most recent pure research conducted by the Swiss firm, incorporating extensive cavitation tunnel test programs on surface piercing propellers, diversified experimentation on different stainless steels, their heat treatment and the investment casting method.



The new REXPSC90/91-7 high-performance propeller from Rolla.

According to Rolla, single propellers are specifically sized in all their parameters and custom manufactured to guarantee that each individual vessel dramatically improves its overall performance and capability within its operational profile. Together with the REXPSC90/91-7's innovative design and construction, this ensures the propeller's maximum performance, efficiency and durability.

To receive additional free information about Rolla's new REXPSC90/91-7 seven-bladed propeller and its entire family of REXP propellers,

Circle 61 on Reader Service Card

American Welding Society Offers New Computer Service

The American Welding Society has introduced a new service to those wishing to research the diversity of Welding Journal articles published. Called the Welding Journal Cumulative On Line Index, or WJINDEX for short, the system is a computer link to retrieve identifying information on published articles directly via computer telephone modem using VT100 emulation. Nearly any computer user can access the WJINDEX. For those unable to access the system, Welding Journal staff can perform searches on request.

With the system, a researcher can retrieve the names, authors, issues and page numbers of various articles using different parameters. For example, upon entering a one-word subject, the system will list each article whose title contains the subject word.

The WJINDEX is available for an annual fee.

For additional information,

Circle 136 on Reader Service Card

Keppel Establishes Shipyard In Vietnam

Keppel Shipyard, a major operating division of Singapore-based Keppel Corporation, Ltd., and BaSon Shipyard, one of Vietnam's largest ship repair enterprises, have signed an agreement to set up a joint venture, Keppel BeSon Shipyard & Engineering (KBSE), to provide regional ship repair, shipbuilding and engineering services.

The joint venture agreement is pending the approval of the Vietnamese government.

The new company has a proposed initial capital of $3.5 million, with Keppel Shipyard and BaSon shipyard having a shareholding interest of 60 percent and 40 percent respectively. KBSE will develop a 9.9 acre site at Cuu Long in Ho Chi Minh City, Vietnam, belonging to BaSon shipyard. The new company will utilize the site's 1,148-foot waterfront on the Saigon River, BaSon's on-site ship repair facilities and a 2,500 man workforce, to provide ship repair services to foreign-owned and Vietnamese vessels of up to 20,000 dwt and to build new vessels up to 328 feet long.

For more free information about the services available from Keppel Corporation, Ltd.,

Circle 146 on Reader Service Card

NRC Appoints Gerald Smith Vice President, Marketing

The National Response Corporation (NRC) recently announced the appointment of **Gerald P. Smith** as vice president of marketing. Mr. **Smith** brings over 35 years of marketing experience in the petroleum industry to NRC.

Mr. **Smith** began his career at the Mobil Oil Corporation, becoming operations manager for the New York region. Between 1970 and 1978, he served as president of Northville Industries' bulk oil subsidiary, Consolidated Petroleum, and later as managing director of Bonaire Petroleum, Northville's crude oil transshipment terminal. In 1980, Mr. **Smith** became president of the Coastal Oil Company, until its 1989 acquisition by the Coastal Corporation.

Mark Miller, president of NRC, called Mr. **Smith's** appointment important to NRC's ability to attend to its clients in the shore-based oil facility operations arena.

NRC is a national marine spill response organization offering oil companies, refineries, terminals and vessel owners operating in the U.S. Gulf and East Coast assistance in meeting the response resource requirements of OPA 90 and state oil spill laws.

Drew Ameroid Celebrates Decade Of WRP Service To Marine Market

Drew Ameroid Marine, a subsidiary of Ashland Oil, Inc., Boontown, N.J., recently marked the tenth anniversary of the launching of its Welding and Refrigerant Products (WRP) Program for the marine industry.

One of the world's leading suppliers of speciality chemicals, Drew has earned a reputation for excellent service and customer satisfaction as a WRP provider since its official entry into that market in 1982, the same year that the company celebrated 75 years of service to the marine industry.

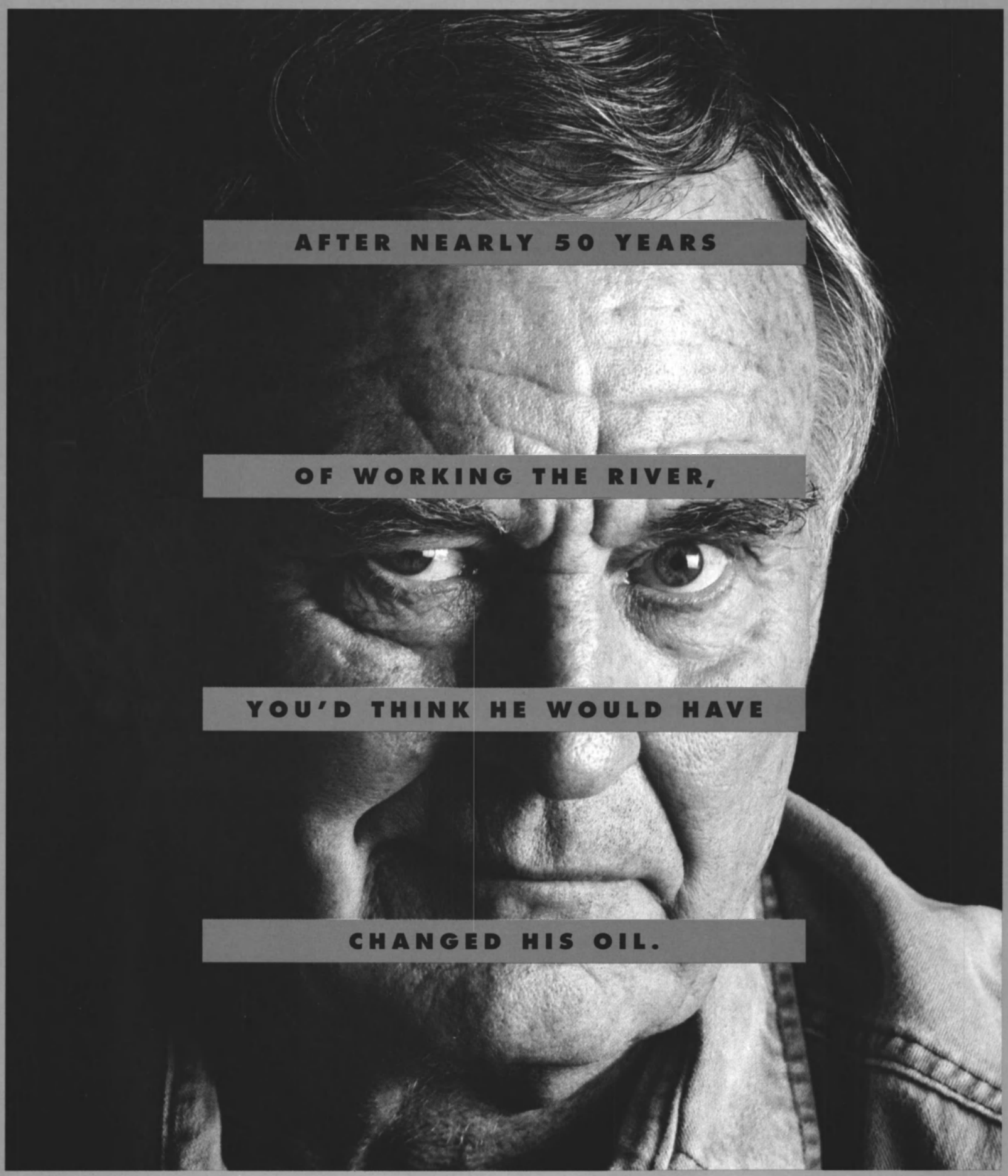
With over 100 major distribution centers serving more than 850 delivery ports around the world, Drew's presence as a top WRP supplier has grown rapidly.

The company offers a full range of products, which include the AMERO^{XR}, AMERARC™ and AMERFROST™ lines of welding gases, gas and arc welding equipment consumables and accessories, and refrigerants.

Joe Lawrence, marketing manager for Drew's WRP product line, attributes the company's impressive ten-year WRP record to a steady focus on customer needs.

For additional free information about Drew Ameroid Marine's WRP Program,

Circle 92 on Reader Service Card



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LUBRICANTS

Circle 271 on Reader Service Card

Peterson Acquires Goldston Yard, Appoints Newell Division Manager

Peterson Builders, Inc., (PBI) of Sturgeon Bay, Wis., has announced that it recently completed the purchase of the Goldston Shipyard on the Jewell Fulton Canal and Highway 1069 in Ingleside, Texas.

This shipbuilding and repair facility with 450 feet of dock area will be established as Peterson's Ingleside Division repair facility.

The shipyard is located 1.5 miles from the newly established Naval Station Ingleside, home base for up to 25 U.S. Navy ships.

Twenty-two of the station's vessels are mine countermeasure (MCM) ships, 11 of which were built by Peterson Builders, Inc., at its Sturgeon Bay construction yard. PBI's Goldston shipyard will support warranty and repair services for the MCM ships as well as other commercial repair opportunities.

James Newell, Peterson's MCM program manager, has been appointed manager of the Ingleside Division.

For more information about Peterson Builders and its Ingleside Division,

Circle 154 on Reader Service Card

RTK Delivers Sea Truck To Port Of Abu Dhabi

RTK Marine, of Dorset, England, recently delivered one of its RTK STW 413 Sea Trucks to the Port of Abu Dhabi, United Arab Emirates. The 13-meter (42.65-foot) ferry will transport staff at high speed between Abu Dhabi and Sadiyat.

The RTK Marine-built Sea Truck ferry delivered to Abu Dhabi.

The STW 413 Ferry has a seating capacity for 50 passengers plus crew. The seating has been arranged to allow for ease of access to emergency exits and ventilation has been included for passenger comfort. The vessel is powered by twin Volvo AD41 marine diesel engines that provide the speed and reliability required by the operator.

RTK Marine has been manufacturing the Sea Truck range of craft for more than 25 years and over 1,100 are in operation around the world.

For more free information about RTK's Sea Truck and other marine craft,

Circle 160 on Reader Service Card

Bardex Awarded Nigerian Shipyard Contract

Nigerdock Nigeria, Ltd., of Lagos, Nigeria, has awarded Bardex Corporation, Goleta, Calif., a contract to incorporate a Bardex shiplift and yard transfer system at the Snake Island facility in Nigeria.

The shiplift chain-supported elevator, equipped with a Bardex synchronized hydraulic chain jack system, will have a hoisting equipment capacity of approximately 4,400 metric tons (4,850-short tons).

Transfer to and from the yard will be accomplished with a Bardex hydraulic load limited wheeled transfer system (bogie train) of matching capacity. The transfer system will incorporate a shallow side-transfer area and will support multiple work stations. The yard transfer system will be designed to work with a unique new hull blocking removal system which uses Aero-Go air bearing casters and inflatable jacks to facilitate block removal and replacement. The Nigerian shiplift system is scheduled to be in operation in 1993.

For additional free information about Bardex Corporation's shiplift and yard transfer system,

Circle 156 on Reader Service Card

The Coast Guard's Marine Safety Network

Progress Has Been Made But Uncertainties Remain

The Coast Guard conducts many marine safety activities to promote the safety of life and property on the high seas and waters subject to U.S jurisdiction. The activities—such as inspecting vessels, licensing crews, investigating marine accidents, and monitoring oil spills—are performed at Coast Guard marine safety offices in major U.S. ports. Coast Guard headquarters provides program direction and oversight through its Office of Marine Safety, Security, and Environmental Protection.

In 1984, the Coast Guard implemented the Marine Safety Information System (MSIS) to support a limited number of marine safety functions. MSIS was based on earlier systems and technology developed in the 1970's. The system's scope was originally narrow, but now—after many modifications and expansions—MSIS serves as the primary information system for marine safety programs.

Studies by the Coast Guard and GAO have identified serious limitations associated with MSIS. For example, a 1989 Coast Guard report on vessel inspections found that MSIS was difficult for field personnel to use and did not eliminate the need for inspectors to rely on manual records. The report also said that managers overseeing the vessel inspection program found the system of little use to them. In 1990, GAO reported problems with MSIS, such as limited analytical ability, difficulties in transferring information to other Coast Guard systems, unreliable data, obsolete hardware, and inflexible software that did not meet users' needs. The report also identified several weaknesses in the Coast Guard's past approach to developing information systems that may have contributed to some specific MSIS problems.

The Marine Safety Network

To address basic inadequacies of the Marine Safety Information System, the Coast Guard began developing the Marine Safety Network (MSN) in 1986. This new system is being developed in six modules, which contain a total of 40 applications. The development is now proceeding as part of a major acquisition under a process defined in the Office of Management and Budget's (OMB) Circular A-109. This process is designed to prevent premature commitments to production and reduce cost increases, schedule delays, and performance deficiencies. In accordance with OMB Circular A-109, the Coast Guard is to evaluate the cost, schedule, and performance of a major project as each acquisition stage to determine whether the project is ready to move to the next phase.

The Coast Guard estimated costs of $34.6 million through fiscal year 1996 to develop the system's 40 application; it plans to have the last module fully operational early in fiscal year 1997. An implementation plan and a high-level analysis of system requirements were completed in late 1989, and field testing of prototype designs for part of the first system module began in April 1992, according to the MSN project manager. Partly on the basis of the analysis and the expected results from the testing, Coast Guard officials believe that MSN requirements will be sufficiently defined to award a contract for full-scale system development in May 1993. Through March 31, 1992, the Coast Guard reported expenditures of about $3.1 million to develop the Marine Safety Network.

The Marine Safety Network's project manager was unsure whether the 40 MSN applications could be completed within the $34.6 million cost estimate because many uncertainties remain that could affect future costs. One significant uncertainty concerns the type of computer language to be used in developing software for MSN and other large Coast Guard information systems. The cost implications of such a change could be substantial. According to the MSN project manager, a change in the type of language could increase MSN's development costs by over $36 million—about double the current estimate to develop the entire system—because programming costs would be higher. However, officials emphasized that the estimated cost increase was preliminary because many alternatives and possible benefits has not yet been considered.

Although the Coast Guard has given some cost and schedule information to the Congress during oversight hearings, it has not systematically provided detailed information on the potential increases in costs or delays in implementing MSN. According to the MSN project manager, since DOT approved MSN's mission needs statement under the A-109 process in June 1992, the Coast Guard will soon provide the Congress with more specific cost and schedule information on MSN, as required by the Department of Transportation and Related Agencies Appropriation Act of 1992. However, since these reports have not yet been prepared, the extent to which they will fully identify MSN cost and schedule problems and uncertainties is unknown.

Compared to MSIS, MSN has greater potential to assist managers in identifying program weaknesses, allocating resources, and evaluating program performance. Unlike MSIS, MSN is designed to improve program oversight by providing relevant reports and enabling headquarters and field units to readily request and analyze data. These steps can enhance managers' ability to identify potential problems and improve operations. According to Coast Guard officials, MSN enhancements are expected to

- help managers better evaluate the causes and trends of marine accidents and devise preventative actions to reduce future casualties,
- provide detailed comparisons of units' work loads to new staffing standards and thereby allow managers to allocate resources more effectively among field units, and
- allow more effective evaluation of unit performance. For example, managers told us that they will be more readily able to (1) compare unit performance to performance standards (e.g., the extent to which field units are conducting required safety-related boardings on high-priority vessels) and (2) monitor operations for potential problems not covered by standard MSN reports, such as the extent to which vessels with outstanding deficiencies are allowed to leave port.

Also, officials expressed optimism that MSN's data and analytical tools could enhance the Coast Guard's ability to address a long-standing need to develop realistic program goals and performance measures—called measures of effectiveness (MOE). The Coast Guard has recognized its need to better develop goals and MOEs. For example, a 1990 Coast Guard assessment of marine safety programs reported that most of the 21 defined program goals were not measurable or attainable and only one MOE was adequate. To illustrate problems in developing MOEs, Coast Guard officials said that changes in vessel casualty rates—a measure that has been used to assess performance—may not necessarily illustrate performance because many other factors can influence these rates.

It is still too early in MSN's development to fully assess the system's potential for improving management of the Coast Guard's marine safety programs. For example, the two modules with significant management applications are not slated for testing until fiscal year 1995.

Estimated MSN Development Costs
As of June 1992

Type of Expenditure	Estimated Development Costs (dollars in millions) MSN (excluding VIDS)	VIDS[1]	Total
Preliminary Studies	$ 0.4	$ 2.0	**$ 2.4**
Equipment[2] and Commercial Off-the-shelf Software	7.3	5.1	**12.4**
Software Development	12.0	6.1	**18.1**
Independent Verification and Validation	0.9	0.8	**1.7**
Total	**$20.6**	**$14.0**	**$34.6**

[1]The Vessel Identification and Documentation System (VIDS) module, which has been mandated by the Congress, is accounted for separately.

[2]The principal equipment items are computers for local sites and the Coast Guard's central computer processing facility and telecommunications equipment.

Source: Coast Guard.

Propulsion Update

Harbormaster SW3150 being positioned onboard a 40-foot barge

Harbormaster Tests Its First New Outboard Drive Unit

Harbormaster Marine, Inc., recently began on-water testing of its newly redesigned model SW3150. Based on the Murray & Tregurtha outboard drive propulsion system, this newest unit is powered by a 150 hp Detroit Diesel 4-53T and swings a 44-inch by 21-inch propeller. The SW3150 features numerous improvements over its predecessors, including the latest technology in hydraulics, seals and corrosion-resistant materials.

The entire unit was easily hoisted into position by a crane, and bolted to mounting rails welded to the deck of a 40-foot barge. Because it is self-contained, no engine room, hull modification or additional accessories were required. Built-in hydraulic controls enabled the drive unit to be lowered 90 degrees to the proper angle, and the full 360-degree steering arc to be used for maneuvering the barge in the narrow Rouge River channel. Test operators were impressed by the fast, precise steering control and exceptional performance in both forward and reverse directions.

Harbormaster Marine is currently redesigning and manufacturing the former Murray & Tregurtha outboard line from 50 to 350 hp. The company also maintains a 90 percent stock availability of spare parts for earlier M&T/Harbormaster outboards and bow thrusters, as well as capability to fabricate or refurbish many of the major existing components.

Initial test of SW3150 on barge

For more information on Harbormaster,

Circle 28 on Reader Service Card

Nautronix Sells New ASK4001 Positioning System

Nautronix Inc. has been awarded a contract to supply Tidewater Port Jackson Marine Pty. Ltd. of Victoria, Australia, with an ASK4001 dynamic positioning system.

To be installed onboard the diving support, fire fighting supply vessel "Flinders Tide," the fourth-generation ASK4001 system is the successor to the ASK3000 system. The ASK range of systems was originally produced by the Offshore Products Division of Honeywell Inc.

Tidewater Port Jackson Marine Pty. Ltd. selected the ASK4001 to provide the vessel with better overall station holding capability and will interface to all positioning sensors including GPS, and acoustic position reference system. The ASK4000 range includes dual and triple redundancy system configurations and a unique joystick with a graphic display. Most components are off-the-shelf commercial boards.

Nautronix acquired all patents, trademarks and inventory rights to the Honeywell commercial offshore products, including those of the ASK systems, in 1990. Nautronix also provides ongoing maintenance and support for all Honeywell systems worldwide.

For further information on the ASK line from Nautronix,

Circle 144 on Reader Service Card

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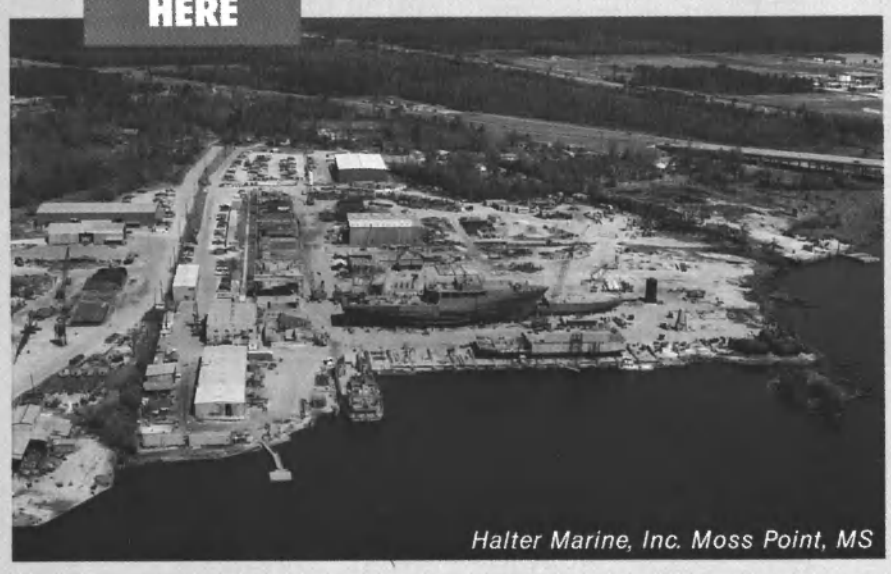

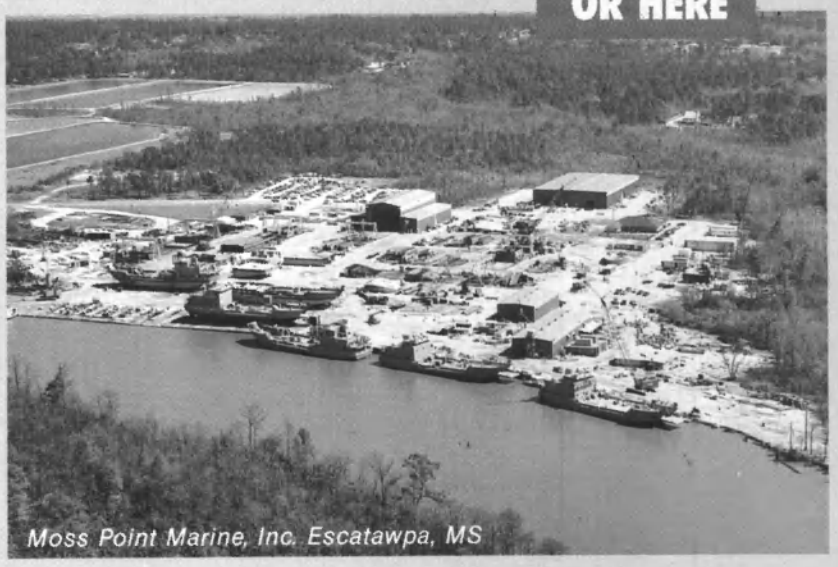

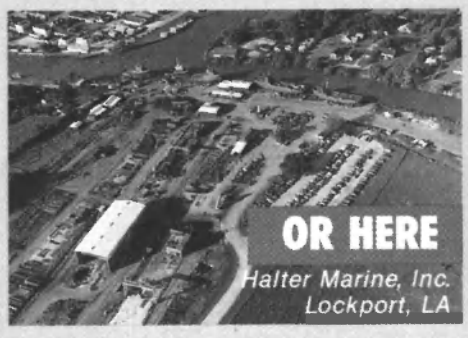

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Circle 282 on Reader Service Card

Tidewater Renames Subsidiaries In Order To Unify Image

Tidewater Inc., New Orleans, La., has announced that in an effort to unify its image around the world, several of its marine subsidiaries have undergone name changes. The new names that begin with "Tidewater" enable customers, vendors and employees to more closely identify the marine subsidiaries with the parent company, Tidewater Inc.

The name changes are as follows: Tidex, Inc. is now Tidewater Marine, Inc.; Tidex International, Inc. is now Tidewater Marine International, Inc.; Zapata Gulf Atlantic, Inc. is now Tidewater Marine Atlantic, Inc.; Gulf Fleet Marine Operations, Inc. is now Tidewater Pacific, Inc.; and Western Boat Operators, Inc. is now Tidewater Marine Western, Inc.

For complete information on any of the services provided by Tidewater,

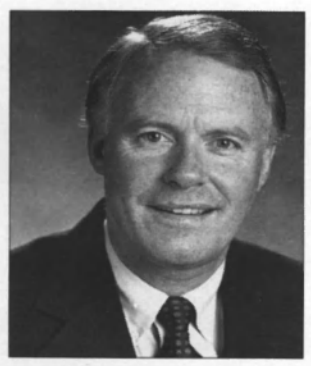
Circle 86 on Reader Service Card

Dupre Retires, Atteridge To Become President Of Furuno USA, Inc.

Furuno USA, Inc., has announced that the president of the company, **William Dupre**, has retired and **James Atteridge** has been named to succeed him.

William P. Dupre

Mr. **Dupre** has been president and general manager of Furuno USA since its 1978 acquisition of the Konel Corporation. Under his guidance, Furuno has become one of the leaders in marine radar and other marine electronics.



James M. Atteridge

The new president, Mr. **Atteridge**, has served as an area manager for the mid-Atlantic states. Before joining Furuno USA in 1984 he spent two years as an independent sales representative for Furuno. He also spent two years as president of Cybernet International and two years as national sales manager for Raytheon Marine Company in Manchester, N.H.

Ronin Marine Opens Construction Facility In Puerto Rico

A $2.8 million yacht-building facility has been opened near the Port of Ponce, Puerto Rico, by Ronin Marine, Inc., of Miami, Fla. The firm says that it anticipates building 40 yachts a year at the facility.

Ronin Shipbuilding Co., the name of the new facility, will specialize in building 50-foot yachts, which will sell for between $650,000 to $1 million. Ronin has been constructing yachts in Taipei, Taiwan, since 1984.

Over the next three years Ronin intends to employ over 200 workers at the Port of Ponce facility.

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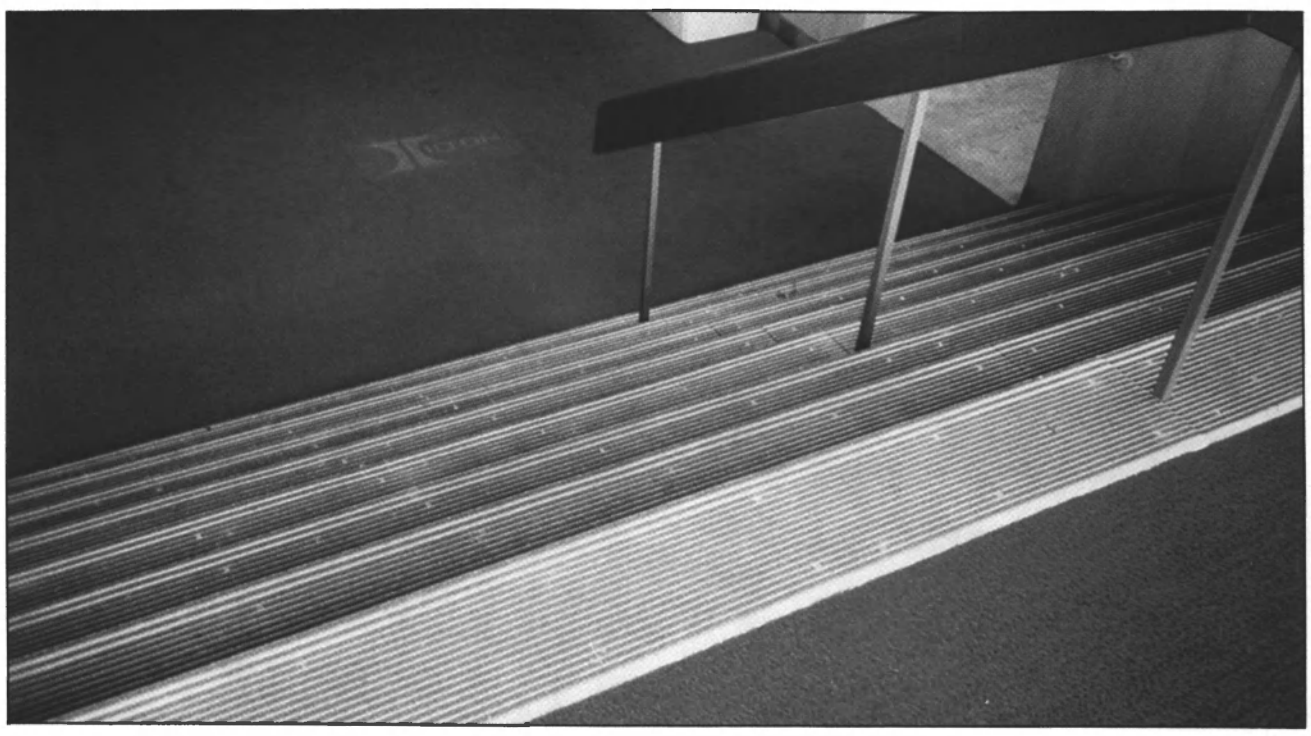

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Circle 294 on Reader Service Card

HMCS Calgary being launched at MIL Davie shipyard

MIL Davie Launches Third Frigate For Royal Canadian Navy

The MIL Davie shipyard, Quebec, Canada, recently christened and launched the last of three warships it is building for the Canadian Patrol Frigate (CPF) program, Her Majesty's Canadian Ship (HMCS) Calgary.

The $10 billion CPF project is Canada's largest defense contract to date, with 12 City Class anti-submarine warfare (ASW) patrol frigates being built for the Royal Canadian Navy (RCN). MIL Davie's contract for building the three ships is valued at about 400-million Canadian dollars ($327,960,000). This amount primarily consists of labor costs, as the material for the project is provided by Saint John Shipbuilding, Ltd., Saint New Brunswick, Canada, the prime contractor for the project.

MIL Davie is proud of HMCS Calgary and its sisterships, particularly as the shipyard created the design of the CPF through its naval architecture group, MIL Systems, based in Ottawa.

HMCS Calgary is scheduled to be drydocked for several weeks in order to carry out work below the waterline, such as the installation of the ship's propellers and sonar dome. Afterwards, the vessel will spend up to one year alongside at MIL Davie for mechanical alignment and compartment outfitting before beginning sea trials.

The first two frigates, HMCS Ville De Quebec and HMCS Regina, are currently in the fitting-out stage in preparation for sea trials.

HMCS Calgary is 440 feet long, 53.8 feet in breadth and has a draft of 22.6 feet. At launching, she weighed approximately 3,000 tons and had 80 percent of her equipment already installed.

Modularized construction techniques were utilized in building the frigate and her sisterships. The hull and superstructures were divided into 34 modules, varying in weight from 30 to 600 tons, that were erected sequentially on the launching berth. This made it possible for the ship's mechanical and electrical components, lighting fixtures, piping, etc., to be installed in yard work shops where work could continue regardless of outside weather.

Because of their high degree of automation, Vice Adm. **Jerry Tuttle**, the U.S. Navy's chief of air-warfare, described the CPF project as a premiere example of how ships of the future should be designed. The ships can reportedly track up to 250 targets simultaneously and in the event of damage, the ship's computers can automatically reconfigure themselves to take over the workload of any lost systems.

During his launching ceremony address, **Guy C. Veronneau**, president and CEO of MIL Davie and The MIL Group, outlined the shipyard's three year objective of achieving a 50 percent increase in productivity: "Our future lies in penetrating the international markets. To do so, we must reach these objectives regarding productivity. It is not enough to be the best in Canada. We must be among the best in the world in terms of cost, quality and speed of execution."

MIL Davie is a member of the MIL Group, which took over the yard in 1987. The MIL Group is active in the design engineering, program management, manufacturing, installation and life-cycle support in shipbuilding, defense, offshore and general industrial fields in Canadian and international market places.

For more information about the services offered by MIL Davie Shipyard,

Circle 2 on Reader Service Card

AAPA Looks At Port Funding; Reevaluates Partnership With Army Corps Of Engineers

At the recent American Association of Port Authorities' (AAPA) 81st annual convention, held in Anchorage, Alaska, port leaders responded to recent events in California by unanimously recommending adoption of a resolution urging that state and local governments refrain from any action that will deprive port agencies of their ability to finance the development of public ports.

"Ports are America's gateways to international markets," said **Anne D. Aylward**, AAPA's immediate past chairman of the board and maritime director of the Massachusetts Port Authority. "It is in the interest of all Americans that ports have the resources to finance the development of terminals necessary for our nation to remain globally competitive."

The action of state and local governments to divert port funds in order to meet non-port budgetary needs has raised grave concern among public port officials. Such action not only deprives public port agencies of the ability to meet the nation's needs for international shipping, but may also be of questionable constitutionality. Diverting port funds may call into question the viability of bond covenants and other contractual obligations entered into for financing port capital development projects.

In adopting the resolution, AAPA leadership was responding to the California legislature's recent action allowing cities to take reserves from major California ports. **Ezunial Burts**, executive director of the Port of Los Angeles, requested that AAPA form a special task force to address the impact of California's actions on the nation's ports.

AAPA's U.S. members also supported a resolution favoring reexamination of the way channel improvement projects are funded and implemented. The resolution resulted from the recommendation of a special task force on the AAPA/Corps of Engineers "partnership," established by Ms. **Aylward**.

"Our goal is to assure the timely and cost-effective completion of deep-draft navigation projects. That should also be the Corps of Engineers' goal. Our paths diverge in the growing conviction among AAPA members that the only way to get more cost-effective and timely projects is to give the ports more control over all aspects of project implementation."

AAPA also backed a proposal to improve Customs' enforcement and collection of the Harbor Maintenance Tax. The AAPA position endorses the recommendation of a working group of the Treasury Advisory Committee to Customs, which includes port representatives and members of the trade community, that would require freight forwarders and brokers to collect the Harbor Maintenance Tax.

Currently, the Customs Service is charged with the responsibility of collecting the Harbor Maintenance Tax, which funds maintenance of navigation channels. The committee believes that implementing regulations can be issued within existing laws. Changes in collection would increase collections and ensure a more equitable collection regime by fairly allocating the responsibility of paying to all shippers.

In addition, AAPA proposed a resolution which favors elimination of trade taxes. "Trade taxes discourage trade and their cumulative impact is unknown," Ms. **Aylward** said. She added, "We will continue efforts to work with Congress and the Administration to promote better understanding of the importance of international trade to the economic well-being of the Western Hemisphere and the regressive nature of taxes on trade."

Finally, AAPA members stressed the need for passage of the Water Resources Development Act of 1992 before Congress recesses in October. "Ports have met the commitment to pay their local share of dredging costs since 1986," AAPA president **Erik Stromberg** said, "and we hope Congress will live up to its commitment to provide authorization to maintain our nation's vital water resources infrastructure. We hope Congress avoids bogging down the bill with lots of issues unrelated to maritime issues—it should focus on necessary water resource needs, and not create more regulatory hurdles."

Founded in 1912, AAPA represents virtually all public port authorities and agencies in the United States, as well as port agencies in Canada, Latin America and the Caribbean.

Westinghouse To Deliver First Underwater Laser Camera

Westinghouse, Underwater Laser Systems, has signed a contract with Deepsea Development Services, Inc. (DDS) for a long-term lease of its first production underwater Laser Line Scan System (LLSS). DDS will integrate this advanced technology sensor and processing system into a specially designed towed vehicle and offer Underwater Laser Imaging Survey & Inspection Services (ULISIS) to a worldwide base of customers.

The underwater LLSS is a new technology development. A prototype has been deployed on a U.S. Navy research submarine, demonstrating its ability to produce high-quality images of submerged objects at ranges many times over conventional sensors, such as television and photo cameras.

Westinghouse has announced that ULISIS is available for commercial, scientific and government customers for such uses as pipeline inspection, search and survey operations, and environmental research and monitoring programs.

For more details and information about the Westinghouse underwater laser camera,

Circle 9 on Reader Service Card

Schelde To Supply Gears For Two Container Feeder Ships

Schelde Gears Vlissingen is manufacturing a pair of gears for two large container feeder ships of a unique design, now being built at the Verolme Heusden Shipyard. Both vessels, the "Atlantic Lady" and the "Atlantic Surprise," will be of the "open-hatch" design, with the cell guides extended from tanktop to above the weather deck to provide continuous stacks 10-high. Each vessel will be propelled by a Stork Wartsila Diesel 8TM620 engine.

The gears are of single reduction, vertically stepped design, with a power take-off for generator drive superimposed on the primary shaft, and incorporate the thrust housing at the after end. The gearcase is constructed of steel plate, the central part containing the bearing seats being double-walled for stiffness. It is supported by a heavily ribbed flange at 330 mm below main shaft level and enclosed below by a sheet of metal oil sump.

Single helical gears with hobbed, carburized, hardened and ground teeth are used throughout. The hollow main shaft, supported in two journal bearings, has a collar for the Michell type thrust bearing at the after end and provisions for the propeller pitch setting box at the forward end. The pinion shaft is carried in two combined radial/axial bearings. Tin-based white metal is used to line the steel bearing shells, all of which can be inspected or removed without interfering with the shafts.

One of the reduction gears being built by Schelde Gears Vlissingen for two containerships.

Schelde gears have a reputation for quiet running and the structure borne noise levels measured during shop trials for this contract are proof of the high quality standard of Schelde gears.

For free literature describing Schelde reduction gears,

Circle 36 on Reader Service Card

Tsirimokos Appointed International Sales Director For WCS

George Tsirimokos has been appointed international sales director for World Communications Systems (WCS) of Newport News, Va.

Mr. **Tsirimokos** joins WCS from Sperry Marine, where he headed the Inmarsat Ship Earth Station programs. At Sperry, he reportedly conceived the revolutionary MCS2B which incorporated the first marinized PC ever used at sea, and which introduced the concept of direct inward dialing to the Inmarsat network. He also pioneered data communications in the industry via his well-known Starbaud concept.

World Communications Systems of Newport News, Va., is a leading developer and supplier of innovative communications integrators, which enhance and optimize the benefits of modern satellite and cellular technology.

338 Substandard Ships Lose ABS Classification

So far this year the American Bureau of Shipping (ABS) has dropped 338 ships from its classification register because of their failure to comply with class regulations.

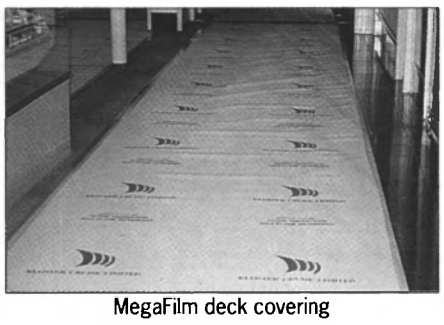
During all of 1991, 428 vessels were dropped, with 20 being scrapped. At the end of last year there were 12,570 ships and marine structures in ABS class totaling 91.5 million gross tons.

From January to August 1992, 38 ships that had been ABS classified were scrapped and 42 dropped from the register for various other reasons.

MegaFilm Offers Solution To Protecting Deck and Wall Finishes On Temporary Basis

MegaFilm is a temporary floor and wall protection system that was specifically manufactured to help solve some unique problems the maritime industry presents. The materials are manufactured in both standard see-through grades and in a flame-retardant version.

The flame retardant MegaFilm is currently being used by many of the large Caribbean Cruise Line companies, and is currently being evaluated by the U.S. Navy for temporary protection while re-fit jobs are being completed, the manufacturer, MegaFilm Limited, said.



MegaFilm deck covering

The company also touts its new product's versatility. The material comes on rolls and is available in four standard and four flame retardant grades. The rolls are available in standard widths of two-, three- and six-feet wide, which means corridors or larger areas can be covered quickly.

The material's unique design is that one side of it is a series of pyramids, which, when in contact with a textured surface, anchors the material and makes them extremely non-slip and safe to use.

On the reverse side of the material, the pyramids are hollowed out so that when the material is overlapped, a flat joint can be created which, when taped properly, will be entirely trip-free, the manufacturer said.

MegaFilm supplies a range of tapes to compliment the system. These tapes can be used in contact with most surfaces from carpets to vinyl.

When MegaFilm is used to protect vertical surfaces, the pyramids are used facing away from the walls, as the material is able to act as a deflector against knocks or general traffic.

MegaFilms' heavy duty grades have also been used for replacement for hardboard or plywood to protect bulkheads or panels which normally have easily damaged finishes.

All of the products are flexible, but also relatively light in weight. For instance, the 15LSFR grade in a 36-inch roll contains 98.5 linear yards on the one roll, but only weighs approximately 65 pounds, making it easy to carry. To lay the product, the user simply removes the outer packaging, and places the product on the surface in need of protection. By simply kicking the roll, it will virtually unroll itself until it reaches an obstacle. This can help reduce amount of labor that must be expended when protecting decks or walls with the traditional materials used for such a task. All MegaFilm grades are printed with the company's name, grade number and phone number. Custom printing, of a client's logo or safety message, is available on larger volume orders.

For more complete information and samples from MegaFilm,

Circle 89 on Reader Service Card

Lifetimer Boats Delivers Workboats To Imperial

Lifetimer Boats recently delivered two oil spill response workboats to Imperial Oil Resources Ltd. The all-welded aluminum vessels are powered by a Navistar 444 TD/260, Marine Diesel engine. A model 273 Hamilton waterjet propulsion system is also provided. Peter S. Hatfield, Ltd., Naval Architects, Marine Engineers and Marine Consultants, represented the owner's interests throughout the project.

For further information detailing the services provided by Peter S. Hatfield Ltd.,

Circle 69 on Reader Service Card

For free literature on Lifetimer Boats,

Circle 70 on Reader Service Card

KRUPP MaK

New Engine Contains 40 Percent Fewer Components

The new M20 diesel engine from Krupp MaK Maschinenbau GmbH represents a new compact class of MaK engines. The M20, which went from drawing board to shipboard in two and a half years, is a small, robust medium-speed engine capable of heavy fuel operation.

Krupp MaK is quick to tout the new powerplant's simplified engineering and inclusive design, as the M20 contains 40 percent fewer components than would be traditionally used to meet such technical requirements, and many ancillary items such as filters and heat exchangers are built onto the engine.

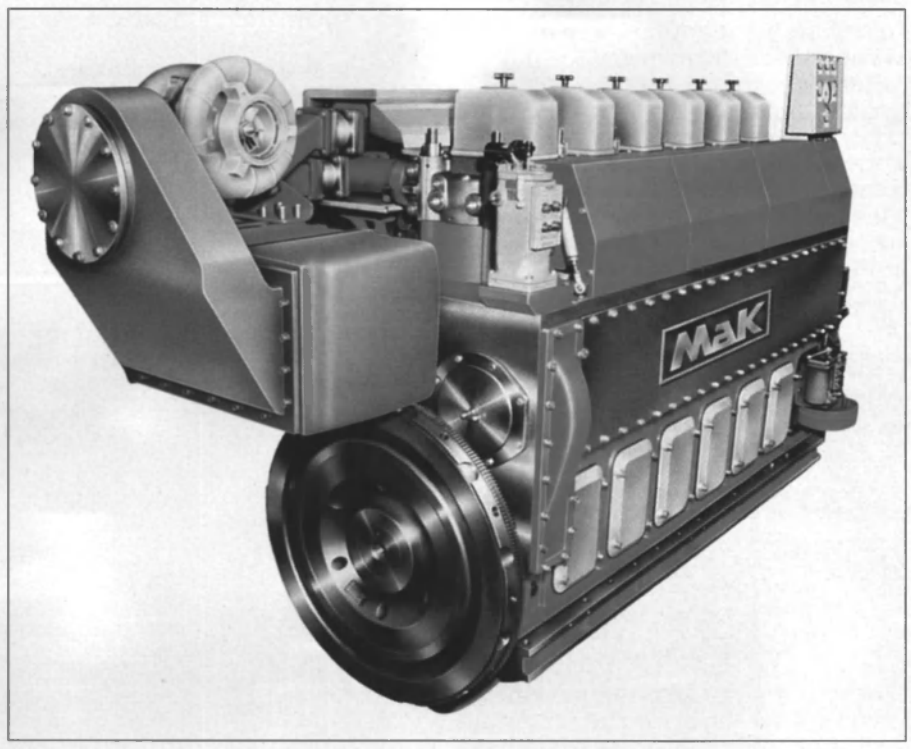
What this translates to in terms of benefits for owners and operators is an estimated 25 to 30 percent reduction in operating costs over the life of the engine, according to the manufacturer. Krupp MaK claims the M20, in tests, can run on heavy fuel for 12,000 hours without maintenance, and in turn the engine will cost less in fuel, maintenance and spare parts.

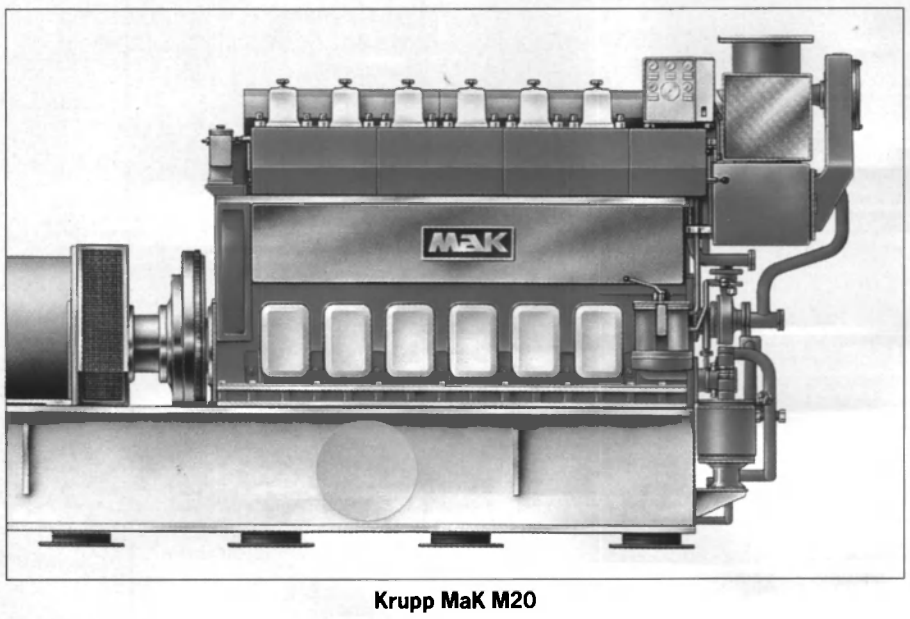
The M20 has a bore of 200 mm, a stroke of 300 mm, and outputs of 900 to 1,530 kW (1,220 to 2,080 hp) at 900-1,000 rpm's. Available in six-, eight- and nine-cylinder in-line versions, or 12- or 16-cylinder V-type engines, the M20 reportedly has a fuel consumption rate consistently below 190 g/kWh. The following information on the M20 includes specifics on: the crankcase and cylinder block; the cylinder liner; the turbocharging system; the piston and connecting rod; the cylinder head and the adjustable injection system.

When looking at the M20's crankcase and cylinder block, due to continuous longitudinal girders in the area of the top cover plate, in the area of the bottom cylinder guide and in the area of the pedestals, the engine frame is a structural supporting member providing advantages for both rigid and resilient mounting. Increased service life is ensured by the cooling water free conception of crankcase and cylinder block; it remains dry and is therefore free of corrosion and cavitation. The crankcase and cylinder block embody many functions simultaneously: the spaces for vibration damper and camshaft drive are cast on; the charge-air duct is cast-in at left-hand, top side; and the oil ducts are directly incorporated.

The "smart" cylinder liner is situated so far outside of the engine that it is cooled in a water cooling jacket only, outside the engine frame. The temperature distribution obtained by this concept avoids cold corrosion and ensures low running resistances. The cylinder is a straightforward, even form with a very rigid head. When subjected to rough loads the cylinder liner will keep its roundness. The multifunctional cooling water ring surrounding the upper part of the cylinder liner and featuring a totally new design fulfills the following tasks: cooling water is led around the liner; integrated cooling water inlet and outlet ducts; basis for cooling water distribution mains; connection between charge-air duct and cylinder head; cover for tappet push rods; protection of cylinder head studs against corrosion; and easy precentering when mounting the cylinder head. An added benefit: mounting and dismantling the cylinder head is considerably easier.

Components of the turbocharging system are fastened to the engine frame, and turbocharging group and high-efficiency intercooler as well as low flow resistances ensure sufficiently cool combustion air. The six M20 utilizes three-pulse charging with two robust pulse pipes. The eight M20 uses the multi-pulse charging system with MaK pulse rectifier, a system developed for the larger MaK engines. The cast-on exhaust pipes are easily removed from the cylinder head, as they are connected using two accessible bolts.





Krupp MaK M20

The connections for the cooling water pipes are arranged laterally on the series engines, making the intercooler accessible by pulling only a few bolts, again demonstrating the M20's ease of maintenance, according to the manufacturer.

Following an MaK tradition, the M20 uses pistons with ample guide length and sufficiently high vault above the gudgeon pins. The balanced dimensioning was designed to reduce tumbling, and the stiff vault above the gudgeon pin reduces deformation under firing pressure. This translates into long service life and low lube oil consumption, according to MaK. The hard running surfaces of the cylinder liners and the ring grooves of the piston provide for long wear. A stepped small-end boss on the robust connecting rod is designed to ensure that firing and mass forces minimize pressures on the bearing. Finally, the connecting rod is provided with drillings for lube oil cooling of the pistons.

The double bottom-designed cylinder head features a rigidly supported combustion chamber, designed to ensure maximum alternating load strength. Between the valves are bores for cooling. Thermal load is kept at a low level and rigidity, especially in the valve area, is still very high.

For ease of maintenance, the four studs connecting the cylinder head can be loosened and tightened without touching the valve drive. Charge-air connection, cooling water inlet and outlet and pushrod cover are provided via elastic sealings on the bottom side of the cylinder head.

Looking ahead to meet emission and fuel consumption demands, the M20 series has an optional module which uses a mechanism to alter the position of the rocker in the injection drive. High pressure injection helps to ensure lower fuel consumption, clean combustion and good part-load capacity on the M20. Short injection lines were designed to ensure that the desired injection characteristics reach the nozzle unimpaired. Features on the M20 to ensure low emissions are:

—a long stroke for a well-shaped combustion chamber providing an intensive air-fuel mixture.

—a high compression ratio for a soft and low emission combustion.

—a high firing pressure is produced because of the high compression ratio.

—the late commencement reduces NO_x production, but normally increases consumption.

—an intensive, short injection improves fuel consumption.

—means to control the exhaust gas recirculation and injection of water.

—means to adjust a constant temperature of the exhaust gases over the entire load range.

The M20 injection system carries out the "ease of maintenance" theme, as the protective covering between the cylinder cap area and pump area consists of one displaceable sleeve only. The two thrust pieces between pump and nozzle are pressure mounted only at the connection points of two pressure screws to allow for quick extraction. Finally, each injection pump is provided with its own emergency stop device which is activated separately from the speed governor, for added safety.

For more information on Krupp MaK engines,

Circle 158 on Reader Service Card

COMSAT Offers Inmarsat-M, Other New Services

COMSAT Mobile Communications announced it is the first and only Inmarsat partner to equip its earth stations for Inmarsat-M service, a new digital satellite voice communications service that brings low-cost, reliable satellite communications to vessels as small as 35 feet. COMSAT's management believes that this service, marketed under the COMSAT trade name Mobile Link, will revolutionize the way the shipping and yachting markets communicate in the future.

COMSAT also introduced three other new services which promise to deliver dramatic satellite communications cost reductions for COMSAT customers: FaxMail service for maritime users of Inmarsat-A, COMSAT service for ships in the Indian Ocean Region (IOR) and the new customer discount plan for high-volume users of Inmarsat-A services.

Mobile Link is a digital satellite communications service which interfaces with compact, lightweight terminals to bring global, two-way voice capability to small ships and yachts using the Inmarsat satellite system. Mobile Link voice service will be offered initially in the Atlantic Ocean Region (AOR) West and Pacific Ocean Region (POR) with AOR east service to begin in November and Indian Ocean Region service slated for 1993. Facsimile and data service will also be added in 1993.

The rate for COMSAT's Mobile Link service has been set at $5.50 per minute.

With the start-up of service at its new Inmarsat-A land earth station in Turkey, called Anatolia, COMSAT extends its service to the Indian Ocean Region and becomes the only Inmarsat signatory to offer full, four ocean region coverage. The new service allows ships traveling in the IOR to obtain the wide range of Inmarsat services offered exclusively by COMSAT.

COMSAT's new FaxMail service for Inmarsat-A users offers cost-reducing features and access to news summaries and information services via fax. The service allows users to send a fax to or from a vessel to multiple shore addresses with a single call.

Finally, the COMSAT Customer Discount Plan for high volume users of Inmarsat-A satellite services enables customers to achieve monthly discounts of as much as 23 percent on ship-originated telephone traffic. Discounts increase each year for four years if annual billings exceed $30,000.

For additional information on all COMSAT services,

Circle 140 on Reader Service Card

Sea-Fab Finishes Work On M/V Dewitt Clinton

Sea-Fab, Inc. announced that work has been completed on the M/V Dewitt Clinton, a 150-foot subchapter T dinner cruise vessel. During the vessel's four-week stay at the company's Pascagoula location, it received drydocking and a bottom job, and the transformation of the vessel to a subchapter H gaming boat was initiated. The vessel left Sea-Fab's facility unfinished to reach its destination before the October 15th closing of the Missouri River.

Besides the drydock and bottom job, the yard was able to: demolish and remove the main deck galley; transform an aft ballast tank to an auxiliary machine space; fabricate and install an elevator shaft serving three decks; modify and relocate air conditioning ducts; install a new 400 kW generator; and install a second steering power system with a larger fire pump.

Some of the subcontractors helping out with the work were: Air Masters Service America; Diversified Insulation Service; Con-Tech Power Systems; D's Electric; Morgan Engine Supply; William G. Preston, Marine Design; and Propulsion Data Services Inc.

For additional information on Sea-Fab, Inc. and its capabilities,

Circle 147 on Reader Service Card

Navy Halon Reliability Program Nears Completion

The Halon Reliability Improvement Program, now well under way, is an excellent example of how complex projects can be administered both expeditiously and cost effectively within the U.S. Navy.

The program began with a meeting of the Surface Ship Survivability Flag Level Steering Committee (SSS FLSC) in 1989, which concluded that several enhancements to the halon fire fighting system onboard U.S. Navy surface ships where necessary. NAVSEA 56Y51, led by **Dennis McCrory,** developed component improvements which eliminated the major contributors to system failures, the most significant being corrosion and contamination of the carbon steel actuation piping. The new requirement for 316L stainless steel actuation piping had to be backfitted in order to achieve acceptable levels of reliability and availability.

Replacing the carbon steel pipe with 316L stainless steel on almost 250 ships throughout the world quickly, reliably and cost effectively is a major logistics challenge. The goal is to maximize the utilization of available manpower while minimizing downtime, safety hazards, damage to the ship and all subsequent costs.

The Naval Ships System Engineering Station (NAVSSES) was tasked by NAVSEA to install these significant modifications called the Halon 1301 Fixed Flooding Systems Reliability Improvement Ship Alterations (SHIPALTS). The NAVSSES Alteration Installation Team (AIT) concept provides the essential skill level wherever needed, and at the lowest possible cost. Given the critical nature of the halon fire fighting system, the process moved quickly: the first ship, the USS Ticonderoga (CG-47) was completed in March 1990, and the successful installation of the SHIPALTS has been continuing ever since.

Based on experience with other alteration programs, NAVSEA 56Y51 recognized the value of joining pipe without the hazards and costs associated with welding (fire danger, skill level, damage to environment, rework, etc.). Thus, NAVSEA developed a mechanically attached fitting (MAF) specification for this program that involved a severe fire test requirement.

The Elastic Strain Preload (ESP) fittings designed and developed by Lokring Corporation are reported to be the only mechanically attached fittings to pass this rigorous specification and receive NAVSEA approval for fire hazardous areas. The Lokring fitting technology has proven to be a significant productivity enhancement item. The combination of high productivity, scheduling flexibility, reliability, easy access, low overhead, increased worker capacity and low rework result in lower installed cost and accelerated job completion.

NAVSSES used the Lokring fittings for the first time on the USS Belknap (CG-26) in February, 1992. Approximately 225 fittings were installed in less than half the time it would take to weld. Upon completion, according to **Eileen Noel** of NAVSSES, the system was hydrostatically tested at 2,850 psi with no leaks.

Ms. **Noel** reported that NAVSSES has had continued success installing approximately 3,500 Lokring fittings in Halon Actuation Systems on an additional 18 ships without any failures. "Considering the safety, cost and convenience factors of the Lokring fittings, the use of these mechanically attached fittings has significantly increased the efficiency of the Halon Reliability improvement Program."

For more information and free literature on Lokring products,

Circle 168 on Reader Service Card

Thomas Marine Delivers 30′ Spill Response Boats To Clean Harbors

Thomas Marine, Inc., of Patchogue, N.Y., recently delivered three Oil Cub spill response boats to the Clean Harbors Cooperative, Perth Amboy, N.J. Clean Harbors is presently exercising its option for three additional Oil Cubs and Thomas Marine recently completed two 30-foot Oil Cubs for Clean Casco Bay, an oil spill response co-op based in Portland, Maine.

One of Clean Harbor's new 30-foot Oil Cubs from Thomas Marine.

The Oil Cub series, a trade mark of Thomas Marine, were engineered and outfitted for fast oil spill response work within the New York/New Jersey area. The Oil Cub configuration is built on the company's proven Explorer hull which has been in successful service throughout the world since 1980.

The welded all-aluminum boats exceed Coast Guard 11-80 recommendations and were specifically designed with acoustic and vibration attenuation in mind to enhance crew comfort and vessel longevity. The 30-foot long Oil Cub has a beam of 10 feet, three inches and a two-foot draft.

Twin 150-hp Volve diesel engines coupled to a rugged Marine Drive Systems-built outdrive produces a top speed of 25 knots and gives the boat excellent maneuverability at slow speeds, which is necessary for the efficient deployment and placement of oil containment booms.

Other Oil Cub features are: a bow door; towing bitt; an 800-lb. capacity bow davit; Jeamar winches; a stern work platform; adjustable bow push knees; Freeman hatches; and cargo tie down points.

For additional free information about the Oil Cub spill response boats or other marine craft built by Thomas Marine, Inc.,

Circle 134 on Reader Service Card

OIL CUB
Equipment List

Engines	Volvo
Outdrive	Marine Drive Systems
Transmissions	Borg Warner
Steering	Hynautic
Controls	Morse
Keel cooling system	Thomas Marine
Winches	Jeamar
Hatches	Freeman
Coating System	Ameron
VHF radio	Motorola
Fathometer	Data Marine
Fuel monitors	Flo Scan
Circuit breaker panels	Bass
Charger	Raritan
Isolation transformer	Westinghouse

New Auxiliary Alarm Display From Vessel Information Systems

Vessel Information Systems recently completed development of an Auxiliary Alarm Display, which is designed to work with existing VIAS Systems and those yet to be installed. The need for this display stems from customer requests for alarm information in many locations around the vessel, the company said.

"Many of our customers have ordered two of the new Auxiliary Alarm Displays to enhance their VIAS System," said **Peter Trogdon**, of Vessel Information Systems.

The new display measures approximately six- by five- by six-inches, and features LCD display, audible horn and silence button. When an alarm is triggered by the VIAS System, the Auxiliary Alarm Display will sound its horn and display the alarm message. The display area is two to 20 characters.

For additional information on Vessel Information System's new product,

Circle 139 on Reader Service Card

Halter Marine Launches Response Vessel For MSRC's Southeast Region

With the launching of the first of three oil spill response vessels to be deployed in its Southeast Region, the Marine Spill Response Corporation (MSRC) moves another step closer to putting in place its network for providing best-effort response in the event of a major oil spill in coastal and tidal waters.

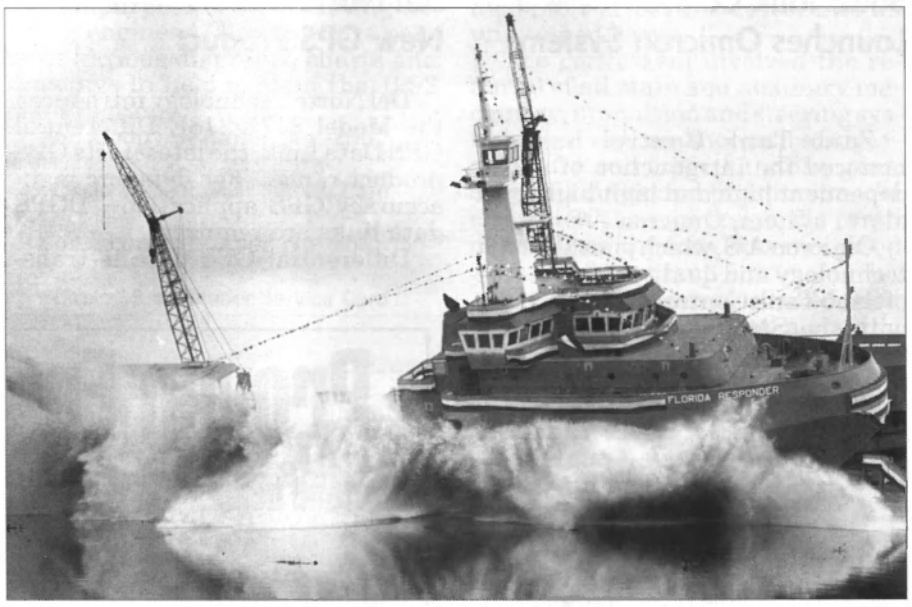
The Florida Responder, one of 16 oil spill response vessels being built for deployment throughout the United States by MSRC, was launched following its christening at Halter Marine Inc., a subsidiary of the Trinity Marine Group.

The 210-foot-long Florida Responder, to be based at MSRC's Southeast Region headquarters at the Port of Miami, is to be joined by the Caribbean Responder, which will be deployed at St. Croix in the U.S. Virgin Islands, and the Georgia Responder, to be based in Savannah, Ga.

The Southeast Region will cover the waters off Florida, Georgia, South Carolina, North Carolina, the U.S. Virgin Islands and the Caribbean.

MSRC, a private, non-profit organization, founded to satisfy the requirements set by the Oil Pollution Act of 1990, is scheduled to be fully operational by August 1993.

The Florida Responder, as well as each of its sister vessels, is designed to hold 4,000 barrels of recovered oil at the source of a spill, to provide around-the-clock accommodations for 38 people and to be equipped with a command and control center. Each vessel includes a helicopter landing pad and is capable of towing a 40,000-barrel-capacity barge.



The Florida Responder, one of 16 oil spill response vessels being built for MSRC.

Employing 71 specialists and equipped with oil response vessels, barges, boom and skimmers, the Southeast Region is one of MSRC's five such regions currently engaged in procuring equipment and vessels, employment and training of personnel and numerous other preparatory functions.

For more information about Halter Marine,

Circle 26 on Reader Service Card

Propulsion Update

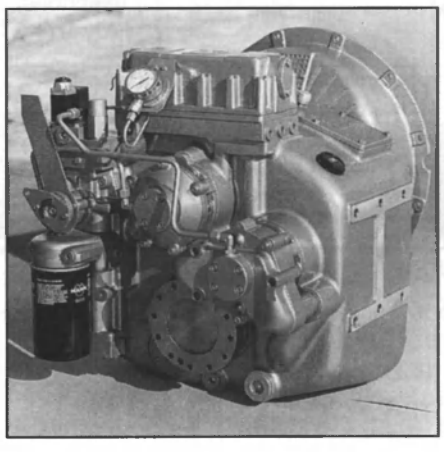
Lohmann + Stolterfoht Presents Navilus GUC Series Marine Reduction Gearbox

Lohmann + Stolterfoht, a member of the Mannesmann Rexroth group of companies, recently presented a marine reduction gearbox of the Navilus GUC series with vertically offset shafts.

The gear transmits at a reduction of 4.053:1 the power of 12,500 kW generated by a MAN diesel engine. For this example, the engine speed is 428 rpm while the propeller speed is reduced to 105.61 rpm. The gear teeth have been hardened and ground, and the gear is equipped with plain bearings. A secondary PTO drives a 1,500 kW generator at a speed of 1,800 rpm. All instruments for temperature and pressure monitoring are mounted on a common panel arranged at the housing top. The relevant measuring variable can be checked locally and in the machinery control room.

The output shaft is hollow to accommodate the propeller pitch control mechanism. The control device itself is directly attached to the gearbox housing. Two of these gears power a 21,500-dwt multipurpose containership at a speed of 20.3 knots. The vessel was built by the Sietas shipyard in Hamburg for the Wulff shipping company.

The new Navilus GUU 24-1G reverse reduction gear unit is shorter and lighter than its predecessors in the respective performance category. The output shaft has been inclined eight degrees to enable engine and gearbox to be arranged in a space saving manner. The oil supply system is integrated into the gearbox to leave a minimum of external pipework. Gear unit ratings range between 660 and 810 kW with rated engine speeds of up to 2,500 rpm. Standard transmission ratios of 1.5:1, 2:1 and 2.5:1 are available.



Reverse reduction gearbox Navilus GUU 24-1G from Lohmann + Stolterfoht GmbH.

For information on the reduction gearbox Navilus GUC,

Circle 170 on Reader Service Card

For information on the reverse reduction gearbox Navilus GUU 24-1G,

Circle 151 on Reader Service Card

Modular Construction Techniques Used To Build BC Superferries

The British Columbia Ferries Corporation—operators of one of the largest ferry fleets in North America—is using a unique approach for the design and construction of two 470-car, 2,100-passenger S-class superferries.

The ferries will provide extra capacity on the popular Tsawwassen-Schwartz Bay run during the 1994 British Commonwealth Games in Victoria, B.C.

In order for the project to begin, BC officials had to choose between sending the $197 million contract overseas or having it done locally. They decided to spread the work around by forming an independent task force of 75 professionals drawn from B.C.'s leading engineering and management companies to oversee design and construction of the superferries.

The task force explored all options, then recommended a unique modular construction method, rarely used in Canada or the U.S. Instead of building a ferry in one large shipyard, the ship would be divided into five modules, which would be fabricated at three smaller yards.

The project began in February 1991 with fabrication of the two hull sections.

The 360-foot aft section was built by Yarrows Shipyard in Victoria and the 190-foot bow section was constructed by Allied Shipbuilding in North Vancouver.

At the same time, construction of the three superstructure modules began at Pacific Rim Shipyard's Delta facility on the Fraser River.

BC Ferries was reportedly able to use this construction method because of the services provided by a small Seattle firm called Etalco. Etalco (Engineered Transport & Lifting Company) provided both the engineering expertise and specialized equipment allowing the huge ship to be built in sections at remote sites.

Workers constructed the first portion of each module at ground level and then raised them to complete the remaining portion, using Etalco's heavy lift devices.

Once the module was completed, Etalco moved it onto a free-floating barge which was towed to a central location where all of the modules were transferred from barges onto the free-floating ferry hull and welded in place.

Moving these huge modules—many of which are the size of a 10 story building—reportedly proved to be difficult. However, Etalco accomplished this mission without any major complications.

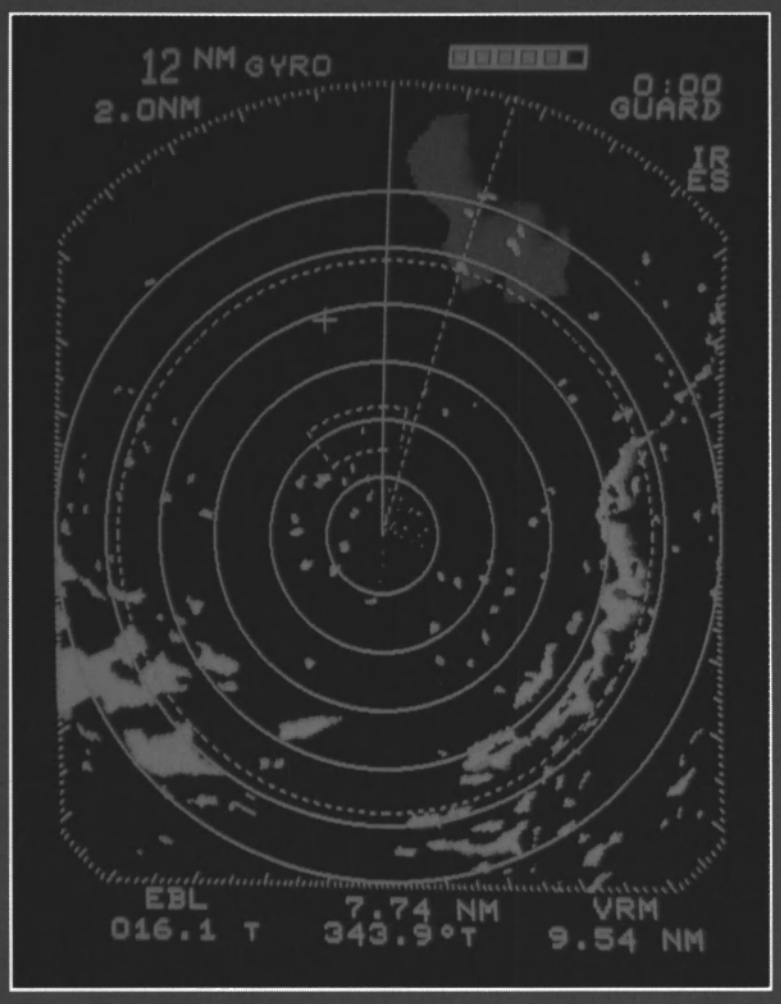
The company is located in Fisherman's Terminal and has performed many of these jobs for the past several years, including moving a massive gold dredge through the jungles of Peru, moving huge container cranes, and moving a schoolhouse onto a barge destined for Alaska.

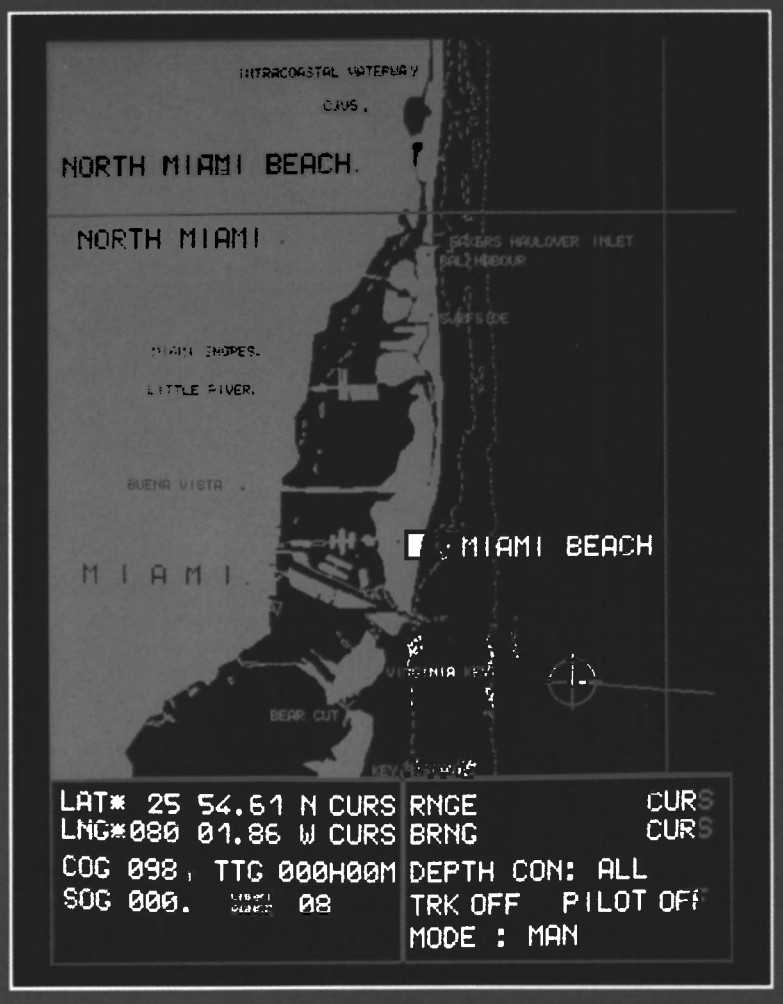
With the first ferry scheduled to be delivered later this year, Integrated Ferry Constructors Ltd. (IFC) has already begun construction of the second superferry and reports that it has plans for additional ferries in their budget over the next decade.

The modular construction method, which reportedly worked so well on the first ferry, will also be used to fabricate the second ferry.

For more information on the modular construction method,

Circle 14 on Reader Service Card





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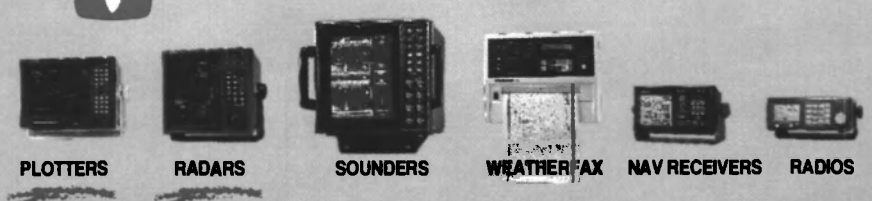

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NEW SULZER DIESEL

Low-Speed RTA-2 Series Engines Upgraded

By upgrading the design, the power outputs of the Sulzer RTA52, RTA62 and RTA72 low-speed, two-stroke marine diesel engines have been increased by approximately nine percent, reports the manufacturer.

Design improvements target the trend towards increased propulsion power while maintaining compact engine dimensions, and the changes are expected to increase the engine line's margins for better reliability and durability, creating a longer time between overhauls.

The recent changes follow New Sulzer Diesel's recent strategy of consolidating an upgrading the competitiveness of its engine program. After overcoming early problems with the RTA-series, particularly piston-running behavior in the 1980's, the engine has regained competitiveness and proven more reliable. Sulzer points out: exhaust valves are now running up to 30,000 hours between overhauls, while low wear rate piston rings and liners enable 12,000 hours between overhauls; and more than 960 engines are in operation worldwide.

The basic design of the three RTA-2 series engines have not been changed, but only component adaptions have been made to permit a prompt introduction into production.

The increased ratings are within the scope of experience. The brake mean effective pressure has been increased from about 17.2 bar to about 18.2 bar, and the mean piston speed from about 7.8 m/s to about 8.1 m/s.

Increased Safety Margins

To cater for the higher power outputs, a few modifications have been needed, for example the adaption of the shrink fit of the crankshaft, an increased efficiency of the axial detuner and refinements of the bearing design.

Some of the design ideas that have been tested on the "Technology Demonstrator" engine and are now applied on the new RTA84T engine have been adopted for the upgraded RTA-2 series engines. For example, a new cylinder liner cooling design strives for optimum distribution of wall temperatures and thermal stresses. The use of three fuel injection valves, which are fitted into an alloyed steel cylinder cover, gives the advantage of a more uniform temperature distribution.

The increase in safety margin that has been achieved by the design changes far exceeds the increased mechanical and thermal loads of the upgraded engines, as it has clearly proven in preliminary engine tests during 1992 of a RTA72 engine fitted with modified components.

Piston-running Behavior

The good piston-running behavior has been maintained by retaining the appropriate features in the RTA design, specifically, multi-level cylinder lubrication, die casting technology for cylinder liners and temperature-optimized liners.

Refinements to match the new running conditions include new piston ring design and a more efficient condensate drain.

Along with the increased power outputs from the redesign, the RTA-2 series engines offer a reduction in the specific fuel consumption of about 2g/kWh at the previous maximum continuous rating. Fuel economy is further enhanced by the standard application of electronically-controlled variable injection timing (VIT).

Due to the limited extent of modifications, the introduction of the redesigned engine can be accomplished in a short time.

For example, the first engine to these new design standards, a 7RTA72 engine, will be built under license at Bremer Vulkan and begin testing in March 1993 before it is installed in a 2,700TEU containership.

For additional information on the New Sulzer Diesel engine lines, including full details and specifications on the RTA-2 series,

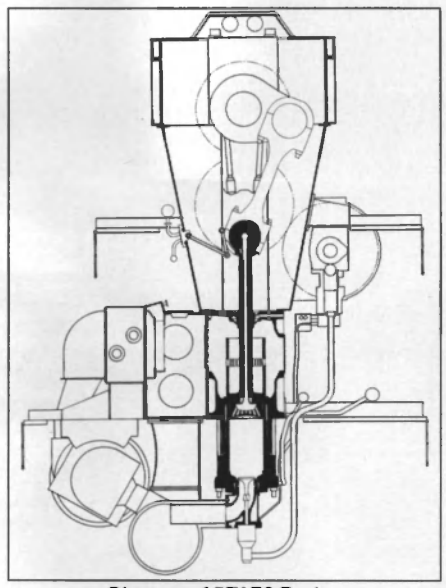
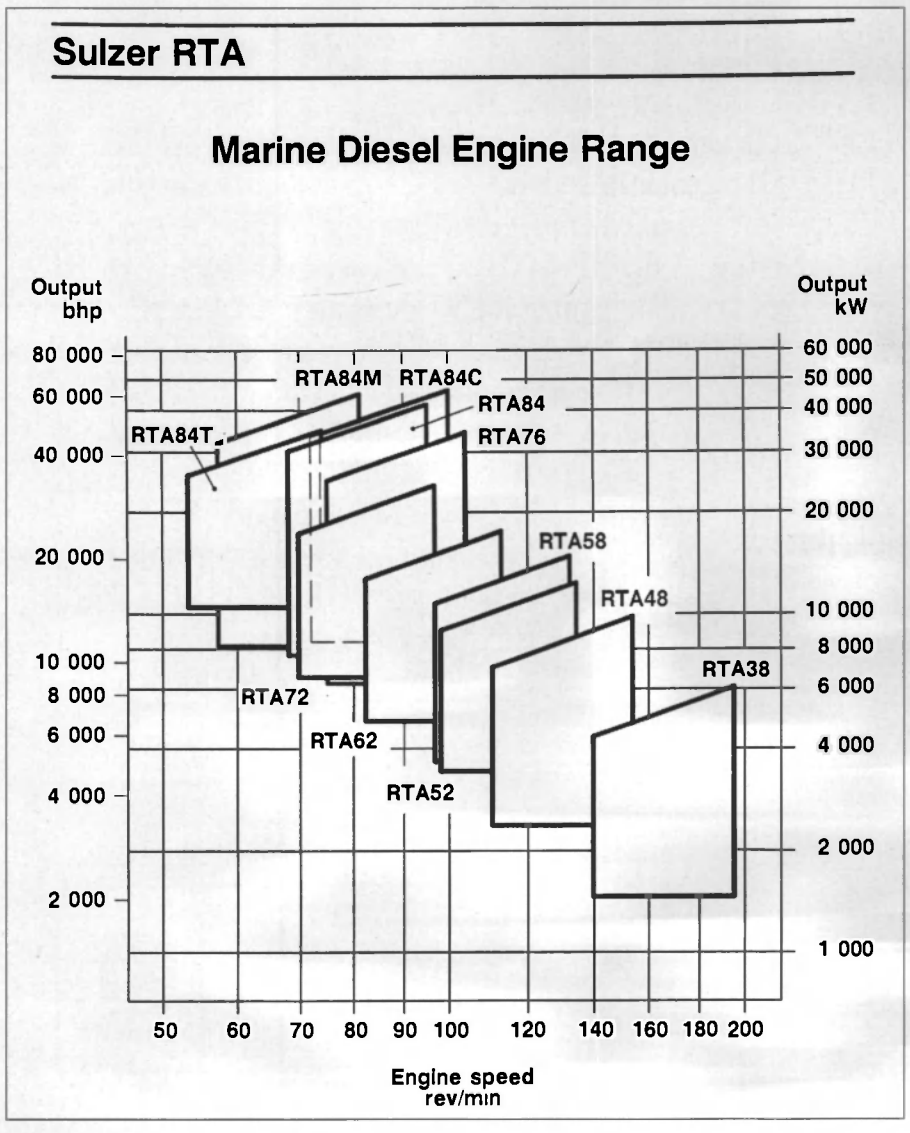
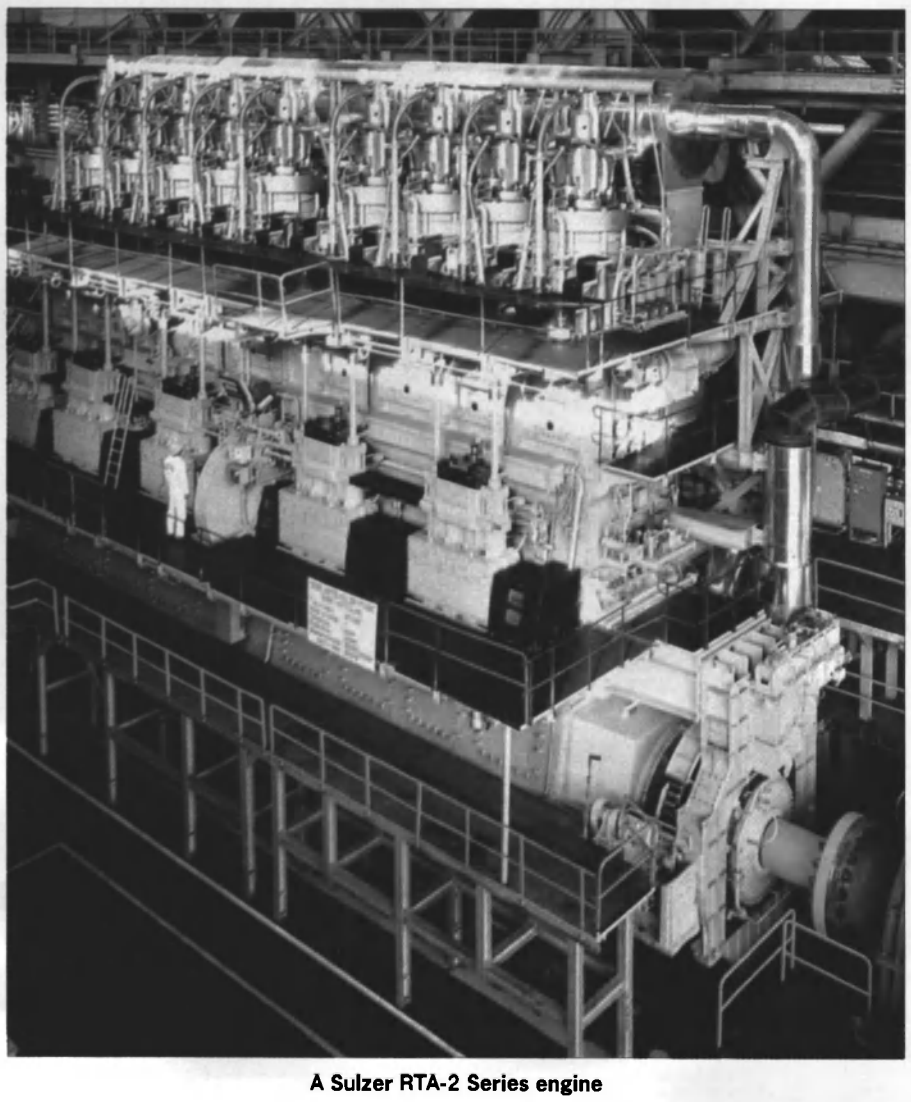


Diagram of RTA72 Engine





A Sulzer RTA-2 Series engine

Keppel Upgrades 174,000-Dwt Floating Storage Facility

Keppel Shipyard, a major operating division of Keppel Corporation Ltd., has completed modifications and refurbishment of the Nan Hai Xi Wang, a 174,007-dwt floating production, storage and offloading facility (FPSO).

The contract was worth about $13.7 million. Major work included modifications to the oil loading and unloading system to meet the requirements of storing crude oil from an additional oilwell. Two ballast tanks were converted to oil storage tanks and a heat exchanger skid was installed.

This is reported to be the second time that Keppel has performed repairs on the Nan Hai Xi Wang. In 1986, Keppel converted the vessel from a crude carrier to a FPSO.

For more information on the services provided by Keppel Shipyard,

Circle 5 on Reader Service Card

Jered Brown Brothers Completes Relocation To Brunswick, Ga.

Jered Brown Brothers, a marine systems manufacturer, has completed its relocation to Brunswick, Ga., from its facilities in Troy and Auburn Hills, Mich. Jered Brown reportedly made the move in order to consolidate all of its administrative, engineering and manufacturing operations and to expand its manufacturing capabilities.

The new manufacturing plant consists of a leased 225,000 square foot facility which is located on a 10-acre deepwater site on the Brunswick River adjacent to the Georgia Port Authority and six miles from the Atlantic Ocean.

The company's administrative staff is located at the Liberty Building in downtown Brunswick.

According to the president of Jered, **Rick Edger**, "Although the decision to leave Detroit was not an easy one, it was necessary in order to be closer to the majority of our customers - mostly large U.S. shipbuilders - and to be on a deepwater site, with ocean shipping capabilities.

"We've already seen some very positive results from our decision in terms of new business. There are two orders presently in-house for very large cranes. We couldn't have built or shipped either of these cranes from our smaller land-locked facilities near Detroit."

For the Port of Jacksonville, Fla., Jered will build a 200 foot high, 40-ton container crane as a subcontractor to IMPSA International, a marine engineering firm based in Argentina.

Jered has also received a contract from P & H of Milwaukee for the fabrication of two 125-ton bridge cranes, each 200 feet long, for the U.S. Navy's Kings Bay, Ga., submarine base.

Jered was recently awarded the contract to design and build two boat and aircraft cranes for the Navy's two newest aircraft carriers under construction at Newport News Shipbuilding.

Jered Brown Brothers' new address is: P.O. Box 904, Brunswick, Ga. 31521-0904; tel: (912)262-2000.

For complete information about the capabilities of Jered Brown Brothers,

Circle 8 on Reader Service Card

MarAd Receives Refinancing Application From American Steamship

The Maritime Administration has announced that it has received an application from American Steamship Co., Buffalo, N.Y., a subsidiary of GATX Corp., for a Title XI guarantee to refinance or restructure the Title XI debt on eight existing vessels.

American Steamship Co. indicated that the five single screw and three twin screw vessels would be used in the Great Lakes trade. All of the vessels were built by Bay Shipbuilding Corp., Sturgeon Bay, Wis.

If approved, the Title XI guarantee would cover approximately $102.3 million or about 87.5 percent of the vessels' estimated depreciated actual cost.

CG Opposes Marine Navigation/Technology Act

Speaking before the House Subcommittee on Technology and Competitiveness, Captain **Alvin Cattalini**, Deputy Chief of the Coast Guard's Office of Navigation Safety and Waterway Services, stated the service's opposition to H.R. 5457, the Maritime Navigation Technology and Research Act of 1992, sponsored by Reps. **Robert Torricelli** (D-N.J.) and **Dana Rohrabacher** (R-Calif.).

The bill requires the Secretary of Transportation to issue rules requiring vessels operating in U.S. harbors to have state-of-the-art navigation, communication and collision avoidance equipment that is compatible with the Coast Guard's vessel traffic systems.

Another provision requires the Secretary to conduct research and development on next generation vessel navigation technologies and on reducing human error in vessel operations. The legislation also mandates a research plan, establishes a research advisory committee, specifies equipment for large and small vessels and requires the Coast Guard to upgrade its systems.

Captain **Cattalini** told the subcommittee that the Coast Guard is already making substantial progress in this area and that no additional legislation is presently required.

John DeMaso, vice president of Sperry Marine, Inc., testified in support of the measure, stating: "We at Sperry Marine endorse the concepts of this bill including the expansion to a full waterways management system."

Southwest Marine Wins $10.7 Million MSC Contract

The U.S. Navy's Military Sealift Command (MSC) recently awarded a $10,782,552 firm-fixed-price contract to Southwest Marine, Inc., San Diego, Calif., for the overhaul of the combat stores ship U.S.S. Mars.

The overhaul work includes voyage repairs, ship alterations, and the removal of weapon systems. The alterations will include modifications to the ship's living spaces in preparation for the ship's MSC civilian crew. The work is scheduled to be completed in June 1993.

The U.S.S. Mars is the second of six Navy combat stores ships that are being decommissioned and turned over to MSC for operation by civilian mariners.

The transfer of the U.S.S. Mars and her sister ships to MSC will help the Navy preserve its force structure and combatant manning levels during a time of decreasing defense budgets and manpower reductions.

Some LPG Tankers Fail IMO Standards

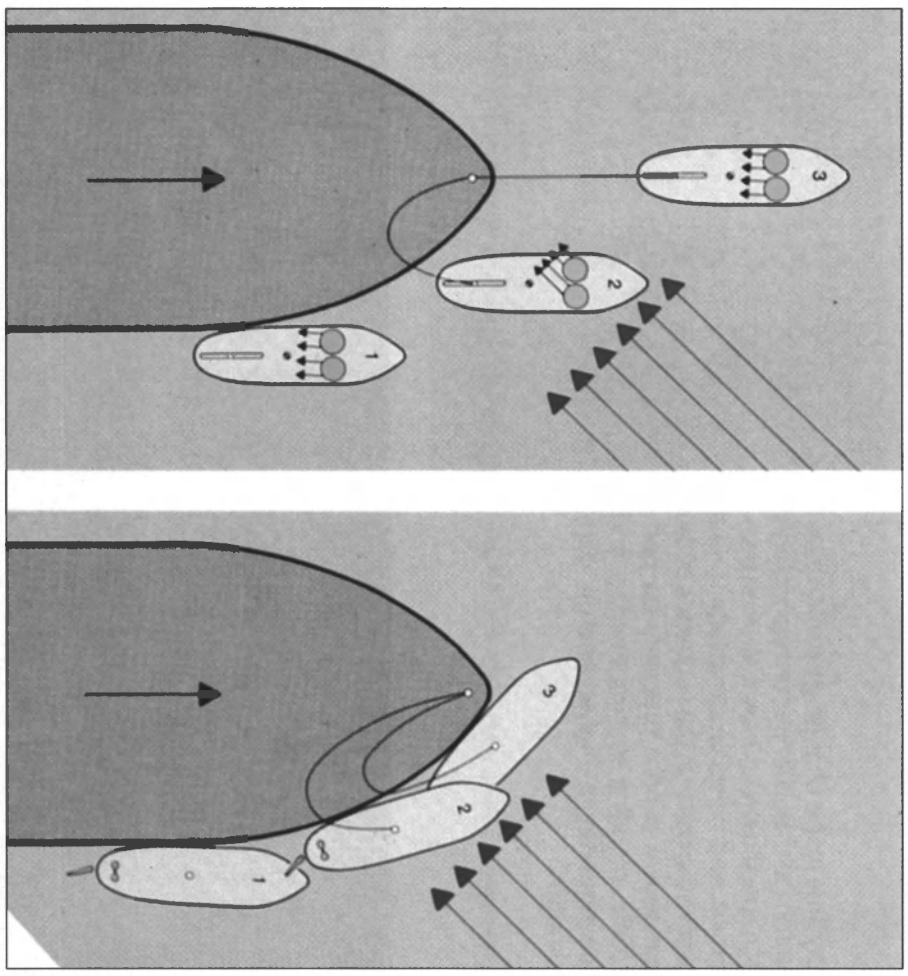
It has been reported that more than 15 percent of the largest tankers in the international liquefied petroleum gas (LPG) fleet are unable to meet International Maritime Organization (IMO) safety specifications that are now required for all new ship construction.

Thirteen tankers built in Japan during the 1970s, most of which are now employed in the Persian Gulf to Japan LPG trade, failed to satisfy IMO standards for low-temperature tolerance steel in the secondary barrier between the vessel hull and the gas-carrying tank. On some of the ships the gas tank material itself was below IMO requirements.

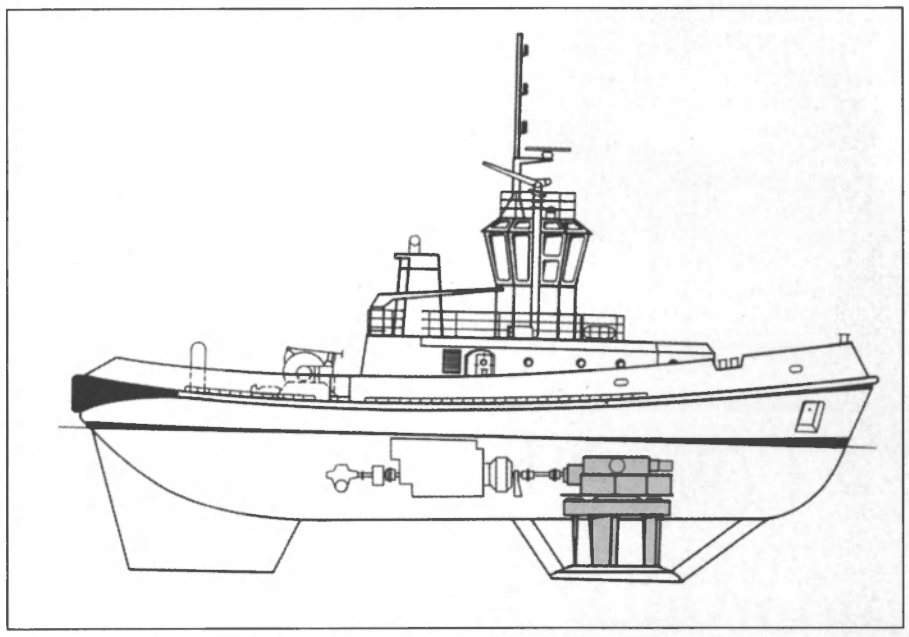
The Gas Carrier Code introduced by the IMO and adopted in 1983 is now mandatory for all vessels built after 1986. All of the substandard tankers were built before the IMO code was introduced.

The LPG vessels are barred from operating in U.S. waters because they cannot satisfy U.S. Coast Guard requirements of having crack-arresting steel in their bilges.

Voith-Schneider Propulsion Makes Loop Responder Tractor Tug Choice For Tanker Safety



Voith Tractor Tug's maneuverability was selling a point over conventional tugs to the Louisiana Offshore Oil Port (LOOP)



Layout of a typical Voith Tractor Tug

Louisiana Offshore Oil Port (LOOP) is the U.S.'s first and only offshore oil port licensed under the Deepwater Port Act of 1974. It receives approximately 900,000 barrels of oil per day (nearly 15 percent of U.S. daily imports) primarily from VLCC's and ULCC's which moor at its port and deliver their cargoes for transportation by pipeline to shore. The final design of the LOOP facility provided for six Single Point Mooring (SPM) locations centered around a pipeline connected to LOOP's Marine Terminal, comprised of a control platform and pumping platform. Three SPM's designed to handle tankers up to 700,000 dwt have been built, and three additional locations are available for future port expansion.

In 1990, LOOP conducted a yearlong study which concluded that a tanker control casualty is the most probable cause of a significant oil spill. After considering various vessel and propulsion configurations, including conventional and tractor tugs, it was decided that the proven Voith Water Tractor, which could act as a vessel to prevent accidents or an Emergency Response Vessel (ERV) to respond to a multitude of emergencies, was the vessel for the job.

This resulted in a relatively large vessel, for which the special maneuvering characteristics of the Voith-Schneider propulsion system proved important. The attributes of a ship handling tug of unusual power and maneuverability that could operate in an open ocean environment and provide steering and retardation control to tankers through indirect towing were required. These same qualities were desirable and compatible with respect to oil spill response, fire fighting, and the capacity of the vessel to enhance routine operational demands.

The key to indirect towing and therefore handling tankers underway, is the tractor tug design and specifically the Voith-Schneider cycloidal propulsion system. The LOOP study and substantial full scale trials have indicated that conventional tug hull forms and screw propellers could not be expected to provide the steering and retardation control to tankers under way at normal ship self-control speeds.

The M/V Loop Responder, owned and operated by Edison Chouest Offshore, Inc., featuring twin Voith-Schneider Propulsion (VSP) units of type 36G II/200 cycloidal propellers arranged side by side in the tractor configuration, is reported to be the most powerful tractor tug in the world. Built at the North American Shipbuilders' shipyard, the tug was designed to provide escort and emergency response to VLCC and ULCC tankers calling at the LOOP facility, the Loop Responder can achieve speeds of 14.5 knots and has demonstrated the capability to stop in less than its own length from full speed.

The Loop Responder measures 155 feet long, has a beam of 51.5 feet and a displacement of approximately 1,670 long tons. The Voith-Schneider propellers are directly driven by two 3,600 hp (2,650 kW) type 3608 Caterpillar diesel engines running at 1,000 rpm, through hydraulic and gear couplings. With a total power of 7,200 hp, it is the largest Voith Water Tractor built so far.

The free arrangement of propellers underneath the hull was accepted in ship-handling only because a nozzle plate could be fitted below the blade tips for reliable protection. The plate is connected to the hull by a statically balanced support system, providing all-around protection for the propeller against grounding. The propellers are thus located between the actual keel and the buoyant hull.

The tug can generate approximately 80 tons of bollard pull in the dynamic mode and up to 200 tons of bollard pull in the indirect towing mode, unique to Voith Schneider tractor tugs and necessary for escort vessel work.

Electrical power is provided by two 150 kW Detroit Diesel gensets and a Detroit Diesel unit provides hydraulic power. The towing winch is a Markey type DUSS-71 single drum hawser winch, designed to achieve braking capacity of 500,000 lbs. and a line retrieval of 200 feet/minute. The towing hawser from Whitehill Manufacturing, Inc. is 1,000 feet of .75-inch diameter Spectra fiber synthetic hawser specially designed for high tensile, positive buoyancy and light weight. The vessel has two Nijhuis, split case horizontal water pumps of 1,000 hp driven off the front end of each main engine, stores 5,000 gallons of liquid firefighting foam onboard and has a Skum model PI-100 around the pump proportioning system and two Skum model MK-250EX/VR-250-DELF water monitors with a range of 425 feet at 170 psi delivering 7,500 gpm.

The Loop Responder also carries 3,000 feet of 48-inch oil spill containment boom on two separate hydraulic powered reels, has in hull storage capacity and separate pump

The M/V Loop Responder

room to handle 3,000 barrels of recovered oil, a disperssant spray system including proportioning pumps valves and two 12-meter spray application arms. The vessel has two 10-ton at 30-foot radius Appleton hydraulic cranes and two eight-ton deck tuggers. The vessel is fully inspected as a towing vessel by the U.S. Coast Guard and carries certification as an Oil Spill Response Vessel (OSRV) under OPA '90 guidelines.

The boat has the capacity to carry 100,000 gallons of fuel and 15,000 gallons of potable water.

For more information on the Voith-Schneider cycloidal propulsion system,

Circle 101 on Reader Service Card

MarAd Awards $2.5 Million Contract To West State

The U.S. Maritime Administration (MarAd) has awarded a $2,578,486 contract to West State, Inc., of Portland, Ore., for deactivation and repairs to the Ready Reserve Force (RRF) breakbulk vessel SS Cape Breton.

MarAd maintains the RRF as a select group of cargo ships to meet surge sealift needs in the early stages of military contingency operations. During operations Desrt Shield and Desert Strom, MarAd activated 79 of its 96 vessels.

The work on the Cape Breton includes repairs necessary to meet classification specifications and regulations. The work is expected to be completed within 60 calendar days.

DOT Agencies Sign Memo Of Understanding On Intermodal Transport

For the first time a Memorandum Of Understanding (MOU) that calls for the improvement of intermodal transport operations throughout the nation was formally agreed to by the maritime and transit agencies of the U.S. Department of Transportation (DOT).

As required by the U.S. Intermodal Surface Transportation Efficiency Act of 1990, Captain **Warren Leback**, U.S. Maritime Administrator, and **Brian Clymer**, U.S. Federal Transit Administrator, recently signed the MOU and committed their respective agencies to undertake joint activities and information sharing.

In addition to creating the country's first Office of Intermodalism, which will be directed by the previous deputy maritime administrator, Dr. **Robert Martinez**, the MOU mandates that the federal government "work with public and private transport interests to identify needs for improved facilities and enhanced transfer techniques between transport modes and carriers."

Within the new MOU are provisions calling for: the coordination of transit, port and maritime development financial assistance; coordination of interagency transport planning and activities at the state and local level; joint research and development projects; and the coordination of development and expansion activities relating to ferry systems and services.

Congress Passes Bill Ending Foreign-Flag Cruises To Nowhere

A bill introduced last June by Rep. **Gene Taylor** (D-Miss.) that would phase-out cruises to nowhere on foreign-flag vessels in U.S. territorial waters was recently passed by the House. The Taylor bill now goes to the Senate for consideration. Congress passed the Taylor bill with little debate and no amendments.

The Taylor bill would amend the 1886 law by allowing only Jones Act vessels to carry passengers in U.S. waters, which would be a boon to U.S. operators and shipbuilders. At the end of the bill's five year phase-out period, gambling cruises to nowhere that are now dominated by foreign operators, would become the exclusive domain of the U.S.-flag industry.

The UNL-built luxury cruise ship Crown Jewel.

Union Naval De Levante Delivers 'Crown Jewel' To Crown Cruise

One of the largest cruise ships to be built in Spain to date, the 19,089-gt Crown Jewel, was recently delivered to its owner Boca Raton, Fla.-based Crown Cruise Line, part of Effjohn International, by Union Naval de Levante (UNL) shipyard, of Valencia.

During a presentation ceremony, a spokeswoman for Crown Cruise Line said: "The yard has shown a perfect understanding of our ideas and has built the ship in accordance with our wishes down to the last detail; we are fully satisfied."

The Crown Jewel is 537.4 feet long, has a 73.8-foot breadth and a draft of 17.7 feet. The vessel is a luxury passenger vessel arranged to provide extensive visibility of the sea. An immense panoramic glass wall fills the central atrium with natural light which then radiates into the decks from within. The public spaces are all designed to lead to the atrium to provide the passengers with a pleasant reference point for their orientation aboard ship.

Vertical communication is made easy and comfortable by means of four elevators, two forward and two aft, and a broad staircase.

In addition to her crew of 304, the ship can carry 916 passengers arranged in 410 cabins extending from deck two (starboard) to deck seven. There are 355 standard cabins, 38 luxury staterooms, 10 suites and one owner's stateroom.

The dining room, on deck four aft, is encased in panoramic windows on three sides, providing passengers an excellent view. Deck five contains various public spaces, such as the Casino, shop's and Harry's Bar and an open-air promenade. The solarium on deck eight includes an outdoor swimming pool with jacuzzies, a gym, sauna, massage area, aerobic facility, deck games, jogging circuit, video game rooms and a children's playroom.

The Crown Jewel was built in accordance with the most recently established International Maritime Organization regulations and the ship's fire protection actually exceeds the applicable international requirements by virtue of a complete sprinkler system and a complex smoke detection installation. Firefighting facilities are duplicated and the various ship areas are independent from each other to prevent a fire or flooding from spreading to other sections of the vessel.

The cruise ship is also completely automated, with its mechanical system visualized on a monitor and operated from a mainframe computer and various control stations in the control room and on the bridge. Although the bridge is designed to be manned by a single individual, the ship's owner has established a requirement that a minimum of three officers be on duty at all times.

The Crown Jewel can reach a top speed of 21 knots with an ample margin that enables her to maintain that speed regardless of weather conditions. Sound and vibration levels onboard are extremely low. In cabins, sound is below 55 db A; while the vibration readings are below 3 mm/s at the majority of the 200 points measured, and at no point reaches 4 mm/s.

An important innovative feature of the vessel is her waste disposal system. Organic wastes, burnables, glass and tin cans are treated separately, making it unnecessary to release waste materials of any kind into the sea.

For more information about the shipyard services and facilities available from Union Naval de Levante,

Circle 39 on Reader Service Card

RSI Services Help Add Safety In Shipyards

Rigging Specialists, Inc. (RSI) is a company which provides safe and cost effective means to gain access to any structure. RSI offers a brochure which outlines, among other things, the company's products, services and expertise, as well as a client list. The company's staff consists of professionals with more than 50 years of experience in safety and debris netting, suspended scaffold and structure access.

The company, among a list of other services, provides safety training to a client and their personnel on the subject of good rigging practices and safety procedures.

To receive information on Rigging Specialists, Inc.,

Circle 152 on Reader Service Card

Vancouver Harbor Receives First Fast Fireboat From Celtic Shipyards

Fireboat 1, built by Celtic Shipyards for Vancouver Harbor

Celtic Shipyards, Ltd., Vancouver, British Columbia, Canada, recently delivered the first of five fast response fireboats to the Port of Vancouver. All of the remaining boats are to be delivered by the end of 1992.

After a joint committee of fire fighters and Vancouver Port Corporation officials determined the technical requirements for the new vessels, a contract was eventually awarded to Celtic Shipyards for five boats based on a design by Robert Allan, Ltd., the Vancouver-based naval architecture and marine engineering firm. The cost of the new vessels is being shared by the port corporation and the five cities and municipalities bordering Vancouver Harbor.

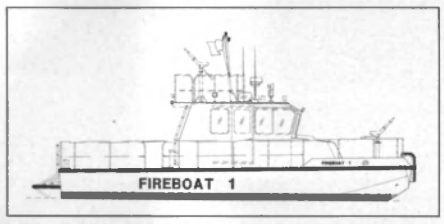
The five fireboats will be strategically positioned throughout the harbor so that they can rapidly respond to any fire with their water and foam pumping capacity. The fireboats will be kept in specially designed boat houses, kept "warm" and ready to respond at all times. The boats will be manned by trained crews from a nearby fire hall, but will not have a dedicated crew.

The all-welded aluminum alloy fireboats have a 40-foot length, a 13.5-foot beam and a maximum draft of 1.83 feet. Propulsion is provided by twin Hamilton 291 water-jets, each driven by a Detroit Diesel 6-71TI engine, rated at 450 bhp at 2,500 rpm, through a ZF/IRM model 30/PL-2DB gearbox, 0.97:1 ratio.

During the trials of Fireboat 1, a speed of 32 knots was obtained. The twin water-jet propulsion also provides the boats with excellent maneuverability and stationkeeping capabilities. This is further enhanced by a water-jet bowthruster, which utilizes a branch of the fire pump flow to provide a transverse thruster capability.

The boats have two main Waterous CXK fire pumps, each delivering 1,500 gpm to two monitors, one on the house-top capable of delivering 2,000 gpm, and one on the foredeck with a 1,250 gpm capacity. Each pump is driven from the front end of a main engine through a Twin-Disc SP21-1HP3 power takeoff, 1:1 ratio.

The fireboats are only 9.7 grt, which means they can be piloted by a non-licensed operator. The vessels are also equipped with large after deck manifolds, enabling them to serve as pumping stations for fire fighting operations ashore, all-round rubber fenders and fendered push-knees on the bow.



Outboard profile of Fireboat 1, designed by Robert Allan, Ltd.

For more free information from Robert Allan on the fast fireboats,

Circle 64 on Reader Service Card

Equipment List

Main engines	Detroit Diesel
Waterjets	Hamilton
Gearbox	ZF/IRM
Cardan shafts	GWB
Fire pumps	Waterous
Fire monitors	Akron
Silencers	Maxim
Jet bucket controls	Hamilton
Wheelhouse control	Kobelt
Hydraulic steering	Wagner
Radar	Furuno
VHF/Loud hailer	Raytheon
Antenna	Morath
Depth sounder	Lorad
Searchlight/Floodlights	Rayline

New Navy Amphibious Assault Ship Joins Pacific Fleet

The Ingalls-built U.S.S. Essex (LHD 2)

The U.S. Pacific Fleet welcomed its first Wasp (LHD 1) Class multipurpose amphibious assault ship recently when U.S.S. Essex (LHD 2) was commissioned at North Island Naval Air Station in San Diego, Calif.

U.S.S. Essex will transport, deploy, command and support all elements of a 1,870-man Marine Landing Force in assault by air and amphibious craft. Secondary missions include operating with an aircraft carrier battle group and providing aircraft and command/control facilities for sea control missions. LHD 2 is also outfitted for disaster relief and humanitarian missions.

The lead ship of the LHD program, U.S.S. Wasp, was delivered to the Navy by Ingalls Shipbuilding division of Litton, Pascagoula, Miss., in May 1989, and is now operating with the U.S. Atlantic Fleet. Following U.S.S. Essex, Ingalls has Kearsarge (LHD 3), Boxer (LHD 4) and Bataan (LHD 5), in various stages of production. The Wasp Class is the first specifically designed to accommodate the air cushion landing craft (LCAC) and Harrier (AV-8B) close air support jet.

Fabrication work for LHD 2 began at Ingalls on July 11, 1988, and U.S.S. Essex's keel was laid on February 16, 1989. Following her launching on January 4, 1991, Mrs. **Lynne Cheney**, wife of U.S. Secretary of Defense **Dick Cheney**, christened the new ship "Essex" on March 16, 1991. LHD 2 is the fifth Navy vessel to bear the name Essex, a lineage extending back to the frigate Essex launched in 1799. Ingalls delivered the U.S.S. Essex to the Navy on July 10, 1992.

LHDs represent the sixth amphibious assault ship program in which Ingalls has been involved since the early 1950s. Most recently, the five ships of the Tarawa (LHA 1) Class were delivered to the Navy between 1976 and 1980. The shipyard is also building ten Arleigh Burke (DDG 51) Class Aegis guided missile destroyers and three Ticonderoga (CG 47) Class Aegis guided missile cruisers for the Navy.

For additional free information on the services and facilities offered by Ingalls Shipbuilding,

Circle 78 on Reader Service Card

Weathernews Inc. Offers New Global Service, Expands U.S. Office

Weathernews Inc. of Chiba, Japan, is now offering a new global ship-weather expert system (MarinES) as part of it existing DEKITA family of global environmental systems.

Along with the announcement of the introduction, **Hiroyoshi Ishibashi**, president, also stated that his company has expanded its Sunnyvale, Calif., office to include full-services operational forecasting and sales centers.

"We are offering the full-range of environmental services to our clients," Mr. **Ishibashi** said. "Our approach is to apply the latest computer technology with knowledge-based systems that solve our client's problems.

Gary Kanemoto, manager, international sales and marketing, said that Weathernews' DEKITA MarinES is currently available from sales centers in Tokyo, Japan and Sunnyvale, Calif.

Weathernews Inc. is a multi-national corporation with its headquarters in the new Makuhari Techno Garden located in Chiba, a technology center near Tokyo, Japan. Since its inception in 1985, Weathernews currently provides weather broadcast services to approximately 50 percent of the broadcast media in Japan. Environmental services are now being provided to the airline, shipping segments, power utilities, construction, agriculture and civil authorities to assist in minimizing risks associated with natural hazards.

For additional information on Weathernews' services,

Circle 129 on Reader Service Card

Alfa-Laval Applies Vibrating Rod Principle To New Viscosity Control System

An advanced viscosity control system, under the name Viscochief, has been developed and is now being marketed by Alfa-Laval. The system is designed to ensure accurate automatic monitoring and control of the injection viscosity of fuel oils.

The Viscochief system is an extension of the advanced line of fuel treatment equipment from Alfa-Laval, which includes Alcap technology, the Heatpac series of electric and steam heaters and the Moatti full-flow automatic filter program.

The Viscochief design has no moving parts, has full-flow measurement, can be installed in-line in any position, is impervious to pressure and flow fluctuations and other factors such as vibrations, is maintenance free, and no calibration or manual adjustments are required.

The Viscochief system was installed by Alfa-Laval onboard the MS Heemskerck, a Nedlloyd containership serving routes between The Netherlands and South Africa. The system reportedly maintained 10 cSt, which was requested by the engine maker.

One of the components of the Viscochief system is the EVT-10C transducer. The operating principle of the EVT-10C is based on a vibrating rod inserted into the flow of fuel oil. The frictional force of the fuel oil reportedly dampens the vibration of the rod.

In addition to the EVT-10C, the system comprises a viscosity control unit, the VCU-160 and an optional Heatpac electric and/or steam heater.

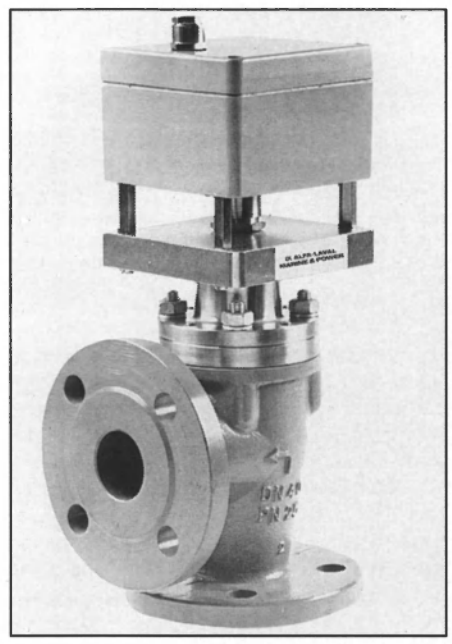
The Viscochief system is designed specifically for installation in booster systems with the VCU-160 control unit and two heaters.

The EVT-10C can also be fitted in order to upgrade existing booster systems. It continuously monitors the viscosity of the oil being fed to the engine.

All system components are designed for on-site installation in the engine room. The Viscochief system and all components have also been approved by 11 classification societies.

For detailed information on the Viscochief system and its components,

Circle 45 on Reader Service Card



The EVT-10C transducer in the Alfa-Laval Viscochief automatic viscosity control system.

New Knotless Fishing Net Increases Catch Productivity, Fuel Efficiency

NET Systems And Nichimo U.S.A. Jointly Develop Unique Netting That Uses Allied-Signal's Spectra[R] Fiber

A new high-strength, abrasion-resistant, knotless netting innovation will help fishermen meet the increasingly stringent conservation requirements of the North American fishing industry.

Nichimo U.S.A. engineers worked for 10 years to design the intricate patented machinery that will manufacture the Ultra Cross™ Spectra[R] Knotless netting at NET System's factory. The new netting is made of Spectra, reportedly the world's strongest and lightest fiber, which is made by Allied-Signal Inc.'s High Performance Fiber Group, in Petersburg, Va. Ultra Cross Spectra Knotless netting will be produced initially for making codends, the area at the back of the net system where the catch is gathered.

Spectra knotless nets require as little as one-eighth the amount of material used in conventional nets and are said by the company to have greater tenacity. Knots add extra weight and typically reduce a twine's breaking strength by about 40 percent.

Ultra Cross and Spectra combined provided one of the strongest, most stable netting available for punishing trawling applications. The Ultra Cross braided/knotless netmaking process is recognized for its strong construction and Spectra is one of the strongest and lightest fibers available.

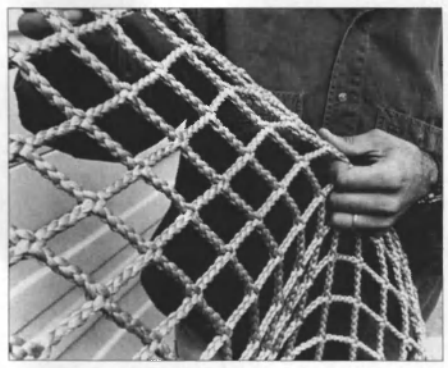
NET Systems, which supplies state-of-the-art fishing systems to more than 80 percent of trawlers in the Northwest, said it expects the majority of those customers to shift to the knotless netting product within two years.

For the last four years there has been a trend in the fishing industry towards single-layer codends because they are lighter, resulting in less drag and reduced fuel costs. They are also easier to work with and maintain, and they allow smaller fish to escape more easily, which reduces bycatch and the number of discards counted against fishing quotas.

In addition to its extraordinary strength, Ultra Cross Spectra Knotless offers significant cost and performance benefits, including the possibility of downscaling the diameter of twines used. This reduces material cost and creates netting that is less bulky. It also cuts down the nets resistance at high speeds, making it easier to handle on ships. Without knots the netting meshes have greater resistance to abrasion, slippage and distortion under heavy loads.

The new netting product has already undergone successful testing on a number of factory ships in North American waters during the recently completed pollock fishing season, including: the Ocean Phoenix, mothership and floating fish processor for a fleet of ten boats; and two factory trawlers, the Arctic Storm and American Dynasty.

Ultra Cross Spectra Knotless is the result of a marketing agreement between NET Systems, a design and manufacturing firm providing industrial, commercial and recreational netting systems and products, and Nichimo that allows for production and marketing of the netting on this continent. It will be produced in Seattle on Nichimo machinery by Superior Netting, a company established by NET Systems, Inc., of Bainbridge, Wash.,



The new Ultra Cross™ Spectra[R] Knotless netting.

and will be available exclusively from NET Systems to the U.S. and Canadian fishing industries prior to the start of the 1993 season.

Allied-Signals, Inc., Morristown, N.J., is a $12-billion advanced technology corporation with core businesses in aerospace, automotive and engineered materials.

For additional free information about the Ultra Cross Spectra Knotless netting from NET Systems,

Circle 56 on Reader Service Card

To receive more free information about the Spectra fiber from Allied-Signal's Fibers Division,

Circle 57 on Reader Service Card

Propulsion Update

Reintjes ADS Speed Control System Helps Integrate Engine, Marine Gears and Propeller

The Reintjes ADS System is an electronically-controlled trolling propulsion system which is suitable for use with all modern marine gearboxes, according to Reintjes.

In order to meet the requirements

Coastal Police boat "Burgermeister Brauer" equipped with Reintjes ADS-System.

for a specified ship speed the engine, marine gearbox and propeller must be optimally matched to each other. This is often problematic when: maneuvering in harbor, locks or other restricted spaces; when recovering the nets on a fishing vessel; when positioning special purpose vessels such as firefighting boats; or when matching speeds with other vessels.

ADS-Active Speed Control can provide the vessel operator with access to a speed range below that achievable at the minimum possible engine speed by means of infinitely-variable propeller speed control. The ADS-System can be used in both ahead and astern propulsion modes. Propulsion mode reversals are also possible during ADS operation.

During ADS operation the gearbox-mounted hydraulic actuation unit is controlled electronically via the propulsion control lever. The hydraulic actuation unit regulates the gearbox clutch oil pressure to produce a controlled "slip" in the multi-disk clutch. The desired propeller speed is thus determined as a function of the torque transmission capability and the propeller curve. As the operational pressure increases, the torque transmitted, and thus the propeller speed, also increases. In the event of an electrical power supply failure, or an incorrect control command, the ADS-System is automatically deactivated and control reverts to the normal operation mode.

Some reported advantages the ADS-System creates include: infinitely variable propeller speed regulation for dead slow propulsion; reduced engine and gearbox loads due to slow acceleration; ADS-System control possible via main propulsion control level or second control stand; and it can be employed with all modern Reintjes gearboxes.

For additional information on the ADS-System,

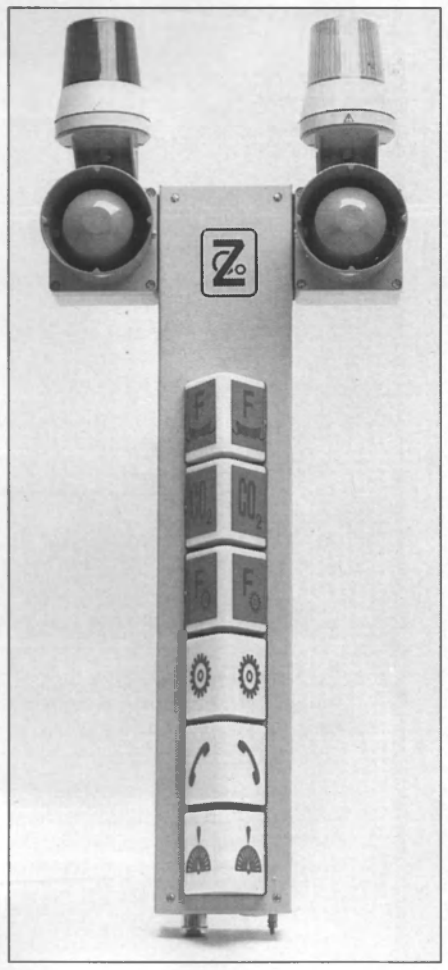
Circle 155 on Reader Service Card

Zollner Introduces New Acoustic Signals

Zollner acoustic signal appliances are in use world-wide for sea and inland navigation, and have proved reliable in all conditions. The company's acoustic line meets the regulations of Colregs 72, Annex III, and are type-approved by numerous international authorities and classification societies.

Zollner recently unveiled a new alarm-signal device for engine room alarms, telephone-alarm, gas-alarm and general alarms. The unit is for use in pneumatic as well as electric operations, and was manufactured in accordance with IMO recommendations.

Other products from Zollner include the Zet-Horn, a whistle driven by a three-phase electric motor, which produces its sound via the oscillating piston; the Makrofon, a compressed-air whistle which produces sound by means of a diaphragm; the Zetfon, an electrically



A new Zollner acoustic signal

operated whistle for 12 and 24V DC and 220V AC; and bells and gongs equipped with mechanical batons.

For complete information on the entire Zollner line,

Circle 149 on Reader Service Card

MSB Approves Purchase Of Three Ships By APL

The Maritime Subsidy Board (MSB) has approved the purchase by American President Lines, (APL) Ltd., of three ships it now operates under charters for $197 million. APL purchased the President Monroe and President Washington from lessor General Electric and the President Lincoln from Xerox Corporation. All three C-9 containerships were built with the aid of construction-differential subsidy (CDS) at Avondale Shipyards, New Orleans, La., in the early 1980s.

The board's action transfers obligations under the CDS contracts from the owner trustee to APL.

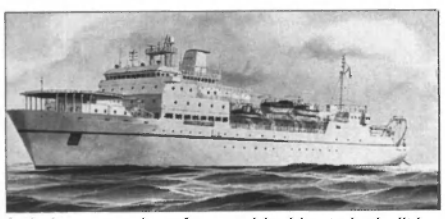
APL's decision to buy the three vessels was announced as the shipping line's parent company, American President Companies, reported third quarter earnings sharply down due to the recession. Last year's figures were boosted by earnings from cargoes carried for the U.S. military during Operation Desert Storm.

Kvaerner Masa-Yards To Build Two Cableships For Southeast Asia

Kvaerner Masa-Yards Inc. recently signed a contract to build two cableships for International Cableship Pte. Ltd. of Singapore. The contract value has been estimated at $145 million with the first ship scheduled for delivery from the Turku New Shipyard in the fall of 1994. The second ship will be delivered sometime in 1997 from the same yard.

International Cableship Pte. Ltd. is a joint venture between Singapore Telecommunications, Asean Cableships Pte. Ltd. and Cable and Wireless (Marine) Limited. The first vessel, to be operated out of Singapore, will be operated by Asean Cableship and the second will be operated out of Manila by Cable and Wireless (Marine) Limited.

The new cableships were designed especially for maintenance of fiberoptic submarine cable. Both vessels will feature a fully stern-working concept, designed to enhance operational performance and response. The vessels will also be fitted with a fully dynamic positioning system.



Artist's conception of new cableships to be built by Kvaerner Masa-Yards

Kvaerner Masa-Yards have specialized in the construction of cableships since the early 1960's. The most recent delivery was the M/S Etisalat in 1990 for the United Arab Emirates Telecommunications company.

The new vessels will be about 393.7 feet long, have a beam of 70.5 feet and a draft of 20.7 feet. Propulsion will be provided through a diesel-electric plant and there will be accommodations for up to 80 crew and cable representatives.

For full information on the services and facilities provided by Kvaerner Masa-Yards,

Circle 43 on Reader Service Card

Offshore Industries To Produce Lemvig Lift In U.S.

Dansk Marinelift ApS and Birch & Krogboe of Denmark, patent holders for the Lemvig Lift, have finalized an agreement with Offshore Industries, Inc., for the engineering and manufacture of the Lemvig Lift in the U.S. **Jeff Gilman**, of Peratrovich, Nottingham & Drage (PN&D), Inc., will coordinate engineering. Lifts will be individually designed to best meet the needs of the purchaser and the site. The Lemvig Lift, capable of handling loads from 100 to 3,000 tons.

For more information on Offshore Industries, Ltd.,

Circle 131 on Reader Service Card

For more information on PN&D,

Circle 132 on Reader Service Card

Texas Drydock Adds New Subsidiary, TDI Rig Masters

Don Covington, president and CEO of Texas Drydock, Inc., (TDI) recently announced the addition of its new Houston subsidiary, TDI Rig Masters, Inc.

Carl A. Wendenburg has been named president of the new operation. He has 20 years of marine engineering experience having served in various technical, shipyard and senior management positions, most recently with Marathon LeTourneau Marine Company.

Robert W. Fogal, Jr., vice president of marketing for Texas Drydock, Inc. and TDI Offshore, Inc. will assist in the marketing effort for TDI Rig Masters. Prior to joining the company in 1991, Mr. **Fogal's** 36-year career included service as president of BGMB (USA), Inc./Sabine Heavy Industries, Inc. and at Baker Marine as shipyard general manager, later becoming vice president of marketing.

TDI Rig Masters will work in conjunction with TDI Offshore at Sabine Pass and Orange, primarily in the rig inspection, repair and modification business.

Founded in 1986, Texas Drydock, Inc. has four waterfront facilities in the Port Arthur-Orange-Sabine area. Comprising a total of 68 acres with 4,900 feet of accessible water frontage, the facilities boast a mean average dockside water depth ranging from 12 to 28 feet.

For additional information on Texas Drydock,

Circle 54 on Reader Service Card

For additional information on TDI Rig Masters,

Circle 55 on Reader Service Card

Siemens Proclaims Productivity Through Automation Will Lower Future Shipping Costs

Productivity through automation on the factory floor has become a fundamental concept since the philosophical teachings of Dr. **Edwards Deming** in the early 1970's. The resulting improvements in efficiency and quality have also upgraded the value-added per employee.

These productivity improvements have filtered across the spectrum from manufacturing disciplines to service-oriented products. The marine industry has also begun to appreciate the contribution of microchips, PLC's, integrated systems, CAE and value-added concepts. The degree to which this advanced technology is accepted and utilized during the next decade could have a direct impact on the future prosperity of the shipping industry.

At the recent SMM '92 show in Hamburg, Germany, Maritime Reporter interviewed Siemens executives **Alfred Bonenberger**, senior director, head of subdivision, and **Peter Richardson**, Eng., general manager, to get their thoughts on the automation trends and the evolving technologies which will carry the marine industry into the 21st century.

Maritime Reporter: Is the philosophy toward increased automation on board ships the same as it is for manufacturing?

Mr. **Bonenberger**: It is very similar. Implementing advanced technology in any industry can lead to a competitive advantage and requires commitment right from the top of any organization. The dedication of management to continuous improvement is the key to successfully achieving the benefits associated with advanced systems.

Maritime Reporter: How do users measure the benefits of automation?

Mr. **Bonenberger**: The one benefit automation should achieve in any industry is higher productivity. However, productivity can be measured in different ways. It might improve the quality of a product. It may speed up the process and reduce the cost-per-unit or it may improve the value-added per employee. Different industries evaluate these benefits differently.

Maritime Reporter: How does the marine industry view the benefits of automation?

Mr. **Bonenberger**: One of the most important trends emerging within this industry is increased productivity by reducing manpower costs. Today, shipping lines are able to reduce the size of the crew considerably. With electrical/electronic systems integration, for example, a crew of eight to 10 can perform the work of 30. In addition, remote monitoring of machinery on board is another benefit of automated systems and adds to the productivity improvements demanded by today's shipping lines. For example, an integrated system means lower maintenance costs because the crew is getting more accurate equipment condition reports, allowing for condition-based maintenance. Also, there is an increase in safety of operation, which can help lower insurance costs. Integration from a single supplier is good for the yard because they have less problems making an integrated system because of the reduced number of interfaces which must be made with different systems. Vessel owners benefit because equipment engineered by one company presents less problems.

Maritime Reporter: How can this integrated system be achieved when using many different equipment and suppliers?

Mr. **Bonenberger**: There needs to be coordination between all equipment manufacturers, for example, when diesel engines must be fitted with sensors. Close cooperation among all suppliers is needed for success.

Maritime Reporter: What is involved in automating a ship to allow a three-man operation?

Mr. **Richardson**: Technology exists today to automate nearly every mechanical application onboard. With intelligent sensors, PLC's and electric drives, the crew is relieved of controlling hundreds of operations manually. But the really interesting developments today are in systems integration. All automated functions can be controlled from one Man Machine Interface. Simply put, everything from the propulsion system to power plant management and machinery monitoring can be automated and controlled from one central location. Better information is instantly updated and intelligently presented on color monitors.

Maritime Reporter: What trends do you see emerging as a result of these technological advancements?

Mr. **Richardson**: Within the marine industry in North America, the idea of a single system vendor supplying equipment, software, and the know-how to put it all together is in big demand. In the past, subsystems from different vendors was the norm. This mix and match approach produced many headaches for ship owners.

Maritime Reporter: Do you see unique opportunities for Siemens here?

Mr. **Richardson**: Owners today want all equipment from the Prime Mover to the Power Plant and down to the propeller to be fully integrated with no compatibility or interface problems. As a manufacturer of a full range of electrical equipment and over 150 years experience in the marine industry, Siemens is one of a select few companies with the know-how and engineering competence to put together total solutions from conceptual design through manufacturing to start-up, training and service.

Hudson Drydocks Appoints James Innerarity As VP Of Sales And Engineering

Hudson Drydocks, Inc., of Morgan City, La., has promoted **James A. Innerarity** to vice president of sales and engineering. Mr. **Innerarity** brings 35 years of industry experience to the position, in which he will be responsible for all aspects of the company's sales, public relations and engineering activities.

Mr. **Innerarity** began his career at Southern Shipbuilding, where he worked for more than 17 years and became a design draftsman project manager. He next spent four-and-a-half years with Tidewater Marine as the assistant manager of engineering. After working for Fritz Culver, Inc., as the manager of engineering and the sales director, Mr. **Innerarity** went into business for himself as a marine surveyor. He then joined Hudson Drydocks as the assistant operations manager and has been with the company for five years.

James A. Innerarity

Hudson Drydocks provides sandblasting, painting and general maintenance and repair services to supply boats, crew boats, tugs, barges and other vessels in the inland and offshore industries. The yard owns two 2,000-gt capacity drydocks and one drydock with an 8,000-gt capacity.

BP Offers Port To Port Computerized Distance Tables

BP Marine, a major supplier of lubricants to the merchant fleets of the world, is now offering the Port to Port Computerized Marine Distance Tables, for use with Microsoft Windows, to the shipping industry.

The system is fully outlined in a brochure from BP, and is capable of computing distances, route computing, providing a world map containing all of the primary routing points, a port name database and much more.

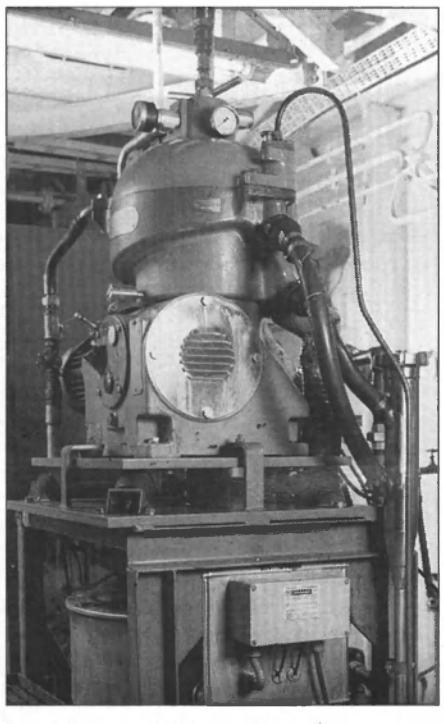
To use Port to Port, a client's computer must be an IBM or a 100 percent IBM compatible PC with an Intel 286 microprocessor or greater, having a hard drive with 4mB free space and 1.2 mB or greater floppy disk drive; 2 mB of RAM; Video Graphics Array (VGA) monitor or better resolution; a parallel printer port; and Microsoft Windows Version 3.0 or later, running in Standard or 386 Enhanced mode.

For further information on BP's Port to Port system, including pricing and availability,

Circle 153 on Reader Service Card

Sludge Treatment Plant From Westfalia Reduces Help Environment

For economical treatment of oil sludge Westfalia Separator has developed a new patent treatment plant. Using this system allows the treatment of oil sludge directly on board the ship, helping create for a cost-intensive disposal.



Westfalia's new ESC4-type oil sludge separator

Oil sludge results from fuel oil and lubricating oil treatment. Depending on the quality of the fuel and lubricating oil, the volume of the oil sludge can amount to 2.5 percent of the used fuel oil.

The oil water sludge is separated by centrifugal separator ESC4 with an Unitrol system specially designed for this purpose. A further essential feature is the special sedimentation tank. With this plane, the sludge volume is reduced to only 10 percent, the residual oil recovered to almost 100 percent and the water content of the cleaned residual oil reduced to less than one percent. The complete plant is supplied ready for connection, and due to the compact design of the unit, with sedimentation tank and pumps arranged underneath the separator, space requirements are reduced to a minimum.

For additional information on Westfalia's new separator,

Circle 150 on Reader Service Card

E3 Tanker Project Launched In London

Five European Yards Combine to Regain VLCC Tanker Business

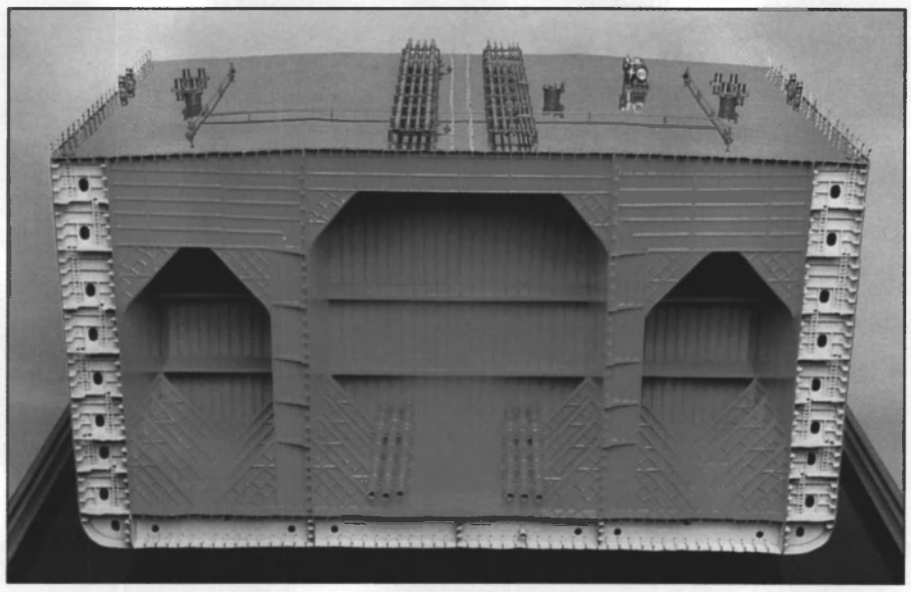
By Graeme Maclennan

The E3 (Ecological, Economical, European) tanker design, developed by a consortium of five European shipbuilders, was unveiled recently at a presentation in London. The 280,000-dwt double hull VLCC with a two million barrel capacity aims to exceed all existing and foreseen environmental regulations. First deliveries of the E3 tanker, now being offered to shipowners, are expected in early 1994. A Maritime Reporter and Engineering News London correspondent reports on the conference and the specific design for the vessels.

It is estimated that 400 VLCC-size tankers will need to be ordered before the turn of the century to replace those vessels withdrawn from the market due to breakdown, equipment defects beyond economic repair, and the inability to meet safety and anti-pollution legislation.

A cooperative effort to recover the large tanker construction business lost to the Far East since the 1970's has been mounted by five shipbuilders in four countries: Astilleros Espanoles of Spain; Bremer Vulkan and Howaldswerke Deutsche Werft of Germany; Chantiers de l'Atlantique of France and Fincantieri of Italy. The five builders believe that 25 percent of the tonnage replacement program should be won by the yards, building at a rate of ten per year. While this is a joint venture, each participant has made a contribution in the field where it has the greatest proven experience.

The prime consideration was to meet the obligations of the hastily-formulated OPA90 regulations, which bar single-hulled ships ordered after mid-1990 or delivered after the end of 1994 from entering U.S. waters. Moreover, there was a need to incorporate safety measures to protect owners against punitive liability for oil spills, as unlimited insurance is no longer available. These provisions all cost more money, but economies in capital and operational expenditure have received close attention. The E3 ships are intended to be operated by modest-sized, but not minimum, complements, as they are likely to be manned by third-world crews.



Model of the new E3 tanker

The E3 Project was started in late 1990, when the task was defined and the general responsibilities established. The four technical goals are—Naval Architecture, Structures, Machinery and Ecological aspects; and three non-technical ones are—Project Coordination, Procurement and Marketing. The six leading Classification Societies were closely involved from the outset.

Parallel, independent computational studies were commissioned from HSVA and MARIN, the research institutes in Germany and The Netherlands. The pre-optimized lines were used for model tests carried out by MARIN, and maneuvering and propulsion-improving tests were undertaken by HSVA in the Hamburg Tank. A series of comparative steering trials led to the adoption of the HDW Simpac rudder, which features duplex steering. It has a blade in two parts, each powered by a separate steering engine and normally operated as one, but able to work separately in an emergency.

Marketing will be a matter of negotiation between the client and the individual yards, some of which can offer a delivery early in 1994. Commonality of the equipment installed on board may lead to economy in purchasing.

PRINCIPAL PARTICULARS
(For Table of Dimensions)

Length on Waterline	324.5m
Length, bp	318.0m
Breadth	57.0m
Depth	31.1m
Design Draught	21.1m
Block Coefficient	0.842
Corresp. Deadweight	280,000t (m)
Maximum Draught	22.0m
Corresp. Deadweight	295,100t (m)
Cargo Capacity (100%)	341,500m3
Water Ballast (100%)	106,100m3
Service Speed @ 21.1m d	15.4kn
Endurance	24,000nm
To Receive Class Notation	100A1
	Oil Tanker (double hull)
	Pt HT, COW, SBT, PL

Structure

Examination of a number of tank configurations and bulkhead positions led to the adoption of two longitudinal and seven transverse bulkheads in the cargo spaces, providing 24 tanks, each about 32m long. These would result in a very low outflow of oil in the event of damage, would offer flexibility for parcel loadings and would avoid the need to provide wash bulkheads, if partial filling was a requirement. The steel weight would be no more than a conventional double-hull design with 50m long tanks having wash bulkheads. Simplified E3 designs, with fewer tanks and different outfits can be offered. Two large slop tanks are arranged aft of No. 8 wing cargo tanks, the heavy fuel bunkers are carried in two large tanks in the wings of the engine room, all within the double skin.

The double-bottom height of 3m, 50 percent above that required by MARPOL rules for a ship of this size, gives an extra safety margin in case of grounding and enables thorough inspection, especially of the deckhead. The wing ballast spaces, 4m wide and twice that called for by MARPOL, offer greater protection against collision and, with access ladders and partial longitudinal girders fitted as walkways between the continuous wide stringers, are readily examined without discomfort.

High tensile steel has fallen out of favor because of its liability to fail due to fatigue and its lower tol-

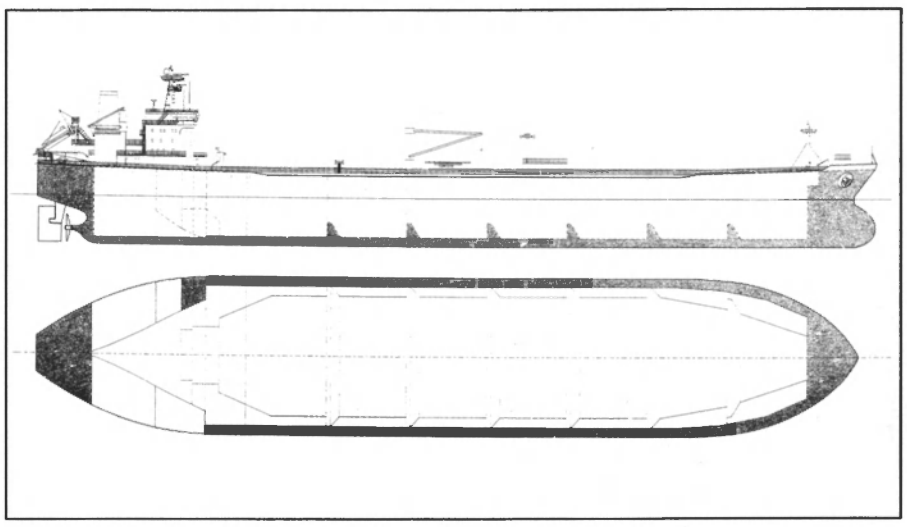
erance fighting corrosion. Its use in the structure is limited to about 25 percent by weight, and confined to the deck, uppermost strakes of the side shell and longitudinal bulkheads and the stiffeners on these panels (full depth for the four longitudinals), inner and outer bottom plating and on the transverse bulkheads amidships. The Germanischer Lloyd has analyzed collision strength and extent of damage in a wide range of situations. The energy absorption capability is seven times that of a similar-sized single-hull ship.

An alternative E3 version with the same overall dimensions, arising from a project already undertaken by the French partner Chantiers del 'Atlantique, is the LDH (loaded double bottom) design. This would have a centerline bulkhead, two tanks in the breadth, a double bottom 6m deep in which cargo can be carried when not sailing to the U.S. coast, and 6.2m wide wing tanks dedicated to segregated ballast.

While the E3 exercise, absorbing some 25,000 hours of design effort, has been finalized for a 2Mbbl (280,000/295,000 dwt) ship, the principles can readily be applied to Aframax, Suezmax and other sizes of tankers.

Cargo Handling

The simplest, most economical arrangement of a pump room immediately forward of the machinery space was chosen. The three 5,000m³/hr cargo pumps, two steam turbine- and one diesel-drive, draw through lines and suctions from flush, readily-drained tank bottoms and discharge through pipelines run within the cargo tanks so that leaks can't result in an oil spill. The ballast tanks can be inerted or vented through the ballast lines. The entire operation of cargo and ballast management is supervised from the control room. The sweep of the crude oil tank washing machines is such as to minimize shadows. A high-performance gas detection installation is to be applied to the wing and double-bottom ballast tanks, which will have lifetime high-build paint coating and cathodic anodes.



E3's environmentally-friendly VLCC

The deckhouse is arrow-shaped to reduce frontal area, thus helping to increase fuel efficiency in a head wind. It is surmounted by an octagonal wheelhouse providing the officer on watch with a panoramic view.

Navigation and communication equipment will be left to the owner's preference. Among the options offered are sonar, with a transponder installed in the bulbous bow, and a hull stress and fatigue strength monitor.

High standards of accommodations are provided for a crew of 29, plus the owner and pilot.

Propulsion

Propulsion systems were closely examined, particularly in its relation to the other major power requirements on board.

A low-speed engine of about 23,000 kW was selected to provide the necessary full-load service speed. It will drive a four-blade, 8,500 mm diameter propeller fitted with a nine-blade, 11,200 mm diameter Grim vane wheel which, it is anticipated, will improve propulsion efficiency about 10 percent. The efficacy of the Grim Wheel, together with that of other aft-end appendages was demonstrated by the series of progressive full-scale trials conducted on a series of similar ships built by Bremer Vulkan in the mid-1980's. The cumulative effect of applying, in addition, the Grothues vortex-spoiling fins and Schneekluthe wake-equalizing duct to the optimized E3 hull is expected to create a fuel saving of more than 15 percent.

The main engine will also drive an 800 kW generator, sufficient to meet all requirements at sea. It will not be associated with a waste heat boiler or exhaust gas turbine-powered generator, as the modern crosshead engine is now so efficient that energy recovery from the low temperature exhaust is not practical. The central fresh water cooler will be scoop-circulated. There is space in the engine room for installing a longer, more powerful engine, if higher speed is required.

Auxiliary electrical power will come from three 1,300 kW generators driven by diesel engines which, because they will normally be used in harbor, will burn a light grade of fuel. One of these sets will have a 2,700 kW diesel engine arranged so that it can drive one of the cargo pumps through a clutch from the forward end of its crankshaft.

Steam at 16 bar and 250-degrees Celsius for the cargo pump turbines and ship's services will be supplied by a 50t/hr boiler, burning light grade fuel in port, and which is the source of inert gas needed when discharging cargo.

The machinery control, a monitoring and alarm network encompassing all of the propulsion and auxiliary plants, and cargo management is centered in a space on deck No. 1, with appropriate functions relayed to the bridge and accommodations.

The aim is zero pollution, and among the provisions, in addition to those concerned with minimizing collision, with ruptured cargo tanks, handling spills and machinery emissions are the replacement of CFC gases in the refrigerating plant and Halon for machinery space fire extinguishing, by less ozone-destructive gases and the provision of advanced garbage and sewage processing plants.

Ship Obsolescence And Scrapping: Problems And Perspectives In The 1990's

No Current Ship Breaking Site Has Dealt With A ULCC

For shipowners, the 1990's began on a wave of optimism. Demand was buoyant—leading to another round of the traditional newbuilding cycle—but, crucially, the market could foresee a genuine replacement demand for aging tonnage as well as potential for growth. In the past, ship scrapping was never thought of as a problem. However, until now the scrap sector has not been faced with such a high volume of redundant large ships—whether million barrel, VL/ULCC tankers, combination carriers or Capesize bulk carriers. Moreover, in previous peak demolition phases the dry and liquid bulk market "nadirs" have not coincided.

Nineteen-ninety-two has seen the shipping industry's problems coalesce with remarkable haste. Underpinning many of these difficulties are the supply/demand fundamentals and economics of the global ferrous scrap market. **The key factor in the whole ship scrap conundrum is that while ship scrapping is now vitally important to the well-being of the shipping industry, ship scrap is virtually irrelevant in the pricing mechanisms of the global ferrous scrap market.** The latter dictates price levels and puts a ceiling on the price shipbreakers can afford to pay.

Ferrous scrap has two principal uses—for re-melting (steel industry use) and re-rolling (construction industry use). The changing nature of steel production and steel consumer demand has forced scrap-based steelmakers (essentially electric arc furnace mini-mills) to look increasingly to the quality of their ferrous scrap intake. Historically, ship plate was thought of as an attractive source of such material. However, such buyers are now faced with the legacy of the age of minimum specification ships—which has pushed ship derived scrap into the last resort category of source material. The re-roll sector also faces difficulties in terms of source material quality but the problem is exacerbated by the availability of highly competitive reinforcing bars made from new steel. As a result, ship scrap can only hope to compete with low value products.

It will have come as no surprise therefore tht during the late 1980's, the high-technology scrapping centers in Taiwan, Japan and South Korea disappeared from the market. Equally, there is little commercial prospect of them returning. As a result, shipbreaking is now beach-oriented, labor intensive, focused on countries with foreign exchange difficulties and, in many respects, somewhat primitive.

Fig. 1

Potential Capability of Breakers Versus Estimated Scrap Demand: 1992-95*

Size Range ('000 dwt)	1992	1993	1994	1995
10-50	48%	57%	65%	68%
50-175	269%	335%	410%	388%
175+	370%	265%	1,015%	1,170%

*Excludes Taiwan, South Korea and Japan.
Source: Drewry Shipping Consultants Ltd.

Herein lies the first major concern of the shipping industry, namely that shipbreaking capacity for large ships falls well below the level required to dispose of the world's overage, sub-standard and economically obsolete vessels. Furthermore, no current breaking site has dealt with a ULCC.

If one compares prospective demand with the historical peak performance of current shipbreakers (i.e. excluding Taiwan, South Korea and Japan) the outcome points to a major cause for concern (see Fig. 1).

Market sources feel that the problem can be overcome, but lack of foreign exchange is a recurring problem in many centers while, in India for example, shortages of cutting gas are curbing cutting capability as well as increasing costs.

The other vital concern for shipowners lies in the financial area. If global ferrous scrap market economies put a ceiling on scrap prices, the differential between owners' ideas of their tonnage's residual value and the prices that shipbreakers can offer is significant and likely to widen.

The market export price is that quoted for U.S. No. 1 Heavy Melting Scrap. Since 1980 prices have varied between US$50 and US$110 per ton. In 1991 prices fell from US$103 to US$85 per ton. Allowing for average freight rates, the average landed costs of U.S. scrap in 1991 were US$120-130 per ton in most Asian countries. For South Europe, the figure reduces to around US$110 per ton. Peak levels have been around US$150 and US$125 per ton respectively.

By 2000, it is projected that landed costs of U.S. scrap could be around US$170-180 per ton in Asia and US$150-155 per ton in Turkey. If historical landed cost/ship scrap price differentials are maintained, the market in 2000 would yield ship scrap price highs of US$290-300/ldt in Asia and US$110-115/ldt in South Europe.

On the financial side, the difficulty for the shipping industry relates to the perceived difference between likely resale "values" and scrap market bids. In the longer term, the market will find ways to adjust to this but in the present market many owners will cling to unrealistic values. This "write off" need over 1992-95 could be as high as US$3.5-4.7 billion for the shipping industry as a whole.

This implied perception has led to various schemes being proposed that will encourage scrapping by providing some form of subsidy. The ultimate aim of these schemes—whether expressed overtly or covertly—is an improvement in freight rates. Consequently, there is considerable concern over the impact on competitiveness (e.g. will the schemes breach U.S. anti-trust or EEC competition rules?).

The more various "scrapping incentive" schemes are promoted, the more scepticism they attract. Regrettably, these initiatives tend to have two inherent weaknessess—which most critics see as reasons why they will ultimately fail.

These are (1) they require owners of "good" tonnage to enable owners of redundant units (which might well be of "poor" quality) to receive a return in excess of what the market (i.e. the shipbreaker) feels they are worth and (2) this further encourages operators of "poor" tonnage to continue to neglect them.

The added worry is that the "sub-standard" operations will continue leading to owners of better tonnage being forced to sell through trading difficulties. If this tonnage is then acquired and neglected by minimum-standard operators the whole disastrous downward spiral will be perpetuated.

For further information contact:
Drewry Shipping Consultants Ltd.
11, Heron Quay, London E14 4JF.

SeaArk Delivers First Of Three New Patrol Boats To Jamaica

New patrol boat built by SeaArk Marine.

SeaArk Marine of Monticello, Ark., recently delivered the first of three offshore, high-speed patrol boats to the Jamaican government.

The 40-foot Dauntless Class vessel was designed and equipped for patrol duties off the coast of Jamaica and features a full array of electronics, complete living accommodations and a long-range fuel tank.

Equipped with Caterpillar 3208TA diesels, the Dauntless 40 was reported to have a trial speed of 28 knots and a range of well over 400 nautical miles at 22 knots.

The Dauntless hull is the first in a series of deep-vee hulls to be produced by Sea Ark Marine, designed by C. Raymond Hunt Associates, Naval Architects, the firm that developed the deep-vee hull form over 30 years ago.

SeaArk Marine has 41-foot and 42-foot versions of the proven hull shape under construction, both equipped with GM 8V92 series diesels which produce speeds in excess of 30 knots.

The new patrol boat is available in models from 28 to 44 feet in length and can be outfitted with fire fighting systems, making them excellent emergency response/fire boats. The stability and load capacity of the new Dauntless vessels also make them ideal workboats.

SeaArk Marine has been producing aluminum work and patrol boats for over 30 years.

The Dauntless Class is an extension of its capability to design and produce boats that are built for specific applications.

For more information on the capabilities and services provided by SeaArk Marine,

Circle 1 on Reader Service Card

Two Mini-Cruise Ships Being Built At Alexandria Shipyard In Egypt


Artist's conception of the Volvo-powered 200-foot cruise vessels.

Horizons, of Cairo, Egypt, recently commissioned Fryco, Inc., of Houston, Texas, to design two 200-foot mini-cruise ships with a beam of 47.2 feet and a depth of 14.8 feet. Once the vessels are delivered, they will be operated by the Hilton Hotel chain.

Passenger capacity will be 70 with a crew of 56. Crew accommodations will be in the hull deck with double and triple cabins on the next three decks. Cabins are all outside premium. VIP and master suites will also be available.

Both vessels will be powered with four 360-hp Volvo six cylinder diesel engines providing a continuous service speed of 12 knots. Three identical six-cylinder Volvo diesels will operate the main generator sets providing 500,000 watts of energy.

Both ships are presently under construction at the Alexandria Shipyard in Alexandria, Egypt, and will be named "Genesis I" and "Genesis II." At the present time the first hull is being assembled and blocks for the second hull are being fabricated. Various parts are being shipped from around the world such as bathroom enclosures from France, wall paneling from Sweden, pumping equipment from Germany, electronics systems from the U.S., propellers from Mexico and Satcom from Japan.

For complete information on the services provided by Alexandria Shipyard,

Circle 49 on Reader Service Card

For more information on the services provided by Fryco,

Circle 103 on Reader Service Card

Genesis I and Genesis II Equipment List

MainEngines	Volvo
Generator engines	Volvo
Propellers	Rice
Generators	Leroy Somer
Reduction gears	Twin Disc
Engine controls	Kobelt
Steering Controls	Kobelt
Coatings	International
VHF/SSB radios	Raytheon
Radar	Raytheon
GPS	Raytheon
Sonar	Wesmar
Satcom	Raytheon
Weather fax	Raytheon
Autopilot	Robertson
Pumps	Gould
Air horn	Kahlenberg
Shaft Bearings	Johnson
Sanitation System	Envirovac
EVAC	Envirovac
Fuel/Water separators	Racor
Shaft Couplings	Lo-Rez
Engine mounts	Lo-Rez
Electrical	L.F. Gaubert

On our 10th birthday, we'll skip the wish and make a promise.

This year we celebrate our first decade of bringing Inmarsat-A satellite communication services to you in the Pacific Ocean region.

And as we cut the cake, we'd like to thank those most deserving.

You.

By consistently using our services (including Inmarsat-C) to communicate with the world, you've helped us bring to you, what is now, clearly, one of the finest maritime communication services available.

Consider our advantages. Our competitive rates are amongst the lowest in Asia. Our coverage is worldwide. And we charge no landline fees for calls to the UK or Nordic countries.

Furthermore, we're *more than tripling* our telephone handling capacity by end '92. So you can easily avoid traffic congestion through the clear skies of Singapore.

It's only by giving you the best service available that we can celebrate this successful decade.

So let us offer you this promise: to continue giving you the most reliable, cost-effective and prompt service throughout the *next* decade.

Celebrate with us — via the Singapore Sentosa Land Earth Station.

Because few services can hold a candle to ours.

Please send me more information on Inmarsat-A Satellite Communication Services.

Name: _____

Company: _____

Address: _____

Tel: _____ Fax: _____

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International Mobile Division, Singapore Telecom
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Singapore 0106. Tel: (65) 322-7827/7818 or
Fax: (65) 227-9947 Telex: (87) 20213

Singapore Telecom
Service first. Always.

Circle 274 on Reader Service Card

Mobil To Operate Double-Hulled Barge That Exceeds Environmental Regulations

The Iroquois after her recent conversion at Gulf Coast Fabricators.

Mobil Oil Corporation has announced the delivery, from Turecamo Maritime, of a manned, double-hulled and highly automated oil barge that exceeds the requirements for environmental safety mandated by the Oil Pollution Act of 1990. Mobil's Marine Transportation division will bareboat charter the vessel from Turecamo. The barge, named Iroquois, was delivered from Gulf Coast Fabricator's shipyard at Pearlington, Miss.

The Iroquois (ex. Eileen) was constructed in 1987 at the Gretna Machine and Iron Works for A & S Transportation of South Kearny, N.J. The employment for which she was designed ended when the State of New Jersey implemented laws restricting deep ocean disposal of treated waste material.

Originally constructed with a double-bottom, the barge was an appealing candidate for conversion to a double-hulled, state-of-the-art oil barge due to her youth and the quality of her construction. **Greg McGinty**, president of Turecamo Maritime, conceived the idea of alternative employment for the barge. The goal was to incorporate the most technologically advanced systems available to provide a cost effective means of moving petroleum products with sophisticated environmental safeguards. Following detailed technical and commercial discussions, the Eileen was bareboat chartered to Mobil, and after conversion renamed the Iroquois.

The two-cabin, four-bunk manned barge is 390 feet long, has a beam of 78 feet and an operating draft of 22 feet. The vessel is equipped with a Skarpenord Cargo Master computerized gauging system and a Framo fixed tank washing system. Epoxy coatings for the cargo tanks were provided by Sigma.

The barge will be based at Port Mobil on Staten Island, where she forms a critical part of a New York-based marine pipeline that provides nearly a quarter of New England's gasoline, jet and heating fuels. In addition, Iroquois is adapted to provide quality transportation for an increasing diversity of additives and specialized gasoline blends that will enable the petroleum industry to meet the demanding requirements of recent amendments to the Clean Air Act.

For additional information on the capabilities and facilities of Gulf Coast Fabricators,

Circle 47 on Reader Service Card

For additional information about Mobil Oil Corporation,

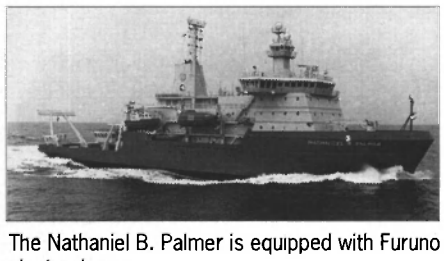
Circle 48 on Reader Service Card

Icebreaker Equipped With Furuno Marine Electronics Equipment

The navigation and collision avoidance equipment for the Nathaniel B. Palmer, the first commercial icebreaking research ship built for the National Science Foundation, has been supplied by Furuno USA.

The new vessel is reportedly able to continuously break ice three feet thick at a speed of three knots and was built specifically to support environmental research in Antarctica.

The vessel has been equipped with an extensive Furuno electronics system, including two ARPA radar units. The National Science Foundation reportedly selected the equipment due to its ability to withstand extremely cold and harsh environments.



The Nathaniel B. Palmer is equipped with Furuno electronics.

Furuno is supplying such equipment as: a Furuno model FR-2822x/8 radar and a FAR-2830S/12 radar, both of which will be interfaced with a third Furuno monitor display, the FMD-8000; a chart recorder; a remote digital depth indicator; two model CH-32 color searchlight sonars; a weather facsimile; a full-function Navtex receiver; a transit satnav receiver; and two GPS receiver/navigation systems.

For more information on Furuno's complete line of marine electronics,

Circle 11 on Reader Service Card

Irwin Elected President Of Atwood Oceanics

W.H. Helmerich, III, chairman of the board of Atwood Oceanics, Inc., a Houston, Texas-based offshore contract drilling company, has announced the election of **John R. Irwin** to the position of president, chief operating officer and member of the board. The election was held at a recent meeting of the board of directors.

Mr. **Irwin** most recently served as executive vice president of the company and succeeded **Robert E. Turrentine**, who has been president since 1980 and retired at the end of October.

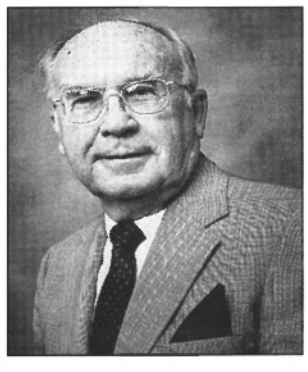
Atwood Oceanics, Inc. is engaged in the business of international offshore drilling of exploratory and developmental oil and gas wells, and related support, management and consulting services.

The company and its subsidiaries, with headquarters in Houston, Texas, owns, operates or manages a fleet of mobile offshore drilling units, in service worldwide. The company began drilling operations in 1970.

Colangelo Elected CEO, Fowler Named Chairman At SPD Technologies

Larry A. Colangelo, president of SPD Technologies, has been given the additional responsibilities of chief executive officer by the board of directors of the company.

The board of directors also elected Vice Admiral **Earl B. Fowler** USN (Ret.) chairman of the board. Mr. **Fowler** has been a director of the electronics firm since it was established as an independent company as a result of a management buyout in 1987.



Earl B. Fowler

SPD Technologies is one of the largest producers of military circuit breakers and switchgear in the United States, as well as a leader in the development and manufacture of high-reliability shipboard systems. The firm also performs ship repair and overhaul services. Headquartered in Philadelphia, the company has operations across the nation and serves military markets worldwide.

Voith-Schneider Units Chosen For New 7,600 HP Tractor Tugs For Arco

Arco Marine, a subsidiary of Atlantic Richfield Corp., has announced that it plans to begin using tractor tugs on its Alaskan routes in order to prevent oil spills.

Arco and Foss Maritime, a tugboat subsidiary of Totem Resources Corp., have announced that Foss will custom-build a new tractor tug for Arco. Five of Foss' tractor tugs are already in use on Puget Sound.

Tractor tugs have submerged propulsion systems with two sets of five vertical blades located just forward of the center of the tug, which allow the tug to have 360-degree control in the event of an emergency when a tanker needs to be stopped and steered.

These types of tugs have been used for many years in Southern California ports. Reports indicate that maneuverability is favorable but that they require more power than a conventional tug.

Arco has indicated that the 7,600-hp tractor tugs will have Voith-Schneider tractor propulsion units and will only be used when its oil tankers are transiting Puget Sound.

Foss reportedly owns six tractor tugs, five of which operate in Puget Sound and another which is in use in Southern California.

An 18-month joint study was conducted by Arco and Foss before the decision was made to build the tug. Included in the study were full-scale tanker-tug trial in Puget Sound and model testing in Holland.

Trinity-Beaumont Launches MSRC's New Jersey Responder In Double Ceremony With Caribbean Responder

Although she was already "unofficially" launched in August, as a precaution against the then-approaching Hurricane Andrew, the New Jersey Responder, the first of three oil spill response vessels (OSRVs) being built by Trinity Marine Group's (TMG's) Beaumont, Texas, shipyard for the Marine Spill Response Corporation (MSRC), was officially christened on October 21 in a dual launching ceremony with the Caribbean Responder, the second OSRV under construction at Trinity-Beaumont.

The launching of the New Jersey Responder and her sistership the Caribbean Responder brings MSRC much closer to becoming fully operational in the waters off of New Jersey and the rest of the U.S. coast. Construction and fitting out will continue on both OSRVs at the Beaumont yard until their scheduled delivery to MSRC in early 1993. The New Jersey Responder will then be assigned to its homeport in the New York/New Jersey Harbor area and the Caribbean Responder will report to St. Croix, Virgin Islands.

The last of the three OSRV's being built by Trinity-Beaumont for MSRC, the Oregon Responder, is scheduled to be launched some time in early January 1993 and will be homeported in Astoria, Oregon. The Oregon Responder will be the last of the 16 spill response vessels to be delivered to the MSRC fleet.

TMG is building a total of 12 vessels for MSRC, with the other nine OSRVs being built by Trinity-Moss Point, Miss., where the Maine Responder was recently launched,

MSRC's New Jersey Responder, before launching at Trinity-Beaumont.

and Lockport, Miss.-based Trinity-Halter Marine. Bender Shipbuilding & Repair Company, Inc., has a contract to build four OSRVs for MSRC. The cost of building all 16 vessels is expected to reach $188 million.

The New Jersey Responder and its sisterships have a length of 208.5 feet, a 44-foot beam and a maximum draft of 14.25 feet. The OSRVs are designed to hold more than 4,000 barrels of recovered oil at the source of the spill, using its own onboard recovery systems, and be able to tow a 40,000-barrel capacity barge. Each Responder Class vessel can accommodate 38, has a helicopter landing pad and is equipped to serve as a command and control center during spill response operations.

The Marine Spill Response Corporation is a not-for-profit corporation established to meet the national need for an effective response capability to cope with catastrophic oil spills in the coastal waters of the U.S. The company is progressing in the procurement of equipment and the establishment of a well-trained marine environment protection force.

To receive additional free information about the services available from the Trinity Marine Group,

Circle 133 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.**

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Bourg Drydock, P.O. Box 1852, Houma, LA 70361
Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219
Ervin Industries, Inc., 3893 Research Park Drive, P.O. Box 1168, Ann Arbor, MI 48106-1668

AIRCONDITIONING AND REFRIGERATION—Repair & Installation
Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001
Carrier Transicold, P.O. Box 4805, Syracuse, NY 132211
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031
Stal Refrigeration AB, Butangsgatan 16, S-601 87 Norrkoping, SWEDEN

BALLAST
Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031
Mineral Research & Recovery Inc., P.O. Box 986, Sonoita, AZ 85637

BARGE BUILDING
Conrad Industries, P.O. Box 790, Morgan City LA 70381
Maxon, South Boundary Street, P.O. Box 69, Tell City, IN 47586
Caruthersville Shipyard, Inc., D/B/A St. Louis Ship, P.O. Box 1134, Caruthersville, MO 63830
Zidell Marine Corp., 3121 S W Moody Ave., Portland, OR 97201

BARGE COVERS
Syntechnics Inc., FRP div. 700 Terrace Lane, Paducah, KY 42003
Xenium Fiberglass Corp., P.O. Box 2696, Paducah, KY 42002

BARGE—Leasing
McDonough Marine Service, 2300 Surekote Road, New Orieans, LA 70117
Zidell Marine Corp., 3121 SW Moody Ave., Portland OR 97201

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

BEARING—Rubber, Metallic, Non-Metallic
B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Orkot Engineering, 2535 Prairie Road-Unit D, Eugene, OR 97402
Tenmat Inc., 511 Interchange Blvd, Newark, DE 19711
Thordon Bearings Inc.., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6

BOILER—Manufacturers
Aalborg Ciserv (Miami) Inc., 2449 Northeast 13th Avenue, Ft. Lauderdale, FL 33305

BROKERS
151 Maritime Services, 34062 El Encanto/B, Dana Pt. CA 92629
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
Crowley Maritime, 155 Grand Ave., Oakland, CA 94612
Zidell Marine Corp., 3121 SW Moody Ave., Portland OR 97201

CABLE ASSEMBLIES
Revere Aerospace, 845 N. Colony Rd. Wallingford, CT 06492

CARGO HANDLING EQUIPMENT
Smith Berger Marine Inc., 516 South Chicago St., Seattle, WA 98108

CHAIN
Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
G.J. Wortelboer Jr. B.V., Postbus 5003, 3008 AA Rotterdam, NETHERLANDS

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ZSI, 12749 Richfield Ct., Livonia, MI 48150

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Sales Agents: American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906,

COMPOUNDS
ITW Philadelphia Resins, 130 Commerce Dr, Montgomeryville, PA 18936

COMPUTERIZED INFORMATION SYSTEMS
Coastdesign, Inc., Unit 201, 12837 76th Avenue, Surrey, BC CANADA V3W 2V3
TIMSCO, P. O. Box 91360, Mobile AL 36691

CONDENSERS/SEPARATORS
Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160
Wright Austin Co., 3250 Franklin St., Detroit MI 48207

CONTROL SYSTEM—Monitoring
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906
Autronica Marine A/S, Drammensveien 126, N-0277 Olso 2, NORWAY
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062
Lyngso-Valmet Marine A/S, P. O. Box 130, N-3430 Spikkestad, NORWAY
MMC International, 60 Inip Dr, Inwood NY 11696
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135
Norcontrol A/S, P.O. Box 1024, N-3191 Horten, NORWAY
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Row Technology, P.O. Box 265, Littlestown, PA 17340
Siemens Energy & Automation, Inc., Systems Div., Marine Systems No. America (A23N), 100 Technology Dr., Alpharetta, GA 30202
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406

COUPLINGS
Lo-Rez Vibration Control Ltd., 156 West 8th Avenue, Vancouver, BC CANADA, V5Y 1N2

CRANE—HOIST—DERRICK—WHIRLEYS
Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178
The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101
Cross Equipment Inc., P.O. Box 446, Houma, LA 70361
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Caristadt, NJ 07072
Hagglunds Inc, Marine Div. Headq., 50 Chestnut Ridge Rd, Montvale, NJ 07645
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
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883
Smatco Industries, P.O. Box 4036, Houma, LA 70361
Westmont Inds, 10805 Painter Ave, Santa Fe Springs, CA 90670
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

DECK MACHINERY—Cargo Handling Equipment
Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013
Cross Equipment Inc., P.O. Box 446, Houma, LA 70361
MacGregor-Navire Group, 34 Bedford Rd., Clapham North, London SW4 7HH
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
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Skookum/Rope Master, P.O. Box 280, Hubbard, OR 97032
Smatco Industries, P.OBox 4036, Houma, LA 70361
Willem Pot b.v., P. O. Box 29102, 3001 GC Rotterdam, The Netherlands

DECK MACHINERY
Boatlife, 205 Sweet Hollow Road, Old Bethpage, NY 11804
Cross Equipment, Inc., P.O. Box 446, Houma, LA 70361
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Nordic machine Mfg., 4700 Balard Ave, NW, Seattle, WA 98107
Smatco Industries, P.O. Box 4036, Houma, LA 70361
Smith Berger Marine Inc., 516 South Chicago St., Seattle, WA 98108

DIESEL ACCESSORIES
Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Gearhardt's Inc., P.O. Box 10161, Jefferson, LA 70181
General Thermodynamics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02360
Giro-Engineering Ltd., 370 Brook Ln., Sarisbury Hampshire, ENGLAND S036ZA
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101
Pow-R-Quik, 5518 Mitchelldale, Houston, TX 77092

DIESEL ENGINE—Spare Parts & Repair
Aalborg Ciserv (Miami) Inc., 2449 Northeast 13th Avenue., Ft. Lauderdale, FL 33305
Caltax Marine Diesel B.V., Stationsweg 6a, 4416 ZH Kruiningen , THE NETHERLANDS
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610
Coltec Industries, Parts & Service Div., 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Co., Mail Code 60011, Box 3005, Columbus, IN 47202-3005
John Deere, John Deere Rd., Moline, IL 61265
Global Maritime Services, 247 SW 33 Court, Ft. . Lauderdale, FL 33315
Golten Marine Company Inc., 160 Van Brunt St., Brooklyn, NY 11231
Hall-toledo, Inc., 525 West Sophia St., Maumee, OH 43437
Hatch & Kirk, 5111 Leary Avenue NW, Seattle, WA 98107
Kim Hotstart Mfg Co., E 5724 Broadway Ave, P.O. Box 42, Spokane WA 99210
MAN B&W Diesel AG, Stadtbachstrasse 1, D-8900 Augsburg 1, GERMANY
MAN B&W Diesel, 17 State St., New York, NY 10004
MTU of North America, 10450 Corporate Dr., Houston, TX 77478
Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, GERMANY
National Maintenance & Repair, Foot of Hawthorne, Hartford, IL 62048
New Sulzer Bros., Inc, 200 Park Ave, New York, NY 10166
Pacific Rim Diesel, 3842 W. Marginal Way SW, Seattle, WA 98106
Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND;
Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15950 Park Row, Houston, TX 77084
Wartsila Diesel, 709 Morgnec Rd., Chestertown, MD 21620

DIVING & SALVAGE
Bisso Marine Co. P.O. Box 4113, New Orieans, LA 70178
H.J. Merrihue, P.O. Box 23123, New Orieans 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

DRILLING & BLASTING
Marine Drilling & Blasting, PO Box 10455, Jacksonville, FL 32247-0455

DRY DOCKS-Design
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Curacao Drydock (USA), PO Box 3012, Curacao, Netherlands Antilles
Ferrostaal AG, D-4300 Essn, Hohenzollernstrasse 24, GERMANY
Marine Design Services, P.O. Box 928, Bonita CA 92002

ELECTRICAL EQUIPMENT
Bender Inc, 400 Gordon Dr, Bldg 501, Exton, PA 19341
L. F. Gaubert & Co., Inc., P. O. Box 50500, New Orieans LA 70150
MMC International, 60 Inip Dr, Inwood NY 11696
Row Technology, P.O. Box 265, Littlestown, PA 17340
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116
Siemens Energy & Automation, Inc., Systems Div., Marine Systems No. America (A23N), 100 Technology Drive, Alpharetta, GA 30202
Universal Marine Electric Co., Inc., P.O. Box 266-923, Houston, TX 77027-6923

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 Rd. S., Suite 10, Memphis, TN 83115
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY

ENGINE TEST EQUIPMENT
Arnot Controls, PO Box 1312, Richmond, CA 94802
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Rd., Plymouth, MA 02360
Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy, TX 77449

EPIRBS
ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale FL 33310-5247
Alden Electronics, 40 Washington St., Westborough, MA 01581
Litton Special Devices, 750 W. Sprout Road, Springfield, PA 19064

EQUIPMENT-Marine
Byrne, Rice & Turner, Inc., 1172 Camp St., New Orleans, LA 70130
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

EVAPORATORS
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974
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 Co., 8 Nebraska St., P.O. Box 15048, Worcester, MA 01615-
Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402

FASTENERS
Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835
Revcar Fasteners, P.O. Box 345, Roanoke, VA 24003
Robbins Manufacturing, 1200 Airport Rd., Fall River, MA 02722

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, Conveyors & Caster Corp., 3501 Detroit Ave., Cleveland, OH 44113
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook, VA 22624
Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160
Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409
Viking Fender Co., 50 Church Street, Sea Bright, NJ 07760

FIBERGLASS GRATING
International Grating, Inc, 7625 Parkhurst, Houston, TX 77028

FIBEROPTIC SYSTEMS
AT & T, Cables System/Fiber Optic Div., 111 Madison Ave., Morristown, NJ 07962

FIRE DETECTION SYSTEMS
Autronica Marine A/S, Drammensveien 126, N-0277 Olso 2, NORWAY
Unitor Ships Service, Inc., 2375 W. Esther St., Long Beach, CA 90813

FRICTION COMPONENTS/PARTS
Champion Friction Co. 845 McKinley St., Eugene, OR 97440

FUEL ADDITIVES, CONDITIONING
Hammonds Fuel Additives, PO Box 38114-407, Houston, TX 77238-8114

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
Lang Manufacturing, P.O. Box 905, Redmond, WA 98073

GANGWAYS, LADDERS
Coast Marine & Industrial Supply Inc., 398 Jefferson St., San Francisco, CA 94133
Sea Systems Inc., 65 Avco Road, Ward Hill, MA 01835
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

GENERATORS
Tech Systems, 401 Watertown Rd., Thomaston, CT 06787

GROUND FAULT PROTECTION & LOCATION EQUIPMENT
Bender, inc., 400 Gordon Drive, Bldg. 501, Exton PA 19341

HEAT EXCHANGERS
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906
A/S Vesta, P.O. Box 548, DK-9100, Aalborg, DENMARK US Agent: Aalborg Ciserv Houston,, Inc., P.O. Box 906, Angleton, TX 77515
Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
Tranter Inc, Old Burk Road, Wichita Falls, TX 76307

HORNS/WHISTLES
Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241

HYDRAULICS
Aeroquip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631
American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Caristadt, NJ 07072

INCINERATORS
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906
A/S Vesta, P.O. Box 548, DK-9100 Aalborg, DENMARK. U.S. Agent: Aalborg Ciserv Houston, Inc., P.O. Box 906, Angleton TX 77515

INSULATION
Soundcoat Company, 1 Burt Drive, Deer Park, NY 11729

INTERIORS
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

JET PROPULSION SYSTEMS
North American Marine Jet, P.O. Box 1232, Benton, AR 72015

JOINER—Watertight Door—Paneling—Ceiling System—Decking
GEC-Marconi Electronic Systems Corp., 550 S. Fulton Ave., Mt. 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
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Rd., Se 140, Jacksonville, FL 32256
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031

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

LEAK DETECTION
U.E. Systems, 12 West Main St., Elmsford, NY 10523

LIFEBOATS/RAFTS
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247
Archway Marine Lighting, 4501 Swan Ave., St. Louis, MO 63110

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
American Piping Products, Inc., 22 S. 9th St., New Hyde Park, NY 11040
Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474

LIQUID CARGO HEATERS
First Thermal Systems, Inc., P.O. Box 4756, Chattanooga, TN 37405

LIQUID OVERFILL PROTECTION SYSTEMS
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026

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, 619 Industrial Rd., Carlsladt, NJ 07072
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315
Golten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

MACHINERY MONITOR AND CONTROL SYSTEMS
Electronic Marine Ssytems, 800 Ferndale Pl., Eahway, NJ 07065

MACHINING—On Site Repair
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315

MARINE ACCOMMODATIONS
Directions in Design Inc, 633 Emerson, Suite 100, St Louis, MO 63141
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Avenue, Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Road, Suite 140, Jacksonville, FL 32256
Maritime Services, 3457 Guignard Dr., Hood River, OR 97031

MARINE FURNITURE
Directions In Design, 633 Emerson, Ste. 100, St. Louis MO 63141
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave, Boca Raton, FL 33431
Marine Accommodations Inc., 8535-3 Baymeadows Road, Suite 140, Jacksonville, FL 32256
Maritime Srevices, 3457 Guignard Dr., Hood River, OR 97031
Wilson & Hayes, 1601 Eastlake Avenue, East, Seattle, WA 98102

MARINE SHIP MANAGEMENT
Arkhon Corp., 1810 Chapel Ave. West, Cheny Hill, NJ 08002

METAL PRODUCTS
Jamestown Metal Marine Sales, Inc., 4710 N.W. Second Ave., Boca Raton, FL 33431
Harrington Metal Fabrication, P.O. Box 410, 6720 M 89, Fennville, MI 49408

MOTORS
Tech Systems, 401 Watertown Rd., Thomaston, CT 06787

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
Arctec Offshore Corp., 578 Enterprise St., Escondido, CA 92025
CDI Marine Co., 9487 Regency Square Blvd., Ste. 500, Jacksonville, FL 32225
CT Marine, 18 Church St., Georgetown, CT 06829
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Ln., 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 Hwy, Ste. 3000, Arlington, VA 22202
Diversified Technologes, 812 Live Oak Dr., Chesapeake VA 23320
Encon Mgmt. & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
GHM Inc. (Ind. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601
Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010
The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104
Morris Guralnick Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110
Hydrocomp, Inc., 45 James Farm-Lee, P.O. Box 865, Durham, NH 03824
JJH Inc., No. 4 Executive Campus, Culbert Blvd. & Route 70, P.O. Box 5031, Cherry Hill, NJ 08034
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
James S. Krogen, 1515 NW 7th St., Ste. 124, Miami FL 33125
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
David P. Levy Enterprises, 527 Legendre Dr., Slidell, LA 70460
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John V. McCollum, Inc., 1199 Long Point Road, Mt. Pleasant, SC 29464
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454
John J. McMullen Associates, Inc., 1 World Trade Ctr, Ste 3000, N Y, NY 10048
MacPherson Maritime Services, 141 Jefferson Ave., Westfield NJ 07090
Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07204
Marine Management Systems Inc., 102 Hamilton Ave., Stamford CT 06902
Marine Power Associates, 1010 Turquois St., Ste 217, San Diego, CA 92109
Maritech, Seacliff, Bay Road, Newmarket, NH 03857
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257
R J. Mellusi & Co., 71 Hudson St, New York, NY 10013
Nautical Designs, Inc. 2101 S. Andrews Ave, Suite 202, Ft Lauderdale FL 33316
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ogden Government Services, 3211 Jermantown Rd., Fairfax, VA 22030
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777
Omega Marine Engineering Systems, Inc., 11757 Katy Freeway, Ste 1100, Houston TX 77079
QED Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulsom St., Ste. 301, San Francisco, CA 94107
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112
Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 975, Barnegat Light, NJ 08006; 2 Skyline Pl., 5203 Leesburg Pike, Suite 700, Falls Church, VA 22041; 1305 Franklin St., Suite 210, Oakland, CA 94612.
George G. Sharp, Inc., 100 Church St., New York, NY 10007
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
TIMSCO, P. O. Box 91360, Mobile AL 36691

NAVIGATION & COMMUNICATIONS EQUIPMENT
Anschutz & Company, One Madison St., East Rutherford, NJ 07073
AT&T, High Seas Dept., 412 Kemble Ave., Room C380, Morristown, NJ 07960
Autronica Marine A/S, Drammensveien 126, N-0277 Oslo 2, NORWAY
Cellnet Corp, 400 Main St, Stamford, CT 06901-3004
Comsat Maritime Services, 950 L'Enfant Plaza SW, Washington DC 20024
C. Plath, 222 Severn Ave., Annapolis, MD 21403
EDO Corporation, 2645 S 300 West, Salt Lake City. UT 84115
Electronic Marine Systems, 800 Ferndale PL., Rahway, NJ 07065
Fairtide Enterprises, Inc., 2536 Sonata Dr., Columbus, OH 43209
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Hose McCann, 9 Smith St., Englewood, NJ 07631
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950
IDB Aero-Nautical Communications, 15245 Shady Grove Rd, Rockville, MD 20850
Kenwood USA Corp., Marine Prod. Div., 2201 E. Dominquez St., Long Beach, CA 90810
Mackay Communications, 441 US Highway #1, P.O. Box 331, Elizabeth NJ 07207
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135
Megapulse, Inc., 8 Preston Court, Bedford MA 01730-2380
Nautronix, 15401 Vantage Pkwy W., Houston, TX 77032
Naval Electronics, 5417 Jetview Circle, Tampa FL 33634
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY
Novatech, 820 Cormorant St., Victoria, BC V8W 1R1, CANADA
Raytheon Marine Co, 46 River Road, Hudson, NH 03051
Robertson Marine Systems, 3000 Kingman Street, Suite, 207, Metarie, LA 70006
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia, PA 19116
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboton, NORWAY
Simrad, 1921033rd Avenue West, Lynwood, WA 98036
Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Summer Equipment Ltd., 24 West 4th Ave., Vancouver V5Y 1G3, CANADA
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086
Waterway Communications System, Inc. 453 E. Park Pl., Jeffersonville, IN 47130

NOZZLES
Harrington Metal Fabrication, P. O. Box 410, 6720 M 89, Fennville, MI 49408

OIL—Marine—Additives
Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001
Shell Oil, P.O. Box 2463, Houston, TX 77252
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650

OIL/WATER SEPARATORS
ACS Industries, Inc., 14208 Industry Rd., Houston, TX 77053
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale NJ 07647
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
MMC International, 60 Inip Dr, Inwood NY 11696
National Fluid Separators, 827 Hanley Industrial Ct, St Louis, MO 63144
Nelson Industries, Highway 51 West, Stoughton, WI 53589

PAINT—COATING—CORROSION CONTROL
Amolean Coating Removal, 12920 S.W. 99 N. Ave., Miami, FL 33176
Ameron, 201 N. Berry St., Brea, CA 92622
The Arnessen Corp., Corrosion Dynamics Div., 1100 Walmut St., Rosell, NJ 07203
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502
GlobalTech, 9801 Westheimer St., Ste. 202 Houston, TX 77042
Jamestown Distrib., 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835
Hempel Coatings, Foot of Curie Avenue, Wallington, NJ 07057
Melvin Pierce Marine Coating, Inc., P.O. Box 93, Semmes, AL 36575
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490
Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Rd., Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030

PIPE FITTINGS/CONNECTING SYSTEMS
Aeroquip Corp., 1695 Indian Wood Cir., Maumee, OH 43537-0631
Deutsch Metal Components, 14800 S. Figueroa, Gardena, CA 90248
Lokring, 396 Hatch Drive, Foster City, CA 94404
Stanley G. Flagg Co., 1020 W. High St., Stowe, PA 19464

PORT SERVICES
Port of Portland, 5555 N. Channel Ave., Portland, OR 97217

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058
American Air Filter, P.O. Box 35690, Louisville, KY 40432
ASEA Brown Boveri, 1460 Livingston Avenue, N. Brunswick, NJ 08902
ASEA Brown Boveri (Stromberg), P.O. Box 185, 00381 Helsinki, FINLAND
Argo International, 140 Franklin St., New York, NY 10013
Aquamaster-Rauma Ltd., Box 220, SF-26101, Rauma, FINLAND
Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY
Bird Johnson Company, 110 Norfolk St., Walpole, MA 02081
CWF Hamilton & Co., Ltd., P.O. Box 709, Christchurch, NEW ZEALAND
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320
Coltec Industries (Fairbanks Morse Engine Div.), 701 Lawton Ave, Beloil, WI 53511
Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005
Electro-Motive, div. General Motors, 9301 W 55th St, La Grange, IL 60525
Fincantieri, Diesel Engines Div—GMT, Bagnoli della Rosandra 334, Trieste, ITALY
Fundiciones RICE, AV Rios Espinoza No.88, COL BENITO JUAREZ, Mazatlan,
GE Naval & Drive Turbine Systems, 166 Boulder Dr., Fitchburg MA 01420
Harbormaster Marine, 12924 Farmington Rd., Livonia MI 48150
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Krupp MaK, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9
Mapeco Products Inc., P.O. Box 6, 725 Glen Cove Ave., Glen Head NY 11545
Marine Gears, Inc., P.O. Box 689, Greenville MS 38707
Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY
MAN B&W Diesel, 17 State St., New York, NY 10004
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Holeby, DENMARK
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15. DK-9900 Frederikshavn DENMARK
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1 GERMANY
MKW Power Systems, 301 S. Church St., Rocky Mount, NC 27801
Mitsubishi Heavy Industries America, Inc., 630 Fifth Ave., Ste. 3450, NY, NY 10011
New Sulzer Diesel, Ltd., CH-8401, Winterthur, SWITZERLAND
Nytands Marine Service A/S, P.O. Box 130, N-4818 Faervik, NORWAY
Omnithruster Inc., 9515 Sorensen Ave., P.O. Box 2144, Santa Fe Springs, CA 90670
Ovako Steel Couplings AB Sweden, S-813 00 Hofors SWEDEN
Rolla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828 Balerna SWITZERLAND
Rolla SP Propellers USA, 4030 Mustang Road, Melbourne, FL 32934, USA
Karl Senner Inc., 25 W Third, Kenner LA 70062
Schottel-Werft, D-5401 Spay, GERMANY
Siemens Energy & Automation, Inc., Systems Div., Marine Systems no. America (A23N), 100 Technology Dr., Alpharetta, GA 30202
Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey LA 70059-0008
Textron Lycoming, 550 Main St., Stratford, CT 06497
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J. M. Voith GmbH, Marine Division, Postfach 1940, D-7920, Heidenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021
Oy Wartsila Ab, Vasa and Abo Divisions. P.O. Box 244, SF65100 Vasa, FINLAND
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Westinghouse Marine Div., 401 E Hendy Ave, Sunnyvale, CA 94088
ZF of North America, Marine Sales, 500 Barclay Blvd, Lincolnshire IL 60069

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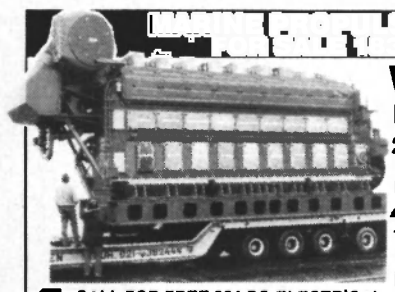

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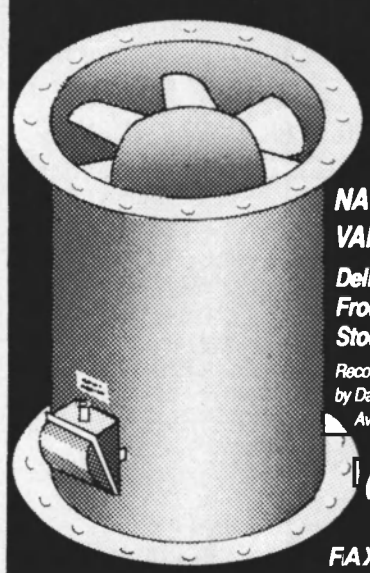

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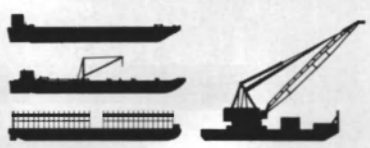

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1. TITLE OF PUBLICATION: Maritime Reporter & Engineering News
   A. PUBLICATION NO. 00253448
2. DATE OF FILING: September 9, 1991
3. FREQUENCY OF ISSUE: Monthly.
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5. LOCATION OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHERS: 118 East 25th Street, New York, New York 10010.
6. NAMES AND ADDRESSES OF PUBLISHERS AND EDITOR: PUBLISHER: John E. O'Malley, Charles P. O'Malley, Maritime Reporter/Engineering News, 118 East 25th Street, New York, New York 10010. EDITOR: John Snyder, Maritime Reporter/Engineering News, 118 East 25th Street, New York, New York 10010. MANAGING EDITOR: Thomas Philips, Maritime Reporter/Engineering News, 118 East 25th Street, New York, New York 10010.
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F. Copies not distributed		
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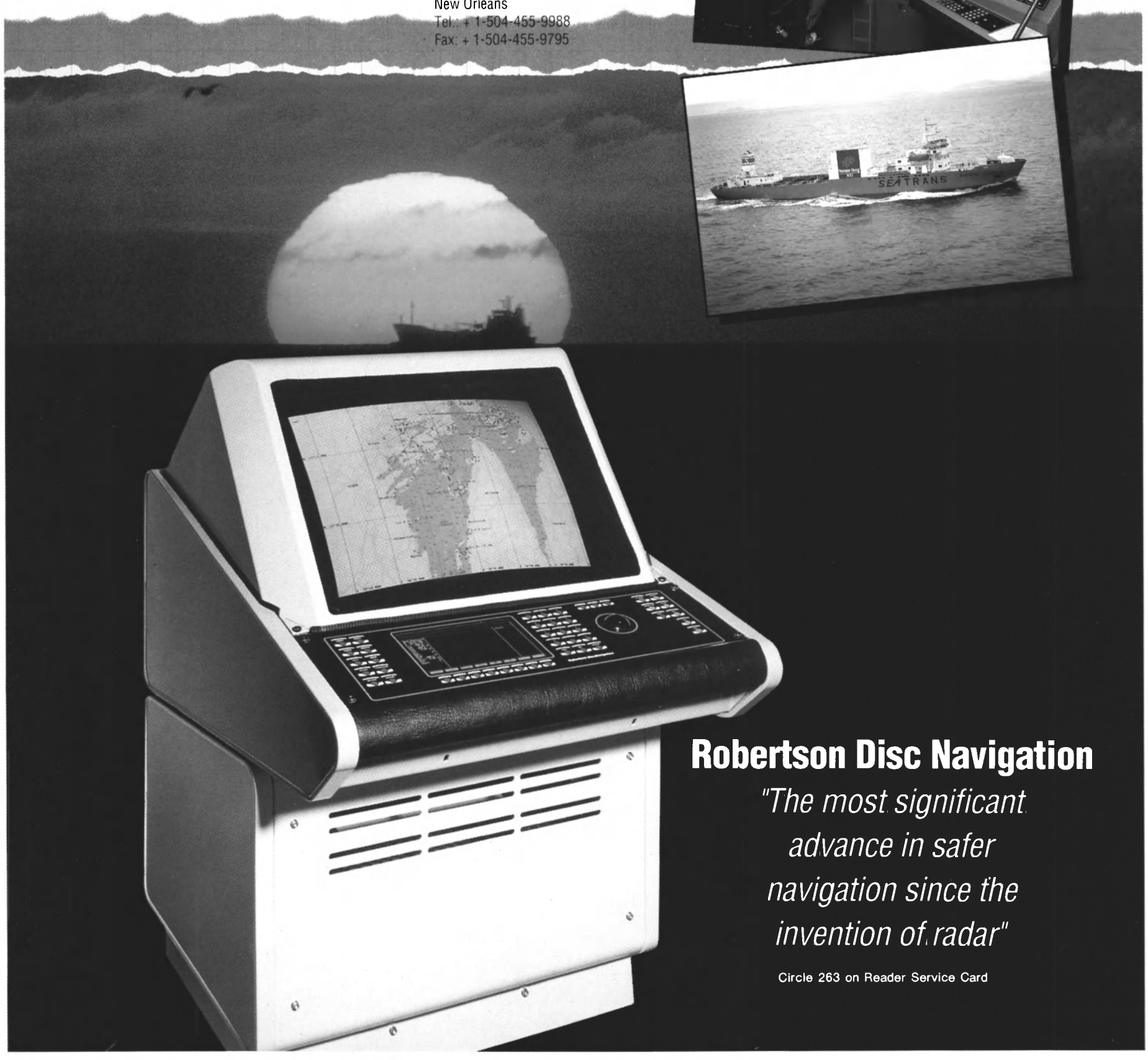

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