



**MARITIME  
REPORTER**  
AND  
ENGINEERING NEWS

**Fast Ferries:**  
High-tech drives market growth



**Tanker Technology: Customer demand drives  
tanker fleet modernization**



**Scandinavian Maritime Industry: Attracting  
new investment from familiar sources**

**Deck machinery & cargo handling review • Marine fuels, lubricants & additives  
Nor-Shipping '95 preview**

**MAY 1995**

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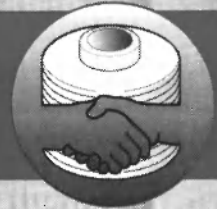
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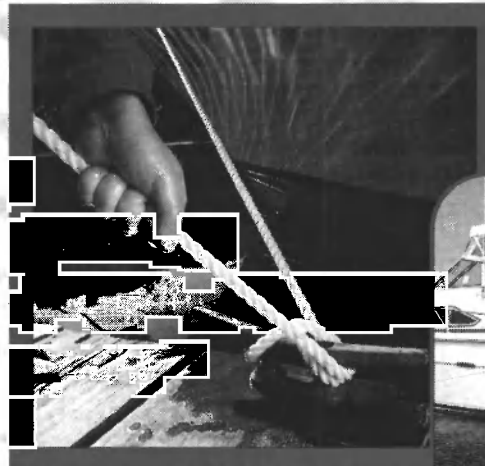




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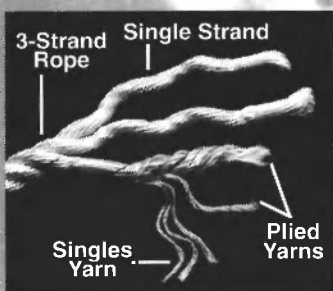
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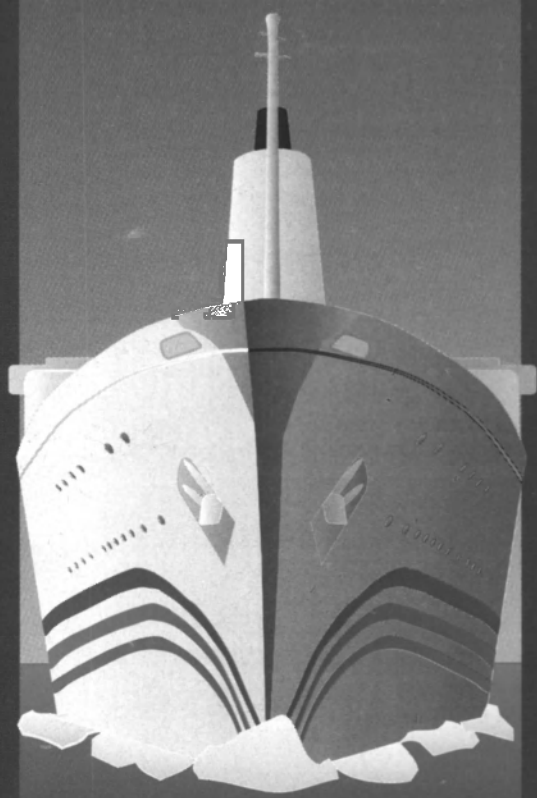
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## ON THE COVER

The fast ferry market has quickened the pulse of many boat owners, builders and suppliers alike. Inspired by an ever-growing orderbook, companies around the globe are pouring time, effort and money into developing next generation technologies to make the vessels faster and safer. The Fast Ferry Update begins on page 28.

### 14 EUROPEAN UPDATE

European builders have had strong showings at recent defense exhibitions ... Malta Drydocks' business & facilities expanding rapidly ... EU directive could seriously affect ship repair yards.  
by Carol Fulford & Andy Smith



The minehunter *Hellevoetsluis* passes through the Thames Barrier.

### 34 SCANDINAVIAN INDUSTRY

Shipbuilding activity is picking up in Scandinavian countries, and the possible return of some Swedish yards to the commercial shipbuilding ranks has created a buzz. — by Alan Thorpe, international editor

**PLUS...** Contract & Company Updates.

KaMeWa waterjets being installed on new Finnyards-built fast ferries.



### 46 TANKER TECHNOLOGY

While VLCC newbuilding is centered in Japan & Korea, many yards in other countries are filling a demand and cashing in by converting existing tonnage to FPSOs and specialty shuttle tankers.  
— by Alan Thorpe, international editor



KMY-built LNG is 70 percent complete.

#### MARKETS

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May, 1995

**FastShip: To Be Larger & To Hold More Cargo**

The designers of the FastShip — Thornycroft, Giles and Co. — announced in late March that according to the latest calculations, FastShip will be larger and will carry more cargo than originally planned, without consequent losses in speed, power or range.

The overall length of the vessel design has been increased by 89 ft. (27.1 m) to 863 ft. (263 m), an increase of 11.5 percent.

Payload has been increased by 1,000 metric tons to 9,200 metric tons, a 12 percent increase, and a speed of 42 knots will still be maintained as planned.

According to **David Giles**, the ship's designer, "We were conservative in our preliminary design specifications, and progressive design optimization over the past months has enabled us to improve overall operating economics." Recent tank

tests also showed that the ability of the hull to maintain its planned speed in high sea states would be improved by making it longer.

A redesigned placement of the marine gas turbine exhaust and intake ducts will allow the transatlantic FastShip to carry approximately 12 percent more cargo containers.

For more information on FastShip  
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## Recent Ship Sales

This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers.

Date Reported	Vessel Name	Vessel Type	DWT	Year Built	Price (\$Mill)
4/04/95	Luzon Trader	Bulker	11,270	78	2.9
3/20/95	Handy Sailor	Bulker	16,325	75	2.4
3/27/95	Forum Papua	Bulker	16,560	78	5.8
	New Guinea				
4/03/95	Negba	Bulker	17,527	77	3.0
3/20/95	Kiwi Crown	Bulker	18,612	87	9.0
4/11/95	Entrepreneur	Bulker	18,795	77	3.7
4/11/95	Unibright	Bulker	18,842	72	1.5
4/03/95	Okeanis	Bulker	19,544	71	1.85
4/11/95	Asian Manila	Bulker	19,764	86	9.25
4/03/95	Hua Feng	Bulker	22,027	80	6.5
3/27/95	Anangel Fortune	Bulker	22,670	74	2.8
4/11/95	Anangel Hope	Bulker	22,670	74	3.0
3/27/95	J Michelle	Bulker	23,509	85	11.25
4/11/95	Ken Spanker	Bulker	23,934	80	6.150
4/03/95	Hemlock Queen	Bulker	23,991	80	6.5
3/27/95	Poola	Bulker	24,233	75	3.6
4/11/95	Yagara	Bulker	25,906	72	6.15
3/27/95	Use	Bulker	25,909	75	3.9
4/03/95	Singa Sun	Bulker	26,586	75	4.6
4/03/95	Pella	Bulker	27,317	71	2.25
4/03/95	Handy Panther	Bulker	27,522	81	8.9
3/27/95	Borg	Bulker	26,160	82	3.6
4/03/95	Bar	Bulker	29,000	86	10.0
4/03/95	Sanko Heritage	Bulker	32,024	84	13.475
3/20/95	Crest 1	Bulker	34,072	82	11.5
4/11/95	Nichirin	Bulker	34,520	85	13.75
3/27/95	Rimba Merbau	Bulker	36,979	77	6.2
3/27/95	Fortune Peace	Bulker	37,740	84	14.250
4/03/95	La Margassa	Bulker	37,994	83	12.6
4/03/95	Prince of Tokyo	Bulker	41,515	74	4.6
3/20/95	Nordsund	Bulker	42,842	85	17.2
4/03/95	Great Ocean	Bulker	43,200	91	22.8
4/11/95	Guinomar Baraka	Bulker	61,399	81	12.85
4/11/95	Ialcos Bay	Bulker	61,897	79	8.0
3/27/95	Marianne 1	Bulker	64,173	74	6.375
4/11/95	Imari	Bulker	65,716	85	17.0
3/20/95	Seabird	Bulker	67,688	74	5.5
3/20/95	Yellow Amber	Bulker	67,800	78	9.0
3/20/95	Nimrod	Bulker	71,397	76	7.3
3/27/95	River Princess	Bulker	114,645	75	15.1
4/11/95	Venanna	Bulker	139,609	82	15.0
3/20/95	Creciente	Bulker	152,065	90	33.5
4/11/95	Hawk	Tanker	29,775	92	18.5
4/11/95	Dilas	Tanker	31,100	72	2.25
3/20/95	Traveller	Tanker	32,229	76	3.65
4/11/95	United Selma	Tanker	81,351	87	28.0
4/03/95	Cathay Spirit	Tanker	83,378	76	4.9
4/03/95	Neva	Tanker	86,260	81	14.0
4/03/95	Aldebaran	Tanker	89,569	85	22.5
3/20/95	Vytina	Tanker	121,561	75	6.0

## Ingalls Christens Destroyer Cole

DDG 67, eighth DDG 51 class Aegis guided missile destroyer built by Ingalls Shipbuilding Div. of Litton Industries in Pascagoula, Miss., was launched on Feb. 10, 1995. The new ship was christened *Cole* in ceremonies on April 8, by Mrs. Lee Perry, wife of U.S. Secretary of Defense William J. Perry. DDG 67 is named in honor of Marine Sergeant Darrell Samuel Cole (1920 - 1945). Sgt. Cole was posthumously awarded the Congressional Medal of Honor for his heroic actions during the Iwo Jima campaign in February 1945. DDG 67 is 505 ft. (154 m) long with a beam of 66 ft. (20.1 m). Four gas turbine engines will power the 8,600-ton ship to speeds in excess of 30 knots. *Cole* will join the U.S. Pacific Fleet, homeported in San Diego, following commissioning in 1996.

Four Ingalls-built Aegis destroyers have been delivered to the Navy, with three more scheduled for 1995 delivery.

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Maritime Reporter/Engineering News



## Willard Builds Composite Boats For L.A.

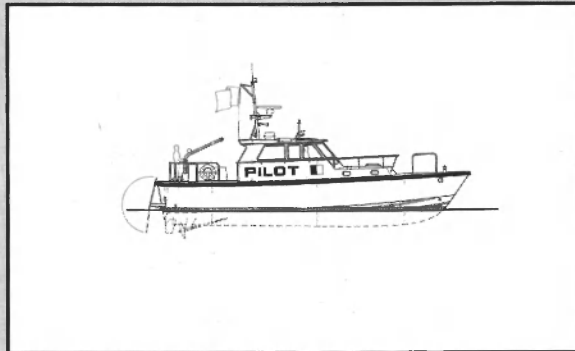
Willard Marine, Inc. of Anaheim, Calif., is constructing two identical 52-ft. (15.8-m) pilot boats based on a contract awarded by Worldport L.A. The design is by C. Raymond Hunt & Associates, Boston, and features molded fiberglass hulls with aluminum decks and superstructures. The vessels are scheduled for delivery by mid-1995.

Powered by a pair of Detroit Diesel engines, each rated at 530 bhp, the deep-V, hard chine hull will have a top speed of 25 knots in order to serve the traffic at peak hours in this busy port. Scantlings are to ABS standards with additional reinforcements to meet the tough service. The design incorporates the latest technology for low sound and vibration transmission to the crew.

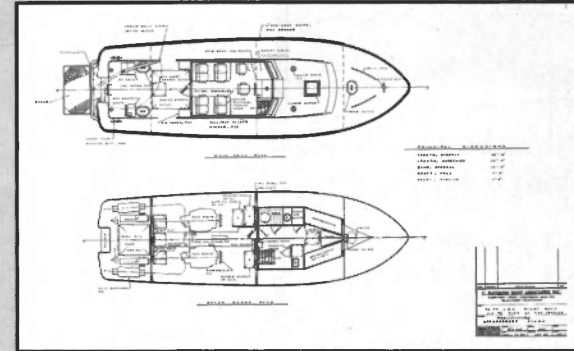
The construction materials were selected to exploit the best properties of each. The molded fiberglass hull does not corrode, requires minimal maintenance and has high impact-absorbing flexural properties. Above decks, the welded aluminum superstructure allows the cabin and boarding areas to be customized to the exact requirements of the Port of Los Angeles pilots.

A rescue system will be incorporated which consists of a two-part transom mounted platform; a grid section acts as a guard to prevent contact with the propellers and a hinged section can be lowered into the water and used to scoop up an unconscious or injured person.

Construction time has been compressed as the decks and superstructures are being constructed on the plant floor while the hulls are molded. After the machinery is installed in the hulls, the decks and superstructure as a completed unit are lifted and installed.



Willard Marine, founded more than 38 years ago, is a builder of commercial and government boats, including tour boats, pilot boats, USCG SOLAS certified rescue boats, passenger-carry-



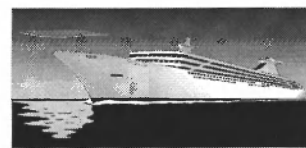
ing multihulls, RIBs and other vessels up to 125 ft. (38 m).

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## Nabrico Completes Two New Deck Barges



Ed Shearer, president of Shearer & Assoc., Inc., announced the completion of the 175 x 60 x 12-ft. (53.4 x 18.3 m x 3.7-m) inland service deck barges *Potomac* and *Wicomico*. These barges were built by Nashville Bridge Company (Nabrico) — which was recently acquired by the Trinity Marine Group — for the Salisbury Towing Corporation of Norfolk, Va. The barges, designed by the Metairie, La., naval architecture firm, will be used in Salisbury's Chesapeake Bay aggregate movements. The barges have cargo capacities of 4,500 tons each and an allowable deck loading in excess of 2,000 lbs. per sq. ft.

The barge design was derived from the previous Nabrico-built barges, *James* and *Susquehanna*, which were 350 x 60 x 12-ft. (106.7 x 18.3 x 3.7-m). Shearer & Assoc., Inc. worked closely with Salisbury Towing Corporation on both barge designs regarding Salisbury's tonnage requirements and operating environments, with consideration for barge strength and weight. Shearer & Assoc., Inc., also provided site owner representation during construction of the barges.

For more information on Nabrico  
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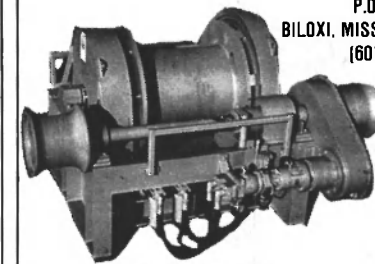
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## MarAd News

### Lykes Seeks Waiver For Pact With Evergreen

Lykes Bros. Steamship Co., Inc., has asked the Maritime Administration (MarAd) for a waiver needed

to permit the company to participate in a reciprocal space charter, sailing, and cooperative working agreement with Evergreen Marine Corp., in the U.S. foreign commerce. Section 804 (a) of the Merchant Marine Act, 1936, as amended, pre-

cludes subsidized U.S.-flag operators or their affiliates from operating foreign-flag vessels which compete with essential U.S.-flag shipping services unless the Secretary of Transportation waives the provision of this section for a specific period of time. Lykes has

asked for a section 804 waiver to participate in the agreement, through the expiration of its operating differential subsidy (ODS) agreement on December 31, 1997. According to Lykes, the agreement covers trade between the U.S. Gulf, East and West Coasts and North Europe. The typical itinerary for Lykes' U.S. Gulf and East Coast/North Europe vessel is Galveston, New Orleans, Miami, Charleston, Norfolk, New York, Boston, Antwerp, Bremerhaven, Felixstowe, LeHavre and Boston. The Evergreen service covered by the agreement would be provided by the vessels dedicated to its round-the-world service. Evergreen's westbound transatlantic service typically calls Hamburg, Thamesport, Rotterdam, Antwerp, LeHavre, New York, Norfolk, Charleston, and Long Beach before proceeding west across the Pacific. Lykes pointed out that the agreement is intended to permit Lykes to achieve better utilization of the vessels committed to North Atlantic services by establishing a course of slot chartering business with Evergreen.

### Title XI Funding

#### T.T. Barge Services Seeks Title XI Guarantees

The Maritime Administration (MarAd) has received an application from T.T. Barge Services, Inc., Mile 125, Harahan, La., for a Title XI guarantee to aid in financing shipyard modernization. The scheduled date for completion is January 1996. The estimated guarantee amount is for \$2,625,000 of the total estimated actual cost of \$3,100,000, with a loan term of 25 years.

#### Smith/Enron Cogeneration Seeks \$80M In Guarantees

MarAd has received an application from Smith/Enron Cogeneration Limited Partnership, Houston, Texas, for a Title XI guarantee to aid in financing two ABS-classed power barges. The proposed builder is Trinity Marine Group, Trinity Industries, Inc., Beaumont, Texas. The barges would operate in the Dominican Republic. One barge was delivered on May 5, 1994; the second was scheduled to be delivered on April 15, 1995. The estimated guarantee amount is \$80 million of the total estimated actual cost of \$205 million, with a loan term of 12 years.

#### Alpha Marine Seeks \$14 Million In Guarantees

MarAd has received an application from Alpha Marine Services, Inc., Galliano, La., for a Title XI guarantee to aid in financing the construction of a Deep Submergence Rescue Ve-

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Changing oil every 5,000 hours instead of every 500 has made a world of difference to Crouse Corporation's single-screw towboat, the *M/V Sue Chappell*. Before the workboat switched to synthetic Mobilgard SHC 120 in its generator engine, it was changing oil every 500 hours and disposing of 112 gallons of waste oil each year.

For the environmentally concerned Crouse Corporation of Paducah, Kentucky, waste oil disposal was a problem that demanded a solution.

**The synthetic solution.** Crouse Corporation, Detroit Diesel Corporation and Mobil Oil Corporation conducted an 8,000 hour test of Mobilgard SHC 120 in the towboat's generator engine. The synthetic lubricant, with its chlorine level well below the most stringent regulations in effect today, yielded remarkable results.

**Mobilgard SHC 120 significantly extended the towboat's oil drain intervals and reduced its annual volume of waste oil 90%.** A single oil drain after 5,100 hours of continuous operation of the engine confirmed the oil effectively lubricated the Detroit Diesel 6-71 engine *10 times longer than mineral oil*. Annual waste oil was now just 11 gallons.

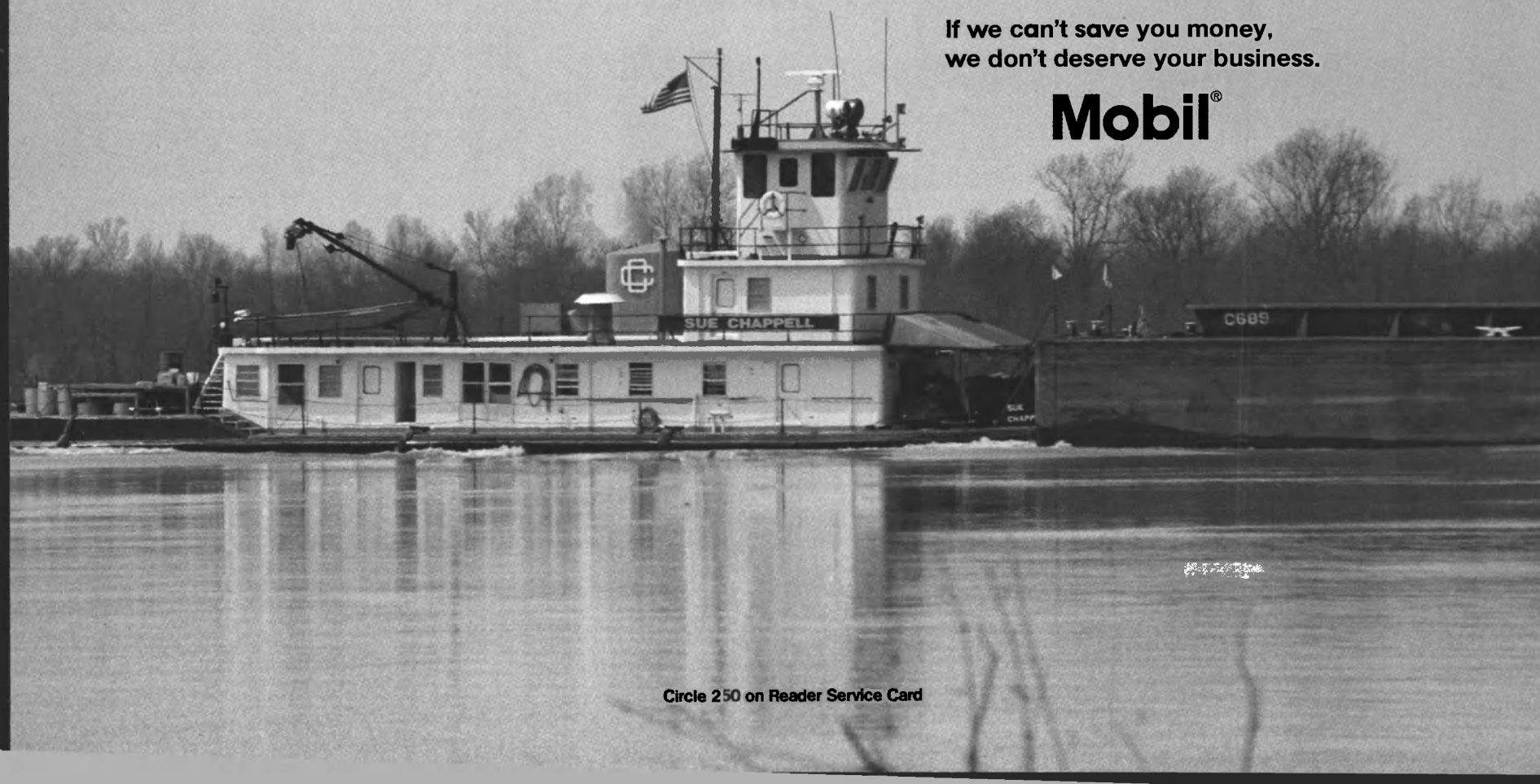
**Mobilgard SHC 120 cut the engine's oil consumption by nearly 75%.** The generator consistently used *only one quart* daily. Quite a difference from the one gallon of mineral oil it typically consumed.

**Mobilgard SHC 120 reduced overall engine wear by almost 50%.** When the towboat was overhauled, engineers found that the engine's piston rings and cylinder liners had only about half the normal wear rates. Time between overhauls is now projected to extend from 40,000 hours to 60,000 hours.

So take a good look at the synthetic lubricant that helped this towboat make a difference in the world. And a change for the future.

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## MarAd News

hicle Support Ship (DSRVS) that will operate in deepwater areas of the U.S. Gulf and East Coast, and worldwide. The vessel is to be built by North American Shipbuilding, Inc., Larose, La., and delivered next March. The estimated guarantee amount is for \$14 million of the total estimated actual cost of \$16 million, with a loan term of seven years.

### Applications Received

**Western Overseas Seeks To Sell Vessel**  
Western Overseas, Inc., Sylvania, Ohio, has asked permission to sell the 14,286-dwt cargo vessel *James Lykes*. The proposed purchaser is Krishna Steel Rolling Mills of India. The vessel

was built in 1960 in Pascagoula, Miss. If approved, the vessel would be scrapped in Alang, India.

### Cove Trader To Be Scrapped

Neptune International, Inc., Elk Grove Village, Ill., has asked permission to register the 46,427-dwt tanker *Cove Trader* under St. Vincent and The Grenadines registry. If approved, the tanker would be scrapped in India. The vessel was built in 1965 in Quincy, Mass.

### Texas Sun Would Transfer To New Owner

MarAd has received an application from Texas Sun Shipping, Inc., Wilmington, Del., for permission to sell and transfer the registry of the 26,281-dwt tanker *Texas Sun*. The proposed

purchaser, Eckhardt Marine GmbH of Hamburg, Germany, intends to use the vessel for a ballast voyage prior to scrapping. It was built in 1960 in Chester, Pa.

### Permission Sought To Transfer Cargo Barge Registries

MarAd has received an application from J. Ray McDermott Holdings Inc., New Orleans, seeking permission to sell and transfer to Panamanian registry the cargo barges *Intermac 600* and *Intermac 627*. The proposed purchaser is Panama Offshore Chartering Co. of Nassau, Bahamas. The barges would be used to transport offshore oil field material in the international trade.

### Chevron Seeks OK To Sell Tanker

MarAd has received an application from Chevron U.S.A. Inc. of San Francisco for permission to sell the 70,213-dwt tanker *Chevron California* to Ruby Enterprises, Inc., of the British Virgin Islands. The vessel would be resold to Kwaliti Steel Suppliers (SBY) of India, for scrapping in India. The vessel was built in 1972 in Sparrows Point, Md.

### Approval Granted

#### Fishing Vessel OK'd For Sale To Russia

MarAd has given approval to Kim Hansen Enterprises, Inc., Seattle, to sell and transfer to Russian registry the fishing vessel *Karla Faye* to Ocean Co., a Russian corporation. The 843-gt vessel was built in 1972. MarAd permission is required under section 9 of the Shipping Act, 1916, as amended.

#### Lykes Request Approved

MarAd has waived the provisions of section 804(a) of the Merchant Marine Act, 1936, as amended, and approved a request from Lykes Bros. Steamship Co., Inc., to carry up to three commuter railcar shells on the foreign-flag vessel *MV Haskerland* from Lisbon, Portugal, to Baltimore, Md. In its application, Lykes indicated the shipper requires the cargo to move before a Lykes U.S.-flag vessel can be in place to carry the cargo. Lykes also noted that Farrell Lines and Sea-Land Service, Inc., the two U.S.-flag liner operators in the Mediterranean, do not object to the service by Lykes. Section 804 precludes subsidized U.S.-flag operators or subsidized U.S.-flag operators or their affiliates from operating foreign-flag vessels which compete with essential U.S.-flag shipping services unless the Secretary of Transportation waives the provision of this section for a specific period of time.

#### American Kestrel OK'd For Scrapping

The Maritime Subsidy Board has approved a request by Kestrel Shipholding Corp., for permission to sell the *American Kestrel* (ex-*Lash Pacifico*) to Eastern Overseas, Inc.

The vessel will be scrapped in a U.S. or foreign shipyard, and may not be used in any other capacity. The vessel was built for Prudential Lines, Inc., in 1974, with the aid of construction-differential subsidy (CDS). The CDS obligations will be transferred to the purchasers and will terminate when the vessel is scrapped.

### Carnival Signs Shiphandling Training Agreement

Carnival Cruise Lines has signed an agreement with RTM STAR Center, whereby the center will provide 10 weeks of shiphandling

Maritime Reporter/Engineering News

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classes for Carnival captains, staff captains and senior deck officers.

The Carnival training classes will be held at STAR Center's Dania, Fla., facility on the bridge of its 360-degree field of view simulator. A KaMeWa joystick system is being installed to duplicate the same type of computer-based remote control steering system found on Carnival's Fantasy class ships.

The simulator can reproduce any body of water, and can create changing weather conditions and currents.

### SSC Releases Ship Structure Research Projects

The Ship Structure Committee (SSC)—an interagency committee that sponsors ship structure research projects—has released two reports which are available upon request. In a report concerning the premature cracking of ship and offshore structures built of high-strength steels, the SSC applied a review technique to assess the fatigue strength of structural details

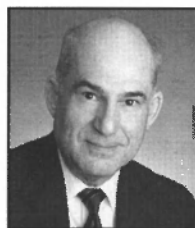
using those steels.

Another report called *Uncertainty of Strength Models for Marine Structures* was published, in an effort to develop a method that can be used to quantify the uncertainties in strength capacities of structures.

To get a copy of the reports  
Circle 144 on Reader Service Card

### Zentech Appoints Punch Director of Marketing

Zentech, Inc. announced that Edward A. Punch will serve as the director of marketing for engineering services. Mr. Punch has been involved in the international maritime and offshore industries for 30 years.



Zentech, Inc. is a design and consulting engineering firm which specializes in providing services to the marine petroleum and construction industries.

## EPA Proposes Rule On Disposal Of PCBs

The Environmental Protection Agency (EPA) is proposing amendments to its rules under the Toxic Substances Control Act (TSCA) for polychlorinated biphenyls (PCBs).

Changes are being proposed for the requirements for determining PCB concentration; marking, storage, and disposal; decontamination levels and procedures; and the reporting and recordkeeping requirements for PCBs, PCB items, and environmental media (e.g. soil, sediments, rivers, and lakes) contaminated with PCBs or PCBs in association with radioactive materials.

In addition, the EPA proposes to insert additional definitions and references, including new authorizations and exemptions, require the registration of furnaces, regulate the disposal of liquids in land-

fills, coordinate PCB disposal approvals with other federal and state programs, and revise the reportable quantity in the spill cleanup policy. The EPA is also proposing to coordinate strategies for the remediation of PCB spills and other disposal sites, including cleanup under the Resource Conservation and Recovery Act Corrective Action provisions and Comprehensive Environmental Response, Compensation and Liability Act (Superfund). The EPA intends to conduct one or more informal public hearings in the Washington, D.C. area on the different parts of the proposal which will take place after close of the comment period. For more information, call the Environmental Assistance Division at (202) 554-1404.

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### Pennsylvania, Maryland Consider Gaming Legislation

On March 3, the Judiciary Ways and Means committees of the Maryland House of Delegates held a joint hearing on a series of gaming measures, including bills to allow riverboat, dockside, and land-based casinos to operate in the state. At a meeting held a week after the hearing, the House Judiciary Committee unanimously rejected the three bills.

In February, Pennsylvania Rep. Frank Gigliotti and 30 other state representatives introduced an Excursion Boat Gaming Act for Waterfront Economic Development. The measure will be decided by the state House Judiciary Committee in the near future.

Provisions of the proposed act include gaming through county referenda, a year-round excursion season, and a \$25,000 filing fee for an operator's license. The gaming com-

mission would authorize a maximum of 10 first-class operator's licenses, and gaming vessels would be required to be self-propelled vessels featuring a paddlewheel in the tradition style. The Act, if ratified, would take effect immediately after the decision of the House Judiciary Committee.

### Gulf Coast Towing And Salvage Companies Link Up

Brown Marine Services, Inc., a Gulf Coast barge and towing company, and Drummond Marine, a salvage company, have joined forces, forming Brown Towing and Salvage Company.

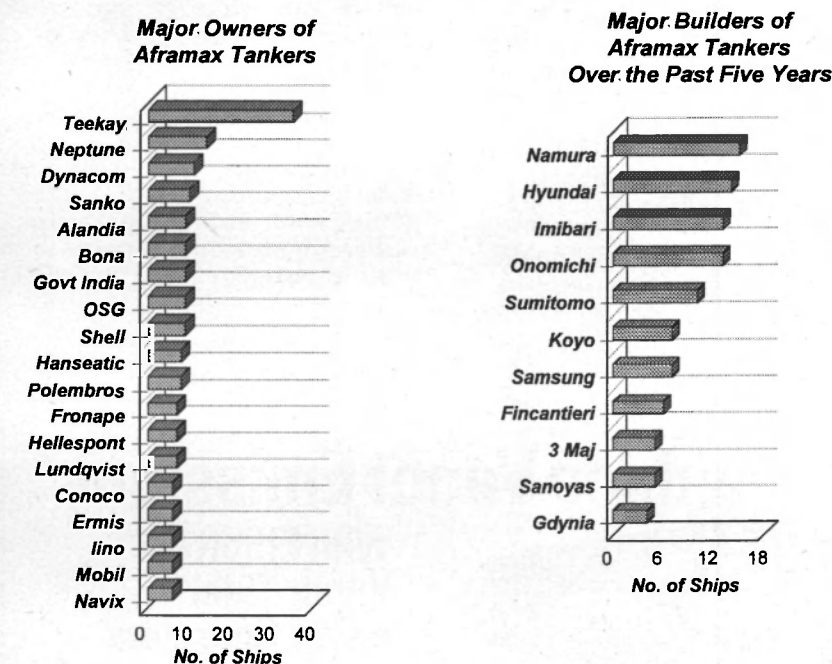
Drummond Marine's 250 ton A-Frame was recently transferred onto Brown's 210-ft. (64-m) deck. The A-Frame barges along with a fleet of tugs and other equipment will combine to create an efficient salvage company. Operations of the new company will be handled by Gary Bryan and Peter Drummond from offices in Pensacola, Fla.

## INDUSTRY TRENDS

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

### 'AFRAMAX TANKERS

Owners like the flexibility of this ship. The 450 Aframax tankers currently in service are used in medium length and short haul oil trades — carrying crude or petroleum products. Construction demand for this size tanker will be brisk over the next five years. One-third of the existing inventory is over 15 years of age — and rising Caribbean and North Sea markets are providing good employment opportunities.



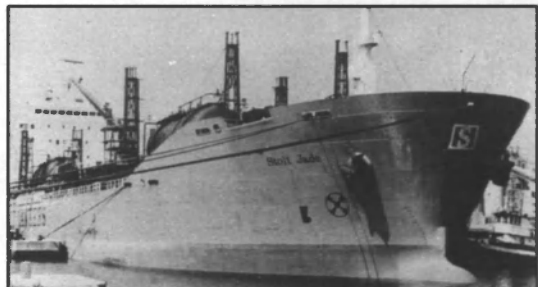
Source: IMA Associates, Shipbuilding Industry Outlook

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Maritime Reporter/Engineering News



### Nelson Joins Textron Marine



**Gary R. Nelson** has joined Textron Marine & Land Systems, New Orleans, as the director of international marketing. His primary responsibilities will be to develop international sales of the Landing

Craft Air Cushion (LCAC) in the Asia/Southeast Asia market.

Textron Marine & Land Systems, a division of Textron Inc., designs and constructs advanced technology air cushion vehicles and surface effect ships, serving both military and commercial interests.

For more information on Textron  
Circle 39 on Reader Service Card

### Grace Elected VP At NASSCO

The National Steel and Shipbuilding Company (NASSCO) has announced that **Janice S. Grace** has been elected vice president of planning and information systems. She is responsible for all planning, scheduling, production control and transportation functions supporting NASSCO's new construction and shipbuilding programs. Ms. **Grace** has more than 21 years of shipyard management experience. In addition to planning and systems, she has held management positions in materials and in ship repair, where she was responsible for engineering, planning, estimating and purchasing.

For more information on NASSCO  
Circle 40 on Reader Service Card

### Finnegan Joins NNS



**Jack Finnegan** has joined Newport News Shipbuilding (NNS) as manager, commercial marketing, in a continuation of the company's plans to be a major player in the world's commercial

shipbuilding industry. Mr. **Finnegan** will be responsible for global marketing and sales of the shipyard's commercial ship new construction designs. His initial focus will be on promotion of the Double Eagle product tanker. Prior to joining NNS, Mr. **Finnegan** was marketing manager for New Sulzer Diesel, U.S.

For more information on NNS  
Circle 43 on Reader Service Card

### Retirement of Coast Guard Captain

Captain **Vernon O. Eschenburg** has announced his retirement from the U.S. Coast Guard (USCG) after 27 years of service. His last duty assignment was with the American Bureau of Shipping (ABS) as USCG's liaison officer. Captain **Eschenburg** has established

HoneyDo Mobile Inc., an Alabama company that buys and sells privately financed notes, mortgages and trust deeds nationwide.

### T. L. James Marine Group Reorganizes

T.L. James & Company, Inc. announced that it will shift its dredging and marine operations and as-

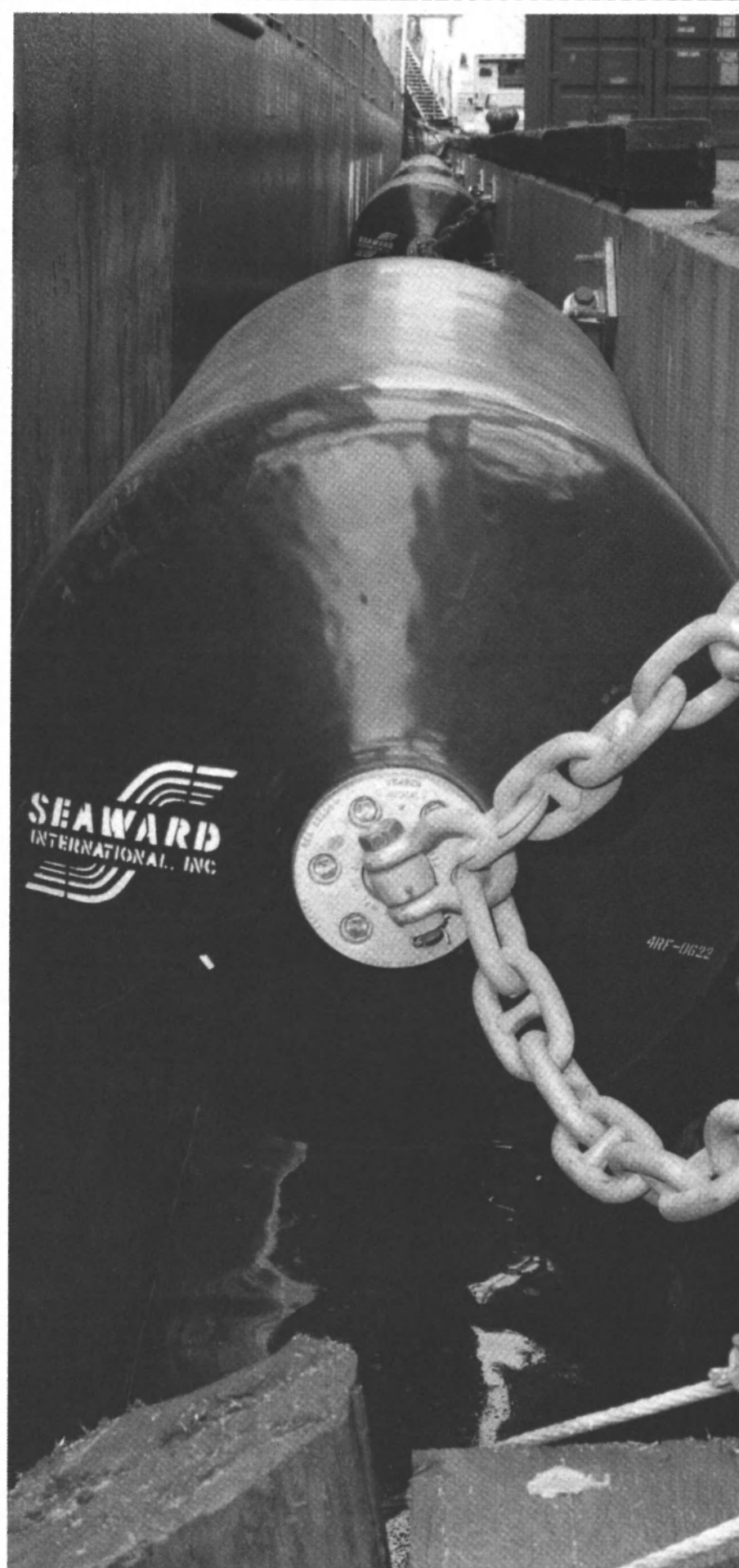
sets into an independent, wholly-owned subsidiary by the end of 1995.

In anticipation of the intended reorganization, **L.A. Hubert, Jr.** was named group president and COO of the Marine Group, replacing his former position of senior vice president and managing director.

The Marine Group operates a fleet of 15 major bucket, cutter and hopper dredges, and more than 100 specially configured support vessels. In addition to performing annual

maintenance for many of the nation's major navigational channels, the Marine Group is involved in beach reconstruction, coastal restoration and the completion of environmental mitigation projects. According to company officials, the subsidiary reorganization will allow the Marine Group to be more focused and competitive.

For more information on  
T. L. James Marine  
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## Shows of force in Euro military market

by Carol Fulford and Andy Smith

For the second time in just two weeks, military-minded visitors made their way to defense industry showcases in Europe and the Middle East, including London's own International Maritime Defence Exhibition (IMDEX), held during the last week in March, following Abu Dhabi's massive IDEX event. Despite the proximity of dates, the U.K. offering at Greenwich still attracted 250 exhibitors, a steady stream of visitors and 12 ships moored up for inspection in West India Docks.

The latter inevitably attracted much attention, largely due to the variety on view. Vessels featured included a SMYGE experimental patrol craft from Sweden, mine countermeasure vessels from France, Germany, Norway, The Netherlands and the U.K., together with the latest Danish Flyvefisken multi-role vessel, a Polish rescue vessel and an Irish offshore patrol ship. The display was completed by a 3,240-ton Nordkapp class coast guard vessel from Norway and — the largest of them all — a 4,330-ton Italian De La Penne class destroyer.

The tone of the four-day event revolved around two major themes: the urgent need for yards to promote and encourage international partnerships and the increasing naval requirements for multi-role vessels.

VSEL, the U.K.'s only submarine building company, was upbeat at the show despite the fact that over the next three months it will continue the process of shedding nearly 600 jobs due to cuts in defense spending. This is not new for the company, which has been steadily reducing its workforce since 1990.

Shortly, there will be no more than 5,200 employed at the Barrow-in-Furness, Cumbria, facility — a yard which used to employ 14,000. Contracts, even for a dwindling workforce are, however, in hand — as VSEL completes the final two vessels in a series of four Trident missile submarines ordered by the Royal Navy, and makes progress with the Batch 2 Trafalgar class project for which it will be tendering later in the year. In its surface shipbuilding capacity, it is constructing the Royal Navy's new helicopter carrier in partnership with Scottish merchant shipbuilder Kvaerner Govan. Kvaerner will complete the basic ship which will then sail to VSEL's yard to be finished to military specification.

The U.K. Ministry of Defence (MOD) has also confirmed that VSEL is the only bidder for the contract to build the

LPD assault ships scheduled to replace HMS *Fearless* and HMS *Intrepid*. If the contract is awarded, the ships will be built at Barrow with support again from Kvaerner Govan.

In addition to this link-up on large surface ships, other collaborative ventures are on the go, such as the yard's international sales and marketing agreement with Dutch submarine builder RDM on the Moray class diesel-electric submarine.

Exclusively in the surface shipbuilding category, U.K. company Vosper Thornycroft was talking eagerly of the pending launch of the first of its new series of fast strike craft for the Qatar Emiri Navy. To be named QENSBarzan, the vessel is the first of four in the new Vita class 183.6-ft. (56-m) series and will be supplied together with extensive integrated logistics support including ship documentation, through-life support and training.

The launch of QENS *Barzan* will take place less than 14 months after keel laying, an impressive build performance that reflects the modern shipbuilding facilities at VT and has moved Managing Director **Martin Jay** to comment: "The vessels for Qatar will be among the best VT has built in terms of productivity and quality." (For more on QENS *Barzan*, turn to page 18.)

Despite such obvious success in the Middle East, VT has not been so fortunate in tendering for the modernization project required by the Brazilian Navy for its six Niteroi class frigates. Although invited as original designer and builder of the vessels to tender as sole prime contractor and project integrator, VT lost out to Italian company Alenia Sistemi Navali. The subsequent contract for \$160 million, signed after the Brazilian Senate approved the funding, was won largely because of the company's edge in being able to offer the bulk of the supply packet — e.g. radars, command and control systems, fire-control equipment and a complete missile package.

Italy is also playing its part in the European naval project of the decade, the buzz talk of the show — Project Horizon. Forming the third country with France and the U.K. in another triumvirate military project, the aim to develop a single class of anti-air frigate is now progressing through stage one. Prime contractors for the project are DCN for France, Orizzonte SpA for Italy and GEC-Marconi Naval Systems for the U.K.

French yard DCN International has also, meanwhile, been awarded three other major contracts: to regularly overhaul Saudi Arabian frigates and Underway Replenishment tankers; supply three Agosta 90-B diesel-electric submarines to Pakistan; and build two air-defense frigates for Saudi Arabia. It also continues to work on the Scorpene family of "next-generation" nuclear submarines for the French Navy in collaboration with Spanish yard Bazan. At 202.3 ft. (61.7 m) in length with endurance of 50 days, the CM2000's strengths are its platform versatility and state-of-the-art integrated combat system. It has been designed for easy conversion to air-independent propulsion, carries a maximum crew complement of 32 and 18 weapons such as torpedoes and missiles.

In Scandinavia, Norwegian yard Kvaerner continues with its program to build the Oksoy/Alta class of minehunters/sweepers. Developed by the navy in Bergen with Defence Research Institute and Det Norske Veritas, the 181.1 x 44.6-ft. (55.2 x 13.6-m) design is of catamaran type with FRP hulls built in sandwich construction. (Continued on page 16)



French yard DCN continues to work on the Scorpene family of nuclear submarines for the French Navy in collaboration with Spanish yard Bazan.



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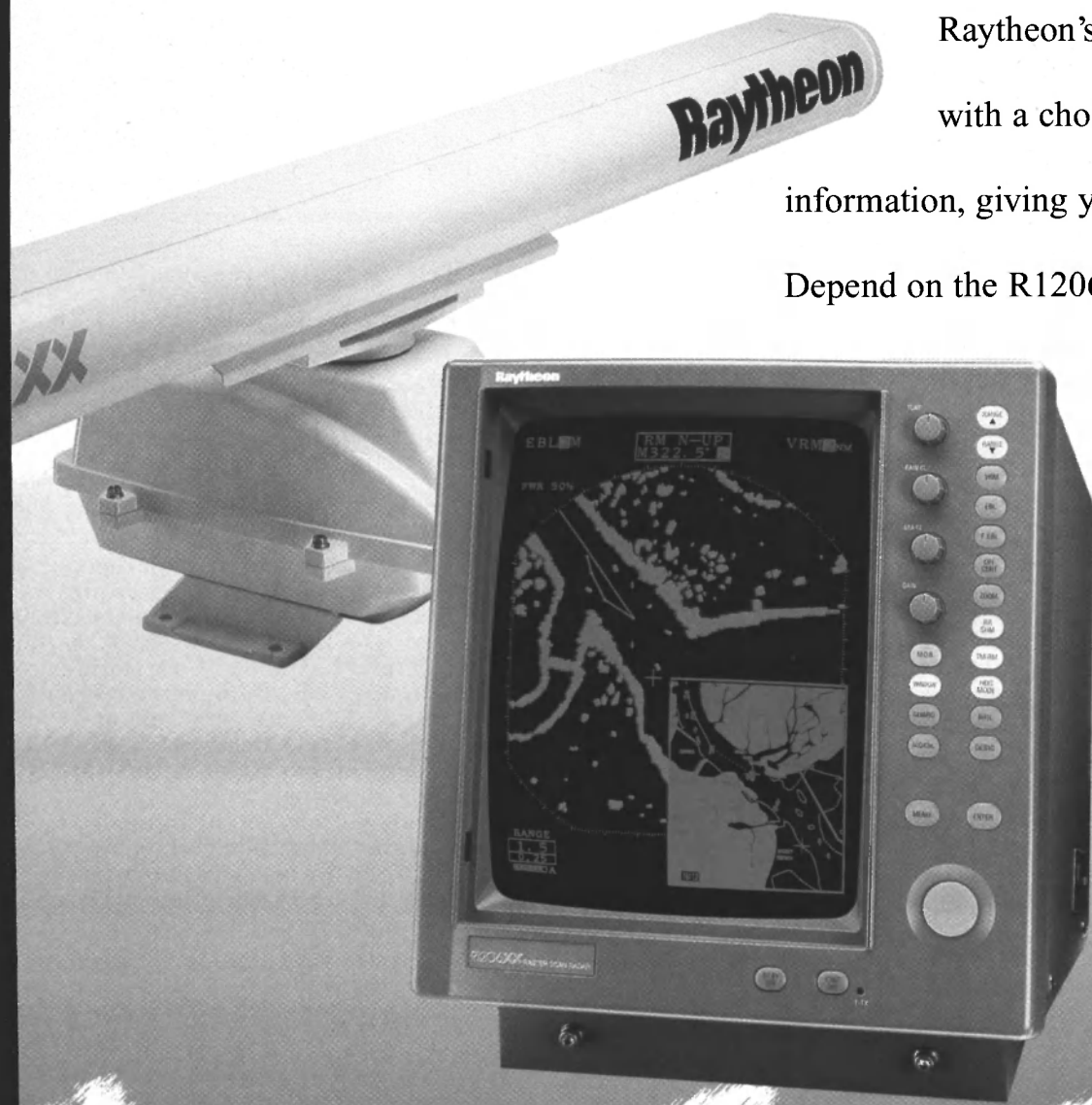
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range†. They both have Raytheon's advanced collision avoidance system, MARPA, allowing you to track up to six moving targets on-screen. Their bright, twelve-inch diagonal screens with 930 x 698 pixel resolution provide excellent clarity and target discrimination even in the worst conditions. The R1206XX and R1210XX have full systems compatibility.

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\*The R1206XX has a 6 kW transmitter.  
†The R1210XX has a 10 kW transmitter.

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## EUROPEAN UPDATE

(Continued from page 14)

Such a bold choice by the Norwegian Navy was made primarily for higher speed purposes, as the catamaran design is claimed to offer higher transit speeds with less installed power. Other bonuses are lower magnetic and acoustic signatures, clearer water for sonar opera-

tions, more comfortable motion and less susceptibility to shock.

In total, nine vessels are scheduled to be built in a program lasting until the latter part of the decade. Four, including the first-of-class *Oksoy*, will be minehunters with the remainder commissioned as

sweepers. Each ship will be powered by twin MTU 12V396 TE84 diesels developing 3,700 hp driving two Kvaerner Eureka waterjets, and two MTU 8V 396 TE54 diesels developing 1,740 hp for a speed of 25 knots and range of 1,200 nm at 22 knots. Danyard also brought a first-

of-class vessel to the show — a Standard Flex 300 — built for the Royal Danish Navy (RDN) as the lead ship of a total of 14 units, of which all but two have been delivered. Replacements for the Daphne and Soloven classes, Flex 300s are multi-role in concept, able to perform duties as a surface combat unit, ASW unit, MCM/minehunter, mine-layer and even as a pollution combat and hydrographic survey vessel in non-military mode.

The vessels are designed for operation primarily in the Danish Straits, their approaches, and the Baltic Sea. In peacetime the SF300 serves as the surveillance and policing workhorse of the RDN, is staffed by a skeleton crew and equipped for search and rescue operations.

Other work in hand is on a series of 10 SAV class minehunter drones, 195.8-ft. (59.7-m) long vessels each powered by a Schottel pump jet. With trials completed last year, full production has now commenced. The vessels are designed to be operated in pairs by the SF300s and have hulls based on the Hugin class TRVs with low noise propulsion. Configured to tow a side-scan sonar, each vessel can either be remotely controlled or maneuvered from the wheelhouse.



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#### Time is running out. CFCs will no longer be produced for the marine industry after 1995.

There may be expensive supplies of CFC-12 — one of the mainstays of marine air conditioning and refrigeration systems — but they will be scarce. The time to act is now.

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### TBT ban threatens yard business

If a draft directive currently under discussion at the European Parliament is adopted without amendment, the use of tin-containing (TBT) antifouling within EU member countries could be banned from 1997 onwards.

The consequences for ship repair yards could be disastrous, according to **Peter Lenney**, marine business director for marine coatings company International (Courtauld's Coatings): "The implications are massive. The most efficient antifouling products which provide clear environmental and economical benefits to shipowners may simply not be available throughout Europe."

The greatest threat lies in the fact that ship operators faced with a possible ban on the application of TBT antifouling would have to look outside Europe for their drydockings. The resultant fall-off in drydocking demand for the European yards would be disastrous, with job losses inevitable, said International.

At present, the directive seeks to introduce a unified set of regulations for biocidal products in the EU, but **Nick Granger**, director of the Shipbuilders & Shiprepairers Association (SSA) which represents U.K. yards, points out: "The Biocidal Products Directive goes far wider than shipbuilding and ship repair. It was devised by the Health, Safety and Environment experts and until quite late in the day no one thought of



asking industry how practical a measure it was." In theory, the directive should greatly simplify the process of bringing products to the market in accordance with the needs of the shipping industry across Europe — a principle which has been welcomed by the marine coatings industry. It is the wording of the proposal, however, that has gone awry.

Jotun, a pioneer of TBT-free antifouling, along with International, has taken environmental factors to heart with the development of its TBT-free Seaguardian product but, nevertheless, Marketing Manager **Linda Diamond** points out: "A number of our larger customers requiring five years fouling free sailing periods have now switched back from tin-free to the TBT type self-polishing antifouling and would certainly continue along this route until a tin-free product guaranteeing the same type of protection is available." She also questions the true environmental benefit of a TBT ban: "When considering the environment there are a number of factors to be taken into account. Since the introduction of self-polishing antifouling, the TBT content has been reduced. As tin-free antifouling remains less effective than tin-bearing products over longer sailing periods, users must be prepared to accept shorter drydocking intervals or possible fouling and a rougher hull. Then it is relevant to ask whether the environment is better served by greater fuel consumption than the release of minute quantities of biodegradable TBT compounds into the oceans."

Marine coatings manufacturers are strongly petitioning for amendments. The Marine Painting Forum (a 20-member strong group of shipyards, contractors, manufacturers, etc.) is urgently attempting to clarify the situation, and the SSA has participated in discussion of the directive and its likely effects within the Association of West European Shipbuilders Group on Shiprepair and also within the Board of the Committee of EU Shipbuilder Associations (CESA).

Concerns have further been raised with the industry Directorate (DGIII) in the European Commission and with individual member states.

**J. Ventura de Sousa**, director of Portugal's Lisnave, one of Europe's foremost ship repairers, acting in his capacity as a member of the Transport Working Group of the Association of Portuguese Shipyards, has written to the president of UNICE (Union of Industrial and Employers Confederation of Europe) to ask that the matter be added to the agenda of the next annual OECD hearing of international governmental and professional organizations. He expresses his concern: "Unless modifications are made, the directive will cause drastic losses of business and possibly closure of some European yards, mainly those which are devoted to the building and repair of high-tonnage vessels."

May, 1995

## Changes at Malta Drydocks


With a healthy repair and conversion orderbook extending beyond the summer and every one of its seven large drydocks occupied, Malta Drydocks has managed to instantly expand its facilities. This has been achieved by absorbing neighboring Malta Shipbuilding Company and

its two drydocks capable of accepting vessels up to 120,000 dwt.

**Sammy Meilaq**, chairman of Malta Drydocks, told *MR/EN* on a recent visit to the yard that the merger, which was agreed upon late last year, is taking place gradually. He confirmed that shipbuilding ac-

tivities will continue but with a greater concentration on smaller vessels such as tugs, supply and support vessels, specialized steel workboats, small product carriers, crane barges and pontoons.

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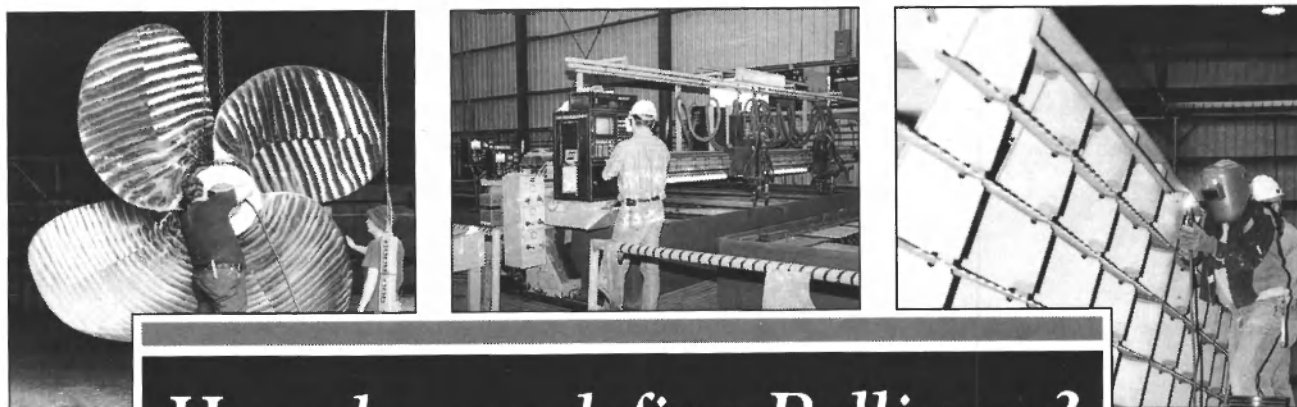
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Harbor, the shipbuilding yard will, in the short term, be used primarily to ease the pressure at the Drydocks. In addition to the two sizable drydocks, one of which is to be enlarged, the yard brings with it numerous cranes, several specialist workshops, some modern welding machinery and 400 skilled workers. Many, including Mr. Meilaq, began as apprentices when it was a Royal Navy dockyard.

Malta has the advantage of being located right in the middle of the Mediterranean between Sicily and North Africa and on the through routes to the Suez Canal, Cyprus, Greece, Turkey and Israel from the Atlantic. Little deviation from a normal trading route is not, however, the only attraction of Malta Drydocks as a repair location. Its single site facilities can accommodate vessels up to 300,000 dwt, the yard has been strike free for 24 years, rates are competitive and

it has a reputation for high quality workmanship. It is fully self-contained in every trade, avoiding the use of subcontractors — and in addition to the drydocks, it has well over a mile of completely sheltered deepwater berths strategically lined with cranes having lifting capacities ranging from 50 to 150 tons.

Over the years, the yard has gained distinguished renown in cruise liner repairs and upgrading but, at the time of our visit, all were cargo vessels, three of which are U.S.-owned. Both the 540-ft. (164.6-m) *Galveston Bay*, owned by Afram Carriers Inc., and the East Atlantic International-owned, 565-ft. (172.4-m) *Galaxy* were in for deck and hatch repairs, general steelwork replacement, boiler and auxiliary machinery repairs and hull blasting and painting. *Mantineia*, a 750-ft. (228.5-m), 60,000-dwt vessel, owned by Metro Freighting, was also

having extensive repairs made to steelwork and machinery. Neighboring docks contained the 123,357-dwt Libyan-owned tanker *Essidra* undergoing significant steel renewal and the 5,449-dwt Dutch cargo vessel *Holland Klipper*, its routine dock work nearing completion.

Just leaving dock was a 286-ft. (87.3-m) Australian owned research ship *Arctic P*, a major conversion which Mr. Meilaq hopes will set the trend for future work to be handled by the Shipbuilding Division at the Marsa Creek premises. Originally an offshore support vessel, the craft underwent a major extension to the superstructure and general refurbishment of the existing cabins to provide luxury class accommodation. New equipment installed includes a 20-ton deck crane, navigational systems and air conditioning.

Mr. Meilaq is confident regarding the future of the newly enlarged Malta Drydocks following the merger with its shipbuilding neighbor. "We will be making cost savings in the obvious overhead areas such as accounts and purchasing and we are already benefiting from a highly flexible and well-trained labor force who have already agreed to cooperate fully. The valuable Marsa facilities which, frankly, have been underemployed in recent years, will be far better utilized, partly for newbuilds, partly for repairs and conversions," he added.

He also expects that, by confining shipbuilding activities to smaller specialized vessels, improving site utilization and bringing about administrative economies, the yard's shipbuilding competitiveness will significantly improve. A more aggressive marketing campaign backed by the resources of the larger unified concern is planned.

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**Vosper Thornycroft Launches QENS Barzan, Qatar Emiri Navy Ship**



Vosper Thornycroft (VT), U.K., launched the first of a new series of fast strike craft for the Qatar Emiri Navy at its Southampton, U.K., shipyard on April 1, 1995.

The 187.7-ft. (56-m) vessel was named QENS *Barzan* in a ceremony performed by Sheikh Major General **Hamad Bin Abdullah Al-Thani**, minister of state for Defence Affairs.

QENS *Barzan* is the first of four strike craft being designed and built by VT for the Qatar Emiri Navy and after launching will be fitted out before delivery next year. Subsequent vessels will be delivered during 1996 and 1997.

This VITA class strike craft is another example of VT's world-renowned family of warships which extends from patrol boats to strike craft, corvettes, frigates and minehunters.

VT has produced a series of successful designs in the 165 - 197-ft. (50 - 60-m) range with strike craft also delivered to the Royal Navy of Oman and Kenya in recent years. The Qatar VITA class will be among the most advanced and powerful ships of their size ever built. VT has built 270 ships for 34 navies over the past 30 years.

In addition to the shipbuilding contract, VT will be providing the Qatar Emiri Navy with



extensive integrated logistics support including ship documentation, through-life support and training.

Such close links with its customers have helped to make VT one of the world leaders in ship sales to Gulf countries over the past three decades.

Managing Director **Martin Jay** commented: "VT's close relationship with Gulfnavies has been built on providing the best ships and supporting them throughout their operational lives." Efforts to ensure the quality of those ships include considerable investment in the latest computer-aided design workstations, one of Europe's biggest laser steel cutting machines, advanced welding equipment and a new shipbuilding module hall.

VT has an orderbook of approximately \$970 million, which includes 14 ships. Besides the Qatar contract, two corvettes are under construction for the Royal Navy of Oman and a minehunter for the Royal Saudi Naval Forces is being fitted out.

Work also starts later this year on the first of seven minehunters for the Royal Navy in a contract that extends to the year 2001.

For more information on  
**Vosper Thornycroft**  
Circle 64 on Reader Service Card

#### HDW Awarded Certificate Of Quality

Howaldtswerke-Deutsche Werft (HDW) AG in Kiel, Germany, has been awarded the international ISO 9001 recognition of quality for its management team. Germanischer Lloyd's general agent, Professor **Gerhard Fischer**, presented the award to HDW's spokesperson for the board, Dr. **Jürgen Gollenbeck**. The certificate covers all areas of production at the yard and is valid throughout the world. Since 1992, HDW has been in possession of the certification in the naval shipbuilding sector; merchant shipping and ship repair have now been added.

#### GEC Alsthom Appoints President/CEO

**Pierre Bilger** has been appointed president and CEO of GEC Alsthom following **Jean-Pierre Desgeorges'** decision to resign as chairman of the management board. The management board comprises: **James Cronin**, managing director; **Kelvin Bray**, managing director of the Power Generation Division; **Claude Darmon**, managing director of the Transportation Division; and **Robert Mahler**, managing director of the Power Transmission & Distribution Division.

For more information on GEC Alsthom  
Circle 71 on Reader Service Card

#### Environment-Friendly Rust Removal System

Norwegian company Dalseide Shipping Services A/S has developed a rust-removal system that uses a rotating head with chain links. The "Rustibus" can be connected to an ejector and reportedly does not cause any pollution. Rustibus has a capacity of approximately 20-30 sq.

m. per hour with a resulting surface in accordance with SA 1.5 - SA 2. If vessels require a surface quality up to SA 2.5 - SA 3, Rustibus can be used together with grit blasting. According to the manufacturer, Rustibus users claimed an increase in capacity from 40 sq. m. to 200 sq. m. of treated and painted surface per day, by combining Rustibus and grit blasting.

For more information on Dalseide  
Circle 8 on Reader Service Card

#### New Mud Handling System Introduced For Offshore Drilling

BJ Services AS and AMEC Itronic AS of Norway have introduced a new mud handling system designed to save time and protect the environment. The system, which reportedly requires almost no maintenance,

(Continued on page 20)



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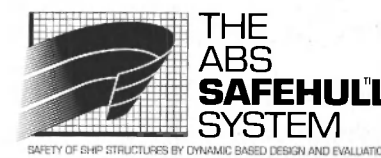
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## Gunderson Inc. Launches First Barge In Decade

In February, Gunderson Inc., Portland, Ore., launched its first barge in 11 years. The barge — a 296-ft. (90.2-m) hydraulically operated, self-dumping hopper barge, designed by Glosten Associates of Seattle — was delivered to Dutra Construction Company, Inc., Calif.

The barge, *M.S.-5*, has a capacity of 5,000 cu. yds., is full-ocean rated, and according to Gunderson, is the largest of its type ever built on the West Coast. A second, identical barge, also built for charter to Dutra, is already under construction, with delivery scheduled for later in 1995.

L. Clark Wood, Gunderson president, commented, "We are delighted to be re-entering the marine business after suffering through 10 years of a severely depressed barge market. During that time we maintained our marine capability, keep-

ing key engineering, scheduling, lofting and supervisory staff. Over the last two and one-half years, we made significant upgrades to our marine facilities in preparation for a market that is now coming back."

Gunderson Inc. is a unit of The Greenbrier Companies, a family of transportation, leasing and management companies, and owner of Autostack equipment, which transports automobiles in standard intermodal trailers or containers.

For more information on Gunderson, Inc. Circle 100 on Reader Service Card

### *M.S.-5* Specifications

Length	296 ft. (90.2 m)
Width	54 ft. (16.4 m)
Depth	23 ft. (7 m)
Capacity	5,000 cu. yds.



Gunderson launches its first barge since 1984.

(Continued from page 19)

nance, is based on enclosed handling of mud chemicals. Since the system is enclosed, the system operator and the surrounding environment are not exposed to the chemicals being drilled. It is not necessary to halt the drilling procedure to install this system, and the system can be operated by one worker, offering an advantage over the traditional two-person process. The manufacturer claims that the system's high-rate mixer also mixes 90 metric tons an hour, compared to the normal 50 metric tons an hour.

### Detroit Diesel Invests In Davco Manufacturing

Detroit Diesel Corporation and Davco Manufacturing Corporation announced the formation of a joint enterprise and purchase of Davco from its founder, Leland D. Davis.

Davco, located in Saline, Mich., designs, manufactures and sells filtration products for diesel engines used in the marine market. Davco has been a supplier to Detroit Diesel

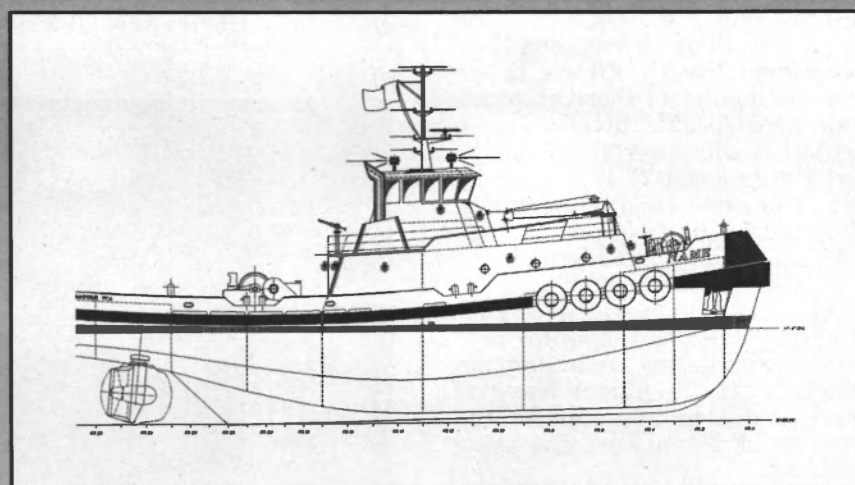
which has purchased and distributed Davco products under a private label. According to Bill Johnston, Detroit Diesel vice president of parts and remanufacturing, "Davco produces a superior quality filter product and our combined expertise as the result of this agreement should help to strengthen the products and the operations of Detroit Diesel and Davco."

For more information on Detroit Diesel Circle 3 on Reader Service Card

### Gladding-Hearn Supplies Ferry To Outward Bound

Boston's Thompson Island Outward Bound Education Center has ordered a new passenger vessel from Gladding-Hearn Shipbuilding, The Duclos Corp. The new 65-ft. (19.8-m) steel vessel is designed to operate year-round, and is equipped with a Detroit Diesel 8V-92NA engine, producing 315 bhp at 1,800 rpm with a top speed of 11 knots. The diesel engine drives a 42-in. bronze

## Nichols To Build Tug With 111,000-Lb. Bollard Pull



Drawing of *Escort Eagle*, a reverse tractor type of tug to be built by Nichols Bros. Boat Builders of Whidbey Island, Wash.

Nichols Brothers Boat Builders President Matt Nichols announced an order for a 117 x 35 x 16-ft. (35.6 x 10.6 x 4.9-m) reverse tractor tug, the *Escort Eagle*, designed for both ocean towing and ship handling, that will deliver 111,000 lbs. of bollard pull. With a maximum fuel capacity of 110,000 gallons, the vessel will have a 32-day towing range.

Being built for Fred Dahl, Jr., whose D&V Boat Company, Seattle, will use the vessel for both inland and international ocean service, the *Escort Eagle* will be delivered in August. D&V officials are now looking at all new contracts for future work. The vessel is load line classed for work in foreign ports as well.

The hefty bollard pull results from a pair of Caterpillar 3516 engines driving Aquamaster 1701 Z-drives. The Z-drives are equipped with four-blade, 6.5-ft. (2-m) propellers turning in nozzles.

A 12V-71 Detroit Diesel between the two main engines will power a 3,000-gpm water pump to supply

water to Stang fire monitors on deck. A Boss foam firefighting system is also installed for use on oil fires.

Ship's service power will be provided by two 90-kW Caterpillar-driven plants. A hydraulically powered ship assist winch/tow on the foredeck will hold 450 ft. (137 m) of 8-in. Spectra line. An articulated hydraulic crane will be used to handle line and the tug's rescue boat, a Zodiac inflatable with a 100-hp Mercury outboard.

The aft Red Fox tow winch will carry 2,000 ft. of 2-in. wire on the main drum and 650 ft. of 8-in. Spectra on the second drum. Tug towing and running lights will allow towing astern as well as forward.

Layout below includes two shower/head units, an all-electric galley, four two-person staterooms, and one single stateroom.

The *Escort Eagle* was designed by Jensen Maritime Consultants, Seattle, and Fred Dahl, Jr.

For more information on Nichols Bros. Circle 66 on Reader Service Card

propeller via a Twin Disc 3:1 reverse/reduction gear and stainless steel shaft. The generator is a 15-kW Onan diesel. The vessel's bulwarks toward the stern can be removed for carrying a vessel.

For more information on Gladding-Hearn Shipbuilding Circle 4 on Reader Service Card

### Crowley Marine Barge Transports Navy Jets

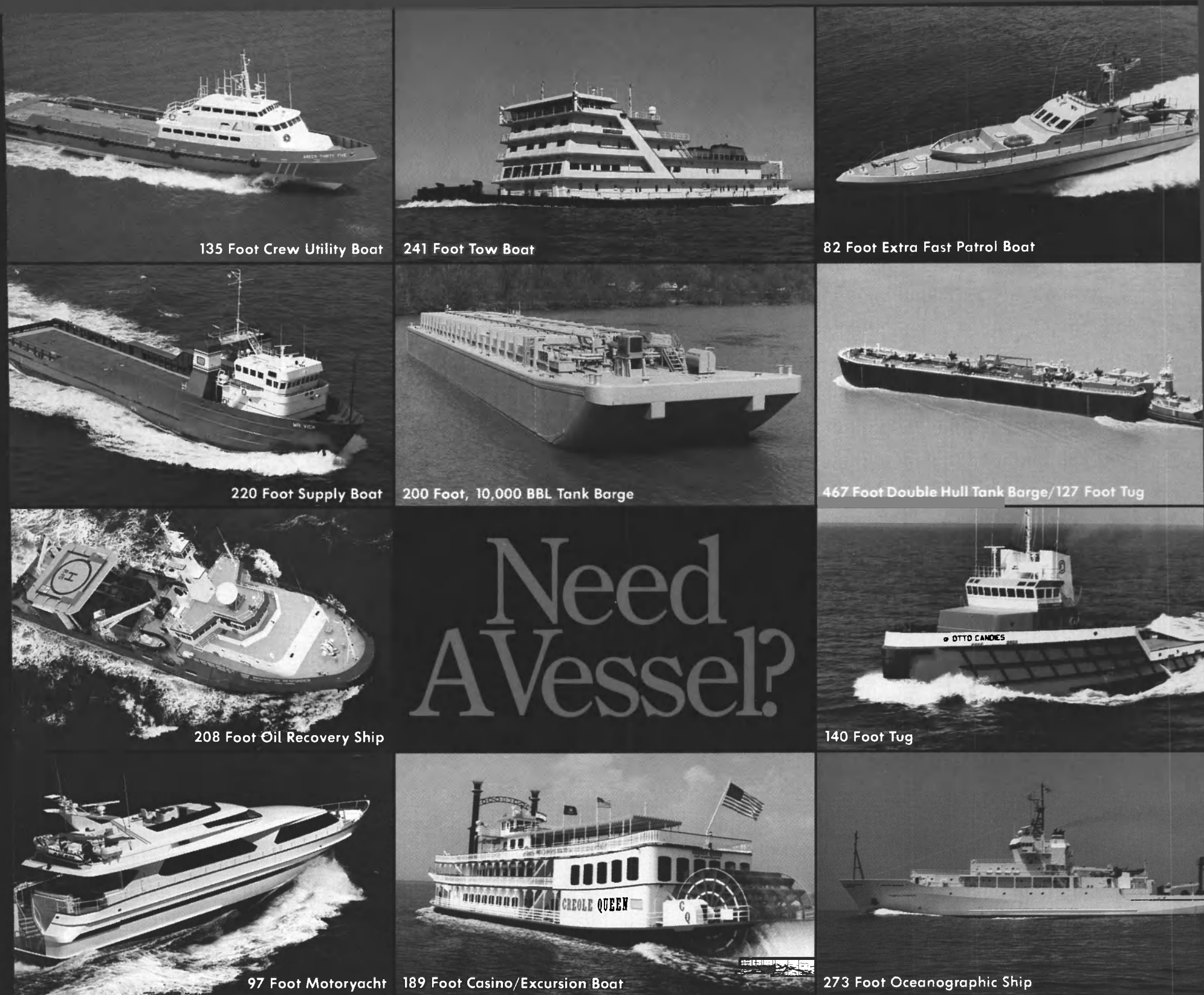
A large dry bulk barge owned by Crowley Marine Services, Inc. (CMS) is transporting 20 T-38 Navy training/fighter jets from San Diego, Calif., to Taiwan. The barge

*Alaska*, equipped with a fully enclosed steel house on deck measuring 272 ft. (82.9 m) by 70 ft. (21.3 m), will carry the unusual cargo, providing protection from the elements. Transit time is expected to be around 40 days. The 389-ft. (118-m) by 80-ft. (24.3-m) barge is being towed by Crowley's 4,300-hp tug/supply vessel *Rig Engineer*.

Crowley Marine Services, Inc. provides specialized marine transportation services, including petroleum product transportation, tanker escort and ship assist, contract barge towing and ocean towing, and marine salvage and emergency response services.

For more information on Crowley Marine Services, Inc. Circle 5 on Reader Service Card





## Trinity's Probably Already Designed And Built It.

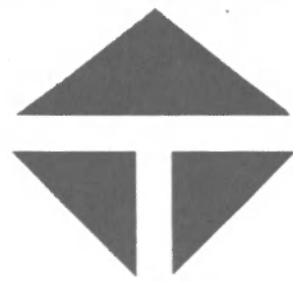
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## Dockwise Transports MHI Cranes Using New Bracing System



The *Dock Express 11* leaving the port of Hiroshima with a cargo of two fully-erected post-Panamax container cranes bound for Hong Kong and Yantian, China, braced with tensioned wires. The red painted gooseneck crane is destined for the MTL Terminal in Hong Kong. The blue painted crane with its boom upright has been delivered to the new terminal in Yantian.

Dockwise NV, which says it is the operator of the largest fleet of semi-submersible heavy-lift vessels in the world, successfully moved two fully-erected post-Panamax container cranes on board the *Dock Express 11*, using a new, reportedly cost-effective bracing system.

An unusual feature of this transport is that the cranes were shipped without any welded diagonal steel bracing pipes.

Due to the good seakeeping characteristics of the *Dock Express* type of vessel, the forces acting on the cranes due to the motion of the ship in a seaway are reportedly much lower than the forces acting on

a barge. This enables the cranes to be braced by a system of tensioned wires instead of massive welded steel bracings. This method results in considerable cost savings for the crane builder.

Both cranes were built by Mitsubishi Heavy Industries (MHI) in Hiroshima.

For more information on Dockwise NV  
Circle 73 on Reader Service Card

For more information on  
Mitsubishi Heavy Industries  
Circle 74 on Reader Service Card

## Argonautics, Inc. Engineers Heavy Lift By Russian Ship



In February 1995, two ship unloaders were safely delivered to the refurbished Guacolda pier in Huasco, Chile. The unloaders were shipped fully erected by Trinav Shipping (Barbados) Ltd., using the Russian heavy lift ship *Stakhanovets Ermolenko*. Argonautics Marine Engineering of Sausalito, Calif., provided all the engineering and supervision required for the safe load-out, seafastening, transportation and offloading of the unloaders.

The two Paceco Corporation-designed luffing type ship unloaders were built by Sade Vigesa at the Verolme yard in Angra dos Reis, Brazil. Each unloader measured approximately 51.5 ft. x 33 ft. (15.7 x 10 m) with a total height of approximately 170.6 ft. (52 m). Total shipping weight was 465 tons.

The transport engineering

started in September 1994. First loading and offloading locations were surveyed. A structural model of the unloaders was prepared for the strength analysis of the unloaders subjected to the inertia loading during transportation.

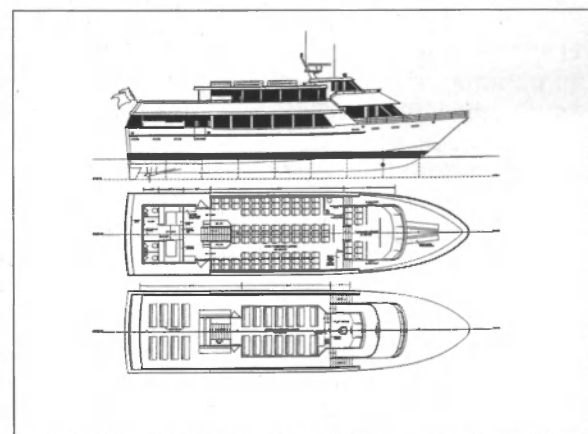
Various seafastening scenarios were analyzed and the optimum configuration was selected.

The *Stakhanovets Ermolenko* departed on Jan. 9. During the voyage, the maximum experienced roll motion was on the order of 13 degrees in a 15-second roll period, well within the design limits of the seafastenings. Weather was favorable and the transport went smoothly. On Jan. 25, the ship arrived at the anchorage of Huasco, Chile.

For more information on Argonautics  
Circle 75 on Reader Service Card

## Westport Shipyard To Deliver Alaskan Explorer

Kenai Fjord Tours, which hosts day excursions out of Seward, Alaska, to Kenai Fjord National Park, will take delivery of a new 100-ft. (30-m) boat built by Westport Shipyard, Inc. of



**RIGHT:** Artist conception of *Alaskan Explorer*, being built by Westport Shipyards for Kenai Fjord Tours.

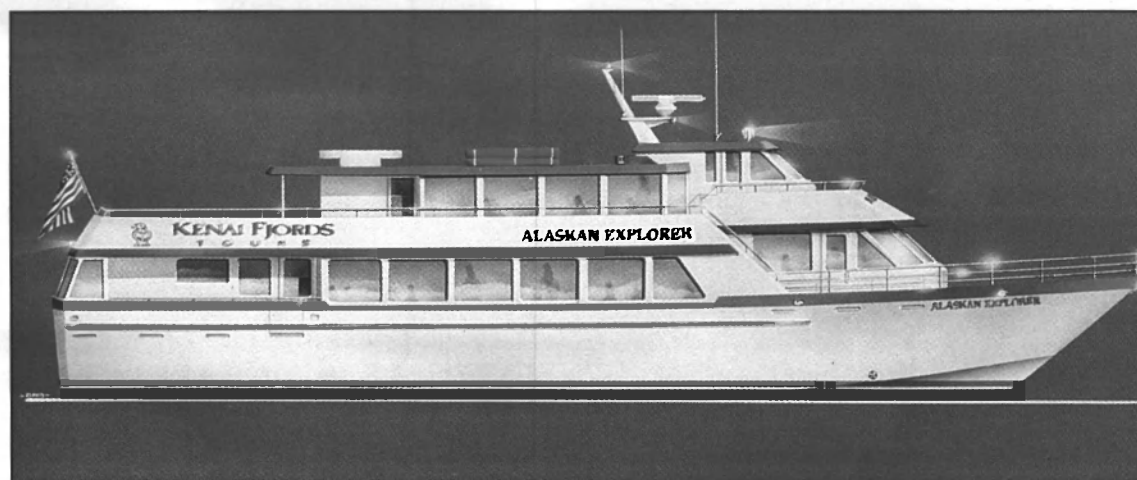
**ABOVE:** Profile and arrangement drawing of the *Alaskan Explorer*.

Westport, Wash., this spring.

**Randy Rust**, general manager of Westport, announced that his company will build the *Alaskan Explorer*, designed to operate off the coast of the Kenai Peninsula in Alaska. The 149-passenger, U.S. Coast Guard-certified vessel will be licensed for coastwise service.

Designed by Jack Sarin Naval Architects of Bainbridge Island, Wash., the vessel will be based on the 100 x 22.6-ft. (30 x 6.9-m) Series 9500 high-speed hull, which has been tank tested to 45 knots. However, powered by 3512 DITA

(Continued on page 25)





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Circle 274 on Reader Service Card



(Continued from page 22)

Caterpillar engines developing 1,750 hp at 1,800 rpm, the boat will operate at a top speed of 28 knots. The Caterpillar engines will drive propellers through 2.5449:1 ZF 460 marine gears.

Notable features to be incorporated in the vessel include Twin Disc's Power Commander engine controls with monitors at two control stations. Ride control involves the Koop Nautic Sea Rocq 2030 system. The system, from The Netherlands, reduces roll and corrects for listing, and incorporates electronic gyro, AVA sensor, and 9.5-sq.-ft. fins.

The exterior arrangement is designed to allow easy passenger movement between decks via exterior stairways port and starboard. Mr. Rust said this plan will allow more passengers on deck when the vessel tours the glaciers and bird rookeries found in the park. The "Portuguese Bridge" design will also allow passengers walkway in front of the wheelhouse.

The *Alaskan Explorer* will join a number of other Westport FRP/Airex excursion vessels operating out of Seward.

For more information on Westport Shipyard  
Circle 67 on Reader Service Card

## Cruise + Ferry 95

Cruise + Ferry 95 is scheduled to take place on May 16-18, in London, at the Olympia 2 Conference & Exhibition Centre. The show and conference will be attended by exhibitors from more than 18 countries, and ten national pavilions are planned. Shipyards taking part account for more than 80 percent of the major cruise ships on order and more than 90 percent by tonnage. Cruise ship builders Kvaerner Masa-Yards, Fincantieri, Chantiers de l'Atlantique, Meyer Werft and Bremer Vulkan will be represented. Equipment suppliers, outfitters and refurbishers will be present, as well as designers and port authorities. The following section highlights some of the new products and services to be featured at Cruise + Ferry '95.

### Thorn Security's Saturn Safety Management System

The latest superliner, P&O Cruises' *Oriana*, was the first ship to utilize Thorn Security's Saturn Safety Management System to increase passenger safety. Saturn is a real-time, multi-tasking computer which can monitor and control various safety sub-systems, including fire doors, sprinklers, HVAC fans and security systems from remote terminals. The Saturn system will be on display at Cruise + Ferry, along with Thorn's proven analog fire detection system and low location lighting.

For more information on Thorn Security  
Circle 21 on Reader Service Card

### HMS Introduces Latest Innovations

HMS S.A. is involved in designing and integrating public address systems, TV and radio reception and distribution, and entertainment systems for the marine industry. The company's Cruise + Ferry stand is located in the French pavilion and will feature two of the company's latest innovations: a new passenger cabin safe, and a 24-in.-diameter Satellite Antenna, type 2494E, developed by Sea Tel Ltd.

For more information on HMS  
Circle 22 on Reader Service Card

### B&B Italia's HSP Panel System

Cruise + Ferry will be B&B Italia's first presentation of its fireproof HSP panel system. The HSP panel is a composite panel constructed with aluminum and fiberglass for lightness and resis-

May, 1995

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tance. Additional thermal and acoustic absorption properties can be given to the basic panel, which is made up of two fiberglass sheets enclosing a core of aluminum. When the panels are exposed to an open flame, there are reportedly no toxic gas emissions released.

For more information on B&B Italia  
Circle 23 on Reader Service Card

**Racal-Decca's Integrated Bridge For The Small Ship**

A new development in marine electronics has been launched by Racal-Decca Marine which makes big ship integrated bridge systems available for smaller vessels. The MIRANS (Modular Integrated Radar and Navigation System) 2000 and 1000 offer users the opportunity of choosing a system of a size and capability which suits their specific vessel requirements. Racal-Decca will also feature its new radar at Cruise + Ferry, the Bridgemaster 250 ARPA.

For more information on Racal-Decca  
Circle 24 on Reader Service Card

**Norac Akerpanel Accommodation Systems**

Norac AS will feature Akerpanel fireproof interior panels, B-15 to A-60 class, for maritime utilization and offshore units. The sandwich design panel system is high sound absorbent (43 dB), and 50 mm thick. The systems are available in standard version or as a fully modular system. The CAD panel plans are devised by Norac with high-grade accuracy for an easy installation process.

For more information on Norac AS  
Circle 25 on Reader Service Card

**Atlantic Engineering For Ship Repair, Conversion, Maintenance Services**

Atlantic Engineering is exhibiting at Cruise + Ferry, and will spotlight its engineering services, laboratory services, and fuelab on-board test kits at the show. The company specializes in marine engineering problem solving, encompassing component repair or refurbishment, metallurgical failure investigation and fuel and lubricating oil testing.

For more information on Atlantic Engineering  
Circle 26 on Reader Service Card

**Norsk Hydro Waste Treatment Systems Features Exclusive Bio Products**

Norsk Hydro Waste Treatment Systems AS has gained exclusive rights to biological products manufactured by Envirotech International, Inc. Norsk Hydro, an innovator of waste treatment systems for the cruise ship industry, now has access to advanced biological products for grease and odor elimination in waste water and sewage treatment plants. Cooperative efforts between the engineering staff of the two companies has resulted in maximizing effectiveness of biological activity of products that reduce odor, grease and corrosion.

For more information on Norsk Hydro  
Circle 28 on Reader Service Card

**Durastic Flooring And Decking**

Durastic Flooring & Decking will feature a new Product Selector at this year's show. Aimed at aiding designers in the specification of an appropriate marine deck covering material or system, the Product Selector gives details of 32 product types and 15 different areas of use. So that shipowners can select the most functional, economic and aesthetically pleasing product, Durastic divides deck coverings into groups: underlayments, finishes, weather decks, fire resistant decks, and other products for areas such as refrigerated holds.

For more information on Durastic  
Circle 69 on Reader Service Card

Maritime Reporter/Engineering News



### MES Delivers 4,700-TEU Containership, Tyne

The 4,700-TEU containership *Tyne*, built at the Chiba Works of Mitsui Engineering & Shipbuilding (MES), was delivered on March 29, 1995 to owner MOL Euro-Orient Shipping SA of Panama. The 981-ft. (299-m) vessel, with an over-Panamax hull form and at 47,549 DWT, is one of the biggest containerships in the world, with a maximum capacity of 4,708 TEUs.

The vessel is powered by the latest model of the 10K90MC Mitsui-MAN B&W main diesel engine, driving a highly skewed propeller.

For more information on MES  
Circle 151 on Reader Service Card

### Hitachi Zosen Gets Three-Containership Order

Hitachi Zosen Corporation received an order for three 71,170 metric ton class bulk carriers from Efloia Shipping Co. SA of Greece through Nissho Iwai Corporation.

Efloia Shipping is a second-tier Greek shipowner founded in 1954. Hitachi Zosen has built a total of eight ships for Efloia, including two bulk carriers of the same type that were delivered to an Efloia family group in 1994 via Nissho Iwai.

The three 705-ft. (215-m) bulk carriers are of the largest Panamax Optima type that Hitachi Zosen recently developed for passage through the Panama Canal. The main engine of the bulk carriers will be an energy-efficient Hitachi Zosen B&W 6S60MC type diesel. The ships are all slated for delivery in 1997.

For more information on Hitachi Zosen  
Circle 152 on Reader Service Card

### ZF Acquires Hurth Group's Driveline Technology Div.

The German Cartel Office has approved the takeover by ZF Friedrichshafen AG, of the Driveline Technology Div. of the Hurth Group of Munich. The acquisition includes marine, rail and truck transmission manufacturing facilities in Arco, Italy, and Munich and Gotha, Germany.

Gary Collar, manager of marine sales for ZF Industries, said, "The takeover is viewed by ZF Friedrichshafen AG as an excellent opportunity to enter the small to medium marine transmission market, an area in which Hurth has long been recognized as a market leader."

ZF now offers a marine transmission product line ranging from 4 to 7,500 kW (5 to 10,000 hp), for a wide range of applications. ZF will market Hurth transmissions under the new name of ZF-Hurth Marine Spa. They will be supported by ZF's worldwide sales and service network.

For more information on ZF  
Circle 153 on Reader Service Card

### Lorton Bros. To Acquire Tampa Shipyards

George and Carl Lorton and Tampa Shipyards Inc., agreed to a contract under which the Lortons will purchase substantially all the operating assets and facilities of the yard, a subsidiary of the American Ship Building Company. The purchase, valued at more than \$20 million, including \$15 million in out-

standing bonds issued by the Tampa Port Authority, must be approved by the U.S. Bankruptcy Court and the Port Authority.

The Lorton brothers also own International Ship Repair and Marine Services. George Lorton is chairman and president, and Carl Lorton is vice president, secretary and director of the company.

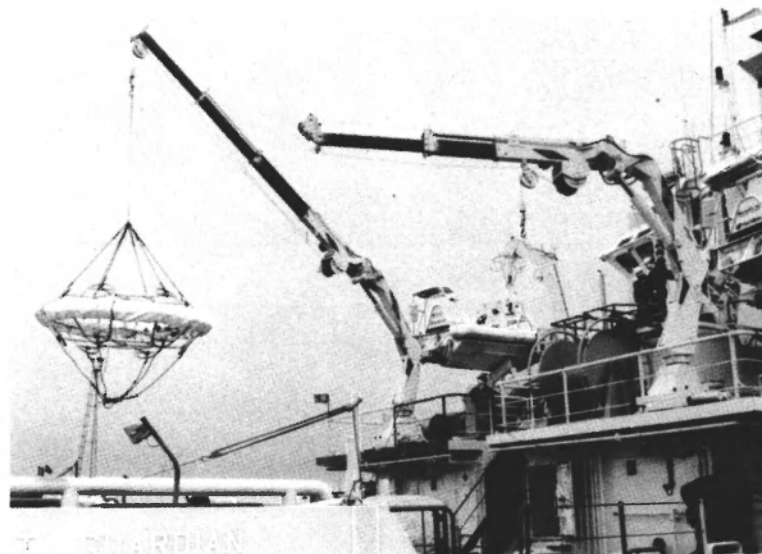
George Steinbrenner, who headed the group of businessmen who acquired American Ship in

1967, has personally loaned the yard more than \$11.5 million to keep it open and operational.

Carl Lorton said the acquisition will allow his company to expand operations and service larger vessels. The company plans to operate its businesses separately. The Lortons reportedly do not plan to undertake new construction in either of their facilities, only repair.

For more information on the acquisition  
Circle 154 on Reader Service Card

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Gr. Britain	Effer UK 00446221890382	00446221670066
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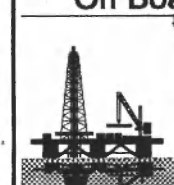



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Circle 206 on Reader Service Card

May, 1995

27



ABOVE: Artist rendering of the CAT 70 HL, recently ordered by Catamaran Lines I for build at Royal Schelde.

## Royal Schelde And Catamaran Lines I Contract For Fast Ferry

Royal Schelde of The Netherlands and Catamaran Lines I Shipping Co. of Greece have signed a contract for the building of a Royal Schelde CAT 70 HL high-speed passenger/car/trailer ferry, with an option for one or two vessels. The first vessel is scheduled to operate on a route between Italy and Greece during the summer months and an alternative route in the winter months.

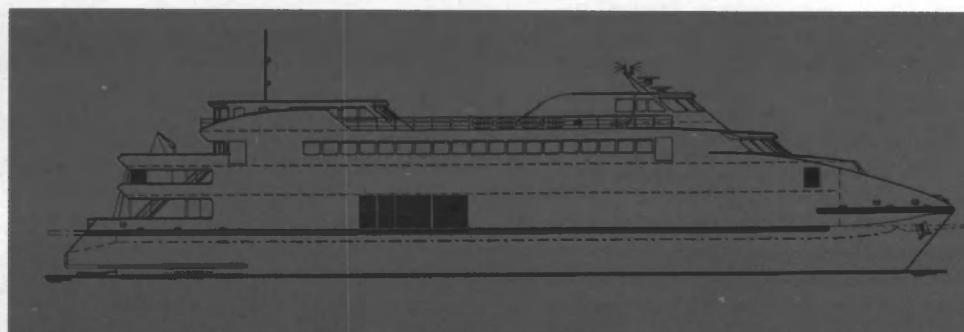
The CAT 70 HL can accommodate 620 passengers and has two car decks for 152 cars, or alternatively 115 cars and 360-ft. (110-m) lane length for trucks, or 90 cars and 524-ft. (160-m) of lane length for trailers/trucks. The vessel has a wide aft ramp, allowing it to be loaded and unloaded using a drive-round system. The range of the vessel at maximum loading speed and with

41-ton fuel oil bunkers is approximately 300 nautical miles, plus ten percent reserve capacity.

Royal Schelde is a yard with 125 years of experience building merchant, naval and high-speed vessels.

Catamaran Lines I Shipping Company is reportedly the first Greek operator to conclude a contract for a large high-speed passenger/car/truck ferry.

For more information on Royal Schelde  
Circle 13 on Reader Service Card



### Vessel particulars

Length .....	251.3 ft. (76.6 m)
Width .....	72.6 ft. (22.15 m)
Draft .....	9.8 ft. (3 m)
Maximum speed .....	36 knots

### Vessel equipment

Main engines .....	Caterpillar 3616 DITA
Waterjets (4) .....	Lips, KaMeWa

## NYC Council Approves High-Speed Ferry Franchise

The New York City Council has granted a terminal lease and operating franchise to New York Fast Ferry Services, Inc. for a high-speed ferry service between Staten Island and midtown Manhattan. The term of the lease is 12 years with two five-year extension options. The new route will offer commuters a transit time of 18 minutes between the St. George ferry terminal in Staten Island and midtown on the west side of Manhattan.

Two 114-ft. (35-m) 350-passenger catamarans will operate the 8.6-nautical mile route starting in the summer of 1996, with a third vessel to follow in 1997. Powered by twin MTU diesel engines coupled to waterjets, the ferries will cruise at 35 knots. The vessels will be constructed at the Derektor yard in Mamaroneck, N.Y.

For more information on  
Fast Ferry Services, Inc.  
Circle 9 on Reader Service Card

## Ferry Association Takes Shape

In January, the American Association for the Advancement of Marine Ferries (A<sup>2</sup>mF) formed to further the promotion and construction of slow/high-speed ferries operating in U.S. waters. The ultimate goal of the association is the construction of ferries by U.S. yards. Prospective association members include shipyards, manufacturers, suppliers, ferry owner/operators, designers, engineers, architects, civil construction contractors, environmental corporations, and other interests. Corporations range from larger companies such as Intermarine of Savannah, Ga., to Sayville Ferry Service of Sayville, N.Y. For more information, contact James M. Acuna, president, at 15606 Powell Lane, Mitchellville, Md 20716, tel/fax: (301) 249-5532.

## WaveMaster Busy With Newbuildings

WaveMaster International recently delivered sister vessels, the 108.2-ft. (33-m) *Langkawi II* and *Langkawi III*, to the Duala Perlis Langkawi

Ferry Service on the west coast of Malaysia. The ferry service already operates a fleet of four WaveMaster monohulls. The new ferries will each carry 200 passengers at a continuous speed of 32 knots, and each is propelled by two MTU 12V 396 main engines.

WaveMaster has also contracted to build the next vessel in the Sydney, Australia ferry fleet. The \$2.5 million vessel, a 114-ft. (35-m) catamaran for 230 passengers, is due for delivery in July 1996.

Two 172-ft. (52.5-m) fast car ferries are under construction for operation in Greece — the largest vessels yet produced by the company, carrying up to 450 passengers and 46 vehicles at 34 knots. WaveMaster will equip these vessels with four MWM engines, as well as an active computerized wave control system developed in liaison with Maritime Dynamics International, as introduced in the award-winning ferry, *SuperFlyte*.

WaveMaster International is a Western Australian corporation, jointly controlled by the Macro Corporation and Malaysian interests. For more information on WaveMaster International  
Circle 10 on Reader Service Card



## Three Major Class Societies Launch Eight New Safety Initiatives

The American Bureau of Shipping (ABS), Det Norske Veritas (DNV) and Lloyd's Register of Shipping (LR) — three of the most well-known and respected classification societies — have come together to posit eight new safety initiatives.

The initiatives, which will be implemented as soon as possible by the three, are as follows:

- 1 Strengthen the transfer of class agreement to make it mandatory that the new society withhold classification until all due requirements placed on the vessel by the previous society have been completed. This is designed to eliminate the opportunity to evade scrutiny or avoid repairs by shifting classification societies.
- 2 Aim to release to interested third parties, such as national administrations and insurance interests, certain information relative to a vessel's status and records. Such information of interest has before now been regarded as confidential, between the class society and owner.
- 3 Introduce a process which will lead to automatic class suspension when special renewal and annual surveys become overdue (suspension meaning disclassified from date of suspension).
- 4 Tighten procedures on the employment and control of non-exclusive surveyors. Criteria will be established for the employment of non-exclusive surveyors by the three societies and cover required capability, experience, and professional qualifications.
- 5 Introduce a minimum standard for monitoring surveys to ensure a reasonable measure of consistency as to how the three societies audit the effectiveness of survey activities through end-result monitoring.
- 6 Introduce criteria on the qualification and training necessary for the societies' field surveyors. The criteria will include minimum professional qualifications for hiring as well as continual training needed to acquire appropriate expertise.
- 7 Introduce procedures to respond to port state control. The three societies will have established common actions to be taken both during and after port state inspections, recognizing the importance of close cooperation with port and flag state authorities and shipowners.
- 8 Lead to a further exchange of views on all factors affecting safety and pollution prevention and their interaction, whether related to the ship, the organization, or the personnel.

The three societies consider this a major step toward safer vessels of all kinds. The move was not made on behalf of the International Association of Classification Societies (IACS), of which all three societies are members, but the three groups insist it was not a break from IACS, and that they expected fellow IACS member societies to follow suit in the near future.

## Kelton Joins Art Anderson Associates

Art Anderson Associates has welcomed **Jeff Kelton** into the company of professional naval architects and marine engineers. His responsibilities as a senior naval architect include design and specifications for high-speed, low-wash passenger ferries and vessel analyses for marine transportation stud-

ies. Mr. **Kelton** brings 18 years of experience to Art Anderson, including eight years of providing design and marketing consultation services to companies in Japan and the Far East.



Jeff Kelton

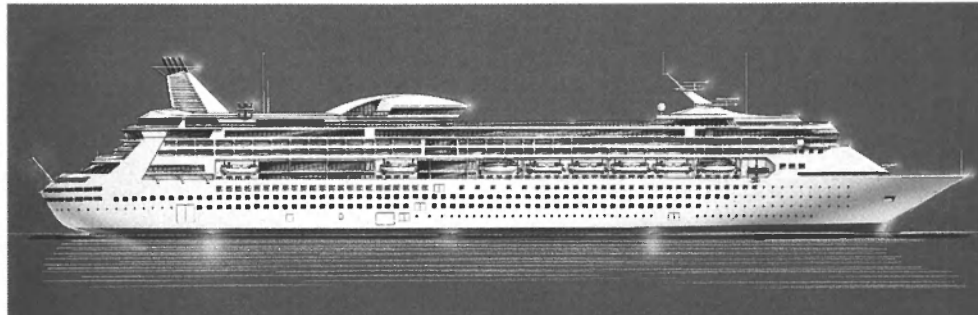
For more information on Art Anderson  
Circle 31 on Reader Service Card

For more information on any of the organizations involved in the new initiatives, circle the corresponding number on the Reader Service Card bound in this issue.

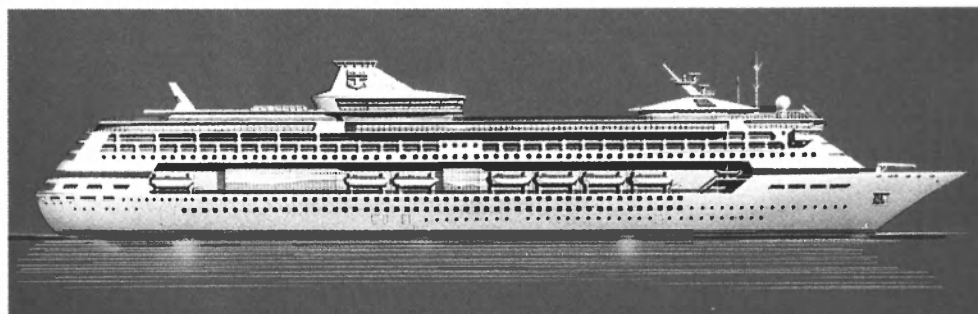
American Bureau of Shipping .....	106
Det Norske Veritas .....	107
Lloyd's Register .....	108

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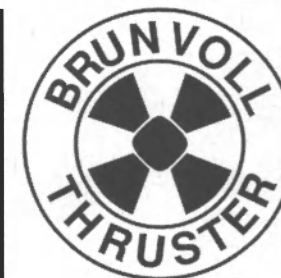
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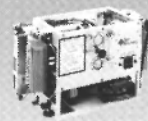


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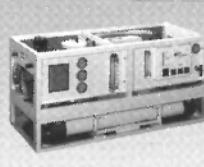
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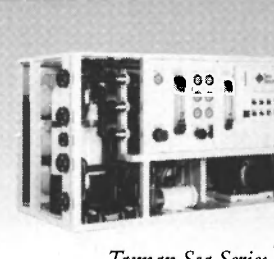
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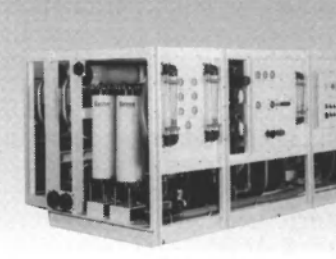
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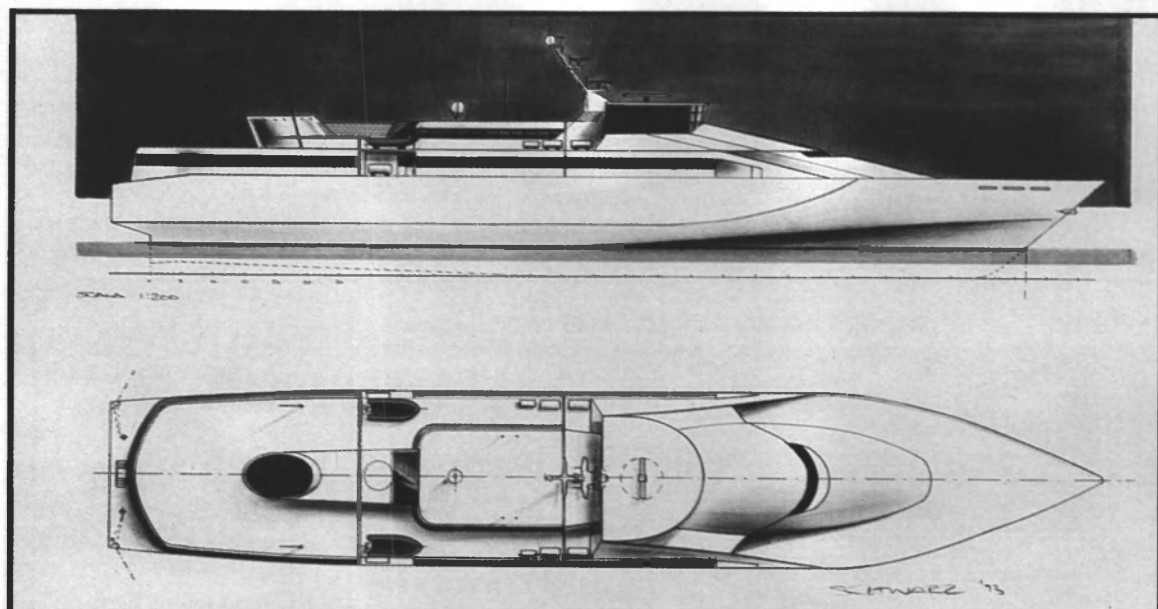


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Circle 27 on Reader Service Card

## Fincantieri's Pegasus Family To Debut Spring '96



An artist's rendering of Fincantieri's new RoRo fast ferry.



The MDV 1200 Pegasus under construction at the Riva Trigoso yard in Genoa.

Fincantieri has obtained an order for three monohull fast ferries of the Pegasus family from Genoa-based company Ocean Bridge Investments (OBI). The MDV 1200 Pegasus vessels will be used by OBI to operate a fast ferry sea line between Italy and Greece. The new vessels will be constructed in high tensile steel, built according to the new High Speed Craft Code (HSC) of the IMO and classed by Germanischer Lloyd.

The MDV 1200 Pegasus has a hull form designed to balance high speed, passenger comfort, low operative costs and high reliability. The 311.6-ft. (95-m) vessel will transport 600 passengers, 170 cars, and up to seven double-decked buses. Car embarking/disembarking operations

will be carried out through one large stern door on the main car deck and through three moving ramps which connect two garage decks.

Fincantieri will power the Pegasus with four MTU 20V 1163 TB 73L diesels, developing a total power of 24,000 kW, providing a speed of more than 36 knots. The ship is expected to enter into service in spring of 1996.

Fincantieri Cantieri Navali Italiani SpA was established in 1959 as a holding company within the IRI Group, and continues to pioneer new design and technology in the tradition of Italian shipbuilding as one of the largest yards in Europe and the Mediterranean.

For more information on Fincantieri  
Circle 11 on Reader Service Card

### Vessel Particulars MDV 1200 Pegasus

Length	311.6 ft. (95 m)
Width	52.4 ft. (16 m)
DWT	over 400,000
Main engines	(4) MTU 20V 1163 TB 73L
Propulsion units	(4) KaMeWa 112 waterjets
Service speed	36 knots

### MTU's Fast Ferry Engines Undergo Metamorphosis

Criteria used to judge the success of a propulsion system include power capability, operational reliability and low-cost maintenance and repair improvements. MTU Friedrichshafen has developed a maintenance prediction system for its 1163 fast ferry diesel engines, designed to increase the performance of its engines and cut the cost of repair. The 20-cylinder engine version, 20-V 1163 TB 73L (4), with a total output of 26,000 kW, will provide the power to further increase speeds for large passenger ferries and break the 40-knot barrier. The continuous output of the 16-cylinder version has been increased to 5,200 kW, and it too achieves impressive figures in comparison areas such as engine dimensions, power-to-weight ratio, fuel consumption and operational parameters.

The maintenance program has introduced a number of features to the 1163 engines, designed to increase the intervals between overhauls and the overall service life of the engines, thereby offering ship operators an efficient and cost-effective propulsion system. These features can be described in a five-step package:

- Improvement of the standard high-pressure system in order to optimize fuel consumption and exhaust emissions
- Bore cooling achieved by increasing cylinder head fatigue strength
- Improved power and torque characteristics achieved by modifying the proven two-stage sequential turbocharging system

- Adaptation and optimization of the turbochargers to match the cylinder output of 325 kW
- Intelligent electronic engine management.

Other design elements include preheated intake air for idling and low-load operation, cylinder cutout systems and accommodation of turbines and exhaust piping in watercooled housings.

Both engines are based on the tested design of the twin 956/1163 series, as well as the knowledge gained from operational service in a wide range of applications. For high-performance applications such as frigates, corvettes and large yachts, the 20-cylinder version continues to offer a maximum output of 7,400 kW. The reduction from 370 to 325 kW/cylinder illustrates the engine's substantial reserves with regard to operational reliability and resistance to wear. Over 200 of the V-20 engines have been delivered since 1985, while a total of 1,585 engines of the twin 956/1163 type are currently in service worldwide.

Another maintenance system will be available in the future, the CAS (Condition Analysis System).

This system is being developed by MTU in four stages, starting with the operating data recorder which records all data relevant to engine operation, and ending with the trend analysis and diagnosis system.

The trend analysis and diagnosis system brings recorded and historical data together. The use of these methods reportedly achieves significantly greater utilization of standard life than conventional methods.

### MTU Orders Received

Yard	Vessel	Engine(#)	Gas (#)	Delivery
Rodriguez	Aquastrada I	16V 595 TE70 (2)	Yes (1)	2
Rodriguez	Aquastrada II	16V 595 TE70 (2)	Yes (1)	2
Rodriguez	Aquastrada III	16V 595 TE70 (2)	Yes (1)	2
Rodriguez	Corsica Ferry	20V 1163 TB73L(4)	No	1995
Inmar	Corsica Ferry II	20V 1163 TB73L(4)	No	2
Mijlem & Karlsen	95-m ferry	20V 1163 TB 73L(4)	No	Spr 95
Laroux et				
Latiz	Corsaire 11000	20V 1163 TB 73L(4)	No	Spr 95
Austal	Auto Express	20V 1163 TB 73L(4)	No	2

### Technical Data — 20V 1163 TB 73L

Power output	6,500 kW
Speed	1,250 rpm
Bore	230 mm
Stroke	280 mm
Displacement	11.63 l/cyl.
Weight	21 tons
Length	5,415 mm
Width	1,660 mm
Height	2,940 mm
Weight/power	3.2 kg/kW
Crankcase	Spheroidal cast iron
Crankshaft	Machined all over with bolted-on counterweights
Connecting rod	Forged, machined all over
Cylinder head	Four valve individual
Piston	Composite design, light metal skirt and bolted-on steel crown
Injection	Single fuel injection pumps, jacketed high pressure fuel lines
Supercharging	Two-stage sequential turbo-charging turbocharger turbines arranged in
Exhaust manifold	gas-light liquid cooled carrier housings
Governing	Constant pressure system, arranged in the engine saddle in gas-tight liquid cooled housing
	Electronic engine control system with integrated load profile and maintenance recorder



### ABS Terminates Pact With Cyprus Register

The American Bureau of Shipping (ABS) announced that effective March 31, 1995, its agreement has been ended with the Cyprus Bureau of Shipping (CBS) to assist in the development of that society. Dating back to 1985, shortly after CBS was founded, the agreement covered ABS assistance in providing: administrative and technical advice; administrative and technical training at ABS offices; and use of ABS Rules for classing CBS ships. Until 1993 the operating head of CBS had been secured from the ABS management staff.

"The intent of our agreement was to help CBS establish the basic foundation from which to become a self-sufficient class society able to serve the local maritime community. We feel this purpose has been served and the agreement had come to its natural end," said **Robert D. Somerville**, ABS president.

He pointed out that two other agreements between ABS and CBS continue. One addresses mutual cooperation for the dual classification (ABS/CBS) of ships, and the other addresses non-exclusive representation.

### Zentech Wins MarAd Contract

The Maritime Administration (MarAd) has awarded a contract — through its Ready Reserve Fleet - Texas Div., Port Arthur, Texas — to Zentech, Inc. of Houston for the design review and engineering modifications to existing LCM (Landing Craft Mechanized) vessels. The project covers upgrading and converting 13 LCM vessels into three types of support vessels, consisting of tow tugs (8), lay repairs (2), and diver units (3).

Modifications include complete reconfiguration of bows and other changes to main structures, including the relocation of pilothouses and new construction of pilothouses together with installation of pipe handling appurtenances for the LCM conversion. The work will meet ABS and U.S. Coast Guard standards.

For more information on Zentech  
Circle 52 on Reader Service Card

### USGIC Releases Market Model For GPS Equipment

The U.S. GPS Industry Council (USGIC) predicts that the worldwide market for global positioning system (GPS) receiver equipment is expected to grow to more than \$8 billion by the year 2000, with marine and military applications anticipated to account for \$290 million in sales.

The collective market estimate was developed using the same techniques used in corporate strategic planning models of individual USGIC member firms.

May, 1995

The study also identified two emerging trends in the GPS evolution: the first is the continuous 30 percent per year decline in the cost of the hardware content; the second is the increased contribution of embedded software in the end-user application. The USGIC market model will be updated annually and be adjusted appropriately as real market data becomes available from the member companies.

### WesTech Gear Ships Pipe Tensioners To Singapore

WesTech Gear Corp. recently shipped its latest series of Linear Pipe Tensioners to Singapore where they will be installed on board the *MV Solitaire*, a pipe-laying vessel currently under construction to be owned and operated by Allseas Engineering B.V. of The Netherlands.

The LPT-220 pipe-laying system is reportedly the largest caterpillar-type tensioner ever built, consisting of three identical tensioning units each designed to hold 100 metric tons of constant tension. A 400-metric-ton capacity abandonment and recovery (A&R) winch with two storage reels and instrumented sheaves are also included in this system. The tensioners and winch are

## KaMeWa Waterjets for speed and economy

Installed in fast passenger/car ferries worldwide, KaMeWa Waterjets have opened up new horizons in terms of speed, economy and passenger comfort.

- ◆ KaMeWa Waterjets offer higher speeds than any other marine propulsion system on the market today.
- ◆ At high speeds, KaMeWa Waterjets are more fuel efficient than propellers, while noise levels can be 50% lower.
- ◆ Higher speeds offer scope for more frequent crossings and thus a greater number of passengers carried.

KaMeWa offers a complete range of waterjets starting from lightweight units in the 100-1,500 kW power range. Although the largest unit built by KaMeWa to date has an output of 22,100 kW, there is no upper limit on size and larger units are currently being designed.

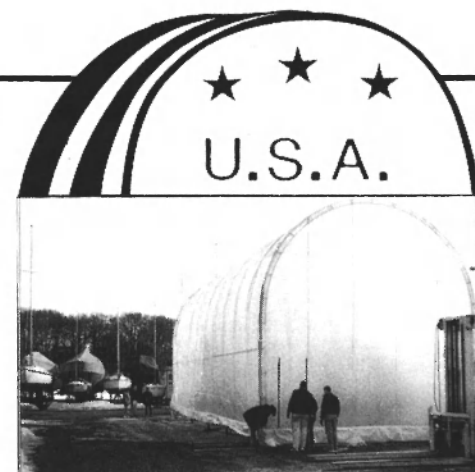


More than 800 KaMeWa Waterjet units are currently installed in monohulls, catamarans, wave-piercers, foil-borne catamarans and rigid hull surface effect ships.

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powered and controlled by an electric drive and electronics control system — manufactured by Reliance Electric — which is tied into the pipe-laying vessel's dynamic positioning system (DPS).

The LPT-220 will accommodate up to 60-in.-diameter pipe, with haul speeds of up to 246-ft. (75-m) per minute.

For more information on WesTech Gear  
Circle 57 on Reader Service Card

### New Owners To Manage Alabama Yard

Gulf Shores Shipyard, Inc., of Alabama, was purchased by operators **Kevin Lagarde** and **Sam Hood**. A new company will be formed with Mr. Lagarde acting as president and general manager, and Mr. Hood as vice president of business development and estimating.

The new company will operate Gulf Shores Shipyard, Inc. as a full service yard with emphasis on quick repair for fleets operating away from home base. The yard will also pursue new construction and heavy steel fabrication contracts. Formerly a division of Brown Marine Services, Gulf Shores Shipyard will now become a subsidiary company.

For more information on the yard  
Circle 12 on Reader Service Card

### USCG Modernizes Cutter *Dauntless*

The U.S. Coast Guard (USCG) cutter *Dauntless* is the fifth "B" class 210-ft. (64-m) cutter to complete Major Maintenance Availability (MMA) at the USCG yard in Curtis Bay, Md. The 27-year-old *Dauntless* was recommissioned in February, after \$19.9 million and 314,000 labor hours spent. The vessel was delivered on time and below budget.

The 210-ft. MMA is a project intended to overhaul and upgrade selected systems and equipment on cutters with approximately 30 years of service.

### DOT Computerizes Dockets

As part of the reorganization of the U.S. Department of Transportation (DOT), the agency has consolidated its separate paper-based docket facilities into a single, central office and has converted to an electronic image-based system. The change will enable the DOT to provide better service and access for public and government users. Ultimately, the public will have on-line access to the system from outside DOT's docket office. The system will support IBM- and Macintosh-compatible equipment, and provide an easy-to-use interface.

### RTK Vessel Shipped To Falklands


RTK Marine has shipped one of its STW 408 Sea Trucks to Shoreham for the journey to the Falkland Islands. The Sea Truck will be a vital link in the Islands' transport system. The craft will be carried on board a ship used to transport supplies to farms in the Islands. The vessel was given a sternguard, extra fendering and additional beach skags to protect the hull and drive system from damage in the Falklands' operating conditions.

For more information on RTK Marine  
Circle 6 on Reader Service Card

### McDermott Joint Venture To Operate Mexican Yard

McDermott International, Inc. has formed a joint venture with CCC Fabricaciones y Construcciones, SA de CV of Mexico City, to operate a yard in Veracruz, Mexico, formerly operated by Astilleros Unidos de Veracruz AS de CV. The venture will be called Talleres Navales del Golfo SA de CV (TNG). McDermott will be active in the yard's management. McDermott and CCC each own 40 percent of TNG. The yard was established in 1943 for repair and newbuilding, and has the capacity to accommodate ships up to 80,000 dwt. Facilities include graving docks and cranes with capacities of more than 90 tons. Plans to add a floating dock are being drawn up.

For more information  
Circle 7 on Reader Service Card




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**SOCIETE GENERALE  
DE FINANCEMENT  
DU QUEBEC**

**Shipyard Investment Opportunity**

Societe generale de financement du Quebec (SGF), a Quebec government-owned development organization, is looking for a partner or partners to take a majority stake in its MIL Davie Inc. shipyard. The shipyard is strategically located on the St. Lawrence River downstream from Montreal and is the largest shipyard in Canada.

This strategy is being pursued in order to assist SGF in further developing the yard and thereby maintaining MIL Davie's position as a leader in the shipbuilding and ship repair sectors on the eastern seaboard of North America. The approach is fully supported by SGF and the Government of Quebec.

Interested parties requiring further information should contact SGF's exclusive advisor, Price Waterhouse, at the following addresses:

<p><b>In North America:</b></p> <p>Price Waterhouse 1250 Rene-Levesque Blvd. West Suite 3500 Montreal, Quebec H3B 2G4 CANADA Tel.: (514) 938-5600 Fax: (514) 938-5709 Attention: Ms. Jaclinthe Charbonneau</p>	<p><b>In Europe:</b></p> <p>Price Waterhouse No. 1 London Bridge London SE1 9QL ENGLAND Tel.: (171) 939-3000 Fax: (171) 403-0733 Attention: Mr. Keith Tilson</p>
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**Price Waterhouse** 

Circle 259 on Reader Service Card



## YARD PROFILE

# Bollinger Adapts To Address Changing Markets

Facilities, equipment and aggressive management all play a big part in today's Bollinger Machine Shop & Shipyard, Inc. — a company poised to deliver the products that the domestic and international marketplace demands. Headquartered in Lockport, La. — a geographic region ripe with able competitors — Bollinger has steadily built an impressive array of new build and repair facilities: expanded computerized engineering, manufacturing equipment processes and total marine service support shops have provided services to help it excel.

"It's a world marketplace now," said **Scott Theriot**, vice president - marketing/sales. He points out that in 1974, roughly 85 to 90 percent of Bollinger's gross sales came from within a 40-mile radius of the yard; today, approximately 10 to 15 percent of Bollinger gross sales come from that same radius.

The Halliburton project perhaps best illustrates Bollinger's prominence on the world market. This project, in which Bollinger and Halliburton together developed the concept, is a totally new type of self-propelled, self-elevating offshore support vessel, a vessel designed to service offshore oil and gas production platforms located in hostile environments. To ensure its place in the international market, Bollinger is in the process of becoming ISO 9000 (9001) certified.

### Strong Commercial Roots

One point Mr. Theriot wants to make perfectly clear is that Bollinger is a "commercial shipyard which has done military work ... we have never left the commercial market." Unjustly tagged as a "navy yard" by some, Bollinger best exemplified its flexibility last fall at its first ever triple christening — an event which also showed the yard's ability to simultaneously run commercial and military orders.

On September 24, at the company headquarters, two coastal patrol vessels (*Firebolt* [PC10] and *Whirlwind* [PC11]) and a 145-ft. (44.2-m) supply vessel *M/V Mickey Gilbert* were christened. The 170-ft. (51.8-m) coastal patrol boats were part of a 13-vessel contract for the Cyclone class vessels for the U.S. Navy. The *Mickey Gilbert* was the first of two vessels for Gilbert Cheramie Boats Co., Inc. It is powered by a pair of GM 8 V 149 main engines and features a Schottel thruster and GM generators.

Bollinger Machine Shop & Shipyard has been in business since 1946, and its roots are firmly grounded in the oil field service. In its history, the company has delivered more than 250 vessels, but it has always been more than a newbuild yard. As the company has diversified to remain buoyant in the event that one business segment drops, it must be especially gratified to see business picking up in many different areas.

BELOW: Bollinger's Larose facility has been very busy of late with repair work.



1995



Bollinger's diversity is readily evident from this view of its Lockport facility, with a U.S. Navy Cyclone class vessel (foreground), a tug and a gaming vessel simultaneously under construction.

ness picking up in many different areas. Because of dips in the newbuild market, it was always a company philosophy to offer more, in terms of repair, specialized equipment and other services.

### Near-Term Business Looks Good

The market on many fronts is looking up, and "it's the best of times in the last 10 years for feeling good about the market. There is a lot of drilling going on," said **Charlotte Bollinger**. "We've got a lot of serious inquiries into newbuild projects." Bollinger also has a lot of ongoing

projects and recent deliveries, including construction of a D-type dipper dredger for Dutra; the second 145-ft. utility vessel for Gilbert Cheramie Boats; and a pair of 6,140-hp tugs for Candies.

Concerning the repair business, Mr. Theriot said "It has never been better ... there is a lot of equipment out there working. We have got an eye on expansion to meet our customer's needs."

Based on the company's recent history, observers know it is not afraid of expansion. With 800 employees and 16 drydocks at four of six sites, Bollinger has grown into a very large "small-boat" build and repair operation.

For more information on Bollinger  
Circle 37 on Reader Service Card

### Quick Reference Guide To Bollinger's Facilities

**Bollinger Lockport:** 250-acre new construction site; five marine railways capable of handling vessels up to 165 ft. (50 m) in length; aluminum, fiberglass or steel repair jobs; USCG-approved gasfreeing and fuel storage facility.

**Bollinger Quick Repair:** 24-hour service located 1,100 ft. (335 m) from the Mississippi River along the Harvey Canal; five floating drydocks with capacities up to 2,500 tons; full-service shipyard; 27,500-sq.-ft. modern, fully equipped propeller shop; 32,000-sq.-ft. machine shop; and complete 24-hour, UL-approved electrical service.

**Bollinger Larose:** On the Gulf Intracoastal Waterway at mile marker 36, offering repairs of both steel and aluminum vessels; four floating drydocks able to handle vessels up to 3,500 tons; on-site warehouse operation; safe harbor for storage.

**Bollinger Fourchon:** Located three miles from the Gulf of Mexico, this facility is available to deep-draft vessels, including mobile drilling rigs; 24-hour service; specializing in quick repair service.

**Algiers Iron Works:** Founded in 1903 and acquired by Bollinger in 1990, the Algiers yard offers a deep water facility on the Mississippi River with repair capabilities for vessels up to 2,500 tons.


**Bollinger Fiberglass:** 26,000-sq.-ft. facility in Mathews, La., houses laminating, painting, outfitting, carpenter and material control shops. Capable of new construction, outfitting existing hulls and tooling construction and repair.

**Chand Corp.:** Database and material experience incorporated into CAPPS, an automated purchasing, material/inventory management, and financial control system developed and used internally.

**Bollinger's Engineering Dept.:** Complete naval architecture service with detail design capabilities. Equipped with CAD systems, staffed with structural, electrical and mechanical engineers, naval architects, designers and draftsmen.



Bow repairs at the Lockport facility.



# SCANDINAVIAN UPDATE

## Shipbuilding Prospects Looking Up

by Alan Thorpe, international editor

One of the most talked about subjects in Scandinavia is the possible return to commercial shipbuilding by some of the yards which were part of Sweden's withdrawal from this industry during the 1980s. The giant Kockum facility, with its large building dock at Malmo, is still in place and talks are underway to reopen the yard for possible re-entry into the cruise vessel market.

Meanwhile, Kockums, which retains its interest in shipbuilding by the design and construction of submarines for the Swedish and foreign navies, has entered joint venture talks with Denmark's Burmeister & Wain for the possibility of supplying steel fabrication sections for the proposed Sound Bridge project between Sweden and Denmark. Kockums is also combining with the Danish shipyard for the RoRo 2000 project for ferry newbuildings in the Baltic trade. This is of particular interest at present, following the recent *Estonia* disaster and the proposed rule alterations by many of the Scandinavian countries, which may lead to many newbuildings required as replacement for older tonnage.

Another Kockums venture back into commercial shipbuilding is the acquisition of a 25 percent stake in Norway's Mjellem & Karlsen (M&K), of Bergen, in a share offer worth half of the 11.3 million shares offered on the open market. The remaining half were bought by the Norwegian Industrial & Regional Development Fund.

Uddevallavarvet is another former shipyard looking at the possibility of returning to the shipbuilding industry. Prior to its closure during the 1980s, this yard concentrated on the medium-sized tanker market. Bruce Shipyard, in Landskrona, has been building sections for two ferry conversions at Norway's Horder Dok & Service, in Oslofjord.

Swedish ship repair and conversion shipyard, Oresundsvarvet AB, Landskrona, recently won a \$28 million contract to lengthen two freight-only RoRo ferries. The 7,984-dwt vessels — *Norking* and *Norqueen* — built in 1980, are owned by Finland's Oy Rettig AB (Bore Line), of Turku, and are on long-term charters with North Sea Ferries for its Zeebrugge/Teesport service.

The two vessels will enter the yard next winter, the first in November with delivery scheduled before Christmas. The second ship follows immediately, and is scheduled to be returned in February 1996. The conversion will include the insertion of a 94.5-ft. (28.8-m) pre-fabricated mid-body section in each vessel, increasing the overall length of the vessel to 590.5 ft. (180 m). The lengthening will increase the vessels to 11,400 dwt, giving each a 30 percent increase in cargo carrying capacity. New fixed ramps will replace an existing elevator system between cargo holds and the main deck. Each vessel's bow will be modified to a more streamlined bulb, which will increase the service speed by 1.5 knots. For more efficient maneuverability in port areas, an additional bowthruster will be installed and the stern propellers will be fitted with high-efficiency blades.

To increase each vessel's engine capacity by an additional 2,200 hp, the main engines and gears in

KaMeWa waterjets are featured on the new Stena high-speed ferries, under construction at Finnyards. At press time KaMeWa announced it had bought Aquamaster Rauma, previously a Finnyards company.

Maritime Reporter/Engineer



A MESSAGE FOR THOSE WHO MAY NOT UNDERSTAND RADAR LEVEL GAUGING TECHNOLOGY

# TRUE OR FALSE?

**R**adar-based level gauging in tanks is a relatively new technology. Just 20 years ago we launched Saab TankRadar, the very first system of this type. Since then, ongoing development has resulted in system enhancements, with the third generation introduced to the market just last year.

Today there are several suppliers in the market-place—each one claiming that their system is the best. We are not ashamed to admit that we are worried about this. In fact, we are really upset. And this has nothing to do with the competition, which just makes us try even harder. Our concern is that some manufacturers simply don't understand the principles of radar level gauging. And this lack of basic knowledge costs both shipyards and shipowners a lot of money. Not to mention how all of this affects the reputation of our business. Radar-based level gauging is a very advanced technology that requires considerable knowledge. So let's be straightforward and discuss what is true and what is false on this subject.

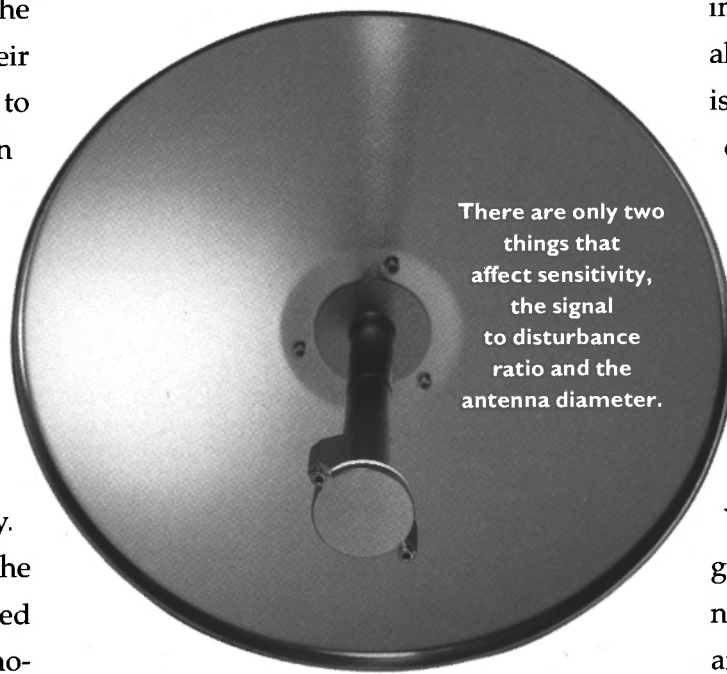
#### INTRINSICALLY SAFE OR FLAMEPROOF.

**It is true** that an intrinsically safe instrument is the best way to improve safety on board. There is not enough electrical energy in an intrinsically safe instrument to cause a spark that could ignite the explosive gas. Furthermore, an intrinsically safe instrument is resistant to human error, and can be safely opened and serviced while it is powered.

On the other hand, **it is false** to claim that a flameproof instrument is equally safe. A flameproof instrument allows an explosion to take place inside the enclosure. Therefore the enclosure must be able to

withstand the pressure, and must have well-defined, clean gaps that release the flames to the outside in a controlled way, so as not to ignite the explosive gas. Before servicing a flame-proof instrument, the deck must be gas-free, or the instrument must have been switched off for about one hour.

When it comes to safety on board, ship



owners, crew and the environment all benefit if you choose an intrinsically safe instrument.

#### SENSITIVITY OR MORE POWER.

**It is false** to say that there are any advantages in increasing the power when using radar to measure the distance to the liquid surface in tanks. **The truth is** that sensitivity is the single most important factor in the performance of a radar level gauge. And sensitivity is unaffected when the transmitted power is increased. In fact, there are only two things that affect sensitivity; the signal to disturbance ratio and the diameter of the antenna. The signal to disturbance ratio is also totally unaffected by the amount of transmitted power. The more power, the

more noise. It's comparable to listening to a radio that is not correctly tuned into a station. If you increase the volume, you increase the noise as well. But if you carefully tune into the correct frequency, you hear sweet, static-free music.

And, one more fact about sensitivity. **It is true** that a large diameter not only improves the sensitivity of an antenna. It also produces a narrow radar beam, which is an advantage when you're measuring in difficult conditions such as deep tanks, when there are waves on the surface or in tanks with a lot of internal structures. The most practical way of having a large antenna diameter is to use a parabolic antenna.

#### CAN YOU BELIEVE US?

You can easily see that radar-based level gauging is a very complex technology. It's not one where you can take short cuts and still have reliability. We invented it and we've worked hard over the years to ensure that Saab TankRadar is the safest and most reliable level gauging system available today.



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Circle 263 on Reader Service Card

## SCANDINAVIAN UPDATE: Shipbuilding Prospects Looking Up

each vessel will be replaced by two new MaK diesel engines type 8M552 with Renk Tacke reduction gears.

Sweden's Gotaverken Cityvarvet, now limited to a single floating dock, has had a successful winter in the ferry market. Recent refit work has included three Stena-owned vessels: the 20,914-grt RoRo vessel *Stena Searider* (upgrading and general repairs); the 15,899-grt passenger/car ferry *Stena Danica* (hull treatment and general repairs); the 10,549-grt passenger/car ferry *Stena Nordica*; as well as DFDS' 17,729-grt passenger RoRo ferry *Prince of Scandinavia* (hull treatment and general repairs).

As of the first of January, Swedish shiprepair com-

pany Gotaverken Cityvarvet AB of Gothenburg has taken over all propeller repairs and reconditioning operations of former repair specialist Ciserv. The necessary tools and equipment are already installed in the workshops of Gotaverken, and work is in progress on existing contracts. In addition, a co-operation deal has been entered into with Lips.

Danish shipbuilding has taken an upturn in recent years with a number of significant orders. Danyard of Fredrikshavn won an order from chemical carrier specialist Stolt Nielsen for a series of seven 37,000-dwt double-hulled chemical tankers at \$90 million per ship. The yard is also building passenger ferries for domestic ferry operator Mols Linien (see *MR/EN*, April 1995, page 64), a containership for Royal Arctic Lines, bulk carriers for Russia's Murmansk Shipping and naval vessels for the Royal Danish Navy.

Copenhagen's Burmeister & Wain has continued on its trend to supply panamax bulk carriers, combination carriers and tankers. The latest order is for a series of three 75,000-dwt bulk carriers for Italy's Bottigliere.

Odense Skipsvaerft, which is part of the AP Moller Group, is currently completing double-hulled VLCCs for both Moller's own fleet and Saudi Arabia's Vela Corp. These tankers are the only such ships built by a European yard apart from one under construction in Spain for a domestic owner.

Shipbuilding activities in Norway center on two companies — Kvaerner and the Ulstein Group. Kvaerner has yards in Floro on the west coast and Kleven, on the island of Ulsteinvik. The Floro yard is busy with a series of five 37,500-dwt double-hulled chemical tankers for Norwegian owner Storli, one to be taken under the ownership of National Chemical Carriers of Saudi Arabia (NCC). Kleven has a wider portfolio, with coastal ferries for Ofetens, a 10,000-dwt coastal tanker for Tarntank Rederei, and a \$27.3 million research vessel for Reiber Shipping.

Ulstein Group, with a great deal of development underway at the Ulsteinvik shipyard, is currently completing a series of three general cargo vessels for Dutch owner Spliethoff and is also busy with various offshore supply vessels of Ulstein design.

The contract to upgrade the Geco AS-owned, 1,483-dwt research vessel *Geco Beta* was awarded to Norwegian yard M&K late last year, and completed in March. Work involved the extension of the vessel by 50.5 ft. (15.4 m) to make it 297 ft. (90.5 m). A new deck superstructure module was fabricated and installed at M&K's Bergen facility. Modifications were made to the propulsion system, drive train and aft underbody. New accommodation areas

## Wärtsilä, Cummins Finalize Joint Venture Plans

Wärtsilä and Cummins finalized a joint venture to produce diesel and natural gas engines up to 6,000 hp (4.5 MW). Tim Solso (left), president and CEO of Cummins Engine Co., and Pentti-Juhani Hintikka, president and CEO of Wärtsilä Diesel, are shown here in front of the first engine, scheduled for limited production beginning this month.



(See *MR/EN* page 11 of April 1995 issue for full details on the project.)

were fitted and other minor repairs and modifications to the vessel were carried out.

Norwegian west coast shiprepair yard Haugesund Mekaniske Verksted AS (HMV) specializes in both the conventional shipping and offshore repair industry, as well as module building for the offshore industry. Recently the yard had two vessels owned by Stolt Comex Seaway A/S of Haugesund in for repair. The vessels were the 2,350-dwt Isle of Man-registered diving support vessels *Seaway Harrier*, which was undergoing hull repairs, and *Seaway Falcon*, for general upgrading and outfitting for pipelaying. Also at the yard was the offshore rig *Transocean 8*, which was undergoing special survey and general repairs.

Finland's largest shipyard, Kvaerner Masa, part of Norway's Kvaerner Group, is one of the most successful shipbuilding yards in the world. Current orders include a \$239.5 million per ship deal with the UAE's Adgas for a series of four large LNG carriers, the first such vessels built outside of Asia for some time. The vessels will be of the Moss Rosenberg cargo containment design, and are for delivery in 1996 and 1997.

The yard is also one of the most successful cruise ship builders, with orders from Royal Caribbean for two ships, Carnival Cruise Lines for four ships, Japan's NYK for one ship and Deutsche Seereederei for two ships.

It appears that Finland's Nemarc, which is a joint venture company between Neste and the shipbuilder Kvaerner Masa, is to convert another two of its fleet of tankers to offshore shuttle tankers, suitable for loading off Murmansk in Russia. Two ships, the *Vikku* and the *Lunni*, have already been completed at Kvaerner Masa's Turku yard, with the two new contracts being for the *Sotka* and the *Tiira*.

Another Finnish shipbuilding facility is Finnyards, which is an amalgamation of Rauma-Repola and Hollming. Finnyards' claim to fame at present is its order from Stena AB for a series of three catamaran-type fast ferries for operation in Scandinavia and the U.K. Apart from this project — which is the largest of its type in northern Europe — Finnyards is currently building a pair of passenger/car ferries for Germany's TT Line and a 13,200-dwt bulk carrier for a domestic owner. Finland's largest repair company, Turku Ship Repair Yard, has two facilities, at Turku and Naantali, where the graving dock is big enough for the many super passenger/car ferries utilized on the Sweden/Finland service. The Turku yard was recently carrying out modifications to the new icebreaker/offshore supply vessel *Nordica*, which is the second such vessel built by Finnyards for use as an icebreaker during the winter months and as an offshore supply vessel during the summer for Ugland.

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Circle 297 on Reader Service Card

Maritime Reporter/Engineering News



## Scandinavian Maritime Industry Company & Contract Update

Scandinavian maritime companies — vessel builders as well as equipment and service suppliers — possess a strong international reputation for bringing technological advances and general excellence to the maritime market. With vast experience in the passenger vessel markets — including cruise ships and ferries (both fast and conventional), the tanker vessel market and specialty vessel market (icebreakers, research vessels, etc.) — the Scandinavian maritime industry has maintained its strength and diversity despite intense international competition. The following section serves as an update of recent business trends and contracts awarded to well-known companies, as well as an introduction to new companies in the Scandinavian Maritime Industry.

As space does not allow for the "full story" on many of these company's products and services, please circle the appropriate number on the Reader Service Card in this issue for complete, free information directly from the companies.

### Denmark



**Danyard** is busy with many projects of varying size and type (refer to main story, page 34) and the yard is currently building two SeaJet 250 passenger/car fast ferries for the Ebeltoft/Odden service between Jutland and Sjaelland.

Engine manufacturer **MAN B&W Diesel A/S, Alpha Diesel** in Frederikshavn, Denmark built what is reportedly the largest two-stroke, small-bore engine ever during the winter of 1994. The unit is an eight-cylinder MAN B&W type 8L42MC rated at 10,840 hp at 176 rpm. It was built for a 950-TEU containership being built at the Singapore Shipbuilding and Engineering shipyard.

**Burmeister & Wain Skibsvaerft A/S** has continued on its trend to supply panamax bulk carriers, combination carriers and tankers. The latest order is for a series of three 75,000-dwt bulk carriers for Italy's Bottiglieri.

For free information on these Danish companies, please circle the appropriate number on the Reader Service Card in this issue:

<b>Burmeister &amp; Wain</b>	
Skibsvaerft .....	142
Danyard .....	109
MAN B&W Diesel .....	110

May, 1995

### Finland

The Finnish industry has pioneered many products and concepts which have been widely emulated.

Both **Kvaerner Masa-Yards** and **Finnyards** are world-class builders, the former specializing in several different areas, including cruise ships and LNG tankers; the latter currently building a presti-

gious order of ferries for Stena (see picture, page 34).

Engineering and naval architecture firm **DeltaMarin** helps keep Finnish — and many other international shipyards — competitive, proven in part by its involvement with Ingalls Shipbuilding in the Maritech-funded program to develop a cruise ship design.

In the high-profile segment of propulsion equipment, Finland fea-

tures a pair of companies which set world standards: **ABB Industry Oy** and **Wartsila Diesel**. ABB Industry is a leading edge



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## Scandinavian Maritime Industry Company & Contract Update

propulsion technology company, co-developing with **Kvaerner Masa-Yards** the Azipod electric azimuthing propulsion system. The diesel-electric drive system offers



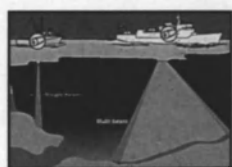
inherent advantages to cruise ships, tankers, offshore supply and ice-breaker vessels. Wartsila Diesel has been — as always — very active of late on the R&D front, and in March announced a joint venture agreement with U.S.-based Cummins.

Focus on ship safety — traditionally strong throughout the region — has intensified proportionately with recent tragic disasters. Vantaa-based **Marioff Hi-Fog Oy** offers Hi-Fog, a unique marine fire protection system which combines standard hydraulic pressures and small amounts of fresh water.

**Waterman Oy**, a division of **Schat Watercraft**, manufactures partially enclosed lifeboats, in sizes

capable of carrying 22 to 150 passengers; enclosed lifeboats, in sizes capable of carrying 15 to 100 passengers; cruise tender lifeboats; and rigid MOB rescue and lifeboats.

Other companies which provide valuable products and services to the maritime market include: **Mock Doors Ltd.** of Helsinki designs, manufactures and maintains large doors for industrial buildings; **Hackman Metos Ltd.**, with the **Metos Marine** portion continuing its marine operations specializing in ship catering equipment and turnkey galley solutions; Vantaa-based **Savcer**, which makes manufactures an impressed current cathodic protection system



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which helps stop underwater corrosion; **Schauman** ships plywoods, known under registered trade names **Wisa** and **Warkaus Ships-Ply**, which are incorporated on reefers, fishing vessels, factory ships, livestock carriers, car carriers, RoRo ships,



Two converter/silencers are installed in the engine casing below the funnel of M/SScandica.

ferries, LNG carriers and cruise ships; **Evac** offers vacuum sewage systems which reportedly are low on both noise and water consumption.

The system consists of toilets, pumps and ejectors, collecting tanks, valves, pipes and fittings and design drawings; **Tebul Oy**, a member of the Wartsila Group for 40 years and an independent company since 1992, offers a wide array products and services, including steering gears, valves for ship piping systems and watertight bulkhead doors.

### Norway

In late March it was announced that **Stolt Comex Seaway** signed agreement to form a strategic alliance with **Kvaerner AS** for a joint marketing, tendering and execution of engineering, procurement, installation and commissioning contracts for whole or significant parts of integrated subsea and gas field developments. The initial agreement is for the Norwegian and British sectors of the North



Sea, but may be expanded to include other parts of the world.

Horten-based **Norcontrol Seacraft** signed a contract recently with **WaveMaster International** for three **SeaCockpit** integrated bridge systems. The philosophy behind the **SeaCockpit** is to have all devices easily accessible and within reach, giving navigators information on a need-to-know basis. **Aanderaa In-**

For free information on these Finnish companies, please circle the appropriate number on the Reader Service Card in this issue:

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(Continued on page 62)



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Circle 26 on Reader Service Card

Maritime Reporter/Engineering News



### S Comes On Line In Prince William Sound

The U.S. Coast Guard (USCG) Prince William Sound Safety Office in Valdez has replaced the old monitors that tracked Port Valdez and Valdez Narrows, switching to the new Automated Dependent Surveillance System (ADSS) to continue the watch from Valdez to approximately 100 miles out to sea beyond the Narrows Entrance.

ADSS equipment significantly enhances the ability of Vessel Traffic Service in Prince William Sound to monitor movements of tank ships. Vessel positions are automatically plotted on an electronic chart display combining all relevant navigation information. The accuracy of the plot is now under 33 ft. (10 m) and the geographic area watched has increased from 400 to 5,000 square miles. ADSS is the result of a six-year effort, from congressional action to budgeting, contracting, design, installation, training and testing. At a cost of approximately \$7 million, the cooperative effort between Raytheon and the USCG has produced a state-of-the-art system with a high degree of confidence.

For more information on Raytheon  
Circle 147 on Reader Service Card

### USCG Modifies Targeting Procedures

The risk-based methods adopted by the U.S. Coast Guard (USCG) on May 1, 1994 to focus its foreign ship boarding efforts on those most responsible for the operation of substandard ships have been modified, effective April 1, 1995. The modifications focus greater attention on ships owned or operated by individuals or companies associated with multiple substandard ships.

The USCG has also updated its list of countries whose ships are targeted for boarding based on the performance records of these countries' ships while operating in U.S. waters. The change creates a two-intervention standard. Ships owned or operated by an individual or company associated with two or more interventions resulting in detention in the previous 12 months will now be targeted for boarding. The USCG identifies deficiencies during 30 percent of the foreign ship boardings and intervenes, and detains foreign ships in three percent of these cases.

Although one intervention no longer highlights the owner or operator, nor causes their ships to be targeted for boarding, the individual ship subjected to intervention will be targeted for increased attention during subsequent U.S. port calls. The USCG initiated this change to make the system more equitable, and to better focus its enforcement efforts on those most responsible for substandard ships.

This two-intervention standard has also been applied to the 1995 update of the list of flag states with higher than average intervention

ratios for the three-year period commencing Jan. 1, 1992. As a result, a flag state will not be targeted based on a single intervention during this period. The 1995 list contains the following 18 countries: Antigua & Barbuda; Argentina; Bahamas; Belize; Colombia; Cyprus; Dominican Republic; Honduras; India; Italy; Malta; Panama; Romania; Russia; St. Vincent & the Grenadines; Turkey; Ukraine; and Venezuela.

### Joint Industry Groups Meets To Study Deepwater Development Concept

Aker Omega, Inc. (AOI) held the first meeting of a joint industry project to study the technical and economic feasibility of its new deepwater development concept which it calls the Tension Rafter

Jacket (TRJ).

The meeting was held to negotiate the final scope of work for Phase 1 of the joint industry project, and was attended by the following oil companies: Amoco, British Petroleum Exploration, Exxon, Mobil, Norsk Hydro, Shell and Texaco. Four different Aker companies were also represented that will participate, including Aker Omega, Norwegian Contractors, Aker Gulf Marine and



  
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Aker Engineering. The meeting resulted in the selection of five different cases to be studied, four for a relatively mild fatigue environment typical of the Gulf of Mexico, and one for a harsh fatigue environment typical of the Norwegian Sea and the Atlantic Ocean west of the Sheltered Islands. A medium deck weight will be studied for both 3,000-ft. and 5,000-ft. (914-m and 1,524-m) water depths in the mild environment, as well as 3,000 ft. in the harsh environment. A heavy deck weight will be studied for both 3,000-ft. and 5,000-ft. water depths in the mild environment.

For more information  
Circle 53 on Reader Service Card

### SAIC Wins NOAA Hydrographic Contract

Science Applications International Corp. (SAIC) has won a con-

tract to support hydrographic surveys by the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service. The one-year contract is valued at more than \$1 million, with a potential value of more than \$2 million. SAIC and its two major subcontractors, Reson, Inc. and Ocean Surveys, will obtain sounding data in western Long Island Sound, Vineyard Sound and, optionally, Nantucket Sound, using multibeam and side-scan sonar equipment.

### Giannotti And AK-WA Merge

Giannotti Marine Services, Naval Architects and Marine Engineers, and AK-WA Shipyard announced a merger. Dr. **Julio Giannotti** purchased the controlling interest previously owned by **O.F. (Fred) Olson**. The new entity will be the Giannotti Corp., with headquarters in the Port of Tacoma, Wash.

Operating divisions will be: AK-WA Shipyard Div., with a yard in Tacoma; the Engineering Div., with offices in Everett, Wash., and Ventura, Calif.; and the Field Services Div., with facilities in Tacoma and San Diego.

The Giannotti Corp. will continue to offer a broad range of shipyard, engineering and operating services to the predecessor companies' long-time commercial and government marine customers.

The executive management will be: **Julio Giannotti**, president and CEO; **Frank Johnson**, executive vice president and COO; **Terry Jenkins**, vice president, finance and administration; **Thomas Dyer**, vice president, new programs; **Phillip Grasser**, vice president, engineering division; and **Douglas Johnson**, vice president, AK-WA shipyard division.

For more information on Giannotti Corp.  
Circle 50 on Reader Service Card

## NEW ORDERS

### Construnaves Member Yard Bolster Orderbooks

Spain's Construnaves member shipyards have reported many newbuilding contracts of late.

Astilleros de Huelva signed a contract to build a pair of RoRo ships (\$20 million per) for Eston RoRo Shipping of Estonia, with an option for two additional ships. The yard also building four 5,600-dwt multipurpose containerships for Lithuanian Multipurpose Shipping. Finally, the yard will soon deliver a pair of advanced-design ferries for Spanish owner Isnasa.

At the end of last year, CNE Freire, located in Galicia, won a contract to build a pair of 5,500-dwt refrigerated cargo carriers for the Spanish owner Maritima del Norte.

Member yard Astilleros Armon won an international contract for three 2 x 2,000-bhp tugs for Union de Remorquaje et Sauvetage of Belgium. There is also the possibility of three additional tugs. Armon, along with Construnaves members Gondan and Zamacona, share an order for seven tugs for the Boluda Group, one of the more active tug and salvage companies in Spain. The contract is pending financing arrangements.

For more information  
Circle 51 on Reader Service Card

### Meyer Werft Books Cruise Ship Orders

The Republic of Indonesia ordered two more passenger ships from Meyer Werft shipyard. These ships are replicas of the 14,000-gt Dobonsolo-type vessels, which measure 481 ft. (146.5 m) long and have a capacity for nearly 2,000 passengers. After delivery of the newbuildings by the fall of 1997, the shipyard will have built a total of 24 ships for Indonesia.

Presently, the sixteenth passenger ship (6,000-grt/1,000 passengers) is nearing completion, with delivery scheduled for next month.

For more information on Meyer Werft  
Circle 49 on Reader Service Card

### Kvaerner Govan Contracted To Build Vessel

A contract was signed between Glasgow-based shipowner Harrison's (Clyde) Ltd. and shipbuilder Kvaerner Govan Ltd. to build a platform supply vessel, a vessel to be operated by Stirling Shipping Co., a wholly-owned subsidiary of Harrison's. The vessel is intended to be based in Aberdeen and operated in the U.K. sector of the North Sea.

It is scheduled for delivery in June 1996. The contract is the third this year by an affiliate of Harrison's for vessel construction with Clyde-based shipbuilders.

For more information on  
Kvaerner Govan  
Circle 99 on Reader Service Card

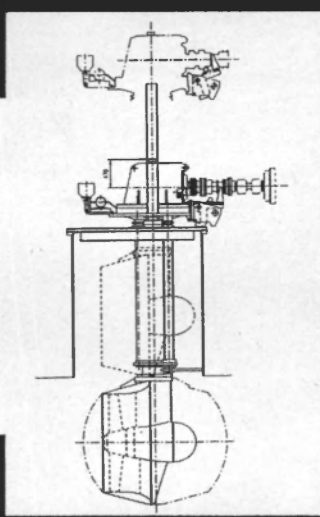
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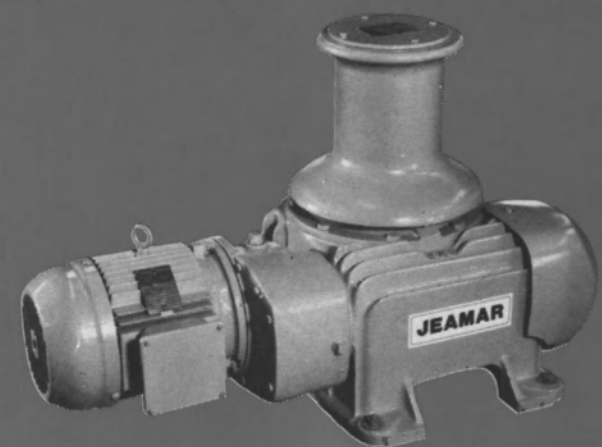
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## PRINCIPAL WORLD SHIPBUILDING CONTRACTS RECORDED — MARCH 1995


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DAEWOO		BULK CARRIER	1	2/97	43
MITSUI OSK LINES (MOL)	HITACHI ZOSEN	BULK CARRIER	3	97	30.2
EFLOIA SHIPPING	HUDONG SHIPYARD	BULK CARRIER	1	96	—
PACIFIC BASIN BULK SHIPPING	XINGANG SHIPYARD	BULK CARRIER	2	97	—
PACIFIC BASIN BULK SHIPPING	XINGANG SHIPYARD	BULK CARRIER	2	6/97	—
SUPREME PEARL LTD.	AESA	BULK CARRIER	2	97	18.5
PACIFIC BASIN BULK S.	HUDONG	BULK CARRIER	1	97	—
PACIFIC BASIN BULK S.	XINGANG	BULK CARRIER	2	97	38
GESCO	DAEDONG SHIPBUILDING	BULK CARRIER	1	97	—
KAWASAKI KISEN	MITSUI	BULK CARRIER	1	6/96	43
MITSUI OSK LINES (MOL)	IHI	BULK CARRIER	1+1	96	45
NYK LINE	SAMSUNG H. I.	BULK CARRIER	1+1	7/96	—
HALLA MERCHANT MARINE	HALLA ENG. & H.I.	BULK CARRIER	2	11/96	—
DAICHI TANKER CO.	SHIN KURUSHIMA DOCKYARD	BULK CARRIER	1	1/96	—
MOC	HYUNDAI	BULK CARRIER	2	97	45
OSG	HYUNDAI	BULK CARRIER	2	97	100
E. OLDENDORF	DALIAN SHIPYARD	BULK CARRIER	2	97	44
U.S. COAST GUARD	MARINETTE MARINE CORP.	BUOY TENDER	3	97/98	61.5
U.S. COAST GUARD	MARINETTE MARINE CORP.	BUOY TENDER	1	97	25
NAL	SUMITOMO	CONTAINER	1	6/97	60
CIA. CHILENA DE NAVEGACION	FLENSBURGER S.	CONTAINER	2	10/96	—
GERMAN INTEREST	FLENDER WERFT	CONTAINER	2	96	—
MARITIME GESELLSCHAFT	BLOHM + VOSS	CONTAINER	1	10/96	39.5
GLOBE ADRIATIC	SEDEF GEMI INDUSTRIE	CONTAINER	1	95	—
EVERGREEN	HAYASHIKANE SHIPBUILDING	CONTAINER	10	97	190
COSCO GROUP	KYOKUYO ZOSEN	CONTAINER	4	11/96	—
DIETER TAMKE	SZCZECIN	CONTAINER	1	97	—
GLOBE CARIBIC	SEDEF GEMI INDUSTRIE	CONTAINER	1	95	—
HERMAN BUSS AG.	MTW	CONTAINER	2	6/97	—
HW JANSEN	HYUNDAI	CONTAINER	1	97	35
NORDDEUTSCHE	HYUNDAI	CONTAINER	3	96/97	35
NSB NIEDERELBE	BREMER VULKAN AG	CONTAINER	3	96	150
GEO	BELGIAN SHIPBUILDERS CORP.	CHEMICAL	6	—	—
MALAYSIAN INT. SHIPPING CORP.	HYUNDAI H.I.	CHEMICAL	2	97	84
STOLT NIELSEN	SNACH	CHEMICAL	3	98	200
BIBBY LINE	AESA	CHEMICAL	3	96	117
MALAYSIAN INT. SHIPPING CORP.	HYUNDAI H.I.	CHEMICAL TANKER	2	4/96	—
WV MARPETROL	UNION NAVAL DE LEVANTE	CHEMICAL TANKER	1	95	25
MALAYSIAN INT. SHIPPING CORP.	HYUNDAI H.I.	CHEMICAL TANKER	2	3/97	—
UNKNOWN	TODD PACIFIC SHIPYARD	FERRY	3	99	181.5
SHUNG GANG PASSENGER TRANS. CO.	AUSTAL SHIPS	FERRY	1	9/95	7.46



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## PRINCIPAL WORLD SHIPBUILDING CONTRACTS RECORDED — MARCH 1995

OWNER/OPERATOR	SHIPYARD	TYPE	NO.	DELIV.	PRICE M \$
EBRIDES SHIP LTD.	AUSTAL SHIPS	FERRY	1	10/95	28
SPEED LINES	AUSTAL SHIPS	FERRY	2	3/96	74
CATAMARAN LINES SHIPPING CO.	ROYAL SCHELDE	FERRY	1	3/96	7.7
CORSICA FERRIES	INMA	FERRY	1	96	25
WASHINGTON STATE DEPT. OF TRAN.	TODD SHIPYARDS CORP.	FERRY	1+2	—	60.5
RED FUNNEL GROUP	FERGUSON	FERRY	1	—	40.3
SAEBJORN AS VARTDAL	EIDSVIK SKIPSBYGGERI	FISHING	1	6/96	—
QAJAQ TRAWL	STERKODER M. V.	FISHING	1	11/95	—
M. CARNAGH	FLEKKEFJORD SLIP & MASK	FISHING	1	9/95	—
BRENDAN GILL	FLEKKEFJORD SLIP & MASK	FISHING	1	95	—
JACZON	BALENCIAGA	FISHING	2	—	18
CHARISMA FISHING CO.	SIGBJORN IVERSEN	FISHING	1	95	—
KLONDYKE FISHING CO.	KOPERVIK SLIP	FISHING	1	6/95	—
RASMUSSEN OFFSHORE	mitsui ENG. & SHIPBUILDING	FFSO	1	9/97	236
DUTCH INTEREST	UNKNOWN	GAS CARRIER	2	6/96	13
ROYAL NAVY	VSEL	LANDING	2	—	948.8
YARDIMCI SHIPPING	IYI DENIZ	MULTIPURPOSE	2	96	—
SUFFOLK MARINE	SOVIKNES VAERFT	PLATFORM SUPPLY	1	2/96	—
NORSK HYDRO	AKER	PLATFORM	1	—	443.75
ENGSHIP AB.	STERKODER M. V.	RORO	1	4/97	—
COMMODORE SHIPPING	ROYAL SCHELDE	RORO	1	3/96	—
KWANG YANG SHIPPING CO. LTD.	KWANG YANG SHIPPING CO.	STEEL CARRIER	1	—	—
TEXACO	AESA	TANKER	1	—	—
GREAT EASTERN SHIPPING CO.	SAMSUNG HEAVY IND.	TANKER	2	—	82
SHIPPING CORP. OF INDIA	SAMSUNG	TANKER	2	—	—
NEPTUNE ORIENT LINE	SAMSUNG HEAVY IND.	TANKER	4	—	—
GREAT EASTERN SHIPPING CO.	HANJIN H.I.	TANKER	2	—	67
VAN OMMEREN	HALLA	TANKER	2	97	66
LAURIN MARITIME	HALLA	TANKER	2	97	66
AMERICA HEAVY LIFT SHIPPING	AVONDALE	TANKER	4	—	143
AMERICAN MARINE TANKSHIPS	NEWPORT NEWS SHIPBUILDING	TANKER	2+4	97	300
FRED OLSEN	H&W	TANKER	1	8/96	60
CERES HELLENIC	SAMSUNG	TANKER	3+2	97	275
RAVENNAVI	FINCANTIERI	TANKER	1	9/96	52
ONASSIS GROUP	SUMITOMO H.I.	TANKER	1	6/97	45
FONG CHANG FISHERY	CHING FU SHIPBUILDING	TANKER	1	5/96	—
SHETLAND TOWAGE	FERGUSON	TUG	2	95/96	—
LONGKON PORT	KWANG YANG SHIPPING CO.	TUG	—	—	—
GHANA PORTS & HARBOUR AUTHORITY	DAMEN SHIPYARDS	TUG	3	—	—
E.N. BISSO & SON	HALTER MARINE INC.	TUG	—	2	—

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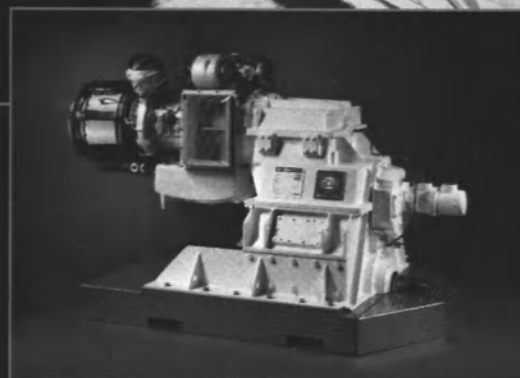
MA-107 capable of handling higher power in the future, without expensive gearbox replacements and ship modifications.

**Rated Power:** 7000 HP/5221 Kw  
**Reduction Ratio:** 6.2:1 thru 24.1:1\*  
**Output Speed:** 2500 / 640 RPM\*  
**Turbines:** TF40 / 501 / LM-500 / Taurus  
**Dry Weight:** 3637 Lbs. / 1649 Kg  
**Cast Aluminum Housing**  
**C or Z Drive Configurations**  
**Complete Lube System**  
**CODOG & CODAG Arrangements**

\* Gear Ratio is fixed. Ratios and speeds above show ranges available.



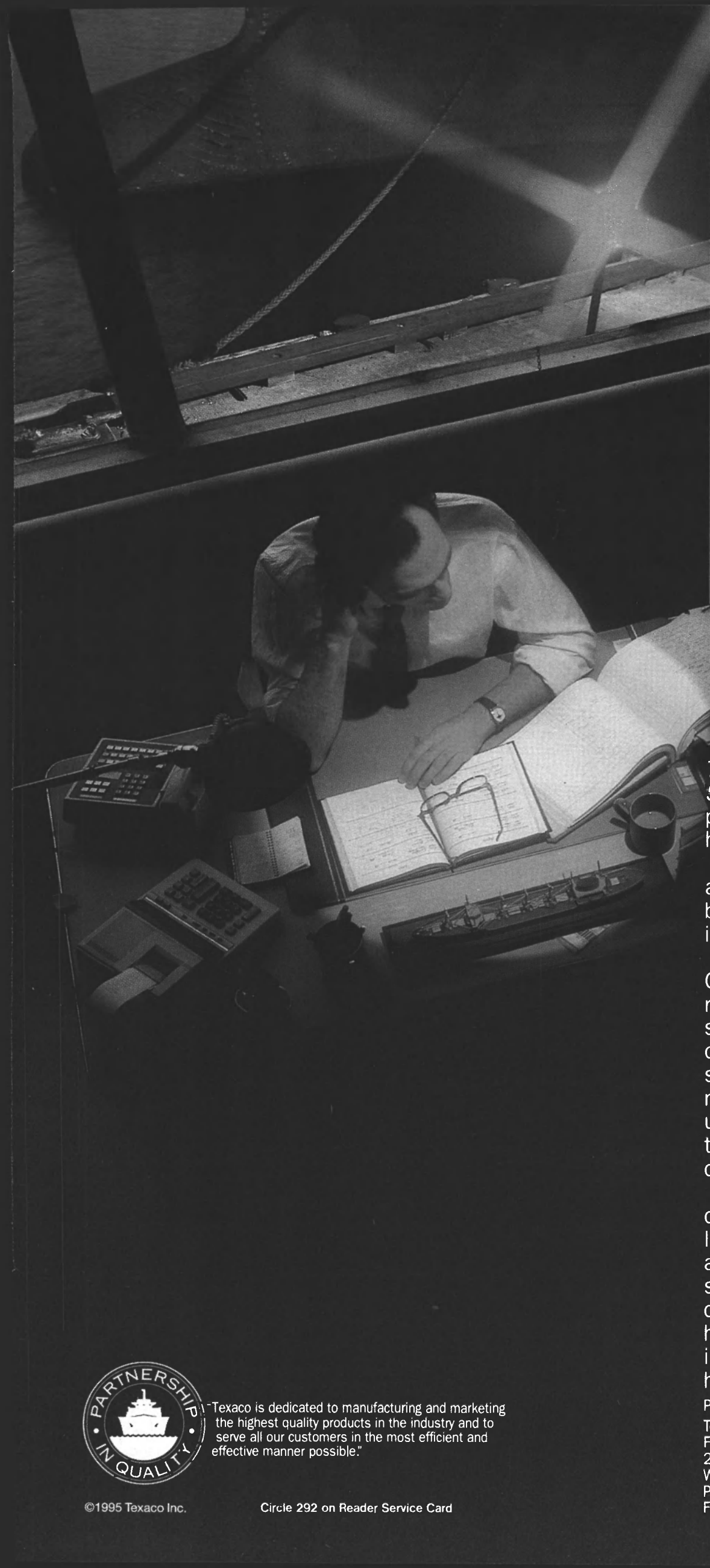
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## MARINE FUELS, LUBRICANTS & ADDITIVES

### Analytical Services & Materials

Analytical Services & Materials (AS&M) is a high-tech company serving the needs of the marine industry in the areas of fuel testing, failure analysis, lube oil testing, destructive and non-destructive testing, consulting and more. AS&M was one of the first few petroleum testing labs in the U.S. to earn ISO 9002 certification. AS&M is also a participant in the Joint Oil Analysis Program (JOAP) run by the Department of Defense to assess lab performance. AS&M has developed unique software based on statistical analyses of fuel quality parameters, termed Engine Friendliness Number (EFN). The AS&M analysis report provides this EFN, which provides a benchmark on a scale of 0 to 100, rating the quality of fuel from the point of view of reduced maintenance, reduced corrosion and wear.

For more information on AS&M  
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### BP Marine Americas

BP Marine says it has the skills, the necessary focus and, most important, the seasoned professionals to produce and deliver high-quality, value-for-money products. Accord-

ing to the company, BP's worldwide network ensures suitable products are available for all applications required on the modern vessel.

For more information on BP Marine  
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### Chevron

Chevron markets a variety of premium marine lubricants internationally. These include:

- Chevron Marine Engine Oils Delo 477 (SAE 20W-40 and 40) — superior high dispersancy, high alkalinity, 17 TBN engine oils for diesel engines in towboats, tugs, workboats, dredges, and in other applications requiring a zinc-free oil.
- Chevron Marine Engine Oils Delo 1000, 2000 and 3000 Marine (SAE 30 and 40) — high quality engine oils developed for a wide variety of medium-speed trunk piston engines including the latest high output engines burning marine diesel oils, or residual fuels with low, moderate or high sulfur content.
- Chevron Marine Engine Oil Symbol 9250 — a high-performance engine oil which fully complies with Symbol 9250 of the U.S. military specification MIL-L-9000H.

For more information on Chevron  
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### Drew Ameroid

Drew Ameroid Marine, a leading provider worldwide of marine fuel additives, offers a coordinated program of fuel treatments designed to optimize performance while minimizing the adverse effects and related costs of low-quality fuels.

Drew's program features Amergy® 222 fuel oil conditioner, Amergy® 1000 combustion improver and LT Soot Release™ catalyst for comprehensive fuel system support that remedies pre-combustion fuel handling and storage problems and reduces post-combustion deposits in marine exhaust systems, as well as promoting maximum fuel efficiency during combustion. In addition, for assistance in prescribing appropriate, cost-effective treatment, Drew's PACE™ fuel evaluation program can provide essential information about the chemical and physical characteristics of each bunkering, before it is used.

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### Enviro Response Products

Manufactured from LM6 corrosion resistant aluminum alloy, the De-Bug Fuel Treatment Unit was developed by a consortium of fuel

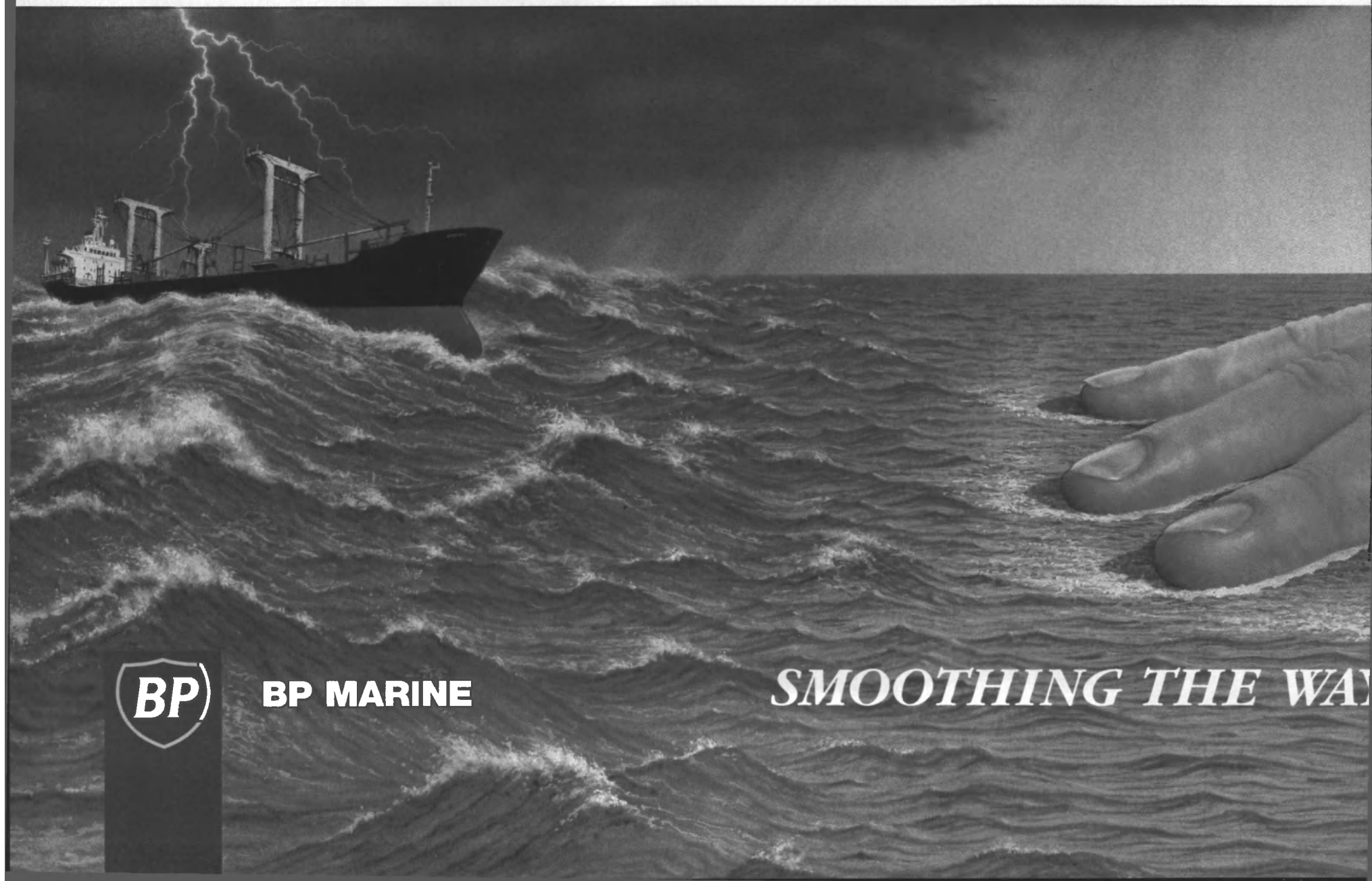
injection specialists, marine surveyors and engineers to control microbial infestations in diesel fuels and oils. The De-Bug Fuel Treatment Unit is a static treatment unit, not a filter. Fuel is passed through the De-Bug unit before it reaches the lift pump, through a magnetic field for a controlled length of time. As the microbes pass through the magnetic field, they disrupt and die. The bodies burn cleanly with the fuel. According to the manufacturer, users will benefit in terms of less downtime, better combustion, enhanced fuel economy, reduced harmful emissions, less maintenance and lower filter costs. De-Bug caters to low rates of up to 5,000 gph.

For more information on  
Enviro Response Products  
Circle 97 on Reader Service Card

### Ferrous Corporation

Ferrous Corporation's products include combustion catalysts, a fuel dispersant and stabilizer, a biocide, and a sterntube lubricant. All products are backed by qualified technical service. According to the company, Ferrous products solve the following problems: carbon residue and asphaltene and engine and boiler deposits.

For more information on Ferrous  
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BP MARINE

SMOOTHING THE WAY



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Fluoramics, Inc. offers Tufoil, a product the company says it so slippery that when it's added to the oil, it allows the engine to run at peak performance and maximum efficiency. Manufactured by Fluoramics, Inc. of Mahwah, N.J., Tufoil holds 11 patents worldwide and is distributed throughout the U.S., Canada, Greece and the Pacific Rim.

For more information on Fluoramics, Circle 96 on Reader Service Card

### Fuelon

Fuelon International offers Fuelon, which converts fuel into a superior grade, according to the company. This chemical effect shortens the molecular hydrocarbon chains of fuel into smaller uniform sizes and then coats them with a heat-seeking formulation that, according to Fuelon, dramatically improves combustion. Fuelon says this improved combustion results in an approximate increase in temperature of 15 percent. The increased temperature will allow users to achieve desired steam production with considerably less fuel.

For more information on Fuelon Circle 93 on Reader Service Card

### Mobil

Mobil EAL Arctic® Series oils were developed to protect refrigeration compressors and system components using HFC-134a, the ozone-friendly, chlorine-free refrigerant which is replacing R-12 in marine refrigeration applications.

The synthetic lubricants are formulated from selected POE base stocks and special additives which reportedly provide outstanding miscibility, thermal stability, lubricity and resistance to hydrolysis. Available in a wide range of viscosities, Mobil EAL Arctic Series oils are part of Mobil's Environmental Awareness Lubricants (EAL) line of products.

For more information on Mobil Circle 85 on Reader Service Card

### Oronite Additives

Oronite consults with marine engine manufacturers to formulate dependable, economical engine oil additives for the demands of today's more fuel-efficient crosshead and trunk piston engines. With extensive research, development and testing facilities, coupled with blending facilities located around the world, Oronite continues to be a major force in the world marine lubricant additives market.

For more information on Oronite Circle 95 on Reader Service Card

### Pre-Luber

The Pre-Luber, a patented external accessory pump, reportedly eliminates dry engine starts and the accompanying wear, to prolong engine life and enhance performance. Sales Professionals, Inc. is the exclusive agent for the Pre-Luber marine and automotive product lines. The Pre-Luber product automatically pre-

lubricates before engine startup. This reduces engine bearing wear by as much as 53 percent, while also reducing wear of the critical engine parts. According to Sales Professionals, the Pre-Luber can more than double the life of an engine. These results were determined by R.C. Engineering, an independent testing firm, in an evaluation of wear differential between engines equipped with the Pre-Luber and those with standard oiling systems.

For more information on Pre-Luber Circle 90 on Reader Service Card

### Royal Lubricants

Royal Bio Guard 3000 series synthetic hydraulic fluids are reportedly formulated from high-quality biodegradable synthetic base stocks. They are recommended by the manufacturer for most types of hydraulic systems using vane, gear, and piston type pumps operating at extremes of both temperature and pressure.

Bio Guard 3000 fluids meet EPA and U.S. Coast Guard requirements for biodegradability set forth in 40 CFR 796.3260. They are also approved for use in hydraulic systems requiring conformance to Vickers 35VQ25. Royal says benefits include improved pumping efficiency, excellent high-temperature stability and compatibility with construction materials, outstanding low temperature properties, lower deposit formation in high-temperature systems, extended service life and longer drain intervals.

For more information Circle 91 on Reader Service Card

### Texaco

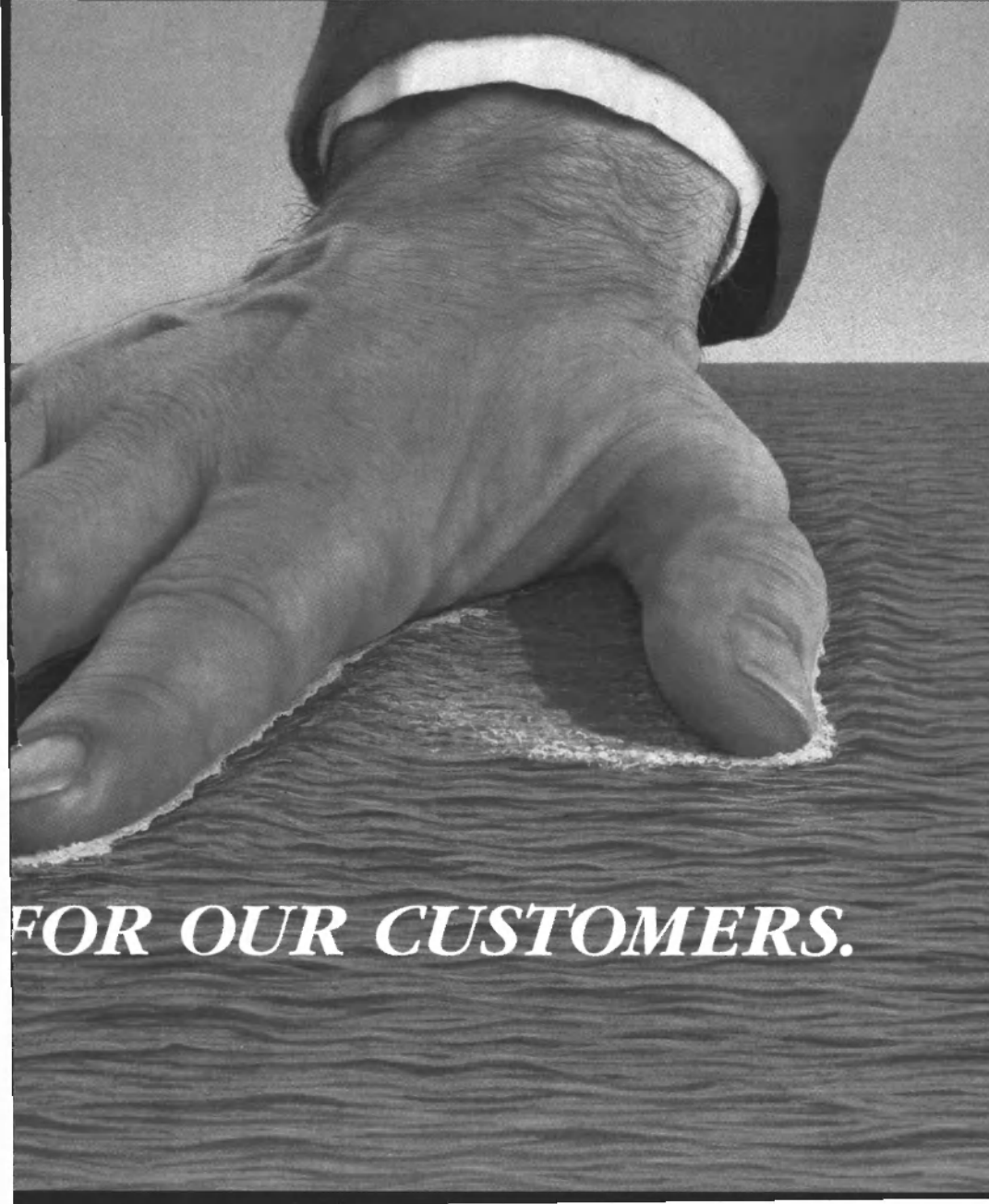
Texaco Fuel and Marine Marketing Department (TFAMM) markets Texaco's bunker fuel and marine lubricants, offering a Used Oil Analysis Program, Management Information Systems, technical literature and engineering services.

Texaco's line of marine lubricants start with Taro Special, a SAE 50 high alkaline reserve (70 BN) premium quality cylinder oil for large, slow-speed diesel engines burning residual fuels.

According to Texaco, Taro Special offers excellent wear protection for cylinder liners and piston rings. Doro AR 30 is a SAE 30 moderate alkaline reserve (6 BN) premium crankcase lubricant for these engines, also meeting the anti-wear requirements of engines equipped with a PTO unit.

Texaco offers Taro XD SAE 30 and 40 oils with a BN of 15 used in medium-speed engines burning fuels with a maximum sulfur content of up to 1.8 percent. For higher sulfur levels, Taro DP SAE 30 and 40 with 32 BN levels, along with Taro XL SAE 40 with a 40 BN, are available. In addition to its marine engine oils, Texaco provides a complete lubricant product line comprising synthetics, specialty oils, and greases which are available for all other lubricant needs.

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# Tanker Technology:

## A Look At The Yards

by Alan Thorpe, international editor

**J**apan and South Korea are the two major shipbuilding nations involved in building VLCCs, although Denmark's Odense Staalskibsvaerft is also a major player. The only other current orders are in Taiwan and Spain, both for domestic owners.

Japan has shown restraint in recent years with various government-sponsored initiatives to reduce the

number of ships being built in each yard, although very few yards have actually closed for business.

The majority of large Japanese shipyards are involved in the tanker market, all the latest orders including OPA 90-regulatory double hulls.

The most recent count of orders included Hitachi Zosen (8 large tankers), IHI (2), Kawasaki (1), Mitsubishi (7), Mitsui (1), Sasebo (2)

and Sumitomo (2).

Meanwhile, South Korea has ignored recent pleas—especially from the OECD—for it to not increase shipbuilding capacity. The main contributors to the South Korean shipbuilding industry are Hyundai Heavy Industries (HHI), Samsung Heavy Industries (SHI), Daewoo Shipbuilding & Engineering and Hanjin Heavy Industries (formerly KSEC). New developments include Halla and Daedong.

The latest development in the South Korean shipbuilding industry is the construction of the large shipbuilding complex at Mokpo, which is being developed by Halla Engineering & Heavy Industries Ltd. (HE&HI). The Halla organization took over the newbuilding and repair yard operated by Incheon Engineering & Shipbuilding Corp. about two years ago, and since has been successful in various projects including a series of 40,600-dwt product tankers for Shell International, the last of which is due for delivery later this year.

Halla, restricted by space to develop the Incheon facility, decided that a new building complex should be built at Mokpo, which is a yard capable of building ships up to VLCC size. This new complex, named New Samho Shipyard, is nearing completion with two suezmax tankers being the first ships due for delivery during the early part of next year. Recently, the yard won an order for two double-hulled VLCCs to be built at this shipyard. All four ships are

for Halla's shipowning wing, Halla Merchant Marine.

There has been mounting criticism from the world's shipbuilding authorities of this project, but it has been allowed to continue with the blessing of the South Korean Government, despite its likely effect upon prices.

Samsung is another expansion-minded newbuilding company. Earlier this year the yard's building capacity was supplemented by the extension to an existing building dock to take VLCC tonnage, and now the yard is planning a third VLCC building dock.

As one of the world's leading tanker builders, South Korea has become involved in ships suitable to meet OPA 90 requirements. All four large shipyards (HHI, SHI, HE&HI and Daewoo) and the smaller Hanjin have designs available and ships on order.

The largest order placed for VLCCs was by Saudi Arabian-based Vela Corp., which contracted a series of six 280,000-dwt crude carriers from HHI at a price said to be in the region of \$114 million each. All the large tankers ordered by Vela and the National Shipping Corp. of Saudi Arabia from Japan, South Korea and Denmark have double hull designs. During 1993 HHI won two orders from the Shipping Corp. of India for two double-hulled VLCCs at a cost of \$60 million each; Samsung received a similar order. Norwegian owner Peder Smedvig ordered, during June 1993, two 95,000-dwt crude

**ABOVE:** The *Uikka* has made its first trip carrying product since conversion by Kværner Masa-Yards. The conversion included equipping the vessel with a diesel-electric power plant and an Azipod propulsion system, developed with ABB. **BELOW:** *Cossack Pioneer* gets a facelift from Keppel.





## Tanker Technology — A Look At The Yards

carriers from HHI at a price of \$43 million each. Later in the year the order was increased to a series of four, although the price per ship increased to \$48.5 million. HHI won the order for two double hull design VLCCs (\$100 million per ship) from U.S. owner Overseas Shipping Group. The yard is also currently building a VLCC for another U.S. owner, Consolidated Maritime.

Samsung has two double-hulled VLCCs building for Belgium's Bocimar, both ordered during mid-1993 at a price of \$43 million per ship. At about the same time, Samsung won an order from Eastern Mediterranean Maritime of Greece for two 97,000-dwt double bottom/double skin crude carriers (\$43 million per ship) — the order, during May 1994, being increased by a 145,000-dwt vessel (\$56 million) of similar design. Another Greek shipowner to utilize Samsung's designs is Thenamaris, which earlier this year ordered two 148,500-dwt crude carriers (\$56 million per ship). Singapore-based Tanker Pacific Management is another independent owner who has ordered a double-hulled tanker (95,000 dwt) from Samsung (\$43 million). U.K.-based NS Lemos has two 95,500-dwt crude carriers (\$47 million per ship) on order at Samsung. The Shell International order for five VLCCs at Daewoo is a very good indication of how many major oil companies may look to future ordering trends — obtaining financing outside normal channels and bareboating the vessels when delivered. Obviously Shell would adhere to the OPA 90 regulations; all five ships (\$90 million per ship) are of double hull design.

The Middle East countries continue to build their tanker fleets. The National Iranian Tanker Co. (NITC) ordered, during 1993, a series of five 300,000-dwt VLCCs, all with a double hull design and all to be built at Daewoo, Koje Island. Daewoo has also been building VLCCs for Sweden's ICB, the ships once again including a double hull design.

Halla won an order during 1993 for three double-hulled 45,000-dwt tankers from France's Soflumar van Ommeren. This order's two-ship option was taken up in May 1994. However, one of the original order was subsequently taken over by Greece's Stelmar Tankers. Halla has also been building 40,600-dwt double hull design product tankers for Shell International.

### Conversion

One of the most lucrative markets for the conversion industry in recent years has been the tanker to FPSO (Floating Production and Storage Offloading units) segment. The most recent contract from this market sector was won by Singapore's Jurong Shipyard Ltd.

(JSL), which was awarded the major contract to convert the 134,000-dwt tanker *Mega Eagle* into an FPSO, the first such conversion contract won by JSL from this specialized offshore market. The \$20 million

contract to convert the 1975-built tanker, which is to be renamed *Nan Hai Sheng Li*, was awarded to the yard by MODEC Inc. of Japan. Work involves the life extension of the vessel for another 15 years and the

installation of new equipment and systems.

Although JSL has won its first contract from this sector, Keppel has been involved with two such conversions in recent months. The

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MarineSafety is applying advanced simulation technology and teaching concepts to the maritime industry. As with FlightSafety, we are in the business of helping to minimize risk.

### THE EUROPEAN CONNECTION

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## Tanker Technology — A Look At The Yards

yard recently delivered the *Nan Hai Kai Tuo* to Philips Petroleum for use off the mainland Chinese coast, and is currently working on the *Cossack Pioneer*, ex-Chevron London, for use off the Australian coast.

In Europe, the main player in this market has recently been Astilleros Espanoles SA (AES), which completed the conversion of the conventional crude-carrying VLCC *Good News* for Bluewater Terminals, and is now working on a second vessel — the 99,800-dwt tanker *Uisge Gorm*, ex-Dirch Maersk — which is being converted, under a \$30 million contract, into an FPSO for Bluewater Terminals.

This market sector is likely to remain buoyant for a number of years for the many specialized yards willing to bid for such a vast project. Amoco Hamilton and Shell are among a number of companies with long-term plans for such conversions, and Australia's Ampoex (Orient) Inc., which has headquarters in Perth and a regional office in Shen Zhen district near Hong Kong, is currently looking at possible shipbuilding/ship repairing companies to carry out a lengthy turnkey project for the design through conversion to hook-up of an FPSO for mainland China.

Another conversion sector from the tanker market is that of conventional tankers to specialized offshore shuttle tankers, especially those many such vessels required for the North Sea. Hamburg's Blohm + Voss (B+V) recently completed such a conversion involving Umland's *Stena Savonita*, ex-Savonita. Norwegian owner Knudsen OAS, Haugesund recently had two of its fleet of tankers converted to specialized shuttle tankers with the Submerged Turret Loading

(STL) system: the *Dicto Knudsen* was converted at AESA and the *Tove Knudsen* converted at the owner's own shipyard, Haugesund Mekaniske Verksted.

Meanwhile, another such project involves the 91,000-dwt tanker *Futura*, which is owned by Finland's Neste. She is to have a new \$13.65 million STL bow loading arrangement fitted at Kvaerner Masa-Yards, Finland. The conversion work will be completed by the end of this year. Kvaerner Masa-Yards had already won a contract from Neste Shipping the previous year (1994) — a \$17 million contract to convert the 16,420-dwt tanker *Lunni* for Arctic trading. The 1976-built vessel arrived in Helsinki at the end of last year and is expected to enter the former Valmet yard in Helsinki at the end of the year and leave in spring 1995. The same work was completed on her sistership, *Uikku*, earlier this year.

When the recently-introduced OPA 90 regulations governing double-hulled tankers came into force this year, many believed that it would result in a number of conversion projects involving existing tankers. U.S.'s Avondale Industries is the first to be awarded such a contract involving Jones Act tankers by American shipowner, American Heavy Lift Shipping (AHL). The \$160 million contract involves the forebody conversions, stern modifications and some house arrangements to the 34,723-dwt *King* and *Knight* and the 30,806-dwt *Solar* and *Spray*. The U.S. Maritime Administration (MarAd) has approved a \$139.4 million loan-guarantee under its Title XI program.



*Murex*, first of a series of tankers being built for Shell.



The M/T *Natura*, owned by Neste Shipping.

## INTERTANKO: 'A View on Profits, Safety & OPA 90



48

Have no doubts, tanker safety and the long-term financial stability of the tanker market are top concerns of Intertanko. The organization has built a considerable reputation for meeting problems head-on to advance the cumulative agenda of its members.

Intertanko, which is the independent tanker owner's association dedicated to representing its members to governments, has been and remains a vocal opponent of OPA 90. The organization recognizes that the legislation was introduced for the best of motives, but Intertanko believes that as OPA 90 now stands, the measure could fail in some of its major objectives. **Kristian R. Fuglesang**, assistant director of Intertanko, recently spoke with *Maritime Reporter & Engineering News* to discuss the short- and long-term effects of OPA 90, as well as other related issues.



Kristian R. Fuglesang

Maritime Reporter/Engineering News



## Tanker Technology — Intertanko

### Uniformity Is A Must

Uniformity, in the form of all countries adhering to one set of regulations set by the International Maritime Organization (IMO), is one of the cornerstones of Intertanko's laborious effort to help persuade the U.S. to drop the conditions set forth under OPA 90 and embrace the international legal regime set out in the 1969 Civil Liability Convention and the 1970 Fund Convention as amended by the 1992 protocols, agreed at IMO.

"We have also seen that individual states regulate tanker operation and even introduce equipment and design requirements in excess of international and federal standards," said Mr. Fuglesang.

"Lack of uniformity can cause confusion, and that confusion can actually cause safety problems. That is why we give full support to IMO, and that [IMO] is where we feel rules on shipping should be agreed [upon]."

Mr. Fuglesang contends that the issue is further confused by independent states being allowed to create and implement their own shipping rules and regulations. "It drives up costs, and makes it difficult for them [tanker operators] to have different plans to meet different rules in these different states." He said such a policy is perceived as short-sighted by many in the tanker shipping industry, and in the long run, such policies could make it less attractive to do business with the individual states.

Intertanko's concern for the long-term well-being of the independent tanker owners should not be misconstrued as a deliberate attack on U.S. policies alone *per se*. In fact, Intertanko has acknowledged that OPA 90 was passed with the best of motives, and to make a contribution to preserving the natural coastal and sea environment of the U.S. Mr. Fuglesang also noted that the U.S. Coast Guard (USCG) showed great flexibility when it came to certification rules.

Intertanko shares the goals of safety and environmental protection. It is certain individual facets of the plan, such as unlimited and uninsurable liability and distribution of responsibility, that are the association's causes for concern.

### Money Talks

As with most everything in business, the key point of contention with OPA 90 surrounds money — specifically, unlimited liability.

The international regime set out in the Civil Liability Conventions, 1969-92, agreed that IMO allows the shipowner to set financial limits on its obligation to compensate for oil spill damage, unless the spill was caused through the carrier's "... actual fault or privity."

In contrast, Intertanko points out, OPA 90 says that "... if the

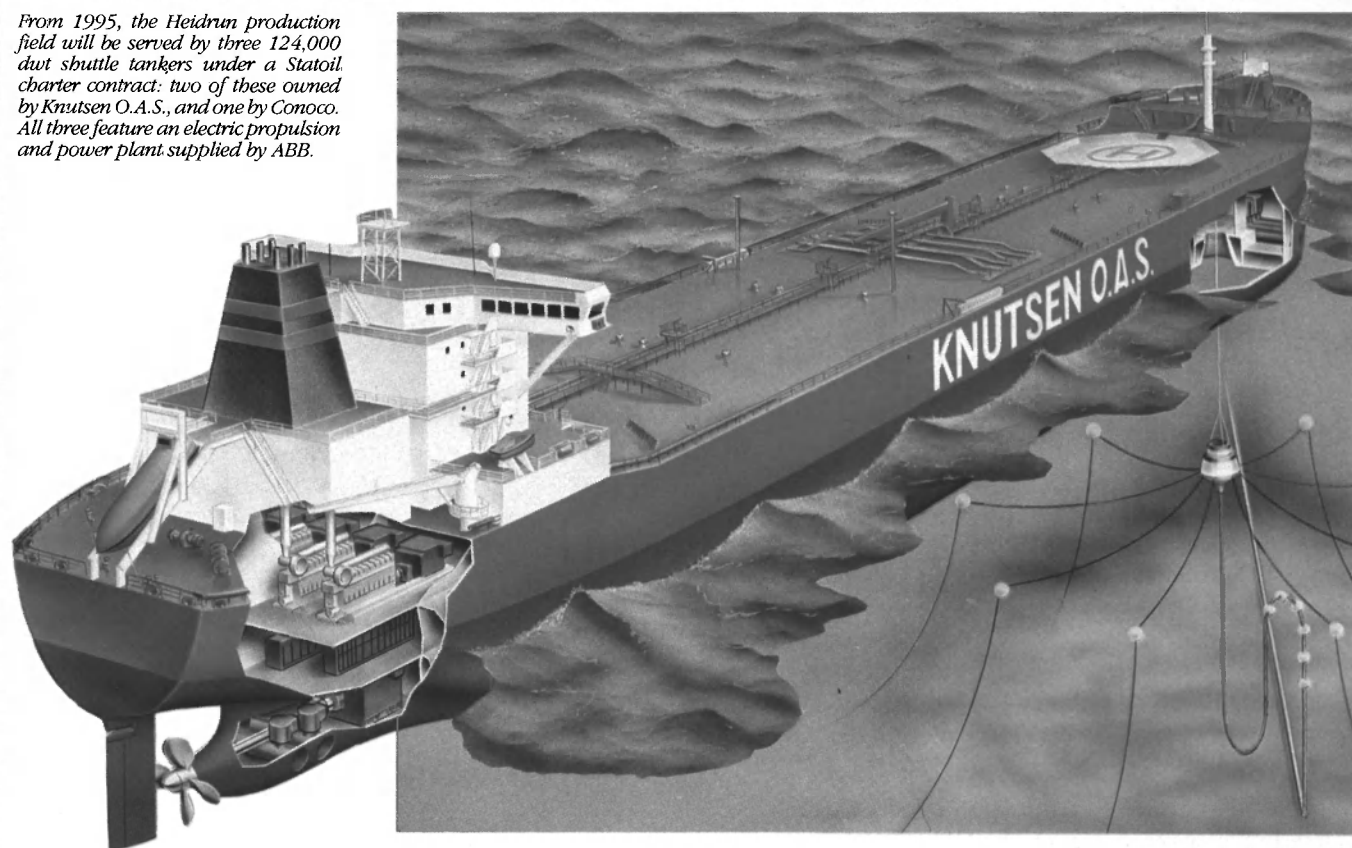
incident was proximately caused by gross negligence ... or the violation of an applicable federal safety, construction or operating regulation by ... an agent or employee of the [shipowner] ..." then the liability of the

shipowner becomes unlimited, which Intertanko deems intolerable to the oil tanker trade and financially insupportable.

Embracing the IMO convention, which incurs shared liability among

the tanker owner and cargo owner, means that cargo owners might be more selective in choosing the ships on which their cargoes are transported, Mr. Fuglesang reasons. This in turn would ensure a demand

From 1995, the Heidrun production field will be served by three 124,000 dwt shuttle tankers under a Statoil charter contract: two of these owned by Knutsen O.A.S. and one by Conoco. All three feature an electric propulsion and power plant supplied by ABB.



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## Tanker Technology

for quality ships, with obvious and good ramifications on the shipbuilding and supplying side.

Conversely, Intertanko argues that OPA 90 will actually delay the modernization of the tanker fleet,

as some shipowners will decide to permanently abandon the U.S. trade and others will be forced to restructure to protect their equities. Ensuring the proper balance between overall available tanker capacity and

market demand is a difficult equation, to say the least. Intertanko has stood steadfastly against shipbuilding subsidies, which it believes lead to the building of unneeded ships. "Subsidies create a vicious

circle," Mr. Fuglesang said.

### The Outlook

"It is difficult to predict long-term," Mr. Fuglesang said, but the key to a healthy, safe tanker industry is to get a worldwide consensus in support of the international regime. He points out that Norway has just this year passed the legislation necessary to embrace the 1992 protocols, and the rest of the Scandinavian countries will soon do the same. For long-term prosperity, he outlines these points as crucial:

- Have a good set of international rules, which we do have, for safety. These rules must be properly and uniformly enforced by flag and port states
- Classification societies must do their job properly
- The port state must take care of a number of issues (charting/port safety, pilots, etc.) to ensure safety
- Charterers need to ensure that the ships they hire are in good condition, and there should be more scrapping of inadequate ships.

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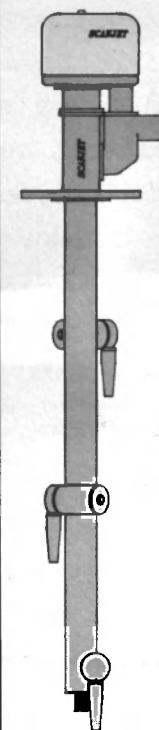


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### Tanker Scrapping This Year To Date

Name	DWT	Built	Owner	Flag
<b>Bangladesh</b>				
Daka	232,980	1983	Haji Ioannou	Cy
Fortunship L	268,081	1975	Ceres Hellenic	Gr
Laina	264,549	1972	Shell Group	I.M.
Lord	227,305	1974	Haji Ioannou	Cy
Oster-Princess	284,508	1972	Barber Intl.	No
<b>India</b>				
Al Azran	97,285	1970	Jordan Nat. Bldg.	Ja
Mountain Sky	219,388	1973	Norbulk Shpg.	Li
Trade Fortitude	249,224	1972	Marine Mgt	Li
C.W. Kitto	268,346	1974	Chevron Shpg.	Li
Chevron California	71,340	1972	Chevron Shipping	Am
Cornelian	155,375	1971	Monegousque	Pa
Dan	30,617	1973	Cardiff Marine	Ma
Polopidas V	227,604	1971	Greenwich Brokrg	Cy
Sveti Stjepan	21,444	1969	Govt. of Croatia	Cr
Caroline Cab	21,649	1962	Barthen	Li
Pecos	28,851	1950	Sabine	US
Alvaro de Bazan	168,532	1972	Pelmar	Pa
Susanbird	218,685	1973	HTC	---

18 vessels 3,055,763 DWT 24 years old (avg.)

Source: Intertanko

Maritime Reporter/Engineering News



### Skarhar Tanker Design Patented

U.S. Shipbuilding Corporation, Inc. (USSC) has been issued patent No. 5,398,630 for a "Simplified Midbody Section for Marine Vessels and Method and Apparatus for Construction." This patent is the baseline concept for the Skarhar tanker design currently being developed by USSC's sister company, Shipbuilding Ventures, Inc. The patent has been designed to reduce labor hours during tanker construction, by using the patented production approach of automatically welding longitudinal girders to an inner and outer shell.

### U.S. Patent Issued On New Flexible Liner Approach

A recently-issued U.S. patent describes a new approach to designing and installing flexible liners inside oil tankers and barges. Instead of using large bladders or curtains, the approach uses small liner segments installed in individual stiffener bays.

The edges of each liner segment are secured in a water/oil-tight manner, using clamping bars bolted to the inboard edges of stiffeners and web frames. Hull inspection is achieved by unclamping the bars, and using small segments reduces the costs of manufacturing and installation. Since the clamping bars are positioned away from the outer shell, a liner segment can be pushed a substantial distance inward, if a spill occurs, without requiring dragging or sliding of liner material across a steel surface.

The lining was invented by **Phil Ross**, with the help of naval architects **Leonard Stanton** and **Tim Layne**, as well as **Patrick Kelly**, environmental engineer and president of JFKM Research.

For more information on the patent  
Circle 105 on Reader Service Card

### Singmarine Delivers First Of Two Tankers To Petroships

Singmarine Industries Ltd. has completed and delivered a 6,500-dwt product tanker to Petroships Pte. Ltd. The vessel, the first of a two-tanker contract for \$35 million, was completed on schedule by Singmarine Dockyard, the flagship company of Singmarine.

In a ceremony held at Singmarine Dockyard's main yard, Mrs. **Khoo Kay Chai**, wife of Dr. **Khoo Kay Chai**, principal of Singapore Polytechnic, named the vessel *Petro Venture*. Mr. **Teh Kong Leong**, chairman of Singmarine Dockyard and director of the marine department, said, "The prompt delivery of *Petro Venture*, the first vessel we have built for Petroships, is a demonstration of our commitment to our customers as well as quality in our products."

"We look forward to further

strengthening our business relationship with Petroships through excellent service, both in our shipbuilding and ship repair divisions."

Measuring 360 ft. (110 m), MT *Petro Venture* has a cargo capacity of 7,800 cu. m. with two cargo pumps, each delivering 750 cu. m. of oil per hour. Powered by a Hanshin engine, the 20-crewmember vessel is capable of a service speed of 12 knots. It is built in accordance with the

classification rules of Nippon Kaiji Kyokai (NKK).

Meanwhile, work is in progress on *Petro Venture*'s sister vessel, which is expected to be delivered in the third quarter of the year.

The Petroships Group owns and operates nine tankers and handles another four owned by its associates in Malaysia.

It is a member of a consortium involved in the development of a

port on the Changjiang River in Changshu, north of Suzhou.

In addition to the second tanker for Petroships, Singmarine Dockyard is presently busy with the construction of an LPG tanker for Thai Oil Company, a containership for Steamers Containerships Holdings Pte. Ltd., and two harbor tugs for Keppel Smit Towage Pte. Ltd.

For more information on Singmarine  
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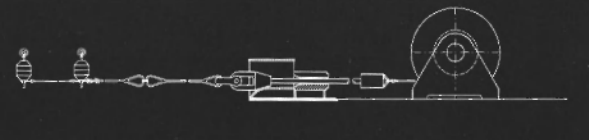
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**Slickbar Develops New Boom Design**

Slickbar of Seymour, Conn., has developed a new oil boom design: the Slickbar Mk 16 Heavy Duty Deployable Oil Boom, a boom that is permanently stored in the water until needed.

The Mk 16 combines the durability and longevity of the rugged Slickbar Mk 8 skirt belting with the

Mk 10's solid molded polyethylene foam floats. It is designed for rapid response and/or frequent deployment around vessels.

The boom's skirt belting is available in three styles: lightweight urethane, heavy weight urethane, and heavyweight PVC. The Mk 16 oil boom has ASTM F-962 standard end connectors, anodized for salt water.

For more information on Slickbar Circle 79 on Reader Service Card

**Haz-Mat "Rubberizes" Spills For Disposal**

Rubberizer, from Haz-Mat Response Technologies, Inc., turns fuels, oils and chlorinated solvents into a rubber-like solid for simple disposal. Available in booms, pillows and particulate forms, the product is used by major response companies such as Foss Environmental to clean up operational spills, or at

the tail end of large spills — and has, in fact, been used by Foss on several spills in the past year. In addition to deck, harbor and at-sea spill response, the product also has many other applications.

The EPA recognizes Rubberizer as a true sorbent. Licensed in the state of California and approved for incineration and landfill disposal in the U.S., Rubberizer is carried by major distributors worldwide.

For more information on Haz-Mat Circle 81 on Reader Service Card



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**Marshall Branson Delivers Response Vessels To S. Korea**

Marshall Branson Marine (MBM) has completed another two rapid response vessels for use in the South Korean oil industry. One MBM Traktakat 150 oil skimming vessel, the *Yukong Green No. 1*, and one MBM Traktakat 140 boom deployment vessel, the *Yukong Green No. 2*, were produced by MBM in association with Ro-Clean International AS of Denmark. Yukong Oil Refinery commissioned the vessels in September, which on completion will be stationed at the Ulsan complex in South Korea.

A similar pair of vessels was delivered to the Honam Oil Refinery in Yosu, South Korea, last September. The Honam and Yukong oil refineries are reportedly the largest refineries in South Korea.

The *Yukong Green No. 1* is powered by twin Cummins 6BTA5.9M1 marine diesel engines developing 250 hp at 2,600 rpm, driving twin four-bladed Aquaquad propellers through Twin Disc MG5061 1.5:1 ratio gearboxes with trolling valves. The engine controls have been modified to prevent damage occurring to the gearboxes when the trolling valves are engaged. The combination of propulsion units and sterngear results in a speed of 10 knots when loaded.

For more information on MBM Circle 82 on Reader Service Card

**Bohus Invest Launches Walboom 450 At Conference**

Bohus Invest launched its newest product at the International Oil Spill Conference at the Long Beach Convention Center recently.

"The Walboom 450 is our most recent product," said Christopher Hassleback, president and CEO of Bohus Invest International. "Among the key features of the Walboom 450 is the self-expanding air cushion, with its air displacement system, preventing air from escaping during service. [The combination of] a construction incorporating a polyurethane compound and PVS fabric which ensures strength and durability for tough inshore conditions makes the Walboom 450 an indispensable product on the market."

Bohus Invest also offers the Walosep WM oil skimmer, the smallest of the Walosep skimmer line. Developed mainly for light and medium oils, the Walosep's interaction

Maritime Reporter/Engineering News



between the submerged turning rotor and the pump reportedly enhances the percentage of oil recovered, reducing the problem of excessive water. The unit has a 44-gpm capacity, and weighs 110 lbs.

For more information on Bohus Invest  
Circle 83 on Reader Service Card

### Naval Architects On Call Meet OPA Needs

Owners and operators of oil tankers and barges are required by 33 CFR 155.240 and 33 CFR 155.245 to have computerized and pre-arranged shore-based damage stability and residual strength programs in place as of Jan. 21, 1995. In addition, 33 CFR 155.1035 and 33 CFR 155.1030 require that a qualified naval architect be identified in the oil spill response plan. Access must be made available 24 hours a day. To answer this requirement, Art Anderson Assoc., a marine and facilities engineering firm in Bremerton, Wash., has instituted an on-call system. Using a cellular phone and a laptop computer, naval architects are available 24 hours a day, seven days a week.

The computer is loaded with the vessel's stability and strength information and a copy of the GHS stability program and other tools. Upon receiving the call, the naval architect is fully equipped to provide rapid assessment of vessel condition.

"Setting up our response system is easy," said **Chris McKesson**, principal-in-charge of the Naval Architecture Group. "The first stage is to build the computer model of the vessels." Then the firm's STRAND program is used to answer certain key questions: (1) Is the vessel in danger of capsizing? (2) Will it float free at the next high tide? and (3) What angle of heel is it likely to assume?

For more information on Art Anderson  
Circle 80 on Reader Service Card

### ECM To Expand Market

Environmental Crisis Management (ECM) continues to be a powerful force in the spill management industry. While 1994 proved to be a successful year for the company, plans are underway to expand its market for 1995-6.

"We are continuing to expand our market by being responsive to requests we've received for training seminars throughout the world, with Japan, Singapore, Italy and Greece all slated for this year," said **Joseph Ledbetter**, president of ECM.

**Fredric Raeder**, ECM vice president, agrees. "ECM continues to grow by serving the needs of the maritime community, whether it's in the world of OPA 90 or general crisis training and regulatory compliance."

ECM provides Qualified Individual and spill response management services, as well as generating oil spill and hazmat plans, drills and training programs.

For more information on ECM  
Circle 84 on Reader Service Card

May, 1995

### Donjon To Offer Total OPA 90 Services

Donjon Marine, Hillside, N.J., a provider of salvage, firefighting and lighterage services, plans to offer comprehensive OPA 90 services to ship and barge owners and facilities in the following areas:

- Full Level E response services in all marine environments, on the East, West and Gulf coasts, the in-

land river system, Caribbean, Alaska, Hawaii and Guam

- Full coverage for all USCG, COTP zones for salvage, firefighting and lighterage
- Spill response and management services
- Planning, drills and training.

The company says it will provide a cost-effective, client responsive organization. **J.A. Witte**, Donjon's

president, commented, "The industry has very limited choice in providers at this point. We seek to offer a full service for a reasonable price, and through such an arrangement, finally give vessel operators, terminal operators, and insurance groups what they require and want, an experienced group that will not dictate to its clients."

For more information on Donjon Marine  
Circle 146 on Reader Service Card

**When it comes to oil spill, it's either clean-up or pay-up**

Unitor's Oil Spill Kit has been designed to be effective, and simple to use in conjunction with each ship's response plan as required by the IMO and OPA 90. The kit contains the necessary sorbents and equipment to deal with up to 12 barrels of oil spill which is the regulatory requirement for vessels over 400 ft (LOA), or 7 barrels - 1100 litres - if under 400 ft. Unitor's Oil Spill Kit assists shipping companies to comply with IMO / OPA 90 recommendations.

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Circle 292 on Reader Service Card

53

## Deck Machinery And Cargo Handling Review

### Appleton Marine Inc.

Appleton Marine manufactures a full line of marine cranes, mooring winches, anchor windlasses and capstans. Recent shipments include 40 electric, variable frequency drive, constant tension, tow haulage winches for the U.S. Army Corps of Engineers; a complete deck machinery package for sealift conversion vessels at Newport News; and cranes, RIB handling davits, anchor windlasses, cross back winches, and capstans for U.S. Coast Guard buoy tenders.

For more information on Appleton  
Circle 36 on Reader Service Card

### Cross Equipment

Cross Equipment, of Houma, La., serves the equipment needs of the oil and gas industry. Cross has an inventory of new surplus, and used remanufactured marine deck machinery, such as complete mooring systems, winches, windlasses, capstans, cranes, and bulk tank systems. A sister company to Smatco

Industries, Cross utilizes Smatco's engineering expertise along with its 51,000 sq. ft. facility for repair and remanufacturing work. Cross' recent projects include delivery of a Smatco model 66-HTS-200 single drum towing winch with levelwind. This unit was installed on the M/V *Scott T. Slatten* for Bisso Towing Co. The company also recently delivered a four-point mooring system for Halliburton to be utilized on a barge in Venezuela. Cross Equipment is currently working on a contract to deliver an anchor handling winch, tugger, and stern roller for a customer in Singapore.

For more information  
Circle 102 on Reader Service Card

### Del Gavio Marine Hydraulics

Del Gavio Marine Hydraulics and its sister company, Del Gavio Ship Repair, are involved in all aspects of shipboard hydraulic system design, installation and repair. This includes all deck machinery such as

winches, accommodation ladders, anchor windlasses, hatch covers, davits and cranes. Both Del Gavio facilities perform electrical system troubleshooting, installation, and design. Motor rewinding, overhaul and testing is performed to UL specifications. Del Gavio recently completed an installation of four Fukushima mooring winches on the M/V *Global Maritimer*, and hydraulic elevator work on the aircraft carrier USS *Abraham Lincoln* (CVN 72). Del Gavio Marine Hydraulics is located in Carlstadt, N.J., and Del Gavio Ship Repair is located in Alameda, Calif.

For more information on Del Gavio  
Circle 103 on Reader Service Card

### Lake Shore Inc.

Since 1858, Lake Shore Inc. has been a designer and supplier of marine equipment and systems both in the domestic and international market. Major products and systems within the marine products group include: mooring winches,

boat-handling equipment, under-way replenishment systems, special cranes, powered floating causeways, anchor windlasses, fairleads, cargo/weapon elevators, capstans, electric motor brakes, traction winches, aircraft salvage cranes, portable arresting gear and minesweeping handling equipment.

For more information on Lake Shore Inc.  
Circle 30 on Reader Service Card

### Lidgerwood Manufacturing

Lidgerwood Manufacturing Company provides deck machinery for U.S. and international shipyards for shipboard and dockside applications. The company uses its 3-D, parametric-driven, solid modeling CAD system to offer customers a variety of potential engineering solutions. The company interfaces electronically with customers in order to expand the exchange of ideas and offer the most agreeable solution at the lowest achievable cost. In the first quarter of 1995, Lidgerwood reports that it has supplied \$5 million worth of marine deck equipment.

For more information on Lidgerwood  
Circle 104 on Reader Service Card

### McElroy Machine

McElroy Machine & Manufacturing Company specializes in the manufacturing of custom winches and other deck machinery for marine applications. McElroy's engineering and design capabilities allow the company to offer a diverse range of equipment to meet its customer's specific requirements.

Recent contracts include four single drum mooring winches for a U.S. towing company, four double drum mooring winches for a West Coast shipping company, anchor capstans for the U.S. Navy's Mark V Patrol Boats, and two vertical windlasses for the 360-ft. (10.9-m) casino vessels built at Bender Shipyard.

For more information on McElroy  
Circle 38 on Reader Service Card

### New England Trawler

New England Trawler Equipment Co. (NETEC, Inc.) has delivered the second set of its escort tug class of winches, with more in production. These winches, available for escort and towing duty, are equipped with the NETEC emergency abort system and are available with various alarm and line-load readout options. The 110-ft. (33.5 m) Kinsman Condor for Bay Transportation, the 7,000-hp vessel for Portland Docking Masters, and Turecamo's newest tugboat have already been outfitted with the winches.

For more information on NETEC  
Circle 145 on Reader Service Card

### Smatco Industries

Southern Marine and Tool Company (Smatco) offers a line of winches ranging from models with 10,000- to 1,000,000-lb. line pull. The company offers mooring systems, tow-

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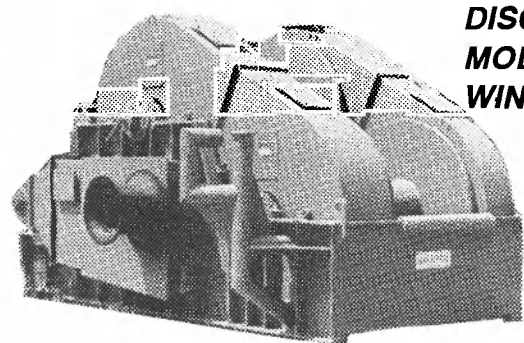
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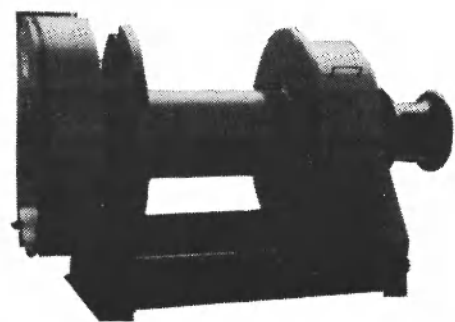
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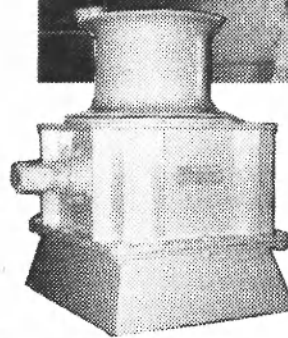
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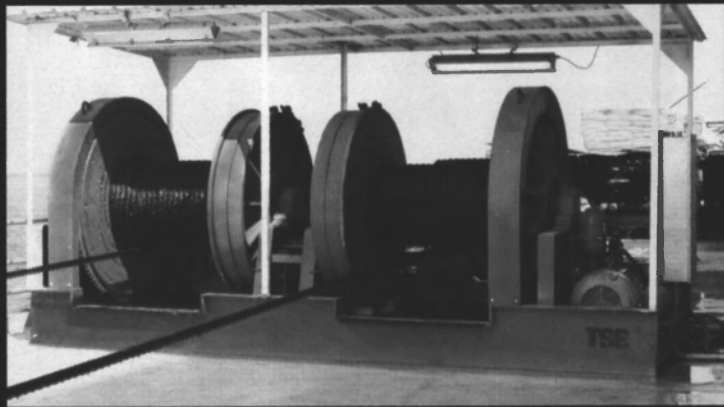
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ing, anchor handling and general construction winches. The Houma, La.-based company has expanded its winch product line to include windlasses, capstans, tuggers, fairleaders and deck sheaves — and also designs and manufactures pipe-handling equipment. Smatco recently developed a Line ROV Handling System which includes winches and A-frames. This system was recently delivered to Ocean Engineering International, Stena Offshore and Perry Tritech. Smatco has a constant production run of swivel head deck fairleaders and deck sheaves customers can purchase out of stock for emergencies.

For more information on Smatco  
Circle 101 on Reader Service Card

### Smith Berger Marine, Inc.

Smith Berger Marine, Inc. designs and manufactures standard and custom wire rope and chain mooring equipment. The company supplied custom-designed Model MD-616-0 fairleads to Newport News Shipbuilding (NNS) and National Steel and Shipbuilding Company (NASSCO) for the Strategic Sealift Program. Tow pin/stern roller assemblies were recently delivered for Crowley newbuilds *Sinuk* and *Siku*. Hvide Marine has ordered a tow pin unit with a cast steel hold down hook for installation on a new tractor tug. Smith Berger supplies hardware to the offshore, dredging, oceanographic and workboat communities.

For more information  
Circle 41 on Reader Service Card

### Timberland Equipment

Timberland Equipment designs and manufactures deck machinery including anchor and mooring

winches, towing winches, oceanographic winches, traction winches, cable laying systems, chain jacks and stoppers, and chain windlasses.

A 138,000-lb., 100-hp double drum anchor winch highlights new products. This anchor winch is hydraulically driven and features superior controllability to allow exact positioning of the anchor and ship/barge.

For more information on Timberland  
Circle 44 on Reader Service Card

### AmClyde

AmClyde Engineered Products, Inc., based in St. Paul, Minn., is one of the world's premier designers and builders of large specialty equipment for lifting, pulling, moving and mooring the heaviest loads in the offshore oil and gas market, for shipyards, material handling and U.S. government installations. AmClyde's engineering design capability is at the heart of its success. The company specializes in pure engineering consulting and helping customers develop innovative solutions to complex problems.

For more information on AmClyde  
Circle 155 on Reader Service Card

### TCW Supplies North

#### American Market

TCW, of Newport Beach, Calif., offers special equipment for the offshore and oceanographic industry. The company markets, distributes, repairs and provides spares for the North American market.

TCW represents Hiab Seacranes, Alaska Marine Cranes and Caley Ocean Systems, a company that manufactures and designs special launch and recovery equipment, including anti-pendulation control for handling RIBs.

For more information on TCW  
Circle 68 on Reader Service Card

### Techcrane International Inc. Markets EBI Cranes

Techcrane International Inc. is the worldwide marketing representative for EBI Marine Cranes. In March, Rodriguez Boat Builders of Alabama installed and successfully tested an EBI TC 10-24-40 hydraulic crane aboard its newly built vessel. EBI model TC 10, with a five-ton capacity, utilizes the same rugged Rack & Pinion telescoping mechanism as its larger cranes, with capacities up to 75 tons.

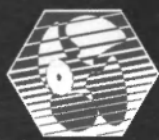
For more information on  
Techcrane International Inc.  
Circle 35 on Reader Service Card

### Kamag Transporttechnik Invokes JTI Logistics

Kamag Transporttechnik GmbH & Co. specializes in intraplant material handling and transporting heavy loads. Kamag reports that its modular transporters can move weights of 10,000 tons. Applications in the offshore and yard industry, such as modular transporters or Kamag platforms, facilitate the movement of

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completed ship sections and oil platform modules within production facilities. In the field of intermodal transportation, Kamag manufactures a vehicle for the movement of interchangeable swap bodies, allowing easy and fast transport of swap bodies without retraction of support legs. This system is part of JIT logistics. Kamag has developed efficient, time-saving equipment for the maritime industry, using a modular construction system and sophisticated hydraulic and electronic technology as a base.

For more information on Kamag Transporttechnik  
Circle 2 on Reader Service Card

### Markey Line Instrumentation Displays



Markey electronic displays

Markey Machinery has introduced new instrumentation displays to serve as "stand alone"

systems for Markey research winches and other equipment. Designed for exposed on-deck duty, the electronic displays offer easy installation, operation, and a modular design adaptable to new or existing instrumentation systems. Audible alarms, operator interfaces and winch control features are available on all standard models. The larger Series 200 displays are currently being used aboard National Oceanic and Atmospheric Administration vessels *David Starr Jordan* and *Discoverer*. The smaller Series 100 displays along with Markey CTD and traction winches will be supplied for 26 research vessels being built by Halter Marine.

For more information on Markey Machinery  
Circle 18 on Reader Service Card

### Intercon Supplies Equipment For Commercial and Military Markets

Intercon's diverse line of deck machinery and material handling equipment serves both commercial marine markets and naval applications. The company's scope of work includes fabrication and machining. Intercon's Tug/Barge Coupler System was recently installed on Penn Maritime's new 7,000-hp tugs *Eliza* and *Lucia*. Intercon's full line of towing and anchor handling winches, hoists, and windlasses continue to be specified for workboats and related vessels. Intercon winches range in size from 20,000- to 1,000,000-lb. line pull. Full production of propulsion gear casings for DDG-51 Class Aegis Destroyers recent Navy deliveries also included a unique 30-KIP FADOSS traction winch system.

For more information on Intercon  
Circle 29 on Reader Service Card

### Jeamar Debuts New Sheaves

Jeamar Winches Inc. has introduced a new line of steel sheaves and directional blocks. These new steel sheaves are cold-formed and supplied complete with lifetime lubricated bearings. According to the manufacturer, cold-forming creates a work-hardened surface ensuring long wire rope life, and reduces wear on the sheave. The use of lubricated bearings in the sheaves is reported to reduce the friction losses.



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May, 1995

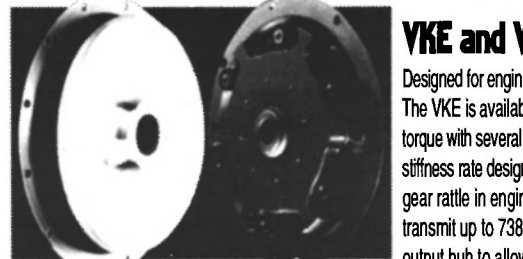
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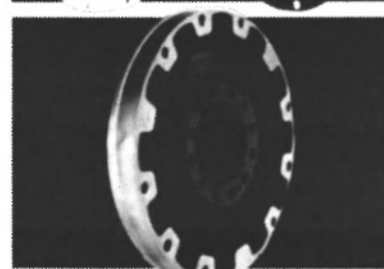
#### RATO Family

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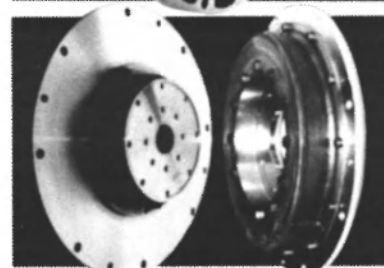
#### VKE and VKE TR

Designed for engine-mounted marine transmissions and pump drives. The VKE is available in various sizes to transmit up to 4,649 lb.-ft. of torque with several torsional stiffnesses per size. The VKE TR is a dual stiffness rate design that is especially effective at eliminating idle speed gear rattle in engine-mounted marine transmissions. VKE TR can transmit up to 738 lb.-ft. of torque. Both couplings feature a splined output hub to allow blind assembly to the driven equipment.



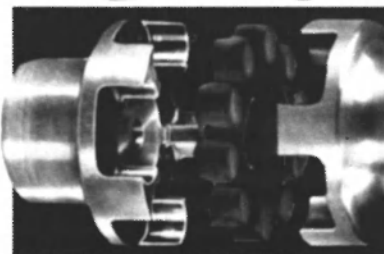
#### VL

Developed for connecting engines to marine transmissions, pump, generators, and similar equipment. "Plug-in" element design allows for blind assembly. Designs are available to connect flywheel-to-shaft and shaft-to-shaft. Sizes are available to transmit up to 18,439 lb.-ft. of torque with several stiffnesses per size for system tuning.



#### VKL

VKL is a self-supporting coupling for use in applications with universal or constant velocity (CV) joint shafts. The connection interfaces available include flywheel-to-flange, flange-to-flange and shaft-to-shaft. Sizes are available to transmit up to 9,225 lb.-ft. of torque. Four stiffness options per size allow for precise system tuning.



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## TANK LININGS: New Developments

Corrosion and cargo contamination are not new problems for vessels which carry liquid cargoes. The difference is in the magnitude of problems, the way they occur and the manner in which both preventive and repair programs are carried out. These problems have been magnified by the continual escalation of costs of materials, labor and equipment used in lining tanks with immersion-resistant coatings.

The problems have become a matter of survival to parts of the shipbuilding and ship repair business. While much of the cost escalation has been brought about by increasing government regulations for worker safety and hazardous waste handling, a large part of tank lining problems are also the result of the increasing purity of the liquid cargoes being carried in the tanks. With tank linings costing on average between \$4 to \$6 per sq. ft., the shipowner must be more careful to ensure the proper product is chosen and procedures are followed in newbuilding and repair.

### Tank Lining Work: A Broad Overview

The very nature of building and coating the interior of a ship's tanks makes it much more difficult than shoreside storage tanks for many reasons:

- New regulations, such as double bottoms, are making the interior components of ships more complicated and difficult to access.
- A ship's tank contains more interior structural components than a shoreside tank. Each stiffener, baffle, etc. represents a difficult area to clean and coat.
- During the newbuilding phase, ships are built in modules with a strict production schedule. The possibility of either taking short cuts or losing the proper intercoat interval between module and body completion stages exists.
- With the exception of crude oil tankers, most ship's tanks are not dedicated to one particular liquid. While coatings manufacturers are very careful to list the liquids which are suitable for their tank linings, they cannot predict the actual service conditions to which those linings will be subjected. The result is inappropriate cargo loadings, insufficient recovery periods and cleaning between cargoes and damages from cumulative loadings of cargoes which increase the penetrating and destructive powers of the previous cargo.
- During the repair stage, there is danger in a commitment to spend only so many days in drydock.

### Options For A Longer Service Life

Shipowners, charterers, refiners, chemical processors and others whose investments are greatly affected by the quality of tank linings have an increasingly difficult task in choosing ways of increasing the service life of their tankers and protecting the purity of their cargoes. Following are some of the options: stainless steel construction; more sophisticated coating systems; better control of the atmosphere during tank lining operations; better equipment for both surface preparation and application; better training of applicators; greater use and authority of trained inspectors; better training of ships crews; limitation of cargoes carried; better control of tank cleaning methods and materials; and synergistic effects of cathodic protection and coatings.

### Advanced Coating Systems: Ballast Tanks

Advanced coating systems have received significant attention recently, resulting in innovative linings with greater ability to resist permeation by liquid cargoes and ballast water. Unfortunately, the major effect of new technology has been used to increase the thickness and decrease the amount of coats in a coating system. The old "user friendly" three- to five-coat systems are rarely seen. In their place are one- and two-coat systems developing the same or greater dry film thicknesses than the previous systems. In the case of ballast tanks, both dedicated and intermittent, the trend has been away from inhibitors, soft films and coal tar epoxies to surface tolerant epoxies, both in the newbuilding and repair programs. Driving these trends are the fact that inhibitors have a short effective service life and require replenishment often. Soft films, while serving as oxygen barriers which tend to delay corrosion, have been seen to act as

Maritime Reporter/Engineering News



shields to discovery of underfilm corrosion during visual inspection; and coal tar epoxies, long the favorite of many owners and yards because of their relatively low costs and resistance to water permeation, are losing favor not only because of their inability to be made in light colors for easy inspection, but because coal tar pitch, which increases their water permeation resistance, is a suspected carcinogen.

Meanwhile, the use of surface tolerant epoxy has been on the rise, because they have a wider range of suitable application from near freezing to nearly 100 degrees F, and better ability to wet less than perfectly cleaned steel than most other traditional ballast tank coatings, providing a better chance for a long-lasting barrier to both liquids and oxygen. (It must be remembered, however, that the degree of cleanliness improves performance of all coatings.) Light colors are readily available, and newer versions developed in Europe (by Hempel, Sigma and Courtauld) and Japan (Kansai) have improved build characteristics on edges, where failures have historically occurred first.

#### Advanced Coating Systems: Cargo Tanks

In the case of cargo tanks, new technology in coatings has been most dramatic. Consider the following examples from major manufacturers in the U.S., Europe and Japan.

- Novolac Modified Epoxy formulations have increased the ability of epoxy tank linings to resist aggressive cargoes. The increased resistance to temperature and permeation from liquid cargoes is somewhat offset by the greater internal stress within the coating. This can be controlled by limiting the film build to within 25 percent of the

manufacturer's maximum recommended dry film thickness. The increased film density makes the tank lining less susceptible to damage during buttermilting. Novolac epoxies also reportedly resist absorption of cargo into the paint film better than most epoxies. Extensive studies have been conducted in Europe by Hempel which have verified the excellent properties of Novolac epoxies.

- New curing agents increase the adhesion and cure of traditional amine epoxy tank linings. While it is still used in limited quantities with very special precautions in the U.S., it has greatly disappeared from most U.S. manufactured tank linings in favor of new curing agents such as cycloaliphatic amines. Other countries are not so stringent in preventing its use.

- One hundred percent solid epoxy formulations have been introduced by most major manufacturers with varying degrees of success. By far the largest problem to be overcome in tank lining application is the removal of solvents from both the tank atmosphere and the coating film. Any residual solvent in the film becomes a potential failure location. One hundred percent solid formulations eliminate this possibility altogether.

- An anti-static epoxy tank lining was developed by Sigma, designed to reduce the risk of explosions caused by a build-up of static electricity. This material is best applied with plural component heated airless equipment.

- Several manufacturers are reinforcing their epoxy formulations with increasing amounts of laminar pigments to create better resistance to stress cracking of the coating film and better resistance to liquid permeation through the paint film. Micaceous iron oxide pigment with a specific platelet structure is finding as increasing use for this purpose.

- Patented new polysiloxane systems from Ameron are being tested by at least one major chemical carrier for aggressive cargoes, such as methanol. The epoxy/siloxane backbone in this formula has shown excellent wettability of the substrate and film density properties in a series of lab and field tests.

#### Control The Atmosphere

Newer, more sophisticated coatings often require cleaner surfaces to which they are applied and more stringent control of the ambient air during drying and curing cycles. Simple blowdown and ambient air blowers have given way to repeated vacuuming operations and volume, humidity and temperature control of ambient air. Both refrigeration and desiccant type dehumidifiers are being used to reduce relative humidity below 50 percent inside the tank at all times. Combinations of heaters and dehumidifiers are being successfully implemented in cold climates. A common failing, regardless of the equipment employed, has been the ineffective use of air circulation. It is essential that wind gauges be used in the difficult recesses of the tank to assure that sufficient flow of air is present above the applied coating film, regardless of the type of coating being used. This is most critical with less than 100 percent solids, solvent-borne coatings, but it is also important with water-based inorganic zincs.

#### The Cargo: Set Limits

Reputable coatings manufacturers spend a large amount of time and money testing the coatings for their ability to withstand immersion in as large a range of chemicals and solvents as possible. They are usually conservative in their recommendations. Unfortunately, too often the cause of failure

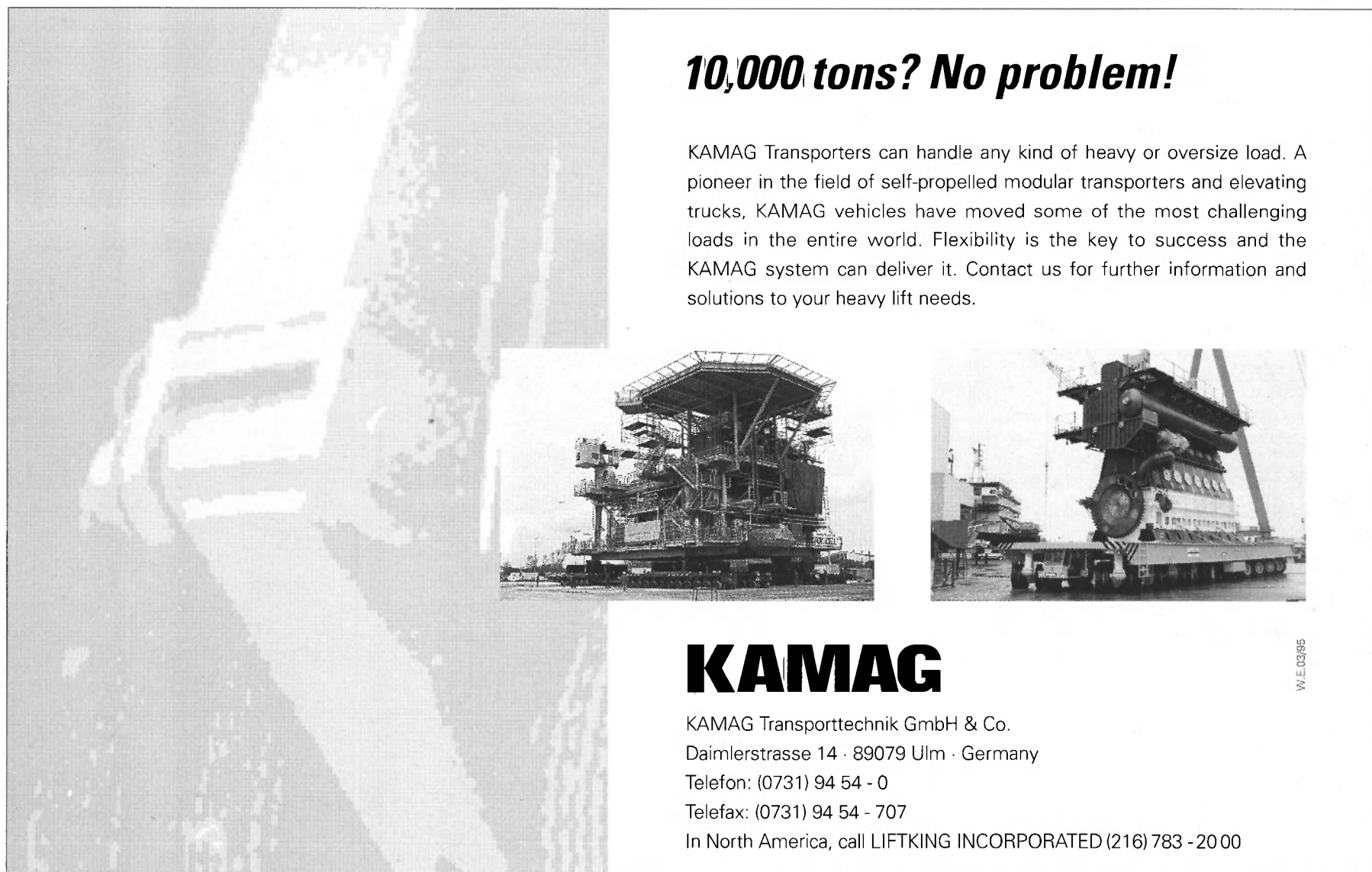
is a decision by the captain of the vessel to take on an inappropriate loading in order to increase the profitability of the voyage. Quite often the failure does not occur after that voyage, thus leading the captain to believe that it is acceptable to carry that loading again. However, the softening of the coatings from chemical attack is cumulative, so by the time the failure occurs after the second or third loading, the result is catastrophic failure of the entire tank lining. It is also a mistake to allow too little recovery between loadings, as even mildly aggressive cargoes can cause lining failure if the linings are not given sufficient time to release the liquids or vapors which have soaked into the coating.

#### Information Is Key

As with most anything in business, the quality and quantity of information on-hand regarding tank linings will help formulate a more cost-effective and efficient solution. Having a coatings expert in-house, or as a consultant, is an obvious first step. Selecting coatings based on case histories and/or comparative lab tests, and carefully following the coating manufacturer's written instructions for surface preparation, application, curing, cargo suitability and recovering periods between loads is another.

*This preceding was from an article by S.G. Pinney & Associates Inc. President Lau Vincent. S.G. Pinney & Associates is a corrosion and control specialist based in Port St. Lucie, Fla.*

**For more information on the topic from S.G. Pinney & Associates Circle 78 on Reader Service Card**



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W.E. 02/95

### Texaco Elects Tilton Sr. VP

Glenn R. Tilton has been elected a senior vice president of Texaco, Inc. Mr. Tilton is currently vice president of Texaco Inc. and president of Texaco USA. He will remain in Houston and continue to serve as president of Texaco USA, the unit dealing in exploration, production, refinement, transportation and marketing of crude, natural gas and petroleum products in the U.S.

### Guido Perla Names Carman Project Manager

Guido Perla and Associates, Inc. has named veteran shipbuilder Tom Carman head of project management for the firm during the construction of the \$17 million casino vessel *Kanesville Queen*. He was formerly vice president of marine operations for the Delta Queen Steamboat Company. While associ-

ated with the *Delta Queen*, he supervised fitting a new hull structure to the vessel as well as the design and construction of the 430-passenger, \$70 million cruise vessel, *American Queen*. Mr. Carman has also served as president of a subsidiary of Clipper Cruise Line, and vice president of operations of its parent company.

For more information on Guido Perla  
Circle 15 on Reader Service Card

### Walker Joins MAN B&W

Chris Walker has joined MAN B&W Diesel, Inc. as director of sales. Mr. Walker is experienced in the diesel engine business, and has worked with Mirreles, GEC and MaK. Formerly, he was the vice president in charge of engine sales for MaK North America in Toronto.



Chris Walker

For more information on MAN B&W  
Circle 98 on Reader Service Card

## CRUISE + FERRY 95

Conference Programme

To be held at Olympia 2  
Conference & Exhibition Centre  
London on 16-17-18 May 1995

**Session 1: A current snap-shot overview of each of the three sectors - Cruise - Ferry - Fast Ferry**  
Klas Brogren, Editor-in-Chief, Cruise & Ferry Info, Sweden.  
The opening speaker will join an invited panel of leading operators to discuss sector issues

#### Session 2: The latest cruise products

**"Legend of the Seas"**  
Presented by Georges Lesavre, Commercial Director, Charliers de l'Atlantique  
**"Orlena"**  
Presenter to be announced  
**"Fascination"**  
Presented by Mikko Niini, Marketing Manager, Kvaerner Masa-Yards

#### Session 3: New Opportunities and Markets

Current situation and prospects for ferry lines between Korea, China and Far East Russia  
Toe-Woo Lee, Head of Shipping Mgmt Dept, College of Social Science, Korea Maritime University, Pusan

The Gulf of Mexico - the pre-requisites for a viable superfast operation are all in place  
Jay J. Lewis, President, Market Scope Inc, Miami

Asian Cruise Market - a candidate for multi-tier development?  
Andrew Coggins Jr, Department of Hospitality and Tourism Management, Virginia Polytechnic Institute and State University, USA

Future developments in the Baltic region. Strategic options for a changing market  
Erik Ostergaard, Manager, Business Development & Planning, DSB Ferries, Denmark

#### Session 4: New Passengership Types

**Superfast Ferries - 500 sea miles in 80 hours**  
K-W Braun, Sales Manager, Schichau Seebewerft, Bremen

Restaurant ship business Japanese-style  
Mikihiko Kobayashi, Director, Seinyo Engineering, Kobe (subsidiary of Mitsubishi's Kobe Shipyard) and Kohji Kumano, President, Luminous Kanko Co Ltd, Japan

#### Session 5: Management Sore Spots - areas of neglect at the risk of cost and damage to the company

Passenger claims following a cruise ship casualty  
Rolf-J. Hermes, Director, Paradi Services, J&K Irons GmbH, Bremen

Accident Response - The media and company credibility  
Tony Redding, Managing Director, TRS, UK

Passenger Handling Systems  
Nigel Powis, Computer Services Director, P&O European Ferries, Dover

Managing the Revenue  
Bob Zayre, Vice President - Marketing, Revenue Technology Services Corporation, USA

#### Session 6: Fast Ferry Safety

Impact of the new IMO High Speed Light Craft Code and DNV Rules on Integrated Bridge Design on Fast Ferries  
Rode Kleppvik, Head of Section on Nautical Safety & Computer Systems, Det Norske Veritas, Høvik

Stena HSS - the coming of age for marine evacuation systems  
Ian Logan, Project Manager, HL Lifeguard Equipment Ltd, UK

The importance of systems reliability and availability for the safe and efficient operation of fast ferries  
Edmund Kroto, Senior Technical Manager, Lyngse Marine, Norway

A completely new full-safe conventional hull design for a fast passenger car ferry  
Jurgen Engelskirchen, Senior Technical Manager, Blohm+Voss AG, Hamburg

#### Session 7: Fast Ferries - the Biggest and Fastest enter service

Operational experience from the first six months service of "Hayabusu"  
Hisao Manabe, Manager, and Ichiro Tanaka, Deputy Manager, Offshore Structures & Development Section, Initial Design Department, Ship Group, Kawasaki Heavy Industries Ltd, Kobe

A Glent Mestral - the "Alhambra" will carry 1250 passengers and 846 cars  
Honorio Sierra, Project Manager and J Tejedor, EN Bazan, Madrid

The World's fastest car ferry "Juan Patricio" - breaking the 30 knot barrier  
Paul Miller, Marketing Manager, Advanced Multi-hull Designs, Australia

TriCat In Service - not just a pretty boat  
Mike McSorley, Senior Sales Manager, FBM Marine Group, Isle of Wight

#### Session 8: Crossing the Channel - the summer ahead

Light at the end of the Tunnel  
Brian Langford, Passenger Marketing & Sales Director, P&O European Ferries, Dover

A review of the Tunnel - now operating in the turn-up-and-go mode for passenger traffic.  
Speaker to be advised, Eurotunnel, Folkestone

The commercial and practical applications of fast ferries  
David Benson, Vice President, Sea Containers Ferries, London

First Evening Welcome Reception  
hosted by Warsila Diesel

#### Session 9: Future Financing Needs for the Passengership Industry

Chairman's Introduction  
Michael Parker, Vice President, Citibank, N.A., London

Bank Lending  
Philip Bailey, Thesen Securities Ltd, London

Capital Markets  
Speaker to be advised, Goldman Sachs International, London

The Leasing Alternatives  
Tom Budgett, Clifford Chance, Paris

Securitisation  
Speaker to be advised, Chemical Bank, London

Securitisation Legal Issues  
Jonathan Walsh, Clifford Chance, London

Credit Enhancement  
David Potter, J.P.H. Homan, London

Equity Finance for the Industry  
Speaker to be advised

Shipyard credits and subsidies  
Philip Bailey, Thesen Securities Ltd, London

The Acquisition and sale of cruise ships and ferries  
Paul Turner, Clifford Chance, London

Competition and EU Issues for the Industry  
Rob Murray, Clifford Chance, Brussels

Fast Ferry Forum  
- A panel will discuss particular applications of the day's financial sessions to this sector of the market

Cruise + Ferry 95 Gala Evening  
Hosted by Bremer Vulkan Werft / Schichau Seebewerft / Lloyd Werft, STN Atlas and Volkswagen

#### Session 10: Ship Enhancement / Revenue

Passenger Entertainment onboard cruise ships and cruise ferries is changing  
Jack Applebaum, Director of Cruising Operations, Grosvenor Productions, a Fortis subsidiary, London (clients include P&O, Holland America, North Sea Ferries etc)

Profit and passenger satisfaction through mobile telephone facilities  
George Tsirimokos, Executive Vice President, World Communications Systems, USA

Cross Channel Ferries - the new retailing opportunity  
Pat Hollis, Hotel Services Manager, P&O European Ferries, UK

#### Session 11: Hull Design Developments

New aspects in the strength analysis of passenger ships  
H.G. Rayer and D. Xester, Germanischer Lloyd, Hamburg

The seakeeping performance of fast single and multi-hull passenger ferries  
Tuomo Karppinen, Heikki Helsharju and Matti Heilevaara, VTT Manufacturing Technology, Finland

#### Session 12: Interior Design

Shopping Centres of the future  
Barry Finnegan, Managing Director, Portland Design Associates, London

Innovative design on Celebrity Cruises newbuilding  
John McNeice, Chief Executive Officer, McNeice, London

New thinking throughout the public space of the Stena HSS  
Nils Bejer, Managing Director, Figura Arkitekt AB, Sweden

The research of the QEB - evolution against passive fire  
Alex McCaughey, Managing Director, MET Studio Ltd, London

#### Session 13: Passenger Terminals

Passenger Terminal Trends and Developments for the super mega cruise ships  
Donald Goddard, Executive Vice President, Gee & Jensen Engineers-Architects-Planners Inc, West Palm Beach, USA

A new cruise terminal from the Past  
John Turgoose, General Manager (Shipping), Dover Harbour Board, UK

An all-ship lifespan (Including HSS)  
John Rose, Managing Director, Marine Development Ltd, Scotland

#### Session 14: The ISM Code and Safety Management

Senior Management - their role in the implementation of the ISM Code  
David Ward, Head of ISM Certification, ABS Europe, London

An Alternative View  
Graham Botterill, Partner, Ferryby Marine, UK

Safety Management - Reduced Risks - Increased Margins  
Hakon Erlesen, Head of Division Safety Management and Operation, Det Norske Veritas, Høvik

#### Session 15: Fast Ferry Propulsion

High-speed propellers or waterjets? An update for owners and designers  
Sytze Voulton, Engineer, Lips BV, Netherlands

Beyond SWS  
Dave Dunlevy, Manager, Marine Applications, Caterpillar Solar Turbines, USA

Keeping fast ferries in service  
Günther A. Reichtsteiner, General Manager, Ship Applications, MTU Friedrichshafen GmbH, Germany

#### Session 16: Shipboard Operation Issues

Passenger health in the Galley  
Speaker to be advised, Mareno Marine Equipment, Italy

"Orlena's" multi-purpose Waste Management System  
Jochen Deerborg, Owner & CEO, Deerborg-Systems, Germany

Environmental correctness coupled with operational economy can enhance ship appeal and cut air-conditioning costs  
Ingo Hansen, Director, Sebroe Marine, Denmark

#### Session 17: NordComPass Session

Introduction by the chairman  
Anders Flising, Safety Director, Stena Line, Sweden, Chairman of NordComPass

Stability and survivability  
Rolf Kjaer, Technical Director, Color Line, Norway

Bow access equipment  
Kai Jansson, Technical Director, Viking Line, Åland

Evacuation and lifesaving  
Ralf-Erik Lindström, Safety Manager, Silja Line, Finland

The human factor in ferry safety  
Per Nordström, Safety Manager, Stena Line, Sweden

Panel discussion and chairman's summary

#### Session 18: Keynote Briefing on Ferry Safety

THE IMO PANEL OF EXPERTS REPORT  
Decisions of the Maritime Safety Committee (9-17 May 1995)

Fernando Plaza, Senior Deputy Director, Maritime Safety Division, International Maritime Organization

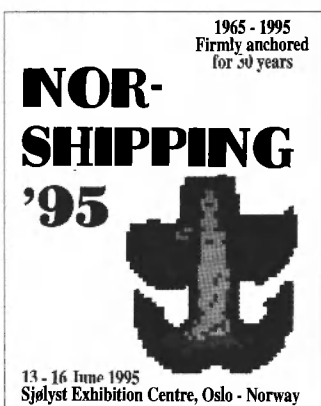
For the full conference programme and registration details, please fax or phone:  
Cruise + Ferry Secretariat, 2 Station Road, Rickmansworth, Herts, WD3 1QP, England Tel: +44 1923 776363 Fax: +44 1923 777206

Circle 209 on Reader Service Card



## Nor-Shipping '95

Oslo, Norway  
June 13-16, 1995



Nor-Shipping '95, Norway's international shipping and maritime offshore exhibition and conference, is set to take place on June 13-16, in Oslo. Over the last 30 years, Nor-Shipping has become an international institution and meeting place for marine professionals worldwide. This year's event features an expanded exhibition area, with more than 15 national pavilions, including the newly organized Austrian pavilion. Other exhibition newcomers hail from the U.S., the U.K., Denmark, Spain, Canada, Poland, China and Russia.

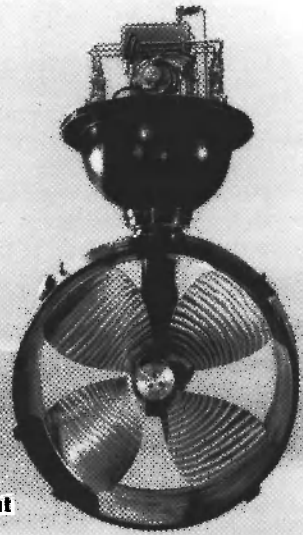
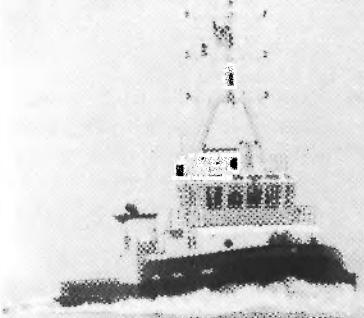
Nor-Shipping '95 is expected to draw more than 400 exhibitors, representing 1,000 companies from 30 or more countries. Shipowning and vessel management companies are expected to account for 20 percent of attendees at the event, and 30 percent of Nor-Shipping participants are expected to be representatives of ship's equipment companies.

Nor-Shipping '95 will present a full spectrum of maritime related products and services, including a number of new products. Maritime electronics will be strongly represented, and other product segments featured prominently at the show will include maintenance, safety and rescue, and maritime offshore and supply activities. "The environmental dimension is also becoming increasingly integrated in the range of products displayed at Nor-Shipping," according to sales manager and Nor-Shipping '95 team member Bjørn Myhrvold.

Included among the exhibiting companies will be maritime interest agencies, such as the U.S. & Foreign Commercial Service, which will have a business information office at the conference in order to accomplish its goal of establishing greater trade with Norwegian shipping interests. Intercargo (The International Association of Dry Bulk Shipowners) will also hold its executive committee meeting concurrent with Nor-Shipping, in recognition of the formidable industry representation in Oslo for the week.

For more information, contact: **Jon W. Thomas** or **Mari Astrup Glittenberg**, Norwegian Trade Fair Foundation, P.O. Box 130, Skoyen, N-0212, Oslo, Norway, tel: +47 22 43 91 00; fax: +47 22 43 1914.

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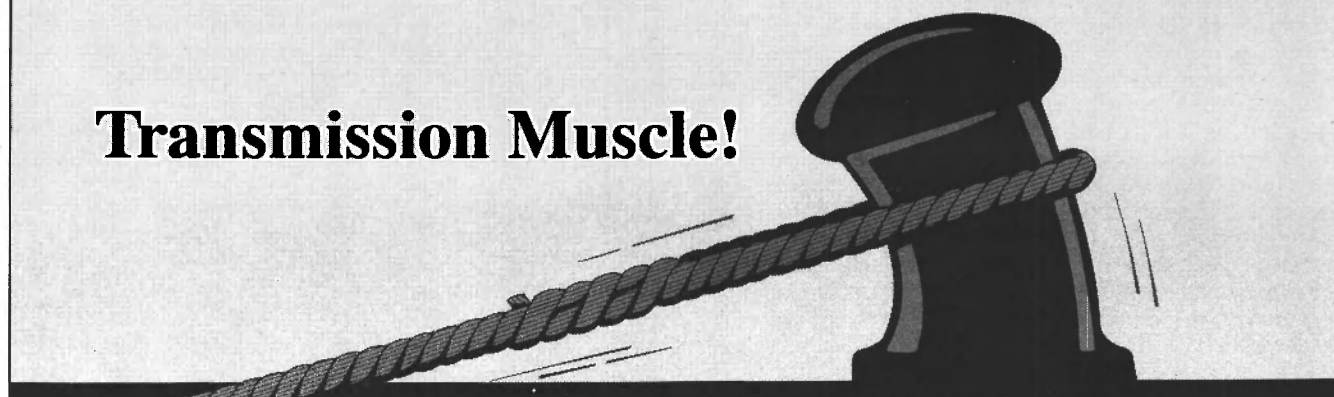
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## Scandinavian Maritime Industry Company & Contract Update

(Continued from page 38)

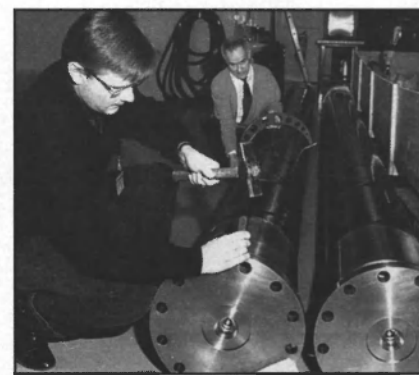
**struments** of Bergen introduced a new Doppler Current Sensor, which is a vectoring sensor which measures the current speed and direction, as well as water temperature. Trondheim-based **Autronica AS** recently received a \$5 million order for maritime instrumentation equipment from the Norwegian yard Kvaerner Floro, which is building four chemical tankers for Skipsaksjeselskapet Storli. Another well-known electronics maker, **Simrad**, announced an order recently to supply ship automation positioning systems and offshore instrumentation worth \$6.3 million. Royal Caribbean Cruise Line ordered dynamic positioning systems for the two cruise ships being built by Kvaerner Masa-Yards, and these DP systems are the first to be installed in cruise vessels.

**Seatex AS**, a leading supplier of differential GPS systems in Scandinavia, has overall responsibility for navigation equipment for the new fleet of Norwegian minehunters. The company's Motion Reference Unit (MRU) provides high-accuracy motion measurement for marine applications.

Saltrod-based **Moland Automation AS** was chosen to supply the Macon 100 alarm and monitoring system for the life extension of Bergesen D.Y. tankers in 1994. The state-of-the-art system was completed within a short delivery time, and programming was completed onboard.

**Porsgrunn** has expertise in the area of steering gear, having introduced the double acting, rotary vane type steering gear in 1986. Since then, more than 60 units of this type have been delivered. Porsgrunn steering gears were reportedly chosen by U.S. shipbuilder Newport News for inclusion on the new Eletsen tankers. Another beneficiary of tanker work is **Maritime Engineering AS** of Hovik, which specializes in the design of a wide range of offshore and support vessels and drilling units, and was chosen to perform the basic design and technical assistance to Statoil for the new Statoil/Bergesen multi-purpose shuttle tanker, to be built at Samsung in Korea.

On the tanker supply side, **ScanRope a/s** has applied for a patent on the concept of emergency towing equipment that can be released from an unmanned craft. The hawser can be cast out



Norway's Applied Composites at work.

when the ship is not crewed, and will land at least 656 ft. (200 m) from the ship. The tail end has a light and radar reflector, and will stay afloat.

Contracts to design and supply equipment for six supply vessels has been awarded to **Ulstein International**. Virtually all of the production companies in the Ulstein group are involved in the orders. The vessels are to be built at three different Norwegian yards. Two vessels each will be based on Ulstein's UT 755, UT 746 and UT 750 design. All vessels are due to contain a full package of Ulstein equipment, and the orders include options for three additional vessels.

**Westad Industri** offers a wide range of butterfly valves for various applications in the ship and offshore markets, including high performance butterfly valves type HPBV for freshwater, seawater, crude oil, petroleum products, chemicals, LPG and more.

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surface preparation and cleaning, and refrigeration — to name a few — **Unitor AS** offers a worldwide network of engineering a support. Unitor Ships Service recently invested \$1.5 million to open a new branch in Vancouver, B.C., Canada.

For free information on these Norwegian companies, please circle the appropriate number on the Reader Service Card in this issue:

Anderaa Instruments .....	123
Autronica AS .....	124
Maritime Engineering .....	125
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Norcontrol Seacraft .....	127
Porsgrunn .....	128
ScanRope a/s .....	129
Seatex AS .....	130
Simrad .....	131
Ulstein .....	132
Unitor .....	133
Westad Industri .....	134

### Sweden



**KaMeWa AB** of Sweden — whose thrusters can be seen being placed on the Finnyards-built Stena ferries on page 34 of this issue — announced the acquisition of Finnish-based azimuth thruster and deck machinery company, Aquamaster Rauma. KaMeWa's current product range encompasses fixed and controllable pitch propellers, tunnel thrusters and rotatable thrusters for the offshore industry, waterjet propulsion systems and electronic control systems.

Osterby Gjuteri AB, is the Osterbybruk-based manufacturer of **MJP Waterjets**, waterjet units which have been in operation worldwide since 1987 and have accumulated more than 500,000 operating hours. Many Swedish suppliers of maritime products and services have positioned themselves as partners with yards to ensure that the shipbuilding process is run smoothly and efficiently. For example, **Kockums Computer Systems** Tribon version 2.0 now includes Tribon Initial Design. Hull surfaces created in Tribon can now be directly accessed by the Tribon Hull application. The Tribon system has enjoyed good success internationally since its debut.

**Saab Marine Electronics** reports that the third generation Saab TankRadar G3 has, in less than two months since its introduction, been ordered for more than 30 ships. A majority of the ships are building in Korea and Japan, and vary in type and size, ranging from a 300,000-dwt VLCC to an FPSO for Shell.

Profile manufacturer **Inexa Profil AB** of Lulea has enjoyed continued success with its wide product range — including bulb flats in widths from 100 to 650 mm — and strict adher-

ence to quality standards and Just-In-Time manufacturing philosophy.

**Applied Composites** manufactures lightweight composite shafts, and DNV recently approved the first set of composite shafts of the company in accordance with rules for High-Speed and Light Craft. The approval was seen as very important by the company for its future, especially for use of composite shafts in high-speed ferries. For reportedly the first time ever, the exhaust from an entire diesel engine plant on board a ship is being cleaned by catalytic converters, thanks to **ABB Flakt** marine. Two main engines and four auxiliary engines onboard the M/S *Scandica* are connected to two combined converters/silencers. The exhaust gas from the six engines is treated simultaneously.

**Kockum Sonics AB** recently announced it had become a certified ISO 9001 company. Kockum Sonics manufactures marine signaling equipment, level gauging systems and cargo planning systems. **Alfa Laval** of Tumba reported an installation of its Alcap separation system aboard the MV *Australian Achiever* in 1993 is now paying big dividends — lower maintenance costs and improved morale.

For free information on these Swedish companies, circle the appropriate number on the Reader Service Card:

ABB Flakt Marine .....	135
Alfa Laval .....	148
Applied Composites .....	136
Inexa Profil .....	137
KaMeWa .....	138
Kockum Sonics .....	139
Kockums Computer System .....	140
MJP Waterjets .....	141
Saab Marine Electronics .....	143

### 50 Years Ago In Maritime Reporter

**MARITIME REPORTS**  
The National Weekly Newspaper for the Marine Executive  
May 17, 1945

*Maritime Day May 22nd*

From the ON THE COVER box of *Maritime Activity Reports*, May 17, 1945:

"Your Merchant Marine was there too. Invasion calls for all kinds of craft in terrific teamwork. This striking silhouette off two Jima shows merchant ships side by side with fighting sisters of Navy and Coast Guard, shutting troops and supplies to the embattled beachhead."



### Astilleros Españoles Delivers Bulk Carrier To Malaysia

The Astilleros Espanoles SA (AESAs) yard in Gijón has delivered the *Bunga Mas Satu*, first of a containership series ordered by the Malaysian International Shipping Corporation. The vessel was delivered April 14, over a month ahead of schedule. *Bunga Mas Satu* is a double-hulled cellular container vessel. The 443.5-ft. (135.2-m) ship is classed by Germanischer Lloyd. The Sulzer main engine, type 6RTA52U, drives the vessel to a service speed of 17.3 knots at 90 percent MCR.

For more information on AESA  
Circle 149 on Reader Service Card

### KaMeWa Acquires Aquamaster From Finnyards

KaMeWa AB of Sweden, a supplier of marine propulsion systems, has acquired Aquamaster-Rauma, the Finnish azimuth thruster and deck machinery company, from Finnyards.

Ingmar Jensen, KaMeWa's managing director, said, "With the addition of Aquamaster's complementary product range we can now offer our customers a full range of propulsion products including a wide variety of thruster types. The Rauma deck machinery business is an exciting new product line for us, with excellent potential for future development."

Timo Salokoski, managing director of Aquamaster-Rauma, added: "Future access to, and collaboration with, KaMeWa's world-renowned research laboratories will strengthen our ability to further develop vessel concepts such as safety tankers and escort tugs."

KaMeWa's products include fixed and controllable-pitch propellers, tunnel thrusters and rotatable thrusters for the offshore industry, waterjet propulsion systems and electronic control systems. KaMeWa is part of the Propulsion Technology Div. of Vickers PLC, based in the U.K.

For more information on the acquisition  
Circle 150 on Reader Service Card

### SCA, AWSC & Others Meet At First-Ever Meeting

Representatives and members of five shipyard industry groups met April 4 at the Madison Hotel in Washington, D.C., to discuss key issues in the U.S. shipbuilding and repair industries. The meeting was organized by the Shipbuilders Council of America (SCA) and the American Waterways Shipyard Conference (AWSC). Other groups involved were the South Tidewater Association of Ship Repairers, Southeast Shipyard Assn., and San Diego Ship Repair Assn.

Tom Jones, vice president of Atlantic Marine and chairman of SCA, and Harvey Walpert, senior

vice president of the Trinity Marine Group and chairman of AWSC, presided and each presented briefings on a list of issues that included: the OECD Shipbuilding Agreement, preservation of the Jones Act, regulatory reform, the Maritech program,

and the Title XI loan guarantee program.

Mr. Jones said the meeting would lead to more cooperation in advancing common views in the industry. Reviewing the meeting, Mr. Walpert said, "This industry meet-

ing has brought forth historic consensus on several important issues. Our discussions will lead to cooperative action at a crucial time."

The group has decided to convey this consensus to members of Congress and the Executive Branch.

**"The SeaOtter meets or exceeds the specifications of other ROV systems sold at twice the price."**

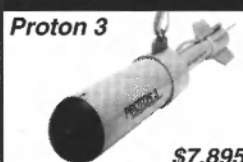
Jack Fisher, President  
J.W. Fishers Mfg., Inc.

"The SeaOtter is powerful enough to handle currents, and rugged enough to reach depths of up to 500 feet. It features four variable-speed remote controlled motors, a CCD color camera, four 100w lamps, and a 13" topside color monitor. A more powerful ROV called the SeaLion is also available, and any SeaOtter may be upgraded to a SeaLion."


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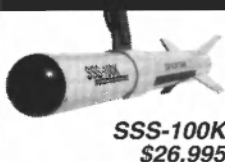
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# BUYERS DIRECTORY

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 advertiser's contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

## ABRASIVES

Erwin Industries, Inc., 2823 Research Park Drive Ann Arbor, MI 48106-1668  
Minerals Research & Recovery Inc., 4620 South Coach Dr., Tucson, AZ 85714

## ABBREVIATIONS

Hot Mail Response, 5941 Box Canyon Rd., La Jolla, CA 92037

## ACOUSTICS

Predco/LLI, 253 Winslow Way West, Bainbridge Island, WA 98110

## ADHESIVES

Life Industries, Corp., 205 Sweet Hollow Rd., Old Bethpage, NY 11804

## AIR CONDITIONING AND REFRIGERATION

Repair & Installation  
Asick Marine, 1410 Central Ave., Farmingdale, NY 11735

## ANTENNA/RATE OF TURN INDICATOR

Marine Services, Inc., 4995 Ocean Pines, Berlin, MD 21811  
Carnier Transcold, P.O. Box 4805, Syracuse, NY 13211

## ALARMS, FACTORY MUTUAL-APPROVED

Beard Mfg. Corp., 7723 Gross Point Rd., Skokie, IL 60076-0226

## ALUMINUM BOATS

Workskill, Inc., 10824 Bothell Hwy S.E., Bothell, WA 98012-6669

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Marine Services, Inc., 4995 Ocean Pines, Berlin, MD 21811  
Rivertronics 2624 East Broadway, Alton, IL 62002

## ASBESTOS ABATEMENT

Chromplex Environmental Prod., Inc., 3405 Highway 33, Neptune, NJ 07753

## BALLAST

Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031  
Mineral Research & Recovery Inc., 4620 South Coach Dr., Tucson, AZ 85714

## BARGE BUILDING

Conrad Industries, P.O. Box 790, Morgan City LA 70381

## BARNEY STRAINERS

Beard Industries, P.O. Box 51115, Shreveport, LA 71130

## BEARING—Rubber, Metallic, Non-Metallic

B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401  
Blom & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY

## BEARING—Rubber, Metallic, Non-Metallic

U.S.A. Reps: Simplex-Turnar Inc., P.O. Box 168, Little Neck, NY 11363p, -0168  
Kahlerberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

## BEARING—Rubber, Metallic, Non-Metallic

Orton Engineered Prods., 2535 Prairie Rd., Unit D, Eugene, OR 97402  
Orton Bearings Inc., 3225 Marway, Burlington, Ont., CANADA L7M 1A6

## BILOG OIL/FUEL LABORER

Northstar Marine, 84 Wall Street, Farmingdale, NY 11735

## BILOG SYSTEMS

Nelson Division, Exhaust & Filtration Systems, Hwy 51 West, P.O. Box 428, Stoughton, WI 53589

## BOAT BOOMS

Sea Systems Inc., 187 Ward Hill Ave., Ward Hill, MA 01835-0579

## BOW THRUSTER

Thrustmaster of Texas P.O. Box 840189 Houston, TX 77284-0189

## BRIDGE BUILDING

In-Mar Systems, Yellowstone Street, Kenner, LA 70064

## BROKERS

151 Maritime Services, 3406E El Escanor, Dana Pt. CA 92629  
Captain Astad Company, Inc., P.O. Box 390486, Ft. Lauderdale, FL 33335

## BULKHEAD SEALS

Blom & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY  
U.S.A. Reps: Simplex-Turnar Inc., P.O. Box 168, Little Neck, NY 11363p, -0168

## CABINERY

Marine Services Corp., 3457 Guigard Drive, Hood River, OR 97031

## CABLE ASSEMBLIES

Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492

## CABLE CLAMPS—STAINLESS STEEL

Barthel P.O. Box 16307 Denver, CO 16307

## CABLE TRAY SYSTEMS

NMP Corp., P.O. Box 35493, Tulsa OK 74153-0493

## CAD/CAM SYSTEMS

Autoshop Systems, 611 Alexander St., Ste. 403, Vancouver B.C. V6A 1E1 CANADA

## CEILINGS, DECORATIVE METAL

The Gage Corp., 803 S. Black River St., Sparta, WI 54656

## CELLULAR TELEPHONE SERVICE

Celnet Corp., 400 Main St., Ste. 800, Stamford, CT 06901-3004

## CHAIRNS

Al Alpha Int'l., Inc., P.O. Box 498985, Cincinnati, OH 45249  
Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02028

## CHAIRS

Washington Chain & Supply Inc., Box 3645, Seattle, WA 98124  
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90746

## CHEMICALS

Gasser Chair Co., 4138 Logway, Youngstown, OH 44505  
Shelby Williams Industries, Inc., 150 Shelby Williams Dr., Morristown, TN 37813

## CHEMICALS

Drew Amerind Marine, One Drew Plaza, Broomton, NJ 07005  
Unter Ship service Inc., 2375 West Esther Street, Long Beach, CA 90813

## CLAMPING—Pipe, Tubes, Hose

ZSI, 12749 Richfield Ct., Livonia, MI 48150

## CLASSIFICATION SOCIETY

American Bureau of Shipping, 2 World Trade Center, 106th Fl., New York, NY 10048

## COATING WELDER

Ray-O Systems, 2002 W. Carson St., Pittsburgh, PA 15204

## COAXIAL CABLES

Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492

## COMPOUNDS

ITW Phildelphia Resins, 130 Commerce Dr., Montgomeryville, PA 18936

## COMPUTER LOFTING

Beardsley Lofting Co., 1616 Barataria Blvd., Ste. 4, Marrero, LA 70072

## COMPUTERIZED INFORMATION SYSTEMS

All Alpha Int'l., Inc., P.O. Box 498985, Cincinnati, OH 45249

## CONCRETE REPAIRS

Autoshop Systems Corp., 4403, 611 Alexander St., Vancouver, BC, Canada V6A1E1  
Chand Corporation, 157 Hwy 654, Matthews, LA 70375

## CONCRETE REPAIRS

Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368  
Intergate Corporation, 2051 Mercator Drive, Reston, VA 22091-3413

## CONCRETE REPAIRS

Kokum Computer Systems AB, PO Box 5565, S-202 15 Malmo, SWEDEN  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

## CONCRETE REPAIRS

TMSCO, P.O. Box 91360, Mobile AL 36691

## CONCRETE REPAIRS

Beard Industries Inc., P.O. Box 51115, Shreveport LA 71130

## CONTROL SYSTEM—Monitoring

Autosave Marine AS, Dammensveien 126, N-0277 Oslo 2, NORWAY  
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123

## CONTROL SYSTEM—Monitoring

Kobelt Mfg. Co., 11720 Horseshoe Way, Richmond, BC, CANADA V7A 4V5  
IMO Industries, Gens Services Division, One Cowles Rd., Plainville CT 06062

## CONTROL SYSTEM—Monitoring

MMC International, 80 Inip Dr., Inwood NY 11696

## CONTROL SYSTEM—Monitoring

Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135  
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006

## CONTROL SYSTEM—Monitoring

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

## CONTROL SYSTEM—Steering

Engine Monitor, Inc., 179 Hickory Avenue Harahan, LA 70123  
Kobelt Mfg. Co., 11720 Horseshoe Way, Richmond, B.C. CANADA V7A 4V5

## CONTROL VALVES

Kokum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

## CONVERSIONS & REPAIRS

Vercocon/Shipyards, 50 Pemberton Ave., N. Vancouver, B.C. CANADA V7P 2P2

## COUPLINGS

American Vulkan, P.O. Drawer 673, Winter Haven, FL 33882  
Holset Engineering, 1223 Kemper Road, Cincinnati, OH 45240

## COUPLINGS

Liebert-Hank Niering GES mbH, P.O. Box 10, A-6719 Nerzing, AUSTRIA  
Maagregor USA 20 Chapin Rd., Pine Brook, NJ 07058

## CRANE—HOIST—DERRICK—WHIRLWIND

AmCyclo, 240 E. Plato Blvd., Saint Paul, MN 551071509  
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178

## CRANE—HOIST—DERRICK—WHIRLWIND

Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072  
Liebert-Hank Niering GES mbH, P.O. Box 10, A-6719 Nerzing, AUSTRIA

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Maagregor USA 20 Chapin Rd., Pine Brook, NJ 07058  
Marine Travell, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235

## CRANE—HOIST—DERRICK—WHIRLWIND

McEroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454  
J. D. Neuhues Industriezweig GmbH, D-5810 Wilton, GERMANY

## CRANE—HOIST—DERRICK—WHIRLWIND

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## CRANE—HOIST—DERRICK—WHIRLWIND

AmCyclo, 240 E. Plato Blvd., Saint Paul, MN 551071509  
Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801

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Morgan Marine, 1300 Normandy Place, Santa Ana, CA 92705  
T.C.W., 1607 Port Barmouth Pl., Newport Beach, CA 92660

## CRANE—HOIST—DERRICK—WHIRLWIND

Tech Crane Int'l., Inc., 61130 Timberland Dr., Lacombe, LA 70445

## CRANE—HOIST—DERRICK—WHIRLWIND

FCS, Inc., 62 Main Street, Centerbrook, CT 06459

## CRANKSHAFT REPAIR

Gottens Worldwide, 160 Van Buren St., Brooklyn, NY 11231  
In-Place Machining Co., Inc., 1929 North Buffalo Street, Milwaukee, WI 53212-3793

## CRANKSHAFT REPAIR

Life Industries, Corp., 205 Sweet Hollow Rd., Old Bethpage, NY 11804  
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-7788

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McEroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## CRANKSHAFT REPAIR

Smith Berger Marine Inc., 516 South Chicago Street, Seattle, WA 98108

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AmCyclo, 240 E. Plato Blvd., Saint Paul, MN 551071509  
American Block Co., 6311 Breen Rd., Houston, TX 77096

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Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801  
McEroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

## CRANKSHAFT REPAIR

NEI Clarke Chapman Canada, 1075 N. Service Rd. W., Unit 4, Oakville, Ontario, L6M 2G2 CANADA  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## CRANKSHAFT REPAIR

Puustnes, PO Box 102, N-4616, Faerik, NORWAY  
SkokumRope Master, P.O. Box 280, Hubbard, OR 97032

## CRANKSHAFT REPAIR

Smith Berger Marine Inc., 516 South Chicago Street, Seattle, WA 98108  
T.C.W., 1607 Port Barmouth Pl., Newport Beach, CA 92660

## CRANKSHAFT REPAIR

Timberland Equipment, P.O. Box 490, Woodstock, Ontario N4S 7Z2 CANADA  
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90746

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DECK STRUCTURES CONTROL CABS  
Carolina Cockpit P.O. Box 93377, Portland, OR 97283

## DECK STRUCTURES CONTROL CABS

DEBALINOW - REVERBERATORS  
Rocher Separation Systems, Inc., 3904 Del Amo Blvd., Ste. 801, Torrance, CA 90503

## DECK STRUCTURES CONTROL CABS

Rocher Separation Systems, P.O. Box 156, 54 Rue Agasse, 1211 Geneva 17, SWITZERLAND  
Watermakers, Inc., 2233 South Andrews Ave., Ft. Lauderdale, FL 33316

## DECK STRUCTURES CONTROL CABS

Watermakers, Inc., 2233 South Andrews Ave., Ft. Lauderdale, FL 33316  
General Thermodynamics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02560

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Hatch & Kirt, Inc., 601 McFarland Rd., Houston, TX 77011  
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101

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MAN B&W Diesel AG, Stadtbachstrasse 1, D-86153 Augsburg 1, GERMANY  
MAN B&W Diesel AS, Teghvelegade 41, DK-2450 Copenhagen SV, DENMARK

## DECK STRUCTURES CONTROL CABS

MAN B&W Diesel, 17 State St., New York, NY 10004  
Motor-Service AB, Box 2115, S-144 04 Ronninge, SWEDEN

## DECK STRUCTURES CONTROL CABS

Motor-Service-Hugg Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315  
New Sulzer Diesel US, Inc., 525 Washington Blvd., Ste 2408, Jersey City, NJ 07310

## DECK STRUCTURES CONTROL CABS

Non-Tech, Inc., 100 Wall St., New York, NY 10005  
Ocean Power & Equipment, 571 Central Ave., Suite 112, New Providence, NJ 07974

## DECK STRUCTURES CONTROL CABS

Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND  
Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15550 Park Row, Houston, TX 77064

## DECK STRUCTURES CONTROL CABS

Ustein Bergen AS, PO Box 924, N5022 Bergen, NORWAY  
Wartsila Int'l., 201 Delaware Highway, Annapolis, MD 21401

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Glamco, 44 Austin Street, P.O. Box 13522, St. Johns, NF CANADA A1B 4B8  
Golten Marine, 160 Van Brunt St., Brooklyn, NY 11231  
Kocum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70066  
Julian A. McDermott, 1539 Stephen St., Ridgewood, NY 11385  
Pulsar Electric Mfg. Co., Inc., 1916 N. Main, P.O. Box 53, Pearland, TX 77581  
Francis Searchlights & Sign Supply Co., 4415 6th N.W., Seattle, WA 98107  
**LIQUID LEVEL GAUGES**  
Eugene Ernst Products Co., 118 Main St., Farmingdale, N.J. 07727  
**LIQUID LEVEL INDICATORS**  
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60078-0226  
**LIQUID OVERFILL PROTECTION SYSTEMS**  
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026  
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Newport News Shipbuilding Logistics & Technical Services, 12129 Jefferson Ave., Newport News, VA 23603  
QED, 4846 N. Winchuck Road, Virginia Beach, VA 23465  
V.L. Logistics Consultants, Inc., 3420 Bellevue Blvd., Ocean Springs, MS 39564  
**LOW-SMOKE CABLES**  
Time Microwave Systems, P.O. Box 5039, Wallingford, CT 06492  
**LUBRICANTS**  
Texaco, International, 2000 Westchester Avenue, White Plains, NY 10650  
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Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072  
Golten Marine Company, Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
New England Traveler Equipment Co., 231 Eastwood Street, Chelsea, MA 02150  
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Electronic Marine Systems, 803 Fendall Pl., Mahwah, NJ 07065  
**MARINE ACCOMMODATIONS**  
Directions in Design, Inc., 633 Emerson, Suite 100, St. Louis, MO 63141  
Hopman Brothers, P.O. Box 820, 435 Essex Ave., Weymouth, MA 02290  
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave., Boca Raton, FL 33431  
Maritime Services Corp., 3457 Guiguard Dr., Hood River, OR 97031  
**MARINE CEILING**  
The Fulk Corp., 803 S. Black River St., Sparks, WI 54556  
Hydro-Aluminum, Via Verk, N-5880 VIK I SOGN, Norway  
**MARINE COATING**  
Devoe Coatings, 4000 Dupont Circle, Louisville, KY 40207  
International Zinc, 450 Seventh Ave., New York, NY 10123  
**MARINE DECKING**  
Sally, P.O. Box 1600, Sapulpa, OK 74067  
**MARINE ELECTRONICS**  
Frank L. Blair Radio, 2011 Hopkela Drive, Metairie, LA 70001  
Kocum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70066  
Stab Marine Electronics AB, Box 13045, 402 51 Göteborg, SWEDEN  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029  
**MARINE ELEVATORS**  
Alimak Elevator Co., 1100 Boston Ave., Bridgeport, CT 06601  
McEroy Machine, 1101 Lonsdale Rd., Elkhart, IN 46535-4454  
**MARINE EQUIPMENT**  
Advanced Polymer Systems, P.O. Box 4454, Bloom, MS 39535-4454  
**MARINE FENDERS**  
Viking Fender Co., 340 Lehigh Ave., Perth Amboy, NJ 08861  
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SafeCo Credit Co., Inc., 4909 158th Ave. NE, Redmond, WA 98052  
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Engineered Data Products, P.O. Box 565, Woodbury, NJ 08060-7565  
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Maritime Services Corp., 3457 Guiguard Dr., Hood River, OR 97031  
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The Fulk Corp., P.O. Box 452, Milwaukee, WI 53201-0482  
**MARINE INSURANCE**  
Helen, 1200 E. 7th St., Fort Lauderdale, FL 33316  
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Hilbert Lubricants Co., 6 campus Drive, Parsippany, NJ 07054  
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Bill Brown Enterprises, Inc., 4995 Ocean Pines, Berlin, MD 21111  
Gilles, Inc., P.O. Box 628, Seabrook, TX 77586  
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Barbarklin, 1810 Chelsea Ave., West, Cherry Hill, NJ 08002  
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Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114  
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Egnite Monitor, Inc., 179 Hickory Ave., Haryana, LA 70123  
Tabor Mason, 800 Fendall Pl., Rahway, NJ 07065  
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Chids Engineering Corp., Box 533, Medfield, MA 02052  
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Crane Consultants, 15301 First Ave S., Seattle WA 98148  
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Diagnosis & Planning, 2120 Washington Blvd., Ste. 200, Arlington, VA 22204  
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Elliott Bay Design Group 5301 Shishole Ave. N.W. Ste. 200, Seattle, WA 98107  
Ercon Mgmt & Engineering Consultant Services, P.O. Box 7782, Beaumont, TX 77708  
GHM Inc. (Inc. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601  
Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010  
John W. Gilbert & Assoc., Inc., 68 Long Wharf, Boston, MA 02110  
The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104  
Guido Peris & Assoc., 4039 21st Ave., Ste. 300, Seattle, WA 98119  
Mores Gundin Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104  
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110  
Hydrocomp, Inc., 202 C Packets Court, Williamsburg, VA 23185  
JH 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. Krogan, 799 Brickell Plaza Ste. 701, Miami, FL 33131  
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225  
MCA Engineers, Inc., 2960 Arway Ave., AA-103, Costa Mesa, CA 92626  
Alan C. McClure Associates, Inc., 2800 South Gessner, Houston, TX 77063  
McEroy Machine & Mfg Co., Inc., P.O. Box 4454, Bloom, MS 39535-4454  
John L. McMillen Associates, Inc., 1 World Trade Cr., Ste 3000, N.Y.N.Y. 10048  
Ferdinand Marbury, P.O. Box 2321, Annapolis, MD 21401  
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07024  
Marine Management Systems Inc., 102 Hamilton Ave., Stamford CT 06902  
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109  
Maritech, Seacraft, Bay Road, Newmarket, NH 03857  
Maritime Design, Inc., 3200 Hatfield Rd., Jacksonville, FL 32257  
R.J. Mallon & Co., 71 Hudson St., New York, NY 10013  
Nautical Design, Inc., 2101 S. Andrews Ave., Suite 202, Ft. Lauderdale, FL 33316  
Ocean Motors Co., P.O. Box 130, 49 Shore Drive, Barrington, RI 02806-0130  
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777

QED Systems, Inc., 4646 Withchuck Rd., Virginia Beach, VA 23455  
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulton St., Ste. 301, San Francisco, CA 94107  
Sargent & Helges, 225 Bonaventure St., Suite 1405, New Orleans, LA 70112  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029  
Sea School, 11812 Gandy Boulevard, St. Petersburg, FL 33702  
Seaworthy Systems Inc., P.O. Box 865, Essex, CT 06425, 17 Battery Pl., New York, NY 10004, P.O. Box 975, Barnegat Light, NJ 08006, 2 Skyline Pl. 5203  
Liesburg Pks., Suite 700, Falls Church, VA 22041,  
50 Vashell Way, Orlando, CA 94363  
George G. Sharp, Inc., 100 Church St., New York, NY 10007  
R.A. Steam, Inc., 253 S. 1st Ave., Surgeon Bay, WI 54225  
A.K. Suda & Ass., 3004 19th St., Metairie, LA 70002-4989  
VMSCO, P.O. Box 91360, Mobile AL 36691  
**NAVIGATION & COMMUNICATIONS EQUIPMENT**  
Aurionica Marine AS, Drammensveien 128, N-0277 Oslo 2, NORWAY  
Cellnet Corp., 400 Main St., Stamford, CT 06901-3004  
ComNav Marine Ltd., 1420 Frances St., Vancouver, BC, CANADA V5L 1Y9  
Comsat Marine Services, 850 L'Enfant Plaza SW, Washington DC 20024  
CruisePhone, 2103 Park Central N., Pompano Beach, FL 33064  
Electronic Marine Systems, 800 Fendall Pl., Mahwah, NJ 07065  
Funaro U.S.A., 271 Harbor Way, S. San Francisco, CA 94080  
Hose-McCann, 1241 W. Newport Center Dr., Deerfield Beach, FL 33442  
IGS Electronics Ltd., Unit V, Rutherford Industrial Estate, Fort, Ayrshire, West Essex, UK  
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837  
Marine Technologies, Inc., 342 Piermyer Rd., St. Johns, N.F., CANADA A1C 5J2  
Megabyte, Inc., 8 Preston Court, Bedford, MA 01730-2380  
Mobile Telesystems, Inc., 300 Professional Dr., Gaithersburg, MD 20879  
Norgram Marine Consultants, 940 Bond Street, Elizabeth, NJ 07201  
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY  
Pauluhn Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearland, TX 77581  
P.O. Instruments, 9855 Westchester Ave., San Diego, CA 92131  
Raytheon Marine Co., 676 Island Pond Rd., Manchester, NH 03109-5420  
Ross Engineering, 1250 E. Staley Rd., Largo, FL 34643  
Scandinavian Micro Systems P.O. Box 65, M-1411, Kolbotn, NORWAY  
Scientific Atlanta, 4291 Communications Dr., Norcross, GA 30093  
Sea, Inc., 7030 220th St. W., Mountlake Terrace, WA 98043  
Seaspeak Electronics, Inc., 240 Tallentree Ave., Jacksonville, FL 32202  
SGC, Inc., P.O. Box 3526 Bellevue, WA 98009  
Simrad, 18210 33rd Avenue West, Lynnwood, WA 98036  
Simrad Robertson, 18001 Hammett, Suite 100, Houston, TX 77043-1823  
Sound Propeller, 1608 Fairview Ave. E., Seattle, WA 98102  
SPD Technologies, 13303 Roosevelt Blvd., Philadelphia, PA 19116  
Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901  
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009  
Sunbeam Equipment Ltd., 241 West 4th Ave., St. John's, N.F., CANADA  
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086  
Waynway Communications System, Inc., 433 E. Park Pl., Jeffersonville, IN 47130  
**NOZZLE SYSTEM**  
Rico Propellers, Av Rio Espozoa #88, Mazatlan, MEXICO 82180  
**OIL—Marine—Additives**  
Rohm-Fine, Inc., 5050 Highway 51, Westborough, MA 01581  
Mobil Oil Corporation, 3225 Galveston Road, Fairfax, VA 22037-0001  
**OIL SPILL CONTAINMENT**  
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141  
**OIL SPILL RESPONSE MANAGEMENT SERVICES**  
Geo Source 4100 N. Shell Square, New Orleans, LA 70139  
**OIL/WATER SEPARATORS**  
Al-Laval Separators, 1000 E. Meams Rd., Warramater, PA 1874-0556  
Blomh & Voss AG, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY  
USA, Reps Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168  
Tandem 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 31 West, Woughton, WI 53589  
Ocean Power 571 Central Avenue, New Providence, NJ 07974  
**PAINT—COATING—CORROSION CONTROL**  
Advanced Polymer Systems, P.O. Box 268, Avon, OH 44011  
Corrosal, Inc., 1045 12th Ave. NW-15A, Issaquah, WA 98027  
Devoe Coatings, 4000 Dupont Circle, Louisville, KY 40207  
Egards, Inc., P.O. Drawer 2696, Lafayette, LA 70502  
Jamestown Distrib., 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835  
Hempel Coatings, Foxboro, MA 01938  
International Zinc, 450 Seventh Ave., New York, NY 10123  
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490  
O'Brien Research Services, 1000 Adams St., Rockville, MD 20857  
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70037  
Sigma Coatings, 8979 Marine St., Houston, TX 77023, 300 River Rd., Houston, TX 77059, 1100 Adams St., Rockville, MD 20857  
Unitor Ship Services, Inc., 2375 West Esther Street, Long Beach, CA 90813  
**PAINT REMOVAL**  
White Metal, Inc., 6300 Mayvale, Houston, TX 77087  
**PIPE FITTING/CONNECTING SYSTEMS**  
Hilbert Lubricants Co., 6 campus Drive, Parsippany, NJ 07054  
**PLATING EQUIPMENT**  
SILCO Servico Plating, 5708 Schlar Rd., Cleveland, OH 44113-1394  
**POLLUTION CONTROL EQUIPMENT**  
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141  
ICI Mop, Inc., 221 Rue De Jean, Lafayette, LA 70508  
**POLLUTION CONTROL CONTRACTORS**  
TRC Corporation, 77415 Cahill Rd., Minneapolis, MN 55439  
**TREEDOM MAINTENANCE**  
Predicta, 235 Worslow Way West, Bridgeville, PA 19110  
**PROPELLERS**  
Bird Johnson, P.O. Box 1528, Pascagoula, MS 39367  
Sound Propeller, 1608 Fairview Avenue E., Seattle, WA 98102  
**PROPULSION EQUIPMENT**  
—Dowlhatters, 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  
ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372, USA  
ABB Industry Oy, P.O. Box 185, 00381 Helsinki, FINLAND  
ABB TURBO-HANGER, Inc., 1460 Livingston Avenue, N. Brunswick, NJ 08902  
Aquamaster-Ruama Ltd., Box 220, SF-20101, Ruama, FINLAND  
Aquamaster-Ruama, Inc., 2315 North Woodlawn Ave., Ste. 103, Metairie, LA 70001  
Bird Johnson Company, P.O. Box 1528, Pascagoula, MS 39367  
Birhval A/S, P.O. Box 270, N-6401, Molde, Norway  
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320  
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227  
The Fulk Corp., P.O. Box 492, Milwaukee, WI 53201-0492  
Fincantieri, Diesel Engines—G.M.T., Bagnoli della Rosandra 334, Trieste, ITALY  
GE Naval & Drive Turbine Systems, 166 Seaboard Dr., Fitchburg, MA 01420  
Golems Marine Company, 160 VanBrunt St., Brooklyn, NY 11231  
Hobart Engineering, Inc., 1320 Kemper Meadow, Ste. 500, Cincinnati, OH 45240  
In-Place Machining Co., Inc., 1629 North Bullum Street, Milwaukee, WI 53212-3193  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Krupp Mak., 7555 Darbo Crescent, Mississauga, Ontario, CANADA L5N 6P9  
Kobel Manufacturing, 11702 Horseshoe Way, Richmond, BC, Canada V7A 4V5  
LIPS U.S.A., P.O. Box 6, 5151 RP Dr., The Netherlands  
LIPS U.S.A., Inc., 3617 Koppers Way, Chesapeake, VA 23323  
Lohmann & Stoltefeld, P.O. Box 1860, D-58408 Witten, Germany  
Mapco Products Inc., 90 Forest Ave., Local Valley, N.Y., 11560  
Markisches Werk, P.O. Box 1442, D-5884 Havelberg GERMANY  
MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel AS, Ostervej 2, DK-4660 Hvideb, DENMARK  
MAN B&W Diesel AG, Altonaer Str., Hamburg, Germany  
MAN B&W Diesel GmbH, Stadtchlostrasse 1, D-86139 Augsburg 1 GERMANY  
MTU of N.A., 19051 Corporate Dr., Sugar Land, TX 77479  
New Sulzer Diesel Ltd., CH-8401, Winterthur, SWITZERLAND  
North American Marine Jet, P.O. Box 1232, Benton, AR 72015  
Omer corp., 111 cedar Creek Rd., Griffin, WI 53024  
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 70002  
Schotte/Werft, Manizer Strasse 99, D-56322 Spay/Rhein, GERMANY  
Schotte/North America, Inc., 1505 Corbin Ave., Hammond, LA 70403  
Siemens Electric Ltd., 1190 Courtyardpark Rd., Mississauga, ONTARIO  
Sound Propellers, 1608 Fairview Ave. E., Seattle, WA 98102

Stewart & Stevenson, 1400 Drestrehan, P.O. Box 8, Harvey LA 70059-0008  
Thrustmaster of Texas, 12227-K FM 529, Houston, TX 77041  
Ustlen Bergen Diesel AS, P.O. Box 824, N-5002, Bergen, NORWAY  
J.M. Voith GmbH, Marine Division, Postfach 1940, D-7620, Heidenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021  
Oy Waris Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND  
**PUMP—LIFEBOAT (hand operated)**  
Beckson, P.O. Box 3336, Bridgeport, CT 06605  
**PUMP—Repair—Drives**  
Allweiler Marine Inc., USA Rep., 14812 S.E. 62nd Court, Bellevue, WA 98006  
Allweiler Marine Inc., Postboks 149, 1351 Rud, NORWAY  
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072  
Giles, Inc., P.O. Box 628, Seabrook, TX 77586  
Jim's Pump Repair, 48-55 36th St., Long Island City NY 11101  
Jerry E. Leach Co., Box 71, 647 State Rd., Cheraw, SC 29520  
Leslind Corporation, 165 Chestnut Street, Alexandria, NJ 07421  
Vila Motivator, 566 Parker St., Newark, NJ 07104  
**REFRIGERATION EQUIPMENT/SERVICES**  
Adcock Marine, 1410 Central Ave., Farmingdale, NY 11735  
RTF Mfg., RD #1 Route 66, Hudson, NY 12534  
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813  
**REMOTE VALVE OPERATORS**  
American United Marine Corp., 3 Broadway, Rt 1, Saugus, MA 01906  
Eliott Manufacturing, P.O. Box 773, Binghamton, NY 13902  
Telleflex, Inc., 771 First Ave., King of Prussia, PA 19406  
**RIGID INFLATABLE BOATS**  
American Eagle, 780 E. Prairie Jensen Way, LaConner, WA 98257  
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806  
Yodac of N. America Thompson Creek, P.O. Box 400, Stevensville, MD 21666  
**ROPE—Manila—Nylon—Haweser—Fiber**  
Allied Signal Inc., Fibers Division, 101 Columbia Rd., Montvale, NJ 07982  
American Mfg. Co., 200 Southpark Rd., Lafayette, LA 70508-3609  
**RUDDER BITES**  
Vesco Products, P.O. Box 40647, Cleveland 2022, South Africa  
**RUDDER STOCK SEALS**  
Breda & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY  
U.S.A. Reps: Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168  
**RUF CONVERTERS**  
Corrosal, Inc., 1045 12th Ave. NW #15A, Issaquah, WA 98027  
**SAFETY LIGHTING**  
Donjon Marine, 1250 Liberty Ave., Hillside, NJ 07025  
**SANITATION DEVICE—Pollution Control**  
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130  
Eliect International Corp., 1110 Industrial Blvd., Sugarland, TX 77478  
Environac, Inc., 1250 Turrett Dr., Rockton, IL 61111  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490  
Surgal Products, Escondido, CA 92029  
**SATELLITE COMMUNICATIONS**  
British Telecom, Room 203, 43 Barmingham Close, London EC1A 7HP  
Comsat Mobile Communications, 2230 Cornsall Dr., Clarkburg, MD 20871-9475  
IDB Mobile Comm., 10525 W. Washington Blvd., Culver City, CA 90232-1922  
Newpage Telecom, Postboks 8701 St. Olav Plaza, 40130, Oslo, Norway  
PTT Telecom Netherlands P.O. Box 30150-2500 JD The Hague, NETHERLANDS  
Singapore Telecom, 15 Hill Street, Telephone House, 2nd Storey, Singapore 0617  
**SCAL MODELS**  
Marketed, PO Box 225, Oconomowoc, WI 53066  
Scale Reproductions, 16346 County Road 13, Fairhope, AL 36526  
Surgal Products, Escondido, CA 92029, 187 N. Ninth Ave., Durango, CO 81301  
**SEALS**  
John Crane Marine, 1536 Barclay Blvd., Buffalo Grove, IL 60089  
**SEALANTS**  
Boatite, Inc., Div. of Life Int., 205 Sweet Hollow Rd., Old Bethpage, NY 11804  
**SELF UNLOADING SYSTEM REPAIR**  
Kilmer Rubber Engineering, GERMANY  
U.S. Rep: Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168  
**SELF CERTIFICATION**  
American Bureau of Shipping, 2 World Trade Center, 106th Fl., New York, NY 10048  
**SHIP REPAIR**  
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813  
**SHIPBOARD COMMUNICATIONS**  
Deerfield Marine, 160 Van Brunt St., Brooklyn, NY 11231  
Hilbert Lubricants Co., 6 campus Drive, Parsippany, NJ 07054  
**SHIPBUILDING EQUIPMENT**  
NEI Syncofill, Inc., 8970 S.W. 87th Ct., Miami FL 33176  
Nalova Engineering Solutions, Via Duca d'Acosta 12, 34074 Montebelluna, Gorizia, ITALY  
**SHIPBUILDING—Repairs, Maintenance, Drydocking**  
Amtrak, Inc., P.O. Box 3107, Brownsville, TX 77823  
Asiellen Esparragos, S.A. Osharinas, 1416-28023 E. Planito SPAIN  
Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., 8200 Heckerich Dr., Jacksonville, FL 32226  
Avondale Industries, Inc., P.O. Box 62020, New Orleans, LA 70150  
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601  
Braso Marine Co., P.O. Box 4112, New Orleans, LA 70178  
Bullinger Lockport, L. Larnes, P.O. Box 650, Lockport, LA 70374-0250  
Caridoc, P.O. Box 1147 Port Of Spain, Trinidad, WI.  
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmo, SWEDEN  
Cincinnati Marine, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381  
Fincantieri SpA Cantieri Navali Italiani, Via Cipro 11, 16129 Genova ITALY  
G.M.D. Shipyard, PO Box 60222, Brooklyn, NY 11235  
Golems Marine Company, 160 Van Brunt St., Brooklyn, NY 11231  
Gulf Coast Fabrication, Inc., P.O. Box 539, Lakehurst, MS 39558  
H.W. Kiel, Germany/USA Rep: Roland Marine Inc., 80 Broad St., NY, NY 10004  
Hall Buck Marine, P.O. Box 35, Baton Rouge, LA 70816  
Hiachi Zosen, Hiachi Shipbuilding & Engineering Co., 1-1-1 Hitotsubashi Chiyoda-Ku Tokyo 100 Japan  
Hike Metal Products & Shipbuilding, Box 698, Wheatly, Ont., Canada N0P 2P0  
IH, Tokyo Chuo Bldg., 6-2, Chiyoda Tokyo 100 Japan  
IH Marine Technology, Inc., 2400 Augusta Dr., Ste. 250, Houston, TX 77067  
Intermarine (USA), Inc., 301 N. Lathrop Ave., Savannah, GA 31402  
In-Place Machining Co., Inc., 829 North Bullum Street, Milwaukee, WI 53212-3793  
Jacksonville Shipyard, 750 E. Bay St., Jacksonville, FL 32209  
Jeffboat, Inc., P.O. Box 610, Jeffersonville IN 47130  
Kvaerner Masa-Yards Oy, Box 132, SF-00151, Helsinki, FINLAND  
Kochua Marine, 615 N 34th St., Seattle, WA 98103  
Levee Shipyards, P.O. Box 1190, HWY 90 East, Jennings, LA 70546  
Linderau GmbH, Sagenstrasse 10, Postfach 9902 D-2900 Kiel, Friedrichshafen GERMANY  
Lisnave, Apartado 2138, 1103 Lisbon, Codex PORTUGAL  
Motor Service AB, Box 2115, 144 04 Rominge, SWEDEN  
Munson Manufacturing, 150 West Dayton, Edmonds WA 98020  
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607  
Nichols Brothers Boat Builders, 5400 South Cameron Rd., Freehold, WA 98249  
Peterson Builders, Inc., 101 Pennsylvania Ave., Surpore Bay, WI 54255-6550  
PDT, 750 Middle Ground Blvd., Newport News, VA 23606-2528  
Thomas Marine, 37 Brimstedt Street, Patuxent, NY 11772  
Samsung Heavy Ind., 25, I-lga, Bonge-dong, Chung-Ku, Seoul, Korea  
SeaArk, P.O. Box 210, Monticello AR 71855  
Seafab, P.O. Box 1651, 4111 Cedar St., Pascagoula, MS 39567  
Service Marine Industries, P.O. Box 3606, Morgan City, LA 70381  
Skipperline Shipyards, 621 Park Plaza Dr., Dept 21, 16129 Genova ITALY  
Stainer Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509  
Swath Ocean, 979 G Street, Chula Vista, CA 92011  
Trinity Marine Group, Box 3029, Gulfport, MS 39505-3029  
Wegdon Shipyard, P.O. Box 908, Westport, WA 98585  
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806  
Zoll Marine Corp., 3121 S.W. Moody Street, Portland, OR 97201  
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevensville, MD21666  
**SHIPYARD / CABLES**  
Americable, 550 Bally Road, El Dorado, AR  
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607  
G.M.D. Shipyard, Brooklyn Navy Yard, Flushing Ave. & Cumberland St., Brooklyn, NY 11205  
Ocean Technical Services 624 Petros Road, Harvey, LA 70056  
T.A.S.T. Corp., PO Box 10392, Fairfield, NJ 07004  
**SIGHTGLASSES**  
Arcon Industries, 200 Williams Street, Portchester, NY 10573  
**SILENCERS**  
Beard Industries Inc., P.O. Box 31116, Shreveport LA 71130

Nelson Division, Exhaust & Filtration Systems, Hwy. 51 West, P.O. Box 428, Sloughon, WI 53589

**SPRAY/NEBULATORS**  
Masters Corp., P.O. Box 6425, Fort Myers, FL 33907

**STAIRMASTER SAFETY TREADS**  
Woolster Products, Inc., 1000 Spruce Street, P.O. Box 896, Wooster, OH 44691-6005

**STERN TUBE BUSHES**  
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South Africa

**STERN TUBE SEALS**  
Bohm & Voss AG, P.O. Box 10 07 20, D-2000, Hamburg 1 Germany  
U.S.A. Reps: Sprimes-Turner Inc., P.O. Box 158, Little Neck, NY 11363-0168

**STIFFNER WELDER**  
Bug-O-Systems, Inc., 3003 W. Carson St., Pittsburgh, PA 15204

**STORAGE/WORKSHELTERS**  
Poly-Steel Shelters, 1209 E. Ocean Blvd., Stuart, FL 34996

**STRAINERS & FILTERS**  
Kraissl Co., 299 Williams Ave., Hackensack, NJ 07601

**STUFFING BOXES**  
Kahlerberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

**SURVIVAL EQUIPMENT**  
Schal Watercraft, P.O. Box 7008, Newark, DE 19714

Sea, Inc., 7330 220th St., Mountlake Terrace, WA 98043

Viking Life Saving Equipment, 1625 N. Main Ave., Miami FL 33136

**TANK LEVELING INDICATORS**  
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906

Autonics Marine A/S, Drammensveien 126, N-2277 Oslo 2, NORWAY

Bergan Tank, 3409 Gulf Breeze Pkwy, Gulf Breeze, FL 32561

ERL Marine Products Div., PO Box 1026, New Albany, IN 47151-1026

Ian Conrad Bergan, 3409 Gulf Breeze Parkway, Gulf Breeze, FL 32561

IMO Industries, Gens Sensors Division, One Cowles Rd., Plainville CT 06062

Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

MIMC International, 60 Imp Dr., Inwood NY 11696

Saao Marine Electronics AB, P.O. Box 13045, S-402 51 Goteborg SWEDEN

**TANK LIQUID LEVEL GAUGES**  
Aechon Industries, 200 Williams Street, Portchester, NY 10573

Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Merrilape, Inc., 59 Porter Rd., Littleton, MA 01460

Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226

**TEMPORARY/PERMANENT SHELTERS**  
Universal Shelters, U.S. Hwy. 19 S., Pelham, GA 31779

**TESTING SERVICES**  
Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

**THERMAL INSULATION**  
Insulation, Inc., 1101 Edwards Ave., Harahan, LA 70123

**THICKNESS TESTING**  
Cyrus Instruments, P.O. Box 3127, Annapolis, MD 21403

M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

**TOOLS**  
Aurand Mfg. 1210 Ellis St., Cincinnati, OH 45223

Titi Tool Inc., 3806 Security Park Drive, Rancho Cordova, CA 95742-6990

**TORRENTIAL VIBRATION SPECIALISTS**  
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

Predict/DLI, 253 Winslow Way West, Barnbridge Island, WA 98110

T.W. Spiegens, 156 W. 8th Ave., Vancouver, BC, CANADA V5Y 1N2

Vibranalysis Engineering Corp., 9300 Gamebird, Houston, TX 77034

**TOWING-Barges, Vessel Chartering, Lightering, Salvage, etc.**  
Jack Fulkner, 2419 Cady Lane, Fostoria, IL 60422

**TRAINING COURSES**  
Fisher Maritime Counselors 71 Valley St., South Orange, NJ 07079

Star Center, 2 West Dixie Highway, Dana, FL 33004

**TURBOCHARGERS**  
ABB Turbocharger Co., 1460 Livingston Ave., North Brunswick, NJ 08902

**ULTRASONIC TESTING**  
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

**ULTRASONIC THICKNESS GAUGES**  
Cyrus Instruments, Inc., 1925 Merland Pkwy, Suite 202, Annapolis, MD 21401

**VACUUM TOILET SYSTEM**  
Envirovac, 1260 Turret Drive, Rockford, IL 61111

Fast Systems, Inc., 3340 N. Broadway, St. Louis, MO 63147

Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, NORWAY.

**VALVES AND FITTINGS**  
Civ-Vial Co., P.O. Box 1325, Newport Beach, CA 92663

Derbyshire Machine & Tool, 5100 Newfield Ave., Philadelphia, PA 19144-1788

ERL Marine Products Div., PO Box 1026, New Albany, IN 47151-1026

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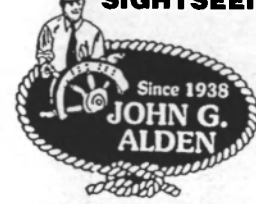
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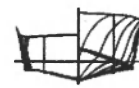
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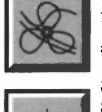
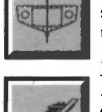


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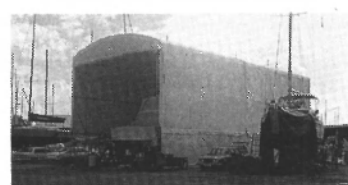
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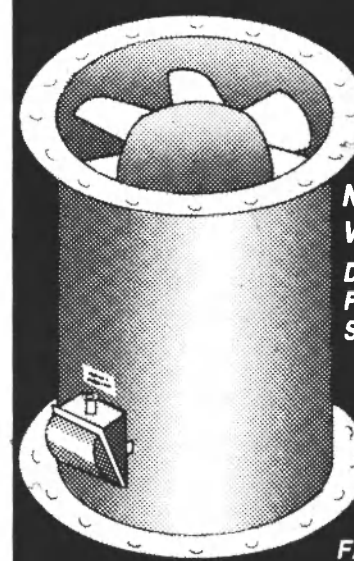
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**Chemical Trader Back After 10-Year Lay-Up**

In late February the towboat *Chemical Trader* came to life again after more than 10 years of inactivity. The boat was laid up at Ft. Smith on the Arkansas River, and in July of 1994 was purchased by Brown Marine Service Inc. of Pensacola, Fla. Then the vessel underwent a 12-month transformation. Powered by a pair of D-398 TA Cats, generating a total 1,800 hp, the *Chemical Trader's* engines were completely rebuilt by Brown Marine, and she was refurbished and repainted. Captain **Gary Bryan**, tug operations manager for Brown, announced that with the vessel, the company is once again in the line haul business on the waterways, having previously sold its liquid transportation division about one and a half years ago.

**NRC Expands Coverage Program**

National Response Corp. (NRC) announced the introduction of a pollution response coverage program for dry cargo, cruise and container vessels. Under the new program, vessel owners may contract for response coverage for \$250 per vessel per calendar year with no minimum fee and a maximum retainer cost of \$5,000 per year for vessels under common ownership. Companies which name NRC for coverage of their tank vessels will receive additional discounts. For an additional \$100 per year per vessel, with a maximum additional charge of \$2,000 per year per fleet, owners will also be able to nominate Smit Americas as a designated salvage responder for incidents requiring such services.

For more information on NRC  
Circle 54 on Reader Service Card

**Small Yard Completes Survey Vessel Overhaul**

A six-month reconstruction project of one of the late model U.S. Army Corps of Engineers aluminum survey vessels has been successfully completed by Robbs' Boatyard and Marina at its Belhaven, N.C., repair and construction yard. The *Cherneski*, assigned to the Corps' Philadelphia office, had fallen short of cruise and top speed expectations. The Corps' Marine Design Department decided a redesign was the best path to take, and Robbs' Boatyard was the successful bidder. Work included lengthening the boat a total of 5 ft. (1.5 m), making it 50 ft. (15.2 m) in length. When work was finished, the boat was longer, lighter (despite the added length and addition of a full transom platform) and faster.

For more information on Robbs'  
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**SkipperLiner Delivers Genesee Belle**

SkipperLiner delivered the *Genesee Belle*, an 81-ft. (24.7-m) sternwheeler, to its owner, Genesee County, Flint, Mich. The vessel will be operated by Genesee County Parks and Recreation at the historical Crossroads Village on Mott Lake. Its sternwheel is of traditional design, fully functional with split paddle functions. Steering is via two independent systems, the monkey rudders and flanking rudders. Propulsion is by a Cummins 6BT5.9G2-M, driving the generator and hydraulic pump. The system is rated for 180 hp at 1,800 rpm. The 150-passenger vessel was not delivered via waterway. The fact that a water delivery was not possible required the boat to be designed and built at SkipperLiner's shipyard, built in a manner so it was possible to transport it overland to the lake.


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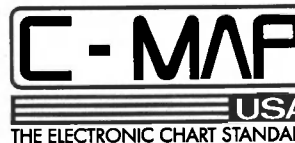
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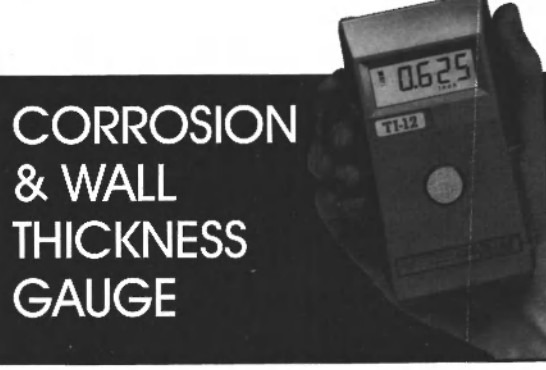
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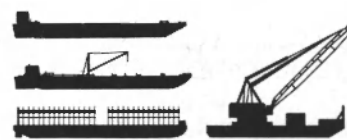
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Nick  
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