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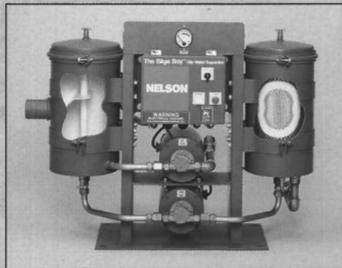
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ON THE COVER

The St. Lawrence Seaway, long a gateway to North America, makes plans to maximize its market potential. New St. Lawrence Seaway Development Corp. head Gail McDonald details the plans, starting on page 50.

8 BULK CARRIERS

MARKET REPORT from IMA Associates — by James R. McCaul
Volatile Market Dominated By Far East Builders — by Alan Thorpe

20 **EUROPEAN UPDATE:** A new ultra-high specification support vessel designed by IMT Marine debuts in Foinaven field.

43 ON THE WATERWAYS

In conjunction with the American Waterways Operators, MR/EN takes a hard look at the issues driving the inland market of today and tomorrow. Editorials from AWO leaders detail operational and legislative activities.

PLUS: New St. Lawrence Seaway head Gail McDonald discusses fleet renewal incentives and other measures designed to maximize the Seaway's market potential.

74 **THE BIGGER THEY ARE . . .** The better they do, at least in the case of Newport News Shipbuilding. The yard has recently been a virtual hotbed of activity: five more commercial ships orders come in; the yard unveils its plan to build ships twice as fast; and rumors swirl about NNS's status.

ALSO IN THIS ISSUE:

20 **New Legislation = Business In RoRos:** MacGregor has signed significant contracts to outfit existing RoRos with flood control doors following a Norwegian Maritime Directorate decision.

62 **MARINE NAVIGATION & COMMUNICATIONS DIRECTORY**

68 **AISE '96 Preview**

72 **Ferlship's Principal Contracts Recorded**

90 **CLASSIFIEDS**

SPECIAL SUPPLEMENT

With this edition of MR/EN

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International

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EDITOR'S NOTE

The maritime industry, conservative in nature, is rarely stagnant. The biggest marine whirlwind is currently centered in Newport News, Va., home of the largest U.S. shipbuilder, Newport News Shipbuilding (NNS). NNS is a perennial top player in the international shipbuilding industry and a continual source of fascination, if for no other reason its enormous size and seemingly bottomless resources. It has been making the nightly news with reports of a new five-ship, \$240-million contract for its Double Eagle product tanker; a new yard efficiency plan designed to slice the time of building ships in half; and an unconfirmed report that the yard is for sale. Needless to say, the executive offices at NNS are a buzz of activity, and our report on page 74 helps clarify some of the recent happenings.

The strong advances of the marine industry are also chronicled in this edition of Maritime Reporter & Engineering News via the inaugural edition of Marine Technology International, which is a standard-sized magazine dedicated to exploring the ways in which technologies are changing the marine industry. For those keeping score, the pre-cursor to this edition was the standard-sized Marine Propulsion Technology supplement which was published in conjunction with MR/EN's September 1995 edi-



tion.

Continuing with our plan to provide insightful market information on one vessel segment per month, this month's report on bulk carrier newbuild trends (by Alan Thorpe, starting on page 10) is enhanced with an exclusibe market report filed by James R. McCaul, president, IMA Associates, starting on the next page. IMA reports that over the past two years there has been a significant rise in demand for bulk carriers. IMA's Shipbuilding Industry Outlook forecasts that bulk carrier construction will run at the rate of 205 to 265 ships annually over the next four years, with growth strong in the Handysize sector. MR/EN's April 1996 vessel focus will be on RoRos, with a strong focus on recent legislative changes designed to make these ships safer.

This edition also includes a preview of the AISE '96 exhibition and conference, an international shipbuilding show in New Orleans which has generated considerable interest around the world. The AISE '96 preview in this edition will provide complete exhibitor profiles in our April "At Show" edition.

Gregory R. Trauthwein

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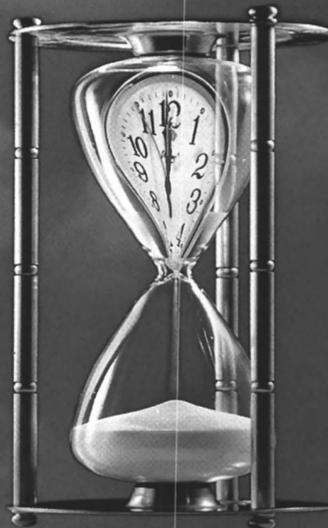
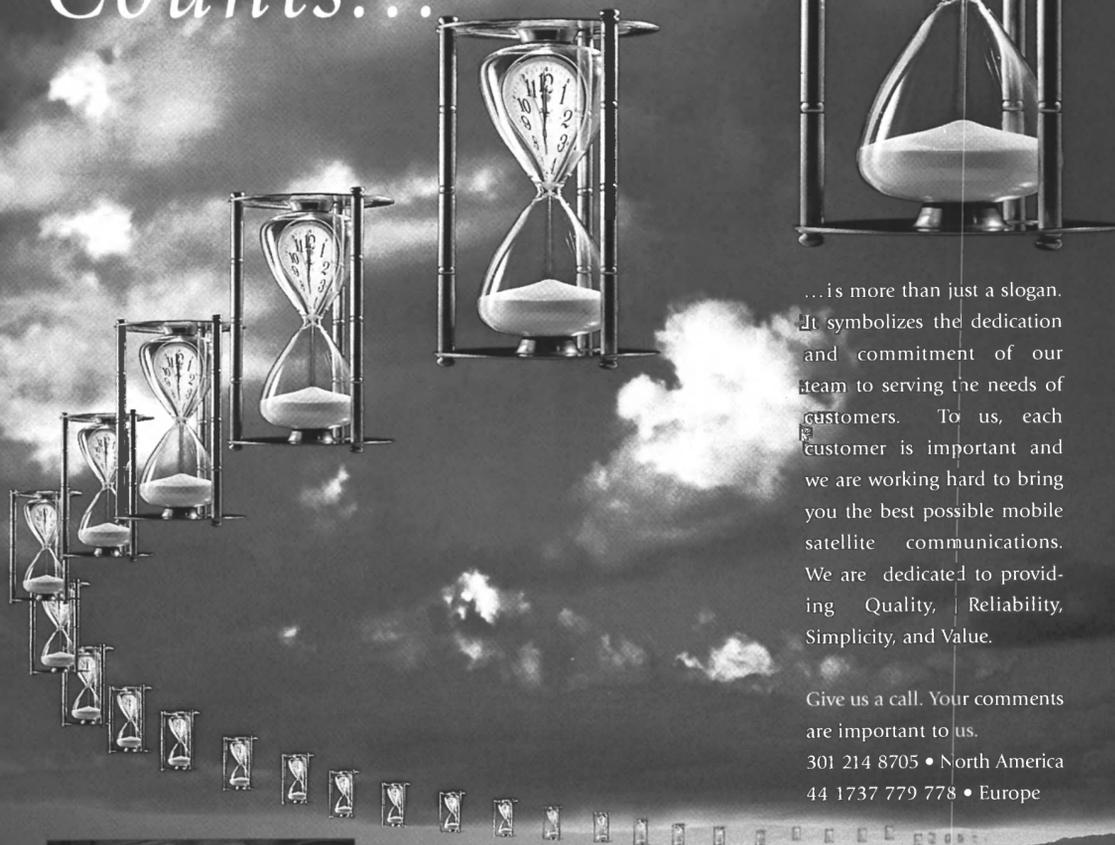
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BULK CARRIER MARKET

Bulk Carrier Construction

Trends positive for Handysize ships

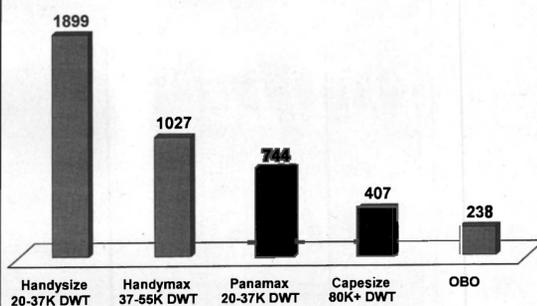
by James R. McCaul, president, IMA Associates, Inc.

The world inventory of dry bulk carriers consists of 4,300 ships which are more than 20,000 dwt. Handysize bulk carriers between 20,000 and 37,000 dwt account for 44 percent of the inventory. Handymax bulk carriers between 37,000 and 55,000 dwt account for another 24 percent of the total. The balance is comprised of Panamax bulk carriers between 55,000 and 80,000 dwt, Capesize ships over 80,000 dwt and combination carriers that move between the liquid and bulk trades.

About 365 bulk carriers are now on order worldwide. The cumulative value of the construction contracts totals \$10.8 billion, with more than 50 percent of this total represented by Panamax and larger ships. Here's how the current backlog breaks down.

Market Segment	# of Ships on Order	Value
Handysize	87	\$1.8
Handymax	116	\$2.9
Panamax	84	\$2.5
Capesize	79	\$2.6
Total	366	\$10.8

THE BULK CARRIER INVENTORY



Source: IMA Associates, *Shipbuilding Industry Outlook*

Major Players

Asian shipyards are clearly the dominant players in dry bulk carrier construction. Japanese shipyards are the major builders of bulk carriers to Panamax size, accounting for 38 percent of bulk carriers between

(continued on page 11)

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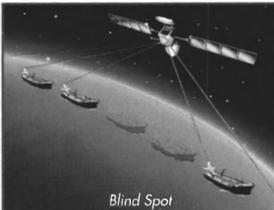
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(continued from page 8)

20,000 and 80,000 dwt on order. Among Japanese yards building bulk carriers are Tsunishi, Oshima, Hitachi and Sumitomo. Korean yards, however, clearly dominate the market for large bulkers, with Daewoo, Hyundai, Hall and Samsung accounting for 39 of the 79 Capesize bulk carriers now on order.

NKK in Japan is also a major player in construction of Capesize bulkers. Several shipyards in China and eastern Europe have established a significant presence in Handysize and Handymax ships, and China Shipbuilding in Taiwan has a relatively strong presence in Capesize bulkers.

Outlook For New Construction

Over the past two years, there has been a significant rise in demand for bulk carriers. The Baltic freight index, which tracks the trend in freight rates, almost doubled between early 1994 and mid-1995.

While the index is now 30 per-

cent off its peak, it is still significantly higher than the level that prevailed in early 1994. However, although long term fundamentals remain very strong, there is concern that the recent spurt of shipbuilding orders could produce a near term surplus in certain sectors of the market, particularly the Capesize sector.

In IMA's recent *Shipbuilding Industry Outlook*, the forecast is that bulk carrier construction will run at the rate of 205 to 265 ships annually over the next four years. This will be a significantly higher figure than that of the preceding three years.

Particular growth will take place in construction of Handysize bulk carriers, as 25 to 30 percent of the existing inventory of these ships is expected to be scrapped over the next five years. Not all sectors, however, will see increased construction. IMA projects a significant downturn in orders for Capesize bulk carriers as a result of the recent overbuilding in this sector.

Executive Changes At BIW

General Dynamics announced management changes at Bath Iron Works (BIW). Effective March 1, BIW President **Duane D. (Buzz) Fitzgerald** became non-employee chairman, and **Allan C. Cameron** became president.

In their new roles, Mr. Fitzgerald will focus on broad industry and public policy issues and their effect on BIW. Mr. Cameron will have full responsibility for the company's operations and activities.

"I recruited **Allan Cameron** to help turn BIW into a more effective and affordable operation, with the expectation that he would eventually succeed me as president," said Mr. Fitzgerald.

Mr. Cameron — who will report to **James E. Turner**, executive vice president of General Dynamics and head of its Marine Group — has been executive vice president and chief operating officer of BIW since 1994. A native of Scotland, he has worked for ship-

yards in Scotland, Canada, and the U.S. — including General Dynamics' Electric Boat facilities.

New Ferry Line Forms

A new maritime company, Catamaran Lines Maritime Company, located in Piraeus, Greece, has formed. During the opening ceremony in the Piraeus offices, General Manager **Athanasios Valsamis** spoke about a super catamaran vessel which will connect Italy and Greece in 1996. As explained by Mr. Valsamis, the vessel will provide superior passenger service, offering speedy, comfortable and safe travel. Satellite telephone booths have been installed onboard the vessel, offering worldwide communications capability. According to company reports, the light-weight, aluminum construction of the company vessel allows travel at 36 knots fully loaded, with crossings between Igomitsa and Brindisi reportedly taking slightly more than three hours.

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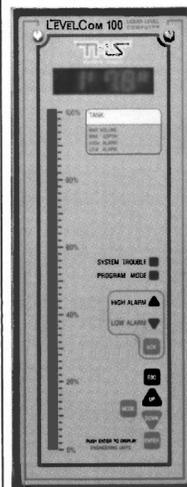
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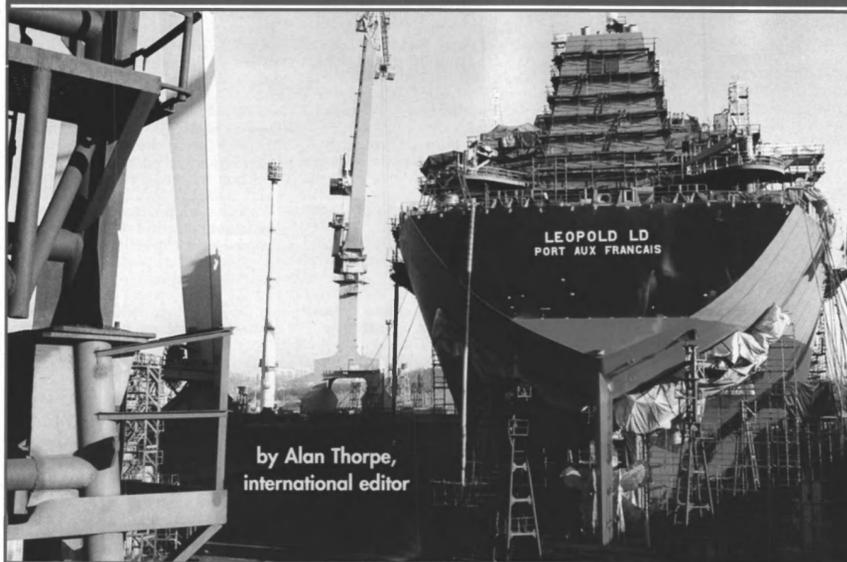
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11

BULK CARRIERS:

A VOLATILE MARKET



by Alan Thorpe,
international editor

A Capesize bulk carrier for France, under construction at Gdynia.

As world trade continues to grow and the bulk shipping surplus in most sectors falls more closely into balance, the components necessary for profitable shipping should definitely be in evidence. As the new year begins, it is timely to reflect on some of the contrasts of the last 12 months to see if the portents for the future are positive.

On the dry bulk side, there is great concern about the orderbook, which is currently running at just under 25 percent of the existing fleet. Capesize owners saw earnings surge from an average of about \$17,000/day in 1994 to more than \$20,000/day in 1995. By the end of the year however, earnings had fallen flat, with rates dipping below \$13,000/day.

However, volatility in rates is generally thought to reflect an approximate balance between supply and demand, where small changes in either exerts considerable influence on price. It would seem, therefore, that the bulk shipping markets are now finely balanced.

South Korea leads the way with bulk carrier newbuildings, with all five large yards involved. As of the end of 1995, Daewoo had orders for 26 ships, with Halla (18), Hanjin (17), Hyundai (30) and Samsung (19) rounding out the market. The seven large shipbuilding

companies in Japan are not far behind in orderbook numbers, with Hitachi (12), IHI (11), Kawasaki (6), Mitsubishi (4), Mitsui (9), NKK (14) and Sumitomo (7), vigorously competing for market share.

Prices in the Far East have remained somewhat static over recent months, with the exception of Capesize vessels, which at a price of approximately \$45 million, are down compared with a price of more than \$50 million paid just two years ago. A good indication of Panamax prices was exhibited recently when Brazil's Docenave paid Korea's Hyundai Heavy Industries \$28.7 million apiece for two 70,000-dwt units.

For smaller sizes (approximately 40,000-dwt units), German owners recently paid \$23 million each for two ships at Guangzhou in mainland China, while Hamburg-Sud paid \$25 million each for two 44,000-dwt units from Brazil's Ishibras-Verolme. Parakou Shipping paid approximately \$29 million each for two Panamax (73,000-dwt) units.

IACS Focuses On Safety

In a move to improve safety of bulk carriers, the International Association of Classification Societies (IACS) implemented significant advances in the safety regime of standard, single-side skin bulk carriers. The new

requirements result from a major study into bulk carrier safety by IACS, which has led the industry with successive measures for a safer fleet.

Encouraged by fewer bulk carrier casualties during 1995, IACS now wants to see improved survivability for the condition most associated with bulk carrier loss — hold flooding while carrying heavy, high density cargo. IACS is proposing higher design in new ships and greater attention to preserving watertight integrity in the existing fleet.

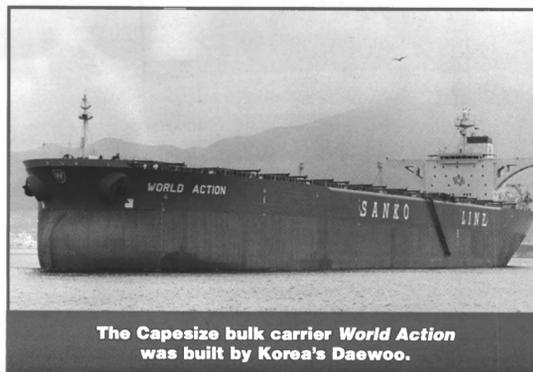
For new bulk carriers 492 ft. (150

m) long and larger, new IACS Unified Requirements cover the longitudinal strength in a hold flooded condition and the strength of watertight corrugated transverse bulkheads. In addition, other Unified Requirements will address the strength of the double bottom structure when a hold is flooded. These requirements will apply to bulk carriers loading not only high density cargoes such as iron ore, but also to any other solid cargo of a bulk density one ton per square meter or more. These new requirements will apply to newbuildings contracted after July 1, 1997.

Also, an urgent review is being carried out of member societies' existing requirements for side shell frames, and also on load strength criteria for hatch covers in order to assess their integrity under extreme loads. This review may identify a need to develop appropriate Unified Requirements. For existing ships, IACS members decided to bring forward that element of the enhanced special survey covering all cargo holds of single side skin bulk carriers, 10 years of age and above, of 492 ft. (150 m) and above, which have not been subject to the five-year enhanced special survey. The date of application was to be announced in February, when the details were scheduled to be worked out. The accelerated surveys will have to be completed within 12 months. All bulk carriers should, therefore, have been through the cargo hold element of the five year, enhanced special survey, probably before the end of 1997 — an advance of about 18 months.

This program will build on the advances made through the introduction of the enhanced survey program (ESP) in 1993. However, IACS considers that it is important that the experience of ESP should be learned and, having sought owners' opinions in 1995, is also reviewing the extent and scope of the annual and intermediate (two/12 years) surveys to establish whether any further enhancements are necessary.

To aid those involved with the survey, inspection and operation of bulk carriers, IACS, building on



The Capesize bulk carrier *World Action* was built by Korea's Daewoo.

BULK CARRIERS: A VOLATILE MARKET

term program concerning pressure measurements aboard a bulk carrier in sea service began on January 21, 1996, as an additional step in the drive to improve the safety of this type of vessel.

The 18-month-long tests, initiated by German classification society Germanischer Lloyd (GL), will be carried out on the 64,000-dwt German-registered bulk carrier *Marine Ranger*, which has been made available for the project by its owner, Egon Oldendorff, Lübeck. The program is being subsidized by the German government through the Federal Ministry of Research and Technology. The 11-year-old ship is in service between Europe and North and South America.

"This is the first time that pressure measurements are being carried out on a bulk carrier in sea service," said Dr. **Hans Joachim Hansen**, the engineer and naval architect in GL's Rules Development Department, who is responsible for the project. "Until now, pressure measurements of this kind have only been carried out on models in ship model testing tanks."

GL will publish the results of the measurements. A total of 11 pressure gauges have been installed at main sections of the hull to measure the pressure on the hull. In addition, in the same areas, four

strain gauges have been installed on the main deck and 32 strain gauges at hold frames and shell, to measure strain/stress behavior due to the motion of the ship at sea.

GL expects to verify load assumptions for sea pressure in the event of heavy pitch and roll, thus improving the strength assessment of local structural details. The four strain gauges on deck are to provide additional knowledge of the wave bending movements of the hull. GL engineers are hopeful that the gauges and data logging and data processing equipment will withstand the rigors of rough seas during the trial period.

Another system available to shipowners involved in the bulk carrying trade is the BMT Smart system, which currently involves some 35 units being installed by leading operators, including British Steel, P&O Bulk Shipping, Wallem Ship Management, China Navigation and Westfleet AS. BMT has also interfaced its stress monitoring system to the vessel loading instrument on the China Navigation Capesize bulk carrier, *Erradale*, providing the ship's crew with a global view of related hull data. The system meets the notation standard for stress monitoring recommended by ABS, DNV and LR.

BMT is also currently managing

and leading a \$3.3 million European Union-funded research program — Ship Hull Integrity Program (SHIP) — which will have important benefits for the next generation of stress monitoring systems. This is intended to integrate and extend current ship monitoring technologies and exploit new system techniques to aid decision making. The ship chosen for the test is British Steel's bulk carrier *British Steel*.

Meanwhile, DNV's work in stress monitoring started with extensive full-scale measurements in the late 1960s supplemented by comprehensive FEM calculations to compare measurements with analysis results. During the 1970s, a series of measurements were carried out during a pioneering Hull Surveillance Project.

In cooperation with Anglo-Eastern Ship Management Ltd., Hong Kong, DNV recently carried out full-scale measurements on a Capesize bulk carrier. The aim was to monitor local and global stress patterns during loading and unloading and when at sea. Measurements were carried out onboard the 170,889-dwt bulk carrier *Mineral Zulu*.

Strain gauges, accelerometers and pressure gauges were installed onboard the ship at 44 locations. The gauges were wired to recording instruments located in

the vessel's superstructure and data was transferred to DNV's head office in Oslo at regular intervals for analysis. Supplementary data on the ship's loading conditions, loading rates/sequences and weather conditions were recorded by the ship's officers. This project played a vital part in developing DNV's classification standards for hull strength monitoring.

BULK CARRIER NEWS continues on page 17.

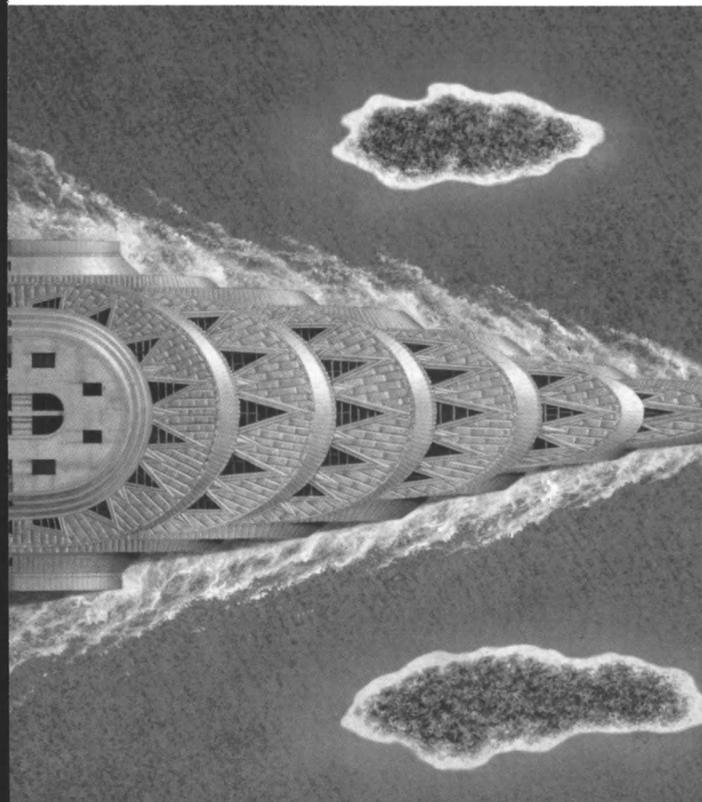
Bulk Carriers on Order In Korea & Japan

South Korea

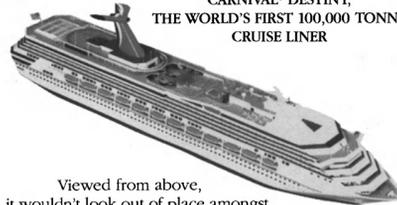
Daewoo	26
Halla	18
Hanjin	17
Hyundai	30
Samsung	19

Japan

Hitachi	12
IHI	11
Kawasaki	6
Mitsubishi	4
Mitsui	9
NKK	14
Sumitomo	7



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Daewoo Bulk Carrier Springs Into "Action"

World Action is a typical Cape-size 150,850-dwt bulk carrier being designed and constructed by Daewoo Heavy Industries Ltd. for World-Wide Shipping agency under the Hong Kong flag. It is intended for the trade of bulk cargoes such as coal and iron ore in bulk, and other normally transported bulk cargoes.

The ship features many advanced systems, and has been classed +1A1, "Bulk Carrier (HC/E)", bulk carrier strengthened for heavy cargoes, hold nos. 2,3,4, and 8 may be empty, EO, ib(+). Steel hatch covers were supplied by MacGregor.

The propulsion power is provided by a B&W 5S70MC diesel with an MCR of 165,000 bhp at 80 rpm. The speed is 16.1 knots with a cruising range 26,000 miles at service speed.

For more information on Daewoo
Circle 13 on Reader Service Card

World Action Particulars

Type:.....150K Bulk Carrier
Builder:.....Daewoo
Owner:.....World-Wide Shipping Agency
Length:.....899 ft. (274 m)
Width:.....148 ft. (45 m)
Draft:.....55.5 ft. (16.9 m)

World Action Equipment List

Main engine:.....Hanjung B&W 5S70MC
Auxiliary engine:.....Yanmar
Propeller:.....Hyundai, FFP
Generator:.....Hyundai
Emergency generator:.....Ssangyong
Coupling:.....Daewoo
Engine controls:.....K.T. Electric
Deck machinery:.....Norwinch
Shafting:.....Daewoo
Bearings:.....JMT
Coatings:.....Dong-Ju Hempel
VHF:.....JRC
Radar:.....Atlas Elektronik
Compass:.....Tokimec
GPS:.....JRC
Autopilot:.....Tokimec
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Satnav:.....JRC
Air conditioning:.....Hi-Pre/Sabroe
Lifeboats:.....Hyundai Precision
Liferafts:.....Viking AS
Davits:.....Dong Woo
Fire fighting system:.....Nam Yang
Desalination:.....Alfa-Laval Desalt
Waste management:.....Electrolux

ABS Classes New Bulkers

American Bureau of Shipping (ABS) classed many significant vessels during the last month of 1995, including several new bulk carriers constructed by companies either Japanese or with Japanese ties. Now included on the ABS roster are:

- *Channel Commander*, a 77,200-gt vessel built for Sea Express Lines by NKK;
- *Maersk Taiian*, a 37,800-gt ship built for Dane Star SA by Hitachi Zosen; and
- *Marcos Dias*, a 25,900-gt vessel built for Chaval Navegacao Ltda. by Ishibras-Verolme.

March, 1996

In other bulk carrier news, the ABS Technical Committee agreed to incorporate SafeHull requirements for bulk carriers 492 ft. (150 m) and greater into the 1996 Rules for Building and Classing Steel Vessels. The strength criteria will become mandatory for the classification of bulk carriers in May, when the 1996 ABS Steel Rules become effective.

For more information on ABS
Circle 12 on Reader Service Card

Sigma Seeks Safety Solution

Following IACS' introduction of the 30-month survey of the ship's mid-body, cargo holds have become one of the most important areas for coating newbuildings and existing tonnage. The new classification rules follow a spate of structural failures due to corrosion over the past few years in bulk carriers.

For the maintenance of the cargo hold and deck areas where mechanically prepared steelwork is involved, and where dry blast cleaning is not possible due to practicability or local pollution laws, Sigma Multimastic can be used to overcome the surface

preparation problem.

The reduced time spent on surface preparation reportedly reduces the overall cost of the application. The coating is reportedly capable of penetrating and binding rust surfaces in conventional cargo holds. The coating is also suitable for vessels carrying grain.

Sigma reports that more than 300 vessels have been treated in the last year with Multimastic. Multimastic is a surface tolerant, VOC-compliant coating specially developed for rusted areas where only surface preparation by power tool or hydrojetting is possible.

For more information from Sigma
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Ingalls Delivers Seventh Destroyer



Ingalls Aegis guided missile destroyers Benfold (foreground) and USS Stethem.

Ingalls Shipbuilding of Pascagoula, Miss., has delivered its seventh Aegis guided missile destroyer, *Benfold* (DDG 65). During its pre-delivery sea trials, DDG 65 rendezvoused in the Gulf of Mexico with Ingalls' sixth Aegis destroyer, USS *Stethem* (DDG 63), as that ship sailed for its October 1995 commissioning site in Port Hueneme, Calif. *Benfold* will be commissioned for U.S. Pacific Fleet duty on March 30, 1996, in its homeport of San Diego, Calif. USS *Stethem* is also homeported in San Diego.

In addition, Ingalls, a division of Litton Industries, has been awarded contracts to build 14 of the 32 ships authorized thus far in the Aegis destroyer program.

For more information on Ingalls
Circle 18 on Reader Service Card

Unitor Wins LNG Turnkey Contract



Mitsui LNG carrier to be supplied with Unitor's Thermal Insulation System.

Unitor, a Norwegian international ship supply specialist, has strengthened its position in the liquefied natural gas carrier (LNG) market by securing a contract to supply the thermal insulation system for a newbuilding in Japan. This contract, valued at approximately \$9.5 million, covers the turnkey delivery of Unitor's patented SG (spiral generated) thermal insulation system, including project management to Hull No. 1432, building at the Chiba works of Japan's Mitsui Engineering & Shipbuilding Co. Hull No. 1432 is a 135,000-sq.-m LNG carrier, under construction for Qatar Liquefied Gas. Thermal insulation work on this vessel's five spherical tanks will start in mid-1997, and is expected to take eight to nine months to complete. This is the second such contract Unitor has secured with Mitsui as of late, and the fourth such project which the Norwegian company has won recently in the LNG carrier mar-

ket.

The other three contracts comprise thermal insulation of a 125,000-sq.-m, four-sphere tank LNG carrier building at Korea's Hyundai Heavy Industries (Hull No. 853), and thermal insulation of two 135,000-sq.-m, five-sphere tank LNG buildings at Mitsui's Chiba Works (Hull Nos. 1411 and 1412). Total contract value for the four turnkey projects is approximately \$37.8 million.

Unitor's Marine Contracting activity has 18 marine insulation specialists located in Japan, Korea and Norway. The company has reportedly secured contracts to supply thermal insulation systems for 21 LNG carriers to date.

For more information on Unitor
Circle 20 on Reader Service Card

American Admiralty Bureau Releases Third Change Sheet

The American Admiralty Bureau has released its third change sheet for its *Lawyer's Guide to the Navigational Rules* (ISBN 1-879778-17-3, published by Marine Education Textbooks, Houma, La.). Change sheet three replaces the previous change sheets, eliminating the need to retain any prior sheets. Change sheets are available free of charge to those who already own the book, in exchange for a self-addressed stamped envelope sent to: American Admiralty Bureau, 4441 Utica St., Metairie, LA 70006. The latest change sheet is included with all new books sold. A companion volume on the legislative history of the navigational rules is scheduled to be released later this year.

For more information
Circle 38 on Reader Service Card

BOATRACS Looks To Europe For Expansion

BOATRACS, Inc. signed a memorandum of understanding with Alcatel QUALCOMM, which is a joint venture company between the Alcatel Group and QUALCOMM, and a QUALCOMM licensee for OmniTRACS in Europe.

This memorandum contemplates BOATRACS operating in Europe under a basis similar to that under which it operates in the U.S.: providing maritime satellite-based communications and tracking of vessels.

"This is a very significant step forward for BOATRACS," said Michael Silverman, chairman and CEO. "The European workboat and fishing boat markets are estimated to be worth substantially greater than those of the U.S."

BOATRACS, based in San Diego, is the distributor in the U.S. marine market of the OmniTRACS Systems, a satellite-based communications and tracking system developed and manufactured by QUALCOMM Inc. The system provides two-way communications between vessels at sea and base stations on land, or with other vessels. It also allows for real-time tracking and monitoring. BOATRACS currently has systems on vessels operating on both coasts, the Gulf of Mexico and in Canada. In addition, BOATRACS has let-

ters of Understanding with QUALCOMM distributors in Mexico and Europe.

Twin Disc To Moke And Market Doen Waterjets

Twin Disc, Inc. signed a licensing agreement with Doen Marine Pty. Ltd. of Melbourne, Australia to manufacture and market Doen's line of axial flow waterjets. The agreement provides for global marketing, with the only exception being the Pacific Rim.

The waterjets will be manufactured in Twin Disc's Racine, Wis. facilities and are complementary to the current marine product line consisting of marine transmissions, Arneson Surface Drives and Power Commander marine electronic propulsion control systems.

The Doen waterjet is transom mounted and readily installed in existing hull configurations without the necessity of cutting the hull at a critical point of flotation. This guarantees the hull's integrity in the event of grounding. The modular design simplifies manufacture and in-water repairs avoiding costly slipping or drydock. There are currently 16 models in the line.

For more information on Twin Disc
Circle 93 on Reader Service Card

RCCL Records Rise In Income

Royal Caribbean Cruises Ltd. (RCCL) reported net income of \$149 million for the year ended December 31, 1995, up from \$136.6 million in 1994. These results include a gain of \$19.2 million from the sale of *Nordic Prince* in 1995.

Revenues increased to \$1.18 billion from \$1.17 billion as a result of a one percent increase in capacity due to the introduction of the 1,800-passenger *Legend of the Seas* in the second quarter. Revenue per available berth remained consistent with 1994.

"I'm pleased that our yields remained consistent with the exceptionally strong performance in 1994 despite the many challenges our industry faced last year principally due to pricing pressure from an increased level of discounting among our competitors," said Richard D. Fain, Royal Caribbean's chairman and CEO.

Between 1996 and 1998, RCCL plans to introduce five new ships with a total additional capacity of 9,700 passengers. Two ships will enter service this year (the 1,800-passenger *Splendour of the Seas* in March and the 1,950-passenger *Grandeur of the Seas* in December 1996), followed by two ships in 1997 (the 2,000-passenger *Rhapsody of the Seas* in April and the 1,950-passenger *Enchantment of the Seas* in September) and one ship in 1998 (the 2,000-passenger *Vision of the Seas* in April).

Texaco, Leviathan Form Pipeline Joint Venture

Texaco Inc. and Leviathan Gas Pipeline Partners, L.P. formed the Poseidon Oil Pipeline Company L.L.C., a 50/50 joint-venture company which will construct, own and operate the Poseidon pipeline.

Poseidon — the first phase of which will be available for use by area producers this month — is designed to service new deepwater and subsalt Central Gulf of Mexico production. To be operated by Texaco, Poseidon will be located in the central Gulf of Mexico and connect to the company's extensive onshore pipeline system at Houma, La.

Leviathan began the construction of the initial phase of Poseidon in August 1995. That phase runs from Garden Banks Block 72 for approximately 117 miles along the edge of the Outer Continental Shelf to Leviathan's platform at Ship Shoal Block 332 before heading to shore at Caillou Island, La.

Ultimately, Poseidon will consist of approximately 200 miles of 16- to 24-in. diameter pipeline capable of delivering up to 400,000 barrels per day of sour crude oil production to multiple market outlets in onshore Louisiana. The pipeline is unique in its position to service deepwater and subsalt discoveries along this route and will extend the pipeline infrastructure into these important new development areas.

U.S. Navy Christens And Launches Trinity-Built Oceanographic Ships

R/V *Atlantis*, the U.S. Navy's newest oceanographic ship, was christened and launched on February 1, 1996, at Halter Marine Inc., of Moss Point, Miss. When completed in the spring of 1997, the 274-ft. (83.5-m) *Atlantis* will be operated by the Woods Hole Oceanographic Institution (WHOI), Woods Hole, Mass., as a general purpose, all-season, oceanographic ship in coastal and deep ocean waters.

John W. Douglas, assistant secretary of the Navy for Research, Development and Acquisition, was the principal speaker. U.S. Assistant Attorney General, Antitrust Division **Anne K. Bingaman**, spouse of Sen. **Jeff Bingaman** (D-NM), was the ship's sponsor. Her matron of honor was Dr. **Suzanne H. Woolsey**, chief operating officer of the National Academy of Sciences and the National Research Council.



ABOVE: Launching of the *Atlantis*. **BELOW:** Mrs. **Anne K. Bingaman** christens *Atlantis*.



Atlantis will be the new support vessel for the manned submersible *Alvin*, also operated by WHOI. The three-person *Alvin* is reportedly the nation's most active deep-diving submersible, with more than 3,000 dives to depths as low as 15,000 ft. (4,572 m). In addition, *Atlantis* will also support unmanned, tethered and autonomous exploration vehicles, including WHOI's own *Jason/Medea* imaging and survey system and its new Autonomous Benthic Explorer, both of which can reportedly reach 98 percent of the world's ocean floor.

Typical scientific missions of *Atlantis* will include physical, chemical and biological oceanography, multi-discipline environmental investigations, ocean engineering, marine acoustics, marine geology and geophysics, in addition to survey tasks such as bathymetry and magnetometry.

Atlantis has a diesel-electric propulsion system with three 715-kW and three 1,500-kW diesel generators integrated to provide power

for propulsion and ship service electrical systems. The ship is equipped with a dynamic positioning system which reportedly provides automated precision track-line and station keeping capability. The system uses data from a global positioning system, an acoustic vertical reference system, the gyro-compass and a wind sensor system to control the ship. Woods Hole will operate the ship under the

University of National Oceanographic Laboratory System (UNOLS), sponsored by the office of the Chief of Naval Research, U.S. Navy.

Halter Marine, Inc., is part of the Trinity Marine Group, Gulfport, Miss., which is owned by Trinity Industries, Inc., Dallas, Texas. The group includes 21 shipyards in Texas, Louisiana, Mississippi, Florida, Tennessee and Missouri.

For more information on Halter Marine Circle 45 on Reader Service Card

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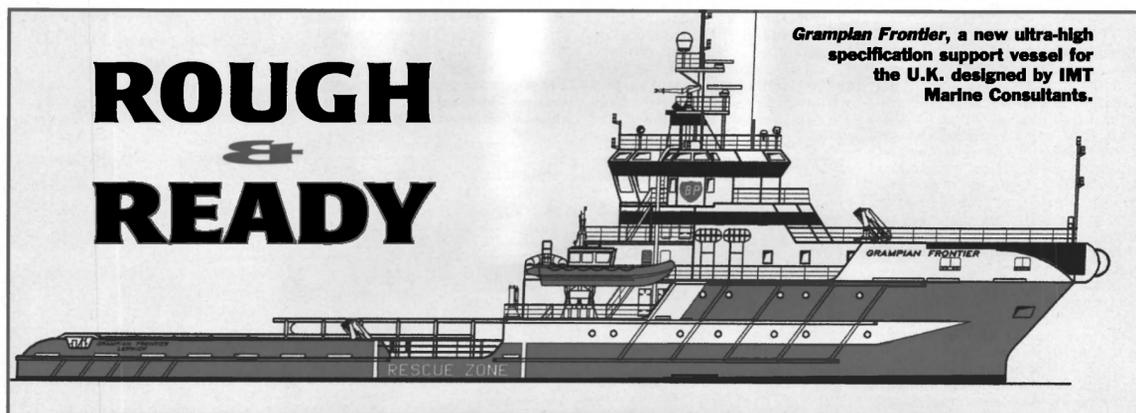
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ROUGH & READY



Grampian Frontier, a new ultra-high specification support vessel for the U.K. designed by IMT Marine Consultants.

The U.K. fleet of stand-by/multi-purpose support ships is to be joined in April 1997 by what is being touted by its designers — IMT Marine Consultants — as the biggest, toughest and most powerful vessel yet.

The keel has already been laid at Yorkshire Drydock, the yard which won the \$16 million construction contract from North Star Shipping of Aberdeen, a subsidiary of the George Craig Group. The 206 x 47.6-ft (62.8 x 14.5-m) *Grampian Frontier* is the first of a new generation of ultra-high specification oil field support vessels.

Developed specifically to withstand the harsh environmental conditions of the Foinaven field west of the Shetland Isles, she will be only the third newbuild to meet the U.K. Code of Practice for this class. The other vessels meeting this standard were either conversions or modifications.

Both of the two previous, custom-built vessels were also built by Yorkshire Drydock to an IMT design, and the new Sea Supporter 1600 class benefits from the experience of its two predecessors. The design is hybrid; while her primary role will be to provide standby cover, *Grampian Frontier* will also carry supplies during normal round trips, give tug/anchor handling assistance by making use of a maximum 110 tons bollard pull, act as an oil spill recovery vessel and offer a potent firefighting force. An additional regular duty will be to assist in positioning the nose of shuttle tankers offloading cargoes of heavy crude from the permanently moored production vessel Petrojarl Foinaven. For this reason, the bow is to be specially strengthened to house a Trellex-Burleigh 69-2-FX type twin revolving wheel pneumatic fender. The vessel will also have the capacity to deploy ROVs for the inspection of subsea oil field equipment.

Propulsion, maneuverability and station keeping equipment for the vessel are being supplied as a package by Ulstein of Norway. A pair of 4,200-hp Bergen diesels turning CP propellers in nozzles are expected to provide a service speed of 12 knots and a sprint speed of 15 knots.

Towing and anchor handling equipment includes a 250-ton-pull twin drum Ulstein Bratvaag towing/anchor handling winch with 4,000-ft. (1,200-m) of 68 mm wire on each drum. Two Effer cranes cover the 98 x 37-ft. (30 x 11.4-m) working deck aft, while a third — for loading stores and tanker assist work — is located on the forecastle deck.

The vessel is to be provided with dispersant spray equipment, as well as tanks and pumps which enable it to collect up to 260-cu.-m. of floating oil with the aid of a skimmer and booms. The fire fighting system — to Lloyd's FIF 1 standard — comprises two 1,200-cu.-m./hr. remote-controlled monitors, which provide a throw of 394 ft. (120 m) at a vertical height of 279 ft. (85 m).

IMT's Neil Patterson is confident in the vessel's ability to be effective in dealing with up to 400 survivors. "In a rescue situation where large numbers are brought onboard, time is of the essence in treating for hypothermia, applying first aid or administering to more seriously injured survivors," he told *MR/EN*. "This aspect of *Grampian Frontier*'s accommodation has been ergonomically designed to optimize the flow of survivors from the reception area, where they are logged and the degree of treatment assessed, to the first aid, intensive treatment, recovery, bed or seating areas."

Rescue equipment includes two 15-person Avon Searider fast rescue craft and a closed-wheelhouse Delta 95 fast rescue boat; all of which are deployed from Caley-

Ocean swell/heave compensated davit systems. A Dacon rescue scoop, scrambling nets and a rescue basket are also included to aid the recovery of survivors from the water.

It has also been considered essential to provide a high standard of crew accommodation. Each member has a private cabin with toilet and shower, and recreational facilities include a sauna, gymnasium, lounge, self-service cafeteria and quiet duty mess room.

Additional cabins are available for charterers and an eight-man ROV support crew. Speaking to *MR/EN*, Yorkshire Drydock's

Managing Director John Dempster said: "We are delighted to get this contract, especially against some very stiff competition from Norwegian yards. The two previous IMT/YDD vessels, *Scott Guardian* and *Trafalgar Guardian*, regularly sail past North Star's premises at Aberdeen and I know they have been impressed. *Grampian Frontier* is being built here at our Lime Street yard, just a few feet from my office window, before being launched sideways into the River Hull and towed the short distance to our fit-out berth at Albert Dock. Completion is scheduled for April 1997."

MacGregor clinches RoRo door orders

The loss of the ferry *Estonia* in the Baltic Sea in September 1994 prompted swift response from those concerned with increasing safety of life at sea. Norway claims the honors for being the first nation in northern Europe to take positive steps towards preventing the occurrence of a similar disaster.

The Norwegian Maritime Directorate (NMD) made a unilateral decision to enforce the fitting of flood control doors to all ferries operating out of Norwegian ports, setting standards with which all operators have to strictly comply by May 1.

Flooding of car decks has been acknowledged as the most dangerous problem for a RoRo vessel and has become the subject of very complex discussions. The north European RoRo safety initiative embraced by the NMD divides the issue into three categories, or lines of defense, namely: preventing water from entering the vehicle deck; improving the survivability of a ship if water enters the vehicle deck; and improving the efficiency of life saving operations.

Flood control doors act as the second line of defense should the bow door fail, or if the hull is breached above the waterline. Ten international ferries operating out of Norway are affected by the flood control door rules and MacGregor's RoRo Safety Group has been successful in clinching the major portion of orders placed.

Group manager Jan-Ove Carlsson said that the company has virtually swept the board by taking orders for 24 of the total of 31 doors required. Color Line has placed a contract for *Color Festival*, *Christian IV* and *Prinsesse Ragnhild*; Scandic Line ordered for its ferry *Bohus*; and Larvik Line for *Peter Wessel*.

Two designs of MacGregor's jalousie type have been selected, with either side-stowing or top-stowing arrangements. Both types comprise a series of lightweight hinged panels which are stowed either above the car deck or to the sides during loading, and can be slid into position without disturbing or delaying the loading process. Doors can be kept open during the entire loading operation until all passengers have left the car deck. The hinged panels are then pulled into position by simple hydraulic or electric winches. Panels for the side-stowing doors run in tracks on the car deck and above it, and when in position, the watertight seals are engaged before the door is fully battened.

(Continued on following page)

EUROPEAN UPDATE

Sweden upgrades with special task craft

A completely new type of special task vessel has been delivered to the Swedish Navy for use by the amphibious battalions. Forming the first step in the current upgrading of Sweden's naval resources, the 39.4-ft. (12-m) long SRC 90E is likely to prove itself among the most versatile in the small craft fleet, reportedly able to move through very shallow waters with outstanding maneuverability.

Sea trials confirmed that the builder, Storebro Royal Cruiser, had succeeded in meeting the project goal — to create a boat with an extremely tight turning circle and very short stopping distances which handled well, even at very high speeds.

The vessels are small but reputed to be extremely rugged, with

hull and superstructure made from a carbon fiber-reinforced vinyl ester sandwich. The keel and hull bottom are reinforced with built-in laminate rubbing protection to enable safe beaching when landing troops. Comfort for the crew has been achieved by placing the

wheelhouse and passenger modules in an elastic suspension system and by the generous use of sound insulation material.

The SRC 90 E is powered by a Scania DSI 14 diesel engine, which develops 625 bhp, coupled to an FF jet 410 hydro jet unit. This propul-

sion package was developed in collaboration with the Swedish Defence Material Administration and reportedly powers the vessel to speeds in excess of 40 knots.

The boat type was specified and designed by **Petter Hakansson**, head of the Ships Directorate at

MacGregor Clinches RoRo Door Deal

(Continued from previous page)

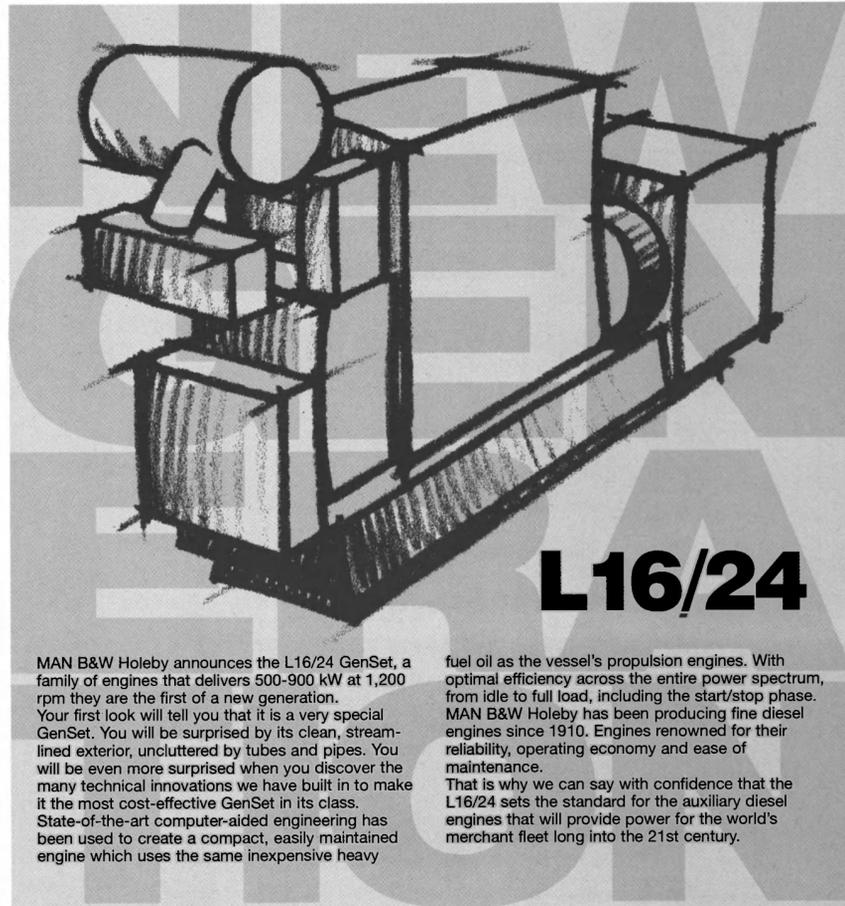
The top-stowing design operates in a similar manner, except the tracks run vertically at the ship's sides or casings. When unloading, the crew opens all doors before passengers are allowed access to the car deck.

The jalousie concept — good for both newbuilds and retrofits — minimizes the loss of cargo space and reduces disturbance to traffic flow during loading and unloading of the car deck. Other features include minimal reductions to free heights and lane widths, and a door structure which can accommodate deflections of the hull and decks. Although now reaping the benefits of substantial contracts, MacGregor should be credited for giving time, effort and money to the research and investigation processes conducted by maritime authorities in Scandinavian countries in the development of new rules. MacGregor participated in the committee which worked out rule proposals for "bow doors and their closing and securing," and assisted the Accident Investigation Commission by carrying out investigations and calculations following the *Estonia* accident. Furthermore, together with Silja Line and Kvaerner Masa-Yard, the company has financed and supported a study of bow door wave pressure impacts carried out by the Technical Research Centre of Finland. In this study, full scale measurements were made on the ferry *Silja Symphony*. Results were analyzed, and the need for bow door requirements, as expressed in the "Nordic rule proposal," was confirmed.

MacGregor fitted a telescopic type flood control door on *Silja Symphony* in 1994. In addition to this, inner bow doors have been delivered and bow reinforcements completed on approximately 35 European RoRo ferries.

For more information from MacGregor Circle 91 on Reader Service Card

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Circle 25 on Reader Service Card

HOLEBY
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EUROPEAN UPDATE



ABOVE: A new type of special task vessel delivered to the Swedish Navy for use by amphibious battalions. **BELOW:** This tug is part of a six-vessel order placed with Astilleros Armon by Union de Remorquage et de Sauvetage.



the Administration. Storebro, which has been building pleasure and workboats from 35 to 75 ft. (10.6 to 22.8 m) for 50 years, sees the new design as being suited to wide ranging marine duties, satisfying the requirements of police, ambulance, coast guard, search and rescue and customs authorities. A total of 39 boats will be built as troop carriers for the Swedish Navy with the final craft in the series due for delivery in December 1997.

Spanish designs suit Belgian and Irish operators

Armon and Zamacona, yards in the Spanish Construnaves group, have boosted their order books with contracts for a total of seven tugs. Armon is building six identical Voith-Schneider tractors for the Belgian operator Union de Remorquage et de Sauvetage (URS) and Zamacona, a slightly shorter, but otherwise very similar vessel for the Cork Harbor Board in Ireland.

Lieven Gevaert, the lead tug in the URS order, was delivered in December. Designed for ship handling, escort and firefighting duties,

and equipped with a 40-ton bollard pull, the 98.4 x 36.1-ft. (30 x 11-m) *Lieven Gevaert* is the first cycloidal thruster tug to join the URS fleet. It is powered by two Deutz SBV-8M-628 diesel engines, each developing 1,500 kW at 900 rpm, powering the type 28 G11/185 Voith units. During trials, the vessel reportedly achieved a free running speed of 13 knots. Equipped to accommodate a crew of eight (the maximum complement needed for coastal duties), the vessel has three double cabins, galley, mess room and shower/toilet facilities at main deck level and an additional two-berth cabin below.

The wheelhouse, which features a central steering console, is well equipped with a Neco autopilot, Skipper echosounder, Magnavox satnav and Sailor SSB/VHF communications system. A remarkably spacious engine room houses three Volvo/Stamford auxiliary generating sets in addition to the main engines, which are fitted with Norgear step-up boxes with built-in clutches. The latter drive two Kvaerner fire pumps which, with a combined output of 2,700-cu.-m./hr., supply deck-mounted firefighting monitors located on a raised platform between the funnels.



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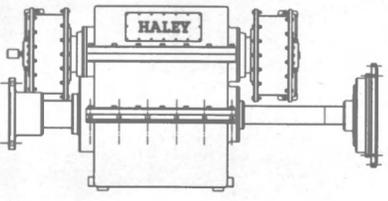
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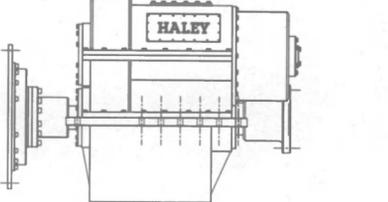
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EUROPEAN UPDATE

Deck equipment includes three fluid/mechanical winches, the aft-located version of which is a two-drum towing type with a 1,640-ft. (500-m) capacity on the top drum and 492-ft. (150-m) on the lower; an anchor handling capstan with a capacity of 2.6 tons at 65 ft./min.; a 50-ton capacity Ferri towing hook; and a Palfinger PK 8000M hydraulic crane.

Safety equipment includes a Kvaerner spray nozzle drenching system fitted around the wheelhouse and superstructure, two eight-man RFD liferafts and a Narwal rigid inflatable MOB.

While Armon makes headway with the second URS tug, Zamacona progresses with its Irish order, and currently estimates a mid-June delivery. The Irish tug is not only similar to those building at Armon, but also resembles VB *Heulua* and VB *Cartagena*, vessels built for a Spanish operator last year.

According to Zamacona's sales manager **Pedro Otazua**, a slight change in the angle of the funnels — to improve visibility from the wheelhouse — is the only notable difference. To be named *Gerry O'Sullivan* (in honor of the late Irish junior minister of marine

who was greatly involved in the project), the vessel is 96.8 x 36.1 ft. (29.5 x 11 m) and will replace an existing, aged tug. Its bollard pull of 43 tons will be slightly greater than that for the Belgian tugs, although free running speed is reduced to 12 knots.

A pair of Wartsila Nohab 25 diesels, rated at 1,490 bhp, will power the Voith Schneider units and a FiFi 1 standard fire fighting system. Cork Harbor Board's Senior Engineer **Tim Murphy** told *MR/EN* that the potential builders were required to meet a 14.8-ft.

(4.5-m) maximum draft restriction. Zamacona's proposal of a 13.1-ft. (4.0-m) draft was a major reason for winning the order. Naval Architect **Gerry Banks** of Clyde Consultants is acting as the Board's consultant and is supervising construction of the tug.

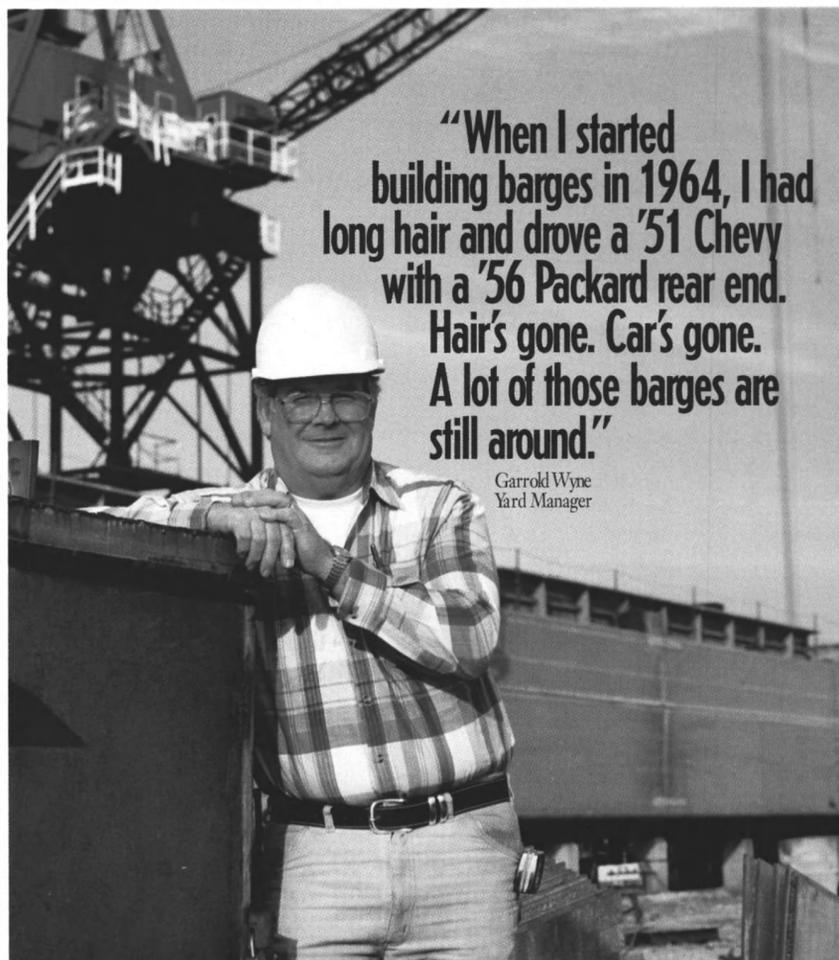
Jamaica Orders Damen Tug



The Damen Stan Tug 2909, *Port Maria*.

Port Maria, the Damen Stan Tug 2909, ordered by the Port Authority of Jamaica, will be used for berthing and other ship handling duties, in addition to fire fighting and pollution control capabilities. The boat is classified by Lloyd's Register of Shipping for unrestricted service. The Stan Tug 2909 has a double chine hull with a transom stern and tapered bow. The transom corners are rounded and the fore-castle reportedly gives sufficient bow height for severe working conditions. *Port Maria* is powered by two eight-cylinder Deutz 8M 628 engines, driving Lips controllable pitch propellers. The reduction gear is a Reintjes type LAF 1561, and the main engines have a total output of 4,000 hp at 900 rpm. This power is reportedly sufficient for a bollard pull of 51 tons and a free running speed of 13.6 knots. *Port Maria* is fitted with Detroit Diesel 6-71N auxiliary engines, driving 112 kVA Stamford generators. A 660-sq.-m. fire fighting pump is driven through a clutchable PTO on one of the gearboxes. The nautical and communications equipment is reportedly in compliance with the Global Maritime Distress and Safety Systems (GMDSS) for Area A#, and the accommodations and insulation used are in compliance with SOLAS requirements.

For more information on Damen
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COMPANY & PEOPLE NEWS

Blackburn Named Manager Of Chevron Chemical Division

Jay Blackburn has been named the new planning and services manager for Chevron Chemical's Oronite Additives Division.



Jay Blackburn

He is responsible for overseeing the information systems, planning and services, marketing communications and administrative support functions

for Oronite's Americas Region. Mr. Blackburn began his career in the company's Olefins Division, and most recently served as market development manager for styrenic polymers in the company's Aromatics Division.

For more information on Chevron
Circle 89 on Reader Service Card

Bahamas Maritime Authority Appoints Director



John Dempster

Tennyson R.G. Wells, minister of transport for the Bahamas, recently announced the appointment of John Dempster as the first director of the newly-formed Bahamas Maritime Authority (BMA). Mr. Dempster, previously the deputy secretary responsible for aviation and shipping in the U.K. Department of Transport, will be BMA's CEO.

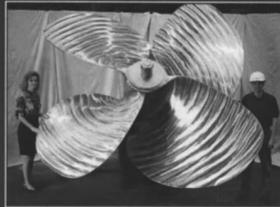
The Bahamian registry's shipping fleet has grown significantly in recent years and now comprises more than 1,000 oceangoing vessels totaling more than 21 million tons. Following an extensive review, the government of the Bahamas moved decisively to strengthen its maritime administration, and last July passed an act to establish the London-based BMA to assume responsibility for all aspects of the administration of the Bahamas registry and the Bahamian flag fleet.

For more information on the
Bahamas Maritime Authority
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Volvo Penta Issued ISO 9000 Certifications



VPA CEO and President Lennart Hammarstrom (right) and Director of Total Quality Thomas Welsh display the company's ISO certification awards.

The engineering and corporate headquarters of Volvo Penta of the Americas, Inc. (VPA), located in Chesapeake, Va., and the gasoline sterndrive manufacturing facility of Volvo Penta Marine Products L.P. (VPMP) in Lexington, Tenn., have reportedly achieved ISO 9000 and ISO 9002 registration, respectively, by Lloyd's Register Quality Assurance Limited.

Volvo Penta of the Americas, Inc. is a wholly-owned subsidiary of AB Volvo Penta, a supplier of marine propulsion systems for numerous applications.

For more information on Volvo Penta
Circle 2 on Reader Service Card

Maritime Reporter/Engineering News

COMPANY & PEOPLE NEWS

Ewing Named COO For Southwest Marine



B. Edward Ewing

Southwest Marine Inc. (SWM), a West Coast network of ship repair facilities headquartered in San Diego, Calif., has appointed **B. Edward Ewing** to the position of chief operating officer. Formerly a corporate vice president of operations for Lockheed Martin and General Dynamics, he will now be responsible for the day-to-day operational activities of SWM's San Diego, San Pedro and Ingleside, Texas, facilities.

For more information on Southwest Marine

Circle 3 on Reader Service Card

Denison Names Klimaszewski Director Of Engineering



Richard A. Klimaszewski

Denison Hydraulics, Inc., Marysville, Ohio, has appointed **Richard A. Klimaszewski** to the position of director of engineering. In this capacity, he will be responsible for the design of the company's piston pumps and controls. Mr. **Klimaszewski** has joined Denison after 29 years with fluid power manufacturer Vickers, Inc., where he held a variety of management positions in engineering, marketing, planning and manufacturing.

Denison manufactures hydraulic components and systems for ships and ordance equipment, as well as for other industrial applications.

For more information on Denison Hydraulics, Inc.

Circle 4 on Reader Service Card

Ward Joins Holman, Fenwick & Willan As Consultant



Ian Ward

Ian Ward has joined the law firm of Holman, Fenwick & Willan (HFW) as a consultant. He recently retired as the head of Lovell White Durrant's Shipping Department — a department which he established in 1976. Welcoming Mr. **Ward** to HFW, Senior Partner Archie Bishop said: "Ian's combination of expertise in maritime law and real knowledge of shipping operations fits in well with our

Admiralty Department — already heavily populated with former seafarers.

"His appointment, together with new partners **Christopher Lockwood** and **Christopher Swart** — who also recently joined us from Lovell White Durrant — has further reinforced our thriving shipping practice."

Burkhill Forms Marine Electronics Consultancy

John Burkhill has announced the formation of his new company, **John Burkhill and Associates, Inc.**, which will provide a variety of consultancy services to shipowners, operators and equipment man-

ufacturers within the international marine electronic equipment market. The company was formed to better respond to the needs of manufacturers and end-users alike in the



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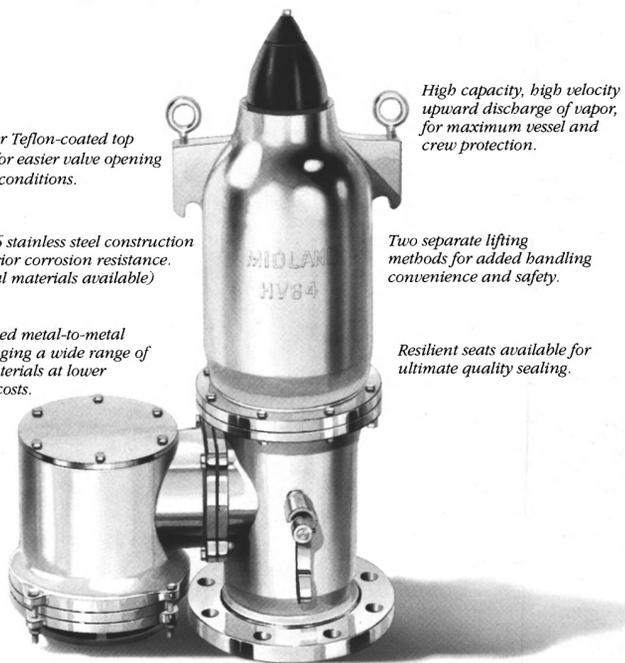
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rapidly changing marine electronics industry. Mr. Burkhill is best known as the creator of the Sperry Marine RASCAR, an innovative marine radar/ARPA product. He brings more than 30 years of product design and management with companies such as Sperry, Decca and Furuno USA, as well as sea-going naval service experience to the new venture.

For more information on
John Burkhill Associates, Inc.
Circle 5 on Reader Service Card

Lithuania Joins IMO

Lithuania has become the 153rd member of the International Maritime Organization (IMO), the United Nations (UN) agency concerned with maritime safety and the prevention of pollution from ships. Lithuania accepted the IMO Convention, which was deposited with the UN in New York, on December 7, 1995.

Rochem Separation Establishes New U.S. Division

Rochem Separation Systems, a wholly owned subsidiary of Rochem A.G. of Geneva, Switzerland, has opened a seawater division in Fairfield, Conn. Lisa Herrin will serve as the sales manager at the new location, and in this capacity, will be responsible for sales and marketing of the company's Disc Tube desalination technology in North America. She will reportedly focus on Rochem's core business which consists of supplying cruise ships and workboats, and providing island hotels with fresh water.

Rochem, involved in the marine chemical business, entered the desalination market in 1982. Since then, the company has reportedly sold more than 1,000 shipsets, and has sold units for *Carnival Destiny* and *Costa Olympia*.

For more information on
Rochem Separation Systems
Circle 7 on Reader Service Card

Celebrity Cruises Names Sacco President

Celebrity Cruises Inc. has announced the appointment of Richard E. Sacco as president and CEO of the company. He previously served as Celebrity's senior vice president of sales and passenger traffic, and was part of the senior management team that launched Celebrity Cruises in 1990. Mr. Sacco is a 25-year veteran of the cruise industry, and has also worked for Costa Cruises and Chandris Fantasy Cruises. He is also a former chairman of the Florida Caribbean Cruise Association, and has held membership on committees in other organizations, namely the Cruise Lines International Association (CLIA), the International Council of Cruise Lines (ICCL), and the Florida Bar Association.

Mr. Sacco succeeds Harry A. Haralambopoulos, who has retired as CEO, but will continue as a director of the board. Albert C. Wallack, senior vice president of marketing and passenger services, will become a consultant to the company after the relocation of Celebrity's marketing department from New York to the company's Miami headquarters.

The December 1995 launch of Celebrity's *Century* will be followed by this year's launch of 73,000-ton *Galaxy*, which will cruise to Alaska.

For more information on Celebrity Cruises
Circle 8 on Reader Service Card

Maritime Reporter/Engineering News

COMPANY & PEOPLE NEWS

Piersall Wins ASTM Award Of Merit

Charles Piersall, Jr., president and CEO of Amadis, Inc., an engineering management firm in West Conshohocken, Pa., has been named a recipient of the American Society for Testing and Materials' (ASTM) 1995 Award of Merit. He was nominated by ASTM's Committee F-25 on Ships and Marine Technology, and was cited for his exceptional leadership and untiring efforts to promote the standardization and education activities of the committee on a national and international scale. ASTM was founded in 1898, and is one of the world's largest voluntary standards development organizations.

Mr. Piersall is a 28-year veteran of the Navy, and during his last assignment as program manager, Amphibious Warfare and Strategic Sealift, earned a Distinguished Service Medal. Since retiring from the Navy ten years ago, he has been a senior corporate officer with professional engineering and architecture firms. Mr. Piersall is also active in standards development activities with the International Organization for Standardization (ISO).

Hella Subsidiary Awarded ISO 9001 Certification

Hella, Inc.'s wholly-owned subsidiary, SAW (Austria), has recently been awarded ISO 9001 certification for successfully meeting all of the criteria and requirements of the International Standard for Quality Management. The ISO 9001 standard recognizes the total quality systems in place at SAW Fahrzeugteile GmbH. & Co.K.G. operations, including activities such as marketing, R&D, manufacturing, distribution and customer service for all OEM and aftermarket products. Hellamarine markets a wide range of lighting products, accessories and safety equipment for the marine OE and aftermarket industries.

For more information on Hella, Inc.
Circle 10 on Reader Service Card

RGF Filtration System Granted USCG Approval

After recent testing was completed by Underwriters Laboratories, the U.S. Coast Guard (USCG) granted approval of RGF Marine Environmental Technologies, Inc.'s Model 4000-C bilge mounted oil/water separator.

This fully automatic oil/water filtration system — constructed of polyethylene, non-ferrous materials — was designed for commercial vessels and reportedly has the capacity to process up to 1,100 gallons of water per day.

The system uses an advanced matrix filtration and coalescing system to remove oil, fuel and other petroleum hydrocarbons from bilge water. It was reported that during the testing of the filtration system, a discharge of 0.78 ppm was maintained, which exceeds the 15.0 ppm USCG standard.

The RGF Environmental Group consists of six companies all dedicated to the design, engineering, manufacturing and sales of pollution prevention equipment.

For more information on RGF
Circle 30 on Reader Service Card

RGF employees display the USCG-approved oil/water separator for commercial vessel applications.



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COMPANY & PEOPLE NEWS

Passenger Vessel Association Elects New Leaders

The Passenger Vessel Association (PVA) elected new leaders at its 25th annual convention and exposition which was held in St. Louis, Mo., in late January. Captain **Alan Circeo**, owner/operator of A.C. Cruise Lines, Boston, Mass., was named president of the association. **K.C. Stanley Lynn**, co-owner of the Kansas City excursion boat company River City U.S.A. — the company that operates the *Missouri River Queen* — was named PVA vice president. **Roger Murphy**, vice president and general manager of the Blue & Gold Fleet, San Francisco, Calif. — in which capacity he is responsible for overseeing the operation of three 400-passenger monohulls, a high speed passenger catamaran and two smaller ferries — was named elected PVA secretary/treasurer.

PVA is a national trade association that represents 500 owners, operators and suppliers of U.S.-flag passenger vessels. PVA members operate dinner and excursion vessels, car and passenger ferries, overnight cruise vessels, eco-

tour vessels and riverboat casinos.

Seaward International Names New CFO

Donald L. Murray has been selected as chief financial officer (CFO) for Seaward International, Inc., a company headquartered in Clearbrook, Va., and involved in plastics and elastomer technology. Previous to accepting this position, Mr. Murray served as vice president and CFO for Rubbermaid. Seaward company reports indicate that his prior experience will be instrumental in helping to position the company for future growth and expansion throughout several industries.

For more information on Seaward International, Inc. Circle 32 on Reader Service Card

International SOS Names Tice CEO

International SOS Assistance Inc., Philadelphia, Pa., one of the largest global medical, personal, security and travel assistance

companies, has named **Gary Tice** to the position of president and CEO. Most recently, Mr. Tice held the position of executive vice president of sales and marketing. In his new capacity, he succeeds former CEO **Abasse Asgaraly**, who has left the company. International SOS Assistance has more than 50 offices worldwide, 15 multi-lingual, 24-hour alarm centers, and reportedly provides assistance to more than 300 Fortune 500 companies, and 40 million customers throughout the world.

For more information on International SOS Circle 90 on Reader Service Card

Nacional Line Adds Vessel To South American Trade Route

Libra Buenos Aires, a fully cellular, 1,400-TEU vessel, has joined Nacional Line's weekly liner service between the U.S. Gulf coast, Brazil and Argentina. The vessel is the largest operating in the line's Gulf service, and offers additional space for cargo and an increased service speed of 19.5 knots. While primarily a contain-

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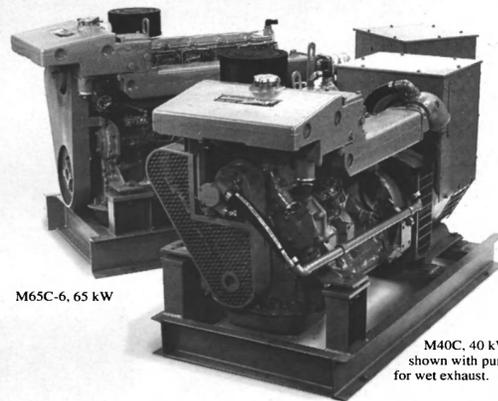
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Maritime Reporter/Engineering News

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NATO

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Circle 29 on Reader Service Card

COMPANY & PEOPLE NEWS

er vessel, *Libra* is also equipped to carry breakbulk cargo. "The success of our Gulf service and the needs of our many customers using this gateway to and from the growing South America markets mandated we upgrade our tonnage," said **Thomas Lloyd**, vice presi-

dent and general manager of Nacional Line.

Metal Products Supplier Announces Merger

Newton R. Reynolds, chair-

man of the board and CEO of Production Supply Company — a New Orleans-based metal products supply company — has announced a merger with Chesapeake Marine Drive Corporation, of Baltimore, Md. The merger will further enhance Production Supply Com-

pany's ability to service and supply metals to the commercial marine market. Chesapeake Marine Drive is a processor of steel Sea Shaft propeller bars in sizes up to 6-in. in diameter, and will continue to operate under the experienced management of **Pat Patterson** and **Marty Loftus**.

Production Supply Co. also recently announced the appointment of **Glen Brown** as a sales associate. Mr. Brown will be located in Nashville, Tenn., and will be responsible for selling hard-to-find aluminum and alloy steel products to the U.S. marine and transport markets, as well as other markets. Production Supply Company serves the marine market by supplying major fabricators and subcontractors with materials, which are reportedly priced competitively and shipped in a timely manner.

For more information on Production Supply Co. Circle 33 on Reader Service Card

Shipping Agency President Retires

After 35 years with U.S. shipping agency Biehl & Company, President **Don Waheed** has retired. Mr. Waheed began with the agency as a sales representative in 1960, and was eventually named president of the agency in 1990. His entire career with Biehl was spent in Houston, Texas, overseeing the operation of the agency's nine port and service offices throughout the U.S.

Mr. Waheed also served several years as the director of Multiport Ship Agencies Network, and recently chaired the organization. In addition, he held leadership positions in other industry organizations, including the West Gulf Maritime Association, the Houston International Seamen's Center, the Houston Customhouse Brokers and Freight Forwarders Association and the Greater Houston Port Bureau.

Apollo Stevedoring/Jason Shipping Recruit Jacomino For Tampa Operations

South Florida shipping executive **Armando Jacomino** has joined Apollo Stevedoring Co., Inc. and affiliate Jason Shipping Co. as manager of Tampa activities. He will be responsible for supervising company operations at the south Florida port, and will be involved in certain sales and marketing activities. The company also announced other changes in leadership at its annual executive meeting held in late 1995. **Timothy D. Baker**, former vice

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Business Briefs

Stolt Parcel Tankers named the first in a series of 10 Innovation Class chemical tankers *M/T Stolt Innovation* at ceremonies at Danyard.

British Columbia Ferry Corp. contracted with Renk for 12 gear units for three new two-hull ferries. Other equipment includes MTU engines and KaMeWa waterjets.

Cegelec Projects Marine Systems Div. won a contract for the supply of a power management system for the Britannia gas condensate field.

Wartsila Diesel received an order from Alabama shipyard to supply complete propulsion systems for the two new chemical tankers under build for Dannebrog Rederi.

GE Marine Systems completed the delivery of an Integrated DC Electric Propulsion and Ship Service Power Distribution System for a vessel being built for Shengli Oil by the Tianjin Xinh Shipyard.

MAN B&W introduced an extension of its popular MC engine program, the super-long-stroke S35MC, S42MC and S46MC engine types.

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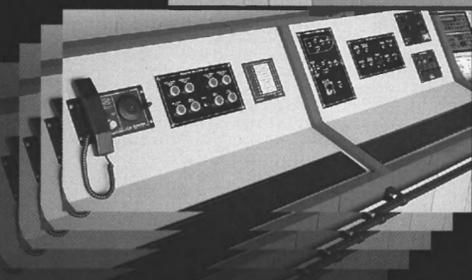
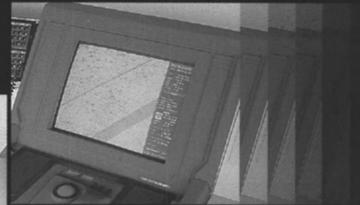
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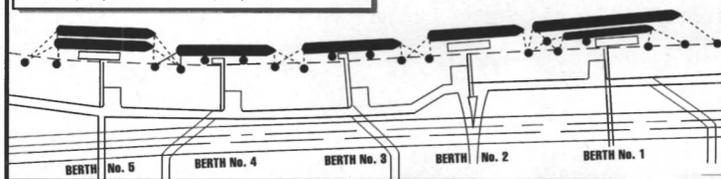
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president in charge of the Tampa division, was named senior vice president and relocated to Port Manatee. **Rick R. Quiroz**, vice president, was reassigned as vice president of stevedoring and terminal services, responsible for all outside activities in all ports. The company provides stevedoring services, ship's agency services, cargo documentation, marketing and sales services for its clients.

Spanish Engineering Consultancy Celebrates Anniversary

In January, Sener, a privately-owned Spanish engineering consultancy, celebrated its 40th anniversary. The company's expertise includes the fields of naval architecture, communications, and marine, chemical, civil and industrial engineering.

Sener's experience in ship design is presently focused in the Senermar division of the company, where designs for newbuildings, large repairs and conversions are carried out. The division reportedly boasts more than 1,000 ships built to its design, and is well known for its Foran CAD/CAM/CAE ship design and production systems, which are licensed in 121 yards in 21 countries.

General design, hull design and production, outfitting design and production, and electrical subsystems have been developed and marketed in this sequence, comprising a completely integrated shipbuilding application.

For more information on Sener
Circle 34 on Reader Service Card

Interior Designer Changes Location

Directions In Design Inc. has moved its location to 1848 Craig Rd., St. Louis, Mo. 63146-4712, tel: (314) 432-2010; fax: (314) 432-5885. The company offers professional interior design services for all kinds of vessel applications.

AIMS Elects Board Of Directors

The American Institute of Merchant Shipping (AIMS) is a national trade association representing 22 U.S.-flag carriers which own or operate more than 10 million deadweight tons of tankers, dry bulk carriers, containerships, and other oceangoing vessels involved in U.S. domestic and international trades. The association recently elected Capt. **Edward W. Knutsen** as chairman of its board of directors for 1996 at its annual membership meeting in Washington, D.C. In the past, Capt. **Knutsen** has served as second in command of the U.S. Merchant Marine Academy at Kings Point, as vice president and general manager of Coastal Corporation's marine subsidiaries and as president of Coscol Marine Corporation.

Other AIMS board members for this year are: **Mark R. Johnson**, general manager, Maersk Inc.; **Leland B. Bishop II**, president, American Overseas Marine Corp.; **Hersh Kohut**, ARCO Marine, Inc.; Capt. **Roger A. Gale**, vice president, BP Oil Shipping Co., U.S.A.; **Brent A. Stienecker**, president, Crowley Marine Services, Inc.; **William J. Lockwood, Jr.**, president, Intercocean Ugland Management Corp.; **James L. Fidler**, president, Sun Transport, Inc.; and Capt. **Earl S. Mealins**, general manager, Marine department, Unocal. AIMS' board of directors also re-elected **Ernest J. Corrado**, president; **Joseph J. Cox**, vice president; and **Roseann A. Pazak**, secretary-treasurer.

AIMS is entering its 28th year of service to the U.S. Merchant Marine.

Maritime Reporter/Engineering News

Oceaneering Converts Mobil Tanker To FPSO

A subsidiary of Oceaneering International, Inc. has purchased the crude oil tanker M.T. *Swift* from Mobil Shipping and Transportation Co. for conversion to a floating, production, storage and offloading (FPSO) system. The FPSO, which has been renamed *Zafiro Producer*, will be installed at Zafiro field offshore Equatorial Guinea to produce oil for Mobil Equatorial Inc., under a contract signed in November 1995. The conversion work is being performed at HAM/PMB Joint Ventures, Inc.'s Pelican Island Facility, Galveston, Texas — the former Todd Shipyard.

The *Zafiro Producer* is a VLCC-class tanker built in 1973 by Mitsui in Japan. At 268,191 dwt, measuring 1,088 ft. in length (331.6 m), it will reportedly be the second largest FPSO vessel in the world, and more than three times the size of Oceaneering's existing 78,000-dwt FPSO *Ocean Producer*. Crude oil storage capacity following conversion will be more than 1,200,000 barrels.

MR/EN Correction

The January issue of *Maritime Reporter* mistakenly stated that Delta Marine Industries, Inc., Seattle, Wash., is a builder of aluminum vessels. In fact, the yard is a composite builder.

EDO Corp. Wins \$6.2 M Minesweeping System Navy Contract

EDO Corporation, College Point, N.Y., announced that its Marine and Aircraft Systems business unit was awarded a \$6.2 million contract by the U.S. Naval Sea Systems Command for the initial production of the MK-105 Mod 4 Magnetic Minesweeping system. The contract represents the first phase of a multi-year program to upgrade all of the MK-105 systems presently operational in the U.S. Navy fleet — a program which signals the first major upgrade to the MK-105. The newly developed system reportedly utilizes new technology to improve reliability, maintainability and operational performance to enable the MK-105s to meet the rapid response mine countermeasure mission well into the next century.

For more information on EDO
Circle 58 on Reader Service Card

Mobil Introduces New Lubricants

Mobil Corporation has introduced four new marine lubricants for medium-speed engines operat-

ing on heavy fuel. The new lubricants — Mobilgard 330, 430, 340 and 440 — have been specially formulated to combat the adverse effects residual fuel contamination has on engine cleanliness and performance. "Residual fuel is a common contaminant of engine oil in medium-speed diesel engines. It often causes excessive piston deposits and sludge in crankcase and camshaft areas ... The

Mobilgard 30 and 40 Series oil are compatible with residual fuel and keep medium-speed diesel engines exceptionally clean and performing better than oils that aren't as technically balanced," said **Alban Eyres**, technical manager, Mobil International Aviation and Marine Sales, Inc.

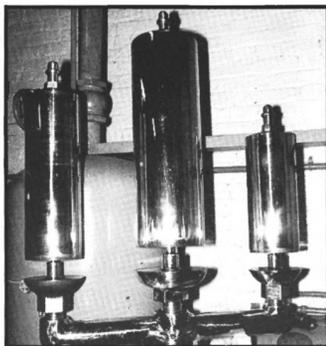
For more information on Mobil
Circle 59 on Reader Service Card

Port Of Portland Gains New Container Services

The Port of Portland has announced the addition of two new ocean container carriers and the expansion of service into Japan from an existing carrier. Taiwan-based Yangming Marine Transport Corp. has entered the Portland market on a weekly basis under a

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Circle 301 on Reader Service Card

space-chartering alliance with "K" Line. Yangming has replaced service previously provided by Mitsui O.S.K. Lines Ltd. under a similar "K" Line space chartering agreement.

The consortium of NYK Line, Neptune Orient Lines Ltd. (NOL) and Hapag-Lloyd AG announced that London-based P&O Containers Ltd. will join its ranks this spring at the Port, allowing all four carriers to share container space on each other's ships. In addition to this vessel sharing agreement, this spring the consortium will add three Japanese ports — Kobe,

Nagoya and Tokyo — to its Far East Express (FEX) service, thereby expanding its transpacific trade coverage area with Portland, Ore.

Bardex Ships Equipment For New Korean Navy Yard

As part of its contract responsibilities for the supply, installation, commissioning and operations training of the dual mode shiplift and transfer systems at the Republic of Korea's new

Pyungtaek Navy base, Bardex Corp. of Goleta, Calif., has shipped the key elements required for operating a 6,000-ton capacity hydraulic chain-operated ship elevator. The shipment included the hydraulic power unit, the hydraulic lift/lower chain jack assemblies, and a revolutionary electronic control system. Bardex's contract is with Samsung Engineering & Construction Co., Ltd., who is under contract to the ROK Navy.

For more information on Bardex
Circle 60 on Reader Service Card

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Admiral Marine Works Opens New Yacht Facility

Admiral Marine Works, Inc. is redefining its potential with the establishment of a yacht newbuilding and repair complex in Port Angeles, Wash., a deepwater harbor located on the north coast of the Olympic peninsula, between the Strait of Juan de Fuca and the Olympic Mountains. The Port of Port Angeles has worked with Admiral to develop a full-service yacht facility, comprising a marine travel lift with a capacity of 330 tons and 200,000-sq.-ft. of storage and yard space. More than 10,000-sq.-ft. of additional space has been allocated for support services, including maintenance, remodeling and all levels of repair work. In addition to this facility, Admiral plans to add 140,000-sq.-ft. of new yacht construction space in May.

For more information on Admiral Marine Works
Circle 64 on Reader Service Card

Polaris Navigation System Installed Aboard Seismic Survey Vessel

A SeisNet integrated navigation system has been installed aboard seismic survey vessel *Mezen*, operated by Continental Geophysical, Calgary. Supplied and installed by U.K. company Polaris International Ltd., the SeisNet system will improve positioning control for 2-D data acquisition and will be developed for multi-streamer 3-D operations. The vessel's first use of SeisNet will be on a 10,000-km project in the Middle East, where the system will provide positioning for 2-D operations, including streamer tracking and navigation processing.

Data is monitored and displayed in real time in the instrument room, with additional status and monitoring displays in the client's office and on the bridge. Further displays can be added as needed, and the navigation processing and chart plotting takes place in a dedicated processing room. *Mezen* is used for surveys in remote and inhospitable areas, including off the Falkland Islands, making the multi-processor approach used by SeisNet, with operational redundancy and easily maintainable components, ideal for operations of this type.

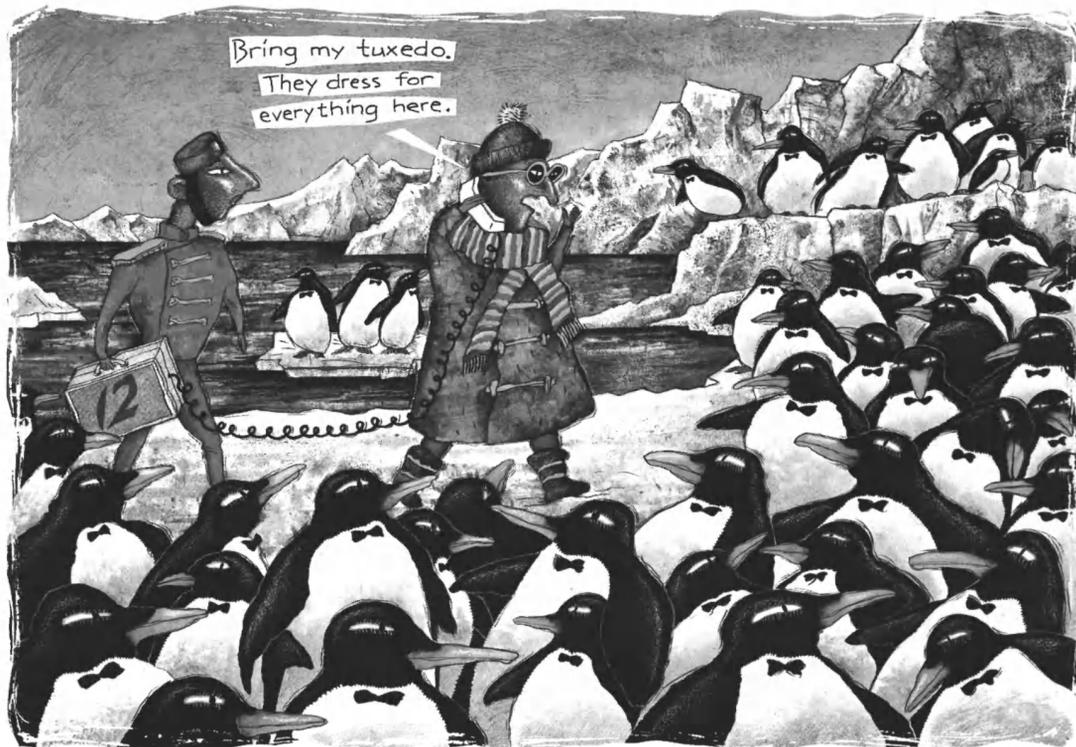
For more information on SeisNet
Circle 65 on Reader Service Card

LR Launches ISM/ISO Certification Scheme

Lloyd's Register (LR) has launched a new certification scheme for ship operators which combines the International Safety Management (ISM) Code and ISO 9002. The new scheme will harmonize the period of validity of both ISM and ISO certificates to five years, with the added benefit of surveillance visits to the offices and ships taking place once every 12 months.

(Continued on page 37)

Maritime Reporter/Engineering News



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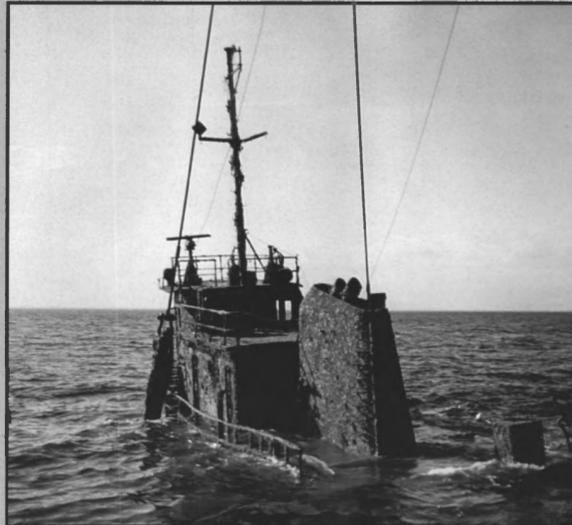
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Cross Offshore Completes McAllister Salvage Project



Cross Offshore and its 500-ton DB *Southern Hercules* was employed for a salvage project in the Atlantic, 70 miles offshore Jacksonville, Fla. McAllister Towing's 94-ft. (29-m) towboat *Marjorie McAllister* sank after fighting Hurricane Opel. The *Southern Hercules* was called for the salvage contract — from its native Gulf Coast waters — and successfully retrieved the 4,000-hp towboat.

While on the scene of the McAllister recovery, Cross President **Dennis Cross** learned that a similar boat — the 95-ft. *MV El Reno Grande* — sank in the general vicinity 18 months earlier. The initial dive report indicated that only marginal damage to a portion of the boat's plating had caused it to sink. The decision was made to raise the vessel. "For 10 years, we have been operating our derrick barge with third party towboats. This salvage project provided us with the opportunity to economically obtain a towboat hull that we could rebuild to our own specifications, and for our own utilization," said Mr. Cross. The vessel is reportedly back in Cross' yard on the Harvey Canal near New Orleans, and refurbishment plans include the installation of twin 3,500-hp Caterpillar engines.

For more information on Cross Offshore
Circle 78 on Reader Service Card

Litton Agrees To Acquire Sperry Marine

Litton Industries Inc. has agreed to acquire Sperry Marine Inc. from an investment partnership led by J.F. Lehman & Co. Total consideration for this transaction, which will be in the form of a stock merger, will be approximately \$160 million. The transaction is subject to review by government regulatory agencies and registration of Litton common stock.

John M. Leonis, Litton's chairman and CEO, said: "Litton is a leading supplier of navigation systems for airborne and ground applications and has a smaller market position in commercial and military marine navigation. The addition of Sperry Marine brings new capabilities in the marine business that are highly complementary to our existing base and that extend our commercial business."

For more information on Litton
Circle 77 on Reader Service Card

agement and aquaculture. It will play a complementary role to established labs at M.I.T., Woods Hole Oceanographic Institution, the Marine Biological Laboratory and Harvard University.

"For example, opportunities exist to adapt complex mathematical models developed at Harvard to improve shipping lanes and ports in environmentally sensitive coastal bays," said Mobil Executive Vice President **Bob McCool**. "And advanced research done for the military in acoustics, optics and lasers is now available for conversion to civilian uses that would greatly aid shipping safety."

The new director of the UMass Dartmouth lab is Dr. **Brian Rothschild**, former chief scientist at the National Oceanographic and Atmospheric Agency. Construction of the new lab is underway, with completion scheduled for May 1997.

Seabulk Acquires Eight More Crewboats

Seabulk Offshore Ltd., a Hvide Marine company, has acquired eight crewboats for offshore energy supply service in the Gulf of Mexico. The acquisition brings the number of crewboats operated by Seabulk Offshore to 34, reportedly making it the third largest crewboat operator in the Gulf.

The eight 80- to 110-ft. crewboats were acquired from Gulf Boat Marine Services, Inc. of Cameron, La., and have been assigned to Seabulk's home port in Lafayette, La.

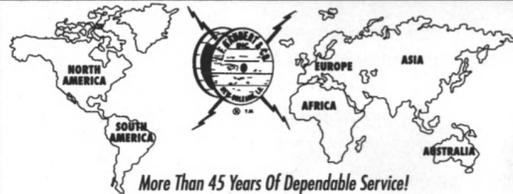
The vessels were built from 1974 through 1980 by Breux Brothers Baycraft and have served in the Gulf of Mexico.

Mobil Presents Grant To Dartmouth Marine Lab

Mobil Foundation, a charitable organization supported by Mobil Corporation, has presented the second installment of a \$100,000 grant to the University of Massachusetts at Dartmouth's new Marine Science and Environmental Technology Lab.

The UMass Dartmouth lab will specialize in developing new technologies and applications in the areas of marine electronics, the maritime industry, fisheries man-

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Maritime Reporter/Engineering News

(Continued from page 34)

The scheme will eliminate duplication of audits as ISM Code certificates will be issued, as appropriate, as part of the ISO auditing process. **John De Rose**, manager of LR's Marine Quality Services department, said: "As more and more ship operators choose to obtain ISO 9002 certification, while the July 1998 deadline for ISM Code certification is approaching fast, a combined certification scheme makes sense for those who want it."

For more information on Lloyd's Register
Circle 66 on Reader Service Card

A-N-D Wins North Sea Contract

Two of the largest ferries sailing the North Sea will be supplied with an advanced fire detection system from A-N-D Group plc. Fairburn Engineering installed the BS100 DYFI system from A-N-D — sole U.K. agent for Autronica — aboard the 31,785-grt sisterships *Nor Sea* and *Nor Sun*. Autronica's system uses a unique filtration method to identify non-critical and actual alarms activated by smoke.

KCS Records New Tribon Orders

Sweden's Kockums Computer Systems (KCS) has reported the increased popularity of its Tribon shipbuilding system. Shipyards using the systems include: Cochin Shipyard of India; Kawasaki Heavy Industries' Kobe and Sakaide yards; and Giurgiu and Tulcea shipyards, both of Romania. New design agent Tribon users include Ghesa of Seville, Spain, and Informatica Navale of Naples, Italy.

Tribon is an integrated design and information system created to fit the shipbuilding industry, with applications that cover all aspects of design, from initial design to production, including advanced features from the assembly phase of ship production and materials control.

For more information on Tribon
Circle 67 on Reader Service Card

Astilleros Españoles Wins Tanker Conversion Contract

Astilleros Espanoles has won a contract for the conversion of a tanker into a floating production, storage and offloading (FPSO) unit. The work will be carried out in the Cadiz yard.

The work is being done for Brazil's Brasoil, which has contracted the Spanish shipyard to convert the 1,049-ft. (320-m) VLCC *Cairo* into the FPSO *Petrobras 32* for operation in the Marlim field, offshore Brazil. The new unit will

be capable of processing 100,000 bpd of oil.

Work to be completed includes: supply and fit of a rig or turret system; installation of a crude processing plant on the deck; and installation of an offloading system.

For more information on
Astilleros Espanoles
Circle 68 on Reader Service Card

USCG Selects Hughes For Surface Search Radar Program

A unit of Hughes Aircraft Co. was awarded a multi-year contract by the U.S. Coast Guard (USCG) for the Surface Search Radar (SSR) program. Hughes Naval and Maritime Systems of Fullerton,

Calif., will design, fabricate and install advanced radar systems aboard the Hamilton class (WHEC-378) high endurance cutters and the Island class (WPB-110) patrol boats. The SSR will increase overall performance and ease of use of the radar suite, allowing information to be integrated with other shipboard display and command and control systems. Hughes is responsible for

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overall system integration of key subsystems. Team members include Furuno and Offshore Systems Ltd.

For more information on Hughes
Circle 69 on Reader Service Card

**Gladding Hearn Delivers Fast Ferry
Gray Lady**

Gray Lady is a new high-speed passenger catamaran built by Gladding-Hearn for year-round service between Hyannis, Mass., and Nantucket Island on Nantucket Sound.

Hy-line Cruises, a division of Hyannis Harbor Tours, took delivery of the 93-ft. (28.3-m) twin-hull vessel in December. Given the rough sea conditions in Nantucket Sound, the new catamaran is deliberately larger than most 89-ft. passenger ferries. The all-aluminum vessel is powered to 30 knots, fully loaded, by twin Detroit Diesel engines, which deliver 1,100 bhp at 2,100 rpm and drive two MJP waterjets. The waterjets reduce the vessel's draft to a shallow 3.28 ft. (1 m).

For more information on Gladding-Hearn
Circle 70 on Reader Service Card

Gray Lady Specifications

Type	Calamaran
Owner	Hyannis Harbor Tours
Builder	Gladding Hearn
Naval architect	Incat Designs
Length	93 ft. (28.3 m)
Depth	9 ft. (2.7 m)
Beam	28 ft. (8.5 m)
Passenger capacity	99
Coast Guard certification	Subchapter T "L"
	coastwise, 20 miles cold water

Gray Lady Equipment

Main engines	Detroit Diesel
Gears	Twin Disc
Waterjets	MJP
Gensets	Northern Lights
Generator control panel	IPS
Hydraulic system	MJP
Radar	Furuno
VHF	Sea
Loran	North Star GPS
Depth sounder	Datamarine
Compass	Ritchie
Loud hailer	Raytheon
Music system	Panasonic
PA/sound system	MAS
Sewage system	Microphor

New Ships Boost Griffin Profits

Durban-based Griffin Shipping ascribes its increased net profit to the acquisition of three modern containerships in 1995. For last year, operating income was nearly 70 percent higher than in 1994. Approximately \$61 million was invested in the three containerships bought during the past year, including *Quadrant Express*, a 1,726-TEU newbuilding. Griffin is a South African stock market-listed shipowning company, with a mixed fleet of 15 dry cargo vessels.

Halotron Receives UL Listing

Halotron Inc. has received an Underwriters Laboratories (UL) listing for a complete line of Buckeye extinguishers containing Halotron I. Halotron is a Halon 1211 replacement.

For more information on
the fire extinguishing products
Circle 71 on Reader Service Card

Maritime Reporter/Engineering News

Datrex Lighting System Specified For QE2

Datrex Inc. supplied its patented Dalite low location lighting system for Cunard's *Queen Elizabeth 2*. It is Cunard's first vessel to undergo the installation, and the fleet-wide contract will fulfill the new IMO resolution A752 (18) for an emergency lighting system on passenger ships.

For more information on Datrex
Circle 72 on Reader Service Card

Triple "Fantasy" At Dalian

On a single day at Dalian Shipyard, the GTR Campbell-designed Fantasy class of multi-purpose cargo vessels celebrated three significant landmarks.

The first-of-class 28,000-dwt *Clipper Fantasy* was completed and delivered to her owners. The second vessel, *Clipper Frontier*, was launched, and the keel for the third was laid. The *Clipper Fantasy* has five 30-ton capacity electro-hydraulic deck cranes, and propulsion is by a Dalian-built MAN B&W 5S50MC.

To date, orders for eight Fantasies have been confirmed. The design is an open, multi-purpose dry cargo, container and self-trimming dry bulk carrier. Grain capacity is 36,300-cu.-m., while a total of 1,130 TEUs can be carried.

For more information on
the Fantasy design
Circle 73 on Reader Service Card

IMO Secretary General Appointed Member Of The Order Of Canada

William A. O'Neil, the secretary-general of the International Maritime Organization (IMO), has been appointed a member of the Order of Canada. The Order was established in 1967 to recognize outstanding achievement, honoring those who have given service to Canada, to their fellow citizens, or to humanity at large.

Bay Fabrication Wins Contract To Lengthen Ferry

Lake Champlain Transportation Co. of Burlington, Vt., awarded the contract to lengthen its double-ended ferry *Grand Isle* to Bay Fabrication Inc. Both Bay Fabrication and Eastern Ship, the new construction branch, are located in Panama City, Fla. The vessel will be lengthened from 137.6 ft. (42 m) to 176 ft. (53.6 m). The vessel was originally built in 1953 by Tampa Marine Co.

Bay Fabrication also appointed **Rudy Sistrunk** as the new general manager of both Bay Fabrication and Eastern Ship. Mr. Sistrunk brings more than 20 years

of industry experience, having formerly served as vessel repair manager for Seacor Marine.

For more information on Bay Fabrication
Circle 76 on Reader Service Card

Pan-United Charts Course For Success

Singapore's Pan-United shipyard

is planning to expand its markets, and **Mok Kim Whang**, general manager, said complex conversions will be a strong factor in pushing aggressively for more work.

The company is looking to expand beyond Singapore within the next three years, and is currently evaluating facilities in China, the Philippines and Indonesia for Capesize vessel handling capabilities.

Productivity will be further enhanced with:

- Expansion of sheltered workshops;
- Upgrading gantry cranes; and
- Concerted efforts to raise the level of productivity of subcontractors.

For more information on
Pan-United Shipyards
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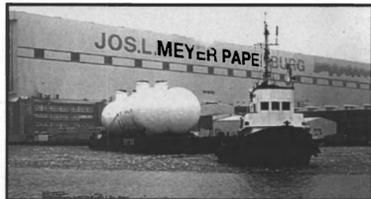
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Meyer Tanks Transported On a Pontoon To Denmark



The two cargo tanks are shown on their delivery to Denmark.

At Meyer Werft of Papenberg, Germany, two voluminous cargo tanks were recently built and loaded onto the barge *EMS Ponton III*, and transported to Denmark. The 1,600-hp tug *EMS Tug* and the barge are owned by the towage company EMS Offshore Service of Leer. The voyage from Papenberg to the Danish port of Fredericia, approximately 300 nautical miles long, reportedly took two days. The cargo tanks have been ordered by shipping company J. Lauritzen AS of Copenhagen, for use in a ship conversion project at the shipyard in Fredericia.

For more information on Meyer Werft
Circle 44 on Reader Service Card

Revenue And Profitability Gains Reported By ASRY

ASRY has reported gains in revenue and profitability in 1995; dock occupancy was high and the volume of steel renewals increased. New ship repair revenue in 1995 rose 10.8 percent compared with the year before — reportedly the highest revenue achieved in any year since the yard opened for business in 1977. The number of vessels repaired in dock and alongside also rose from 104 to 113, while operating profits increased from \$7.3 million to \$8.5 million. Net profit also rose to \$1.5 million, compared with \$80,000 in 1994. Prominent in stemming ves-

sels were owners from Greece, Brazil, Norway and the U.K., in addition to a strong demand from owners based in the Arabian Gulf, Singapore, Germany, Hong Kong, Italy, Sweden, Denmark, Turkey, India and Japan.

In terms of vessel size and type, the number of VLCCs docked has risen, and ASRY's market remains weighted towards crude oil tankers, product, chemical and LPG carriers, but with good demand from bulk carriers and container vessels which reportedly can now be accommodated in the two floating docks added in 1992.

ASRY is reportedly budgeting for further revenue increases in 1996. Among large vessels worked on or booked are *Jahre Pollux* (370,000-



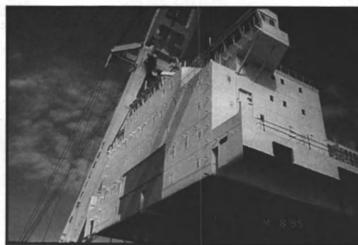
One of several Brazilian vessels repaired at ASRY in 1995.

dwt), *Tarim* (280,964-dwt), *Bartolomeu Dias* (151,000-dwt), *Jacui* (131,662-dwt), *Astro Alpha* (268,288-dwt), *Corona Star* (222,760-dwt), *Bridgeton* (413,842-dwt), and *Galp Funchal* (304,815-dwt).

For more information on ASRY
Circle 42 on Reader Service Card

Smit Continues Danyard Heavy Lifts For Stolt Nielsen Newbuildings

Smit Maritime Contracts has completed the third visit in a series of heavy lifts required for the construction of Stolt Nielsen's series of chemical tankers building at Danyard, Frederikshaven. In January, the Smit sheerlegs *Taklift 4* visited the Danish yard to lift and



The *Taklift 4* is shown lifting the accommodation block for the *Stolt Innovation* into place.

position two stern sections weighing 1,250 and 660 tons for the second of seven newbuildings. The *Taklift 4* was equipped with a 98.4-ft. (30-m) fly-jib for this operation.

The *Taklift 4* has a reported lift capacity of 1,400 tons in the fly-jib. The sheerlegs lifted the stern section from its location onshore and placed it onto a heavy barge. The barge was then rotated to bring the stern into the required position for the second lift into the drydock.

Taklift 4's first visit to Danyard was in June 1995, when two stern sections were positioned for the *Stolt Innovation* — the first of the newbuildings. The sheerlegs' second visit occurred in August when the *Stolt Innovation*'s accommodation block was lifted into position. During the latest visit, the *Taklift 4* also performed heavy lifts at the neighboring Orskov Yard. The "launch lift" of the 560 ton hull of an LPG tanker was followed by the lift of the main engine, superstructure and funnel for the vessel *Helene Sif*. *Taklift 4* also relocated two LPG tanks on the quay at the Orskov facility.

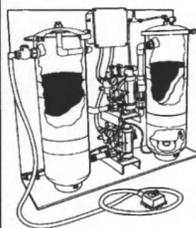
The sheerlegs' next visit to Danyard is scheduled to take place this spring, when the superstructure of the second Stolt Nielsen newbuilding will be lifted into place. Further visits are also planned over the next three years under this contract for ongoing heavy lift assistance.

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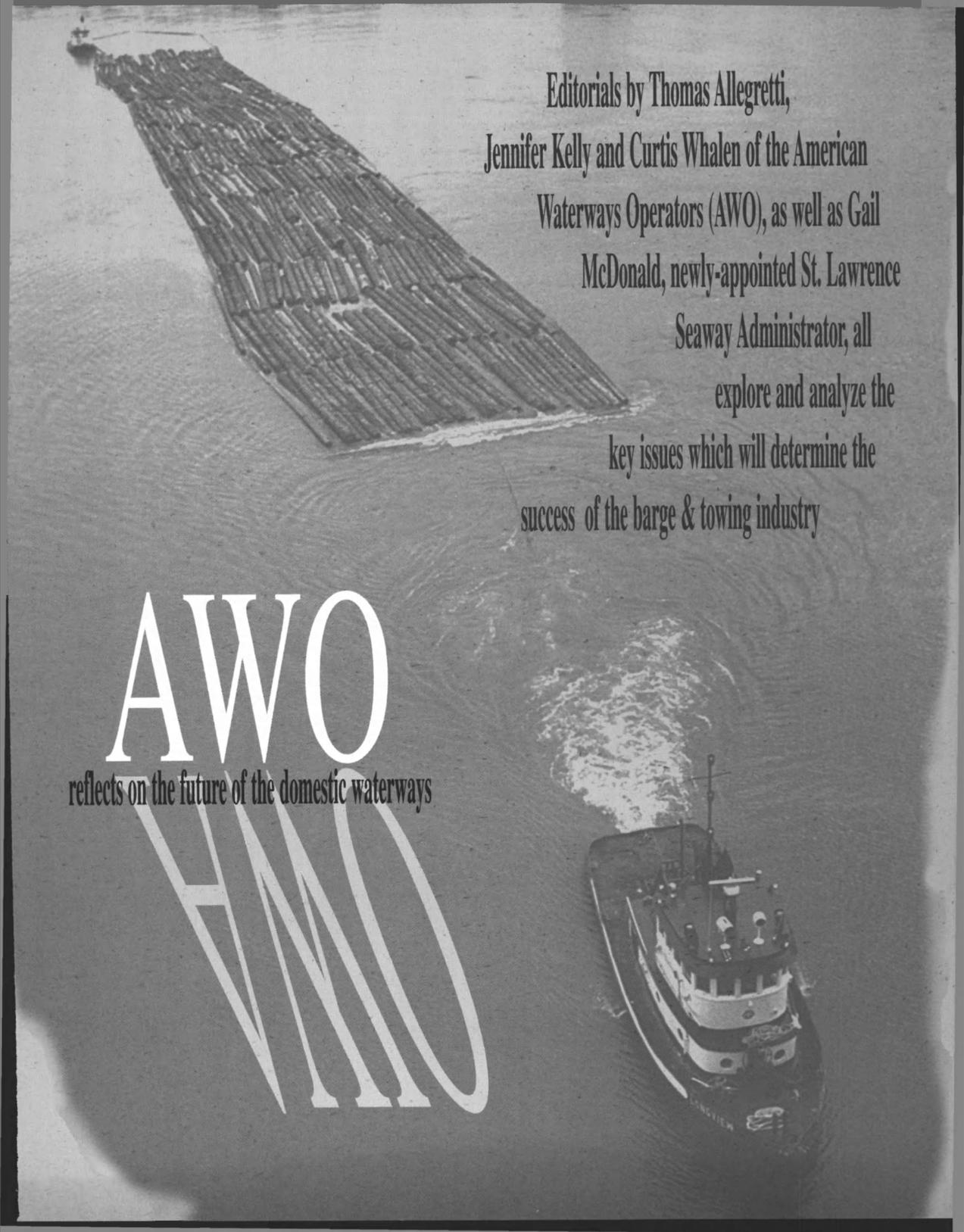
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Maritime Reporter/Engineering News



Editorials by Thomas Allegretti,
Jennifer Kelly and Curtis Whalen of the American
Waterways Operators (AWO), as well as Gail
McDonald, newly-appointed St. Lawrence
Seaway Administrator, all
explore and analyze the
key issues which will determine the
success of the barge & towing industry

AWO
reflects on the future of the domestic waterways

American Waterways Operators

Leading the Way in Marine Safety

By Thomas A. Allegretti, president, American Waterways Operators

The recent oil spill by grounded barge *North Cape* off Rhode Island has jolted the U.S. maritime industry with a painful reminder of the importance of prioritizing safety and environmental protection. One major accident, regardless of cause, always has the potential to wreak tremendous damage; such that we cannot afford to let a second go by without efforts directed at minimizing the risks of spill occurrences. The marine industry must be the first line of defense in terms of promoting safety and environmental protection in America's inland and coastal waterways. While the industry strives to implement effective preventative measures, the barge and towing industry has taken steps forward, putting a system in place distinguishing it as a leader in marine safety.

This strategy is laid out in *AWO 2000*, AWO's five-year strategic plan, which embraces a progressive vision of the barge and towing industry as leading a campaign for higher standards of safety and environmental protection in U.S. ports and waterways. The vision statement which serves as the introduction to the strategic plan sets a clear and ambitious goal; namely that AWO "needs to be a leader in promoting marine safety, working in partnership with its members to promote sound operating principles and practices, and working in partnership with the federal government to implement safety improvements." AWO is currently pursuing a focused, multi-faceted campaign to position the association and its member companies to meet the demands of this new mission and serve as a catalyst for safety improvements, both internally and in concert with the industry's governmental partners.

The Responsible Carrier Program

Unanimously approved by AWO's Board of Directors in December 1994 as a code of practice for member companies, the Responsible Carrier Program embodies the *AWO 2000* vision of the association working in partnership with its members to promote sound operating principles and practices. The

three-part program establishes standards for company management and administration, vessel equipment and inspection, and "human factors" (e.g., crew qualifications and training) which meet or exceed the requirements of federal law and U.S. Coast Guard (USCG) regulations. Reflecting the inclusive process by which it was developed, the program is applicable to all segments of the barge and towing industry, including: inland, coastal, and harbor operators; dry and liquid cargo carriers; and large and small companies alike.

In approving the establishment of the Responsible Carrier Program, AWO set a January 1, 1998 compliance deadline for association members. In April 1995, a comprehensive implementation assistance program designed to give all AWO members the tools needed to adopt the Responsible Carrier Program was unveiled. Scheduled for completion in mid-1996, the assistance program includes five principal components: 1) the development of an implementation timeline identifying the major steps involved in adopting the Responsible Carrier Program, along with suggested milestones designed to ensure full compliance by January 1998; 2) the production and assembly of sample policies and procedures to help member companies develop company-specific policies, as called for in the management and administration section of the program; 3) compilation of a catalogue of in-house and external training resources to help companies identify sources for the crew training required in the human factors section of the program; 4) development of an implementation clearinghouse to facilitate company-to-company information sharing and dialogue; and, 5) development of an implementation checklist to assist companies nearing completion of the implementation process in evaluating compliance with the program and identifying areas in which additional work may be needed.

The recently completed first full year of Responsible Carrier Program implementation also featured the establishment of an internal and external outreach

program designed to promote the new program among both AWO member companies and the barge and towing industry's many constituencies, including Congress, USCG, state and local government agencies, and the industry's shipping customers in the oil, chemical, mining, and agriculture industries. AWO's member communications program included the launching of a regular "Responsible Carrier Program News" feature in the biweekly *AWO Letter* to answer member questions and disseminate information on program implementation.

Late last year, AWO instituted a mechanism for ongoing review, updating and modification of the Responsible Carrier Program. This reflected the board's view that its vote to establish the program was only a starting point in the process of developing sound operating principles and practices. Approaching the goals of *AWO 2000* means making the Responsible Carrier Program a living document, and a continuing process — which will be accomplished by incorporating lessons learned and new technological developments into the program, as well as considering, debating, and adopting suggestions to improve and strengthen the program, maintaining an unwavering focus on the program's underlying objective.

Other AWO Safety Initiatives

While establishment of the Responsible Carrier Program marks the cornerstone of AWO's efforts to promote sound operating principles and practices within its membership, during the past two years, the association has undertaken several other initiatives aimed at advancing the *AWO 2000* vision. Key initiatives included a substantial improvement in the association's effort to gather industry safety statistics, the establishment of a new Interregion Safety Committee, and refinement of a safety advisor system initiated in mid-1994 by AWO sector committees.

AWO's newly-revamped safety statistics program was initiated in 1994 to fulfill two distinct *AWO 2000* directives: 1) to improve

marine safety and environmental protection; and, 2) to help make the association the principal repository and disseminator of industry information and statistics. In 1995, the program produced a 34 percent increase in the number of AWO member companies reporting data on oil and hazardous substance spills, vessel accidents, and personal injuries. This data was formatted to allow individual companies to compare their safety performance against the aggregate results reported by other AWO members. In addition, this information provides the association as a whole with a mechanism for measuring the success of safety initiatives such as the AWO Responsible Carrier Program. Used in conjunction with existing governmental data, the program will also allow AWO members to compare their safety performance with USCG statistics for the industry as a whole.

The AWO Interregion Safety Committee was established in January 1995 to provide a forum for safety and operational professionals from the association's Midwest/Ohio Valley and Southern regions to "enlist support, share information, and work toward the resolution of common safety-related concerns." The early work of the committee focused on three key areas: 1) the role of towing vessel wheelhouse personnel in administering and supervising workplace safety programs; 2) the characteristics of successful safety incentive and awards programs; and, 3) measures taken by AWO member companies to reduce the incidence of back injuries among vessel crew members. The committee also identified "root cause analysis" of personal injury cases as a priority for its future work.

The sector safety advisor system

(Continued on page 51)





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AWO And Federal Agencies

Promoting Partnership And Sound Public Policy

By Jennifer A. Kelly, director, Government Affairs, American Waterways Operators

The continuing debate between Congress and the administration over the proper role of federal regulatory agencies probably won't be settled in any significant sense until after the fall elections — and maybe not even then. In the meantime, the American Waterways Operators has adopted a proactive stance in its advocacy efforts with agencies such as the U.S. Coast Guard (USCG), the Department of Transportation and the Environmental Protection Agency — the primary regulatory agencies which impact the barge and towing industry. In a nutshell, AWO's approach has focused on a dual objective: reducing unnecessary and burdensome regulatory mandates and eliminating governmental impediments to the efficiency of industry operations; and, at the same time, working in partnership with government to eliminate substandard operations and promote needed improvements in marine safety and environmental protection. The objective is to make AWO the "lead advocate" in promoting constructive regulatory changes in a manner that reflects the association's five-year strategic plan, *AWO 2000*, which calls for a more dynamic and creative approach to AWO's dealings with the federal government.

AWO's regulatory strategy, which is premised on the view that both industry and government have a role to play in ensuring marine safety and that government regulation must be judiciously deployed and carefully targeted to address genuine deficiencies, is finding a receptive audience in a USCG increasingly beset by resource constraints and directed by its own strategic business plan to focus on achieving results, not just issuing regulatory mandates. In fact, the administration's "regulatory reinvention" initiative, unveiled by President Clinton in a March 1995 memorandum to the heads of all Executive Branch departments and agencies, reinforced this theme, calling on agencies to "cut obsolete regulations," "reward results, not red tape," and promote freer and more extensive dialogue between government and the regulated community.

AWO's efforts to reduce unnecessary regulatory burdens on the barge and towing industry produced several recent successes. The USCG formally withdrew a proposal in April 1995 to classify coal, wood chips, sawdust, and other bulk solid cargoes carried by barges as "potentially dangerous materials" subject to onerous special handling requirements. AWO had vigorously opposed the agency proposal, arguing that applying the proposed requirements to unmanned barges would impose unnecessary operational, administrative, and economic burdens on barge transporters of coal and other "potentially dangerous" materials, with no meaningful improvement in vessel or crew safety. In withdrawing the proposed rule, the USCG acknowledged the need to better target its regulatory activities, noting that the proposed rule was not a sufficiently high priority to warrant the continued expenditure of agency resources.

AWO's advocacy was also instrumental in convincing the USCG not to pursue a requirement for the installation of devices aimed at detecting leaks from vessel cargo tanks while the vessel is underway. AWO urged the USCG not to require the installation of devices which both industry and USCG studies have shown to be unreliable. The association emphasized the significant technological difficulties associated with tank level or pressure monitoring devices and the flexibility afforded the agency by the Oil Pollution Act of 1990 (OPA 90), which requires the USCG to establish technical standards for such devices but does not mandate their use. Last August, the USCG issued proposed regulations which reflect the approach urged by AWO, and signaled its inclination not to proceed at this time with a requirement that underway leak detection devices be installed on tankers or tank barges.

AWO's efforts to promote operational feasibility and economic soundness in the USCG's implementation of OPA 90 also produced positive results in the form of an agency proposal last November that established interim opera-

tional requirements for large, single-hulled tank barges scheduled for phaseout under the OPA. An earlier proposal, issued in October 1993, called for significant structural modifications, despite the limited lifespan of affected vessels and substantial evidence that the technical assumptions underlying the proposed requirements were flawed. AWO had argued strongly that operational measures, including enhanced crew training and vessel maintenance procedures, would be more cost-effective than structural changes, while at the same time doing more to prevent casualties that might lead to oil spills. In November 1995, the USCG adopted this approach in its revised regulatory proposal.

AWO's recent efforts have also produced notable results in the association's drive to work in partnership with the USCG to upgrade agency guidelines and regulations in several key areas. For example, in April 1995, after nearly 17 years of development, the USCG issued new regulations governing the qualifications and training of tankermen and persons in charge of dangerous liquid or liquefied gas cargo transfers. AWO had strongly advocated the issuance of more rigorous standards for tankermen as a necessary complement to increasingly stringent corporate policies aimed at reducing the incidence of tank barge transfer spills, which overwhelmingly results from human error.

AWO's efforts to promote higher standards of personnel competence among towing vessel crews were also reflected in the issuance of a new USCG Navigation and Vessel Inspection Circular (NVIC), providing voluntary guidance for the training of entry-level barge and towing industry personnel. AWO worked closely with the congressionally authorized Towing Safety Advisory Committee (TSAC) to develop training guidelines designed to enhance workplace safety and reduce the incidence of injuries suffered by towing vessel crews.

Last November, the joint efforts of AWO, TSAC, and the USCG to improve navigational safety on towing vessels culminated in the publication of proposed regulations

establishing more stringent navigation equipment requirements for towing vessels. Both AWO and the USCG had

recommended implementation of the tougher standards in the wake of the September 1993 Amtrak derailment. The proposed rule would establish by regulation the navigation equipment requirements proposed in the 103rd Congress by former House USCG and Navigation Subcommittee Chairman **Billy Tauzin** (R-La.) and current USCG and Maritime Transportation Subcommittee Chairman **Howard Coble** (R-N.C.). This move marked the third in a series of efforts by the USCG and TSAC to upgrade regulatory requirements for towing vessels. This effort to upgrade marine safety standards began in early 1994 with strong support from AWO. Two other elements of the initiative include the publication of more stringent requirements for reporting marine casualties, which was accomplished in late 1994, and new radar training requirements for towing vessel operators. A fourth proposal, calling for more rigorous licensing rules for towing vessel operators, should be issued this spring.

Anticipating Future Challenges

AWO 2000, the association's five-year strategic plan, makes clear that AWO's success in the advocacy arena requires anticipating future issue challenges and working proactively to meet them. In the regulatory arena, the agreement last September to pursue a formal Safety Partnership with the USCG is indicative of the association's efforts to lend a more productive, constructive focus to its involvement with federal agencies. The Safety Partnership calls on USCG and barge and towing industry

(Continued on page 53)



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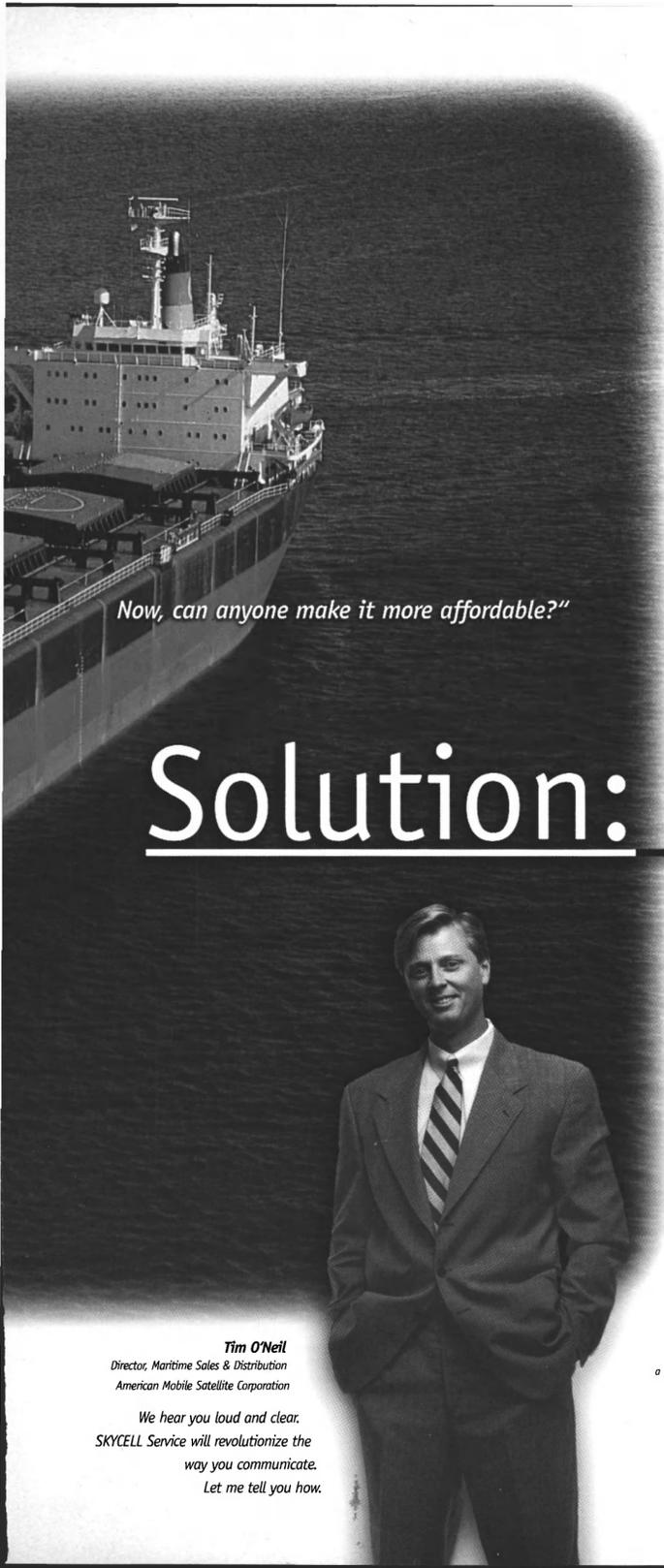
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Taking Legislators To Task

AWO Fights to Ensure Long-Term Health of Barge & Towing Industry

by Curtis Whalen, vice president, Legislative Affairs, American Waterways Operators

The need for effective legislative advocacy — representing the interests of the barge and towing industry to Congress, federal agencies and state and local governments — has been a preeminent concern of the American Waterways Operators (AWO). The timelessness of this concern is underscored by the recent grounding of barge *North Cape* off Rhode Island and the subsequent spill of approximately 800,000 gallons of home heating oil. This incident provides a vivid reminder to the barge and towing industry: if we fail to make the case to Congress regarding the industry's excellent overall safety record, we run the serious risk of being unnecessarily burdened with ineffective and unwarranted laws that are likely to fall short of their goals in terms of improving marine safety and environmental protection.

Thus, in addition to being a leader in marine safety, the barge and towing industry must also be the leading advocate for effective, value adding, common sense legislation which addresses and solves real problems. Beyond this proactive advocacy approach, industry must continue to keep a watchful eye out for other legislative initiatives, such as efforts to abolish the Jones Act, which has enabled a vibrant and cost-effective domestic merchant marine industry.

AWO's five-year strategic plan, *AWO 2000*, clearly defines advocacy as a key element of the association's mission. That plan affirms that "AWO needs to be the lead advocate in promoting sound legislative and regulatory decisions by federal and state governments." Since adopting this plan nearly two years ago, AWO's Board of Directors and association members have stepped forward to meet the challenges of *AWO 2000* amid a changing legislative and industrial landscape.

AWO Outreach Targets Navigation Safety Initiatives

In addition to changes in the House and Senate leadership and majority party status following 1994's national elections, each committee and subcommittee in

Congress elected new chairpersons, staff directors, counsels and key legislative staff. The House Merchant Marine and Fisheries Committee was eliminated, while other committees traditionally important to the industry were restructured, creating a much different legislative process than had existed for several decades. Because this drive to change the role of government complimented AWO's forward-looking agenda, the association was able to immediately initiate targeted advocacy efforts to implement Board-approved issue action plans in several areas.

The first issue concerned completing industry, agency and congressional efforts initiated during the previous Congress to implement a consensus regulatory program aimed at improving navigational safety.

AWO argued that because the Department of Transportation and the U.S. Coast Guard (USCG) were well into the process of implementing the consensus safety regulations called for in the 1994 Towing Vessel Navigational Safety Act legislation, the new Congress had no reason to bog down that process by drafting new legislation and holding new hearings. Maritime leaders in Congress and the USCG concurred with AWO's view that initiating a new legislative inquiry would be counterproductive to enhanced safety, and that the public would be better served by encouraging the USCG and industry to work together to complete the pending safety initiatives.

Taking Action On User Fees

Another issue addressed by AWO in the new Congress was that of increased or expanded commercial navigation user fees for inland waterways. Of particular concern were renewed efforts by the administration through the Office of Management and Budget (OMB) to press the Corps of Engineers to expand the use of existing waterways fuel taxes — which by law already cover 50 percent of construction and rehabilitation expenditures — to include operation and maintenance (O&M) costs as well. Given the emphasis on balancing

the budget, it was clear that the industry's vulnerability on user fees, which in political parlance equate to spending reductions, would most likely arise in this budget process. Therefore, our immediate lobbying focus was directed at the budget writing committees, now chaired by **Pete Domenici** (R-N.M.) and **John Kasich** (R-Ohio) in the Senate and House, respectively.

Unfortunately, our legislative assessment was accurate, and Chairman **Domenici's** initial draft budget proposal did include a \$2.5 billion inland waterways user tax proposal, which would greatly expand the scope and level of the industry's fuel tax. Fortunately, a majority of Budget Committee members objected to the chairman's proposal and it was dropped from the budget bill prior to its formal release. Upon learning of the Senate Budget Committee's strong objections to the user fee proposal, House Budget bill drafters reportedly dropped the proposal from their potential revenue-raising options list.

While the 1995 congressional budget/user fee lobbying skirmishes were taking place, work was also ongoing to prepare for a more decisive user fee battle anticipated for this year. In order to ensure that AWO would have accurate economic data which would justify the current level and authorized uses of the inland waterways fuel tax levy, work was completed in September 1995 on an AWO-National Waterways Conference study by Mercer Management Consulting, Inc., titled *The Importance of Inland and Intracoastal Waterways to State Economies*. This analysis, initiated in 1994, provides information on the impact of the inland waterways on the economies of 26 states. More than 120 national and state waterways, agriculture, mining and other groups have endorsed the study, which will provide empirical data upon which our lobbying/educational efforts will be based.

Tracing The Pattern Of Jones Act Advocacy

Defense of the Jones Act — which

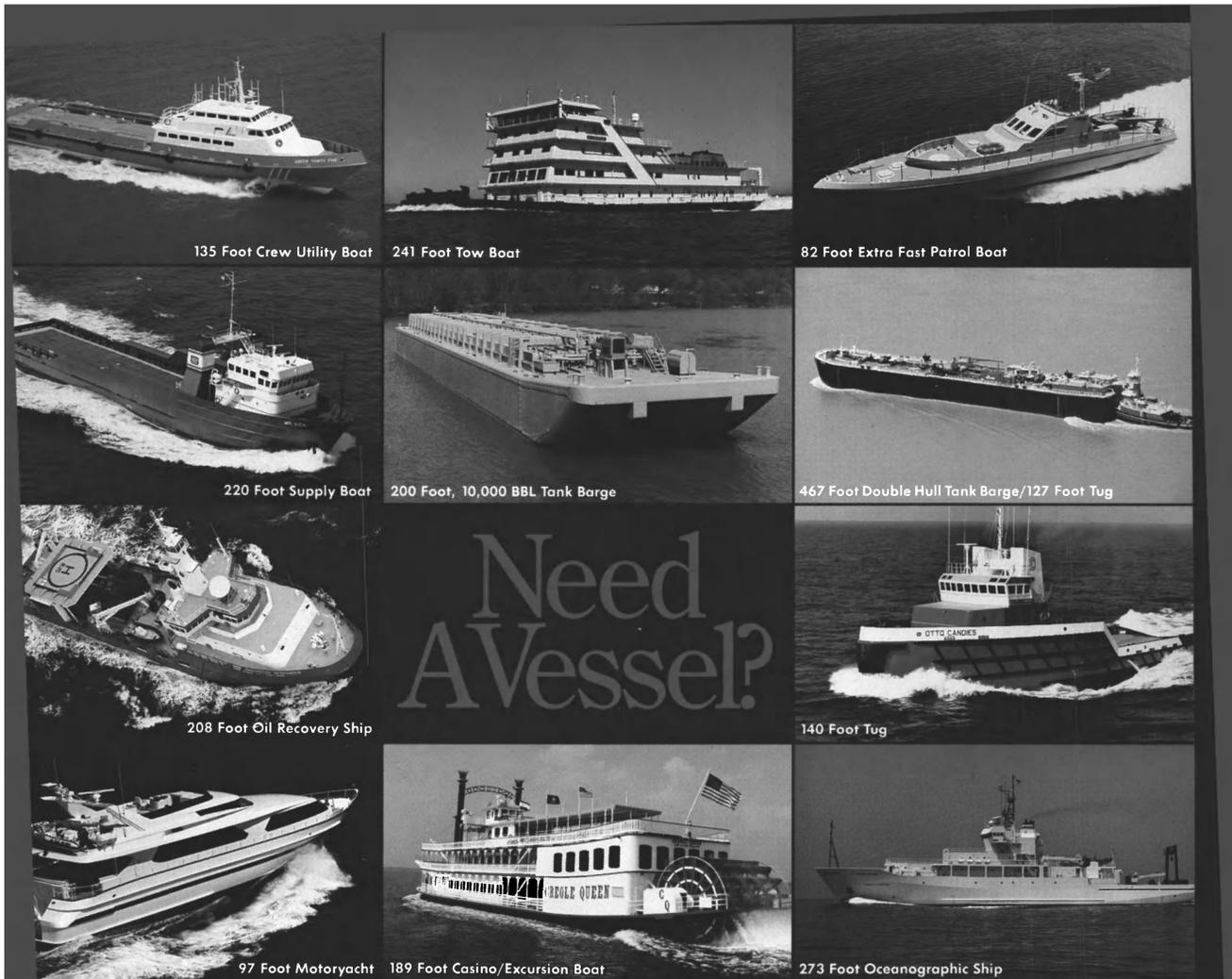
reserves participation in the U.S. coastwise trade to U.S.-owned, U.S.-crewed, and U.S.-built vessels — is a preeminent issue for AWO. Beginning about a year ago, opposition to the Jones Act coalesced with the formation of the anti-Jones Act "Jones Act Reform Coalition," a shipper-backed group led by former Federal Maritime Commissioner **Rob Quartel** which seeks the enactment of legislation that would effectively eliminate U.S. cabotage laws.

AWO and its allies in the domestic maritime industry rallied quickly to meet this emerging challenge, relying heavily on the groundwork laid over the past two years by the AWO-led Jones Act Coalition and Steering Group. Formed in the wake of the 1993 leak of a draft recommendation from the staff of the Vice President's National Performance Review, which called for elimination of the Jones Act and related U.S. cabotage laws, the coalition brought together the barge and towing industry, the passenger vessel industry, Great Lakes carriers, and the domestic tanker, liner, and the offshore supply vessel and dredging industries in a common effort to defend the Jones Act against future challenges from any quarter. In February 1995, the coalition completed work on a comprehensive research project which highlights the economic, environmental, and national security benefits which the Jones Act provides to the nation.

AWO and its coalition partners worked throughout the spring and summer of 1995 to defend the Jones Act in the public policy arena, meeting with and seeking support from key members of Congress, the Secretary of Transportation, industry audi-



(Continued on page 52)



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The Key To Seaway Commercial Vitality

Fleet Renewal Incentives Top Agenda

by Gail C. McDonald, administrator, St. Lawrence Seaway Development Corporation

For more than 35 years, the Great Lakes' St. Lawrence Seaway has served commercial users worldwide with a safe, reliable and efficient transportation route to and from North America. As administrator of the federal agency charged with operating and maintaining the U.S. portion of the Seaway system, I am committed to both increasing the waterway's current global marketshare and preparing it for the challenges that lie ahead. Commercial waterborne transportation continues to be more competitive on a global scale, and now is the critical time to identify areas for improvement in order to guarantee the system's long term prosperity.

In recent years, the Seaway has successfully regained a large percentage of the marketshare it lost in the late 1980s, but more must be done to ensure the waterway's continued trade growth. The 1995 navigation season was a successful one, demonstrating that the binational waterway has re-established itself as a competitive transportation route. Overall, commercial tonnage on the Montreal to Lake Ontario section of the Seaway was 38.7 million metric tons, the third consecutive season of increased trade and the highest level on the waterway since 1988. U.S. international tonnage on the same section of the Seaway has experienced four consecutive years of cargo growth since 1991, from 4.6 million metric tons during the 1995 season — representing a 161 percent increase in U.S. international trade via the Seaway system.

This is an exciting time for the St. Lawrence Seaway and its mar-

itime community, both on and off the waterway, as we prepare to compete on a larger playing field well into the next millennium. There are a number of challenges that will determine the system's success or failure in the next century. I am committed to devoting my time as administrator to expanding business for the Seaway and its users, placing special emphasis on resolving problems associated with the aging Seaway fleet.

Following a surge in the early 1980s, Seaway newbuildings have been virtually non-existent. As a result, the Seaway's fleet of vessels 15 years old and younger has dropped steadily each year. For more than two years, the Corporation has been working to implement a tolls incentive program, offering sizable Seaway toll discounts to owners and operators of newly built or refitted Seaway-size vessels. The idea of an incentive program for new Seaway-size vessels has received full endorsement from many areas of the Seaway maritime community, including the Great Lakes Commission, the Shipping Federation of Canada, organized labor and the U.S. Great Lakes Shipping Association.

In order to get a clearer picture of the fleet situation, the Corporation conducted an analysis — *State of the Seaway Fleet* — and recently released its findings. The purpose of the report was to offer the Seaway maritime community, public policymakers and interested individuals with a breakdown of the Seaway's current sailing fleet, along with projections for its future fleet.

Over the years, there have been

many diverse and inaccurate Seaway fleet statistics floating throughout our industry relating to the percentage of Seaway-capable vessels in the world's fleet. While some calculate the percentage at under 10 percent, this is a far cry from the results of our analysis, which made use of computerized databases provided by some of the world's shipping industry leaders. In general, our study concluded that more than 14,000 vessels, or 40 percent of the world's commercial vessel fleet, can transit the Seaway system.

For our analysis, we broke down that total to include only those vessels that represent Seaway traditional vessel types, including bulk carriers, tweendeckers, RoRos, and tankers. In doing so, we located more than 12,000 vessels — roughly 36 percent of the world's fleet — that qualify as Seaway-sized ships. Unfortunately, this fleet is aging quickly, with approximately three quarters of the 12,000 vessels currently between 10 and 25 years of age. Looking to the future, only 68 vessels of the total fleet over 25,000 dwt will be 20 years of age or less in the year 2005. Something must be done, and quickly.

Throughout the early 1980s and early 1990s, the Seaway lost a large percentage of its international market share, and concurrently, carriers did not see a need to build new vessels to meet decreasing tonnage levels. Due to the recent surge in tonnage over the past few years, the Seaway has regained a large percentage of lost business. Demand has returned, and so must the supply-side of new and available vessels. The future of the Seaway depends on the availabili-

ty of vessels capable of moving goods through the waterway. In order to provide for continued Seaway transit of commercial goods, we

must encourage newbuildings through incentives. In addition to working on incentives for a new vessel fleet, the Corporation is in the midst of refocusing its trade mission and marketing programs to include meetings and presentations targeted at many of Europe's largest carriers and shipbuilders, for the purpose of discussing prospects for refitting and building new, Seaway-sized vessels. I have arrived at the Seaway at an exciting time, and will join the industry-wide effort directed at improving the safety, reliability and efficiency of the Great Lakes Seaway System in order to attract new international customers.



On January 2, Gail C. McDonald was sworn in as Seaway administrator by Transportation Secretary Federico Peña. Ms. McDonald is a former chairwoman and commissioner of the Interstate Commerce Commission (ICC), prior to which she served as associate director of Regulatory Affairs at the Gas Research Institute in Washington, D.C.

The Seaway's Five-Year Plan

According to Seaway representative Kevin O'Malley, the incentive program alluded to by Gail McDonald in her editorial above "was originally set up to be a five-year

program ... offering owners and operators of newly built or refitted vessels with sizable tolls discounts over a five-year period." According to the proposed program mandates,

during the first year, 100 percent toll discounts would be given, followed by an 80 percent discount the second year, and so on, until the end of the five-year period. Work on the pro-

gram is ongoing, and reportedly, negotiations are taking place with the Seaway's Canadian counterparts in order to fashion a program acceptable to all parties.

AMERICAN WATERWAYS OPERATORS: LEADING THE WAY IN MARINE SAFETY

(Continued from page 42)

was initiated in mid-1994 to promote attention to key operational and navigation safety issues within the four AWO sector committees: Inland Liquid; Inland Dry; Coastal; and Harbor Services. The safety advisor, a sector committee member, is responsible for identifying safety issues which may warrant attention from a sector committee and for overseeing the management of those safety issues which the committee elects to pursue.

Sector safety initiatives undertaken in 1995 included a proficiency demonstration checklist for pilothouse personnel, and the examination of inspection and replacement guidelines for towlines made from synthetic materials.

AWO-Coast Guard Safety Partnership

AWO's efforts to promote sound operating principles and practices within the association's membership laid the foundation for the second major safety initiative launched by the association — the formation of the AWO-Coast Guard Safety Partnership in September 1995. The launching of this ground-breaking partnership epitomizes the AWO 2000 vision of the association "working in partnership with the federal government to implement safety improvements." The AWO-USCG partnership, in turn, is based on the premise that both USCG and the barge and towing industry share a common interest in improving marine safety and environmental protection, and that these causes are best served by a cooperative approach that emphasizes dialogue and results-oriented action through partnership.

AWO's Board of Directors unanimously approved the AWO-USCG partnership six months ago. The agreement was formally inaugurated on September 19, 1995, when Rear Admiral James C. Card, chief of the USCG Office of Marine Safety, Security, and Environmental Protection, and I signed a memorandum of understanding committing our respective organizations to a systematic process for cooperation and problem solving. The signing of the agreement capped a nine-month effort by a team of senior USCG and AWO representatives to develop a framework to facilitate cooperative action in the service of improving marine safety and environmental protection.

The structure of the new partnership includes a national Quality Steering Committee (QSC) tasked with identifying safety or environmental issues to be addressed by quality action teams (QATs) comprised of experts from USCG and the barge and towing industry. The first quality action team to emerge from the new partnership was established in November 1995 by the national QSC to study ways to reduce the incidence of crew

fatalities on towing vessels. Likely subjects for future quality action teams include the causes of tank barge transfer spills and measures to reduce the incidence of recreational/commercial vessel accidents.

To facilitate USCG-industry cooperation on regional and local issues, the new partnership also includes a regional and local component. In the fall of 1995, region-

al and local QSC's were established on a pilot basis in AWO's Midwest/Ohio Valley and Southern regions. Similar QSC's are planned for AWO's Atlantic and Pacific regions pending a fall 1996 evaluation of the results of the regional pilots.

A Look Toward the Future

AWO is poised to build on its recent successes and to take a

major new step toward achieving AWO 2000's strategic vision. In September 1995, AWO's Board of Directors approved an association budget for this year which includes funding for a new senior-level staff position to oversee management and coordination of AWO's safety portfolio, including all facets of Responsible Carrier Program implementation. The decision to hire a new staff

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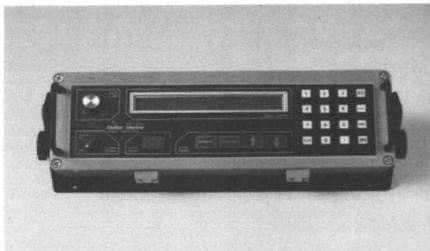
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AMERICAN WATERWAYS OPERATORS: LEADING THE WAY IN MARINE SAFETY

person, the first senior-level job to be added to AWO's headquarters staff in more than a decade, represents a tangible manifestation of the board's commitment to the success of the association's safety program and its goal of completing implementation of the Responsible Carrier Program by the end of 1997.

The addition of the new staff person is intended to enhance the

value which AWO members derive from association membership in at least four ways, namely: 1) by providing coordination and focus to the association's multi-faceted safety program; 2) by providing greater and better targeted assistance to all AWO members in achieving Responsible Carrier Program compliance; 3) by securing recognition and tangible incentives for members achieving

Responsible Carrier Program compliance; and, 4) by ensuring better organizational focus and targeting of core staff expertise on behalf of AWO's members.

Ultimately, the addition of the new staff position is intended to lock in the priority focus on safety and Responsible Carrier Program implementation.

While the recent accident off Rhode Island is frustrating and

disappointing to an industry that has invested energy in safety improvements, it fortunately has not altered AWO's approach to various safety initiatives — if anything, it has reinforced our commitment to carrying these programs forward. The spill is a reminder that safety is achieved through a process of continuous improvement — a process without a terminus.

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Above: 156,000 sq. ft. warehouse for Virginia International Terminals Inc. USA.



Left: 98 x 315 ft. paper store for the Port of Dundee, Scotland.

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Taking Legislators To Task

(Continued from page 48)

ences and shipper groups. In October 1995, the coalition also unveiled a comprehensive rebuttal to the claims put forth by anti-Jones Act forces. The document, titled *The Jones Act: Fact and Fiction*, was sent to every member of the Senate and the House of Representatives under the signatures of six national trade associations representing Jones Act vessel operators and the three principal associations representing the U.S. shipbuilding and repair industry.

The groundwork laid by AWO's Jones Act Coalition and Steering Group provided a solid foundation for the formation of the Maritime Cabotage Task Force, a broad-based coalition established in September 1995 which brought together carrier, shipyard, and maritime and shipyard labor interests, along with Jones Act supporters in other industries and transportation modes to form a united front in defense of the cabotage laws.

In keeping with AWO 2000's emphasis on the value of coalitions as a means of leveraging the association's advocacy resources, AWO is a funding member and an active participant in the task force, which is spearheading the defense of the Jones Act during the ongoing second session of the 104th Congress.

AWO Mission Emphasizes Legislative Advocacy

The ability of AWO to mount an effective response in the wake of the *North Cape* spill in Rhode Island has underscored the value of the industry's overall advocacy program. It is unclear how great an impact this accident will have on the legislative process. AWO has already organized a full-scale outreach effort including meetings with key congressional staff involved in legislative responses to the spill.

These moves are part of AWO's proactive stance on legislative advocacy. And given the unpredictable nature of legislative change in the mid-90s, these broad-based efforts to provide effective, dynamic advocacy are perhaps more vital today than at any time in the association's 51 years of service to its members.

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130 ft. (39 m), and a cutting radius of 21.7 ft. (6.6 m) and 19.7 ft. (6 m), respectively, the units each reclaim at a rate of 1,600 t/h in three-shift operation.

The engineering and the two-finish machined replacement drums — each weighing approximately 120 tons without buckets — are to be supplied by Krupp South Africa (Pty.) Ltd., Randsburg. The bulky units are to be transported from Durban to Antwerp and Rotterdam, respectively, and from there to the German construction sites. Transport — by sea, inland waterway and highways — will be organized by Hamburg-based Nestrans Seehafenspedition GmbH, a member of the Krupp Hoesch International group.

PWH designs and builds drum reclaimers for the homogenization of bulk material.



sun pads, enclosed hood and lavatory

in. This transceiver can reportedly be used for portable operation, and as a base station. Both the main unit and detachable front panel have microphone connectors, enabling the IC-706 to be mounted at the NAV station, while the transceiver is mounted in another location.

In addition to covering all the HF bands with 100 watts of output power, the IC-706 also reportedly covers 144 to 148 MHz at 10 watts. For marine mobile operation, this transceiver offers a continuous tuning receiver from 30 KHz up to 200 MHz. This reportedly includes reception of all marine radio beacons, marine low-frequency NAVTEX, marine weather facsimile, all shortwave bands, television and FM broadcast reception, in addition to continuous

facility's infrastructure, equipment and storage facilities, and including a listing of the port users. Also included are directories of ship operators, intermodal services (equipment leasing and servicing), transportation management and information services and intermodal equipment.

For more information on Jane's
Circle 40 on Reader Service Card

Seattle Interests Win Russian Projects



Trawler/processor Sterkoder, which recently underwent a variety of repairs at the Tippett Marine Services.

Tippett Marine Services, Seattle, Wash., has recently completed its 25th repair contract on a series of Russian-registered ships. The project involved *Sterkoder*, a 213-ft. (65-m) trawler/processor. Over a six-week period, Tippett performed electrical motor and pump repairs, recertified all rigging and accomplished

a variety of miscellaneous repairs on the crew quarters, factory area, hydraulics and boilers. At the same time, main engine overhauls were completed by Trans Marine of Seattle, and drydock work was carried out at Lake Union Drydock.

"We've developed a good rapport with the Russian vessel operators," said Tippett President **Billie Adams**. "...and this milestone is a tribute to the way our people have learned to meet their needs on a repeat basis." **Jerry Tilley**, operations manager for Marine Resources Company International, said: "We've handled 35 Russian vessel refits, and 22 of those have been done at Tippett."

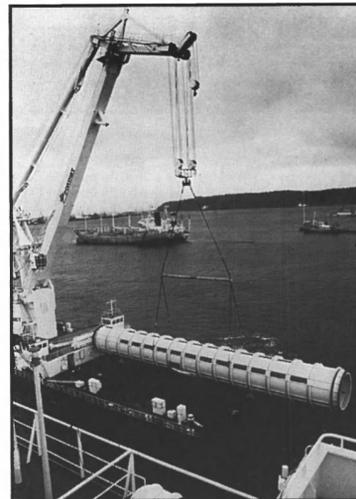
Seattle-based MRCI manages more than 20 Russian-registry fishing vessels, for whom they provide quality control technicians, captains and other crew members. In addition to fishing operations, the company has been involved in joint ventures in timber and electronics in Russia since 1976. According to Tippett, the yard anticipates more similar contracts in the future, for vessel conversions, systems upgrades and voyage repairs. "At this point, we've scheduled four projects for 1996 and are negotiating more," Mr. Adams said.

For more information on Tippett
Circle 79 on Reader Service Card

PWH To Modernize Drum Reclaimers For Raw Feed Coal

The Bad Oeynhausen Service and Erection center of PWH Anlagen und Systeme GmbH, a company of Krupp Fodertechnik GmbH, has reportedly been contracted by Ruhrkohle Bergbau AG to renovate and modernize two

drum reclaimers of virtually identical design. The reclaimers, which homogenize abrasive raw feed coal for further processing, have been in operation in the Auguste Victoria mine in Marl since 1980, and the Lohberg mine in Dinslaken since 1978. With a track gauge of



A floating crane in Durban, South Africa, loads the 120-ton drum for a drum reclaimer used for the homogenization of raw feed coal onto the deck of the Green Cape freighter for shipment to Antwerp, Belgium.

five years there are options allowing for the purchase of up to 1,250 additional units not to exceed \$2.97 million.

Reportedly, Trimble's design will provide Precise Positioning Service (PPS) such as position and velocity. The GVRC will replace existing receivers aboard U.S. and allied surface and submarine Naval Combatants where it will be embedded in the Navigation Sensor System Interface (NAVSSI). The receiver also provides a "blended navigation solution" for use with naval and avionics Inertial Navigation Systems (INS).

"Trimble is pleased to have won the opportunity to supply the U.S. fleet and its allies with the latest dual-frequency PPS technology," said **Bill Walters**, Trimble's military sales manager. "This progressive and innovative procurement has allowed the government to replace early 1980s technology, weighing over 40 lbs. and requiring 12 printed circuit boards, with a com-

plete receiver in a single slot board weighing less than one pound. With Trimble's technology, the Navy will enjoy increased GPS performance in a compact, affordable package.

For more information on Trimble
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New International Service Company Established

George Tsirimokos and a group of worldwide colleagues have established GXT International Ltd., offering comprehensive services to both manufacturers and operators. Mr. **Tsirimokos** is recognized in the marine electronics industry through published articles and papers, and also through the use of his products, advice and services. GXT International's

associates are located in major shipping centers worldwide and include leading navigation, communications and software development experts.

Mr. **Tsirimokos** was most recently executive vice president of International Communications Group and marketing manager for Sperry Marine Inc. At Sperry, he directed the development of satcom programs and the first-ever e-mail over Inmarsat.

For more information on GXT
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Northstar Adds To Line Of Chart Navigators

Northstar has added the 951X and 951XD to its line of Differential GPS systems. The 951X series features Navionics cartography and 1 1/2-channel GPS performance. internal Tide-Track with a 24-hour graphic display of high and low tides, 1,000 waypoint capability, and a 3-D screen which shows up to 30 of the closest operator-entered points. The 951X's 12-channel GPS receiver reportedly locks onto every available satellite. The 951XD adds an internal dual-channel beacon receiver that uses one channel to receive differential corrections, while the other channel searches for other available beacons in the event the first one is lost.



Northstar Differential GPS Chart Plotter.

For more information on Northstar
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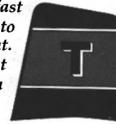
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EMPRESS II

RIVERBOAT GAMING • An industry in flux

by Nina D. Miller, editorial assistant

Once a boon to the Gulf Coast maritime industry and a market extension to the gaming industry, the riverboat gaming market is experiencing growing pains. The problem is primarily a legislative one. Few new jurisdictions are legalizing riverboat gaming and new projects in legalized states are scarce, thus thwarting the market's extension. While interest from the owners remains, state lawmakers have slowed progress to a crawl. However, optimists are seizing what little encouragement there is in the hope that riverboat gaming will once again be a growth market.

When the first casino riverboat set sail in Iowa, the concept of merging the maritime and gaming worlds was embraced by builders and owners alike. "It was a boom to the boat building industry when it was something new to do," said **Ronald Babin**, sales and marketing manager of Avondale Industries, Inc. Many boats were built on the speculation that legalization would spread rapidly and the market would support them. Comparing today's market with that of previous years, **Ed Doherty**, president of Atlantic Marine, said, "As far as building, the pace is considerably slower than it has been in the last five years." **Peter Husta**, marketing manager at Service Marine commented, "It's



Avondale's Council Bluffs riverboat is shown on the icy Missouri River.

hiring at riverboat gaming facilities, a statewide gaming commission consisting of five members would be created to supervise gaming operations, and applicants for gaming licenses would be subject to personal and financial background checks. One license would be awarded per applicant, which authorizes the applicant to operate one riverboat, with each applicant paying a non-refundable application fee of \$250,000.

An earlier version of the bill containing a provision for a state-wide referendum went to the State Government Committee, but was killed by Rep. Paul Clymer (R-Bucks), head of the panel. To avoid

"Riverboat gaming is an industry that will come to Pennsylvania one day. It is in our interest to make that day sooner rather than later."

— Rep. H. William DeWeese

Rep. Clymer's panel, Rep. George Kenny of northeast Philadelphia, removed the state-wide referendum requirement, calling for only a local referendum. Rep. Kenny's backdoor maneuvering does have one glitch. The statewide referendum must be restored to get Governor Tom Ridge's backing. Optimistically, Rep. DeWeese commented, "Riverboat gaming is an industry that will come to Pennsylvania one day. It is in our interest to make that day sooner rather than later."

Beating The Odds

Despite the gloomy outlook, there are some success stories in today's riverboat gaming market. According to Mr. Katz, the Louisiana market has become a billion dollar industry, generating money for the state treasury and jobs for the community. He expressed his belief that if there were a referendum in Louisiana, the voters would favor continuation of gaming boats. Mr. Katz cited examples of successful casino boats: "Flamingo has done a good job of appealing to tourists. Boomtown Belle has done a great job of marketing the west bank of the Mississippi. Treasure Chest has been outstanding at marketing to suburbanites. It has given \$1 million to the community. Bally's Belle of New Orleans has appealed to minority and suburban markets."

Mr. Cooper agreed that, after an analysis of monthly revenue reports of each state, the general health of the market is good. But where is it doing the best? According to Mr. Cooper, the answer is, "Overwhelmingly Illinois because they have four Chicago area boats." Ms. Shepard

commented, "The market is doing well in Missouri. It is highly regulated and very organized." She added that Hilton plans to open one boat in Missouri in the near future.

Additional positive news for the gaming boat market comes from Council Bluffs, Iowa, where, in spite of temperatures as low as -50 degrees F, Ameristar Casino's Council Bluffs, riverboat reported

114,660 patrons during its first 17 days of operation. According to figures reported to the Iowa Racing and Gaming Commission, gross revenue for those days totaled \$3,580,094. The boat is part of Ameristar's \$100 million resort which features architecture reminiscent of a gateway rivertown in the late 1800s, and is scheduled to open this spring.

Other hopeful projects include

Keith Marine's conversion of Hollywood Casino Cruises' former dinner/cruise vessel *Paradise III* into an offshore casino boat. The 150 x 36-ft. (45.7 x 11-m) vessel carries 560 passengers on operations out of the Hollywood/Ft. Lauderdale, Fla. area. *Paradise III* features 370 gaming stations including slot machines, blackjack, craps, roulette and poker tables. Also, Trump Indiana is making an

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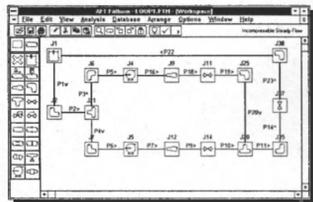
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attempt to boost the market with the construction of the 288 x 74-ft. (87.8 x 22.5-m) gaming boat *Trump Casino*. Scheduled for delivery in April, the vessel will share a landing in Buffington Harbor, Ind. with Barden Development Corp.'s *Majestic Star*. Barden is converting *Majestic Star* — the former *President V*, a 1950s vintage vessel — for use pending construction of a new casino vessel.

Future Trends

With riverboat gaming building slow for now, yards are looking elsewhere to supplement the lost business. For a company with as many facilities and as diverse a portfolio of specialties as Trinity, the slowdown should be considered a mere blip on the balance sheet.

According to Mr. **Husta** of Service Marine, "The prudent shipyard should be looking at maintaining capabilities to meet any remaining (riverboat gaming) market. However, other markets need to be served."

The offshore oil industry seems to be a popular course of action, with yards such as Atlantic Marine, Bollinger and Service Marine making efforts in this sector. According to Mr. **Doherty**, Atlantic Marine will also supplement the casino boat market with ferries and tugboats, while Mr. **Theriot** said that Bollinger will concentrate on liftboats and the international, specialty and military markets. Other auxiliary plans of action include the building of river hopper barges at Avondale. According to Mr. **Walpert** of Trinity, "Niche markets will develop. People that finance gaming boats will want more assurance on profitability. Finance will become a key factor."

Mr. **Husta** offered an in-depth description of Service Marine's plans for the future. "We are returning to our core competency — dinner cruise ships, offshore vessels and capital expansion to put us back in the specialty barge business. We opened a new yard in Bayou Black. The full force of the new yard will be devoted to the offshore market." He added, "We will be launching a special project — the next generation offshore workboat. This is a specialty vessel which provides improved seakeeping capabilities for work in deeper waters with the same or better cargo capacity." Mr. **Husta** also said that Service Marine is preparing to support the drydock market in a way as to not impact gaming revenues, and is planning to build at least two of the four remaining licenses in Indiana.

Although it is far from being the star market it was intended as, all is not lost for riverboat gaming. As long as owners remain optimistic, the demand for casino boats will not die. Legislative developments such as those in Pennsylvania show there is hope for market expansion. And the success of numerous existing boats combined with the promise of those to come keeps the riverboat gaming market alive.

For information on yards mentioned in the story, circle the appropriate number on the Reader Service Card:

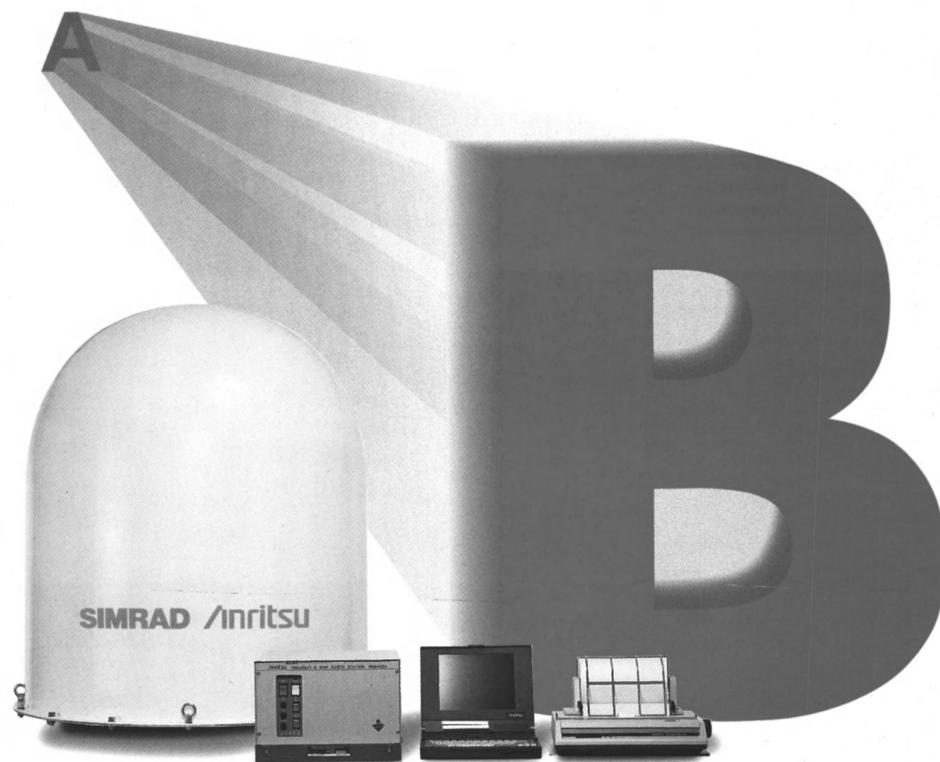
Atlantic Marine	94
Avondale Industries	95
Bollinger	96
Service Marine	97
Trinity Marine	98

STAY IN TUNE WITH GAMING LEGISLATION

The Transportation Institute offers information germane to this topic in its Guide To Riverboat And Shipboard Gaming Legislation. To contact the Institute, write to: Transportation Institute, 5201 Auth Way, Camp Springs, Md. 20746.

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Marine Navigation/Communications Equipment & Services Directory

The following information is a partial directory of marine electronics manufacturers, compiled by the editors of *Maritime Reporter*. Each company's product offerings are listed with its directory information. The publisher is not responsible for errors or omissions.

Key:

AI =	Alarms	EPIRB =	EPIRB	R =	Radios
An =	Antennas	GPS =	GPS	Rr =	Radar
Au =	Autopilot	Gy =	Gyrocompass	SL =	Speed Logs
C =	Compass	IB =	Integrated Bridge	S =	Sonar
EC =	Electronic Charts	MS =	Monitoring System	TG =	Tank Gauging
		P/F =	Phone/Fax		

Aanderaa Instruments
Fanaveien 13B
5050 Nesttun-Bergun
Norway
Tel: +47 55 132500; Fax: +47 55 137950
Prod: MS

Abask Marketing Inc.
615 S.W. 7 Ave.
Fort Lauderdale, FL 33315
Tel: (954) 763-6834; Fax: (954) 763-6836
Prod: Satellite Communications Products and Auto Tracking Satellite Television Systems

ACR Electronics, Inc.
5757 Ravenswood Road
Fort Lauderdale, FL 33312
Tel: (305) 981-3333; Fax: (305) 983-5087
Prod: R, An, EPIRB
(Also SART, Lighting Products, GMDSS, Searchlights, Battery Products, Strobes)

Adroit Systems Inc. (ASI)
209 Madison St., 5th Floor
Alexandria, VA 22314-1764
Tel: (703) 684-2900; Fax: (703) 836-7411
Prod: GPS
(Also GPS-based heading, pitch & roll)

Alden Electronics Inc.
40 Washington St.
Westboro, MA 01581
Tel: (508) 366-8851; Fax: (508) 898-2427
Prod: EPIRB, P/F
(Also, SART, NAVTEX Receivers, Weather Chart Recorders)

American Radio Corp.
914 - 164th St., S.E. B1698
Mill Creek, WA 98012
Tel/Fax: (206) 745-8424

Prod: R
Anritsu Corp.
5-10-27, Minamiazabu, Minato-ku
Tokyo, Japan
Tel: +81 3 3446 1111; Fax: +81 3 3442 0235
Prod: EC [C-Map Plotter only], Rr
(Also Inmarsat A/B S.E.S.)

Atlas Elektronik of America
90 Myrtle St.
Cranford, NJ 07016
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Prod: IB, P/F, Rr, SL
(Also Echosounders)

Banmar Marine Electronics, Inc.
3207 W. Warner Ave.

Santa Ana, CA 92704
Tel: (714) 540-5120; Fax: (714) 641-2614
Prod: Au
(Also Fuel Management Systems)

BT Inmarsat
43 Bartholomew Close
London EC1A 7HP, U.K.
Tel/Fax: +44 171 492 4996
Prod: Satellite Comm. Service Provider

Cast Inc.
5450 Katella Ave.
Los Alamitos, CA 90720
Tel: (310) 594-8883; Fax: (310) 594-4694

Cellnet Corp.
400 Main St., Suite 800
Stamford, CT 06901
Tel: (800) 225-5226, (203) 359-6333;
Fax: (203) 359-6826
Prod: Cellular Pay Phone Equipment & Service

ComNav Marine Ltd.
1420 Frances St.
Vancouver, B.C., Canada V5L 1Y9
Tel: (604) 254-0212; Fax: (604) 255-3523
Prod: Au [also accessories]
COMSAT Maritime Services

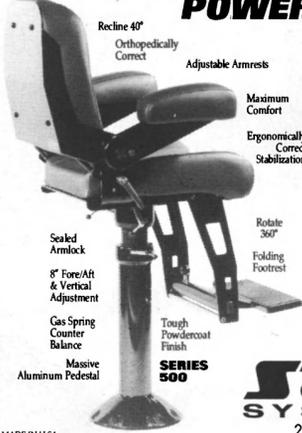
22300 COMSAT Drive
Clarksburg, MD 20871
Tel: (800) 424-4297, (301) 428-2379;
Fax: (301) 601-5953
Prod: P/F
(Also Communications Services, Satellite Communications Service, Vessel Tracking Service)

C. Plath
222 Severn Ave.
Annapolis, MD 21403-2569
Tel: (410) 263-6700; Fax: (410) 268-8713
Prod: Au, C, Gy, MS, SL
(Also Steering Systems, Direction Finders, Electronic Chart Tables)

EEV Inc.
4 Westchester Plaza
Elmsford, NY 10523
Tel: (914) 592-6050; Fax: (914) 682-8922
Prod: Radar Products and Satellite Communications Products

Electronic Marine Systems Inc.
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Prod: Au, C, GPS, Gy, IB, Rr, SL
(Also Inmarsat M&B Land Terminals [portable])

Furuno U.S.A., Inc.
271 Harbor Way
So. San Francisco, CA 94404
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(Also Satellite Communications Products, Echosounders, GMDSS)

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Newburyport, MA 01950
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Telephone, Announcing System]

Hose-McCann Telephone Co., Inc.
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Deerfield Beach, FL 33442
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Hull Electronics
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El Cajon, CA 92020-1953
Tel: (619) 447-0036; Fax: (619) 444-0628

ICOM America Inc.
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Belvue, Wash. 98004
Tel: (206) 454-8155; Fax: (206) 454-1509
Prod: GPS, R
(Also Satellite Communications Products)

IDB Mobile Communications
6903 Rockledge Drive Suite 500
Bethesda, Md. 20817
Tel: (301) 214-8700; Fax: (301) 214-8701
Prod: Satellite Communications Products

Infonav Corporation
P.O. Box 188
St. John's, Newfoundland
Canada A1C 5J2
Tel: (709) 754-0305; Fax: (709) 754-0705
Prod: EC, IB, Rr

Kelvin Hughes Ltd.
New North Road, Hainault, Ilford
Essex, 196 2UR England
Tel: +44 181 500 1020;
Fax: +44 181 500 0837
Prod: An, C, EC, EPIRB, GPS, IB, MS, R, Rr
(Also Satellite Communications Products, SARIs and Plotting Tables)

Koden Electronics Co., Ltd.
P.O. Box 6700
Clearwater, FL 34618
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Prod: GPS, R, Rr
(Also Depth Sounders, Lorans)

Leica Navigation and Positioning Division
23860 Hawthorne Blvd.
Torrance, CA 90505
Tel: (310) 791-6111; Fax: (310) 791-6108
Prod: GPS

Litton Special Devices
750 W. Sproul Road
Springfield, PA 19063
Tel: (610) 328-4000; Fax: (610) 328-4016
Prod: EPIRB

Lokata Ltd.
New North Road, Hainault, Ilford
Essex, 196 2UR England
Tel: +44 181 501 6144;
Fax: +44 181 559 8892
Prod: EPIRB
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Mackay Communications, Inc.
300 Columbus Circle
Edison, NJ 08837
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Marine Electric Systems, Inc.
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Clifton, NJ
Tel: (201) 471-6800; Fax: (201) 471-2811
Prod: AI, MS
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Magnavox Electronic Systems Co.
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Torrance, CA 90503
Tel: (310) 618-1200; Fax: (310) 618-7001
Prod: Satellite Communications Terminals,
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Marine Technology International Ltd.
50 Barwell Business Park, Leatherhead
Road
Chessington, Surrey, U.K.
Tel: +44 81 391 60; Fax: +44 81 391
6010
Prod: An, P/F, R
(Also SATCOM, GMDSS)

Megapulse Inc.
8 Preston Ct.
Bedford, MA 01730
Tel: (617) 275-2010; Fax: (617) 275-4149
Prod: GPS (Also Navigation Systems)

Mobile Telesystems, Inc.
300 Professional Dr.
Gaithersburg, MD 20879
Tel: (301) 590-8576; Fax: (301) 417-0759
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(Also Inmarsat-A, -C, -B and -M, GMDSS
Consoles and SART)

Morad Electronics Corp.
1125 N.W. 46th St.
Seattle, WA 98107-4633
Tel: (206) 789-2525; Fax: (206) 789-4840

Motorola
P.O. Box 1417 WH3170
Scottsdale, AZ 85252
Tel: (602) 949-3033; Fax: (602) 897-4253

Naval Electronics, Inc.
5417 Jetview Circle
Tampa, FL 33634
Tel: (813) 885-6091; Fax: (813) 885-3789
Prod: An

Narcontrol Seacraft AS
P.O. Box 1056, 3194 Horten, Norway
Tel: +47 330 41436; Fax: +47 330 47474
Prod: AI, Au, EC, MS, Rr, TG

Norwegian Telecom
Postboks 6701, St. Olavs Plas
Oslo 1, Norway N-0130
Tel: +47 22 777 302; Fax: +47 22 41 53
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Offshore Systems International (OSI)
19015 36th Ave. W.
Lynnwood, WA 98036
Tel: (206) 670-8400; Fax: (206) 670-0660
Prod: EC

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3930
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(Also Satellite Communication Products)

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Surrey, England KT3 4NF
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1273
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Houston, TX 77017
Tel: (713) 943-3325; Fax: (713) 943-3802
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IB, MS, P/F, R, Rr, S, SL, TG
(Also Satellite Communications Products
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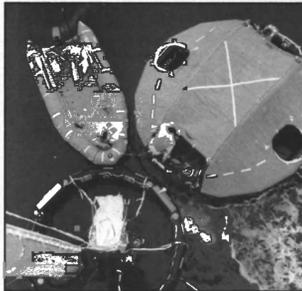
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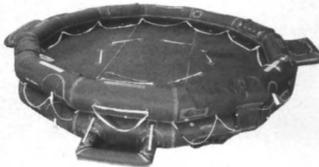
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Prod: Au, GPS, Loran, SATNAV, Rr

Simrad, Inc.
19210 33rd. Ave. West, Lynnwood, WA 98036
Tel: (206) 778-8821; Fax: (206) 771-7211
Prod: Au, C, EC, GPS, Gy, IB, MS, Rr, S
(Also Satellite Communications Products)

Singapore Telecom
15 Hill St., #02-00 Telephone House
Singapore 0617
Tel: +65 73 03 219; Fax: +65 73 2 7379

SI-TEX Marine Electronics, Inc.
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Tel: (813) 536-0898; Fax: (813) 530-7272
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(Also Depth Sounders, Lorans, Stereos)

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9111 Barton, Box 2934, Overland Park, KS 66201
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Prod: An, EPIRB, R

Sperry Marine Inc.
1070 Seminole Trail, Charlottesville, VA 22901
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Standard Communications Corp.
(Head Office) Torrance, CA 90502
Tel: (310) 532-5300; Fax: (310) 515-7197
P.O. Box 92151, Los Angeles, CA 90009-2151
Tel: (310) 532-5300; Fax: (310) 515-7197

Prod: An, R, SL, S (Also Digital Marine Instruments)

STN Atlas Elektronik (Head Office)
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Tribar Industries Inc.
1705 Flint Rd., Downsview, Ontario, Canada
Tel: (416) 736-9600; Fax: (416) 736-7858
Prod: MS, Rr

Trimble Navigation Ltd.
645 North Mary Ave., Sunnyvale, Calif. 94086
Tel: (804) 481-8000; Fax: (804) 481-7781

Waterway Communications
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Digital Still Camera Available From Benthos



Pictured is a stab positioning cone, digitally captured by the Benthos DSC 5010 at a depth of 443 ft. (135 m) in the North Sea.

Hundreds of high resolution, digital images of critical underwater structures in the North Sea were recently captured by a new camera from Benthos. In a sea trial, the DSC 5010 Digital Still Camera was mounted to the remotely operated vehicle (ROV) *Examiner* and launched from *Stadive*, reportedly the world's largest saturation diving and ROV support platform. The purpose of the trial was to demonstrate the value of digital imaging techniques for offshore inspection, and was conducted by invitation from Shell U.K. Exploration.

The DSC 5010 reportedly acquires photographic quality images and transmits them instantly for viewing on the surface where printouts can be made immediately. The camera incorporates Kodak Megaplus electronics and an imager that reportedly provides 1.5 mil-

lion pixels of information, a gradient detail of 1,024 light levels and equivalent film speeds ranging from 60 to 750 ASA. Because images are in a digital format, they can also be transmitted by modem to other locations.

Benthos manufactures a complete line of underwater imaging systems that includes digital, video and 35 mm models, in addition to a full range of companion electronic flashes.

For more information on Benthos
Circle 27 on Reader Service Card

CeStar GPS Receiver/Antenna Available From Cetrek

A six-channel, high performance, integrated CeStar GPS Receiver/Antenna is now available from Cetrek USA for all power and sail applications. The new system is reportedly waterproof and can be mounted on any standard marine antenna base. It outputs position, course, speed and time measurements using the NMEA-0183 protocol to a wide variety of marine electronics instruments. Operating automatically when power is applied, it serves as a GPS sensor for a broad range of navigation equipment, including autopilots, plotters, depth sounders, fishfinders and radars.

For more information on Cetrek
Circle 53 on Reader Service Card

Maritime Reporter/Engineering News

RTK Ferries Help In Bridge Construction



RTK Marine 40-seat, high-speed passenger ferry.

U.K.-based boat builder RTK Marine has been constructing a number of 40-seat, high-speed passenger ferries for a Portuguese bridge project. Novaponte, a European consortium, is building a second bridge to link the city of Lisbon. It has ordered the RTK SPV 512 short haul passenger ferry to transport construction workers around the worksite on the River Tagus. All craft are reportedly capable of high-speed operation, and are also able to operate in shallow waters. A comprehensive nav/comm installation of radar, VHF radio, GPS, echo sounder and compass are fitted in each craft.

For more information on RTK Marine
Circle 19 on Reader Service Card

CSD Plugs Used On Stena Line Ferry



CSD sealing plug used on a new ferry under construction for Stena Line.

CSD sealing plugs are reportedly being used for the fire-safe and watertight ducting of pipes through bulkheads and decks aboard the new ferry under construction for Stena Line. This type HSS1500 vessel is the first of the new ferries being built by Finnyards in Rauma, Finland.

Propulsion is based on waterjets instead of propellers. The propulsion system consists of a set of gas turbines with a total output of 68,500 kW. The type HSS1500 vessels have aluminum hulls, are 394 ft. (120 m) in length and have a width of 131 ft. (50 m). The vessels can carry 1,500 passengers and 375 cars, or 50 heavy goods vehicles and 100 cars. The first two are due to sail in the Irish Sea; the route of the third is not yet known.

The CSD sealing plug is the basis of the CSD range of products for the individual ducting of pipes. CSD sealing plugs consist of two identical parts which have a serrated profile on the outside and are ridged on the inside. The plug contains no metal parts in order to prevent corrosion. The front of the plug carries a raised edge to prevent it from being pushed too deeply into the opening to be sealed. The plugs are installed in outer pipes which are welded into decks and bulkheads. Depending on the design application, CSD plugs are constructed in fire-safe rubber grade FRR (fire resistant rubber).

CSD International has obtained certificates of approval for its various products from Det Norske Veritas, Bureau Veritas, Lloyd's Register of Shipping, American Bureau of Shipping, Norwegian Maritime Directorate, Germanischer Lloyd, Nederlandse Scheepvaartinspectie and also from TNO and UL.

For more information on CSD
Circle 46 on Reader Service Card

March, 1996

AISE '96 PREVIEW

EDULE

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Livingston scheduled to partici-
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For more information on AISE,
contact **Bruce Cole** at McNabb
Expositions, P.O. Box 418, 34
Spruce St., Rockport, Maine 04856,
tel: (207) 236-6196; fax: (207) 236-
0369.

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Phone: 713/840-8811
Fax: 713/840-1198

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Fax: 210/831-6220

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Circle 205 on Reader Service Card

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. For more information, call (212) 997-0966.

Date reported	Vessel name	Vessel type	DWT	Year built	Sale price (m)
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1/22/96	Seacaptain	Tanker	31,161	74	\$3
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1/22/96	Antiparos	Tanker	59,489	76	\$3.1
2/9/96	Skaubay	Tanker	64,631	83	\$16.3
1/22/96	Gantar Kadepe	Tanker	87,219	85	\$21
2/12/96	Seahope D.Y.	Tanker	101,450	92	\$36.5
1/29/96	Maitros I	Tanker	123,969	74	\$6
1/22/96	Anastasis	Tanker	140,900	75	\$5
2/5/96	J Daisy	Tanker	233,759	76	\$7
1/22/96	Columbia	Tanker	258,076	89	\$50,000

Trinity Signs Contract for Four Tank Barges; Refurbishes Passenger Boat

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Overall, the barges will be 297.5 ft. in length, with a 54-ft (16.5-m) beam and a 12-ft. (3.7 m) deep hull. The cargo tanks will be built for three pounds per square inch (PSI) working pressure and a vapor recovery system. Their design will also reportedly allow for future installation of a hot oil heating system. Additionally, *John James Audubon* was drydocked to have barnacles, algae and other matter removed from the hull by steam cleaning and sandblasting prior to repainting at Trinity-Gulf Repair. The 600-passenger boat was in the Trinity repair and conversion shipyard to undergo routine maintenance as well as the repair of holes in a tank, repacking of stuffing boxes, servicing of sea valves, removal of rope wrapped around the propeller shaft and a new paint job for the vessel's bottom. Trinity-Gulf Repair is one of the Trinity Marine Group shipyards, and is owned by Trinity Industries, Inc., Dallas. The group includes 21 shipyards.

For more information on Trinity
Circle 105 on Reader Service Card



Pictured is *John James Audubon* at Trinity Gulf-Repair.



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COPPER	302, 303, 304, 316	INCONEL
NYLON	TITANIUM	HASTELLOY

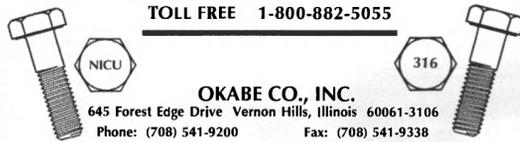
SPECIFICATIONS TO: ANSI, ASTM, ASME, SAE, MILITARY.

Quality Assurance Program in accordance with, MIL-I-45208, MIL-STD-45662, MIC LEVEL I

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Circle 324 on Reader Service Card

Maritime Reporter/Engineering News

AISE '96 PREVIEW

CONFERENCE SCHEDULE

The American International Shipbuilding Exposition (AISE) is scheduled to take place on April 11-13 at the Ernest N. Morial Convention Center in New Orleans, La.

AISE organizers expect attendance at the show to reach 6,000 persons, in addition to the representatives from approximately 250 leading world suppliers that have registered to exhibit. The latest in ship designs will be available, and the shipyards in attendance will undoubtedly be offering evidence of their commercial vessel production capability by exposing show delegates to new yard building techniques, productivity enhancement programs, facility upgrades and new equipment.

Sponsoring agencies for AISE include the U.S. Department of Commerce, the Maritime Administration, the American Shipbuilding Association, the Shipbuilders Council of America, the American Waterways Shipyard Conference, the Marine Machinery Association, the Maritech Program, Intertanko, Intercargo and the International Association of Classification Societies.

In conjunction with the products and services exhibition, a conference program, titled the "American International Maritime Forum," is scheduled to take place in order to encourage constructive discussion among maritime professionals and U.S. legislators and regulators concerning the future of U.S. legislation and regulations affecting vessel operators based in the U.S. and abroad. A keynote address and five seminar sessions will take place during the three-day conference period, covering topics such as ship construction, U.S. regulations and legislation, the revolution in communications technology, and international regulations.

Notable speakers will include: **John Graykowski**, Maritime Administration; **Gregory B. Hadjieleftheriadis**, Eletson Corp.; **A.L. Bossier, Jr.**, Avondale Industries, Inc.; **Pete Bontadelli**, California Office of Oil Spill Prevention and Response; Rear Admiral **James C. Card**, Office of Marine Safety, Security and Environmental Protection;

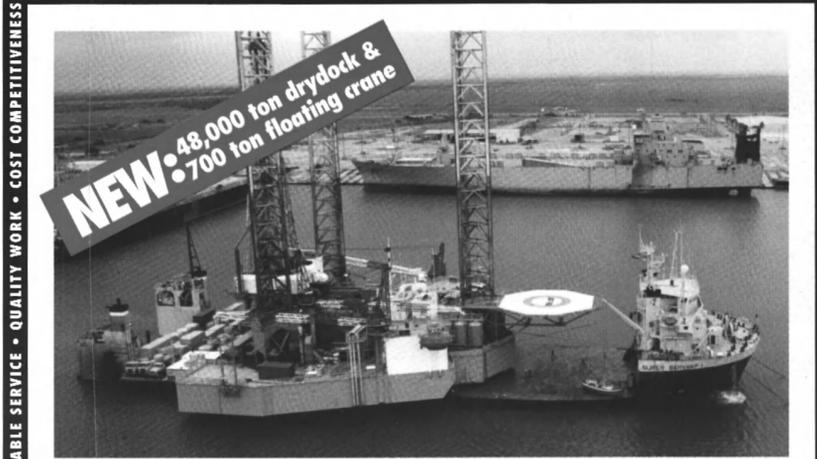
Timothy O'Neill, American Mobile Satellite Corp.; **Frank Iarossi**, American Bureau of Shipping, and Admiral **Albert J.**

Herberger, U.S. Maritime Administration. A panel of U.S. legislators will also come together to discuss views on legislation, with Senator **John Breaux**, Senator **Trent Lott**, and Congresspersons **Herb Bateman**, **Tillie Fowler**, and **Robert**

Livingston scheduled to participate as panel members.

For more information on AISE, contact **Bruce Cole** at McNabb Expositions, P.O. Box 418, 34 Spruce St., Rockport, Maine 04856, tel: (207) 236-6196; fax: (207) 236-0369.

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AMFELS operates an ASME and API certified facility for building process packages for onshore and offshore production applications.

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Look To
MR/EN's AISE
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'96 exhibition. The April 1996
will feature full Exhibitor
Profiles, with booth numbers

RECENT SHIP SALES

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For more information on Trinity
Circle 105 on Reader Service Card



Pictured is John James Audubon at Trinity Gulf-Repair.



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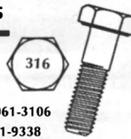
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Circle 324 on Reader Service Card

Maritime Reporter/Engineering News

**STN Atlas Offers New
Navaid Development;
Supplies VTS To Sweden**

STN Atlas Elektronik has made new navaid developments which include Chartplot — a modular integrated navigation console for management and display of all essential nautical data, superimposed on electronic charts via a choice of 17, 20 and 29-in. high-resolution color monitors. Reportedly, in a stand-alone mode, it can also be operated with non-Atlas radars using an NMEA interface.

Chartplot reportedly complements the Atlas NACOS series of integrated navigation command units. Users reportedly include P&O's latest cruise liners *Oriana* and *Sun Princess*, both of which are equipped with 45-2 systems. NACOS also forms part of a new series of Ship Control Centers.

Communications systems include a full range of Debeg internal and external GMDSS-type systems, inclusive of dual power supply functions for fail-safe operation. Also available is the SP 1600 series of Inmarsat-M digital mobile satellite terminals which reportedly includes interfaces for fax units, laptop computers and GPS receivers.

In addition, the Swedish National Maritime Administration has ordered an STN Atlas Elektronik 9730 Vessel Traffic Services (VTS) system for monitoring and controlling all traffic in the Flintrannan Channel during construction of the new Oresund combined bridge and tunnel link connecting northern Denmark and southwestern Sweden. The radar-based system, due to begin operation in July, is reportedly designed to enhance the safety and two-way flow of an estimated annual volume of more than 20,000 vessels of all types and tonnage. It will comprise two remote-controlled radar stations on the north and south sides of the new link, at Limhamn and Klagshamn, connected to a proposed new VTS center at Malmo pilot station.

For more information on STN ATLAS
Circle 15 on Reader Service Card

**Seatex Offers New
Developments**

Seatex has announced two new additions to its Motion Reference Unit (MRU) line. The MRU-H, designed for heave compensation, is reportedly suited to single-beam sonar applications where all motions are measured, but heave measurement is the most critical. The MRU-1 is a motion reference unit for measuring vertical and transverse motions on the bows of ships and offshore structures. In addition, the Seatex Helideck Monitoring System — Seatex HMS 100 — has been introduced as a complete monitoring system for

the helicopter desk roll, pitch and heave motions.

For more information on Seatex
Circle 54 on Reader Service Card

**Nautronix Receives DP
Contract**

Nautronix Inc. of San Diego, Calif., has been awarded a contract

to supply a complete triple redundant dynamic positioning system, the ASK 4003, for the drill ship *Peregrin I*, owned and operated by Falcon Drilling.

In addition, Nautronix will supply an acoustic BOP Emergency Release system, electric riser angle sensors, environmental sensors, UPSs and a training simulator system. The Nautronix dual redundant RS5D short baseline acoustic

positioning system and Trimble 4000DS DGPS are reportedly included as the position reference for the ASK4003 DPS. *Peregrin I*, formerly *mihail Mirchink*, is presently undergoing retrofit in Singapore and will be operating off Brazil in 6,562 ft. (2,000 m) depths upon completion.

For more information on Nautronix
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Ritchie sets a new standard in Electronic Compass Technology...



Easy Interfacing.

Ritchie's MagTronic Heading System is setting a new standard for Electronic Compass Technology. That's because the MagTronic Sensor produces a crisp, clean signal that converts directly to digital information with accuracy and repeatability unmatched by other sensors. This sensor can also provide identical heading data for all your on-board navigation instruments. In fact, you can usually connect up to three instruments including your compass display directly to the sensor. That's

Easy Interfacing. If your electronics require several different signals all at one time, That's Easy too. All it takes is a MagTronic Interface Enclosure and simple slip-in MagTronic Interface Modules. Imagine, no more conflicting

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Circle 274 on Reader Service Card

Principal Contracts Recorded, January 1996

Orders are listed alphabetically, by vessel type. Publisher is not responsible for errors or omissions. For additional information on this, or other ship market information, contact: FERLISHIP, Paseo De San Francisco De Sales, 8, 28003 Madrid, Spain, tel: +341 441 4138; fax: +341 441 4138.

OWNER OPERATOR	COUNTRY	SHIPYARD	COUNTRY	TYPE	No	DWT	GT	DELIV	PRICE (\$)
FIKADA SALVAGE	JAPAN	MITSUBISHI	JAPAN	BARGE	1	—	—	1996	54
BRUCKNER MARITIME	JAPAN	KANDA	JAPAN	BULK CARRIER	1	23,000	—	—	23
GOLDEN OCEAN GROUP	TAIWAN	OSHIMA	JAPAN	BULK CARRIER	2	47,300	—	1996	26.7
GOLDEN OCEAN GROUP	TAIWAN	OSHIMA	JAPAN	BULK CARRIER	2	47,000	—	1998	—
N.Y.K.	JAPAN	HAKODATE DOCK	JAPAN	BULK CARRIER	1	28,000	17,000	1997	—
OTOBUKI KAIUN	JAPAN	KANDA	JAPAN	BULK CARRIER	1	23,000	—	—	23
TOWA SHOUN	JAPAN	KANDA	JAPAN	BULK CARRIER	1	28,000	—	—	23
POLISH STEAMSHIP COMPANY	POLAND	STOCZNA	POLAND	BULK CARRIER	3	15,500	—	1998	48
CERES HELLENIC SHIPPING	GREECE	DALLAN	CHINA	BULK CARRIER	2	90,000	—	—	—
HANJIN SHIPPING CO.	KOREA	HYUNDAI	KOREA	BULK CARRIER	1	135,000	—	10/97	38
KEYIANG SHIPPING	KOREA	HYUNDAI	KOREA	BULK CARRIER	1	135,000	—	12/97	38
DIAMOND CAMELLIA	—	OHMACHI	JAPAN	BULK CARRIER	1	23,400	—	1997	19.8
BOTTLEGERI NAV	ITALY	BIEL	DENMARK	BULKER	3	74,500	—	1997	68
FUJITSUBS CORP.	JAPAN	MITSUBISHI	JAPAN	CAR CARRIER	1	7,360	—	2/97	—
UNKNOWN	U.K.	YORKSHIRE	U.K.	CARGO/TIMBER CARRIER	1	3,200	—	1997	—
STEAMERS MARITIME HOLDING	SINGAPORE	WUHU SHIPYARD	CHINA	CONTAINER	2	—	—	1997	20
ALFRED TOEPFERD	GERMANY	FLENSBURGER	GERMANY	CONTAINER	1	—	—	4/96	—
DRAXL SCHIFFFAHRTS	GERMANY	DETLEF HEGEMANN	GERMANY	CONTAINER	2	7,000	—	1997	—
GERMAN INTERESTS	GERMANY	THYSSEN NORDSEWERKE	GERMANY	CONTAINER	1	33,000	—	1997	43
GERMAN INTERESTS	GERMANY	THYSSEN NORDSEWERKE	GERMANY	CONTAINER	2	30,300	—	1997	70
HERMAN BUSS KG	GERMANY	FLENDER WERFT	GERMANY	CONTAINER	1	—	—	1997	45
HPC	GERMANY	FLENSBURGER	GERMANY	CONTAINER	2	—	—	12/97	—
HANSA MARE	GERMANY	SAMSUNG	JAPAN	CONTAINER	1	—	—	1998	—
HAFAG LLOYD	GERMANY	SAMSUNG	JAPAN	CONTAINER	3	—	—	1998	187.5
REGIONAL CONTAINER LINE	NETHERLAND	MIHO SHIPYARD	JAPAN	CONTAINER	2	10,600	—	4/97	43
SEA-LAND	U.S.	LJLL	JAPAN	CONTAINER	4	59,000	50,200	1998	272
UNITED ARAB SHIPPING CO.	KUWAIT	JAPANESE ALLIANCE	JAPAN	CONTAINER	10	—	—	1998	650
HANJIN SHIPPING CO.	KOREA	HANJIN	KOREA	CONTAINER	2	—	—	1998	—
HANJIN SHIPPING CO.	KOREA	HANJIN	KOREA	CONTAINER	2	—	—	1998	—
NORDDEUTSCHE VERMOGEN	GERMANY	HYUNDAI	KOREA	CONTAINER	4	65,000	—	1997	259.2
CMA	FRANCE	HALLA	KOREA	CONTAINER	2	—	—	1998	112
HANSA / SCHLUSSEL RED	GERMANY	HYUNDAI	KOREA	CONTAINER	2	30,000	—	1997	84
NORDDEUTSCHE VERMOGEN	GERMANY	HYUNDAI	KOREA	CONTAINER	1	—	—	1/98	54.8
DANAOS SHIPPING	GREECE	GDANSKA	POLAND	CONTAINER	1	42,800	—	6/98	45
GERBRUDER WINTER	GERMANY	GOYNIA	POLAND	CONTAINER	2	30,600	—	3/98	—
UNIGLORY	TAIWAN	CHINA SHIP. CORP.	TAIWAN	CONTAINER	3	—	—	1997	72
KASIF KALKAVAN	TURKEY	SEDEF SHIPYARD	TURKEY	CONTAINER	3	12,500	6,431	96/98	69
SWEDISH DEFENCE MATERIAL	SWEDEN	KARLSKRONA VARVET	SWEDEN	CORVETTE	2	—	—	—	—
AVESIA	SWEDEN	MARIO MORINI	ITALY	CHEMICAL	1	6,400	—	—	—
FIMBETA	ITALY	MARIO MORINI	ITALY	CHEMICAL	1	14,000	—	—	—
STOLT NIELSEN	NORWAY	IMMA	ITALY	CHEMICAL	6	5,200	—	1998	120
BRAGE/SIGRA	NORWAY	KVAERNER KLEVEN	NORWAY	CHEMICAL	1	17,460	—	1997	47.2
POLISH STEAMSHIP COMPANY	POLAND	STOCZNA	POLAND	CHEMICAL	2	15,300	—	1999	40
GENERAL NAT. MAR. TRANS	LIBYA	DAEWOO	KOREA	DRY CARGO	1	8,500	—	3/97	—
DANISH INTERESTS	DENMARK	MORSO VAERT	DENMARK	FERRY	1	—	800	1996	—
OCEAN BRIDGE INVESTMENT	GREECE	FINCANTIERI	ITALY	FERRY	2	—	—	1997	63.5
TIRENIA	ITALY	FERRARI	ITALY	FERRY	2	—	—	1997	95
TIRENIA	ITALY	FINCANTIERI	ITALY	FERRY	2	—	—	1997	63
STATOIL, ABB, AKER, MARITIME GROUP	NORWAY	HITACHI ZUSEN	JAPAN	FPSO	1	—	—	1998	—
MODEC INC.	JAPAN	KEPPEL	SINGAPORE	FPSO	1	137,684	—	—	—
OB-IRYS RIVER SHIPPING CO.	GREECE	ARMINIUS WERKE	GERMANY	GENERAL CARGO	2	2,800	—	1997	—
N.Y.K.	JAPAN	NIPPON KKK	JAPAN	LNG	2	—	—	9/98	156
N.Y.K.	JAPAN	NIPPON KKK	JAPAN	LNG	1	—	—	9/98	—
DOCKENDALE	BAHAMAS	DALLAN	CHINA	MULTI-PURPOSE	2	28,000	—	1998	—
AP MOLLER	DENMARK	ULSTEIN	NORWAY	OFFSHORE	1	8,000	—	—	—
GEORGE CRAIG & SONS	U.K.	YORKSHIRE	U.K.	OFFSHORE	1	—	1,500	4/97	—
NINA COMP. DI NAVIGAZIONE	ITALY	SEC	ITALY	PASSENGER	1	24,000	—	6/98	135
ALEX MASSON	SCOTLAND	HELLESQY	NORWAY	PURSER-TRAWLER	1	—	—	12/96	—
DALMO REPRODUKT	RUSSIA	AARHUS FLYDEDOCK	DENMARK	REEFER	2	3,700	—	1998	—
INDONESIAN GOVERNMENT	INDONESIA	CMN	FRANCE	RESEARCH	1	—	1,350	1997	—
GRANDI TRAGHETTI	ITALY	NUOVI CANTIERI APUNIA	ITALY	RORO	1	7,300	—	5/98	—
GRIMALDI	ITALY	FINCANTIERI	ITALY	RORO	2	18,500	52,700	—	126
US NAVY MSC	U.S.	AVONDALE	U.S.	RORO	1	60,000	—	1999	206.5
INSTITUTE OF GEOLOGY, MINING & MET.	SOUTH KOREA	ULSTEIN WERFT	NORWAY	SEISMIC RESEARCH	1	—	2,000	12/96	—
ZAMIL MARINE	—	SOUTHERN OCEAN	SINGAPORE	SUPPLY	3	1,200	—	1996	—
NAVIGAZIONE DI CABOTAGGIO	ITALY	NUOVI CANTIERI APUNIA	ITALY	TANKER	1	10,000	—	9/97	—
FINAVAL	ITALY	NUOVI CANTIERI APUNIA	ITALY	TANKER	1	—	40,000	1998	37
TORN A/S	DENMARK	HYUNDAI	KOREA	TANKER	2	—	95,000	1997	92
ULTRAMAR CAN. INC. & CERES HELLENIC	CANADA+GREECE	SAMSUNG	JAPAN	TANKER	2	—	150,000	3/98	—
CROWLEY MARITIME	U.S.	NICHOLS	U.S.	TUG	2	—	—	1997	6

Folk Gear Drives Shipped For Installation On Bob Hope Class RoRos

The Falk Corporation, Milwaukee, Wis., an ISO 9001-rated company, has manufactured two marine main propulsion gear drives for the Navy's Strategic Sealift Bob Hope Class of Military Sealift Command ships. On February 6, one of the two gear drives was readied for shipment to Avondale shipyards in New Orleans for installation on the 950-ft. (289.6-m) RoRo USNS *Bob Hope*, which has been configured to transport a variety of military vehicles and unit equipment.

When completed, the ship will have two gear drives which will drive four 22-ft. (6.7-m) diameter propellers. Each of the speed reduction gear drives will be connected to two of the ship's four Colt Pielstick 10 PC 4.2 400 rpm diesel engines, which will deliver a combined 65,160 hp to the gear drives. The drives will produce 1.6 million ft.-lbs. of output torque, and will drive each propeller shaft at 105 rpm at a top speed of 24.5 knots per hour. Included in the Navy contract is an option for five more gear drive systems, with the total contract value equaling \$15 million.

For more information
Circle 92 on Reader Service Card

American Commercial Barge Makes Appointments



Steve Morris

Deborah Snyder

American Commercial Barge Line Co., Jeffersonville, Ind., has recently announced two executive appointments. **Steve Morris**, former manager of safety, has been promoted to the position of director of safety/shore facilities. **Deborah Snyder** has accepted a position in grain freight sales. She was formerly employed by Continental/ContiCarriers in Chicago.

Reed Joins Derbyshire Machine & Tool

Todd R. Reed, former sales manager of Technical Products & Precision Mfg. Co. Inc., has joined Derbyshire



March, 1996

Machine & Tool Co., Philadelphia, Pa. He will serve as the vice president of sales, and in this capacity, will promote the company's expertise in specialty valves and fittings.

Association Elects Leaders

The Greater New Orleans Barge Fleeting Association, an associa-

tion of companies engaged in the operation of barge fleets and towboats in the New Orleans/Baton Rouge area, has elected a new board of governors for the 1996-97 term. The appointments are as follows: **James M. Fox**, American Commercial Barge Lines, president; **Karl Gonzales**, Gulf South Marine Transportation, Inc., vice president; **Fred Renoulet**, Capital Marine Supply, Inc./

Triangle Fleet, treasurer; **Angela Cenac**, Marine Bunker Service, Inc., secretary; **Bill Grantham**, Capital Fleet, Inc., northern director; and **George Janssen**, Channel Shipyard of New Orleans, southern director.

This organization was founded in 1976, is made up of 57 member companies, and exists to promote a closer professional relationship between members.

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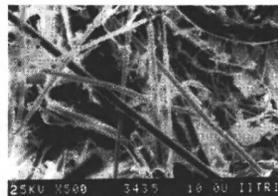
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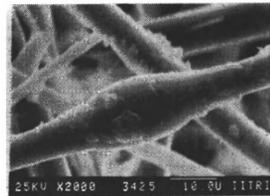
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Circle 32 on Reader Service Card

Newport News Shipbuilding Pushes Full Speed Ahead

Newport News Shipbuilding has been "top of the news" of late, winning orders for five additional product carriers, unveiling its new plan to build ships twice as fast and maintaining its strong presence in the U.S. Navy market. The biggest story, however, is the still unconfirmed speculation that the yard is up for sale.

Rumors Run Rampant

The consolidation of the U.S. defense industry and parent-company Tenneco's paring down have done little to squelch rumors that Newport News, the U.S.'s largest privately owned shipyard, is on the sales block. Rumored suitors include several prominent U.S. companies. At press time, however, the parent company had given no definitive word on a plan to sell the rejuvenated shipyard.

The Making Of A Commercial Success

Newport News Shipbuilding won a contract to build five, 45,300-dwt Double Eagle product tankers for Hvide Van Ommeren Tankers of Fort Lauderdale, Fla. The contract won approval for Title XI loan guarantees from the U.S. Maritime Administration, which will cover 87.5 percent of the project's approximate \$240 million cost. It raises the number of Double Eagles to be built by the yard to nine, including the four ships ordered previously by Eletson.

According to Newport News, it was the availability of MarAd's long-term financing guarantees which cemented the contract.

The ships will measure 620 ft. (189 m) by 105 ft. (32 m), and will offer a service speed of 16



Newport News Shipbuilding has made significant headway on the commercial shipbuilding front, with nine orders in hand for its new product tanker design.

knots. They will be among the first newly-built, double-hulled tankers designed and built for service in the U.S. trade since the passage of OPA 90. Materials for the ships will be ordered in the next few months, with construction slated to begin in 1997. All five ships will be delivered by the end of 1998.

"We are pleased to be building these ships for Hvide/Van Ommeren," said Ed Waryas, director of commercial marketing. "This order firmly establishes the Double Eagle as a recognized class of series-built product tankers. Such series construction is critical to our winning future shipbuilding contracts."

"Let's face it. For years, the U.S. shipbuilding industry has not been a ball of fire in the commercial market place. All along, people have doubted that we would actually be building these ships, but if you come down to the shipyard, you'll see construction is underway," Mr. Waryas said. "Our strategic plan was to get subsequent orders for the series, and we have."

The announcement of the new contracts comes on the heels of the yard announcing implementation of its major initiative aimed at cutting, by at least 50 percent, the time it takes to design and build a ship.

The Full Speed Ahead program will focus all of the yard's 18,000 employees'

efforts on doubling the speed of their processes by redesigning and recreating them. Special emphasis will be placed on the five major processes between receipt of a contract and delivery of the ship: design; production planning; material sourcing; steel fabrication; and outfitting.

Newport News Shipbuilding President and CEO Bill Fricks kicked-off the process innovation program at a ceremony attended by 600 employees.

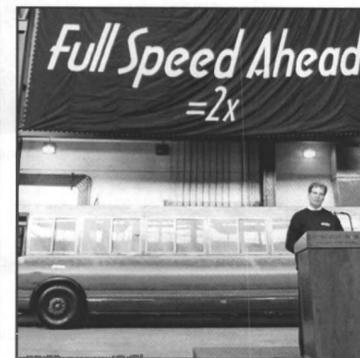
Expanding Roles

Newport News also recently announced that Mr. Waryas would assume the additional responsibilities for management of its commercial ship repair business. The yard has repaired more than 60 commercial ships since its re-entry into the business in 1992.

Mr. Waryas joined the yard in 1993 as director of domestic marketing and sales. He came to Newport News from MAN B&W Diesel, Inc., where he was director of business development. Under his direction, NNS has built an impressive orderbook for its new Double Eagle product



While the commercial side of Newport News' business has received the majority of attention of late, the yard maintains a strong presence as a navy builder as well. Pictured is the USS Greenville on sea trials. The nuclear-powered submarine was delivered a month early.



President and CEO Bill Fricks launched NNS's Full Speed Ahead program with great fanfare and high expectations. The program is designed to enhance the entire ship design and building process.



Ed Waryas, who has enjoyed great success marketing the Double Eagle product tanker, takes on the additional responsibilities of managing NNS's commercial ship repair division.

tanker design. "Putting our ship repair marketing under Ed's direction indicates our confidence in his abilities, as well as our continuing emphasis on ship repair as a component of our diversification efforts," said Greg Cridlin, vice president, marketing.

"We have been focused on getting repeat business, such as from the cruise ship segment," Mr. Waryas said. "At the same time, we want to broaden the base, and target vessels calling on the U.S. East and Gulf coasts."

Mr. Waryas succeeds Charles Jenkins, who was selected to head one of the newly-established process innovation teams, part of the Full Speed Ahead program.

Recent Navy Business

While impressive gains have been made on the commercial side of business at Newport News, its strong ties to navy business are still very evident at the yard, and central to future success. The yard recently won a contract to perform overhaul work on the USS *Monterey*, a Ticonderoga Class guided missile cruiser outfitted with the Aegis combat system. The \$12.5-million contract includes hull painting, dry docking, inspection of propeller, shafts, valves and tanks.

It will also include several upgrades to the combat systems.

"We are very pleased to have won this award because it is the first Aegis-equipped ship we will have overhauled, and we hope to work on more ships of this type in the future," said Mike

Shawcross, director, naval marketing at Newport News. "Also, this is another successful step in our efforts to diversify our business."

The USS *Monterey* was built at Bath Iron Works and will arrive at NNS in June. It is scheduled to return to the fleet in March.

The yard's reputation as a qual-

ity naval builder was enhanced by its early delivery of its 52nd nuclear-powered submarine, the attack submarine *Greeneville* (SSN 772), to the U.S. Navy. It was delivered one month early. The remaining submarine under contract, the *Cheyenne* (SSN 773), is due for delivery in the late summer. The *Greeneville* measures

360 ft. (110 m) long, is 33 ft. (10 m) in diameter and carries a weapons system including torpedoes, Harpoon and Tomahawk missiles and submarine-launched mobile mines.

Aside from the submarine and upgrade business, NNS currently has construction contracts for two Nimitz class aircraft carriers.



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Newport News Shipbuilding

at a glance

1995 sales	\$1.8 billion
Employees	18,183
Backlog	\$4.6 billion
Goods & Services purchased in 1995	\$753 million
Facilities	550 acres
Ships built	Nearly 800

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Circle 206 on Reader Service Card

MES Delivers Bulk Carrier; Announces Towing Arrangement Test Results

The Tamano Works of Mitsui Engineering & Shipbuilding Co., Ltd. (MES) delivered 46,664-dwt bulk carrier *Fairy Queen* to owner Fair Wind Navigation S.A. of Panama. The handy size bulk carrier has five cargo holds and four cranes. The overall vessel length is 622.6 ft. (189.8 m), and the ship is powered by a Mitsui-MAN B&W 6S50MC diesel to a speed of 14.6 knots.

In other MES news, an emer-

gency towing arrangement, jointly developed by MES affiliates Mitsui Zosen Chiba Kiko Engineering Inc. (MCKE) and Mitsui OSK Kogyo Ltd. (MOK), has reportedly passed strength tests of classification societies ABS, DNV, LR and NK.

Tests were conducted in accordance with IMO guidelines, and the towing arrangement simultaneously passed tests for two types of equipment — one for 50,000 dwt or

larger, and the other for more than 20,000 dwt, but less than 50,000 dwt tankers. The emergency towing arrangement is installed at the bow and stern of a tanker, so that, should the tanker become unable to run by its own power, it can be promptly subjected to towage to prevent drifting or stranding.

For more information on MES
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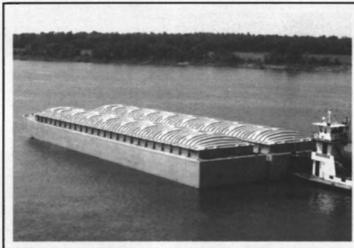
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Circle 289 on Reader Service Card

LPG Carrier Converted By YVC Bolnes In Rotterdam

LPG carrier *Coral Actinia* was lengthened for Dutch owner Anthony Veder at YVC Bolnes dockyard in Rotterdam. Reportedly, within seven days after its arrival at the yard, a 115 ft. (35 m) long bow/hull section was cut through and separated from the hull, while the 2,200-cu.-m. cargo tank remained suspended in position by means of a temporary gantry construction. Transfer of the bow/hull section — a distance of more than 180.4 ft. (55 m) — was carried out by means of computer controlled hydraulic driven platform trailers. Within two more days, the 79 ft. (24 m) long, prefabricated lengthening section, weighing 260-tons, was fitted by the same method along the suspended existing cargo tank, followed by relocation of the bow/hull section into its new position. Extensions and modification of the LPG system was carried out by Noell LGA Gastechnik of Remagen, Germany. This conversion increased the vessel's overall length from 239 to 317.5 ft. (72.74 to 96.79 m) and cargo capacity from 2,200 to 3,200-cu.-m. YVC Bolnes Dockyard is scheduled to carry out an identical conversion to the sister vessel *Coral Acropora* in April 1996.

For more information on YVC
Circle 109 on Reader Service Card



Shown is the lengthening of *Coral Actinia*.



The *Coral Actinia* after lengthening.

Maritime Reporter/Engineering News

BP Offers New Grade Of Trunk Piston Engine Oil

BP Marine has developed Energol IC-HFX, a new grade of trunk piston engine oil which it says will help improve crankcase cleanliness in engines using residual fuels. **John Liddy**, BP Marine's technical manager, said that the new grade has already been approved by New Sulzer Diesel, Wartsila, and MAN B&W.

For more information
Circle 74 on Reader Service Card

Lockheed Unit Wins \$6.4 M For Radar Development

Sanders, a Lockheed Martin Co., received an initial \$6.4 million contract from the Navy for the Advanced Technology Development (ATD) phase of its High Frequency Surface Wave Radar (HFSWR) shipboard program.

The Naval Command Control and Ocean Surveillance Center (NCCOSC), Research, Development, Testing and Evaluation Center (NRaD) is the contracting agency and is conducting this ATD.

Under the contract, Sanders will evaluate the ability of a shipboard HFSWR system to detect and track cruise missiles and other low-flying threats at over-the-horizon ranges. The radar developed and delivered for this ATD program will transfer HFSWR technology to a shipboard system that will be tested against real and simulated threats. This system will permit U.S. Navy LSD-41 class and all other Ship Self-Defense System (SSDS) equipped ships to successfully defend against existing and future anti-ship missiles. Work will be performed over the next two years at Sanders' Surveillance Systems Division in Hudson, N.H.

Stolt Comex Seaway Secures Three-Year Contract

Stolt Comex Seaway won a three-year contract from Petrobras for laying of flexible flowlines and the provision of diving and remote-operated vehicle (ROV) support services in waters on the Brazilian continental shelf. All of the work will be carried out by DSV *Seaway Osprey*. The contract is valued at \$67 million, and there is an optional one-year extension.

Initial Phase Of DGPS Launched In U.S.

On January 30, the U.S. Coast Guard (USCG) officially began the initial phase of the Differential Global Positioning System (DGPS). The USCG DGPS service will eventually provide coastal coverage to the continental U.S., the Great Lakes, Puerto Rico, much of Alaska and Hawaii, and part of the Mississippi River basin.

Esso Norge Balder Field Development Greenlighted

Esso Norge AS won government approval for its plan to develop the Balder field in the Norwegian sector of the North Sea. Esso Norge is the operator and holds 100 percent equity in the Balder 25/11 block (PL001). Recoverable oil reserves from the development are estimat-

ed at 170 million barrels. Development costs are expected to be approximately \$800 million.

Balder will be developed using subsea wells tied into a floating production, storage and offloading vessel, reportedly the first dedicated installation of this type on the Norwegian Continental Shelf. Crude oil will be offloaded from the production vessel and transported to market by shuttle tankers.

Drilling will start this spring and production will commence in early 1997.

Esso Norge purchased the production vessel *SPU380*, currently under construction at Far East Livingston Shipyard (FELS) in Singapore, from Smedvig Production Contracting KS. Installation of some of the topsides equipment will be completed at Offshore & Marine in Sandnes, Norway.

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Jeffboat Names Irby VP

Inland shipbuilder Jeffboat, Jeffersonville, Ind., has appointed **Danny Irby** to the position of vice president of production. Mr. Irby formerly served as vice president of new construction at Bender Shipbuilding and Repair Co., in Mobile, Ala. In addition to being involved in new construction, his respon-



sibilities at Jeffboat include marine repair and maintenance.

For more information on Jeffboat
Circle 83 on Reader Service Card

Passenger Vessel Association Hires Risk Manager

Rick Brown, owner of North Coast Marine Service, Toledo, Ohio, which specializes in vessel safety programs, risk management and

crew training and education, has been named by the board of directors of the Passenger Vessel Association (PVA) as risk management consultant to the association.

Mr. Brown will work exclusively with PVA members to analyze safety, risk management and insurance issues. He will recommend solutions and strategies for members' most pressing concerns. Mr. Brown has been actively involved in PVA for many years, most recently serving as a member of the Safety and Loss Control Committee where he authored several papers used by members of the association, and subsequently recommended by the U.S. Coast Guard (USCG). He is also a party to the National Transportation Safety Board's Marine Division for investigating marine collisions.

PVA is a national trade association for the owners, operators and suppliers of U.S.-flag passenger vessels, whose combined membership operates approximately 1,200 vessels and carries about 90 million passengers a year.

"K" Line Names Butters VP

Oscar J. Abello, president and CEO of "K" Line America, Inc., has announced that **Stephen M. Gill**, vice president-sales, North America, has resigned from the company to pursue other interests, and that **Frank E. Butters** has been named to fill the position. In this post, which combines sales, marketing and pricing functions under one division, he will be responsible for all such activities in the U.S. and Canada.

Mr. Butters joined "K" Line in 1991 as vice president of marketing and pricing. During his tenure, responsibility for marketing and pricing the company's eastbound and westbound services was transferred from Tokyo to North America. "K" Line is a fully integrated intermodal transportation company linking the Pacific Rim with North America, offering six weekly, fixed-day sailings to the Pacific Northwest and Pacific Southwest, which connect with company-owned double-stack train services that cover the U.S., Canada and Mexico.

Bay Fabrication/Eastern Ship Appoints New GM

Brian R. D'Isneria, president of Bay Fabrication, Inc. and Eastern Ship, Inc. of Panama City, Fla., recently announced a new managerial appointment within these organizations. **Rudy Sistrunk** has been named general manager of both the new construction facilities of Bay Fabrication and Eastern Ship. Before assuming this new position, Mr. Sistrunk was employed as vessel repair manager for offshore operator Seacor Marine Inc. of Morgan City, La. He will now be responsible for managing all aspects of production, project management and daily operations at Bay Fabrication/Eastern Ship.

Lake Champlain Transportation Co., Inc. of Burlington, Vt., has awarded a contract for the lengthening of its double-ended ferry — *Grande Isle* — to Bay Fabrication. The 137-ft. (38-m) passenger/vehicle ferry will be lengthened by cutting the vessel in half close to midship, and adding a 38-ft. (11.5-m) midbody section. The finished dimensions will be 176 ft. x 43 ft. x 11 ft. (53.6 m x 13.1 m x 3.35 m). In addition to the lengthening, other work to be performed includes constructing a larger deckhouse and passenger cabin in order to further enhance passenger comfort and safety. Upon completion, *Grande Isle* will be able to accommodate five semi-tractor trailer units in addition to several smaller trucks and cars, or 40 cars and no trucks.

For more information on Bay Fabrication/Eastern Ship
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GPA Chosen For Turnkey Engineering On Tug Project

Guido Perla & Associates, Inc. (GPA), Seattle, has been selected by Nichols Brothers Boat Builders, Inc. to provide turnkey engineering services in the construction of two 120 x 41.5-ft. (37 x 12.6-m) tractor tugs for Crowley Marine Services. According to Alex Loudon, vice president of engineering at GPA, the company will provide all hull fairing, lofting and nesting of steel parts for cutting. Three-dimensional assembly drawings will assist shipyard production personnel in reciting the steel parts for each hull and deck house module. GPA will also supply 3-D computer composites of the machinery spaces and pipe systems to route piping and wireways through the hull.

Italian Naval Architecture Firm Opens New Office

Sciomachen, a naval architecture firm from Bologna, Italy, has recently opened a new office to better suit its changed working techniques which have evolved over the last decade with the gradual shift from pencils to computers. Design and drafting at the new Sciomachen facilities is now accomplished entirely on networked CAD workstations. The company's projects encompass a full range of marine designs from high-speed power yachts to fast ferries, excursion vessels, fishing vessels, displacement yachts, and racing and cruising sailboats.

For more information on Sciomachen
Circle 88 on Reader Service Card

Simrad Delivers Dynamic Positioning Systems

Norwegian marine electronics group Simrad has been awarded a contract by Kvaerner for the delivery of dynamic positioning systems for two vessels to be used in the floating rocket-launching pad system called Sea Launch. One of the positioning systems will be installed on a semi-submersible rig which is currently under conversion at Kvaerner Rosenberg in Stavanger, Norway.

When converted, the rig will be an offshore launching pad for rockets carrying satellites into orbit in space. The other system is for the Sea Launch command-and-control vessel which is being built at Kvaerner Govan in Glasgow, Scotland.

The Simrad systems will keep the two vessels in position, close to each other and connected by a gangway during the preparation for launching. During the actual launch, the rig will be unmanned and positioning will be remotely controlled via radio link from the command vessel.

For more information on Simrad
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JMS Completes 200th Computerized Ship Model

With the completion of the latest bulk ore carrier model, Jamestown Marine Services (JMS) has produced 200 computerized, numeric models for clients worldwide, said company President **Bruce Banks**. Through the use of HECSALV, the commercial version of the U.S.

Navy's Program of Ship Salvage Engineering (POSSE), JMS is reportedly able to enter complete vessel characteristics, including hull form, hydrostatics, compartmentalization and baseline strength and stability characteristics. This information is then used to provide residual hull girder strength based on the reported extent of damage, residual stability based on damaged compart-

ments, and development of the most favorable off-loading, ballasting or cargo transferring sequences to improve stability and reduce stress.

Since the passage of this regulation deadline on January 21, 1995, JMS has reportedly noticed a shift in the types of ships being modeled. Owners of bulk carriers, containerships and passenger vessels are turning to numeric modeling to

give engineers the ability to rapidly assess a vessel's damaged stability following an accident.

For more information on JMS
Circle 39 on Reader Service Card

New Literature Features Goltens' World Of Services



Goltens Worldwide has produced literature which details every one of its ship repair services. According to **Norman Goltens**, company president, Goltens is making this literature available so that shipowners and operators will be better prepared in case of emergency. "For more than 50 years, Goltens has provided spare parts as well as specialized and general repair of ships and land-based facilities, including re-engining for both. We do reabbtting, grinding and machining in-situ, as well as crankshaft grinding in our facilities."

For more information on Goltens
Circle 37 on Reader Service Card

Bailey Singles Out Its Products And Services



Bailey Refrigeration Co., Inc., Avenel, N.J., has created and now offers a series of individual brochures. "Rather than put all our products and services into one brochure, we felt we would create comprehensive brochures on each individual product and service we offer," said **Ben Bailey**, company president. "In this way, customers do not have to work through information of no interest to them in order to find what they need."

Brochures offered by Bailey include: *Capital Equipment (A/C and Refrigeration Systems); Preventive Maintenance Service; CFC Conversions; Changeover Service; Repairs & Retrofits; Appliances; and Spare Parts.*

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

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ELECTRICAL WIRE DEVICES

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Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

ELECTRONIC INFORMATION SUPPORT

Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

EMISSION CONTROL

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Rector Topsoe Nymkølevet 55, DK-2800, Lyngby, DENMARK

EMPLOYMENT

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Mane Jobs, Inc., 800 Downriver Blvd. Ste. 111, Mobile, AL 36609

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ENGINE EFFICIENCY EQUIPMENT

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Stellar Marketing, 7759 Townsend Place, New Orleans, LA 70126

ENGINE ROOM LIGHTING

Paulsun Electric Mfg. Co., Inc., 1816 N. Main, P.O. Box 53, Pearland, TX 77581

ENGINE TEST EQUIPMENT

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Alois Electronics, 40 Washington St., Westborough, MA 01581

EVAPORATORS

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Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130

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Aro M. Les Associates, Inc., 411 Borel Ave., San Mateo, CA 94402

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Onite Co., Inc., 845 Forest Edge Drive, Vernon Hills, IL 60061-3106

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B.F. Goodrich, 150 Division Drive, Wilmington, NC 28401
Kahleberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Schuyler Mfg. Co., Inc., 16901 Woodville-Redmond Rd., Woodville, WA 98072
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Chesapeake, VA 20824
Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409
Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

FIBERS

Allied Signal, Meyer I Box, 101 Columbia Rd., Morristown, NJ 07962

FILTER SYSTEMS

Cypress Inc., 689 N. Blackhawk Dr., Westmont, IL 60559
Luber-Finer, Inc., 5050 Quorum Drive, Dallas, TX 75240

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Therma-N-A, 13115 Dulany Valley Rd., Glen Arm, Baltimore, MD 21057

FIRE SUPPRESSION AGENT

American Pacific Corp., 370 Howard Hughes Pkwy., Las Vegas, NV 89109

FLAME CUTTING MACHINE

Sup-O-Systems, 3033 West Carson St., Pittsburg, PA 15204

FUEL CONSERVATION

American Vulkan, P.O. Drawer 673, Winter Haven, FL 33882

FLEXIBLE COUPLINGS

American Vulkan, P.O. Drawer 673, Winter Haven, FL 33882

GALLEY EQUIPMENT

Coscolon Refrigerator Co., 349 Industry Rd., Kenner, LA 70062
Hesterm Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Lang Manufacturing, P.O. Box 905, Redmond, WA 98073

GANGWAYS, LADDERS

Sup-O-Systems, 3033 West Carson St., Pittsburg, PA 15204
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

GEAR REPAIR

International Gears International, Inc., 2600 N. Concord Belle Chasse, LA 70037

GENERATOR

Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107

HATCH COVER SEAL RENOVATION

Baywood Inc., 3841 Stoneway, Bellingham, WA 98223
KIBI Corporation, U.S. Rept. Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168

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ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
ALASKA DIESEL	NORTHERN LIGHTS GENERATOR SETS	200
ALLIED SIGNAL	ROPES & FIBERS	201
AMERICAN BUREAU OF SHIPPING	SHIP CERTIFICATION	202
AMERICAN MOBILE SATELLITE	SATELLITE	203
AMERICAN MOBILE SATELLITE	SATELLITE	204
AMFELS	SHIPBUILDING	205
ANIXTER	WIRE & CABLE	206
AMPCO PUMPS	PUMP/ALLOY	207
APPLIED FLOW TECH	COMPUTER SOFTWARE	208
AQUAMASTER RAUMA	PROPELLERS	209
ASTILLEROS ESPANOL	SHIPBUILDING	322
ATLANTIC MARINE	SHIPYARD	210
AUTOSHIP SYSTEMS	SOFTWARE	211
BAYWOOD	HATCH COVERS	212
BBN ACOUSTIC	ACOUSTICS	213
B.F. GOODRICH	POLYMER PRODS.	214
BLOHM & VOSS	SIMPLEX COMPOUND 2000	215
BOATRACS	SATELLITE COMM.	216
BOLLINGER	SHIPYARD	217
BP MARINE	LUBRICANTS	218
BRANTON	JOINERS	316
BILL BROWN	AIR CONDITIONING	219
CAPITOL DIESEL	ENGINE & GENERATORS	220
CHEMPLEX ENVIRONMENTAL	ASBESTOS ABATEMENT	323
CONNECTICUT MARITIME ASSOC.	TRADE SHOW	309
CONSILIUM MARINE AB	TANK CLEANING EQUIPMENT	221
CORROSEAL	MARINE IND. COATINGS	222
COSPOLUCH REFRIGERATION	REFRIGERATION	223
CUSTOM SHIP INTERIORS	JOINER CONTRACTOR	224
DUNLOP-BEAUFORT	EVACUATION SYSTEM	225
ELECTRONIC MARINE	NAVIGATOR	226
ELLIOTT MFG.	VALVE CONTROL SYSTEM	227
ELTECH	SANITATION DEVICES	325
ESGARD	PAINTS	228
FAST SYSTEMS	SEWAGE SYSTEMS	308
R.W. FERNSTRUM	GRID COOLERS	317
FERRO CORP.	LIQUID COATINGS	229
J.W. FISHERS	UNDERWATER METAL DETECTORS	230
FUNDITESA SANJURIO	MARINE DIESEL SPARE PARTS	231
FURUNO	COMMUNICATION RADAR	232
L.F. GAUBERT	ELECTRICAL CABLE	233
GENERAL SHIP REPAIR	SHIPYARD	234
HARBOR MASTER	MARINE PROPULSION PRODUCTS	236
IDB MOBILE	COMMUNICATIONS	238
IMA ASSOC.	BUSINESS REPORT	319
INSTRUMENTS COMPUTER & CONTROLS	FULL CONSERVATION	239
INSULATIONS, INC.	MARINE CONTRACTORS	240
ITW PHILADELPHIA RESINS	CHOCKFAST COATINGS	241
JEAMAR WINCHES	WINCHES	242
JEFFBOAT	BARGES	243
JEZEK TOOL CO.	MEASURING DEVICE	324
KAHLENBERG	HORNS & WHISTLES	244
KING ENGINEERING	FLUID FILLED GAUGES	245
KOCKUM SONICS AB	MARINE SUPPLIER	246
KRUPP MAK	DIESEL ENGINE	247
KVH INDUSTRIES	ELECTRONIC & NAVIGATION EQUIP.	248
LANG MFG.	GALLEY EQUIPMENT	249
JERRY B. LEACH	INSURANCE BROKERS	250
LEE VAC	SHIPYARD	251
MACKAY COMMUNICATIONS	COMMUNICATIONS	252

ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
MAN B&W HOLEBY	DIESEL ENGINES	253
MARINE GEARS	MARINE GEARS	254
MARINE SAFETY INT'L	SIMULATION TRAINING	255
MARINE TRAVELIFT	CRANES & HOISTS	256
MCELROY MACHINERY	MARINE EQUIPMENT	257
MIDLANDS MFG.	VALVES, GAUGES, ALARMS	259
MOBILE OIL	MARINE OIL	260
MOTOR SERVICE HUGO STAMP	DIESEL ENGINE-SPARE PARTS	261
NELSON INDUSTRIES	ECOVENT RECIRCULATORS	263
NELSON INDUSTRIES	BILGE BOY	264
NERA A.S.	SATELLITE COMMUNICATIONS	265
NEW ENGLAND TRAWLER	DECK MACHINERY	266
OFFSHORE SYSTEMS	NAVIGATION/COMM. EQUIPMENT	267
OKABE INC.	FASTENERS	268
PAN AMERICAN SYSTEM	ALARM SYS./NAV. LIGHT PANELS	310
PANEL SPECIALISTS	BULKHEAD PANEL	318
PARKER HANNIFIN	FIRE-RESISTANT HOSE	269
PINPOINT SYS.	ELECTRONIC CHARTING SYSTEMS	270
PTT TELECOM	SATELLITE COMM.	271
RADIO HOLLAND	ELECTRONICS	272
R & D ASSOCIATES	MARINE REPAIRS	311
RGF MARINE	BILGE FILTERS	273
E.S. RITCHIE & SONS	ELECTRONICS	274
RO RO '96	TRADE SHOW	321
RUBB, INC.	RELOCATABLE STORAGE BINS	312
SAFECO CORP.	MARINE FINANCING	275
SAFE DIVISION	WORKBOAT	316
SCALE REPRODUCTIONS	SCALE MODELS	276
SCHUYLER RUBBER	FENDERING	277
KARL SENNER	SHIPBUILDING	278
SERVICE MARINE	SHIPBUILDING	279
SERVICE VALVE & FITTING	VALVES & FITTINGS	280
SGC, INC.	MARINE RADIO	281
SIMRAD	RADAR EQUIPMENT	282
SINGAPORE TELECOM	TELECOMMUNICATIONS	283
SMITH BERGER	DECK MACHINERY	284
STANDARD COMMUNICATION	HAND HELD VHF RADIO	285
STELLAR MARKETING	ENGINE SPEED PILOT	314
STIDD SYSTEMS	MARINE SEATING	286
STORK-KWANT	CONTROLS	287
SUNY MARITIME	CONTINUING EDUCATION	288
SYNTECHNICS	BARGE COVERS	289
TECHNICAL MARINE SERVICE	TANK LEVER INDICATOR	313
TELIA MOBILTEL AB	GMDSS	290
THRUSTMASTER OF TEXAS	JET BOW THRUSTERS	291
TITAN MARITIME	MARINE SALVAGE	292
TM MARKETING	PUBLICATION	294
TRIMBLE NAVIGATION	NAVIGATION/COMMUNICATION	293
TRIBAR INDUSTRIES	MARINE DOCKING	320
TRINITY MARINE	SHIPBUILDING	295
U.S. YACHT PAINT	ANTI FOULING & PROTECTION COATINGS	296
VIKING FENDER	FENDERING	297
VIOLET DOCK PORT	BERTHING FACILITIES	298
VITA MOTIVATOR	EDUCTORS	299
WATERCOM WATERWAYS	TELECOM	300
WATERMAN SUPPLY	MARINE EQUIPMENT	301
WESTERN MACHINE WORKS	HYDRAULIC TOW PINS	302
WESTINGHOUSE MOBILE SATELLITE	SATELLITE COMM.	303
WILLARD MARINE	RIGID INFLATABLE BOATS	304
WOOSTER PRODUCTS	STAIR SAFETY TREADS	305
WORKSKIFF INC.	BOAT BUILDERS WORKSKIFFS	306
WORLD WIDE SERVICE	VIDEOS	307

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KMY Delivers Carnival's Inspiration

Kvaerner Masa-Yards (KMY) delivered its sixth superliner for Carnival Cruise Lines, the M/V *Inspiration*. The vessel was scheduled to leave the shipbuilder's Helsinki New Yard on February 23 for Miami, Fla., via Brixham, U.K. *Inspiration* has a gross tonnage of 70,367, a passenger capacity of 2,600, measures 853 x 118.1 ft. (260.6 x 36 m), and operates at a speed of 22 knots. The vessel has a diesel-electric AC-AC power plant consisting of six diesel generators and two cycloconverter-controlled electrical propulsion motors. The total onboard power developed is 42,240 kW (57,400 hp). *Inspiration* continues the series of Fantasy class ships, the first of which, M/S *Fantasy*, was delivered in 1990.

For more information on KMY
Circle 99 on Reader Service Card

Inspiration Particulars

Length	852 ft. (260.6 m)
Width	118.1 ft. (36 m)
Draft	25.4 ft. (7.75 m)
Gross tonnage	70,367
Speed	22 knots
Classification	Lloyd's Register

Inspiration Machinery

Main engines	Wärtsilä-Sulzer (4) 17ZAV405
	+ (2) 8ZAL405
Generators	(4) 10.3 MVA + (2) 6.8 MVA
Propulsion motors	ABB Marine
	(2) 14 MW AC motors, 140 rpm
Propellers	(2) KaMeWa controllable
	pitch propellers, 5.2 m diameter
Rudders	(2) semi-balanced
Bowthrusters	(3) 1,500 kW
Sternthrusters	(3) 1,500 kW
Fin stabilizers	(2) Brown Brothers, 14.5 sq. m.
Steam generation	(2) oil-fired steam boilers
	(6) exhaust gas boilers

Karl Senner To Supply Marine Transmissions For USCG Program

North American distributor for Reintjes Marine Transmissions, Karl Senner, Inc., has been selected as the supplier for marine transmissions for the U.S. Coast Guard's (USCG) 47-ft (14.3-m) Motor Life Boat Program. Karl Senner, Inc., based in Kenner, La., will supply Textron Marine & Land Systems of New Orleans with 20 shipsets of Reintjes WVS234PU reverse reduction marine transmissions for the initial contract award.

For more information on Karl Senner
Circle 108 on Reader Service Card

NASSCO Awarded U.S. Navy Contract

National Steel and Shipbuilding Company (NASSCO) has been awarded a \$207 million contract award from the U.S. Navy to build

one additional Strategic Sealift Ship. This option award brings the number of Sealift New Construction ships awarded to NASSCO to four. In September 1993, NASSCO received a \$265 million contract to build the first large, medium-speed RoRo ship for the Strategic Sealift Program. In October 1994, NASSCO received an additional contract for \$436 million to build two more Strategic Sealift Ships. The Navy still holds

two additional options in what potentially could become a six-ship program with a total value of \$1.3 billion.

For more information on NASSCO
Circle 110 on Reader Service Card

SMI Delivers Conversion Projects

Service Marine Industries (SMI) completed five conversion projects

in 1995. Four steel conversions included three 20-ft. (6.1-m) mid-body extensions for TRICO Marine Operators, Inc., which involved the addition of pneumatic bulk tanks, increased liquid mud capacity and increased deck space and payload capacity.

The fifth conversion was an aluminum vessel modernization, with bow and stern additions.
For more information on Service Marine
Circle 111 on Reader Service Card



The RoRo Exhibition attracts a wide range of roro expertise. This view features terminal systems from Finland, shipbuilders from Norway, ports from Germany and shipbrokers from Sweden.



Delegates will be able to study the latest techniques in roro cassette operations, seen here alongside Lübeck's new two-level ramp system for large combi-ro-ro vessels.



Attendees can visit the 8 ferry berths (3 rail) at Travemünde. In addition to 1.5 million passengers p.a., the Skandinavienkai is a major transshipment hub for containers and trailers.

RORO 96

Where the business is...

RoRo 96, the thirteenth event in the series of biennial conferences and exhibitions, will be held in the City of Lübeck whose Ports of Lübeck and Travemünde service all types of roro tonnage; the new generation of large combi-ships, ro-pax and rail ships, and forest product carriers. The last mentioned traffic has also made the port the world leader in cassette trailer operations.

New state-of-the-art roro terminals and shore facilities provide an onsite showcase of roro operations which will be matched by the latest technologies and services on show in the RoRo 96 Exhibition.

The RoRo 96 Conference is the recognised international forum for the study and evaluation of industry developments. The present 120 000 lane-metre roro orderbook stands at more than 50 vessels with a value of almost \$2.5 billion and is coupled with heavy investment in roro port facilities and cargo handling equipment.

This evidences an industry confident of its future role. But with new safety standards being imposed by national authorities and IMO on the design and operation of passenger car ferries, many operators are considering new tonnage strategies which envisage ro-pax vessels for freight and fast ferries for passengers and cars.

If your business is roro then invest in it by attending RoRo 96.

More information Fax : +44 1923 777206

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Francis Searchlights/Stam Supply Co., 4415 6th N.W., Seattle, WA 98107

LIQUID LEVEL GAUGES
Kry Engineering Co., Inc., Box 1228, Ann Arbor, MI 48106

LIQUID LEVEL INDICATORS
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026
Meritape, Inc., 59 Porter Rd., Littleton, MA 01460
Inland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226

LOGISTICS
Newport News Shipbuilding, Logistics & Technical Services, 12129 Jefferson Ave., Newport News, VA 23605
CED, 4646 N. Wilchuck Road, Virginia Beach, VA 23455
VL Logistics Consultants, Inc., 3420 Blenville Blvd., Ocean Springs, MS 39564

LUBRICANTS
Royal Lubricants, P.O. Box 518, East Hanover, NJ 07936
Texaco International, 2000 Westchester Avenue, White Plains NY 10650

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
Del Gavo, 619 Industrial Rd., Carlstadt, NJ 07072
Golden Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
New England Towler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

MARINE ACCOMMODATIONS
Dickinson II Design Inc., 11457 Old Cabin Rd., Ste 100, St. Louis, MO 63141
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
Jameson Metal Marine Sales, Inc., 4710 Northwest Second Ave, Boca Raton, FL 33431
Maritime Services Corp., 3457 Guiland Dr., Hood River, OR 97031

MARINE CEILING
Hydro-Aluminum, VA Verk, N.5860 VK I SOGN, Norway
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

MARINE DECKING
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
Sentry, P.O. Box 1600, Sausalito, CA 94967

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Marine Drilling & Blasting, Inc., P.O. Box 10455, Jacksonville, FL 32247-0455

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Kookum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
Sash Marine Electronics, 40, Box 15045, 4221 Galesburg, SWEDEN
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

MARINE ELEVATORS
Alroch Elevator Co., 1100 Boston Ave., Bridgeport, CT 06601
McElroy Machine, 1101 Lorraine Rd., Bixby, MI 39535-4454

MARINE EQUIPMENT
Borner & Associates, 1100 Route Rochelle, Sidel, VA 70458
McElroy Machine P.O. Box 4454, Bixby, MI 39535-4454

MARINE FINANCING
Salco Credit Co., Inc., 4909 156th Ave. NE, Redmond, WA 98052

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Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813

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Det Norske Veritas, Haasstratstraat 7, 3079 DC Rotterdam, The Netherlands
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Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492
Haley Marine Gears, Inc. P.O. Box 689, Greenville, MS 38702
Marine Gears, P.O. Box 689, Greenville, MS 38701
Westech Gear Corp., 2000 East Imperial Hwy., Lynwood, CA 90262
ZF Industries, Inc., 771 Highway Hill Drive, Vernon Hills, IL 60061

MARINE HYDRAULICS
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MARINE INSURANCE
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Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807
Jameson Metal Marine Sales, 4710 Northwest Second Ave, Boca Raton, FL 33431
Johnson Construction Services, Inc., 3420 Rusk P.O. Box 1380 Houston Texas 77251

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Donald L. Blount, 2520 Elmwood Ave., Ste. K, Norfolk, VA 23513
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CBI Marine Co., 4940 Woodcock Dr., Suite 200, Jacksonville, FL 32207
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Crane Consultants, 15301 First Ave S., Seattle WA 98148
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Sargent & Heiles, 225 Barons St., Suite 1405, New Orleans LA 70112
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Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702
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Comsat Maritime Services, 950 I. Erdani Plaza SW, Washington DC 20024
CruisePhone, 2100 Park Central N., Pompano Beach, FL 33064
Funaro U.S.A., 271 Harbor Way, S. San Francisco, CA 94069
Hose-McCorm, 1241 W. Newport Center Dr., Overland Beach, FL 33442
ICS Electronics Ltd., Unit V, Rufford Industrial Estate, Ford, Arundel, West Essex, UK
KWI Industries, Inc., 110 Enterprise Center, Middletown, RI 02842-5288
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837
Negron Marine Consultants, 640 Bond Street, Elizabeth, NJ 07201
Onshore Systems Ltd., 107-200 West 1st St., North Vancouver, B.C. V7P 2M4 CANADA
Raytheon Marine Co., 676 Island Pond Rd., Manchester, NH 03109-5420
Scandinavian Micro Systems P.O. Box 155, N-111, Kobolton, NORWAY
Scientific Adams, Inc., 1650 International Court, Norcross, GA 30093
Sea, Inc., 7030 220th S.W., Mountlake Terrace, WA 98043
Sinnad, 19210 3rd Avenue West, Lynnwood, WA 98026
Sinnad Robertson, 19001 Hamlety, Suite 100, Houston, TX 77043-1923
Sperny Marine Inc., 1070 Semole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Starlink, Inc., 6400 Highway 290, East Suite 220, Austin TX 78752
Trimble Navigation, 565 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086
Arenway Communications System, Inc. 435 E. Park Pl., Jeffersonville, IN 47130

NOZZLE SYSTEM
Rice Propellers, Av. Rios Espinoza #88, Mazatlan, MEXICO 82180

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Texaco International, 2000 Westchester Avenue, White Plains NY 10650

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Bjorn & Voss AG, P.O. Box 10 07 20, D-20457 Hamburg 1, GERMANY
U.S.A. Rees-Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
MMC International, 60 Ins Dr., Jersey City, NJ 07310
National Fluid Separators, Inc., 1001 Highway Industrial Ct., St. Louis, MO 63144
Nelson Industries, Highway 51 West, Sloughon, WI 53589

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Corrosel, Inc., 1045 12th Ave. NW, FSA, Issaquah, WA 98027
Duraco Coatings, 6000 Dupont Circle, Houston, TX 77029
Egard, Inc., P.O. Drawer 2698, Lafayette, LA 70502
Fern Corp., 1301 North Flora St., Plymouth, IN 46363
Jameson Distrib., 28 N. Main St., P.O. Box 348, Jamestown, RI 02835
Hempel Coatings, 6901 Cavalcade St., Houston, TX 77028
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Wilks, CA 95490
Permatrust Rust, 284 Court St., Wallingford, CT 06492
Product Research Service, Inc., 229 Hwy 23, PO Box 150, Belle Chasse, LA 70037
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70037
Sunco Coatings, 8975 Market Road, Houston, TX 77029
Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030
Unitor Ship Services, Inc., 2375 West Esther Street, Long Beach, CA 90813
U.S. Yacht Paint, 1525 Rte. 1 South, N. Brunswick, NJ 08902

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Loking Corp., 996 Hatch Drive, Foster City, CA 94404

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Oil Mop, Inc., 221 Rue De Jean, Lafayette, LA 70508

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Predictive VSS Winslow Way West, Bainbridge Island, WA 98110

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Rolle SP Propellers SA Via Silva 5, P.O. Box 251, 6028 Salama - SWITZERLAND
Rolla SP Propellers USA Inc., 4003 Mustang Road, Melbourne, FL 32934 USA
Sound: Propeller, 1628 Fenwick Avenue E., Seattle, WA 98102

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American Propellers, 2300 West Main St., Wallingford, CT 06492
ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372, USA
ABB Industry Div., P.O. Box 155, 00381 Helsinki, FINLAND
ABB TURBOCHARGER, Inc., 1460 Lincoln Avenue N., Brunswick, NJ 08902
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Aquamaster-Rauma, Inc., 2315 North Woodlawn Ave., Ste 103, Metairie, LA 70001
B&W Johnson Company, Inc., P.O. Box 1239, Pascagoula, MS 39367
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Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492
Friedrich Diesel Engines Div.-DWT, Bagnoli, Road 234, Trieste, ITALY
GE Naval & Dine Turbine Systems, 166 Boulder Dr., Fitzburg MA 01420
Kahnberg Bros. Co., Inc., 3929 North Bluff Street, Milwaukee, WI 53212-3793
Krupp Max, 1255 Denton Crescent, Mississauga, Ontario, CANADA L5N 9P9
Kobel Manufacturing, 8238 129th Street, Surrey, B.C. CANADA V3W 0A6
LIPS B.V., P.O. Box 6, 5151 RP Drunen, The Netherlands
LIPS U.S.A., Inc., 3617 Koopers Way, Chesapeake, VA 23023
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MAN B&W Diesel AS, 61615 Augsburg 1 GERMANY
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Schottel North America, Inc., 1505 Center Ave., Hammond, LA 70403
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Siemens Electric Ltd., 1180 Courtmeyer Rd., Mississauga, ONTARIO
Stewart & Stevenson, 1400 Duxettman, P.O. Box 8, Harvey LA 70059-0008
Thrustmaster of Texas, P.O. Box 840189-12227 IFM 529, Houston, TX 77284-0189
Ustlen Bergen Diesel A/S, P.O. Box 921, N-5002, Bergen, NORWAY
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U.S. Rep. Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021
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Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Wilks, CA 95490
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Kobolton Marine Engineering Co., 6F Tatsunuma Bldg., 3-19 Yaeasu 1-Chome, Chuo-ku, Tokyo, 103, JAPAN
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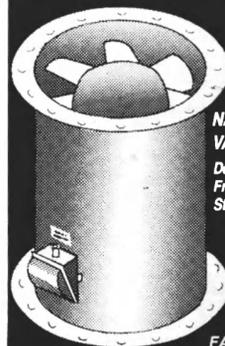
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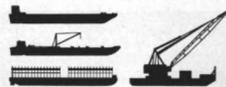
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