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FEBRUARY 1997 EDITION

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On The Cover

International navy business, sagging for many years, will inevitably peak again according to industry insiders. Catch up on some of the latest contracts, as well as the newest designs, products and developments from top navy builders and suppliers, starting on page 63. (Cover photo courtesy of HDW)

8 MARINE FINANCE

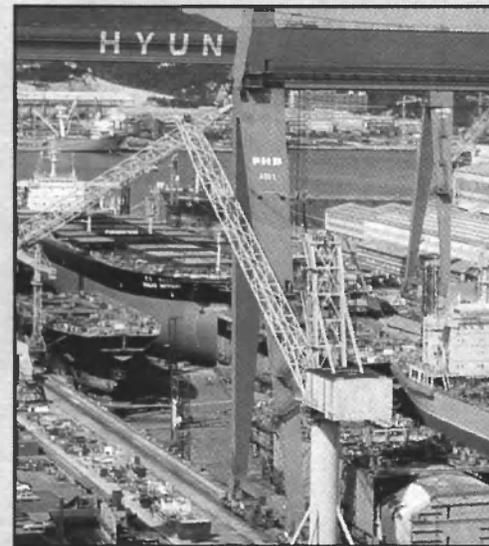
ISM Code — the legal, commercial and economic ramifications. Plus: Samsung to build Chevron VLCCs, Trico to pay \$36 million for eight vessels.

28 STARTING STRONG

Korea's Hyundai Heavy Industries has started the year with a significant order from Norway's Bergesen. Review this and other news from the area in this month's Far East Update. — by Alan Thorpe, international editor

49 NORWEGIAN MARITIME REVIEW

Steeped in maritime culture, Norwegian innovation continues to fuel the success of the country's marine builders and suppliers in the international marketplace.



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Fincantieri-built Veendam is shown entering Venice.

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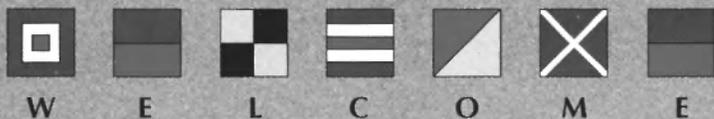
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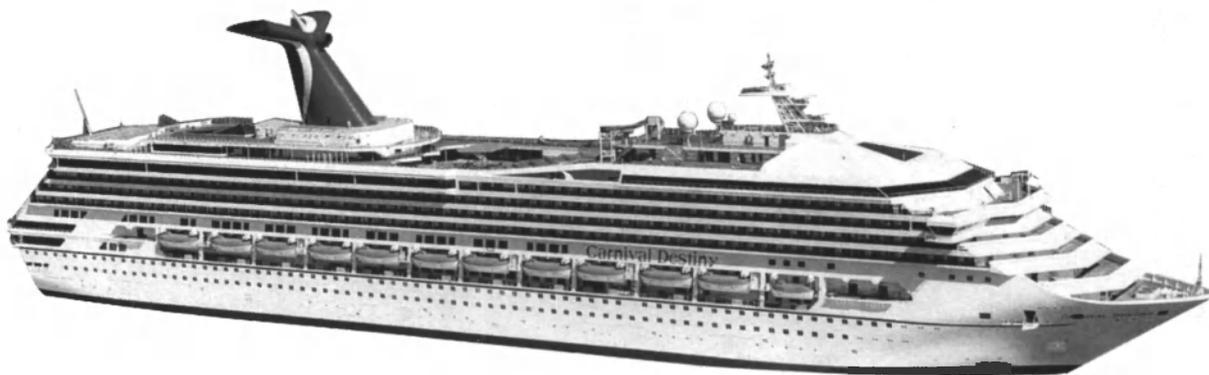
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Carnival Cruise Line's "Carnival Destiny"



For Carnival Destiny and Carnival Triumph, ABB supplies a 60MW power plant and two 20 MW Cyclo propulsion drives, six thruster motors and five compressor motors.

State-of-the-Art Propulsion

The ABB Marine Cyclo propulsion concept has once again demonstrated the confidence it enjoys among leading shipowners: Carnival Cruise Lines has chosen it for their new 100,000 GRT *Carnival Destiny* and *Carnival Triumph* being built at Fincantieri.

The ABB concept offers cruise vessel operators superior performance, flexibility and profit generating potential. It has indeed become an industry standard for successful cruise ships. Installations and orders include eight of CCL's *Fantasy*-class ships, five of Holland America Line's vessels and two of Crystal Cruises vessels and, more recently, Star Cruises' *SuperStar Leo* and *SuperStar Virgo*. Azipod, the innovative azimuthing electric propulsion unit, continues its success story with orders for the two most recent *Fantasy*-class ships.

Eminently suitable also for tankers and special-purpose vessels, ABB Marine AC propulsion systems are presently being supplied for ro-ro ferries, shuttle tankers, floating production vessels, product carriers, pipe and cable laying vessels, and drilling rigs.

These are only some of our recent deliveries. All told, ABB's experience of electric power plants and propulsion systems spans over 50 years.

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Helsinki, Finland
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Telefax: +358 10 222 2350

ABB Industrial Systems Inc.
Ft. Lauderdale, FL 33315, USA
Telephone: +1 954 763 8600
Telefax: +1 954 763 4849



International Representatives

Australia
ANNE MURRAY/YVONNE SANDFORD
World Media Network Pty. Ltd.
Suite 5, Level 1, 89 York St.,
Sydney, NSW 2000 Australia,
Telephone: +61 2 9299 5677; Fax: +61 2 9299 6178

Benelux
PAULA TACO
Maritime Media NL
Boekwijkstraat 43, 2743 DL
Waddinxveen, Netherlands
Telephone: +31 182 640655; Fax: +31 182 649150

China/Hong Kong/Taiwan
NEWTON CHENG
Winwell Services Ltd.
Room 808, Yu Sung Boon Bldg.,
107-111 Des Voux Road, Central Hong Kong
Telephone: +852 2815 0266; Fax: +852 2544 6662

Corsica/Gibraltar
Paulo Brehm
AZ Publicidade Lda.
Rua Almirante Barroso, 52-1 D
P-1000 Lisbon, Portugal
Telephone: +351 1 3142256; Fax: +351 1 3525157

Eastern Europe
ALFRED THURNER/ALEXANDER JURCENKO
Alpine Media
Moosallee 50, A-5550, Radstadt, Austria
Telephone: +43 6452 6363; Fax: +43 6452 63634

France
DANIEL SOLNICA
Ediconsult Internazionale
25 rue Saulnier 75009 Paris, France
Telephone: +33 1 4246 9571; Fax: +33 1 4246 8508

Germany & Switzerland
HANSJORG BRANS
Maritime Media
Freiherr v. Stein Str. 24, D-63303 Dreieich, Germany
Telephone: +49 6103 697745; Fax: +49 6103 697743

Italy
VITTORIO NEGRONE
Ediconsult Internazionale
Piazza Fontane Morose, 3-16123 Genova, Italy
Telephone: +39 10 583684; Fax: +39 10 566578

Japan
TOSHIRO EGUSA
Publinterwork
C-407, 2-22-6, Tsukuda, Chuo-Ku, Tokyo 104 Japan
Telephone: +81 3 3536 5404; Fax: +81 3 3536 5490

Korea
C.H. PARK
Far East Marketing Inc.
Room 1310 Golden Tower Building
191, 2KA, Choonjung-Ro, Seodaemun-Ku, Seoul, Korea
Telephone: +82 2 364 4182/3; Fax: +82 2 364 4184

Scandinavia
STEPHAN R.G. ORN/LEON SCHULZ
AB Stephan R.G. Orn
Box 184, S-271 24 Ystad, Sweden
Telephone: +46 411-184 00; Fax: +46 411 105 31

Singapore
CATHERINE WONG
The Euro-Asia Link
391 A Orchard Road #12-01,
Ngee Ann City Tower A, Singapore 238873
Telephone: +65 337 4658; Fax: +65 383 6081

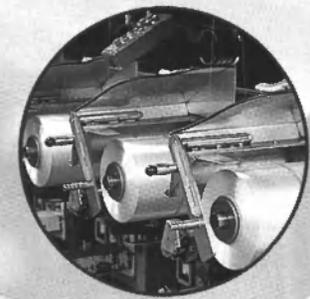
Spain
JESUS MORAN
Varex
Modesto Lafuente, 4-28010, Madrid, Spain
Telephone: +341 448 7622; Fax: +341 446 0198

United Kingdom
MICHAEL J. DAMSELL
Euromedia Ltd.
P.O. Box 122, Hayward's Heath,
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EDITOR'S NOTE

Today's "I need everything yesterday" business climate calls to mind. The Patience Prayer: "God grant me patience...and I want it right now!"

The urgency with which maritime executives require information on today's and tomorrow's industry trends is a driving force in creating the editorial content of each issue of Maritime Reporter. This edition embodies that goal, with significant coverage of the cruise ship, offshore and naval industries.

Associate Editor Bridget Murphy has, in effect, adopted the cruise ship market as her own, and has regularly sat with the industry's top powers to discuss the business. Her coverage of this glamour market — which includes MR/EN's annual anointing of Outstanding Cruise Ships — starts on page 33.

The revival of offshore business is beyond its infancy, and indicators point to a strong run through the end of the decade. A recent market report from Arthur Andersen regarding the U.S. oil & gas industry found that 70 percent of companies plan to increase domestic exploration and development spending in 1997. Coverage of this expanding market, which includes a new deepwater drillship design from Hitec, begins on page 72.

Finally, navy spending has been making news of late, and several significant contracts and proposals promise to infuse dollars and life into an otherwise dormant market segment. As Jim McCaul says in his report entitled U.S. Navy Ship Construction Continues To Provide An Envious Business Base, U.S. shipyards have more than an \$18 billion construction backlog, a figure exceeding the backlog of any other shipbuilding nation — including Japan & Korea (Read this story on page 63).



Gregory R. Trauthwein

Gregory R. Trauthwein, editorial director

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Editorial & Executive Offices
118 E. 25th St., NY, NY 10010
Tel: (212) 477-6700; Fax: (212) 254-6271;
e-mail: mren@marinelink.com

PUBLISHERS

Charles P. O'Malley
John E. O'Malley
John C. O'Malley

Vice President
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EDITORIAL

Editorial Director
Gregory R. Trauthwein
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INTERNATIONAL OPERATIONS

Charles E. Keil, Vice President
980 N. Federal Highway, Ste. 206-19,
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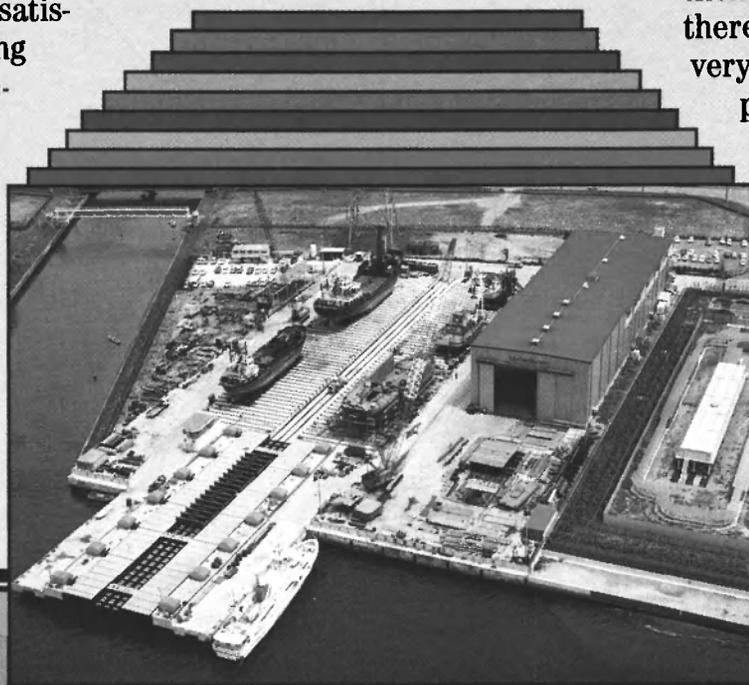
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ISM CODE

The legal, commercial & economic consequences

by Guy E. C. Maitland

In imposing a higher degree of accountability on the shipping industry through what in effect are "market disciplines," the ISM (International Safety Management) Code can be seen to have some fairly sharp teeth which will alter existing corporate procedures and legal structures, as well as private commercial relationships.

In aiming to promote safe operational practices ashore as well as afloat, the Code is also about how companies are formed and run. Its dominant theme is accountability — from the vessel at sea to the corporate suite — and it rewrites a number of familiar rules and roles.

The Code can be looked upon as a part of a continuing erosion of immunities traditionally available to owners and operators, together with a broadening and extension of liability and accountability to other sectors of the shipping industry.

Prior to the ISM Code, there existed a number of institutional relationships and practices which acted as buffers to give the industry, including underwriters, a certain degree of protection from unlimited and unforeseen liability. This is fundamental to almost all contracts for the carriage of goods by sea, and for marine insurance. Because it was possible to control exposure, a shipowner's risk of being liable for loss or damage has been predictable, and therefore insurable at an acceptable cost. These buffers included the division of responsibility for safety management between owners, agents, operators, managers and charterers, and the common use of separate shipping companies with low capitalization and common ownership.

Many of these relationships and practices will now change: one will involve the burden of showing what is called "due diligence," which broadly means that an owner or operator would not legally be responsible for losses caused

by the negligence of a ship's crew, if it can be shown that the owner or agents exercised "due diligence" at the beginning of the voyage to make the vessel seaworthy.

In principle, in the past, a navigational error that puts a vessel on the rocks would not be imputed to the owner or operator unless the courts find "privity" on their part, meaning actual or constructive knowledge. Courts, particularly in the U.S., go to great lengths to find such privity, and clearly the ISM Code will from now on be a powerful asset to lawyers and judges in doing so.

Article 4 of the Code requires that companies designate a person ashore responsible to top management for monitoring the safety and pollution aspects of shipborne operations and for ensuring that adequate resources and supports are applied.

This "link" now imposes a degree of knowledge and control that could seldom, in the past, be documented and verified.

It could, for example, determine whether an operator can resist the demands of a charterer to enter port in poor weather or when the crew have not had their mandatory rest period.

It will be more difficult to rely on the safety net of insurance cover where there has been a lack of due diligence, or where there is found to be privity. The cost of insurance, if indeed it is available, may go up. The link between the ship and top management also changes the practice whereby owners are entitled to limit their liability under the Carriage of Goods by Sea Act (COGSA), or the Hague Rules as they are known in the U.S., if a casualty occurs without their actual fault or privity. If prior knowledge is found to exist, it is possible that the cargo P&I underwriter may decide that it deprives the owner and manager of coverage.

Clearly, the broad and comprehensive nature of the Code's provisions will facilitate the linkage of any unseaworthy condition with a

New Contracts

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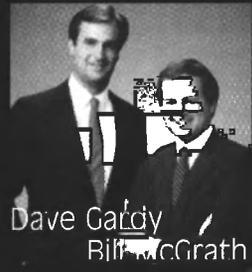
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SWIRE PACIFIC OFFSHORE	ULSTEIN SHIPYARD	ANCHOR HANDLING	1	—	3/98	23.1
EAGLE MARITIME	SASEBO	BULK CARRIER	1	71,790	2/97	24.32
PAN OCEAN SHIPPING	HYUNDAI MIPO	BULK CARRIER	2	20,000	1998	—
SHINWA KAIUN	I.H.I.	BULK CARRIER	1	170,000	1999	—
TOP GLORY	OSHIMA SHIPBUILDING	BULK CARRIER	3	30,000	9/99	58.3
MITSUBI O.S.K. LINES (MOL)	OSHIMA SHIPBUILDING	BULK CARRIER	2	47,300	97/98	44.4
NYK LINE	OSHIMA SHIPBUILDING	BULK CARRIER	2	46,700	97/98	49.54
NIPPON STEEL CORP.	MITSUBI ENG. & SHIPBUILDING	BULK CARRIER	1	228,000	1998	50.27
MITSUBI O.S.K. LINES (MOL)	YAMABARI SHIPBUILDING	BULK CARRIER	1	49,400	1997	23.42
KUMAMOTO FERRY	AUSTAL SHIPS PTY LTD	CATAMARAN	1	—	—	4.8
ANDERS UTKLENS	AUKRA INDUSTRIER AS	CHEMICAL	1	16,000	11/98	40
EMILIANA MARITIMA	LINDENAU GmbH SCHIFFWERFT	CHEMICAL	1	14,400	1997	—
MARNAVFINAVAL	AARHUS FLYDEDOCK	CHEMICAL	2	8,000	1998	—
SOVCOMFLOT	ULJANIK SHIPBUILDING	CHEMICAL	1	47,500	1998	35
ARMIN KLINGENBERG SCHIFFS	QING SHAN SHIPYD	CONTAINER	1	—	1997	—
BERTRAM F. BORMERS	CHINA SHIPBUILDING CORP.	CONTAINER	5	32,500	1998	—
COSCO	ALABAMA SHIPYARD	CONTAINER	4	—	1998	157.36
DELMA	SAMSUNG	CONTAINER	2	—	—	—
DUNAV TA LLOYD	PT PAL	CONTAINER	2	—	1999	90
HANSA	SAMSUNG	CONTAINER	1	43,600	1998	43
IRAN SHIPPING LINE	SADRA	CONTAINER	2	—	1998	—
LEONHARDT & BLUMBERG	SAMSUNG	CONTAINER	1	—	1999	—
NORASIA	JIANGNAN	CONTAINER	5	—	1998	—
NORASIA LINE	UNKNOWN	CONTAINER	5	—	1999	—
SCHOELLER	MAWEI SHIPYARD	CONTAINER	2	—	98/99	27.4
CORAL CONTAINER LINES	CASSENS WERFT	CONTAINER	1	—	12/98	—
NYK/TOKYO SEMPAKU	SHINKURUSHIMA DOCK	CONTAINER	2	22,000	1997	59
UNKNOWN	LINDENAU GmbH SCHIFFWERFT	CONTAINER	2	—	97/98	—
UNKNOWN	CASSENS WERFT	CONTAINER	2	—	97/98	—
OMI CORP.	DAEWOO	CRUDE CARRIER	2	156,000	1998	—
THENAMARIS	SAMSUNG	CRUDE CARRIER	2	150,000	98/99	—
UNKNOWN	SAMSUNG	CRUDE CARRIER	2	105,000	98/99	—
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CHEMGAS	UNKNOWN	GAS TANKER	2	—	97/98	23
LAURITZEN KOSAN TANKERS	HYUNDAI HEAVY INDUSTRIES (HHI)	GAS TANKER	2	—	11/98	40
IRAN ISLAMIC REPUBLIC	SADRA	GENERAL CARGO	6	22,000	1998	—
GERMAN GOVERNMENT	KROGER-WERFT	HYDRO. RESEARCH	1	—	10/98	39
CHEMGAS	KANREI SHIPBUILDING	LPG	2	2,850	1997	23
WESTFAL-ARSEN	MITSUBI ZOSEN	LPG	3	—	—	—
U.S. MILITARY SEALIFT	AVONDALE SHIPYARD	MULTI-PURPOSE	1	—	2000	—
ARKHANGELSK SHIPPING	TROGIR SHIPYARD	MULTI-PURPOSE	5	6,900	98/00	75
SIMONSEN & SLANG	ABG SHIPYARD	MULTI-PURPOSE	1	5,350	1998	17
HAI SUN HUP	HITACHI SINGAPORE	MULTI-PURPOSE	4	19,150	98/99	70
WESTFLEET MANAGEMENT	HYUNDAI HEAVY INDUSTRIES (HHI)	OBO	1	110,000	1999	—
UNIVERSAL ABOITIZ	FBM ABOITIZ MARINE	PASSENGER FERRY	4	12/97	30	—
UNKNOWN	KVAERNER SINGAPORE	PASSENGER FERRY	1	—	1997	—
WATER JET SHIPPING	KVAERNER SINGAPORE	PASSENGER FERRY	1	—	1997	—
NORWEGIAN INTERESTS	SOVIKNES VERFT	PLATFORM SUPPLY	1	—	1997	—
SOLSTAD SHIPPING	ULSTEIN VERFT AS	PLATFORM SUPPLY	1	4,320	3/98	23.4
MEDITERANSKA PLOVIDBA	SPLIT	REEFER	2	12,800	98/99	80
DONG BANG FORWARDING	DAE SUN	RoRo	4	6,000	1998	—
MINOAN LINES	FOSEN MEK VERKSTEDER AS	RoRo PSSGR. FERRY	1	—	6/98	111
BP + MAERSK TANKER	DAEWOO	TANKER	1	—	8/98	90
CERES HELLENIC	SAMSUNG	TANKER	2	148,500	1998	—
NIARCHOS GROUP	DAEWOO	TANKER	1	300,000	1998	84
TANKER PACIFIC	SAMSUNG	TANKER	2	105,000	98/99	81.2
MING WAH	NAMURA ZOSENSHO	TANKER	2	105,000	1998	86
SCINICARIELLO SHIP MGT.	NAMURA ZOSENSHO	TANKER	1	100,000	8/98	42
STENERSEN	JIANGNAN	TANKER	2	13,000	1998	—
UNICOM MANAGEMENT SVS.	ULJANIK SHIPBUILDING	TANKER	1	47,500	1999	33
WAH KWONG	FUKUOKA SHIPBUILDING	TANKER	1	11,500	1998	27
ASIAN ETERNAL SHIPPING	PAN-UNITED SHIPYARD	TANKER	2	17,500	1998	42
AP MOLLER SINGAPORE PTE.	DALIAN SHIPYARD	TANKER	2	110,000	1998	84
CARL F PETERS	CHEUNG KU MARINE IND.	TANKER	1	6,500	2/98	16
NANJING CHANGJIANG	BOHAI SHIPYARD	TANKER	2	35,000	8/98	60
PACIFIC CARRIERS	ONOMICHI	TANKER	2	46,500	1998	62
PRIMORSK	DAEDONG SHIPBUILDING	TANKER	3	46,000	8/98	98
WAH KWONG	DALIAN SHIPYARD	TANKER	2	44,000	1999	68
AP MOLLER	DAEWOO	TANKER	1	126,000	1998	90
CERES HELLENIC (G P LIVANOS)	SAMSUNG	TANKER	1	150,000	1999	55
GLAFKI MARITIME	NKK CORP.	TANKER	2	150,000	8/98	—
GLAFKI	DAEWOO	TANKER	2	—	1998	104
GOLDEN OCEAN	MITSUBISHI H.I.	TANKER	1	310,000	1999	83.7
WYŻSZA SZKOŁA MORSKA	REMONTOWA	TRAINING VESSEL	1	300	1997	—
DUBAI PORTS AUTHORITY	DUBAI DRYDOCKS	TUG	1	—	—	—

failure of the owner or operator's system of management. One omen of change is that hull underwriters, under the ITC Hulls clauses, have extended the requirement of due diligence to include "superintendents or any of the assured's onshore management". This has the effect of avoiding null and machinery-related claims result-

ing from poor maintenance.

There will also be a link between the ISM Code and national laws. Take OPA 90, for example. Its definition of those liable for a polluting vessel is very broad and includes owners, operators and bareboat charterers. However, the Code, in prescribing that a Document of Compliance (DoC) is

VIDEO PROFESSIONALS THAT KNOW PORT FROM STARBOARD...AND A WHOLE LOT MORE



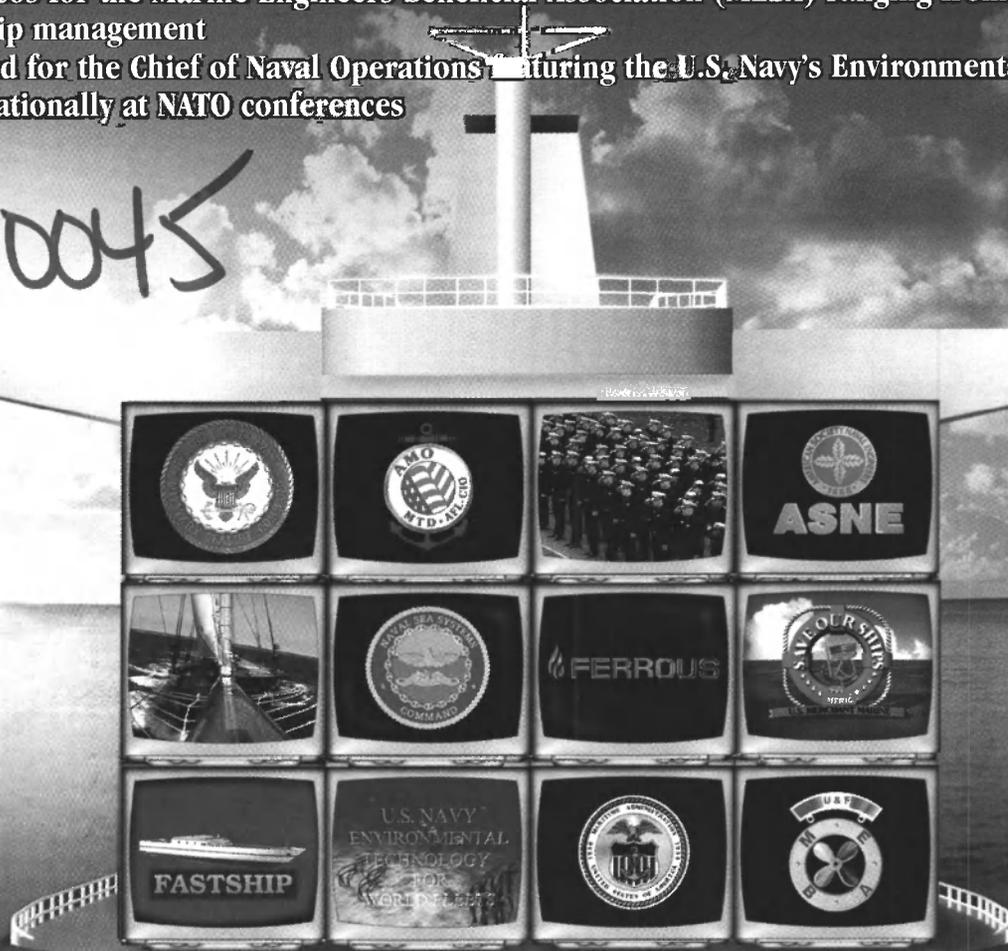
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- a series of training videos for the Marine Engineers Beneficial Association (MEBA) ranging from MARPOL compliance to burner tip management
- a presentation produced for the Chief of Naval Operations featuring the U.S. Navy's Environmental Technology, which was aired internationally at NATO conferences

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MARINE FINANCE

issued to the company operating the vessel, and that a Safety Management Certificate (SMC) is issued to the vessel itself, clearly identifies the operator. The two "laws" work hand in hand to lay bare all operational interests, however diverse and dispersed, to all claimants.

The insurance industry is also concerned with the effect of the Code on the right of the owner or operator to limit liability, notably under the 1976 London Convention. Limitation of liability is one of the sacred artifacts in the holy tabernacle of maritime law — and in particular, marine insur-

ance — and has a profound effect on rates. The owner's or manager's prior knowledge of some procedural failure or operational or maintenance malfunction, obtained through the designated person link between the ship and top management, may result in the loss of P&I cover, while the loss of

the right to limit liability may have an impact on the nature of available insurance cover. In channeling accountability, the Code may bring about a number of secondary results. One of these is that if liability exceeds the available insurance and assets of the responsible party, claimants could conceivably attempt to pierce the corporate veil and proceed against the assets of sister corporations, subsidiaries, affiliates and shareholders. The Code clearly delineates the connection between vessel and management, and its transparency requirements clearly point to the responsible party. Therefore, managers, owners and operators should carefully appraise their entire corporate structure so that affiliates cannot be unreasonably held liable in damages for errors or deficiencies for which they are not responsible.

As an example, some companies, in reviewing how they are structured, may wish to ensure that the operating company that obtains the DoC is the one that they would not mind being identified by the revenue authorities as exercising management control. If the owner's operating decisions are actually made by an affiliate dressed up to look like a broker, charterer or agent, there is an element of risk that may be undesirable. This could be because the broker or agent may be found by the authorities to have surprisingly little revenue for a company with management responsibilities, and this could lead to further inquiries. In all likelihood, a well-capitalized company with non-interlocking directors would be immune from a legal incursion to establish responsibility. In requiring that a variety of documentation must exist and be maintained, including DoCs and SMCs, the Code has also created a treasure trove of information which can be used in litigation.



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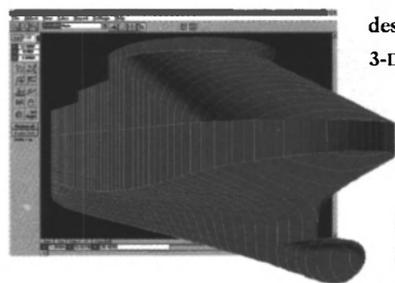
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**Vessel &
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Contract News**

Samsung Wins Contract For Two Chevron VLCCs

Chevron announced agreements to acquire two new double-hulled tankers as part of an ongoing fleet renewal program for Chevron Shipping Company. The VLCCs

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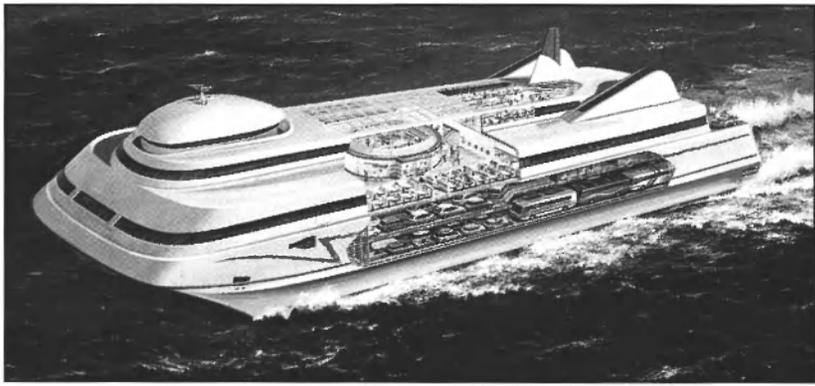


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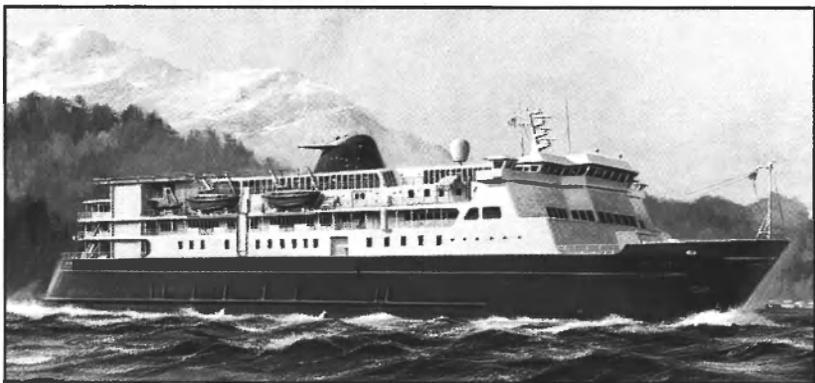
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E-CAT: Passenger, High Speed, Low Wake



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MARINE FINANCE

will be built by Samsung Heavy Industries Co., Ltd. at its Koje Island Shipyard in Korea for delivery in late 1998 and early 1999. Financing for the vessels has been arranged by Cambridge Partners L.L.C., a New York-based investment bank. A Cambridge subsidiary will reportedly own the vessels and Chevron Shipping will

operate them under a bareboat charter agreement. Chevron options out to 18 years. Each new 301,000-dwt tanker will be capable of carrying approximately two million barrels of crude oil on voyages from the Middle East to Chevron's refining locations in the U.S.

For more information on Samsung
Circle 79 on Reader Service Card

Trico To Acquire Eight Vessels For \$36 M

Trico Marine Services, Inc. has entered into definitive agreements to acquire seven supply vessels and one utility vessel for \$36.2 million in cash in two separate transactions. The first acquisition from Laborde Marine, consisting of five

supply vessels and one utility vessel, is expected to close by early February. The second transaction for two supply vessels is expected to close in the second quarter. Both acquisitions will be financed under the company's credit facility. The first acquisition also includes a three-year charter contract for a supply vessel beginning mid-year.

USN Narrows The Field Of Arsenal Ship Contractors

Three teams headed by Lockheed Martin, Northrop Grumman and General Dynamics Corp. each won \$15 million contracts to develop prototypes of the U.S. Navy's (USN) next Arsenal Ship. Teams headed by Hughes Aircraft Co. and Rockwell International Corp. were not given further contracts following the award of \$1 million grants in July 1996 to all five competitors, for work associated with the provision of initial design concepts.

Ingalls Shipbuilding Division of Litton Industries will join Lockheed Martin and Newport News Shipbuilding in jointly developing one complete Arsenal Ship design for the Navy and DARPA. One team will be selected from the three in early 1998 to continue in the third phase of the program, which will involve the detailed design and construction of the first ship. Follow-on phases will include contracts for testing the first ship, as well as construction and support of five additional ships, which will be capable of providing deterrence, initial strike, naval surface fire support of marine and army forces ashore, and battle space dominance. The ships will incorporate stealth technology, a highly-survivable ship structure, and state-of-the-art automation systems for reduced crew levels and lower operating costs.

The members of the three teams are as follows:

- Lockheed Martin; Litton Industries/Ingalls Shipbuilding; Newport News Shipbuilding; and Government Electronic Systems.
- Northrop Grumman Corp.; National Steel and Shipbuilding Co.; Vitro Corp., Rockville, Md.; Solipsys; and Band Lavis & Associates, Inc.
- General Dynamics, Bath Iron Works, Raytheon Electronic Systems and Science Applications International Corp.

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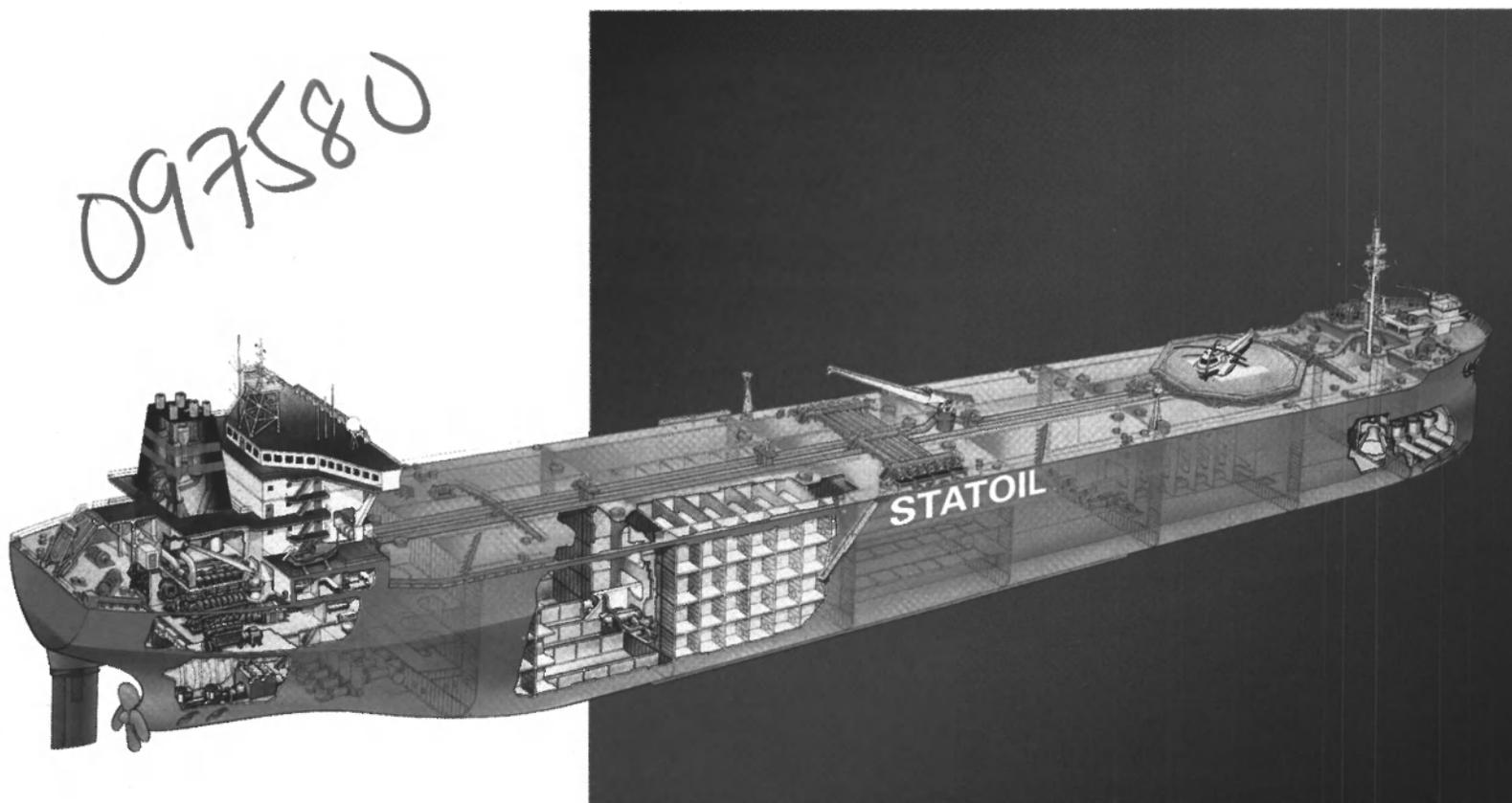
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Southwest Marine Wins Chancellorsville Contract

The U.S. Navy has awarded Southwest Marine, Inc. (SWM) a \$10.4 million contract for repair, maintenance, overhaul and modernization/upgrade of the propulsion and combat systems on USS *Chancellorsville* (CG-47). The ship is a guided missile cruiser homeported in San Diego. Work is scheduled to begin in March and be completed by December. The work package includes drydocking, hull girder strengthening and upgrading of the foam fire fighting system and the anti-submarine and anti-surface warfare systems.

For more information
Circle 83 on Reader Service Card

Tidewater Awards Contracts

Working in partnership with F.L. Beier Radio, Nautronix, Inc. received an ASK4002 order from Tidewater Marine, Inc. of New Orleans for the 230-ft. (70.1-m) *Falcon Tide*, a well stimulation vessel. This system is configured as an ASK4002 dual control console system. Nautronix and Tidewater have also contracted for an ASK4002B (joystick system) DPS with autopilot feature for work on *Gulf Backer I*, an anchor handling tug. In addition, Nautronix has received an award from Diamond Offshore to supply the ASK4003 triple redundant Dynamic Positioning System and Data Management System for drillship *Ocean Clipper*.

For more information on Nautronix
Circle 84 on Reader Service Card

Henschel Wins General Dynamics Contract

Henschel, a subsidiary of SPD Technologies, Inc., has been awarded a contract by General Dynamics' Electric Boat Division to develop the entire Interior Communications System (ICS) for the U.S. Navy's new attack submarine. The contract includes systems integration engineering and utilizes COT (commercial off-the-shelf) technology with the added benefit of meeting all Navy requirements. This contract follows the recent announcement that Henschel will support the redesign of ICS for CVN-79, the Navy's next aircraft carrier, in a contract awarded by Newport News Shipbuilding (NNS).

For more information on Henschel
Circle 85 on Reader Service Card

February, 1997

KaMeWa Canada Awards Contract

KaMeWa Canada has awarded John Crane Marine the contract to supply stern tube and bulkhead shaft seals for Société des Traversiers du Québec's new Polyvalent class ferry, hull No.

716, to be built at the MIL Davie yard in Lévis, Québec.

For more information on John Crane
Circle 86 on Reader Service Card

Fednav To Purchase Icebreaker

Shipowning group Fednav Ltd.,

Montreal, Canada, has reached an agreement with Gulf Canada Resources Ltd., Calgary, to purchase Polar class icebreaker M/V *Kalvik*. The ship is a sister vessel of the Canadian Coast Guard's *Terry Fox*, a vessel providing ice-breaking services in the Arctic, Eastern Canada and the St.



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MARINE FINANCE

Lawrence River. *Kalvik* and *Terry Fox* are reportedly the most powerful and newest icebreakers operating in Canada.

In other company news, on Nov. 15, 1996, Fednav announced its purchase of the Canadian government's 51 percent interest in Canarctic Shipping, owner of *Arctic*, a 28,000-dwt Arctic class oil/bulk carrier vessel.

Sun Microsystems Provides Info Tech Solutions To Navy

Sun Microsystems, Inc. announced that its wholly owned subsidiary, Sun

Microsystems Federal, Inc. has been issued one of three blanket purchase agreements (BPAs) for workstations, servers and related products from the U.S. Navy, as part of the Tactical Advanced Computer Joint Workstation (TAC JW) project.

TAC JW is open to the Navy, Marine Corps, other Defense Department components and the Coast Guard.

The BPAs will provide commercial information technology products for land and shipboard command and control applications.

For more information
Circle 77 on Reader Service Card

Australian Co. Acquires New Fleet Of Containers

Sea Containers Australia Ltd., a wholly-owned subsidiary of Sea Containers Ltd., has acquired the Australian domestic container fleet of Brambles Australia Ltd. for \$13 million. This fleet of approximately 3,000 containers will be added to the existing 5,000 container fleet of Sea Containers Australia employed in the Australian market, reportedly positioning Sea Containers the largest lessor of such equipment in this market.

Sea Containers Australia has its headquarters in Sydney and its managing director is **Ian Routledge**, who has said that his company is expanding rapidly in the two-pallet wide container leasing market. Sea Containers Ltd. announced earlier this year its new patented SeaCell unit is two-pallets wide and can be carried in containership cell guides, as well as meets the demands of the Australian domestic land transport industry.

Sea-Land Enhances Gulf Of Mexico Service

Sea-Land Service Inc., a unit of CSX Corp. in Richmond, Va., has

Cascade General Awarded Conversion Contract

Cascade General, Inc., operator of Portland Shipyard, announced award of a contract for conversion of 619-ft. (189-m) vessel *Glomar Explorer* into a deepwater oil drillship. The job will involve fabrication of more than 4.5 million pounds of steel and reactivation of nearly every system on the vessel. The ship has been on layberth status since 1980 as part of the Maritime Administration's (MarAd's) Ready Reserve Fleet (RRF). It is currently under long-term charter to Global Marine Drilling Co., Inc., Houston, Texas. Final decisions on conversion details are still under discussion but according to Cascade General Executive Vice President **Andrew Rowe**, the contract could potentially total more than \$18 million and mean employment for more than 200 workers a day during a six-month period. "We are delighted to win a contract of this magnitude. This will be the largest steel project ever performed in Portland. This job will position us as a major player in the U.S. conversion market," said Mr. Rowe. The vessel is scheduled to arrive in Portland early this month, and design and steel prefabrication work is already under way. The most unique challenge of this job will be the removal of two, 200 x 74 x 9-ft. (61 x 22 x 3-m) structures from the bottom of the ship's hull, and "filling in" the existing "moon pool" with 1,600 tons of new structure. New interior decking, a new thruster tunnel and a variety of ship's gear will also be installed to enable the vessel to drill in water up to 7,500 ft. deep.

After the conversion is completed, the vessel will reportedly sail to the Gulf of Mexico for final outfitting, and will then commence work for Chevron and Texaco in early 1998.

For more information on Cascade General
Circle 91 on Reader Service Card

improved its service in the Gulf of Mexico by adding a call at the Port of Houston, Texas. Under the new service, Sea-Land vessels now will call Houston on Friday, and will continue calling New Orleans on Sunday. The service, which is expected to begin in mid-February, is expected to improve transit times to San Juan by two days for the Houston market. "Continued strength in the Puerto Rico market and our infrastructure improvements in San Juan give us the opportunity to improve service in the Gulf," said **John Sullivan**, vice president of Sales for Sea-Land's Americas services.

In December 1996, Sea-Land improved its efficiency at its San Juan facility with the addition of a third crane.

CSI Wins Southwest Marine Contract

Custom Ship Interiors, Inc. (CSI) has been awarded a contract by Southwest Marine, Inc. to renew portions of *M/V Aleta Amarilla*, a 200-ft. (60.9-m) fishing vessel gutted by fire. All work will be performed at the yard's San Diego facilities. The work includes: engi-

neering; interior rough framing work; air conditioning/ventilation work; galley equipment, reefer and furniture installation; and some electrical installations.

For more information on CSI
Circle 81 on Reader Service Card

COFR Provider Announces Gains

Shoreline Mutual (Bermuda) Ltd., a specialist provider of Certificates of Financial Responsibility (COFR), announced a strong gain in market shares for 1996 and a restructured pricing program for 1997. The company has reportedly issued 1998 guarantees to date, writing an estimated \$27 million in premiums, representing 56 million and 40 percent of the commercial COFR market. The company's largest gains have been made in the tanker category. Shoreline reported 47 percent of commercial COFR market for tankers and 37.5 percent of the market for commercial dry cargo.

Shoreline's restructured pricing program was scheduled to take effect on Jan. 1, 1997.

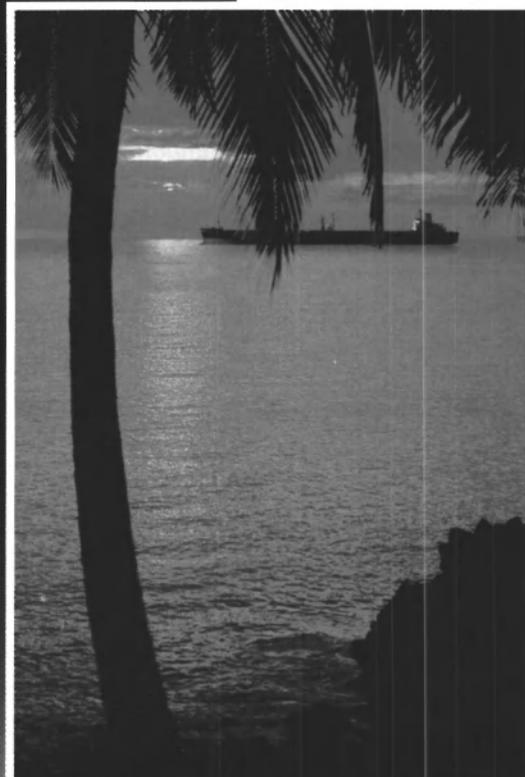
For more information on Shoreline Circle
78 on Reader Service Card

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 tel: (212) 997-0966.

Date Reported	Vessel Name	Vessel Type	DWT	Year Built	Sale Price (M)
12/2/96	Oriental Pearl	Bulker	20,189	76	\$2.5
12/20/96	Med Lerici	Bulker	23,222	73	\$2.5
12/20/96	Golden North	Bulker	23,982	81	\$6.2
12/16/96	Sunny Bulk	Bulker	26,646	73	\$2.6
12/9/96	Federal Matane	Bulker	28,214	84	\$9.5
12/20/96	Noble Star	Bulker	28,637	77	\$3.6
12/9/96	Lazaros L	Bulker	28,637	77	\$3.5
12/9/96	Ocean Fortress	Bulker	29,125	84	\$8.8
12/20/96	Hau Wan	Bulker	30,868	81	\$5
12/2/96	Jag Rani	Bulker	34,135	76	\$3.5
12/20/96	Platte	Bulker	37,061	82	\$3.5
12/16/96	Azteca I	Bulker	39,070	87	\$12.8
12/16/96	Western Mariner	Bulker	42,239	84	\$11.5
12/20/96	Nand Swasti	Bulker	51,540	86	\$14.4
12/2/96	Clarisse Venture	Bulker	60,190	82	\$9
12/16/96	Stella	Bulker	64,780	83	\$8
12/16/96	Daiten	Bulker	69,497	86	\$14.3
12/2/96	Marquesa	Bulker	71,831	77	\$5.8
12/9/96	Forum Cape	Bulker	112,686	73	\$3.8
12/9/96	Thalassini Avra	Bulker	129,237	81	\$12.3
12/20/96	Hedvig	Bulker	133,357	81	\$9
12/9/96	Ikan Tongkol	Bulker	138,490	82	\$9.8
12/20/96	Mar Sofia	Tanker	15,456	79	\$4.5
12/20/96	Sukhumi	Tanker	24,000	75	\$2.2
12/20/96	Pacifica	Tanker	29,840	85	\$15
12/9/96	Astipalea	Tanker	30,318	70	\$2
12/16/96	Entalina	Tanker	31,486	78	\$7
12/9/96	Horizon XII	Tanker	39,998	75	\$3.5
12/2/96	Panagia	Tanker	88,066	96	\$30
12/16/96	Tonbridge	Tanker	267,911	77	\$7

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Circle 35E on Reader Service Card

Airborne Equipment Chosen For Shallow Water Surveys

LADS Corp. Ltd. of Adelaide, South Australia, has selected Bombardier Regional Aircraft Division's de Havilland Dash 8(x) Series 200B as an airborne plat-

form for revolutionary hydrographic survey of shallow coastal waters.

The contracted equipment is scheduled for delivery in June, and will then be modified and outfitted with the Laser Airborne Depth Sounder (LADS) specialized shallow water survey equipment, and

will be available for service entry in mid-1998. LADS Corp. intends to contract its surveying capabilities globally. The LADS system measures water depth on a 240-m wide matrix at 16.9-ft. (5 m) sounding intervals for coastal waters to depths of 229.6 ft. (70 m).

H.E.R.C. Wins USCG Service Contracts

H.E.R.C. Products Inc. has contracted to use its technology to clean the vacuum waste water lines aboard U.S. Coast Guard (USCG) cutters *Vigilant*, *Seneca*, *Tampa* and *Lagare*. This agreement follows the successful completion of vacuum waste water line cleaning projects aboard USCG cutters *Forward*, *Bear* and *Escanaba*. H.E.R.C. CEO **Steven Carl** comments, "We are very pleased with the increasing volume from the U.S. Coast Guard. With seven ships under our belt, we are even more hopeful that our proprietary chemicals and methods will become a part of the Coast Guard's annual preventative maintenance program on its 80 ships that contain this type of waste water system."

For more information on H.E.R.C. Circle 80 on Reader Service Card

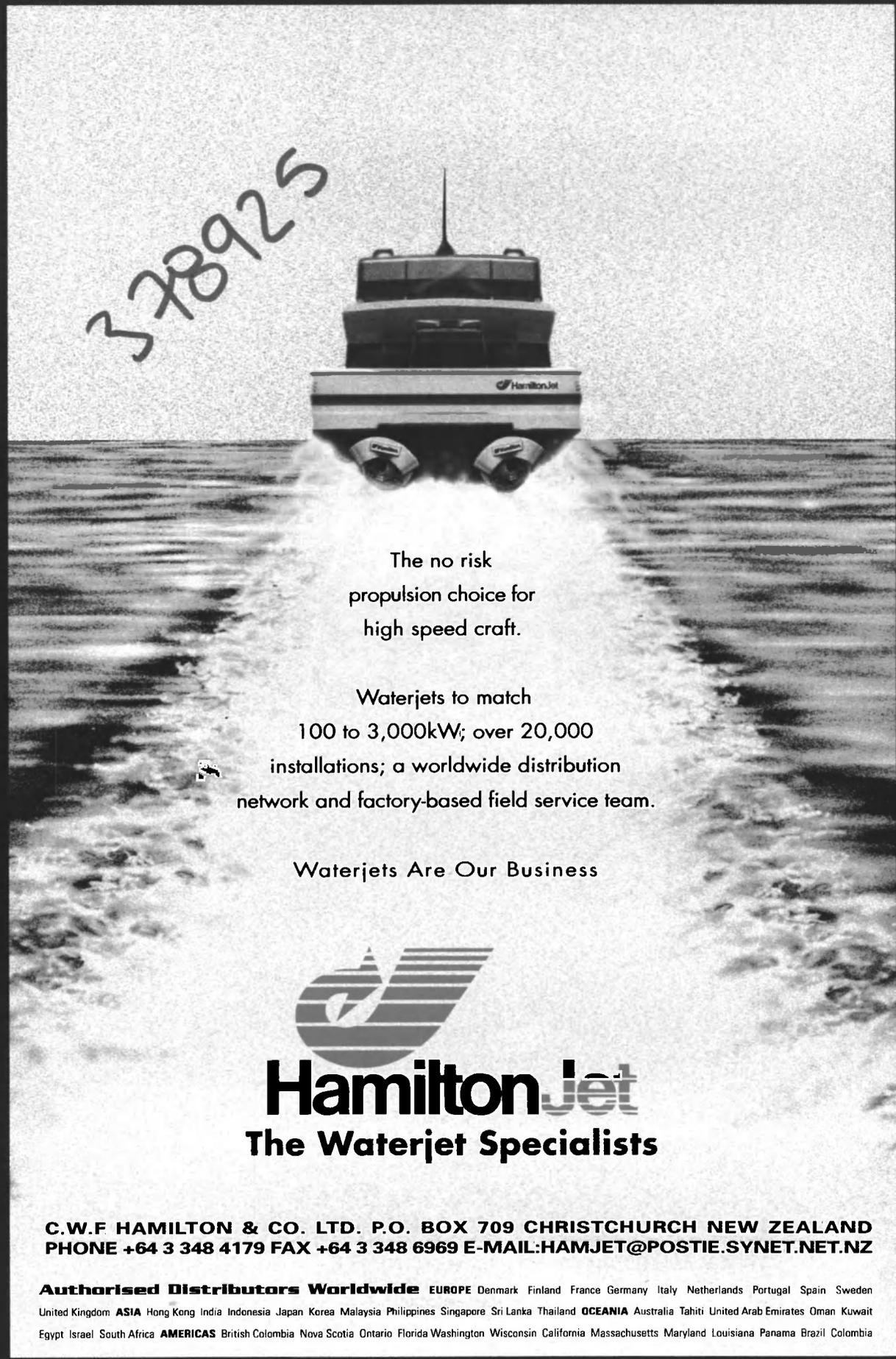
Raytheon To Acquire Hughes Electronics Unit

Raytheon has struck a deal to buy the defense operations of Hughes Electronics from General Motors for \$9.5 billion. The company beat out Northrop Grumman Corp. for the contract. In other news, Raytheon Engineers & Constructors has been selected by the Naval Undersea Warfare Center (NUWC) to operate and maintain NUWC's Atlantic Undersea Test & Evaluation Centers (AUTEC) in West Palm Beach, Fla., and on Andros Island in the Bahamas, a contract with a potential value of \$240 million.

Leica Acquires Philips Navigation Business Unit

Leica GPS has announced the purchase of the ap navigator business unit of Philips Navigation A/S of Copenhagen, Denmark. Under the agreement, Leica will assume responsibility for the development, production, marketing, sales and technical supports for all Philips marine GPS navigation products and systems, including the popular ap MD10, ap MK9 and ap MD8 GPS navigators.

For more information on Leica Circle 74 Reader Service Card



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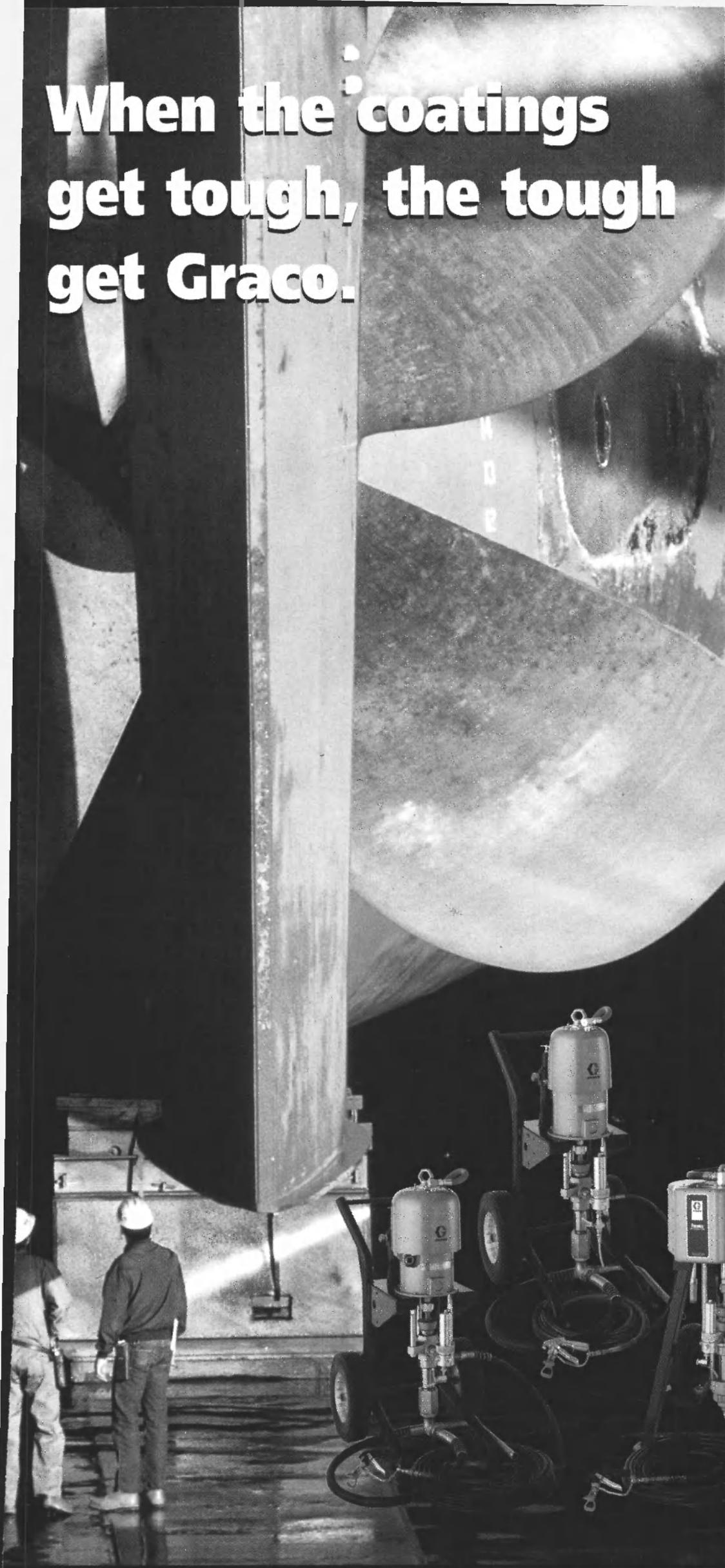
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Circle 302 on Reader Service Card

A/S Dan Bunkering Offers New Fixed Price Arrangement

New plan puts a hedge around uncontrollable bunker prices

There are innumerable world events and situations which will forever make the price of oil fluctuate widely. Whether it be war, environmental concerns or political sanctions, a shipowner/oper-

tor's bunker purchase department has to live with the fluctuations in the bunker prices and buy when it is about to run out of fuel. A/S Dan Bunkering has devised a new Fixed Price Agreement to relieve

some of the uncertainty.

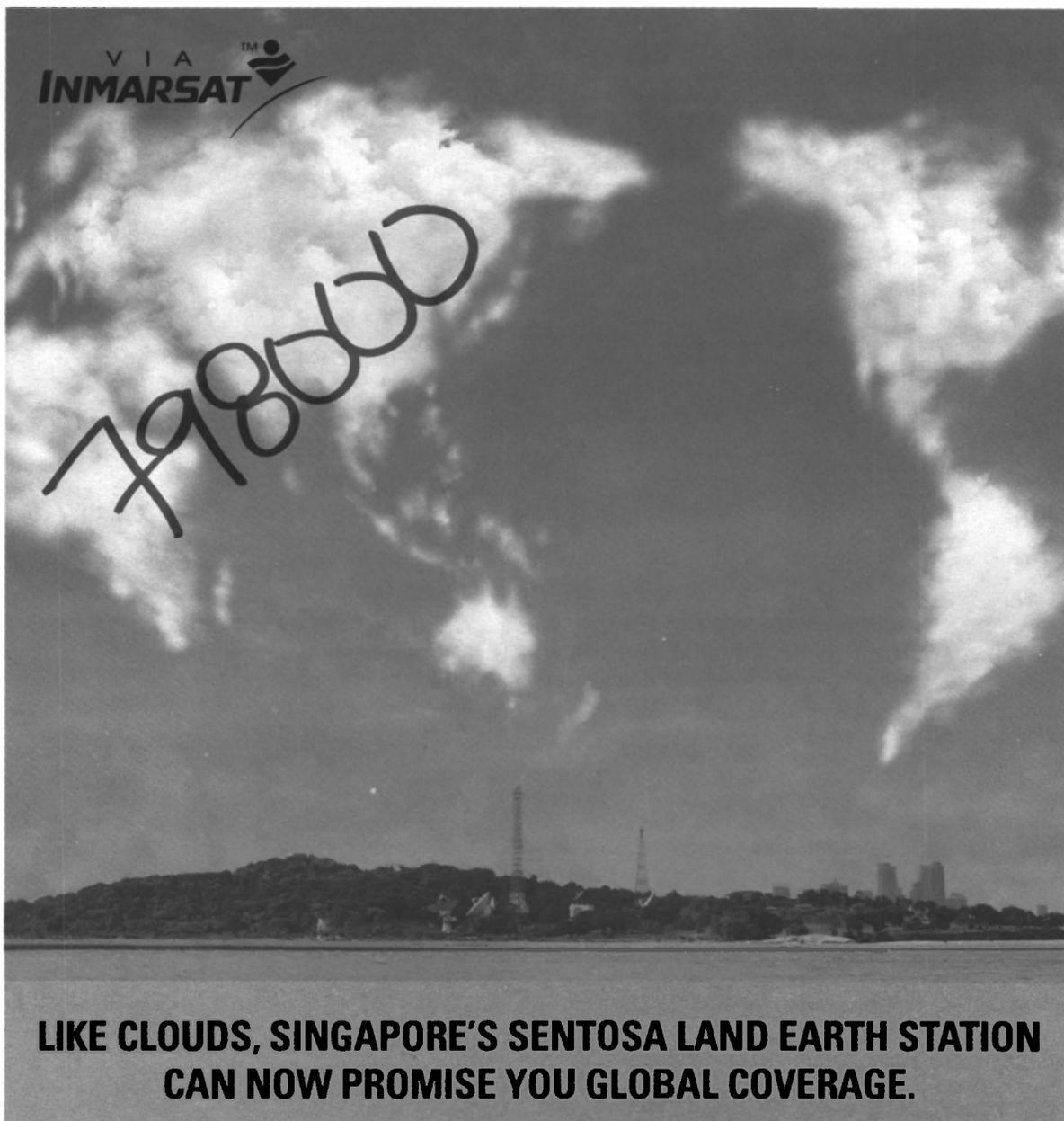
The company has established a hedging concept — designed to run for six to 12 months — which has been tested for more than a year with a range of select clients. The owner/operator gets an agreed amount of fuel delivered at a firm

price per ton, and an agreement is made for a specific harbor/bunker location. For the plan to work efficiently, the owner/operator has to be fairly sure of the amount to be lifted during the agreement period.

While the agreements are irrevocable, there is some protection. There is an option to include a "down-side opportunity" which allows the bunker buyer to benefit in case the bunker markets fall below a certain level.

According to the company, its Fixed Price Agreement puts the responsibility of purchasing bunkers onto the bunker company in return for advantageous price.

**For more information on the new plan
Circle 12 on Reader Service Card**



Here's news that'll put you on cloud nine. Singapore Sentosa Land Earth Station now offers global reach with its Inmarsat-A service. Meaning, direct links to anywhere from the Indian, Pacific, Atlantic (East and West) Ocean Regions, along with service of the highest quality and reliability.

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Circle 325 on Reader Service Card

USCG Initiates River Safety Change

The Eighth U.S. Coast Guard (USCG) District Headquarters in New Orleans directed its Captains of the Port to assess their ports and determine which passenger vessels moor or anchor in areas where they could be endangered by ship or barge traffic. The Captains were further advised to require these vessels to have their bridges manned by a qualified crew member whenever passengers are onboard.

Current regulations do not require a bridge watch on moored vessels, however this requirement will be initially implemented through administrative directives and ultimately the regulations will be modified. Included in those vessels being assessed are: excursion vessels; ferries; and foreign passenger vessels. Certain vessels, such as gaming boats located in a moat and small passenger vessels, will not be included in this requirement.

This directive, stemming from the M/V *Bright Field* collision with the New Orleans Riverwalk, focuses on the ability to immediately alert passengers of impending emergencies when a vessel is moored or at anchor. If a passenger ship has its bridge manned, it will be able to receive emergency marine-radio broadcasts, monitor waterway activity, rapidly sound the alarm and direct passengers to safety.

The Eighth Coast Guard District has Captains of the Port located in New Orleans and Morgan City, La.; Galveston/Corpus Christi and Port Arthur, Texas; Mobile, Ala.; Memphis, Tenn.; Louisville and Paducah, Ky.; St. Louis and Huntington, W.V.; and Pittsburgh, Pa.

set up a fully-operational office from any location — on land or at sea." Full ISDN connectivity to the B-Sat HSD service is achieved using a module called SØDA. This is reportedly the only tool necessary for end-to-end communications with customers' off-the-shelf products. BT allows two-way calling via B-Sat HSD, enabling

remote units to be contacted directly. The Integrated Services Digital Network allows users to send and receive high volumes of data, text, voice, video and image files through a single digital telephone line over the public telephone network.

For more information
Circle 71 on Reader Service Card

Leica Introduces 12-Channel DGPS Navigator

Leica Inc. has unveiled a new 12-channel version of its MX 400 marine DGPS (differential global positioning system) navigator providing enhanced reliability and

(Continued on next page)

Flowdata Offers Net Fuel Monitoring System For Marine Applications

FuelCom net fuel monitoring system from Flowdata is designed to provide temperature compensated fuel monitoring for diesel engines used in marine propulsion.

For recirculating fuel systems, FuelCom uses positive displacement flowmeters and non-intrusive sensors to monitor the flow rate of both the supply and return sides, with the temperature-compensated difference providing a net burn measurement. For non-recirculating systems, a positive displacement flowmeter and sensor monitors the supply side only. In both scenarios, FuelCom provides detailed data necessary to optimize fuel economy, reduce emissions and schedule maintenance.

For more information on Flowdata
Circle 41 on Reader Service Card

BT North America Launches High Speed Data Service

BT North America Inc. has introduced its B-Sat high speed data (HSD) service, the latest feature to be added to the B-Sat satellite communications service. B-Sat HSD reportedly enables interconnection with land-based Integrated Services Digital Network (ISDN) services and allows units in remote locations to take advantage of ISDN for sending and receiving information in a variety of forms including voice, data, video and real-time video conferencing.

"BT has developed an extensive global presence providing telecommunications services around the world," said Dr. Nick Spencer, BT's product manager for maritime and Land Mobile Satellite services. "Our B-Sat high speed data service ensures that BT's satellite customers have the capability to

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Circle 277 on Reader Service Card

Cutting Out Bad Bunkers

Shipowners and charterers are becoming more and more aware of the trouble and expense which poor quality bunkers can cause. The best initial defense against being caught with bad bunkers is to sample them before use. There are many different ways of sam-

pling and testing the quality and quantity of bunkers, some more reliable than others. The International Bunker Industry Association (IBIA) has produced a guide to onboard bunker test kits — the *On Board Test Kit Report* — which gives details on 14 different

manufacturers and the equipment they market, as well as a brief guide on what to look for in sampling equipment.

The two main parameters of bunkers which can be checked are density and water content. A sophisticated kit can go further to check for viscosity, compatibility, flashpoint, salt pour point, wax and fines. Tests are also now avail-

able for microbiological contamination of fuels, an area of increasing concern.

For more information on the IBIA
Circle 76 on Reader Service Card

To receive the IBIA On Board Test Kit Report, contact the International Bunker Industry Association at 2 Turret Grove, Clapham Old Town, London SW40EC, U.K. Tel: +44 171 627 4404; Fax: +44 171 627 4405; e-mail: ibia@globalnet.co.uk.

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(Continued from previous page)

accuracy. The MX 412 has 12 parallel receiver channels, permitting it to track all GPS satellites in view simultaneously, plus a built-in beacon differential receiver providing enhanced accuracy by accepting error correction data transmitted from marine radio beacons. Working with U.S. Coast Guard DGPS radio beacon broadcasts, field tests for the new 12-channel navigator have yielded accuracy levels of less than 3.3 ft. Leica's GPS division specializes in advanced SatNav technology.

For more information on Leica Inc.
Circle 99 on Reader Service Card

DP-Pumps Offers Multi-Stage Centrifugal Pumps

DP-Pumps B.V. has introduced two series of vertical, multi-stage, in-line, centrifugal pumps — its DPV and DPVS series. All components of the new range of pumps are made of stainless steel and are in contact with the pumped medium.

The DPV series is manufactured from stainless steel AISI 304, the DPVS series is made from stainless steel AISI 316. The mechanical shaft seal of the new pumps is designed in conformity with DIN 24960. The O-ring seal of the pump sleeve is constructed in a manner which makes it insensitive to temperature fluctuations, assuring maximum protection against leakage.

For more information on DP-Pumps
Circle 75 on Reader Service Card

Saab Marine Reports Orders For Marine Tank Gauges

Saab Marine Electronics now offers the Saab TankRadar G3, the



Complete Life Saving Equipment and Services for all types of Vessels

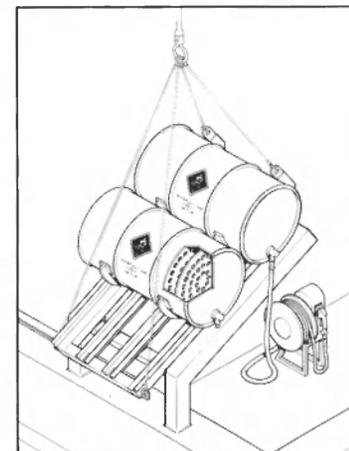
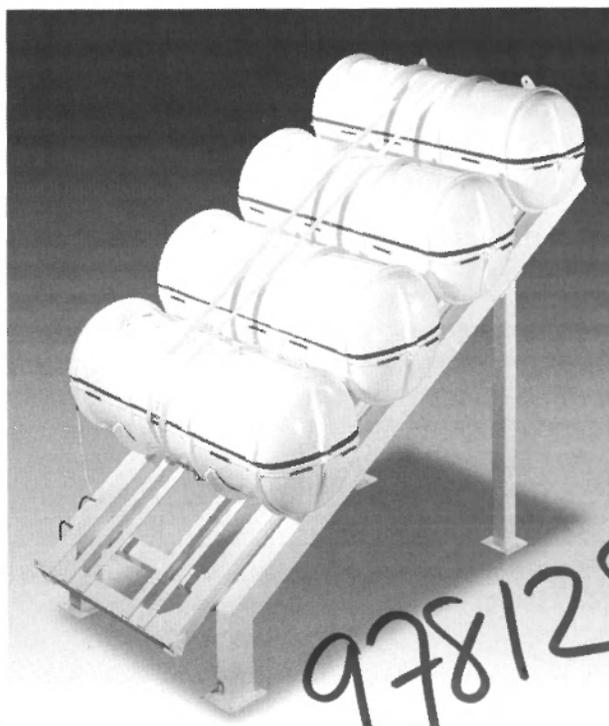
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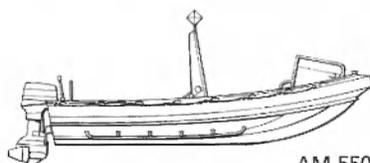


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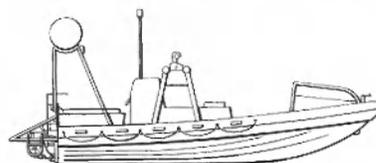
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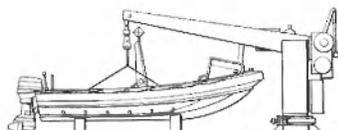


AM-700

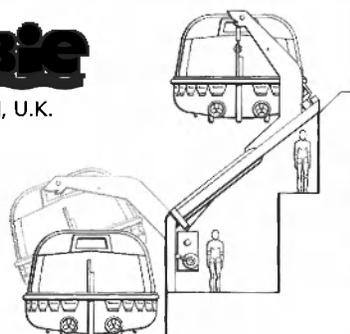
WelinLambie

Brierley Hill, West Midlands, England, U.K.

Davits



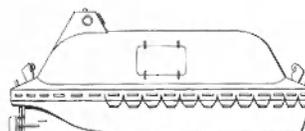
Rescue Boat Davit



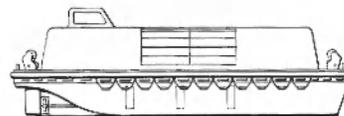
Overhead Gravity Trackway Davit



Peterlee, County Durham, England, U.K.



Phoenix



Neptune

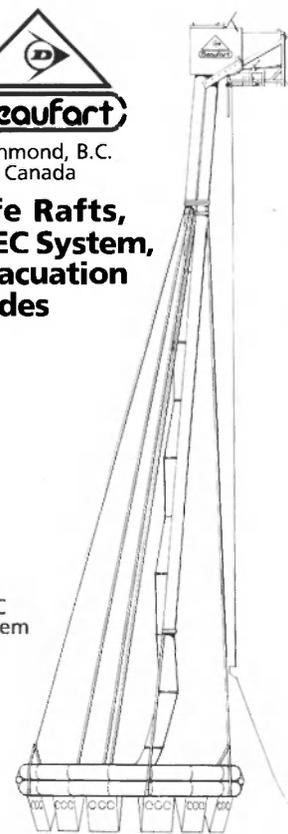
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third generation of its marine tank gauges.

Saab Marine has received an order for its TankRadar system Nos. 999, 1000 and 1001 for installation on Danish shipbuilder Nordsovaerft's series of 3,500-dwt chemical tankers being built for Italian owner Marnavi. Near the end of 1998, Saab Marine experienced an order boom including contracts for the TankRadar system from Onormichi Shipyard in Japan for systems to be installed on four 47,000-dwt tankers being built for Pacific Carriers of

Singapore; complete systems including cargo handling functions from Unicom of Cyprus to be installed on nine 47,000-dwt product carriers; a system for ENVC of Portugal for Ahrenkiel 5,700-dwt newbuilds Nos. 194 and 195; and complete systems including cargo handling functions ordered by Swedish owner United Tanker to be installed on two 16,000-dwt chemical tankers at the Vulcano Shipyard in Spain.

For more information on
Saab Marine Electronics
Circle 42 on Reader Service Card

SCRIMP RHIBs Available From Otech

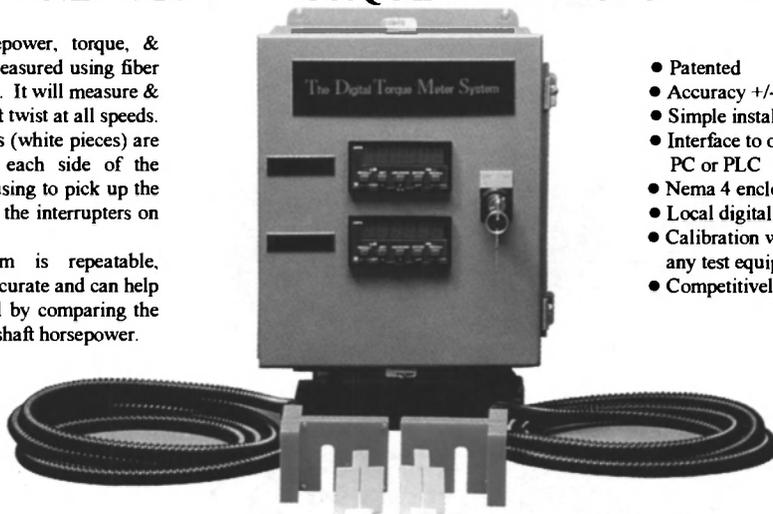
Ocean Technical Services, Inc. (Otech), a New Orleans-based ISO-9002 certified, full service shipyard offers the Ocean Spirit line of RHIBs (Rigid Hull Inflatable Boats). The unique Deep Vee hull designed by Crompton Marine Ltd. of the U.K. flattens to a delta conic planing curve at the transom and contains a series of concave spray and chines running the full length of the boat. Licensed by Crompton

in conjunction with Sintes Fiberglass Design, Otech has modified the series to incorporate a molded deck, quick tube replacement system and the SCRIMP (Seeamann Composites Resin Infusion Molding Process) method of fiberglass construction — a cutting-edge technology in which the material-to-resin ratio is accurately and consistently controlled, yielding the ultimate in composite qualities.

For more information on Otech
Circle 43 on Reader Service Card

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Circle 239 on Reader Service Card

Moran Towing Orders More Retractable Z-Drive Thrusters

Moran Towing Corp., has ordered two more retractable Z-drive thrusters from Ulstein Maritime Ltd (UML) of Vancouver, Canada. The units are a follow-on order to two identical units ordered last year by Moran.

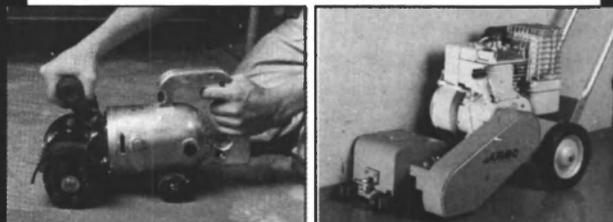
The Z-drives will be installed in Moran's new MOETRAC class of enhanced tugs. Each of the four tugs is to have a retractable Z-drive retrofitted in its bow, increasing power and maneuverability, as part of Moran's program to upgrade its single-screw tug fleet. The thruster is Ulstein's model 370 HRV retractable Z-drive. For the Moran application, the unit is rated at 440 kW at 1,800 rpm. The 52 in.-diameter propeller is set in a nozzle and turns at 508 rpm. Other configurations include through-hull and deck-fitted versions.

Nikon To Distribute NovAtel GPS Line

Nikon Inc. has signed an agreement with Global Positioning System (GPS) manufacturer NovAtel Inc. in which Nikon will take over distribution of NovAtel's line of GPS products in the U.S. and Latin America. "There is tremendous potential in the vital, fast-growing GPS arena, and we are excited to enter the marketplace with NovAtel as a partner," said Jack Abrams, executive vice president and chief operating officer of Nikon. Nikon has named Sean Fitzpatrick supervisor, GPS Marketing and Development, for Nikon's Surveying department.

For more information on Nikon Inc.
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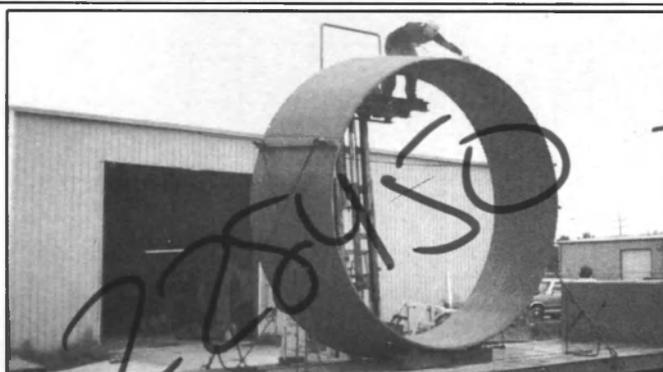
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Circle 326 on Reader Service Card

Mobil to buy NNS tanker

Intended for Greece's Eletson, 45,000-dwt tanker to enter Jones Act trade

Mobil Corp. has announced its plans to buy a double-hulled tanker from Newport News Shipbuilding (NNS). The vessel is the first of a series of four ships originally ordered by Greece's Eletson.

The deal was evidently forged among the three companies in an attempt to meet Mobil's near-term transportation needs. According to **Mike Hatfield**, vice president,

Communications, Newport News Shipbuilding, the remaining three tankers are expected to be delivered to Eletson according to the original plan.

The ship is the first newbuild double-hulled ship built in a U.S. shipyard that meets the requirements of the OPA 90.

"This fine new ship underscores our commitment to operate a fleet of state-of-the-art double-hull ves-

sels that meet or exceed U.S. and international environmental and safety requirements," said **Gerhard Kurz**, president, Mobil Shipping Transportation Co.

"The purchase of this ship reflects Mobil's commitment to maintaining its traditional position as a leader in marine transportation."

According to NNS Chairman and CEO **Bill Fricks**, "Mobil came to

us looking for a ship to replace one that was being retired from service later this year. We had one that was nearing completion for another customer, and were pleased that we were able to structure an arrangement that was good for all three companies." Mobil plans to employ the 45,000-dwt double-hull ed ship to transport refined petroleum products — gasoline and distillates — to Florida markets.

CALENDAR OF EVENTS

International Boatbuilders' Expo & Conference (IBEX 97):

February 6-8, Greater Ft. Lauderdale/Broward County Convention Center, Ft. Lauderdale, Fla.
Contact: To register to attend, fax: (972) 620-3099.

Underwater Intervention 1997:

February 17-19, Adams Mark Hotel, Houston, Texas.
Contact: Underwater Intervention Committee, 2611 FM 1960 West, Ste. F-204, Houston, Texas 77068, tel: (800) 316-2188; fax: (713) 893-5118.

MariTrends '97: February 22-27, Hyatt Regency New Orleans at Louisiana Superdome, New Orleans, La.

Contact: Passenger Vessel Association, 1600 Wilson Blvd., Ste. 1000A, Arlington, Va. 22209, tel: (703) 807-0100; fax: (703) 807-0103.

Project Controls For Government Shipbuilding And Repair Contracts:

February 24-25, Holiday Inn Arlington, Washington, D.C.
Contact: **David Copeland**, Center For Management Development And Training, Inc., P.O. Box 16360, Washington Dulles Airport, Washington, D.C. 20041, tel: (703) 758-8747; fax: (703) 758-8620.

13th Fast Ferry International Conference & Exhibition:

February 25-27, Singapore.
Contact: Fast Ferry International, Milroy House, Sayers Lane, Tenterden, Kent TN30 6BW, U.K., tel: +44 1580 766960; fax: +44 1580 766961; e-mail: info@fastferry.co.uk.

MARCH 1997

1997 Customs/Trade/Finance Symposium of the Americas:

March 2-4, Hotel Inter-Continental, Miami, Fla.
Contact: Stuart Newman Associates, 3191 Coral Way, Ste. 204, Miami, FL 33145, tel: (305)461-3300; internet: http://www.americatrade.com/symposium.

Seatrade Cruise Shipping Convention and Exhibition:

March 11-15, Miami, Fla.
Contact: **Michael Kazakoff**, Miller Freeman (Princeton) Inc., 125 Village Blvd., Suite 202, Princeton, N.J., tel: (609) 452-9414; fax: (609) 542-9374.

SNAME Gulf Section Ship Production Symposium:

March 12-14, New Orleans, La.
Contact: **Edward Gaines**, tel: (601) 935-1357; fax: (601) 935-1693.

All Electric Ship 97:

March 13-14, Paris, France.
Contact: AES General Secretariat, 48 rue de la Procession, 75724 Paris Cedex 15, France, tel: +33 1 44 49 60

60; fax: +33 1 44 49 60 17.

Fishing 97:

March 13-15, Aberdeen, Scotland.
Contact: **Clare Northcott**, EMAP Highway, Meed House, 21 John St., London WC1N 2BP, U.K., tel: +44 171 470 6301; fax: +44 171 831 2509.

Shipping '97:

March 17-19, Stamford, CT.
Contact: **Carleen L. Kluss**, International Marketing Strategies, 28 Southfield Ave., Stamford, CT. 06902, tel: (203) 406-0106; fax: (203) 406-0110.

ASNE Day 1997:

March 18-20, Sheraton Washington Hotel, Washington, D.C.
Contact: **Whitney Emerson**, American Society of Naval Engineers (ASNE), 1452 Duke St., Alexandria, Va. 22314-3458; tel: (703) 836-6727; fax: (703) 836-7491.

1997 Power Machinery and Compression Conference:

March 26-27, University of Houston Hilton and Conference Center, Houston, Texas.
Contact: University of Houston Continuing Education Center, tel: (713) 743-1181.

PetroVietnam '97:

March 26-28, Ho Chi Minh International Exhibition and Convention Centre, Ho Chi Minh City, Vietnam.

Contact: Vietnam Oil and Gas Corp., Reed Tradex, Reed Tradex House, 323 Bond St., Office Villa, Muang Thong Thani, Chaengwattana, Nonthaburi 11120, tel: (662) 503-2199; fax: (662) 503-4100-1.

APRIL 1997

1997 International Oil Spill Conference:

April 7-10, 1997, Fort Lauderdale Convention Center, Fort Lauderdale, Fla.
Contact: Conference Manager, 1997 Int'l Oil Spill Conference, 655 15th St., NW, #300, Washington, D.C. 20005, tel: (202) 639-4202; fax: (202) 347-6109.

Underwater Technology International (UTI) 97:

April 8-10, Aberdeen Exhibition and Conference Centre, Scotland.
Contact: **Deam Given**, director, G-Standards, 9825 Bonnie Vista Drive, La Mesa, CA 91941, tel: (619) 660-8402; fax: (619) 660-8402; e-mail: DeamG@aol.com.

AWO 1997 Annual Convention and Board of Director Meeting:

April 10-11, 1997, The Ritz-Carlton, Arlington, Va.
Contact: **Tina Gardner**, manager, Administrative & Member Services, American Waterways Operators, 1600 Wilson Blvd., Ste. #1000, Arlington, Va. 22209, tel: (703) 841-9300; fax: (703) 841-0389.

China Fast Ferry & Commercial Craft Show:

April 13-16.
Contact: **Craig Moyes**, Proshow Ltd., 16A Chelsea Wharf, Lots Rd., London SW10 0QJ, U.K., tel: +44 171 376 7777; fax: +44 171 352 0818.

The Safety of High Speed Craft:

April 14, Shanghai, China.
Contact: **Amanda Wilkes-Brough**, The Royal Institute of Naval Architects, 10 Upper Belgrave St., London SW1X 8BQ, U.K., tel: +44 171 201 2401; fax: +44 171 201 2401.

Maritime Vietnam 97:

April 16-18, 1997, Ho Chi Minh City International Exhibition and Convention Centre, Vietnam.
Contact: RAI Exhibitions Singapore Pte. Ltd., 1 Maritime Sq., # 09-01, World Trade Centre, Singapore 099253, tel: +65 272 2250; fax: +65 272 6744.

Marine Indonesia '97:

April 23-26, Jakarta, Indonesia.
Contact: Overseas Exhibition Services Ltd., 11 Manchester Sq., London W1M 5AB, U.K., tel: +44 (0) 171 486 1951; fax: +44 (0) 171 486 8773.

SASMEX '97:

April 29-May 2, Baltimore, Md.
Contact: U.S. Marine Safety Association (USMSA), 1900 Arch St., Philadelphia, Pa. 19103-1498, tel: (215) 564-3484; fax: (215) 963-9785.

HHI Starts '97 Strong

Korean yard wins bulker contract from Norway's Bergesen to start year



by Alan Thorpe
international editor



Kong's Parakou Shipping, is due for delivery next month.

The large South Korean yards involved in the construction of LNG carriers are set for a boost during 1997, with the news that Korean Gas Corp. (KGC) will place contracts, through various South Korean shipowners, for at least ten 135,000-cu-m capacity vessels. This follows six such orders placed during 1996 — two each for HHI and DHI and one each for SHI and Hanjin Heavy Industries.

Various yards in Japan have benefited from an order from United Arab Shipping Co. (UASC) for a total of 10 containerships. Kawasaki Heavy Industries will build

The first major newbuilding contract for 1997 was Norway's Bergesen order for a 172,000-dwt bulk carrier from South Korea's Hyundai Heavy Industries (HHI) for \$49 million. The vessel, when delivered in 1998, will enter a 15-year long term charter with British Steel.

The long drawn out Kuwait Oil Tanker Co. (KOTC) saga is set to reach fruition later this month, with HHI expected to win an order for two VLCCs, with an option for another. The price is believed to be in the region of \$80 million each. The negotiations for this deal have taken two years to complete, other South Korean and Japanese yards being the only competition.

HHI is also one of the favorites to win an order from Malaysian International Shipping Corp. (MISC) for two 105,000-dwt tankers. The yard has two similar vessels on its books, ordered by MISC during 1995. Another shipowner interested in the same type of tonnage is Singapore's Tanker Pacific, which has placed a two-ship order with South Korea's Samsung Heavy Industries (SHI).

SHI has been one of the most successful newbuilding yards of late, with orders from Conoco for a 103,000-dwt specialized offshore drillship; two 150,000-dwt tankers from Greece's

Thenamaris; and an option for a fourth vessel in a series of 148,000-dwt tankers from Greece's Ceres Hellenic.

Meanwhile, Daewoo Heavy Industries (DHI) has also been active in the market with an order for two 156,000-dwt tankers from U.S. major OMI Corp. DHI has also reached an initial agreement with Greece's Niarchos for a 300,000-dwt VLCC, and has won a further Suezmax order from Sweden's IOB. One firm order recently won by DHI was an order for a 126,000-dwt North Sea shuttle tanker from Denmark's AP Moller. The vessel, due for delivery during late 1998, will be chartered to a consortium of companies headed by BP Shipping. The vessel has been ordered for use from the Schiehallion FPSO, which is currently under construction at Belfast's Harland & Wolff (H&W). Meanwhile, BP Shipping has a series of three Suezmax tankers under construction at SHI. These vessels will also be owned by an independent (North American Shipping) and chartered to BP Shipping.

Daedong Shipbuilding is another South Korean shipyard poised to enter the international market with an order for three handy-sized product carriers from Russia's Primorsk Shipping. During last year, Daedong opened its new shipbuilding complex at Chinhae. The first ship, a 46,500-dwt bulk carrier for Hong

four and Mitsubishi and Mitsui will build three each.

Japan's Mitsubishi Heavy Industries (MHI) has won a further ULCC order in the form of a 305,000-dwt unit for Golden Ocean Group, with a second vessel currently being negotiated.

Italy's Scinicariello has ordered a 100,000-dwt tanker from Japan's Namura Zosen, with an option attached for a second ship. This shipyard has also won a 170,000-dwt bulk carrier contract from Japan's Navix Line, the ship due for a long term charter to Nippon Steel.

Denmark's AP Moller (Maersk Line) has become the latest Western shipowner to move into the mainland Chinese market with an order for two specialized product carriers of 110,000 dwt (120,000-cu-m) from Dalian Shipyard. The ships, which will both be delivered during the latter part of 1998, are similar in design to those ships ordered by this owner from Japan's Mitsui Zosen. Singapore's Pan United Shipyard has recently won an order from Indonesia's Pertamina for two 17,500-dwt tankers, the first double-hulled vessels to be built by this shipyard. Each vessel will have a cruising speed of 13 knots and will be able to carry up to 23,700-cu-m of crude oil.

Pan United is currently undergoing an expansion program at its shipyard with another floating dock, with a deadweight capacity of approx-

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imately 50,000 tons being built within the yard's own confines. This dock, which will be ready in the first quarter of this year, complements the yard's existing 40,000-dwt capacity floating dock, which was also built by the yard. Work is continuing on a \$712,600

covered workshop, due to become fully operational later this year. In a development which represents the biggest shake-up in the Singapore ship repair industry in years, Sembawang Corporation is to acquire Jurong Shipyard Ltd. (JSL) in a deal expected to be com-

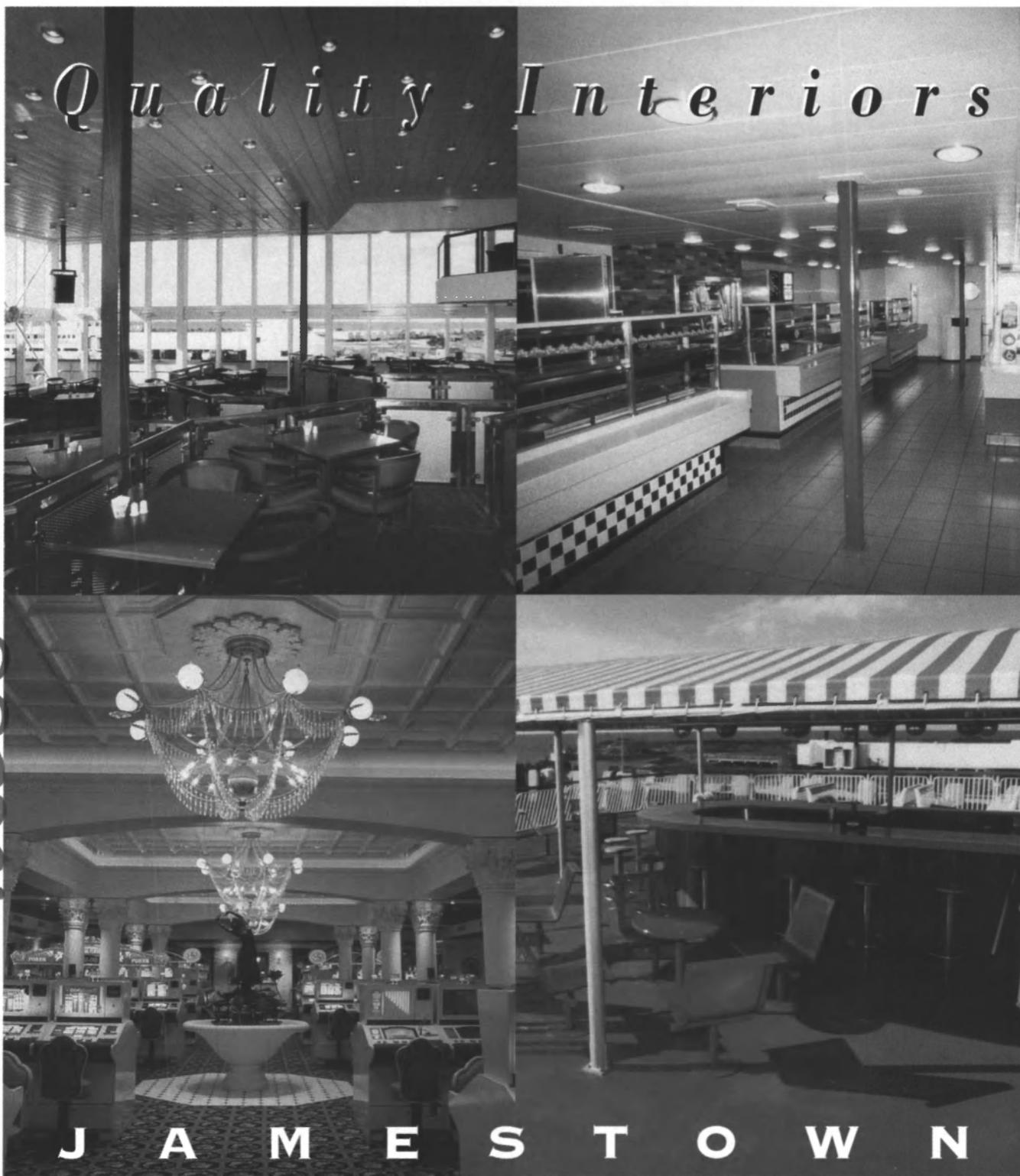
pleted early this year, creating the world's largest single ship repair group. This acquisition will also affect a decrease in the number of repair yards in Singapore from four to three, the others being Keppel Shipyard and Hitachi Zosen Singapore. Sembawang is to

inject approximately \$198 million worth of its shipyard and engineering assets into JSL in return for some 41.1 million new JSL shares. This will raise Sembawang's stake in JSL from 20 to 41.6 percent. Assets being injected into JSL by Sembawang include: Sembawang Shipyard (two floating docks of 150,000 dwt and 60,000 dwt); Karimun Shipyard & Engineering (Sembawang's new ship repair facility); Bohai Sembawang Shipyard (a Jurong/Sembawang joint venture in Tianjin, China); and the fixed assets of Sembawang Bethlehem (Sembawang's newbuilding facility). The deal is still subject to the approval of both sets of shareholders and the Singapore stock exchange.

Another example of the problems facing the Singapore ship repair area was Hitachi Zosen Singapore's warning that its second half results for the current financial year would be much lower than its first half profit of \$3.8 million. The first half figure was down from \$4.3 million in the same period the previous year. The yard has admitted that it saw no significant improvement in the ship repair market in the first half of 1996. Hitachi has traditionally relied on a good flow of repair and maintenance contracts from Japanese and local tanker owners, but these contracts have been hard to come by in the past three years.

In association with Bangkok-based Southeast Asia Technology Co. (SEATEC), BMT Group has been appointed as consulting engineers for the second phase of the new dockyard being developed for the Royal Thai Navy at Sattahip, Thailand. The consultancy contract, which commenced last October, will be completed within five months. BMT and SEATEC have been responsible for the planning, detailed engineering design, and specification of the first phase of the development, and are currently supervising construction work, including extensive dredging and reclamation, the construction of a drydock and associated arrival and refit berths.

Kepphil Shipyard, a member of Singapore's Keppel Group, has announced the start of construction of its new 40,000-dwt drydock at its Bagan, Batangas, shipyard in the Philippines. Kepphil



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Shipyard has reported an 18.3 percent jump in pre-tax profits to \$3.9 million for the first nine months of 1996, compared to \$3.3 million for the same period in 1995.

The yard has also reported revenues reaching \$5.1 million. The improvement has been due to an increase in ship repair work on local vessels at Keppel's Batangas Shipyard. Earlier this year, the yard sold its 20,000-dwt floating dock to Singapore's Singmarine Dockyard and Engineering for \$3 million as part of a rationalization program.

Two Far Eastern companies have expressed an interest in the Eastern German shipyards formerly belonging to bankrupt Bremer

Vulkan Group, MTW Schiffswerft in Wismar and Volkswerft Stralsund, Stralsund.

Another Far Eastern shipyard expanding into the North European scene is Malaysia's Penang Shipbuilding, which has taken a 48 percent stake in Denmark's troubled Danyard facil-

ity. The investment is worth approximately \$100 million.

South Korean industrial conglomerate Hanbo Group is considering investing \$1 billion in a shipbuilding and repair facility in the Philippines. This was announced by the Philippine Board of Investments (BoI), a government

agency tasked with promoting the Philippines as a investment site and providing tax incentives to priority industries. According to BoI's Korean Desk Officer, **Angie Cayas**, Hanbo is in the process of looking for an ideal site for the labor intensive project which is expected to generate 20,000 jobs.

Keppel Enhances Group Companies With Name Change

The Keppel Group has embarked on a corporate identity program aimed at optimizing its name to enhance the market positions of its major companies. For the first step of this process, six of the group's major listed companies in Singapore and the Philippines will be renamed. Property Developer Straits Steamship Land Ltd. (SSL) will be known as Keppel Land Ltd., Singmarine Industries Ltd. will rename itself Keppel Marine Industries Ltd. and Steamers Maritime Holdings Ltd. will become Keppel Telecommunications & Transportation Ltd. (Keppel T&T).

In addition, Far East Levingston Shipbuilding Ltd. (FELS) plans to become known as Keppel FELS Ltd. In the Philippines, Keppel Shipyard Inc. will be renamed Keppel Batangas Dockyard Inc., and Cebu Shipyard & Engineering Works Inc. will be known as Keppel Cebu Shipyard & Engineering Inc.

"This exercise is intended to benefit companies in the Keppel stable, especially in our move into new markets overseas. We want our companies to ride on the Keppel name in their growth as we are committed to expand our businesses in the Philippines," commented **Sim Kee Boon**, chairman of holding company Keppel Corporation Ltd.

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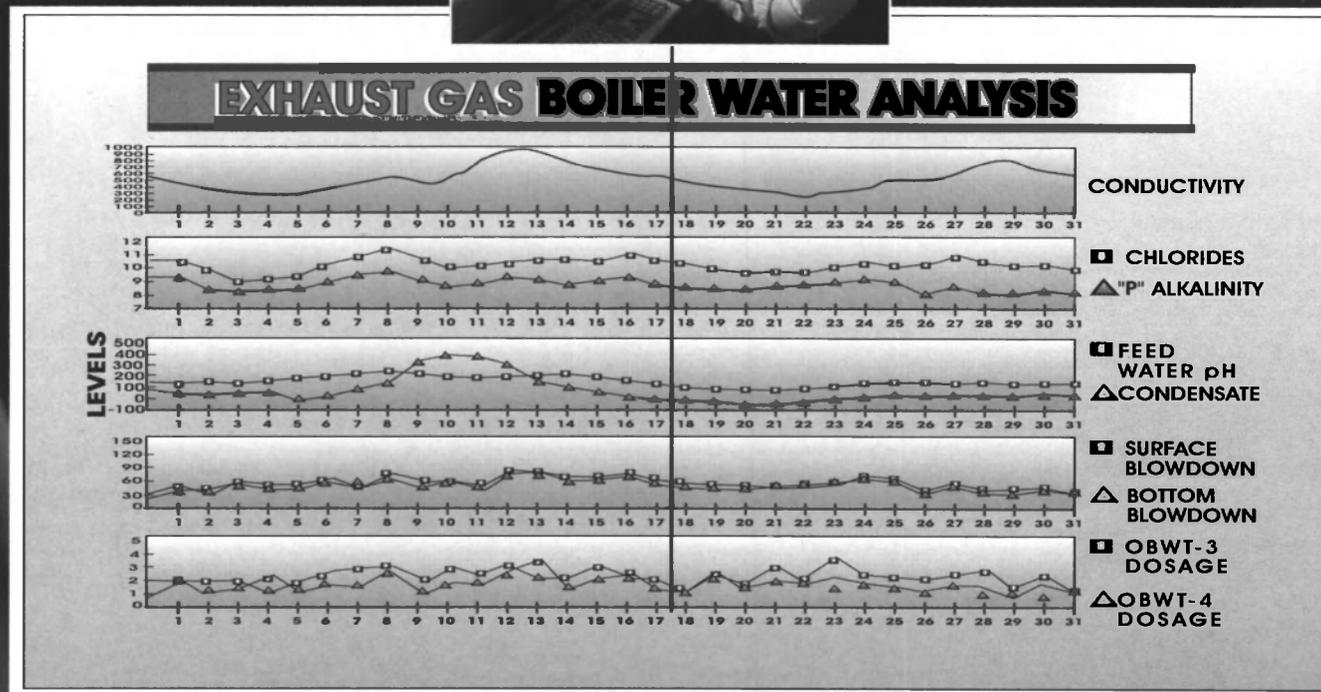
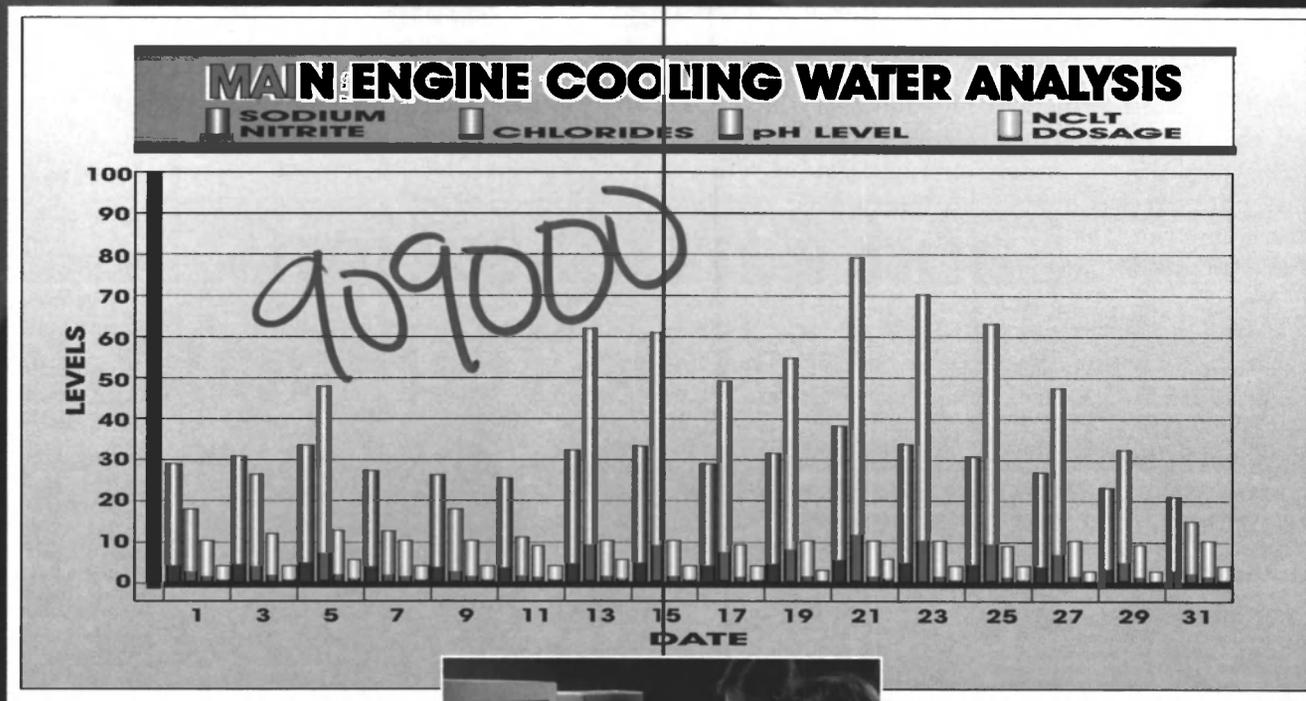
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In This Section

- **Spotlight on
Celebrity Cruises**
- **Outstanding
Cruise Ships
of 1996**
- **Cruise Notes**
- **QE2 Embarks on
World Tour**

edited by **Bridget Murphy,**
associate editor

CRUISE INDUSTRY Annual



Outstanding Ships of '96

1996 was a banner year for the cruise sector. Ship ordering activity maintained the peak levels set a few years ago, consolidation of owning lines continued, and sector powers fought to establish and re-establish themselves via European and Asian ventures and full-scale acquisitions. Plans for the emergence of a new cruise interest in the U.S. progressed at a mighty speed, and in Europe, carefully placed cruise ship repair contracts helped yards stay

afloat. In 1997, market watchers will undoubtedly look to the Far East as the industry's new growth arena, as investors anxiously await positive returns from the risky newbuild projects that are currently plying the oceans of the world.

Stay tuned to *MR/EN's* cruise ship reports throughout this year and please forward any news leads to Bridget Murphy, murphy@marinelink.com.

Celebrity Cruises Savors Limelight During *Galaxy* Inaugural

by Bridget Murphy, associate editor

The masterminds behind Celebrity Cruises recently carried out a strategic plot which thrust their company into the limelight. The cruise line docked its most dynamic ship in New York Harbor, called out its chief executives and beckoned journalists, travel agents and engineers to come aboard and enjoy tours complete with gourmet food and wine service.

Call it intuition, but the cruise line guessed correctly when it figured that the mainstream public would revel in the kind of over-the-top antics involved with hosting the premier of TriStar Pictures' latest film, starring actor **Tom Cruise**, aboard its spanking new vessel. The successful implementation of this plan resulted in a media sensation which put the cruise line and its newbuild *Galaxy* in the public eye for the better part of two weeks.

Eager to carve a niche in a competitive industry characterized by a glut of new ships, Celebrity Cruises pulled no punches in the December 1996 introduction of its latest and greatest ocean liner, and the company is hopeful that its strategically orchestrated inaugural of *Galaxy* will have a positive effect on the bottom line for FY97.

From Behind A Smokescreen

A sistership to 1995's *Century* and 1997's *Mercury*, *Galaxy* is the "middle child" of the three-ship series for German shipbuilder Meyer Werft, whose reputation for innovative ship construction and technical expertise prompted Celebrity to contract for the vessel series in March 1993, five months after completing a joint venture with bulk shipping company Overseas Shipholding Group, Inc.

Celebrity Cruises was initially launched in 1990 to provide premium vacations for informed consumers aboard an infant fleet. *Galaxy* is the newcomer in the line's fleet of five, which includes *Meridian*, completely rebuilt during the company's inaugural year, and *Horizon* and *Zenith*, the first ships to be designed and built to Celebrity specs. The series to which *Galaxy* belongs was conceived to usher in a new cruising era in which Celebrity ships could

occupy a place at the front and center of the sector, emerging from behind a smokescreen of anonymous cruise ship bows.

Celebrity has achieved this objective by stoking the flames of innovation, appealing to new passenger segments by offering gimmicks such as cigar rooms, extensive spa facilities, children's "fun factories," corporate business centers and interactive television systems, all of which can be found aboard *Galaxy*.

Not to be outdone by the superior craftsmanship of the ship's exterior, Celebrity also arranged an electronic partnership with Sony to aid in the creation of an equally innovative *Galaxy* interior, which is outfitted with a state-of-the-art theatre, disco, business center and computer room, in contrast to the ship's reliance on traditional nautical decor, featuring wood trim and navy color schemes.

"We're always thinking about what the customer's lifestyle is, what he wants, and we deliver it," CEO **Richard Sasso** told *MR/EN* during *Galaxy*'s inaugural visit to New York.

He said that Celebrity's formula for success is a dual emphasis on variety and service and added, "We're not trying to build ships bigger than the next guy." In fact, at 77,713 gross tons, the ship is still the largest cruise ship ever built in Germany and is also the largest cruise ship capable of transiting the Panama Canal.

Expansion Backed By Quality Assurance

The emergence of the Celebrity fleet in the next few years will be highlighted by an incredible itinerary expansion and placement of a vessel in Europe. The cruise line's confidence in Meyer Werft's capability to produce superior vessels is clearly supported by the gutsy direction the company is taking.

Mr. Sasso told *MR/EN* that when the time came to place new-build contracts, Celebrity was impressed with Meyer Werft's covered dock facility, which "insures that a ship will be worked on year round." He added that the yard satisfied his company's major priority, namely, that the ships would

be built by a reputable company which could guarantee on-time delivery. "I think it's really a question of quality. We wanted to build the most highly technical, durable vessels," said Mr. Sasso, who pointed out that the German shipbuilder has delivered on all its promises.

"If you use the best materials with the best engineers, you will have a ship that will last into the 21st century," explained Mr. Sasso. "The quality of the ships also dictates where they might trade," continued the Celebrity CEO, alluding to the cruise line's plans for its growing fleet to visit a total of 110 ports in the next two years.

The European Continent And Beyond

In 1996, Celebrity began Alaskan cruises. This year the company will conquer South America and the South Pacific for the first time. Additionally, in the summer of 1998, Celebrity ships will visit Europe, advised Marketing Senior Vice President **Art Sbarsky** during one of *Galaxy*'s inaugural stops along the U.S. Atlantic Seaboard.

The *Horizon* will be sent to do a transatlantic cruise in May '98," Mr. Sasso told *MR/EN*. The ship will reportedly then run Mediterranean and Baltic cruises. "We have an infrastructure in Europe. The ship will be based in Europe," he added.

Celebrity Chairman **John Chandris** also elaborated on the role the European audience will play in the expansion and profitability of the cruise line during a press session held in the chambers of *Galaxy*'s business center. He recounted the ship's delivery, which took place at a small Dutch containership port, and was reportedly attended by 350,000 people. "I could tell there were people who probably hadn't cruised before ... Perhaps in Europe cruising is a little bit behind ... There is a bigger audience that we need to address," stated Mr. Chandris.

Indeed, Celebrity's placement of ships in Europe — a tactic which has become a vital part of fiscal survival in the cruise sector — is an important indicator that the



He Said It...

Celebrity CEO Richard Sasso on:

Disney Cruise Line...

"I like the Disney concept. I think it will bring very broad attention to the industry."

Generic cruise advertising campaigns...

"We do have a unique product and our own marketing ideas, however, we do also support generic advertising ... We need to become mainstream. Our competition is not the other ships."

Celebrity's fleet...

"All the ships are different ... We have tried to find a different character for each of them."

cruise line is on the inside track to success, particularly for such a young venture with a modest number of ships.

Celebrity's executives will certainly agree that it is not enough for the company to keep talking about how "nothing else compares" with its product and how it "spent more money on hardware, software and people" than any other cruise line in its category.

The cruise line has backed up these claims by commissioning ships with innovative infrastructures designed for easy retrofitting and upgrading, and flexible itineraries arranged to capitalize on new market growth. Perhaps this strategy will be effective in, to paraphrase **Tom Cruise**'s character in the movie that premiered onboard *Galaxy*, showing them the money.

Name *Costa Victoria*
 Shipyard Bremer Vulkan
 Owner Costa Crociere
 Delivery June 1996



Costa Victoria is escorted by a tug during a latter construction phase.

In a discussion of his company's latest new-build, Costa Crociere Chairman Dr. **Nicola Costa** said that the ship's name, *Costa Victoria*, expresses the confidence with which his company operates in the European market.

After Bremer Vulkan received the order to build the ship in late 1993, the yard and three additional companies, namely Lloyd Werft in Bremerhaven, Schichau Seebeckwerft and STN Atlas Elektronik, began a collaboration to produce the 823.4-ft. (251-m), 74,000-gt liner.

The ship's main lobby spans a height of seven decks and is capped by a glass dome. At the bow of the vessel is an observation lounge which affords excellent ocean views. This ship is the only vessel in the cruise line's fleet equipped with two dining rooms, an indoor pool, and a refrigerator and mini-bar in every stateroom.

Costa Victoria was constructed with a modular building assembly, with the Bremer Vulkan shipyard and Schichau Seebeck yard each building one half of the ship from different sections. The final assembly took place in the building dock of the Bremer Vulkan yard in Vegesack in Bremen. The engine room section, fitted out under cover in the hall, was carried to the building dock with a heavy lift transport system. Hydraulic presses then pushed the volume sections together on special slideways.

In the ship's hull, further engine units and the propulsion unit were completed at the same time as other fitting-out operations. The power system provides current for the two propulsion

engines of the ship, and the power station consists of six diesel generators, producing a total of 50,400 kW.

STN Atlas Elektronik supplied the propulsion unit and the electronic equipment for the ship's management systems. The company installed a bridge from which the communications and navigation technology can be controlled from a single workstation. This ship control center was designed to guarantee a high degree of operational safety.

As its part in the ship construction process, the Lloyd shipyard fitted out the passenger and crew areas of *Costa Victoria* after completing mock-ups of every cabin type. In May 1996, the vessel was blasted with final coats of paint in the Lloyd building dock, and shortly thereafter completed its second trial run.

Making its American debut, *Costa Victoria* sailed into New York Harbor on Oct. 31, 1996, and was greeted at Battery Park by fireboats spraying water, as it made its way to the city's Passenger Ship Terminal.

This call was part of an inaugural 18-night, transatlantic voyage which began in Genoa, Italy, on Oct. 20. The ship's seven-night Caribbean cruises, which set sail from Fort Lauderdale, Fla., began on Nov. 10. The ship also sails 16-night eastbound transatlantic voy-

ages to Genoa, Italy, and seven-night cruises from Venice to Greece and Turkey.

The Bremer Vulkan companies have reportedly received a follow-up order to *Costa Victoria* — a 78,000-ton cruise ship to be delivered to Costa Crociere in July 1997.

Costa Victoria Main Particulars/Machinery

Length	823.4 ft. (251 m)
Width	105.8 ft. (32.2 m)
Draft	25.5 ft. (7.8 m)
Tonnage	74,000 gt
Speed	23 knots
Propulsion	(2) electric motors, 15,000 kW each
Total power output	50,400 kW
Passengers	2,250
Crew	800
Classification society	Registro Italiano Navale
Order value	\$300 M
Builder	Bremer Vulkan consortium
Owner	Costa Crociere
Delivery date	June 1996



Name *Inspiration*
 Shipyard Kvaerner Masa Yards
 Owner Carnival Cruise Lines
 Delivery 1996

Charged with building Carnival Cruise Lines' Fantasy class liners, on Feb. 22, 1996, Kvaerner Masa-Yards' Helsinki New Shipyard delivered *Inspiration*, the sixth superliner of an eight-ship series for the Florida-based company.

Fantasy, *Ecstasy* and *Sensation* were delivered in 1990, 1991 and 1993. *Fascination* was delivered in 1994, and *Imagination*

was honored as one of *MR/EN's* Outstanding Cruise Ships of 1995 after its delivery that year.

While these ships share the same main characteristics in build, the public areas of these 2,600-passenger liners are unique in design.

Following the *Fantasy* mold, Carnival's latest newbuild of this class has a diesel-electric AC-AC powerplant consisting of six diesel generators and

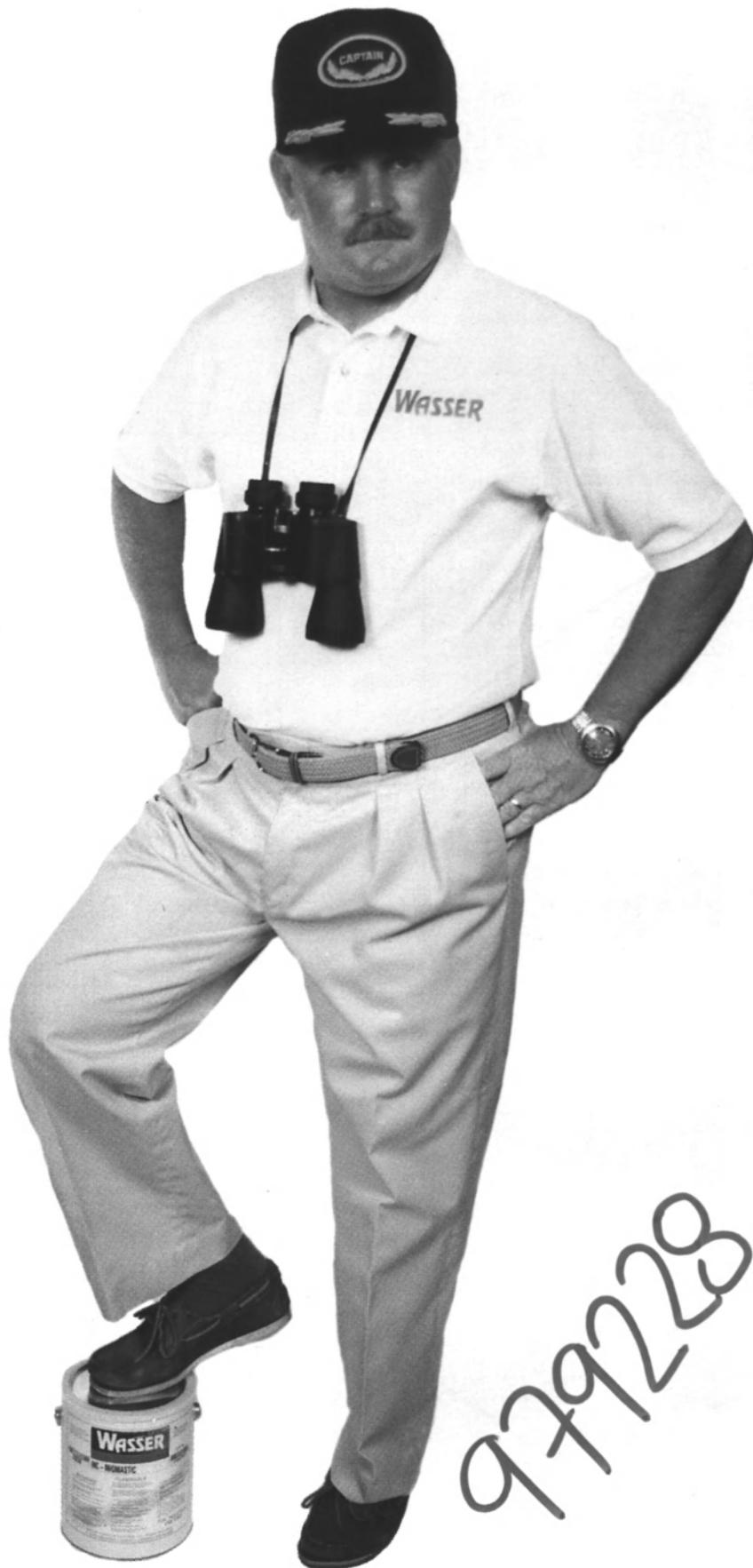
two cycloconverter-controlled electrical propulsion motors.

The total onboard power developed is 42,240 kW (57,400 hp), which propels the ship at a service speed of 22.3 knots.

After being handed over to Carnival in early 1996, *Inspiration* journeyed to Miami via Brixham, U.K. Soon after the 852-ft. (260.6 m), 70,367-gt cruise vessel was deployed in weekly cruises in the Southern Caribbean from San Juan, Puerto Rico.

Sisterships *Elation* and *Paradise* will join *Inspiration* and complete the *Fantasy* class in 1998.

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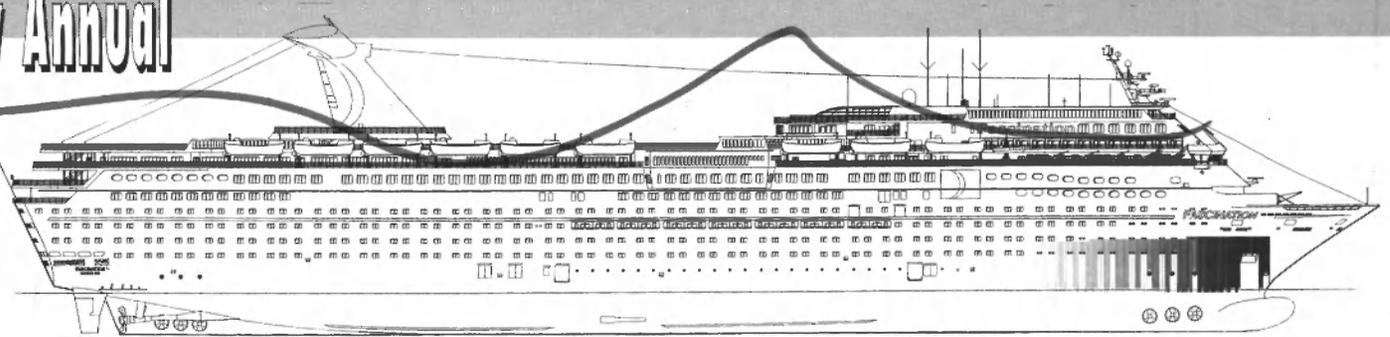
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Fantasy class general arrangement drawing, by KMY for Carnival Cruise Lines.

Inspiration Main Particulars

Length	852 ft. (260.6 m)
Width	118.1 ft. (36 m)
Draft	25.4 ft. (7.7 m)
Tonnage	70,367 gt
Speed	22.3 knots
Passengers	2,040
Classification society	Lloyd's Register
Registry	Panama
Order value	\$270 M
Builder	Finerner Masa Helsinki New Shipyard
Owner	Carnival Cruise Lines
Delivery date	February 1996

Inspiration Machinery

Main engines	Wäsilä-Sulzer (4) 12ZAV40S, (2) 8ZAL40S
Generators	(4) 10.3 MVA, (2) 6.8 MVA
Propulsion motors	ABB Marine, (2) 14 MW AC motors, 140 rpm
Propellers	(2) KaMeWa CP, 5.2 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

SeaVision Provides Interactive Television For Cruise Ships

Carnival's latest newbuild, *Carnival Destiny*, features an interactive television system (ITV) developed by SeaVision. The system, dubbed FunVision, provides guests with a wide variety of services, including shore excursion preview and purchasing, room service and wine ordering, informational videos, a daily activity board, shopping, gaming and movies-on-demand. The system is also reportedly in operation onboard *Carnival Imagination*. SeaVision is a division of Pittsburgh-based Allin Communications Corp., and in 1997, will reportedly install ITV systems on 25 luxury ships on five different cruise lines, including Carnival, Celebrity, Cunard, Norwegian and Royal Caribbean.

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Cruise Industry Annual

Cruise Shipping Show Returns To Miami

The 13th annual Cruise Shipping show will be staged in Florida at the Miami Beach Convention Center this year, and is scheduled to take place on March 11-15. The conference will be centered on the theme of globalization, with an emphasis on how new ship construction and new market development are driving the expansion of the industry.

According to show organizers, this year's event is expected to be 20 percent larger than last year's show, with many new exhibitors and products, particularly in the interactive equipment segment. Spain, the newest nation to join the list of exhibitors, will be represented at the show by a separate pavilion highlighting its national equipment and service suppliers. Companies from the Caribbean, Finland, France, Germany, Italy, Norway and the U.K. will also convene in national pavilions.

A State of the Industry debate has been scheduled, and is expected to bring together a distinguished panel of cruise line executives. The conference program will also include discussions of new niche-marketing innovations and the changing business of passenger shipbuilding.

For more information, contact **Michael Kazakoff** or **Susan Stokes** at Miller Freeman (Princeton) Inc., tel: (609) 452-9414; fax: (609) 542-9374.

RCCL Names Williams To Presidency

Royal Caribbean Cruises Ltd. (RCCL) recently announced the appointment of **Jack Williams** as president of the cruise line, effective January 6, 1997. Formerly vice president and general sales manager for American Airlines, Mr. Williams replaces the line's founding President, **Edwin Stephan**, who was named RCCL's vice chairman in January 1996.

"We are extremely pleased to welcome Jack Williams to the Royal Caribbean management team," said RCCL CEO **Richard D. Fain**. "His wealth of experience and broad understanding of the global marketplace will have a significant impact on our efforts as we contin-

ue our worldwide expansion."

The announcement came on the heels of the introduction of *Grandeur of the Seas*, the third of six Vision-class ships entering service through 1998.

HAL Donates Funds To Cayman Environmental Preservation Effort

On Dec. 16, 1996, Holland

America Line (HAL) reportedly donated \$100,000 to The National Trust for the Cayman Islands for the development and preservation of a marine bird sanctuary on Little Cayman Island. The donation was announced at a press con-

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Cruise Industry Annual

ference in George Town, Grand Cayman, by **Joe Valenti**, the cruise line's vice president of Marine Operations.

"Holland America Line has long been committed to maintaining a clean environment for its passen-

gers, employees and the regions in which the company does business," said Mr. Valenti, who added that Grand Cayman is one of the most popular ports of call for HAL's ships. "Holland America's concern with the environment pre-dates

most of the legislation governing waste disposal. In fact, Holland America Line was the first cruise line to agree to the Caymans' zero discharge regulations," stated Mr. Valenti.

The HAL executive also noted

that the cruise line supports other organizations whose missions are focused on environmental preservation, including the Seattle Aquarium, which is the home of a female sea otter rescued from the Exxon Valdez oil spill in Alaska and adopted by Holland America.

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Kvaerner Masa-Yards build cruise liners and passenger ferries, gas carriers, icebreakers and ice-going tonnage as well as all types of special technology vessels, such as tankers, cable ships, research vessels, offshore vessels, dredgers and crane ships.

Florida Company Signs Cruise Ship Gaming Contract

On Dec. 23, 1996, Florida Gaming Corp. announced the signing of an agreement with Tropicana Cruises International, Inc. to operate the poker concession onboard cruise ship M/V *Tropicana*, which has approximately 300 gaming positions and operates out of the Port of Miami.

Cathelco Anti-Fouling Equipment To Be Fitted On Disney Ships

U.K.-based Cathelco Ltd., a supplier of pipework anti-fouling systems, has been chosen to provide equipment for Disney Cruise Line's *Disney Magic* and *Disney Wonder*, due to be launched in 1998. The two, 85,000-ton ships will each have forward and aft systems with sea chest mounted anodes designed to protect pipework with flow rates of 2,310-cu-m/hr and 1,600-cu-m/hr.

Cathelco systems are based on the electrolyte principle and usually consist of copper and aluminum anodes, fitted in the sea chest strainer or wired to a control panel.

The copper ions create an environment where barnacles and mussels cannot settle and the aluminum ions form an anti-corrosive layer on the internal surface of pipes. In the case of cruise ships with mainly cupro-nickel pipework, a soft iron (FE) anode is substituted for the aluminum.

Other Cathelco-equipped cruise newbuilds include: *Legend of the Seas*; *Splendour of the Seas*; *Grandeur of the Seas*; *Carnival Destiny*; *Galaxy*; and the upcoming *Superstar Leo* and *Superstar Virgo*.

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Maritime Reporter/Engineering News

Boston Operator Starts Cruise Venture With Former Sagafjord

On Oct. 23, 1996, Boston-based vacation company Saga International Holidays Ltd. made a \$30 million investment, purchasing its own cruise ship to meet the growing demand for cruise vacations. This ship is the former Cunard *Sagafjord*, which is currently named *Gripsholm*, and on charter to a German operator.

Saga will reportedly rename the ship once again, and it will be the only ship in the world on which passengers under 50 years of age are banned. Saga's American cruise customers will share the ship with customers of the Boston tour operator's U.K.-based parent company.

The 24,474 ton-liner, with a capacity of 620 passengers, will be taken over by Saga this spring and will operate a series of summer cruises in the Mediterranean, Scandinavia and the Baltic, operating out of the U.K.'s Port of Dover before a winter refit.

Announcing this acquisition, Saga Chairman **Roger De Haan** said that Saga has been selling cruise holidays on the world's leading lines for many years. "At present, demand is exceeding supply. Running our own ship is the only way to ensure that we can offer the number of quality berths which our customers require," concluded Mr. De Haan.

CLIA Previews Industry Highlights For 1997

A flotilla of new ships, cruises geared to special interests and exotic new ports of call top the list of trends in 1997 cruising, according to Cruise Lines International Association (CLIA).

For the second year in a row, new ships will grab headlines as they are launched by CLIA-member lines — part of a building boom that is expected to last until the end of the century. The lineup for 1997 includes the following vessels:

- **Bergen Line** — Norwegian Coastal Voyage's *Nor Norge*, April.
- **Princess Cruises** — *Dawn Princess*, May.
- **Royal Caribbean Cruises**

Ltd. — *Rhapsody of the Seas*, May. *Enchantment of the Seas*, September.

• **Holland America Line** — *Rotterdam VI*, October.

• **Radisson Seven Seas Cruises** — *Paul Gauguin*, October.

• **Celebrity Cruises** — *Mercury*, November.

In addition, Majesty Cruise Line will expand its fleet with the charter of Cunard Line's *Crown Dynasty*, renamed *Crown Majesty*.

New ports to be visited by ships

in the world's fleet include Rio de Janeiro, Buenos Aires, the Straits of Magellan, Costa Rica, South Africa, northern Europe, the Mediterranean and the Kanawha and Illinois rivers of the U.S. Midwest.

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Name *Carnival Destiny*
 Shipyard Fincantieri
 Owner Carnival Cruise Lines
 Delivery November 1996

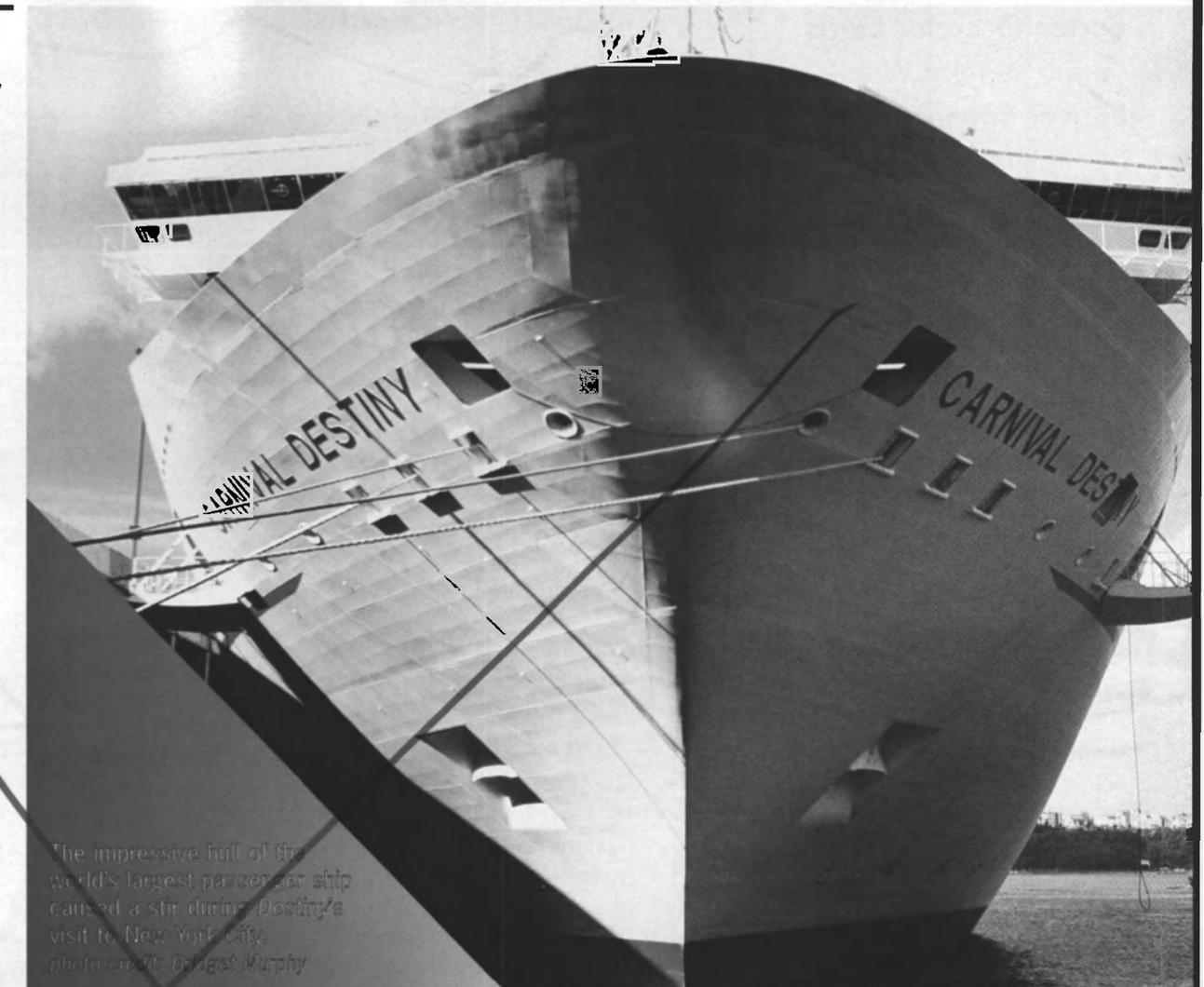
Carnival Cruise Lines' MS *Carnival Destiny*, recently entered into the Guinness Book of Records as the largest passenger ship ever built, reached another milestone in late December 1996 when it carried a record 3,269 passengers, the most ever on a single cruise ship voyage. The ship has a maximum capacity of 3,360, and operates an alternating schedule of week-long voyages to the Eastern and Western Caribbean from its homeport of Miami.

Destiny's interior favors the design trend towards busy and modern art, a modest gold-plated plaque mounted on the ship's Promenade or "Destiny Way," attests to Carnival's adherence to another cruise sector trend — Italian vessel construction. *Destiny* was contracted out to Fincantieri and the group's Monfalcone yard completed the task on time, and with "innovation and flair," as called for in its corporate mission.

According to Lloyd's Register, which classed *Destiny*, the ship is the first cruise vessel to comply with all of the amendments to the Safety of Life At Sea (SOLAS) Convention of 1992. This includes safer positioning of lifeboats, emergency exit routes with low location lighting and improved structural fire protection standards covering aspects such as enhanced materials specification.

The ship features generous cabin design, with 60 percent of the staterooms equipped with ocean views, and a little more than half of these featuring private balconies large enough for two to sit out on.

The ship's diesel-electric propulsion system, supplied by ABB, employs a central generating arrangement with six ABB generators driven by six Sulzer diesel engines, giving a service speed of 22.5 knots. The two ABB 20 MVA synchronous propulsion motors, driving twin screws and controllable pitch propellers, operate at variable speeds, being supplied through



The impressive hull of the world's largest passenger ship caused a stir during *Destiny's* visit to New York City. photo credit: Brian Murphy

cycloconverters, which provide a frequency between 0 and 15 Hz — reportedly the first ever high voltage cycloconverters installed on a cruise ship.

While *Destiny* is incapable of transiting the Panama Canal, Carnival's Vicki Freed, senior vice president, Sales and Marketing, told *MR/EN* in an interview last year that the emergence of large-sized ships would not eliminate the company's newbuild design efforts in the 70,000-ton range. "I think the 70,000-ton Fantasy ships will continue to be ordered because of the flexibility of being able to move in and out of port. It's not just the big ships that will be ordered," said the cruise executive.

With an Asian cruise venture in the works with Hyundai Merchant Marine, agreements in place with the U.K.'s Airtours, plans to acquire Italian cruise interest Costa Crociere, and three

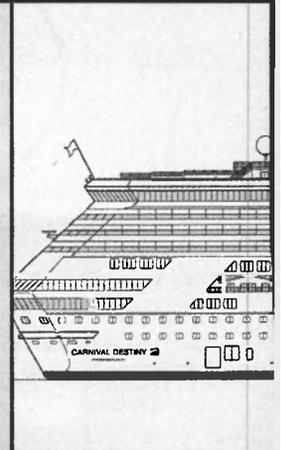
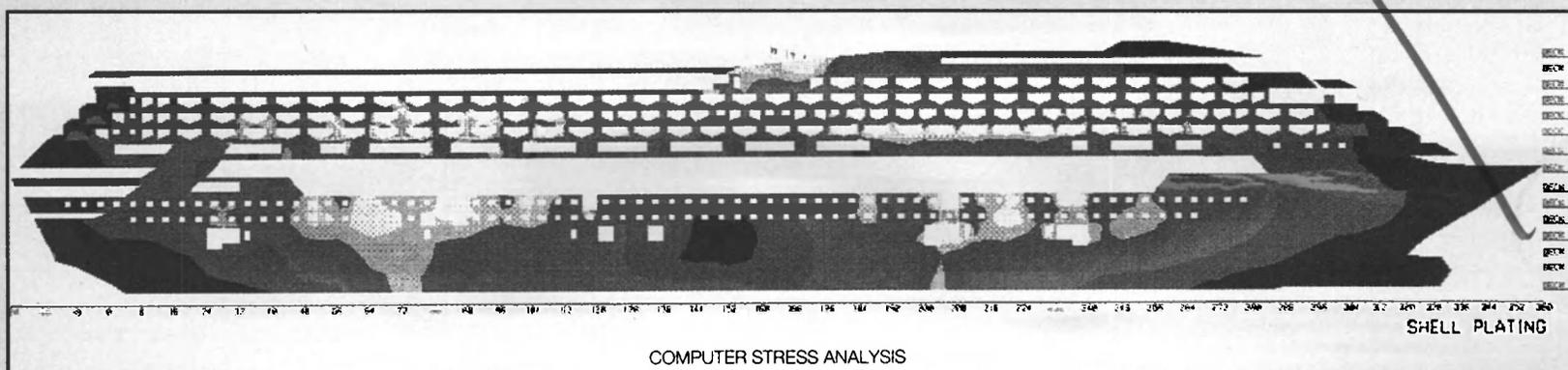
Carnival ships — two 70,000-ton and one 100,000-ton — set to emerge in 1998, Carnival has established a reputation as a sector powerhouse in a consolidating marketplace.

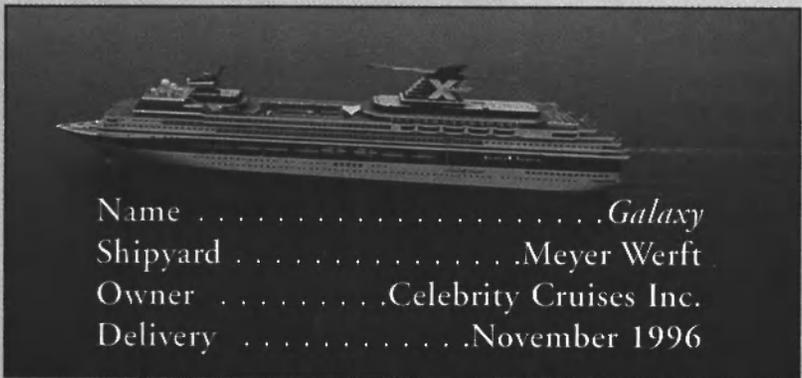
Carnival Destiny Main Particulars/Machinery

Length o.a.	893.03 ft. (272.2 m)
Width	116.4 ft. (35.48 m)
Draft	26.9 ft. (8.2 m)
Tonnage	101,353 gt
Speed	22.5 kn
Passenger capacity	3,360
Main power	diesel-electric propulsion
Generators	(6) ABB
Engines	(6) Sulzer diesels
Propellers	controllable pitch
Classification	Lloyd's Register
Order value	\$400 M

Carnival Destiny • Carnival

Destiny computer stress analysis.





Name *Galaxy*
 Shipyard *Meyer Werft*
 Owner *Celebrity Cruises Inc.*
 Delivery *November 1996*

propeller shaft. The heavy fuel oil operated diesels are resiliently mounted and arranged according to the "father and son" principle, which provides great flexibility in propulsion and electric power generation. Each gearbox is additionally provided with a power take-off

On Nov. 20, 1996, the 77,713-gt cruise vessel *Galaxy* was delivered by Meyer Werft shipyard in Papenburg, Germany, to Celebrity Cruises, Inc. The vessel was previously christened in October by *Doula Chandris*, spouse of *Michael Chandris*, a member of Celebrity Cruises' board of directors.

Galaxy is 865.8 ft. (263.9 m) in length, and is a sistership to *Century*, which debuted in 1995 and was honored as one of *MR/EN's* Outstanding Cruise Ships of 1995. *Galaxy* will reportedly will be the largest ship ever to transit the Panama Canal and the largest cruise vessel operating in Alaska during 1997.

After delivery in Germany, the ship traveled to Southampton, England, and was also introduced in Amsterdam and Hamburg before heading to the U.S. East Coast for a two-week series of inaugural events. While docking in New York City, the ship hosted the premier of a major Hollywood film, which showcased Celebrity's electronic alliance with Sony Corp. (See story on page 34.)

On Dec. 21, 1996, the ship's eight-night maiden voyage commenced from Port Everglades to the Western Caribbean. In addition to its regular seven-night Western Caribbean sailings, *Galaxy* offers cruises ranging in length from 10 to 15 nights that include trans-canal and Alaska itineraries.

The ship is propelled by four, non-reversible, four-stroke MAN B&W L48/60 engines, with an output of 2 x 9,450 kW and 2 x 6,300 kW at 500 rpm. Each pair of engines transmits power via a gearbox to a

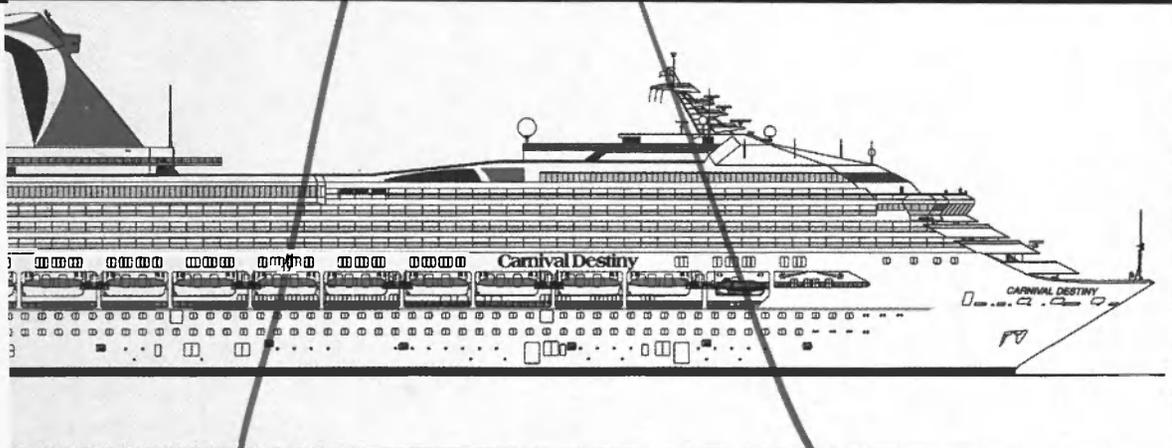
for a 5,200-kW shaft generator for electric power supply during voyages. The engines are connected to Renk gearboxes via flexible Vulkan-Rato couplings.

Galaxy complies with all applicable IMO and U.S. Coast Guard regulations and is classed by Lloyd's Register with the notation (100A1 "Passenger Ship" IWS, LMC, UMS.

Galaxy Main Particulars	
Length	865.8 ft. (263.9 m)
Width	105.6 ft. (32.2 m)
Draft	25.2 ft. (7.7 m)
Tonnage	77,713 gt
Propulsive power	53,556 hp
Speed	21.5 knots
Passenger capacity	1,896
Classification society	Lloyd's Register
Order value	\$320 M
Builder	Meyer Werft
Owner	Celebrity Cruises
Ship's registry	Liberia
Delivery date	November 1996

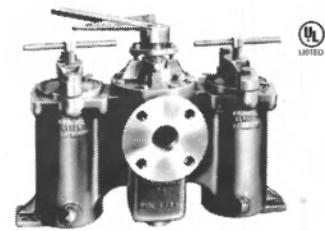
Galaxy Machinery	
Main engines ...	(4) four-stroke MAN B&W L48/60 engines
.....	2 x 9,450 kW, 2 x 6,300 kW outputs at 500 rpm
Propellers	(2) controllable pitch
Gearboxes	Renk
Couplings	Vulkan-Rato
Generator sets	(4) auxiliary diesel MAN B&W sets,
.....	type 6L40/54
Navigation system	NACOS 45-2

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STRAINERS, FILTERS TRANSFER VALVES TRANSFER PUMPS

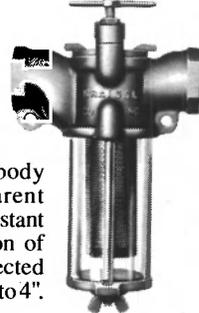
Rugged Construction—Cast Iron, Steel, Stainless, Bronze and Other Alloys. Flanged, Threaded or Weld-End.



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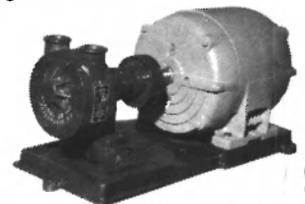


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The Ship of Lights at Chantiers.

Name *Splendour of the Seas*
 Shipyard Chantiers de l'Atlantique
 Owner Royal Caribbean Cruises Ltd.
 Delivery March 1996

In a ceremony at Chantiers de l'Atlantique shipyard in St. Nazaire, France, on March 15, 1996, Royal Caribbean Cruises Ltd. (RCCL) Chairman and CEO **Richard Fain** accepted delivery of *Splendour of the Seas*, nicknamed The Ship Of Lights. The 69,500-gt ship began its inaugural summer season of 12-night cruises to the British Isles, Mediterranean, Scandinavia and Russia on March 31. On Nov. 1, *Splendour* crossed the Atlantic for a winter season of seven-night cruises to the Southern Caribbean from San Juan, Puerto Rico.

In an interview with *MR/EN* in mid-1996 Mr. **Fain** explained how the construction of new ships such as *Splendour* is key to the company's strategy for growing business, especially in Europe. "We've made no secret of our goal of building our European base. Most of building market shares comes from building new ships for these markets," said Mr. **Fain**.

Splendour kicked off RCCL's introduction of five new ships in five years. These new ships will reportedly offer a combined total capacity of 7,900 passengers, 54 itineraries and 134 destinations worldwide. In addition, RCCL has announced the commencement of a newbuild project known as Project Eagle, formulated in part by an

alliance with Mitsubishi, although the first two sister-ships will be built by Kvaerner Masa-Yards. These ships will be built to emulate the success of *Splendour of the Seas* and the other Vision class ships.

Splendour of the Seas Main Particulars

Length 866.7 ft. (264.2 m)
 Width 104.9 ft. (32 m)
 Draft 25.2 ft. (7.7 m)
 Tonnage 69,500 gt
 Speed 24 knots
 Passengers 2,060
 Classification society Det Norske Veritas
 Order value \$325 M
 Builder Chantiers de l'Atlantique
 Owner Royal Caribbean Cruises Ltd.
 Delivery date March 1996

Splendour of the Seas Machinery

Main engines Cegelec
 Generator engines Wartsila Diesel
 Generators GEC Alstom, producing
 5 x 11,350 kW
 Propellers (2) Lips B.V., 4 blades
 Thrusters (2) Brunvoll bowthrusters,
 2 x 1,500 kW
 Fin stabilizers (1) pair ACH, 16-cu-m
 Engine control Norcontrol
 Steering control (2) Becker rudders,
 Frydenbo steering gears
 Radar Sperry Marine
 Lifeboats (10) Harding
 Tenders (4) Harding
 Liferrafts (56) Viking
 Waste management system Deerberg
 Desalination equipment Brackett Green
 Lifts (17) Schindler
 Ballast control Norcontrol

In 1992, with the launch of *Statendam V*, Holland America Line (HAL) embarked on a new phase of ship-building that also included the debut of *Maasdam V* in 1993 and *Ryndam III* in 1994. *Veendam IV* is the fourth ship in the Statendam series, and the contract for its construction was signed with Fincantieri on Dec. 10, 1993. This ship is the fourth to bear the same name in the 123-year history of HAL, and its name originates from the name of a town that grew up near a dam in an area of lakes and marshes in the north of Holland where peat or "veen" is produced. *Veendam I* was built in 1881 by Harland & Wolff in Belfast, Ireland, weighed more than 4,000 gt, was powered by steam and sails to a speed of 13 knots, carried a large number of emigrants from the Netherlands to U.S., and eventually sank in the Atlantic.



Name *Veendam*
 Shipyard Fincantieri
 Owner Holland America Line
 Delivery May 1996

Modern-day *Veendam* is a 719.6-ft. (219.3-m) ship, which carries 1,266 passengers and a crew of 602, and is propelled to a speed of 22 knots.

Commencement of steel cutting for *Veendam IV*'s structure and unit fabrication both occurred in April 1994, followed by the official keel laying ceremony in September of the same year. The ship was floated out from its building dock in Italy in June 1995, and the 55,451-gt MS *Veendam* entered service on May 25, 1996.



Shipyard photo of Veendam's propeller supports.

During the ship's inaugural cruises in 1996 and again in 1997, HAL passengers travel the Eastern and Western Caribbean from Fort Lauderdale, and from New York to New England, Eastern Canada and Bermuda.

Veendam Main Particulars/Machinery

Length 719.6 ft. (219.3 m)
 Width 101 ft. (30.8 m)
 Draft 24.7 ft. (7.5 m)
 Tonnage 54,451 gt
 Speed 22 knots
 Passengers 1,266
 Classification society Lloyd's Register
 Order value \$231 M
 Builder Fincantieri
 Ship's registry Bahamas
 Delivery date April 1996
 Propulsion power (2) 12 MW ABB motors with KaMeWa CP propellers
 Side thrusters (3) 1,760-kW KaMeWa, two bow, one stern
 Joystick (3) KaMeWa
 Rudders (2) Flap Hinze
 Diesel engines (5) Sulzer medium-speed



Grandeur of the Seas in pictured in Kvaerner Masa's Helsinki building dock.

NameGrandeur of the Seas
 ShipyardKvaerner Masa-Yards
 OwnerRoyal Caribbean Cruises Ltd.
 DeliveryNovember 1996

On Nov. 20, 1996, Finland's Kvaerner Masa-Yards' Helsinki New Shipyard delivered M/S *Grandeur of the Seas* to Royal Caribbean Cruises, Ltd. (RCCL). At a length of 915 ft. (279.1 m), a gross tonnage of 74,140, and a passenger capacity of 2,240, the ship is the biggest cruise hner in the RCCL fleet.

The vessel has a diesel-electric AC-AC power plant machinery with electric propulsion motors. The total onboard power developed is 50,400 kW (68,500 hp). *Grandeur* began begin year-round service to the Eastern Caribbean from Miami on Dec. 14, 1996. Sistership *Enchantment of the Seas* is due to be delivered by Kvaerner in July 1997.



Grandeur's propulsion motor.

Grandeur of the Seas Main Particulars

Length, o.a.915 ft. (279.1 m)
 Width, o.a.121.3 ft. (37 m)
 Draft24.9 ft. (7.6 m)
 Tonnage74,140 gt
 Speed23.5 knots
 Passengers2,240
 Order value\$300 M
 Classification societyDet Norske Veritas
 BuilderKvaerner Masa-Yards' Helsinki New Shipyard
 OwnerRoyal Carribean Cruises, Ltd.

Delivery dateNovember 1996

Grandeur of the Seas Machinery

MachineryDiesel electric power station
 Total output50,400 kW (68,500 hp)
 Main engines(4) MAN B&W 12V 48/60
 Propulsion motors(2) 17,000 kW, Cegelec AC motors
 Propellers(2) FP
 Bowthrusters(2) 1,750 kW
 Stern thruster(1) 1,750 kW

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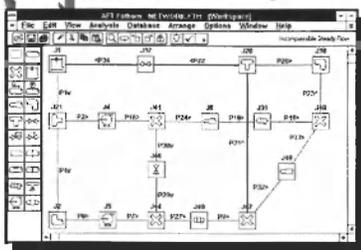
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QE2 Refit Completed In Southampton

by Alan Thorpe, international editor

For the first time in almost a decade, Cunard's *Queen Elizabeth 2* (QE2) — flagship of the British merchant fleet — visited the King George V drydock in Southampton, England. The ship entered the drydock, now owned and operated by A&P, for her biennial overhaul on Nov. 22, 1996, and reportedly sailed on schedule on Dec. 12.

Much of the 12 million pound refit was routine and statutory maintenance, but the opportunity was taken to further upgrade a number of passenger areas as part of Cunard's continuing strategy to ensure QE2 remains the finest ship afloat.

Planning for the project had been under way for more than 18 months, with a project team working full time, and for the past six months, more than 40 people from both Cunard and A&P were involved in detailed planning. More than 1,000 workers were involved in the refit, operating in two, 12-hour shifts.

In the passenger areas, major refurbishment was undertaken in the Mauritania Restaurant and Princess Grill. The Mauritania Restaurant, which was previously a two-sitting restaurant, was changed to a one-sitting facility. This major improvement was achieved by removing a number of cabins from passenger use, reducing the ship's capacity from 1,750 to 1,500.

In the Queen's Room, the principle venue

recently for ballroom dancing, a new dance floor was installed to replace the original, 30-year-old model. New carpets were installed in at least six common rooms and several corridors. New marble bathrooms were fitted in 43 cabins. In addition, a new, interactive television system was installed in all cabins.

On the mechanical side, the propellers, stabilizers and rudder were all overhauled, several miles of pipework renewed, a new fore-jeck installed to repair damage sustained in last year's Hurricane Luis, and work on a new, low-level lighting system (part of the requirements of the new Safety of Life at Sea regulations) was completed. Some blasting and re-painting work was also carried out.

According to Cunard Director of Sales and Marketing **Cathy Jackson**, "This refit, while relatively modest compared with the last one, is part of our continuing improvement program to ensure that these high satisfaction ratings continue, and that the ship continues to deserve its accolade as the flagship of the British Merchant Marine."

The A&P contract, thought to be worth approximately seven million pounds, secured more than 1,000 jobs at the A&P Southampton yard for the duration and was won against stiff competition from repair yards in Germany, Spain and elsewhere in



Two years have passed since this ship's voyage to New York cost Cunard millions of pounds in compensation to passengers, after the ship sailed with plumbing problems and debris-stewn passages before a refit was finished. In this photo, workboat floats alongside QE2 as the ship prepares to receive passengers in New York.

photo credit: Bridget Murphy

Cunard's Cruising Tradition



Commemorating the 75th anniversary of the world cruise, Cunard's *Queen Elizabeth 2* set sail on a world cruise voyage from New York City on January 4. This photograph was taken shortly after the ship's arrival at the New York Cruise Passenger Terminal on that morning. Passenger rates for the 103-day cruise, encompassing 37 ports of call including newly instituted stops in the United Arab Emirates and Oman, started at a whopping \$28,120 per person, based on double occupancy.

photo credit: Bridget Murphy



At one point, *Queen Elizabeth* claimed *Carnival Destiny's* current honors as the largest passenger ship in the world. The 83,673-gt, 1,031 x 118-ft. ocean liner is pictured here plying the waters of New York Harbor. QE was equipped with 25 public rooms stretched out over 14 decks. The vessel, sunken in 1972 in a suspected arsonous fire in Hong Kong, will reportedly be given a final resting place under a new container port slated for construction in the colony. The ship was purchased by the father of future Hong Kong leader Tung Chee-hwa from Cunard in 1970, for conversion into a floating university.

the U.K.

Measuring 962.9 x 121.6-ft. (293.52 x 32.07-m), QE2 fit snugly into the yard's Southampton 1,197.49 x 134.5-ft. (365 x 41.1-m) King George drydock, originally opened in 1993 and built to accommodate legendary Cunard liners *Queen Mary* and *Queen Elizabeth*.

Commenting on the arrival of QE2 — the fourth major cruise vessel to be refitted at the yard since September 1996 — A&P Southampton Managing Director **David Adams** stated: "We have been working towards these contracts for the last two years, investing in the people and facilities that allow us to compete in Europe's premier league of ship repairers. I have to applaud the stance taken by our Group and its shareholders in approving the investment at a time when our forward orders were measured in terms of hours, days, or if we were lucky, weeks. Without that investment the yard would not have survived."

MacGregor Elevators Feature Advanced Safety

The products of MacGregor, a supplier of cruise line elevators, now feature an advanced safety system designed to provide protection for passengers. Memco's new Pana194 door system transmits infrared beams in a criss-cross pattern in order to scan for obstructions as elevator doors close. Any interference with the beams across the door openings activates a relay which can stop or reverse closure of elevator doors. The detectors are manufactured in a range of widths and with different fixing methods to suit a large variety of doors, both center and side-opening. Installations using the earlier Pana40 system can be upgraded to incorporate the 194-beam facility by enhancement of the micro-controller chip on the control board in the Panacombi model 240 controller.

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In 1990 DNV pioneered 'Safety Management and Environmental Protection' (SEP) for the shipping industry. To date, more than 300 vessels and some 70 ship owners or managers hold SEP certificates—which are fully in compliance with the ISM Code. Ship owners and managers have experienced fewer accidents, improved safety for both ship and crew, and a marked reduction in accidents and cargo damage. Since the early '90's DNV has strongly advocated the need for uniform and consistent implementation of the ISM code in view of its great importance as a proactive instrument in enhancing safety at sea.

PEOPLE

DNV awarded the first 'Crew Manning Office' certificate in 1996. The certificate addresses all aspects of importance for crew management organisations responsible for the selection, recruitment and training of seafarers. DNV's 'people' schemes will include schemes for seafarers, as well as certification schemes for crew manning agencies, training institutes, simulators and maritime institutions.

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Norwegian Innovation Spurs Commercial Success

by David Tinsley

Norway is steeped in maritime culture, infused with a living, evolving tradition that bears directly on the economic and industrial well-being of a progressive state. The Norwegians have always been a pioneering seagoing people, and that spirit of confidence and innovative thinking continues to be reflected in the maritime sector.

Quality and advanced technology are hallmarks of Norwegian products and services across the board in shipping, shipbuilding and allied fields, and a strong commitment by government and industry to collaborative research and development is indicative of a determination to keep the whole industry at the leading edge. For example, current studies focusing on information technology applied to ship operations, construction materials usage and the minimization of vessel emissions seek to strengthen the competitiveness of Norwegian equipment, machinery and systems producers, as well as shipping and shipbuilding.

Norway's maritime cluster is second only to the nation's energy industry in terms of economic impact and revenue generation.

The ships' equipment sector alone employs approximately 10,000 people in 200 companies, generating an annual turnover of around NOK 13 billion. About 70 percent of Norwegian equipment makers' production is exported. Key recipients include yards specializing in high value newbuildings such as cruise vessels, containerships and the larger types of fast ferries.

Such is the interdependence of the maritime industries that newly implemented improvements in the tax regime for Norwegian shipowners can be expected to ultimately benefit the country's maritime infrastructure at large. Several years of decline in the size of the

Norwegian fleet was arrested in 1996. The Norwegian Shipowners Association is confident that the switch from corporation tax on shipping earnings to a moderate tonnage tax plus other measures will boost the Norwegian fleet and flag.

The inexorable shift of global shipbuilding influence to the Orient also has major implications for the support industries, notably, the marine equipment sector.

Characteristically, many Norwegian companies view the tiger economies of the Asian Pacific region as a challenge and a business opportunity, rather than as a threat. For instance, lightweight shipbuilder Kvaerner Fjellstrand's Singaporean yard has enabled the company to tap the eastern Asian potential. In a new development, Kvaerner Fjellstrand Singapore is involved with the Manila-based company Negros Navigation in a

joint study into the feasibility of setting up a shipyard in the Philippines to service both the expanding domestic and international markets for fast ferries.

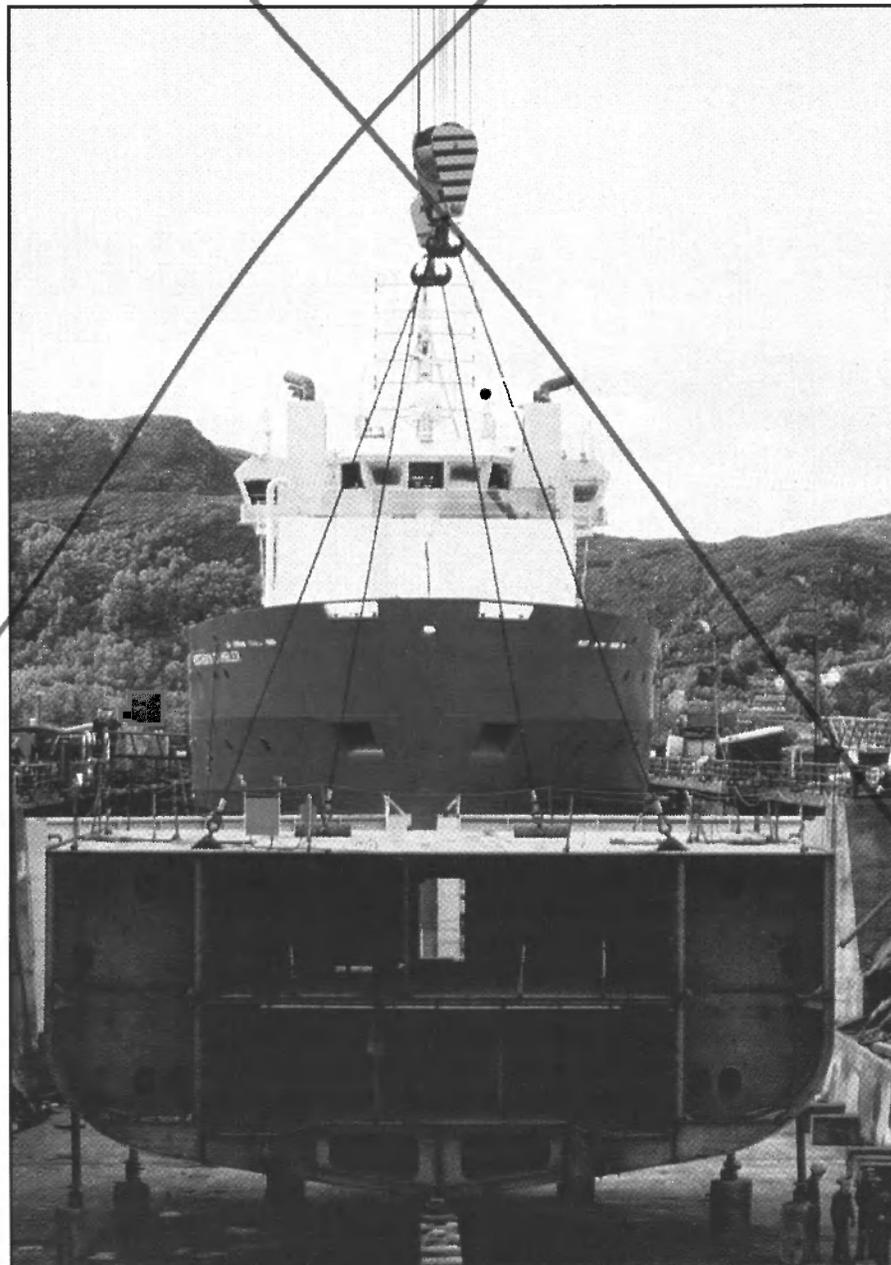
The company's Norwegian operations, meanwhile, are being consolidated. Faced with the delivery of at least nine catamaran ferries from its Omasstrand yard during 1997, Kvaerner Fjellstrand has leased the former Rosendal Verft in Hardangerfjord to secure additional capacity for fabricating superstructures.

Kvaerner Ships Equipment's recent transfer of its corporate headquarters and senior management to Singapore from Tranby, just outside Oslo, points to a strategy aimed at getting closer to the core customer base as well as strengthening the company's presence in a growing market.

Acquisitive Kvaerner, while integrating the U.K. conglomerate Trafalgar House into the organization and suffering a downturn in profitability from its pulping and offshore activities, is sanguine about the prospects for its shipbuilding interests. Kvaerner, which is an essential element of the domestic shipbuilding industry, spent NOK 1.6 billion acquiring yards in Scotland, Finland and Germany between 1989 and 1992, which generated double that amount in net cash over the six years ending 1995.

Today, it ranks among the top five shipbuilders worldwide, in terms of physical capacity and orderbook. The acquisition of the Kleven Group in 1990 restored an indigenous steel shipbuilding capacity to Kvaerner, following the closure of the Fredriksstad yard in 1988.

Further shipbuilding expansion over the next few years will be strategic, as indicated by the 1996 takeover of Russia's JSC Vyborg Shipyard in the Gulf of Finland, and by the moves to buy a yard in China.



Versatile Ulstein Verft in Ulsteinvik. Pictured is the positioning of the first section of a survey vessel recently delivered to South Korea.

Target markets for Kvaerner's shipbuilding interests, collectively, are predominantly in the specialized or capital-intensive categories.

This includes the unit cargo, reefer ship, cruise and ferry, LNGC, LPGC, chemical tanker, shuttle carrier and Arctic oil and

gas sectors. Research and development endeavors are shaped by the long-term commitment to the more sophisticated end of the newbuilding business.

It is also developing advanced projects such as the innovative Sea Launch program.

The latter breaks new ground in

space technology engineering, entailing the construction of a \$98-million plus mothership at the Kvaerner Govan yard in Glasgow and a \$78-million adaptation of the former North Sea oil platform *Odyssey* at the Kvaerner Rosenberg yard in Stavanger, Norway.

Ship's Suppliers

Major equipment suppliers such as Kvaerner, Ulstein, Ultveit Moe, Simrad and Kongsberg Norcontrol also offer yards the advantage of single source purchasing for total systems packages, an attractive option for shipbuilders in today's times of tighter cost control and ever-shrinking workforces.

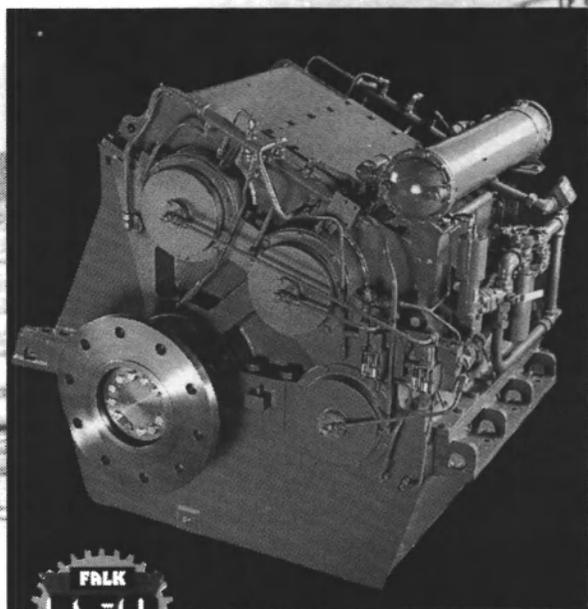
In recent months, Norwegian ship supply specialist Unitor has landed its largest ever single contract. The \$15-million deal calls for turnkey project management and supply of thermal insulation systems to two Hyundai-owned LNG carrier newbuildings ordered in South Korea.

The Kvaerner and Ulstein groups account not only for a large slice of West Coast shipbuilding capacity, but also for much of the

(Continued on page 52)

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Both wire and fiber systems are designed for mounting on weather decks and deployment by one person. Also, both feature a ScanRope ETS bracket fitted at the transom to act as a strong point and allow for flexibility in regard to positioning on the deck. Both systems are available in two varieties: the ETS 2000 for vessels below 50,000 dwt and the ETS 4000 for vessels above 50,000 dwt. The ScanRope Towing Link (patent pending) is especially designed for vessels with strongpoint, chafing chain and fairlead already installed.

For more information from ScanRope
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The Creation Of A Worldwide ECDIS Database

Despite persistent obstacles in placing the long-awaited Electronic Chart Display and Information System (ECDIS) on the bridges of SOLAS-class ships, continuous progress is being made.

The C-MAP Group has responded by mounting an effort to digitize the world's shipping routes and ports in an IMO-compliant format. C-MAP has put into motion a process which it believes will ultimately lead to improved navigational capabilities for the world's commercial fleet.

C-MAP is nearing completion of a worldwide database that will incorporate all of the charts required by the commercial ships of the world.

Presently, its library consists of nearly 10,000 digitized charts, 2,500 of which have already been upgraded to an ECDIS SENC (System Electronic Navigational Charts) standard.

The effort will be completed with the upgrading of another 1,000 charts.

International cooperation has been obtained from scores of marine electronic equipment manufacturers, shipowners, Hydrographic Offices and individual mariners. Lack of official validation by Hydrographic Offices has been a major impediment to the acceptance and use of ECDIS worldwide.

To solve this problem, The C-MAP Group has entered into a number of non-traditional collaborations with hydrographic offices and government institutions.

Not only have these alliances and affiliations enabled the work to move forward; they have become something of a model for the type of international cooperation which is essential to the completion of ECDIS data for implementation aboard all SOLAS-class vessels.

Cartographic production centers are fully operational by C-Map in six countries (Italy, U.S., Canada, Poland, Russia and Norway), while further R&D on the company's electronic cartography products is being carried out in Italy, Norway, Canada and Russia.

To ensure the accuracy and precision of its electronic charts, C-MAP incorporates a multi-stage-quality assurance program.

The first phase consists of verifying that digital data matches the source used to create it, and includes both geometric entities

such as points, lines and areas, as well as database information. Quality checks are performed by two sets of technicians.

The C-Map Group updates its chart database continuously, based

on Notices to Mariners corrections and new chart additions, and releases updated charts to subscribers three times a year. Interim updates are made available to subscribers as new data is added and major changes are incorporated.

For more information from C-Map
Circle 20 on Reader Service Card

The preceding was excerpted from an article by Dr. Fosco Bianchetti, president and CEO of C-MAP, and Ken Cirillo, vice president and general manager of C-MAP/USA.

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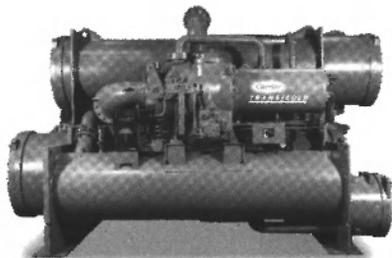
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(Continued from page 50)

capital investment undertaken in recent years to raise production efficiency and work capacity. Such measures have helped ensure continuing competitiveness in selected areas of the market, including chemical tankers, offshore service

vessels, research ships, high grade coastal ferries and other specialized tonnage. A degree of industry consolidation has taken place in the past year, one example being the purchase of the newbuilding and repair firm Soviknes Verft by shipbuilding and engineering group Brattvaag Industrier.

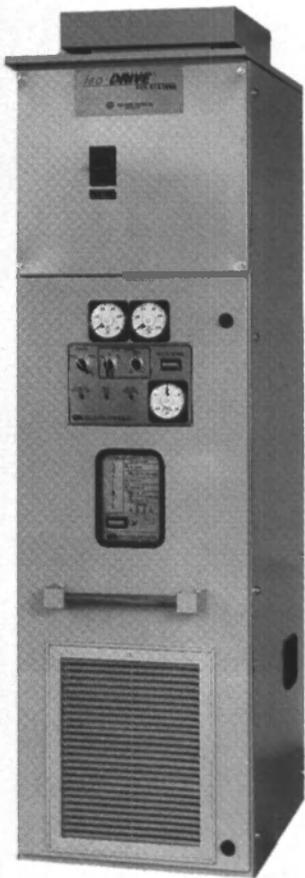
Tough and resourceful by nature, Norway's scattered West Coast communities have maintained a leading position in the highly demanding field of offshore support vessel (OSV) design and construction. The evolution of offshore activities in Europe's north-west continental shelf, the shift of

offshore production to deeper and more hostile water, new safety legislation, and the age and type profile of the service vessel fleet has provided cornerstone business opportunities which Norwegian yards have been quick to seize.

A pronensy for continuing innovation and improvement is particularly well demonstrated by the Ulstein Group, with its ubiquitous UT family of platform supply ships, anchor handlers and multi-role vessels. Nearly 290 OSVs embodying UT700 series design, including more than 100 built by Ulstein itself, have been ordered since the 1970s. One of the crucial factors contributing to the resilience of the shipbuilding sector in the construction of high-value, specialized tonnage is the extent to which home-grown technology is applied in the new classes of offshore vessels. A vibrant equipment industry means that key determinants of OSV performance, including anchor-handling winches, main engines, thrusters, rudders, steering gears and electronic control systems are produced in the Norwegian domain at an internationally competitive level.

The Ulstein Group offers full packages, individual components or any permutations spanning design, construction, engineering and equipment supply. In addition to the newbuilding production at its own Ulsteinvik premises, where the OSV orderbook extends into mid-1998, it licenses other Norwegian and foreign yards to build UT-series vessels and sells gear for use in non-Ulstein or non-Norwegian developed designs. Thus, for instance, heavy-duty Ulstein Brattvaag winches figure in the specifications for almost all the larger type of anchor-handling support vessel newbuildings worldwide.

Among the 1996 completions by Ulstein Verft, the UT740-class, 222-ton bollard pull capacity *Normand Neptun* provided a new showcase for Norwegian offshore vessel technology. Ranking as one of the largest support ships equipped for anchor-handling, it was installed with a triple-drum Brattvaag winch of 400-ton capacity. Other new types from the Ulstein stable to have been commissioned into service in 1996 have included the UT756 design, which readily lends itself to adaptation for cable-laying duties. One such vessel was delivered by



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Ulstein Design Facilitates Operations In Deeper Waters

Solstad has placed a repeat order for Ulstein's new UT740 design, which is distinguished by the large Ulstein Brattvaag winch which can pull 500 tons on the main drum, enabling the vessel to work in waters of 3,280 ft. (1,000 m) or deeper. Following the in-service success of the first UT740 anchor-handling/tug/supply (AHTS) vessel *Normand Neptun*, which was delivered by Ulstein Verft last March, its owner Solstad Shipping of Karmoy in southwest Norway has ordered a second vessel of the same design from the Ulstein Group's shipbuilding division and has taken an option on a third vessel in the series.

The new vessel, contracted for delivery in October 1997 brings the total of Ulstein UT700 series ships built for Solstad Shipping to 13 vessels. It will also be the sixth Solstad vessel to be built by Ulstein Verft.

Normand Neptun, with its large Ulstein Brattvaag winch, can reportedly handle the heaviest anchors, chains and wires in waters of 3,280.8 ft. (1,000 m) depth or deeper.

To ensure this massive winch and the vessel's 222-ton bollard pull can be fully utilized, great care was taken in the development of the hull lines to ensure adequate buoyancy aft to counter excessive squat when towing mooring lines and hauling anchors. Similarly, the design has been achieved without compromising open water performance and seakeeping which were considered of utmost importance for the intended operations of the UT740 in hostile deeper waters. As a result of these requirements the depth of the vessel at the stern is 25.5 ft. (7.8 m), about one meter more than earlier large AHTS designs.

For more information on the vessel from Ulstein Verft

Circle 14 on Reader Service Card

For more information on the winch from Ulstein Brattvaag

Circle 15 on Reader Service Card

the Usteinvik yard to the AP Moller organization, following a class of six UT745 platform supply ships.

An important new addition to the workload has been the series of UT720-type AHTS vessels awarded to Ulstein Verft by Swire Pacific Offshore of Singapore. More flexi-

ble and powerful than its predecessors, the UT720 covers the industry's requirement for a medium-sized AHTS of around 2,000 dwt capacity, and is intended to meet a growing demand for substantial liquid cargo intake.

The construction in Norway of the latest generation of vessels for

the Coastal Express (Hurtigruta) network is seen as a vindication of the competitiveness of the West Coast yards and domestic equipment suppliers. The allocation of the preceding trio of 11,000-gt ferries to German shipbuilder Volkswerft Stralsund had been a considerable blow to the indige-

New T-Bulbs Challenge Traditional Welded Profiles



Circle 278 on Reader Service Card

Recent reports studying the effect of replacing traditional welded profiles with T-Bulbs show significant reductions in paint area, weight, maintenance time, and a higher capacity for corrosion control. Excerpts:

"A reduction in paint area of 2,005 m² in the cargo area is significant. Sandblasting, painting, and inspection are reduced accordingly." 1)

"A large reduction is to be found in the surface area. The reduction is between 580 and 8,600 m²." (2.3% and 13.5%) 2)

"...good possibility of a reduction in the steel weight. The reduction is between 16 and 295 tonnes." (0.8% and 14%) 2)

"The self-draining nature of the T-Bulb, particularly in the upside-down position, will undoubtedly improve corrosion life." 2)

"Accessibility for work and inspection will be vastly improved. Also the paint will last longer due to finely rounded corners on the flanges." 1)

For more detailed information on these studies and a free T-Bulb design program please call Fundia Profiler on +47 22 58 43 90 or fax on +47 22 18 35 69.

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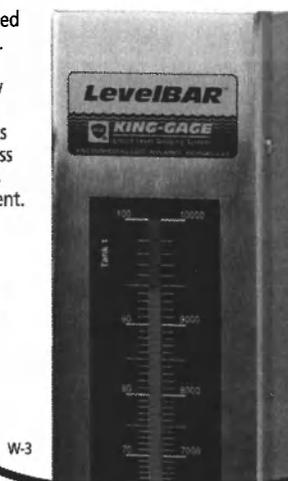
1) 'Comparison of built-up T-profiles and Fundia's new T-Bulb profile in a 170,000 Dwt. Bulk Carrier', Shipping Research Services, August 1996. 2) 'Steel and Area Analysis', Knud E. Hansen A/S (consulting naval architects and marine engineers), September 1996.

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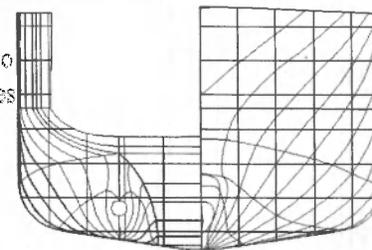
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Circle 243 on Reader Service Card

nous shipbuilding sector. By the measure of deadweight capacity, the largest newbuildings under construction in Norway are a series of 37,500-dwt parcel tankers at Kvaerner Kleven, destined for operation in the Storli pool. Although Kvaerner Kleven's modern 656 x 131-ft. (200 x 40-m)

drydock confers the ability to construct vessels up to about 75,000 dwt — and heightened productivity with handysize tonnage — the industry sees its primary target as the market for added-value newbuilds below 40,000 dwt.

In terms of enclosed volume, the biggest merchant ship entrusted to

a Norwegian yard recently is a sistership to the 31,000-gt ferry *Ikarus* earlier contracted from Fosen Mek Verksteder by Cretan operator Minoan Lines. To be named *Pasiphae*, the latest vessel will be certified for 1,500 passengers and will have RoRo provisions for 160 trucks or 800 cars.

Longstanding partner of Norwegian shipbuilding, the Swedish subcontractor Bruces Verkstads of Landskron, is constructing the hull of *Ikarus*, which will be towed to Fosen for completion. The Norwegian yard delivered the slightly smaller (28,400-gt) *Aretousa*, to Minoan Lines in 1995.

In recent years, the Norwegian shipbuilding industry has succeeded in attracting contracts for a number of specialized vessels from Japan and South Korea, markets characterized by an almost complete self-reliance on newbuilding tonnage and consequent, minimal import demand. Reflecting a key area of Norwegian prowess, fast ferries have figured in the prestigious export work secured from Korean and Japanese operators. In addition, the past year has seen the completion of a 24,000-dwt alumina pellet and aluminum ingot carrier, *Rakiura Maru*, for an arm of Tokyo-based Navix Line. The project was handled by the Maritime Group-owned Horten Shipyard, which assigned all steelwork to Bruces Verkstads. The recent delivery of an oceanographic survey vessel to South Korea by Ulstein Verft underscored the industry's ability to penetrate Oriental markets. Tailored to the needs of the Korean Institute of Geology, Mining and Materials, the survey ship project drew on Ulstein's experience in designing

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An offshore Floating Production, Storage and Offloading (FPSO) platform is designed to operate for long periods in harsh environments. Many operators have found that onboard surveillance systems are critical in the safe and cost-effective operation of these units. Hernis Scan Systems has a strong record of supplying closed-circuit TV surveillance systems to all types of offshore units, including FPSOs, shuttle tankers and floating storage vessels. It has reportedly been a pioneer in developing CCTV systems manufactured from materials and components suitable for marine applications. This R&D effort has paid off, as it reports a commanding 90 percent market share in the Norwegian North Sea offshore sector.

For more information from Hernis
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and building a series of six seismic vessels for Western Atlas of Houston between 1991 and 1995.

The Norwegian-developed Ramform concept, involving a radical hull shape resulting from an exceptionally wide beam, has received a considerable boost as the basis for two state-of-the-art seismic vessel newbuildings. The \$180-million order, awarded by marine seismic contractor Petroleum Geo-Services to Langsten Slip & Baatbyggeri, followed the introduction in 1995 of *Ramform Explorer* and *Ramform Challenger*.

Ramform Explorer marked a fundamental departure in seismic ship design, allowing multiple streamers to be simultaneously deployed from the vessel's broad, aft working platform. It is understood that the latest tonnage will be more powerful and offer even more streamer winches than the 16 incorporated in *Ramform Challenger*. Umoe Sterkoder at Kristiansund has recently sealed a contract for a third vessel of an advanced new type conceived for the Baltic paper export trade. The completion by the yard of the 7,620-dwt, first-of-class *Transgard* in June had signaled a major new stage in the development of the Finnish-owned forestry products carrier fleet. The stern-ramped *Transgard* has been designed for carrying sto-ro freight underdeck, with a break-in of cassettes on the after part of the tweendeck, and with capacity for 321 TEU containers on the weatherdeck. Mariehamn-based Bror Husell Chartering took delivery of the lead vessel, while the Turku firm Engship is scheduled to receive the second-of-class this month, and the third in September of 1998. An additional three newbuildings, employing a similar design concept but with an increased length and deadweight of 8,800 tons, are due to be delivered in 1997/98 to United Shipping of Mariehamn by Fosen Mek Verksteder. All six ships were ordered on the strength of long-term charter agreements with the Finnish forestry goods exporter Transfennica. The design provides a response to changes in the composition of the Finnish export trade to continental Europe, notably the increasing volumes of copier or sheeted paper conveyed on rolltrailers or cassettes, while realizing new targets in trans-

New Waste System Design Minimizes Space Requirements

Norsk Hydro Waste Treatment reportedly installed its first

waste treatment system on a cruise ship in 1981 on the S/S *Norway*. Its operating experience has led to totally new technical specifications and philosophies for waste handling systems onboard cruise ships. Its new design promises to mini-

mize space requirements, and the system consists of: a waste incinerator system; a food waste treatment system; and a recycling and storage system.

For full technical specifications on the new system

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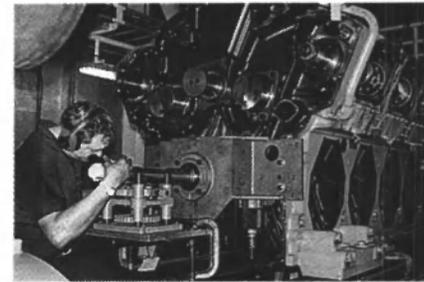
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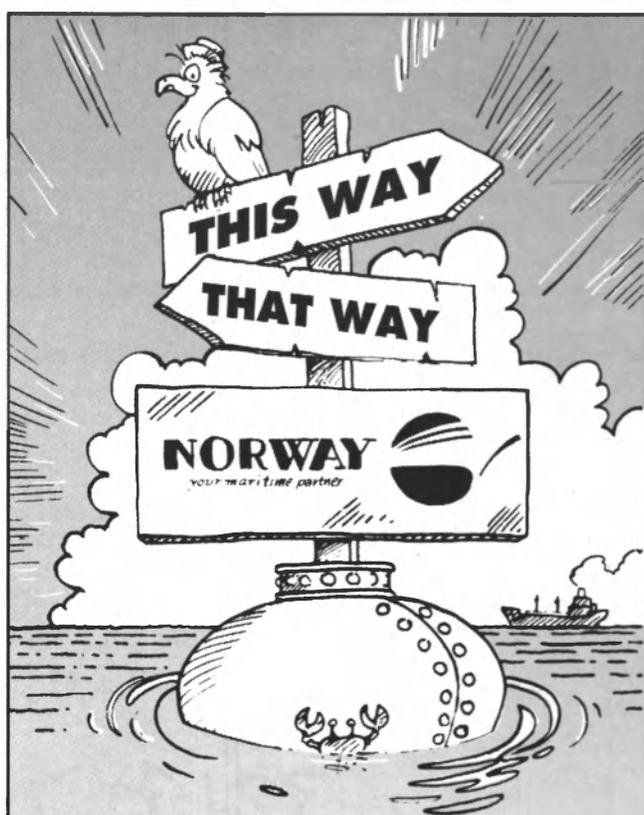
portation and handling efficiency. Just more than 10 years from its launch of the B-series engine on the fiercely competitive 320mm bore sector, Ulstein Bergen is set to complement production of in-line models with more powerful vee-

form variants. The Bergen factory has a 12-cylinder prototype of the B engine in vee configuration under testing, and commencement of commercial manufacture is imminent. The company is also planning to augment its range with 16 and 18-cylinder models.

As a consequence, the power band will be extended from the current maximum of 5,400 bhp (3,970 kW) for the nine-cylinder, in-line unit to 11,000 bhp (8,090 kW) for the V18 engine. This will entail the adoption of faster fuel injection, a change in compression ratio, and

different valve timing compared with the present in-line models.

The Norwegian belief in the link between research and commercial success is exemplified by the decision to prolong the Kvaerner Group-inspired Ship R3D maritime technology program.



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Leading the move toward information standardization

The global maritime industry is moving towards a standardization of computerized data, following the automotive and aerospace leads. Through a three-year developmental project, Det Norske Veritas (DNV) aims to consolidate all of the ship-related data it gathers worldwide by using the ISO STEP standard. An Express-based product from Norway's EPM Technology was selected as a key tool for achieving this goal. DNV has engineers working at yards around the world monitoring all phases of shipbuilding.

The classification society's offices worldwide also track ship operation for continuous evaluation, and therefore process huge amounts of data. "We cover two phases of vessels' life cycles," said **Jochen Haenisch**, from DNV's division for Technology and Products. "Our imported data ranges from input for ship approval, such as hull shapes, to operational data for measuring machine performance." The ISO 10303-STEP standard allows CAD/CAM, CAE and a range of other data to be exchanged between systems

from different software suppliers. After evaluating a number of different STEP development tools, DNV chose EPM's Express Data manager because it was found to provide required functionality. In the near future, DNV may extend its scope of operations to include involvement in projects focused on the construction of floating production units for the offshore oil and gas industry, as well as ships.

"We're integrating all our applications into one system called Nauticus," said Mr. **Haenisch**. "This will be installed in the our offices worldwide. STEP will enable us to communicate electronically with our clients, yards, owners and ship management companies and to analyze their computer-based data relating to both newbuildings and operations."

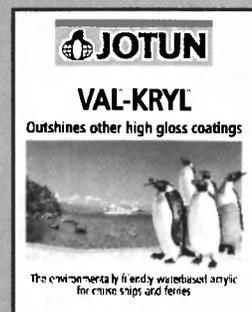
For more information from DNV
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For more information from EPM
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Norwegian Company Literature Review

Val-Kryl from Jotun Valspar Marine Coatings

Val-Kryl, the environmentally friendly water-based acrylic for cruise ships and ferries is designed to outshine other high gloss coatings. Available in a wide variety of long-lasting, vibrant colors, Val-Kryl looks good and reduces maintenance costs, pleasing passengers, owners, applicators and crew! **Circle No. 102**



Unitor Automatic Fire Detection System

From the simplest to the most advanced applications, Unitor offers automatic fire alarm systems and equipment which are reliable and designed to suit vessel needs. All Unitor systems and equipment reportedly conform to the requirements of SOLAS as well as to the rules relevant national authorities and classification societies.

Circle No. 103



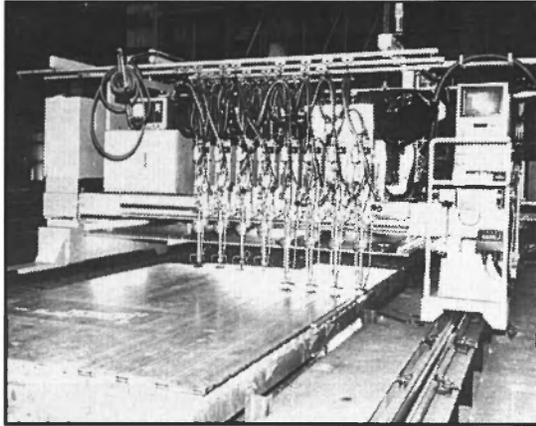
BS-100 DYFI From Autronica Eliminates False Alarms

For decades seagoers have found the name Autronica synonymous with engine room monitoring equipment. With the development of its DYFI-technology, Autronica has set a new standard for ships. Conventional systems cannot distinguish between smoldering fires and dust pollution - and DYFI-technology reportedly can, literally filtering out the most common causes of false alarms.

Circle No. 104



Koike Introduces Thermal Cutting Center



Koike Aronson has introduced an "operator-less" CNC thermal cutting center. According to company President **John Capozzi**, the new MYNUC AutoCut oxy-fuel cutting system is the culmination of the company's continuous efforts to automate all aspects of the cutting process, from parts programming to bridge and torch positioning and torch ignition. A series of automated features is integrated into the new machine to free up the operator for other tasks. These features include quick change torches, automatic torch spacing and selection, automatic balance gas pressure system, flame detection and shut-off, collision (with dropped parts) detection, height sensor and auto ignition. The machine is designed for large ship fabrication runs and steel service centers, specifically those involved with many small production runs on medium to thick steel plate. Other features include flame and gas leak detection with automatic shut-off and the newest version of the company's HYBRID D8 CNC controller working in conjunction with KAP parts programming software.

For more information on Koike Aronson
Circle 21 on Reader Service Card

New Cat 3196 Offers Low Weight-To-Power Ratio

Caterpillar's Engine Division offers the new Cat 3196, a compact, 12-liter displacement, totally electronic marine diesel engine with ratings from 490 to 660 bhp at 230 rpm.

The Cat 3196 reportedly provides the highest power output, lowest weight-to-power ratio — at 3.92:1 — and best fuel consumption to power rating of any diesel engine in its class. Specific fuel consumption at 2,300 rpm is .351 lb/bhp-hr., and propeller demand fuel consumption at 1,900 rpm cruising speed is 17.6 gph.

A twin screw installation has reportedly put a 51-ft. (16-m) custom charter vessel at 90 percent of rated engine speed within 11 seconds.

A single Cat 3196 powering a 42-ft. lobster boat/gillnetter has reportedly enabled the vessel to accelerate from idle to full power in eight seconds with no visible smoke, and has enabled maintenance of

cruising speeds of up to 19 knots at 1,900 rpm.

The 3196 electronic control system adjusts fuel delivery to optimize power and torque while limiting smoke and emissions.

Both fuel injection timing and duration are closely tied to a variety of factors including air inlet temperature, boost pressure, fuel temperature, engine load, engine speed and desired throttle speed to ensure exceptional performance.

The control system's fuel timing and air/fuel ratio maps were fine-tuned in the development laboratory, based on detailed load data provided from field test engines accelerating to planing speed.

The mechanically-actuated unit injector fuel system develops high injection pres-



Pictured is the Caterpillar Cat 3196 marine diesel engine.

sure from a camshaft design which supplies fuel earlier in the combustion cycle. Combined with the optimized unit injector nozzle tip design, this is designed to improve combustion efficiency to increase power while reducing fuel consumption.

Emission levels meet current and anticipated European and U.S. regulations.

For more information on
Caterpillar
Circle 89 on Reader Service Card

Alyn Manufactures Lightweight Composite

Alyn Corp. has introduced an advanced metal matrix composite for applications in the transportation industries. Boralyn, an aluminum boron carbide composite, is reportedly stiffer and lighter than aluminum and has a greater specific strength and stiffness than titanium,

aluminum or steel. In terms of marine applications, the material has thus far been fabricated into propellers, drive shafts and tubing materials for analysis. Other applications include turbine and internal combustion engine components including cylinder sleeves, gears, drive shafts, rocker arms, pistons, connecting rods, valves, bearing supports and turbine vanes.

For more information on Alyn Corp.
Circle 33 on Reader Service Card

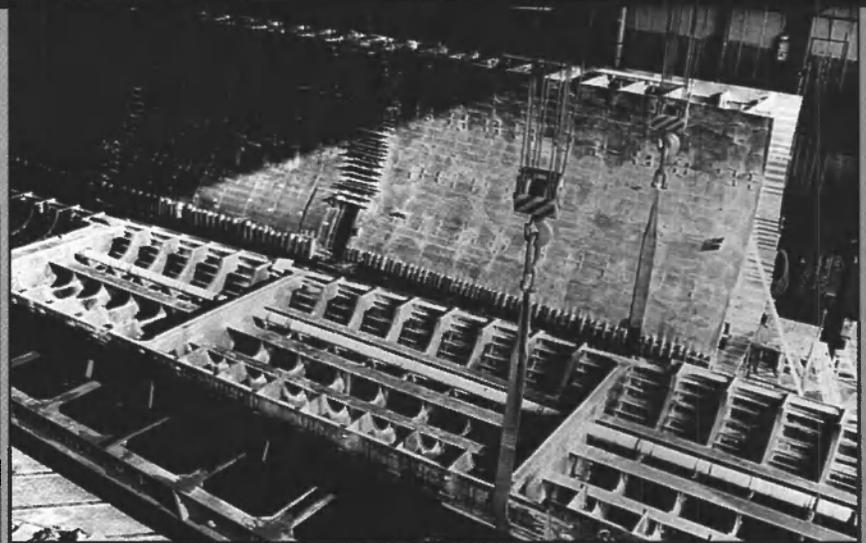
Aluminum Alloy Offers Operational Advantages

Hoogovens Aluminum Walzprodukte GmbH has developed an advanced materials system that reportedly yields even greater reductions in structural weight than existing aluminum construction materials, resulting in stronger, more durable vessels. The company recently supplied all of the aluminum plate for HSS 1500, a fast ferry operated by Stena Line AB, Gothenburg, Sweden, and built by Finnyards in Rauma, Finland.

The company's new alloy, Alustar, reportedly features improved corrosion resistance, less distortion during welding, a smaller heat-affected zone and improved fatigue life of welds. The strength of the new alloy was reportedly achieved through a combination of alloy, chemistry and process modifications. Carefully controlled precipitation of anodic intermetallics

helps the new alloy achieve improved corrosion resistance. "The major breakthrough is that this material is not just 20 percent stronger than typical properties in base mechanical properties, but also much stronger in the weld zone ... By working closely with companies like

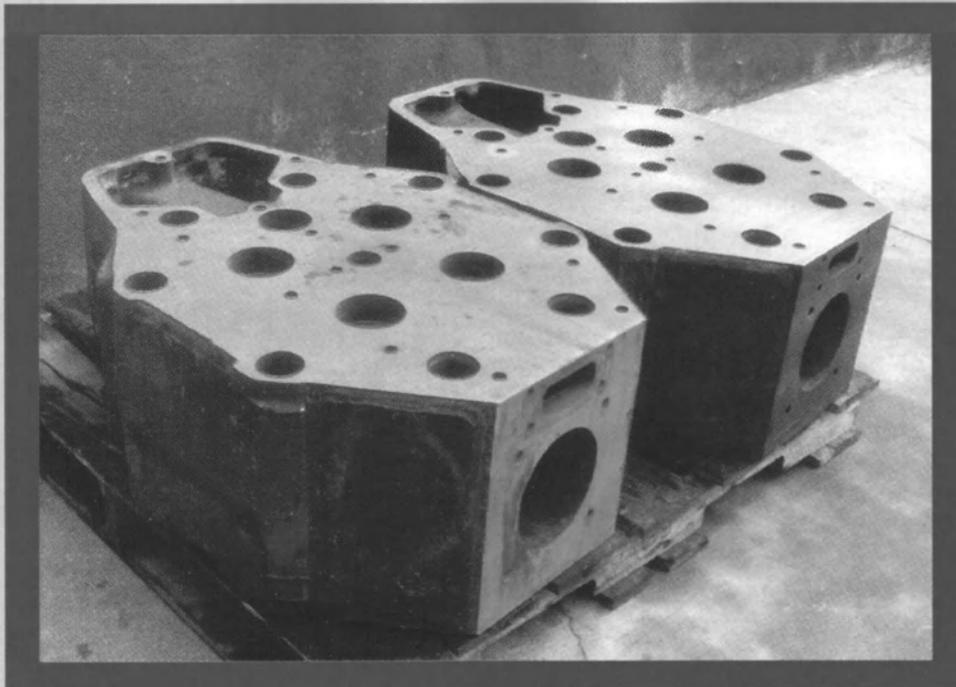
International Catamaran and Finnyards, we identified the need to produce a material with a much higher strength, and we have the technical and production resources at our plant in Koblenz to develop this material, as well as the global marketing and distribution



Pictured are sections of HSS 1500, manufactured by Finnyards with sections of Hoogovens' aluminum plate, consisting of a new high-strength, lightweight alloy.

capability to make it available for a wide range of applications," said company Technology Manager **Alfred Haszler**.

For more information on Hoogovens
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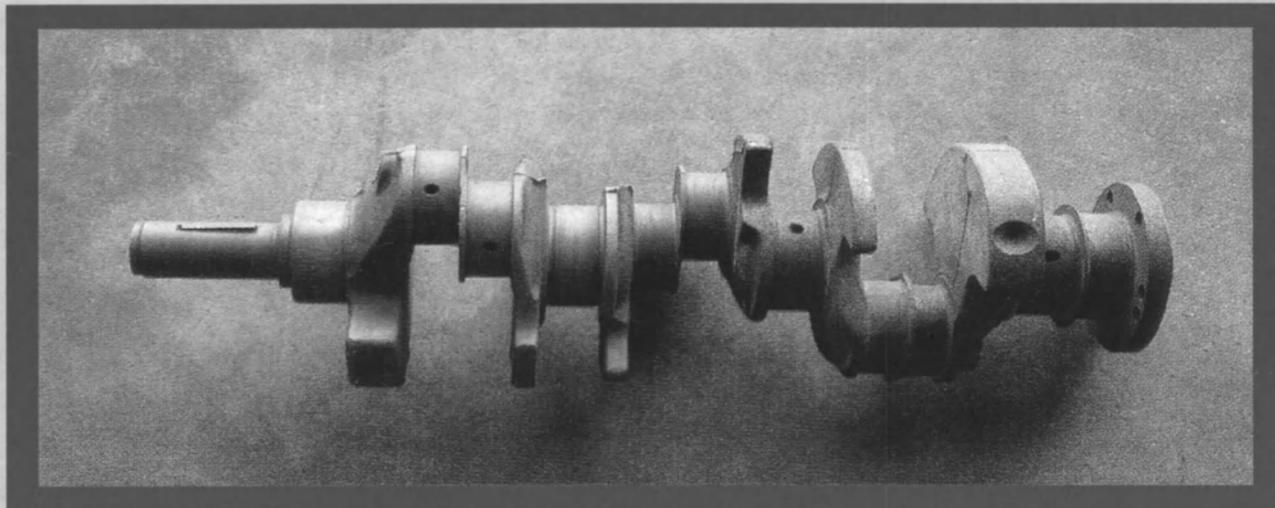
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NKK Markets New Fuel-Saving Pielstick Engine

A new fuel-saving Pielstick diesel engine has reportedly been successfully demonstrated by NKK Corp. at its Tsurumi Works in Japan, and the engine will be installed on a 9,000-gt RoRo vessel which is currently under construction. The new engine, a Pielstick 18PC4-2B, has reportedly been upgraded to 1,800 ps from the conventional 1,650 ps, realizing fuel cost reductions of approximately three percent.

Developed through a technical partnership with S.E.M.T. of France, NKK holds more than 50 percent of the market share in Japan for the company's marine applications. NKK has also found extensive applications in power generators and expects to expand marketing of the more powerful engine for large generators, specifically in Asian markets.

Tolo's Grid-Lock Features Increased Strength

Tolo Inc. specializes in providing metallic, composite and bonded sandwich structures and assemblies for the marine and other industries. The company's new sandwich construction technology, dubbed Grid-Lock, reportedly employs CAD/CAM and CNC manufacturing systems to produce structures with strength to weight efficiencies that exceed other current concepts. Grid-Lock is an innovative method of joining structural components with simple tongue and groove joints, resulting in double-skinned, ribbed-core structures that are bonded, brazed or otherwise fused together. By creating bond joints contained within machined recesses, the skin/core interfaces become highly effective shear joints, thereby eliminating the potential for peel or tensile loading of the bond line. The multi-directional ribbing creates a mechanical lock within the engagements to effectively reduce shear stresses by more than 50 percent during loading conditions. Additionally, the presence of fillets along the edges of the recesses permits a gradual transition of stresses between the vertical ribs and surface panels.

For more information on Tolo Inc.
Circle 32 Reader Service Card

NEC Acquires New CNC Machinery

North End Composites (NEC) has recently acquired a new, five-axis Computer Numerically Controlled (CNC) routing machine.

NEC is a complete modeling, tooling and parts fabrication facility for the composites industry. The automated router, which was due for delivery in the first week of January, is able to carve almost any 3-D shape from a block of material measuring 30 x 15 x 6 ft.

(9.1 x 4.5 x 1.8 m). By machining numerous sequential pieces which can then be nested together, there is almost no limit to the size of tooling which can be performed.

Traditionally, plug and tool making has involved extensive hand labor to take a concept from a

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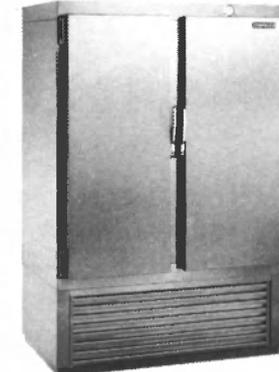
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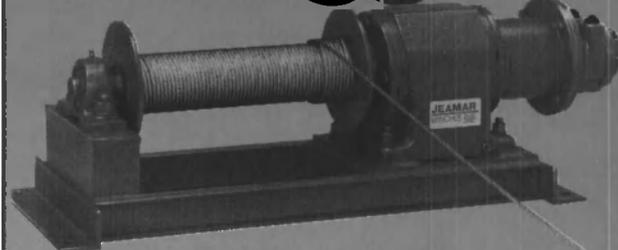
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paper drawing and turn it into a full scale model. However, Computer Aided Design (CAD) is bringing new products to market in shorter development cycles. Once the product is designed in a CAD file, the product can be directly manufactured by machines through Computer Aided

Manufacturing (CAM). CAD/CAM complements the work of the designer, because what goes into the CNC router as machine code is precisely what comes out as a final part.

For more information on
North End Composites
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These barriers are also used to block the transfer of airborne noise from gearboxes, bowthrusters and pumps.

For more information on
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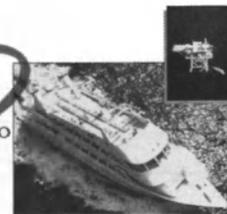
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Circle 231 on Reader Service Card

Automated Steel Plate Cutter Installed At Yard

Bay Ship and Yacht has announced the installation of a new automated steel plate cutting system, featuring a computer which guides cutting torches through steel plates up to eight in. thick.

The system will reportedly allow the shipyard to speed production of precision parts and compete more aggressively for ship repair and shipbuilding contracts in the Pacific Rim.

"This advanced technology offers our customers rapid response, exacting repeatability and cut steel free of contaminants and distortion," said **Bill Elliott**, president of Bay Ship. The new cutter features both plasma and oxy-fuel cutting on an ESAB L-Tec 3000-12 system.

This allows the shipyard to fabricate virtually any metal part required in ship repair.

For more information on Bay Ship
Circle 22 on Reader Service Card

SWEP Offers Heat Exchangers With Flanges

SWEP has introduced vacuum-brazed, compact flanges of DN-type on its heat exchangers for district heating. Currently, the flanges have been developed to fit compact brazed heat exchangers (CBE) sizes B35, B45, B50, B57 and B65. The flanges are available in stainless or mild flange, and meet DN-type requirements.

For more information on SWEP
Circle 23 on Reader Service Card

Maritime Reporter/Engineering News

Catamaran Ferries And ESAB Announce Partnership



CFI employees are shown welding the first hull module of a high-speed aluminum ferry with ESAB welding equipment and filler metals.

Catamaran Ferries Int'l. Inc. (CFI) has chosen ESAB Welding & Cutting Products as its exclusive provider of welding equipment and filler metals in its venture to build high-speed aluminum ferries for the international fast ferry market. As CFI begins construction of a 365-ft. (122 m) aluminum-hulled catamaran fast ferry for B.C. Ferries, the company will use a special wire feeder package custom-designed for its needs.

According to Jerry Utrachi, vice president of Equipment Marketing for ESAB, the welding solutions package includes 160 feeders and industrial inverter pulse Mig power sources manufactured in ESAB's Florence, S.C., facility. The package also includes four Mig tractor systems built and delivered from ESAB's factory in Sweden.

For more information on ESAB
Circle 24 on Reader Service Card

Fincantieri Installs Automatic Transport System

Specializing in handling heavy loads by means of air film technology, Solving has delivered a fully automatic transport system on air bearings to Fincantieri's Monfalcone shipyard in Italy. The transport system, reportedly the first of its kind, is used for handling components and blocks between different workstations for prefabrication of ship hulls.

One part of the system contains fully automatic air film transporters for the movement of prefabricated components up to 50 tons. The other part is integrated in a production line for prefabricating ship blocks, and consists of air film pallets which lift the blocks and move them between different workstations along the line.

For more information on Solving
Circle 88 on Reader Service Card
February, 1997

Daewoo Offers Innovative Hull Interface Software

Daewoo Heavy Industries Ltd.'s (DHI) Engineering & Technology Division has developed what is reportedly the first interface software for hull and outfitting

designs. DHI has reportedly overcome the difficulty of sharing design information between the two design parts due to the difference in CAD systems by developing the software named DHI (Daewoo Hull Interface), which reportedly enables all design information to be held in common and freely

exchanged, while both design procedures are simultaneously carried out. A completed 3-D hull model can be transmitted directly to outfitting design. DHI has been applying the software to all vessels under construction since July.

For more information from DHI
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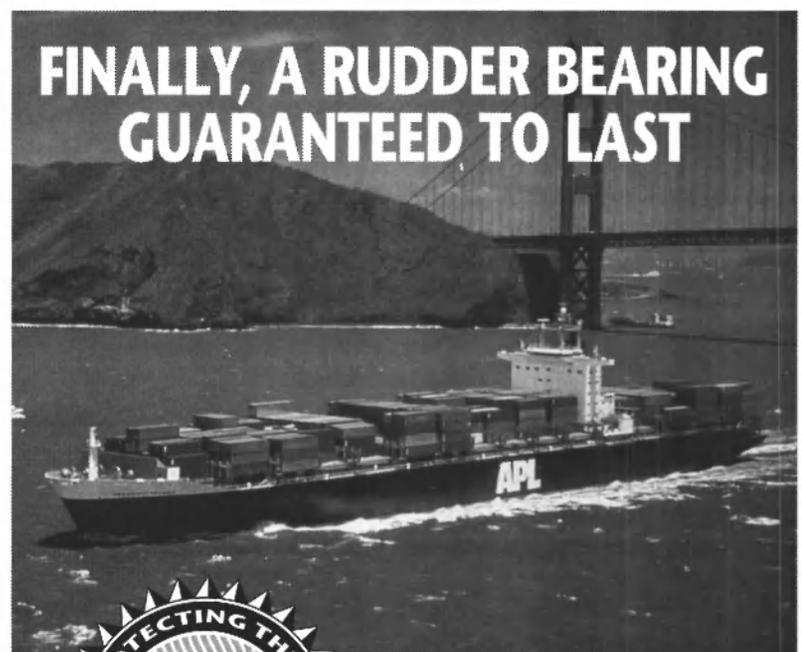
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Circle 327 on Reader Service Card

KMM Tests World Class Product Tanker

Moritech funding aids in development of 40,000-dwt tanker

Kvaerner Masa Marine Inc. (KMM) has completed a model test program of its 40,000-dwt World Class product tanker design at the B.C. Research Ocean Engineering Center on behalf of an undisclosed owner. The model test program included resistance and seakeeping tests to verify the vessel's performance in calm water and in waves. This state-of-the-art tanker was designed for the Modular Tanker Consortium (MTC) with

funding provided by the U.S. ARPA (Advanced Research Projects Agency) Maritech program and consortium members. Market research carried out for MTC identified two tanker classes that have good potential in both U.S. and international markets. The first was a 597-ft. (182-m), 40,000-dwt World Class series product carrier and the second was an 886-ft. (270-m), 125,000-dwt Alaska series crude carrier capable of

Suezmax service. Designs for both ships have been developed by KMM to meet new requirements for double hulls. Innovative propulsion systems have been evaluated for ships including diesel-electric, azipod and geared medium-speed diesels with controllable pitch propellers for both single and twin screw arrangements. In addition to resistance and seakeeping tests, experiments were conducted in association with the University of British Columbia (UBC) to measure the waves generated by the hull when towed in calm waters. A laser imaging system was used to measure the wave elevation across a transverse section of the water surface as the model passed a fixed point in the towing tanker. The sections were then combined to produce a 3-D surface of the wave elevations around the hull. Kvaerner Masa Marine Inc. will use the wave measurements to validate numerical predictions of the waves from a new hydrodynamics program which is currently under development. KMM is also working with UBC on a new method of predicting the flow field, waves and wave resistance of ships. The method is based on a parabolized slender-body theory and employs the boundary-element technique with a non-linear, free-surface boundary condition. KMM will use the software to optimize the hull forms of future ship designs by minimizing the wave resistance.

For more information
Circle 90 on Reader Service Card

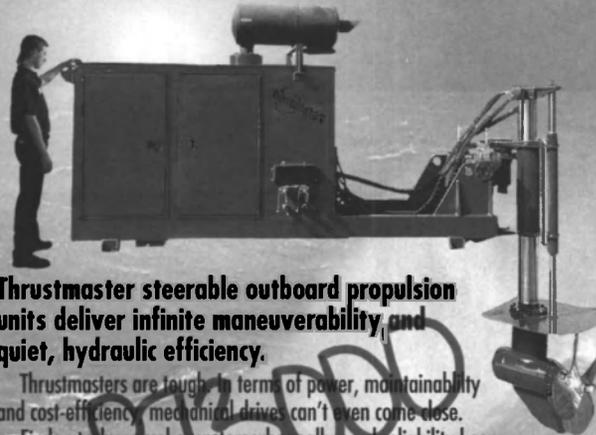
Product Range From Svanehøj

Svanehøj International AS specializes in the design and manufacture of centrifugal pumps. Svanehøj's scope of supply also includes dome flanges with gasket and bolts as well as bottom guide rings. Standard material is stainless steel AISI 316L. Oil-lubricated bearings are held in position by flexible O-rings and transmission shafts are made of carbon steel alloy.

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Circle 221 on Reader Service Card

On The Rebound?

Questions surrounding the resurgence of naval business focus on when, not if

With navy budgets seemingly headed for the sea floor, many traditional defense suppliers have sought to expand their markets within and outside of the maritime industry. However, while navy business is depressed around the globe, it is far from dormant. In fact, several long-awaited contracts and new designs have been recently announced, sending a charge into a long-believed moribund market segment.

LPD-17

Followed closely by *MR/EN* since early last year, the contract to build the next-generation of U.S. Navy warships, LPD-17, was won by a consortium of builders and suppliers led by Avondale Industries. While the Ingalls-led team has started official action to protest the award, it appears that Avondale Industries, Inc. and team members Bath Iron Works, Hughes Aircraft and Intergraph Corporation, have the \$641 million contract in hand and will be responsible for leading the development and procurement of advanced ships systems and the integra-

tion this technology into vessel construction for the ship.

The award provides for options exercisable by the U.S. Navy for two additional ships, and the contract price of the three ships has been estimated to exceed \$1.5 billion. Avondale will reportedly build the first two ships while Bath Iron Works (BIW) will build the third. Hughes Aircraft will be responsible for integrating the ships' electronic and weapons systems into the construction process.

The contract is unique on many fronts, and a potential watershed for Navy construction in America. LPD-17 embodies the U.S. Navy's efforts to procure, produce and maintain a series of vessels in a progressive, economical manner, with a bottom-line approach to development as well as life cycle costs.

To date, the LPD-17 procurement has bent or broken many standard operating procedures, evidenced by the fact that the operational core of the project will be established on location at the prime contractor's facilities in Louisiana, not in Washington, D.C.

In other U.S. Navy develop-

ments, three teams headed by Lockheed Martin, Northrop Grumman and General Dynamics Corp. each won \$15 million contracts to develop prototypes of the Navy's next Arsenal Ship.

Ingalls Shipbuilding division of Littell Industries will join Lockheed Martin and Newport News Shipbuilding to comprise one team jointly developing the complete Arsenal Ship design for the Navy and DARPA. Northrop Grumman Corp. and National Steel and Shipbuilding Co. will lead another team, and a consortium led by General Dynamics, Bath Iron Works and Raytheon was also granted a \$10 million stipend for continued efforts to produce the final Arsenal design.

"The Navy's Arsenal Ship Program represents an important, viable source for potential future shipbuilding and systems integration business for the three contractors on our team. Also, the \$15 million awarded to our team today will provide work for about 30 engineering and support professionals in our shipyard over the next year," said Ingalls President Jerry St. Pe' upon announcement of the contract awards.

One team will be selected in early 1998 to continue in the third phase of the program, which will involve the detailed design and construction of the first ship. Follow-on phases will include contracts for testing the first ship, as well as construction and support of five additional ships, which will be capable of providing deterrence, initial strike, naval surface fire support of marine

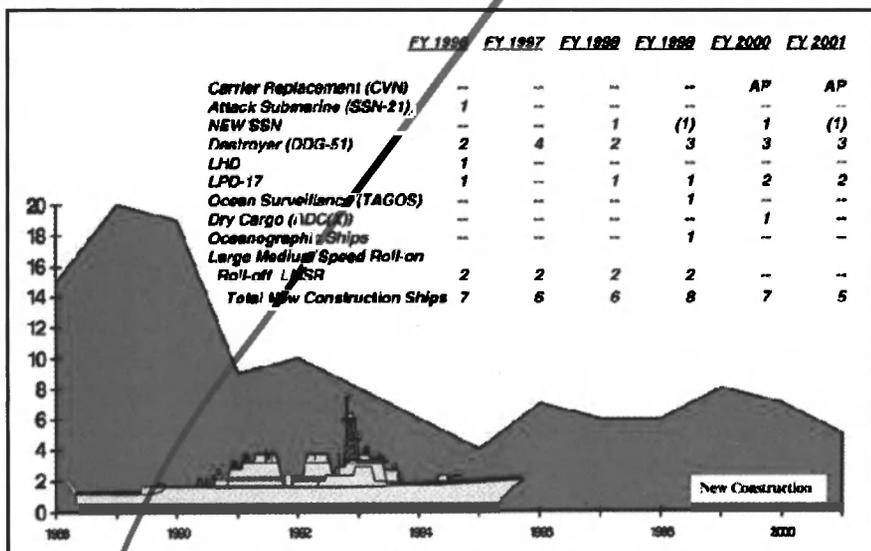
U.S. Navy Ship Construction Continues To Provide An Enviable Business Base

by James R. McCaul,
president, International Maritime Associates, Inc.

When the Cold War ended, shipyards in the U.S. faced a very uncertain future. They were looking at a serious downturn in business prospects. After all, the U.S. Navy had generated newbuilding contracts averaging 20 ships annually during the 1980s — and the 550-ship naval force generated maintenance expenditures exceeding \$4 billion per year. Anticipated Navy force downsizing was widely expected to dramatically change these numbers and have a majorly adverse impact on shipyard business.

To some extent these dire predictions have come true. Navy ship construction has recently been averaging five to seven ships annually and repair expenditures are substantially lower as a result of the downsized naval force. These changes in workload have forced downsizing and consolidation in the industry. But let's look more closely at the current situation. U.S. shipyards have more than an \$18 billion construction backlog, a figure exceeding the backlog of any other shipbuilding nation — including Japan & Korea. In contrast to most foreign shipbuilders, U.S. yards are generally profitable. If world shipbuilders were ranked according to profitability, at least a half dozen U.S. companies would be among the top ten most profitable yards. U.S. yards have rationalized their workforce, and employment at major yards has come down from 80,000 to 65,000 over the past several years. Many yards have been investing in robotics and other capital improvements. Even more significant is the future for U.S. builders. It's very bullish — with shipbuilding contracts from the U.S. Navy continuing to provide a solid business base for the remaining major yards.

(Continued on page 70)





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Circle 263 on Reader Service Card

NAVY-BUSINESS



La Fayette class frigate, a multi-purpose stealth frigate from DCN International.
Photo Credit: DCN International/Zedda.

and army forces ashore, and battle space dominance. The ships will incorporate stealth technology, a highly-survivable ship structure, and state-of-the-art automation systems for reduced crew levels and lower operating costs.

On The Water But Undercover

The development of ships that eliminate or significantly reduce detectability to all sensors are obviously desirable, and currently an "in vogue" design challenge. Several new or modified designs are being marketed, including

variety of configurations.

Saudi Arabia has chosen a multi-purpose anti-air version, the Asian customer has selected an anti-submarine warfare version, and the French have selected a ship designed to accommodate future upgrades offering extended anti-air and anti-submarine warfare capabilities.

To accelerate construction while improving flexibility, the ships will be assembled from pre-fitted hull sections. All units comprising each major system are housed in single hull sections or modules.

Vosper Thornycroft's Sea Wraith (detailed in the January 1997 edition of *MR/EN*, page 65), and the LaFayette class frigate from DCN International.

The LaFayette class frigate is currently on order for three navies including France, Saudi Arabia and an Asian nation. While it is not a new design (several are in service), new versions are under development to complete its transformation into the stealthiest warship in service. DCN touts the vessels' low detectability to all sensors (radar, sonar, IR and magnetic), a vital capability for eluding hostile units.

The frigate is considered a multi-purpose craft and is available in a

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LPD-17: The Players

Who: Intergraph Computer Systems

What: Develops and markets hardware products and markets integrated software for the Technical Desktop — a combination of compatible technical applications and personal productivity tools on a single desktop computer. Technical applications include computer-aided design, engineering, analysis, manufacturing and publishing. ISS also provides core system software, high-end applications, and training, consulting and implementation services.

For more information

Circle 64 on Reader Service Card

Who: Avondale Industries

What: Avondale has approximately \$570 million in annual sales. The New Orleans shipbuilding facility employs 5,500 people and has a staff of approximately 350 designers, technicians and engineers. Avondale's current backlog is approximately \$1.4 billion.

For more information

Circle 65 on Reader Service Card

Who: Bath Iron Works

What: A General Dynamics company, Bath Iron Works is the U.S. Navy's lead shipbuilder of DDG-51 Arleigh Burke class Aegis Destroyers. Its current backlog is approximately \$2 billion.

For more information

Circle 66 on Reader Service Card

Who: Hughes Aircraft

What: A leader in defense electronics, Hughes Aircraft's Combat Systems operation in San Diego, Calif., will integrate capabilities from its weapon systems unit in Tucson, Ariz., and sensor unit in

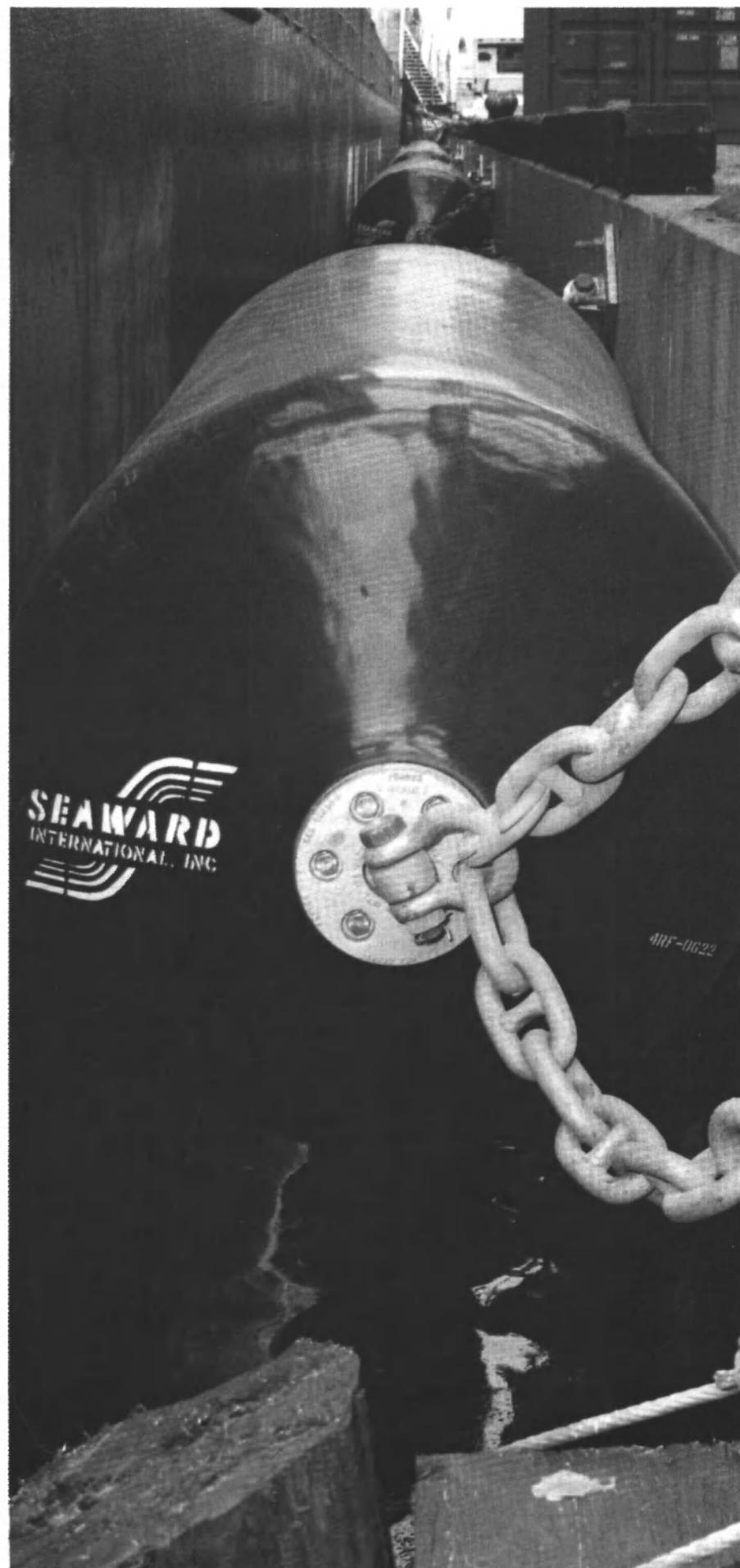
Fullerton, Calif. Hughes will provide electronic systems development and integration for the LPD-17 contract and is responsible for developing the ship's information distribution infrastructure.

For more information

Circle 67 on Reader Service Card

Vosper Thornycroft Delivers Corvette

Vosper Thornycroft (VT) has delivered the second of two corvettes for the Royal Navy of Oman (RNO). Project Muheet, to



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LPD-17 Principle Characteristics

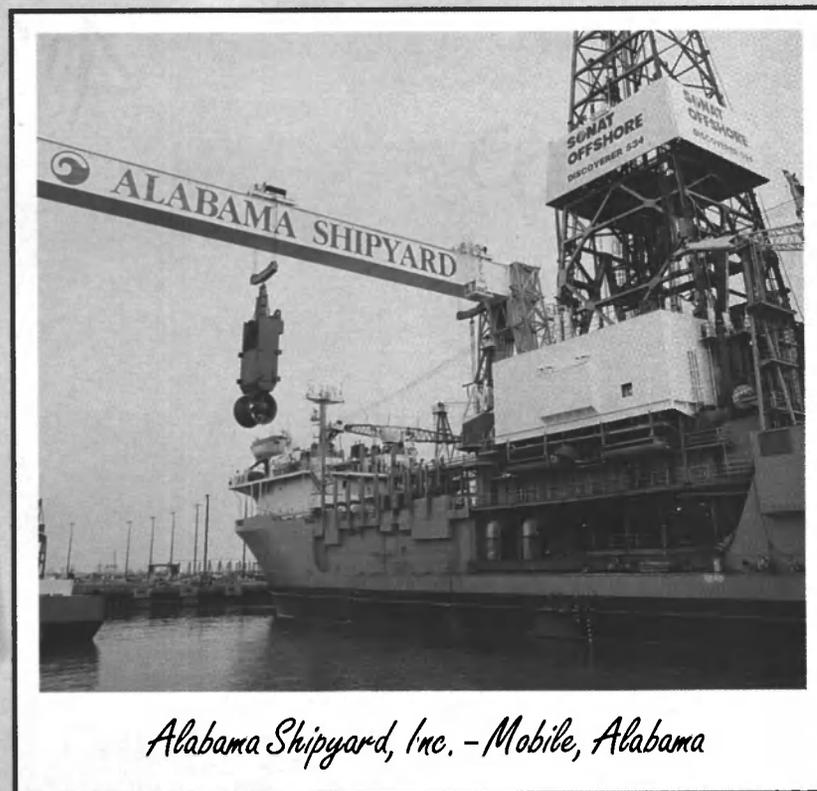
Length	603.7 ft. (208.4 m)
Width	104.6 ft. (31.9 m)
Displacement	25,300 mt
Propulsion	(4) diesel engines on 2 shafts
Speed	22+ knots
Payload	708 sq. m. (cargo)
Accommodations	400 crew/700+ troops
Armament	(2) MK15 Phalanx CIWS; (2) MK 31 Rolling Airframe Missiles; MK 41 VLS NSSMs; (3) 25 mm Machine Guns; (4) 50 Cal. Machine Guns
Landing craft	(2) LCACs
Amphibious lift	(2) CH-53E or (4) CH-46E or (4) AH/UH-1 or (2) MV-22
Medical capabilities	(4) operating rooms (2 medical, 2 dental); 124-bed ward and casualty overflow

Circle 287 on Reader Service Card

*Your Needs...
One Answer.*



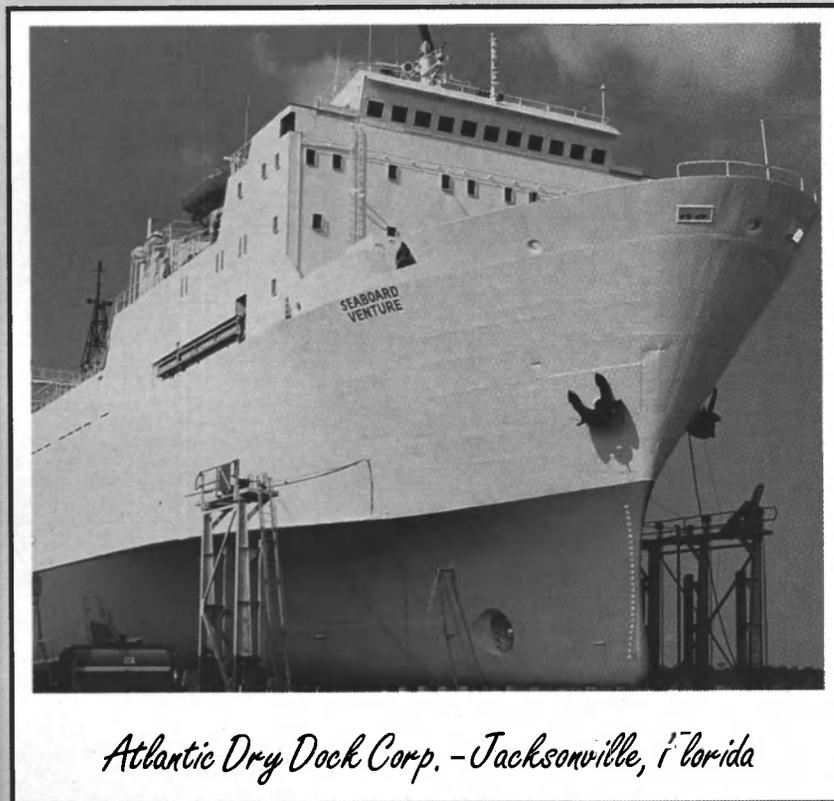
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VT delivered the second of two corvettes for the Royal Navy of Oman.

build a pair of 272.3-ft. (83-m) corvettes for RNO, has been completed in just more than four years following the contract signing. *Al Mua'zzar* follows the first-of-class *Qahir Al Amman*, which was commissioned into the RNO in September 1996. The ship, powered by four Crossley Pielstick 16V diesel engines driving two CP propellers through reduction gearboxes, is capable of speeds in excess of 25 knots. To improve radar cross section signature of the ship, the hull form and superstructure were designed to minimize radar reflection.

For more information on
Vesper Thornycroft
Circle 68 on Reader Service Card

BBN Systems Awarded Navy Contract

BBN Systems & Technologies was awarded a contract for \$572,000 by the Naval Surface Warfare Center Carderock Division to provide active noise control systems for all ships of the PC-1 class, the Navy's newest high speed patrol craft. The BBN active control system reduces low frequency airborne noise levels in crew bunks.

For more information from BBN
Circle 63 on Reader Service Card

Pier Upgrade Uses Innovative New Technology

An innovative technology using carbon reinforced plastic (FRP) laminate to strengthen older piers is now in service at Pier 11 at Norfolk Naval Station. The upgrade reportedly increases the pier's strength by 15 percent and removes restrictions on the use of 70-ton cranes. Installation involved epoxy-laminating FRP to the bottom of the pier spans to increase stiffness, stop cracks from spreading and increase strength. The upgrade has a design life of 20 years and was installed while the pier remained in use. Upgrades are designed to extend the useful

life of existing piers, while saving on costs associated with complete rebuild project.

Propulsion System Sought

The U.S. Army Corps of Engineers has issued a Request for Proposals (#DACW61-97-0010) for the design, construction, testing

and delivery of a microprocessor-based electronic propulsion control system for use in the Philadelphia District's hopper dredge *McFarland*. The new electronic propulsion control and transfer system will be retrofitted with the existing CCP, engine governor and bowthruster control systems. The

system will also include controls and indicators for the operation of the bowthruster. Contractors can obtain a copy of the solicitation from: Commander and District Engineer, U.S.A.C.E.K., Philadelphia District, 100 Penn Square East, Philadelphia, Pa., 19107, Fax: (215) 656-6780.



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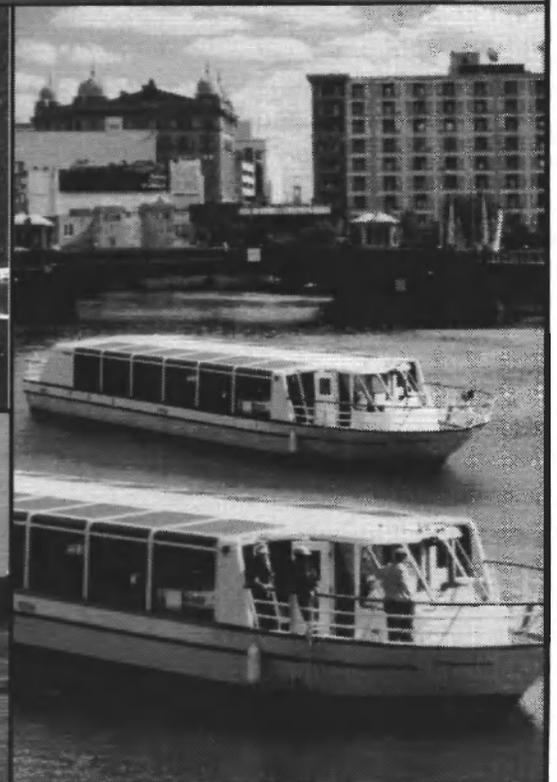
(Top) SkipperLiner luxury vessels rank among the finest and strongest, and earn profits in a variety of configurations. 30' to 160' lengths. 14' to 60' beams. We have excellent custom design/build abilities.

(Center) SkipperLiner's newest sternwheeler, the M.S. Dixie II operates as a sight-seeing and dinner cruiser. At 141' x 33', certified for 600 passengers, she is one of three SkipperLiners earning for their owners on Lake Tahoe.

(Bottom) Nostalgic SkipperLiner paddlewheelers from 49 to 800 passengers generate significant revenues for dinner cruise operators throughout the U.S.

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Circle 307 on Reader Service Card

Intermarine Facility Specially Equipped For Composite Construction

Intermarine USA specializes in composite construction, and has a separate construction facility dedicated to this function.

The yard's composite materials fabrication facility building has an area of more than 160,000-sq-ft., consisting of a main fabrication floor and a large mezzanine for lofting operations and support services such as fiberglass storage, material properties laboratories, industrial clinic and tool rooms.

The facility is equipped with six semi-automatic resin/glass impregnators on fully articulated bridge cranes, and has a 675-ft. (205.7-m) main shop floor with a 129 x 55-ft. (39.3 x 16.7-m) door clearing, designed to simultaneously house six minehunters or molds all under one roof. The main fabrication floor is served by three, 22-ton capacity overhead bridge cranes, as well as four of the six impregnators.

The facility is designed as a workstation-oriented assembly line, with optimal utilization of valuable, high bay manufacturing floor area. The floor features a 750-ton rail transfer system capable of moving completed GRP hulls or large components both longitudinally and transversely through the lamination/assembly process.

For more information on Intermarine USA
Circle 30 on Reader Service Card

increase engine performance and eliminate environmental problems in existing exhaust systems. With a square side pipe design, the system reportedly breaks up and reduces sound waves. The high speed exhaust outlets direct the remaining sound waves and exhaust fumes into the propwash and away from the vessel. Engine performance is increased by eliminating interior baffles, lowering back pressure. A unique filtration design reduces exhaust emissions and removes any waste oil or blowby oils that are sent down the exhaust pipes when engines are started or idled.

Neptune Marine Systems, Inc. offers complete custom design assistance for single, twin or triple engine applications. Technical packages are also available.

For more information on
Neptune Marine Systems
Circle 26 on Reader Service Card

Delta "T" Offers Complete Line of Engine Room Ventilation Equipment

Delta "T" Systems has received orders from shipbuilders such as Bertram, Broward, SeaRay, Burger, Admiral, Sabre and Hatteras for engineered engine room ventilation packages.

The Delta "T" product range includes: air mist eliminators, combustion and cooling air fans; fire/smoke dampers; and electronic fan speed control systems. Each complete system comes with a guarantee ensuring compliance with engine manufacturers' and/or classification society specifications.

For more information on Delta "T"
Circle 29 on Reader Service Card

Halter Purchases Autoship-Pro Hull

Halter Marine Group of Gulfport, Miss., has purchased two additional Autoship-Pro hull design packages, bringing the company's total hull design program purchases from Autoship Systems Corp. to five. In addition, Halter Marine has made Autoship-Pro its main hull design and fairing tool.

Ohsawa Technical Design Co. Ltd. has installed Autoship programs on its 56-ft. (17-m) aluminum alloy catamaran *Yumekaina*, reportedly one of many companies in Japan using Autoship systems.

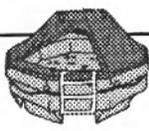
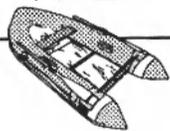
The latest program from Autoship-Pro — 6.1 — includes a new Report Editor with a spreadsheet interface which allows for on-line editing within all Autoship Systems programs.

For more information on Autoship
Circle 25 on Reader Service Card

Neptune Introduces Advanced Exhaust System

Neptune Marine Systems has recently released the 2000 exhaust system, designed to

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U.S. Navy Ship Construction Continues To Provide An Enviably Business Base

(Continued from page 63)

Between FY98 and FY02, the Department of Defense will likely fund a new aircraft carrier, four new attack submarines, 12 to 15 Aegis destroyers, eight to 10 LPD 17s, two to four shuttle ships and

two or three arsenal ships. There may also be contracts for additional sealift ships and build/charter contracts to acquire new MSC tankers and combined container/ammo ships.

Longer term, there are plans for

a new class of aircraft carrier, new surface combatants, additional submarines, etc.

U.S. shipbuilding is in an enviable situation.

The world shipbuilding industry is burdened by depressed prices on commercial contracts and few

yards are now making adequate return on investment. In contrast, U.S. yards are performing well financially.

Just look at the current prices of publicly traded shipyards in the U.S. to see how the market views their performance.

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Fairbanks Morse Wins \$19 M Navy Sealift Deal

The Fairbanks Morse Engine Division of Coltec Industries has received an order valued in excess of \$19 million to produce four engines and related equipment that will propel a new ship for the U.S. Navy Sealift program. The four engines are for the program's fifth ship, designated the T-AKR 304. The engines are scheduled to be deliv-

ered to Avondale Industries, Inc., the New Orleans-based shipbuilder, in 1998.

Thomas Reder, the division's vice president of Sales and Marketing, said, "This order represents our continuing leadership in the supply of high horsepower diesel engines for U.S. Navy applications. It is a vote of confidence to our employees, who have worked hard to ensure reliable, high-quality and cost-effective products are available from an established U.S. manufacturer."

A ship, by any other color, is still...



A Ship! Pictured is Contship Germany, one of the colored container ships introduced by Contship Containerlines Ltd. of Ipswich, England, in an effort to raise the company's profile. The vessel was docked in New York; Norfolk, Va.; and Charleston, S.C., at the end of last year. The Contship fleet also consists of vessels painted turquoise and yellow.

Schichau Seebeckwerft Delivers Combi-Ferry To DFO

Touted as the biggest combi-ferry in the world, *Mecklenburg-Vorpommern* was handed over to owner Deutsche Fahrgesellschaft Ostsee (DFO) by Schichau Seebeckwerft, a subsidiary of Deutsche Bahn AG. The super-ferry can reportedly carry up to 50

rail cars, 65 trailers, 90 private cars and 1,000 passengers. Development and construction of the vessel was completed in 18 months.

For more information on Schichau Seebeckwerft Circle 96 on Reader Service Card

Mecklenburg-Vorpommern Main Particulars

Length o.a.	656 ft. (200 m)
Length b.p.	607 ft. (185 m)
Width	92.5 ft. (28.2 m)
Draft	20.3 ft. (6.2 m)
DWT	7,900
Main engines	MAN/B&W 6L 32/60

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The many design features, which are standard on the 300 BFM hoist, make it easy to handle even the most difficult lifts. The open end design speeds boat loading and unloading, while the beam forward design increases boat clearance for masts and boat bridges.

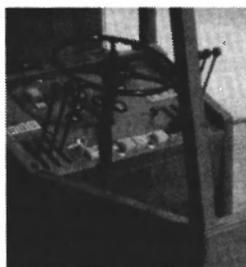
Two speed hoisting and two speed drive, along with the unit's 90° pivot steering, reduces boat handling time and increases maneuverability, along with boat handling and service opportunities. Our automatic load equaliz-

ing feature provides synchronized sling adjustment and confident boat handling.

The 300 BFM mobile boat hoist features a high strength, low alloy steel super structure with stainless hydraulic tubing for a long, trouble-free service life. Maintenance is easy with low mount, easily accessible power plant and hydraulic compartments.

A sturdy, eight-wheel stance with chain drives and Marine Travelift's pivot trunnion, for travel over uneven terrain, increases yard utilization and eases boat handling congestion.

Best of all, your Marine Travelift 300 BFM mobile boat hoist may be your marina's best investment. It offers economical installation costs when compared to other large boat handling systems, more customer service opportunities, and excellent profit



Full instrumentation is located in the operator's compartment for travel, steering, hoisting, sling spacing and load controls.

potential and outstanding resale value when you decide to increase load capacities.

For complete details and specifications on the 300 BFM mobile boat hoist or our complete line of boat hoists with capacities from 15 to 500 tons, and our line of Mariner® marine forklifts, contact your local distributor or Marine Travelift, Inc., 49 E. Yew St., P.O. Box 66, Sturgeon Bay, WI 54235 USA • Phone: 414-743-6202 • Fax: 414-743-1522.



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Offshore Opportunities Are Abundant

With the offshore market's continual climb, questions regarding business prospects and profits in this lucrative niche have turned from "when?" to "how much?". According to a year-end report from Arthur Andersen regarding the U.S. Oil & Gas Industry Outlook, it is anticipated that there will be a shortage of U.S. offshore rigs in 1997.

The survey — which compiles and analyzes responses from corporate executives in the U.S. exploration and production industry — found that there is more optimism regarding the potential for new oil discoveries — specifically in Deepwater Gulf of Mexico and Alaska — than there has been in the past two years. Also, more than 70 percent of the respondents indicated that their companies are planning to increase both domestic exploration and development spending in 1997 compared with 1996, while 79 percent said increased capital will be available for their companies for the remainder of the 1990s. In ranking the most important factors for determining capital spending decisions, the availability of attractive drilling prospects ranked number one, while the projected natural gas price ranked second.

While these numbers signal (potentially) rosy returns for the U.S. market, there are high times ahead around the world, particularly in the North Sea. The long-planned merger between Aker Oil and Gas Technology and Maritime Group was recently completed, and the new group aims to become an international leader in the offshore industry. The group is anticipating rapid growth, building on a base which now consists of \$1.5 billion in revenues, operations in 20 countries and nearly

ABS Positioned To Capitalize On Offshore Boom

ABS announced a fee freeze, an expanded suite of technical services and a new marketing structure to help it capitalize on the rapidly expanding offshore sector. The new initiatives are designed to "offer operators greater technical resources, more attractive costs and quicker response in support of projects which are being developed under very strict time constraints," said Robert D. Smerville, ABS president.

A new offshore team will focus exclusively on servicing the particular needs of this specialized sector. Marketing efforts will be led by the new ABS vice president, Offshore Technology, Dr. Malcolm Sharples.

A new offshore strategy group comprised of seven of the most experienced senior offshore executives within ABS is now located in Houston.

Principal among ABS' new service packages will be the applications of

ABS SafeHull dynamic-based design systems to FPSOs. Also, enhanced technical guidelines and computer based analyses for semi-submersibles and a range of critical operational installations are also being finalized, for release throughout 1997. Currently, more than 80 percent of all jack-ups in service worldwide have been certified by ABS.

For more information from ABS
Circle 54 on Reader Service Card

Kvaerner-SBM To Deliver World's Largest Production Barge

A turnkey contract for the world's largest production barge has been awarded to subsidiary companies of Kvaerner Oil & Gas Norway, and IHC Caland N.V., the Netherlands, by Australian oil company Woodside Offshore Petroleum.

(Continued on next page)

Sea Prince: A new deepwater drillship design



Lund, Mohr & Giæver-Enger (LMG) Marin and Hitec are introducing a new and innovative monohull drilling vessel design. Coined *Sea Prince*, the vessel is designed to combine the operational characteristics of a semi-submersible rig with the advantages of a monohull. These include large payload capacity, low re-supply needs, self-propulsion in transit, offshore oil storage opportunities, short building time and favorable construction costs.

Sea Prince is designed to allow performance of any anticipated heavy duty drilling operation in water depths to 9,842 ft. (3,000 m). The vessel is fitted with a high performance drilling rig, incorporating an all-new patented heave compensation system (Active Heave Drilling).

Positioning of the vessel will be based on a fully redundant DP system. An anchoring system may be installed as an option, enabling the vessel to operate in a 'DP assisted mode' or in an 'anchor assisted DP mode.'

The patented design may be tailor made to demands, with regards to capacities and various modes of operation. *Sea Prince* has been developed in a joint venture between Hitec and LMG Marin. Statoil and the Norwegian Research Council have contributed financial support.

Technical data

LOA:	639.7 ft. (195 m)
Width:	131.2 ft. (40 m)
Payload capacity:	Minimum 15,000 tons
Transit speed:	12 knots
Personnel:	70-80 (normal), 135 berth capacity

Design objectives

To ensure maximum performance and flexibility, the new vessel strives to meet the following design objectives:

- * Dynamic capability to work in North Atlantic sea conditions currently covered by semi-submersible drilling rigs;
- * Capability to perform any anticipated heavy duty drilling operation in water depths to 3000 m;
- * Arrangement of drilling systems and utilities enabling enhanced drilling operations, including dual string operations;
- * Operation without re-supply for at least 100 days;
- * Availability of up to 100,000 bbls. oil storage for test production, with conversion to production mode (200,000 bbls) possible after inshore conversion.

For more information on Hitec
Circle 49 on Reader Service Card

(Continued from previous page)

Valued at approximately \$420 million, the contract has been awarded to a consortium comprising Kvaerner Engineering in Oslo, and Swiss-based Single Buoy Moorings Inc., a member of the IHC Caland group (The Kvaerner-SBM Consortium). Kvaerner will provide the complex topsides for the production barge and SBM will provide the large diameter turret mooring and fluid transfer system. The contract for building the hull has already been awarded to Korea's Samsung Heavy Industries, and this will be incorporated in the turnkey contract and managed by the consortium.

"Winning this contract against international competition confirms our key position as a supplier of complete offshore installations," said **Tore Bergersen**, executive vice president of Kvaerner Oil & Gas. "The order is particularly important for Kvaerner Oil & Gas Norway because ... it shows that Norwegian engineering firms are internationally competitive."

"SBM's advanced turret and high pressure

swivel technology and their experience as a turnkey supplier and operator of floating production systems will contribute to the success of the consortium," said **J.D. Bax**, president and CEO of IHC Caland N.V.

The contract embraces design, procurement, fabrication, supervision, commissioning and start-up of the production vessel. It also includes for planned and unplanned maintenance over the first three years of the field's operation phase with an option throughout the life of the field. This vessel is due to produce petroleum from the Laminaria and Corallina reservoirs in the Timor Sea off northwestern Australia. Water depths in the area are around 1,198 ft. (365 m). Due to come on stream at the turn of the year 1998/99, the barge will have a daily production capacity of roughly 170,000 barrels and will be able to store approximately 1.4 million barrels. Measuring 895 x 164 x 92-ft. (273 x 50 x 28-m), it is reportedly the largest production vessel designed to date.

For more information from Kvaerner Oil & Gas
Circle 46 on Reader Service Card

Hitec Gets Green Light For Drilling Facilities Upgrade

Hitec ASA reportedly it received a letter of intent from Smedvig Offshore to upgrade the current drilling facilities at Statoil's Stafford A platform in the North Sea. Main parts of the contract include new pipe handling equipment, a new driller's cabin and drilling instrumentation system.

Plug & Abandonment Rig For Ekofisk

Hitec has received a letter of intent from Smedvig Offshore, regarding the delivery of a new rig for use in the Greater Ekofisk area.

The rig is of a new, modular design, mak-



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OFFSHORE REVIEW

ing it easy to move the rig between the many platforms in the Ekofisk area. It will be used to shut down old wells as new wells are drilled from the 2/4 X platform. The rig will be prepared for a possible upgrade which will enable it to perform light drilling service and well intervention. As was the case for the Leangen, Troll A and Ekofisk 2/4 X rigs, Canadian company Drecto will be responsible for all steel construction, and will be the largest subcontractor to Hitec for the project. Delivery is planned for late 1997.

For more information on Hitec
Circle 98 on Reader Service Card

Umoe To Build Troll C

Norsk Hydro has signed a letter of intent with Umoe Haugesund AS for an engineering, procurement and construction contract for semi-submersible steel platform, Troll C to produce additional oil reserves from the Troll field. The contract comprises a steel floater with a deck frame, process module, utility module and living quarters. The FPU (Floating Production Unit) contract value is approximately NOK 3.9 billion.

After an initial qualification, the UMoe/GVA8000 platform concept won out over two other Norwegian contractor groups.

The unit will have a total weight of approximately 24,000 tons. The platform will be anchored in 1,083 ft. (330 m) of water in the northern part of the field. Tow-out is scheduled for June 1999.

The total recoverable oil reserves from Troll is now estimated to be approximately 1.2 billion barrels. The Troll C platform will produce the northern part of the Troll West gas province. Approximately 378 million barrels will be produced over the platform.

Troll field partners are:

SDFI	62.696%
Saga Petroleum	4.080%
Statoil	11.880%
Elf Petroleum Norge	2.353%
Norsk Hydro, operator	7.688%
Norske Conoco	1.661%
Norske Shell	8.288%
Total Norge	1.353%

Golden Geophysical Expands In Vietnam

Golden Geophysical opened a joint venture with PetroVietnam (PGPC) in Ho Chi Minh City. PGPC provides complete seismic

data processing capabilities from 2-D to 4-D.

In the near future, additional services will be offered, such as gravity and magnetic studies and geologic interpretation.

For more information on the venture
Circle 50 on Reader Service Card

Kvaerner and Statoil/BP To Upgrade Semi In Baku

Kvaerner has received a letter of intent from Statoil/BP Exploration (Shah Deniz) Ltd. for the upgrade of a Shelf Class semi in Azerbaijan.



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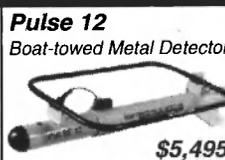
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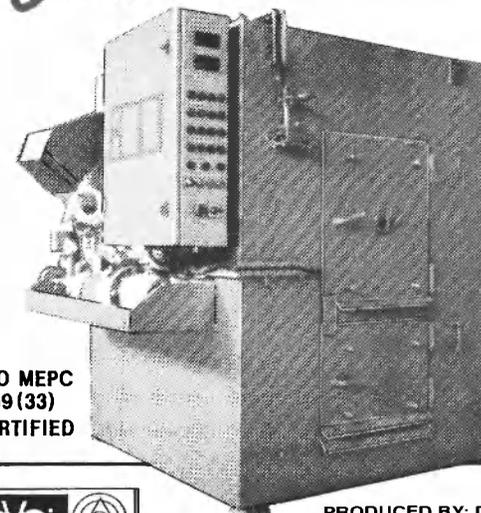
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OFFSHORE REVIEW

The interim project workscope covers engineering, procurement and project management to enable the semi to perform exploration drilling in 475 m of water in the Shah Deniz project. The value of the total rig upgrade is expected to cost \$100 million and other prospective rig users are anticipated to share in the investment and hence its use.

The contract will be carried out in an alliance initially consisting of Statoil/BP Exploration (Shah Deniz) Ltd. and Kvaerner. Additional alliance members will be selected as the project progresses. An important factor for awarding the contract to Kvaerner was past experience

with the conversion of Shelf 12 and Shelf 8 at the Vyborg Shipyard in Russia. The contract was won in competition against European and Asian contractors.

Scientific Marine Services Opens Houston Office

Scientific Marine Services (SMS) has named **Thomas L. Johnson** as resident engineer for its newly opened branch office in Houston.

Recent work in the Houston office has included the assessment of the Amoco Marlin TLP

and Spar designs, sea trials planning for a dynamically positioned drillship, and assessment of the Diamond Offshore *Ocean Star* deep-water semi-submersible upgrade.

For more information on SMS
Circle 58 on Reader Service Card

Stolt Comex Seaway Invests \$14 M In Deepwater ROVs

Stolt Comex Seaway has invested \$14 million in new deepwater ROVs.

"This major investment in new ROV technology is part of the ongoing expansion and reconfiguration of our assets to meet the demands of the deepwater market worldwide," said **Bernard Vossier**, CEO of Stolt Comex Seaway. Based on its experience in the North Sea, the company has designed and built a new range of work class ROVs for very deepwater applications with components suitable for operations in water depths of 9,540 ft. (3,000 m). The new ROVs will be installed on *Seaway Falcon*, *Seaway Eagle* and *Seaway Harrier*. *Seaway Condor* has completed the upgrade of both workclass ROV systems for the Shell Mensa umbilical installation.

Stolt Comex Seaway Expands Fleet

Stolt Comex Seaway expanded its support ship fleet with the delivery of the new multi-purpose subsea construction ship, *Seaway Eagle*, which was bought at auction from receivers of the bankrupt Boelwerf Vlaanderen shipyard in Belgium. When completed, the *Seaway Eagle* will involve an investment of \$60 million. After a competitive tender, the Scheldpoort repair yard at Vlissingen in Holland was picked to complete the fitting out of the vessel. Upon completion in April, the vessel will be working in the North Sea for five months, initially on the Britannia Development Project in the U.K. sector. It will be relocated to the Asian Pacific to start on the Statoil Lufeng 22-1 subsea field development in the South China Sea in September.

Bardex To Moor Genesis Spar

Aker Rauma Offshore tapped Bardex Corp. to supply the mooring system on the floating Spar drilling and production facility to be deployed in the deepwater field located in GOM's Green Canyon 205. The mooring vessel mooring system will be capable of moving the Spar over the deck or up to a maximum of a 70-ft. offset from its central position to allow for loop current forces exerted on the hull. The hull for the floating production facility will be built and transported from Aker Rauma's yard in Finland for installation in late 1998 in 2,600 fsw 150 miles south of New Orleans. McDermott is fabricating the topsides.

For more information from Bardex
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Service Marine

Service Marine's new brochure explains the technical details as well as the advanced operational characteristics behind its revolutionary new deepwater supply and utility vessel. The vessel is a modified SWATH design dubbed THOM, which stands for Twin Hull Ocean Runner.

Circle 57 on Reader Service Card



Fincantieri Wins \$430 M Carnival Contract

Carnival Corp. has reached an agreement with Fincantieri for the construction of a \$430-million cruise ship. The ship, to be delivered in the summer of 2000, will be a sister to the recently launched 101,353-gt *Carnival Destiny*, the largest passenger vessel ever constructed.

and select the products which are best suited to ensure a long, cost efficient life. The company was an early entrant in this market, and boasts contracts in Europe, Scandinavia, the U.S., the Far East and Southeast Asia.

For more information
Circle 51 on Reader Service Card

Alabama Shipyard Wins Containership Contract

COSCO Line (America) and Alabama Shipyard completed the contract process for four 600-ft. (182-m), 1,432-TEU containerships. Engineering will commence immediately, and the first ship is scheduled for delivery in 1999. The ships will be propelled by a slow speed, two cycle, direct reversible crosshead diesel engine driving a FP, five-blade propeller. It will be built in accordance to ABS rules.

For more information
on Alabama Shipyard
Circle 199 on Reader
Service Card

Jotun Valspar: Targeting Protecting Floating Units

Jotun Valspar's new "total corrosion protection concept" specially targets the floating production and transport units market, and is being touted for its low life cycle costs. The company, which foresees dramatic growth in offshore areas, provides marine and offshore protective coatings systems as well as cathodic protection systems. FPSOs, with a planned life of eight to 25 years and unique positioning as a vessel/offshore structures, present unique corrosion control problems. Jotun Valspar is counting on owners to look beyond the "cost per gallon"

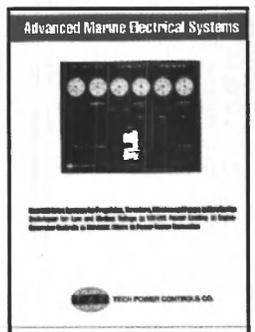
Engineered Data Products



Engineered Data Products' eight-page catalog highlights a number of its rugged office furniture solutions designed to withstand the rigors of life aboard a ship or rig.

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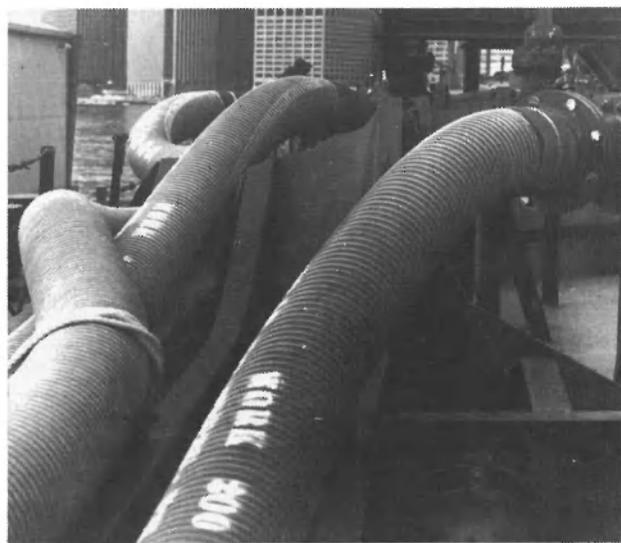
Package contains details on a variety of products, including new SCR drive systems for propulsion, distribution switchgear for low and medium voltage, and engine generator controls.

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MarAd's Joan Yim Resigns

Deputy Maritime Administrator **Joan Yim** has announced her resignation, effective Jan. 20, 1997. Appointed by President **Clinton** to her current position as deputy administrator in April 1993, she

was responsible for administering the programs and activities of MarAd, and serving as chief operating officer of the 1,000-person agency. In addition, Ms. **Yim** exercised responsibility for subsidy administration, port and intermodal systems development, ship operations and maintenance, ship-

building, international activities, research and technology assessment, personnel management, budgets, procurements, finance, marketing, legal issues relating to agency initiatives, and liaison with national defense agencies.

"It is with great regret that I accept Joan's letter of resignation,"

said U.S. Secretary of Transportation **Federico Peña**. "**Joan Yim's** energy, focus and insight have been the driving force in resolving many of our most difficult maritime issues. The Administration is losing one of its strongest maritime champions."

Maritime Administrator **Albert J. Herberger** expressed his appreciation for Ms. **Yim's** abilities, noting: "**Joan Yim** has ably served as my principal assistant and has been an invaluable asset to me, to the Maritime Administration and to the maritime industry." A member of President **Clinton's** 1992 Transition Team for the Department of Transportation, Ms. **Yim** chaired the administration's Interagency Working Group on the Dredging Process, spearheading the development of a National Dredging Policy and an 18-point action plan to resolve dredging and dredged material disposal issues.

A professional planner with almost two decades of experience in community-based planning, policy analysis, project management and intergovernmental affairs, she was formerly a supervising planner with the Honolulu office of Parsons Brinckerhoff as well as a planner with the Hawaii Office of State Planning, where her responsibilities included natural resources, coastal zone and ocean management, and public infrastructure financing. She is also a former Democratic national committee woman.

Ms. **Yim** will assume responsibilities as the program area manager, Marine, with Parsons Brinckerhoff, an international planning, engineering and construction management organization.

AWO Welcomes New Transportation Secretary

On Dec. 20, 1996 **Rodney E. Slater** was named as the next U.S. Secretary of Transportation. **Thomas Allegritti**, president of The American Waterways Operators (AWO), responded to the announcement by issuing a series of supportive comments.

"AWO extends a warm welcome to Mr. **Slater**. While we don't know him well, it is clear that his close ties to President **Clinton** will be a key asset as he takes on



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the challenge of running the Department of Transportation (DOT). He surely will have the president's ear and that's crucial for the well being of the American transportation system. We are impressed by Mr. Slater's solid credentials in the transportation field, and confident that his tenure at the Federal Highway Administration has prepared him well for this job," said Mr. Allegretti.

Garcia Named Acting Deputy Administrator Of NOAA

Terry D. Garcia is the acting assistant secretary of Commerce for Oceans and Atmosphere and deputy administrator of the National Oceanic and Atmospheric Administration (NOAA). Although official appointment to the position has not been confirmed by President Clinton, Mr. Garcia has been responsible in this capacity since Douglas Hall's recent departure. Prior to assuming his current position, Mr. Garcia served as general counsel for NOAA, championing the agency's efforts to enact and implement fair natural resource damage assessment (NRDA) guidelines.

Newport News Names Government Relations VP

Patrick A. Tucker has been named vice president of Government Relations for Newport News Shipbuilding



(NNS). He is responsible for the company's relations with local, state and federal governments.

Mr. Tucker was previously employed as executive director of Government Relations for Tenneco, Inc., the former parent company of NNS. Before joining Tenneco in 1994, he served as counsel for Virginia Senator John Warner for a year.

McDermott Executive Resigns

On Jan. 13, J. Ray McDermott, S.A. announced that Mike H. Lam resigned from his position as pres-

ident and chief operating officer and as a member of the company's board of directors. James L. Dutt, chairman of the board and CEO of J. Ray McDermott, said the company will immediately begin to identify candidates for his replacement.

Mr. Lam had been a member of the company's board of directors since its formation in January 1995. He was named president of the company's Marine Construction Services in September 1995, and president and chief operating officer in

September 1996.

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 - The Baltic & International Maritime Council (BIMCO)
 - The Baltic Exchange
 - Council of European & Japanese National Shipowners' Association (CENSA)
 - HELMEPA
 - The Hong Kong Shipowners' Association
 - International Association of Classification Societies, Ltd.
 - International Association of Dry-Cargo Shipowners (INTERCARGO)
 - International Association of Independent Tanker Owners (INTERTANKO)
 - International Chamber of Shipping, Ltd.
 - International Shipping Federation, Ltd.
 - Liberian Shipowners' Council
 - Norwegian Shipowners' Association

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PEOPLE & COMPANY NEWS

installation of subsea production facilities for the offshore oil and gas industry.

Int'l Absorbents Hires Finn

International Absorbents Inc. announced that **Ambrose J. Finn**

has recently joined the company as Northeast Industrial Sales manager.

Since 1988, Mr. **Finn** was a regional sales manager for two of the U.S.' largest absorbents manufacturers and marketers, Excel Mineral Co., Inc., Santa Barbara, Calif., and Golden Cat Corp. of

South Bend, Ind. During his 30-year career in industrial sales, he has also been associated with Menardi-Southern/U.S. Filter Corporation and the Electro-Air division of Emerson Electric Co.

The company develops, manufactures and markets sorbent products derived from recycled, renew-

able materials. These environmentally-conscious products are designed to outperform conventional products used in a broad range of industrial and consumer applications, including oil and hazardous liquid spill cleanup and oil/water filtration.

LR Names European Regional Manager

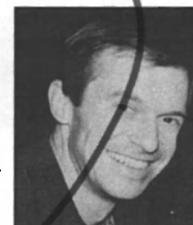
Lloyd's Register (LR) has appointed **Willem de Jong** as group regional manager for Europe. He has also joined LR's Management Committee, effective Jan 1. Mr. **de Jong's** responsibilities include the coordination of all LR operations within Europe, excluding the U.K. and Ireland, and he will ensure the cooperation between LR's marine and industry businesses and the local offices of LR Group companies. In particular, Mr. **de Jong's** role will include the application of best practice, the promotion of cross-border initiatives and training, and the development and delivery of new services throughout the European Union.

Consultants Named For Thailand Dockyard Project

BMT Group Ltd., in association with Bangkok-based Southeast Asia Technology, Co. Ltd. (SEATEC), has been appointed as consulting engineers for the second phase of the new dockyard being developed for the Royal Thai Navy at Sattahip, Thailand. The consultancy brief includes a review of the master plan, and detailed design and specification of the workshops and equipment, including gantry, portal and mobile cranes as well as an investigation of options for a further drydock or shipfit facility. The contract is expected to be fulfilled by March.

GL Promotes Wittenberg

Germanischer Lloyd (GL) has named **Lutz Wittenberg** as head of its Business Promotion and Project Division. The function of the division



(Continued on page 82)



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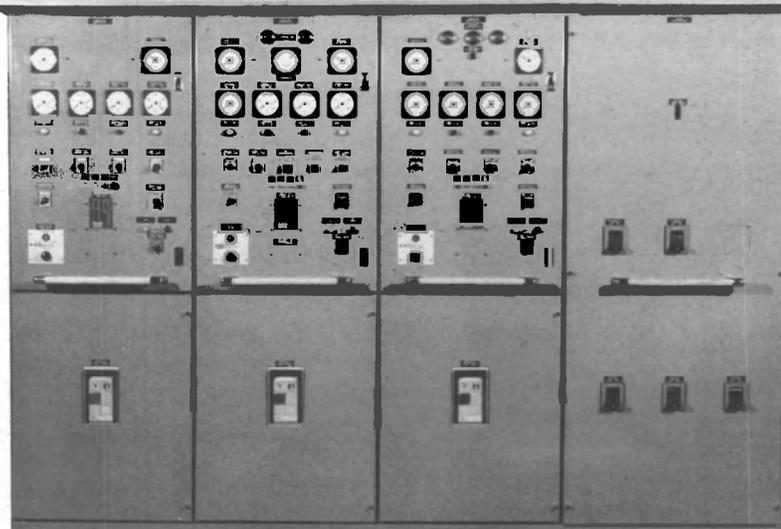
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Q&A With ABS

American Bureau of Shipping (ABS) President and Chief Operating Officer **Robert D. Somerville** spoke with *Maritime Reporter* recently in regards to ABS' participation in a conference on advanced materials for marine construction which was scheduled to be held in New Orleans from February 5-7. Mr. **Somerville** was to deliver supporting remarks during the event's opening seminar. The following has been excerpted from a transcript of his conversation with *MR/EN* Associate Editor **Bridget Murphy**.

MR/EN: What prompted ABS to sign on as a major sponsor of the International Workshop on Advanced Materials in Marine Construction?

Somerville: ABS is a proponent of technology development and technology transfer. We commit significant resources to internal research and development and also fund substantial external R&D both independently and as a member of several consortiums. We hold seminars throughout the year on subjects which we feel will be of technical benefit to our clients in the shipping and offshore sectors. ABS supports workshops, like the one on advanced materials for marine construction, which are relevant to our activities. It must be remembered that ABS does not merely concern itself with the design of marine structures. It must also type approve all the machinery and equipment which goes onboard vessels. Although the vast majority of marine structures are still primarily constructed from carbon manganese steel, the industry is using an increasing number

of alloys, specialty steels and composites in both hull and equipment applications, and for some of the specialized new technologies being applied in the offshore sector. As one of the leading classification societies in the world, ABS must not only keep abreast of these new materials but, wherever possible participate in and even lead the research which is being undertaken in their development.

MR/EN: In your opinion, what are some of the more significant barriers to widespread use of advanced shipbuilding materials? Examples could include costs, lack of fabrication expertise and differences in design philosophy.

Somerville: The major roadblock is economics. As a general rule, advanced materials are more costly to manufacture, procure and fabricate than traditional materials such as mild steel. A real payback must be demonstrated before owners normally consider committing to a newer technology which involves higher capital costs. The marine industry is also inherently conservative and operates in an environment which can impose significant risk. It is understandable that owners seek assurances that no surprises await them if they incorporate advanced materials into their vessels or structures. Unforeseen failure could mean significant financial losses and even the risk of loss of human life. The capabilities and the limitations of advanced materials must be clearly understood, especially their effect on service performance. Overcoming these roadblocks is one of the objectives of this workshop and thus in line

with the ABS policy of supporting technology transfer.

MR/EN: How is the use of new, advanced shipbuilding materials affecting the process of classifying ships and marine structures to ABS standards? Are any new standards being developed for structures built with state-of-the-art materials and, if so, has there been any cooperation with other classification societies?

Somerville: As with most new concepts in design, both advanced materials and advanced fabrication technology pose new challenges for class. ABS is willing to review novel approaches and, when they are found to be technically sound, approve them for construction and service. This continuing improvement of design, in materials and of fabrication benefits the industry and ABS. But the singular approval of a newly developed material or technique is distinct from the formal development of a standard. The latter is pursued when the improvement is likely to be implemented by the industry on a wider scale. As greater acceptance is gained, standards are submitted to the International Association of Classification Societies (IACS) for their adoption as Unified Requirement.

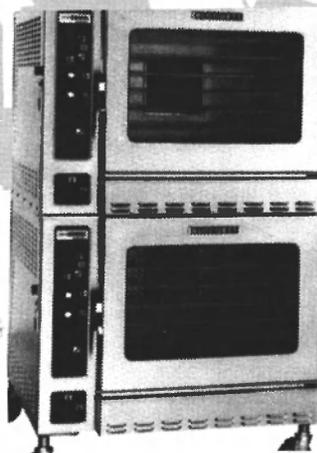
As an example, ABS has approved several mooring systems that use a studless mooring chain. This type of chain is now becoming increasingly popular for use. This spread in its application has encouraged ABS to consider incorporating what is currently a project-related approval into our existing standards for moorings.

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PEOPLE & COMPANY NEWS

includes worldwide business development and trend analysis, liaison with industry, contract and market policy and coordination of special projects. ~~Mr. Wittenberg~~, a naval architect, joined GL in 1978 and served as Technical director of the society's Technical Bureau for Southeast Asia, based in Kuala

Lumpur, from April 1995 until his return to Germany in September 1996. He succeeds ~~Martin Gerike~~, who has retired. ~~Mr. Gerike~~ will continue to be active in the management of GL's joint venture companies in Eastern Europe.

PCCI Welcomes Aparicio

PCCI, Inc., Alexandria, Va., has welcomed **Luis Aparicio** to its company as a senior analyst where he will develop and review oil spill response plans for facilities, vessels and oil field operations for

commercial clients within the U.S. and South America. Previously, **Mr. Aparicio** was employed as an environmental scientist with Dames and Moore.



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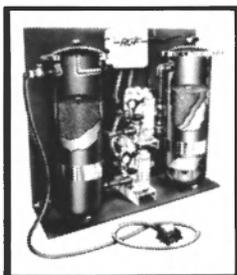
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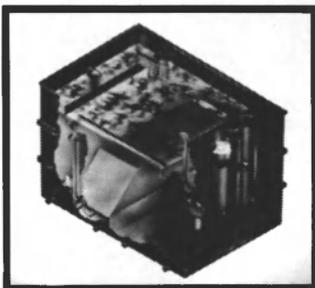
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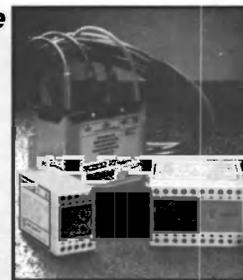
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Maritime Reporter/Engineering News

Aker Omega Changes Company Name

Aker Omega, Inc. has changed its name to Aker Engineering, Inc. in order to symbolize and reconfirm Aker Maritime's focus and commitment to the deepwater and drilling production arena. With corporate responsibilities in the Gulf of Mexico and West Africa, Aker Engineering, Inc. will continue to provide front end engineering, detail engineering and project management services covering floating production technology, subsea production systems and marine pipelines.

Evergreen Adds Australia To Worldwide Network

Evergreen customers in North America, Europe, Asia and the Indian subcontinent can now use the Taiwanese carrier for shipments to and from Australia. Evergreen is now a participant in the Australia-Singapore-Australia (ASA) service which provides a weekly service, linking Singapore with Sydney, Melbourne, and on a fortnightly basis, Brisbane.

Evergreen is slot chartering space from Lloyd Triestino, which together with Hanjin and Regional Container Lines, is a partner in this service. ASA uses four, 1,000-TEU ships to maintain the service on 28-day schedules. At Singapore, ASA service connects with several Evergreen services.

Volvo Penta Restructures Global Organization

In order to improve customer relations worldwide, Volvo Penta has made significant changes in the structure of its organization. The new organization has been designed to create a clearer acknowledgement of responsibility, directly on site in markets close to customers. Four regional units have been created, each with full local responsibility for all customer relations and business in the region, for all types of products. At the main office in Goteborg, Sweden, global support functions — for product supply, product and customer support and diesel engine development — will serve the company's four regions, which are: Europe; North America; Asia; and the International region.

Hamworthy Marine Expands U.S. Sales Network

Hamworthy Marine Inc. has expanded its U.S. sales support network with the opening of an office in Newark, N.J. The office has been established to meet the

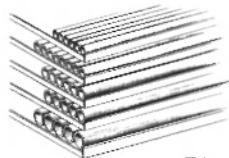
needs of the high concentration of shipowners in the Northeastern region of the U.S., as well as to address the growth in shipbuilding on the Atlantic seaboard. The office is being headed by **Aaron Bresnahan**, a graduate of the U.S. Merchant Marine Academy, and former Marine and Sales manager



Nick Chappie



Nick White



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PEOPLE & COMPANY NEWS

for Hyde Products, Inc.

In addition, Hamworthy has named **Nick White** as its Sales and Marketing manager and **Nick Chapple** as Spares manager for its Pumps & Compressors unit.

Hellenic Shipyards Apoints Agent For North America

Hellenic Shipyards Co. of the Skaramanga Yard in Greece has appointed Vogler Marine Agencies, LLC as its exclusive representative for the U.S. and Canada.

Hellenic Shipyards Co., founded in 1957, is reportedly the largest shipyard in the eastern Mediterranean, operating two graving docks and three floating

docks.

At present, the yard has hired engineering and consulting firm Brown & Root Ltd. to operate Hellenic Shipyards Co.

Sonsub Announces Promotions

Sonsub International Inc. has announced the promotion of **Peter Breese** to the position of senior vice president, Engineering and Subsea Operations. Dr. **Breese** has risen quickly from his last appointment as vice president



of Engineering and Operations. In his new capacity, he is responsible for overseeing all of the company's subsea and environmental engineering activities.

Bruce Gilman has been named as senior vice president, Commercial and Remotely Operated Vehicle (ROV) Operations.

He is responsible for overseeing Sonsub's global marketing and commercial programs, as well as developing new opportunities for the company's diverse range of services throughout the world. In the past, Mr. **Gilman** has served as president and chief operating officer of Sonat Subsea Services and Sonsub Americas.

Port Weller Dry Docks Names GM

Charles W. Payne has been appointed to the position of general manager of Port Weller Dry Docks, a division of Canadian Shipbuilding & Engineering Ltd. (CSE) located in St. Catharines, Ontario, on the Great Lakes. Mr. **Payne** has been associated with Port Weller Dry Docks for 17 years and has held senior management responsibilities for Port Weller's shipbuilding and ship repair operations.

Thomas Miller Appoints Head Of Asian Operations

The Thomas Miller Group, managers of maritime and transport insurance mutuals including the U.K. P&I Club, the U.K. Defence Club, the TT Club and ITIC, has relocated one of its senior directors to the Hong Kong office. **David Martin-Clark** will head up all Miller activities in the Asia Pacific region.

Neptune Introduces Advanced Exhaust System

Neptune Marine Systems has recently released the 2000 exhaust system, designed to increase engine performance and eliminate environmental problems in existing exhaust systems. With a square side pipe design, the system reportedly breaks up and reduces sound waves.

The high speed exhaust outlets direct the remaining sound waves and exhaust fumes into the propwash and away from the vessel. Engine performance is increased by eliminating interior baffles, lowering back pressure.

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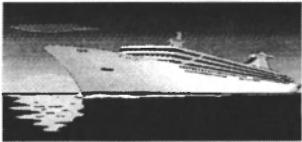
Technical packages are also available.

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Cruise Industry Annual

Cruise Capacity Changes Through 1999

Cruise Line	Addition/ Deletion	1996		Ship Name	New/ Used
		Delivery Date			
American Hawaiian Cruises	D	4/96		Constitution	U
Carnival Cruise Lines	A	4/96		Inspiration	N
Carnival Cruise Lines	A	11/96		Carnival Destiny	N
Carnival Cruise Lines	D	5/96		Festivale	U
Celebrity Cruises	A	11/96		Galaxy	N
Costa Crociere	A	7/96		Costa Victoria	N
Costa Crociere	D	10/96		Daphne	U
Cunard Line, Ltd.	D	3/96		Sagafjord	U
Dolphin Cruise Line	A	5/96		Island Breeze	U
Epirotiki Cruise Lines	A	5/96		Stella Maris	U
Epirotiki Cruise Lines	D	5/96		Orpheus	U
Holland America Line	A	4/96		Veendam	N
Norwegian Cruise Lines	A	3/96		Norwegian Crown	U
Norwegian Cruise Lines	A	5/96		Royal Odyssey	U
Princess Cruises	D	12/96		Golden Princess	U
Regency Cruises (fleet)	D	1996		all ships	Chapter 11
Royal Caribbean Cruises, Ltd.	A	3/96		Grandeur of the Seas	N
Royal Caribbean Cruises, Ltd.	A	11/96		Grandeur of the Seas	N
Royal Cruise Line	D	3/96		Crown Odyssey	U
Royal Cruise Line	D	5/96		Royal Odyssey	U
Royal Cruise Line	D	10/96		Star Odyssey	U
Royal Cruise Line	D	7/96		Queen Odyssey	U
Seabourn Cruise Line	A	7/96		Seabourn Legend	U
World Explorer Cruises	A	7/96		Universe Explorer	U
World Explorer Cruises	D	1/96		SS Universe	U
Dolphin Hellas	D	1996		Aegean Dolphin	U
Renaissance Cruises	A	1996		Aegean Dolphin	U

Cruise Line	Addition/ Deletion	1997		Ship Name	New/ Used
		Delivery Date			
Celebrity Cruises	A	11/97		Mercury	N
Costa Cruises	A	1997		Costa Olympia	N
Holland America Line	A	10/97		Rotterdam VI	N
Holland America Line	D	9/97		Rotterdam	U
Princess Cruises	A	1997		Dawn Princess	N
Royal Caribbean Cruises Ltd.	A	4/97		Rhapsody of the Seas	N
Royal Caribbean Cruises Ltd.	A	9/97		Enchantment of the Seas	N
Radisson Seven Seas	A	12/97		Paul Gauguin	N

Cruise Line	Addition/ Deletion	1998		Ship Name	New/ Used
		Delivery Date			
Carnival Cruise Lines	A	1998		Elation	N
Carnival Cruise Lines	A	1998		Paradise	N
Carnival Cruise Lines	A	1998		Carnival Triumph	N
Disney Cruise Line	A	1/98		Disney Magic	N
Disney Cruise Line	A	12/98		Disney Wonder	N
Princess Cruises	A	1998		Grand Princess	N
Royal Caribbean Cruises, Ltd.	A	4/98		Vision of the Seas	N
Silversea Cruises	A	1998		Unnamed	(planned)N
Renaissance Cruises	A	1998		Unnamed	N

Cruise Line	Addition/ Deletion	1999		Ship Name	New/ Used
		Delivery Date			
Silversea Cruises	A	1999		Unnamed	(planned)N
Princess Cruises	A	1999		Sea Princess	N
Renaissance Cruises	A	1999		Unnamed	N
Renaissance Cruises	A	1999		Unnamed	N

Editor's Notes: Based on public information gathered by Cruise Lines International Association, a total of 27 new ships are contracted or planned to be added to the North American fleet from 1996 through the end of 2000. "Planned" ships listed in the chart have been announced, although there has been no confirmation of a contract being signed. The following information is offered as a clarification to information in the chart: American Hawaiian's *Constitution* left service in 1995 to re-enter in 1997. It has been announced that the ship will not re-enter the cruise line's fleet. Regency Cruises entered Chapter 11 bankruptcy proceedings in November 1995. Four of Royal Cruise Lines' ships have changed hands. *Royal Odyssey* was in operation with Norwegian as of May 1996. *Crown Odyssey* was transferred to Norwegian and renamed *Norwegian Crown*. *Queen Odyssey* became Seabourn's *Seabourn Legend*. *Star Odyssey* was purchased by Fred Olsen Lines to sail in October 1996.

Premier Cruise Lines To Sell Ship

Viad Corp's cruise subsidiary, Premier Cruise Lines, has announced plans to sell the S/S *Atlantic* to Westrai Holdings Inc. The transaction is being handled by Jacq. Pierot Jr. & Sons, Inc., a shipbroker located in New York.

Company officials said Westrai's subsidiary Mediterranean Shipping Cruises is planning to sail the ship, to be renamed *Melody*, out of Genoa on June 1.

Meanwhile, *Atlantic* will continue sailing on its three and four-night itinerary to the Bahamas from Port Canaveral, Fla.

Premier Cruise Lines said all passengers booked on future sailings of *Atlantic* past its last sailing date are expected to be accommodated on its other ship, S/S *Oceanic*.

Viad Corp is a S&P Mid-Cap 400 company with \$2.4 billion in annual revenues, and was formerly known as The Dial Corp. before a successful spin-off of its consumer products group last August.

Costa Chairman Discusses Carnival Buyout

On Dec. 19, following the announcement that Carnival Corp. and Airtours, plc, intend to purchase 100 percent of the shares of cruise line Costa Crociere SpA, Costa Chairman Dr. Nicola Costa made a statement.

"The announced entry of Carnival Corporation and Airtours as stockholders of Costa Crociere will have a positive impact on our company. I would like to confirm that Costa Crociere and Costa Cruises in North America will continue to operate and market, with full autonomy, all the announced cruise programs in Northern Europe, the Mediterranean, the Caribbean and South America.

"Furthermore, the collaboration with Carnival, the world's largest cruise operator, and Airtours, one of Europe's largest tour operators, will enable our company to carry on the successful development strategy it has pursued over recent years.

"The aim of the proposed agreement is to reinforce the financial

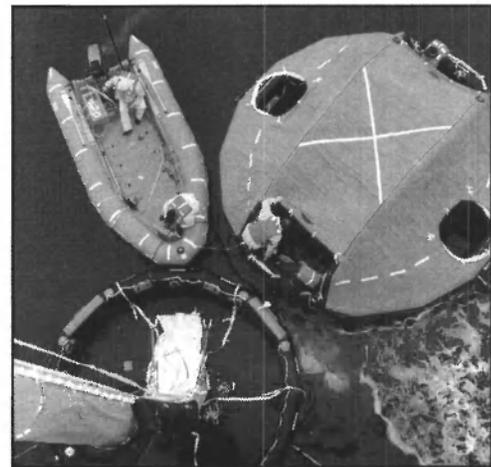
(continued on page 86)

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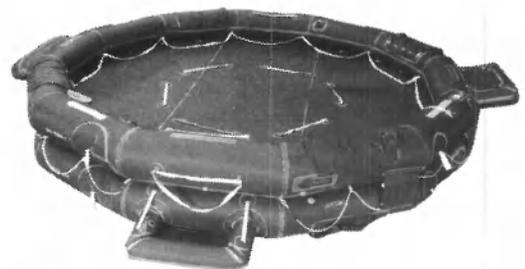
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structure of the company, leverage the synergies resulting from the collaboration with the new stockholders, maintain and enhance the value of the current product, the brands and the sales and marketing organization in the various countries, thus consolidating Costa Crociere's leadership within the European market," said Dr. Costa.

In the U.S., Costa operates its two newest vessels: the 54,000-ton *Costa Romantica*, which debuted in 1993; and the recently introduced 76,000-ton *Costa Victoria*. Both vessels offer alternating seven-night cruises to the Eastern and Western Caribbean every Sunday (November through April) from Port Everglades.

Major U.S. City Honors Cunard

In a Mayoral Proclamation delivered on Jan. 6, San Francisco Mayor **Willie Brown** declared the day to be "*Royal Viking Sun Day*" in the California city.

In a speech aboard Cunard's *Royal Viking Sun*, the Mayor noted that San Francisco and *Royal Viking Sun* share a rare sense of style and elegance that are hallmarks of both the city and the Cunard fleet of luxury cruise ships.

Mayor **Brown** and *Royal Viking Sun* Captain **Halle Gundersen** reportedly addressed a group of assembled passengers and reporters in the ship's main dining

room during a luncheon which celebrated the launch of the ship on its 1997 World Cruise. The 99-day voyage was scheduled to carry passengers around the world to 27 ports of call.

The ship's journey will be completed when it arrives in Fort Lauderdale, Fla., in April.

bunker supplier to adopt The Baltic and International Maritime Council (BIMCO) FUELCON standard marine fuel purchasing contract for all its sales.

The standard was drafted by BIMCO with the intention of reducing confusion in the bunker market by promoting a worldwide standard contract, presenting an alternative to the usual method whereby suppliers retain their own terms.

Penninsula started trading in February 1996 and has established itself in the Gibraltar market.

It is also a bunker trader in the Spanish mainland and ports of Algeciras, Ceuta and the Canary Islands.

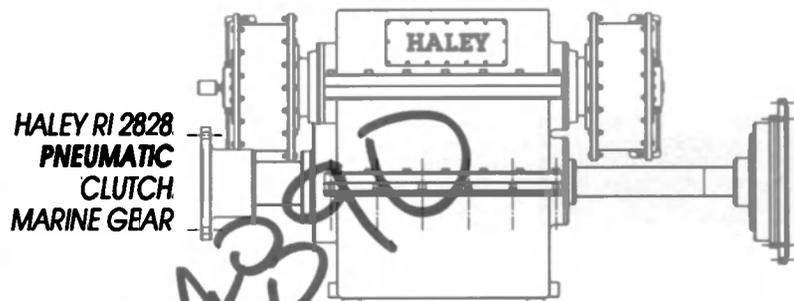
Penninsula Petroleum Adopts BIMCO Fuel Purchasing Contract

London-based bunker fuel supplier and trader Peninsula Petroleum has reportedly become the first

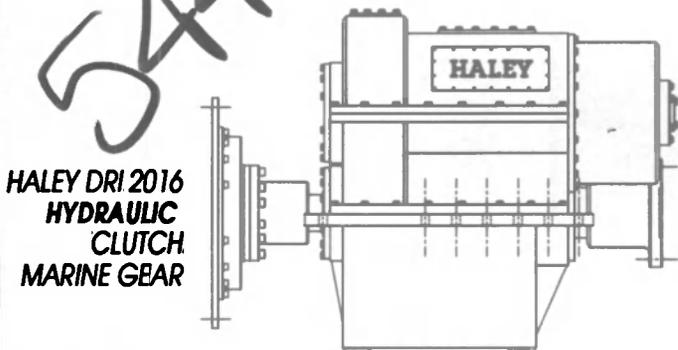
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Maritime Reporter/Engineering News

The Swap Meet



Norwegian Crown

Changes in vessel ownership are an important factor in the ever-adapting cruise sector. A few companies scooped up secondhand ships in 1996, as a few interests struggled to stay afloat financially. Other cruise interests used the newbuilding frenzy of cruise dynamos as an opportunity to build fleet rosters, with the purchase of older ships. The sale of the following three vessels evidences the swapping that went on in 1996, proof that niche markets and exotic itineraries will continue to feed smaller cruise lines with passengers.

Seabourn Legend

On July 22, 1996, *Seabourn Legend* arrived in New York City for the second christening ceremony since its construction. The 10,000-gt, Norwegian-registered ship sailed past the United Nations Building and docked shortly thereafter for a gala ceremony, during which **Atle Brynestad**, co-owner, chairman and CEO, addressed the crowd:

"Today, we welcome this ship to her true family and give her the name she deserves," concluded Mr. **Brynestad**.

The vessel was christened *Royal Viking Queen* in 1992, and later renamed *Queen Odyssey* by previous owner Royal Cruise Line. The 204-passenger ship cruises North and South America, the Caribbean, the British Isles, Europe, Scandinavia, East Africa, Southeast Asia, the Orient and the South Pacific.

Island Breeze

Removed from Carnival's roster in May 1996, the former *Festivale* entered Dolphin Cruise Line's ranks the same

month, renamed *SS Island Breeze*. On Dec. 6, 1996, the ship was officially purchased from Carnival by I.B. Ltd. The purchase transaction was in the

form of a seven-year charter agreement. I.B. has assumed financial responsibility for the vessel previously held by Carnival (even while operated by Dolphin). Under this deal, Dolphin retained operation, sales and marketing responsibility.

Island Breeze will sail from Montego Bay to the Panama Canal until undergoing a SOLAS refit this May, a project which will be completed at a cost of \$10 million. After retrofitting, the ship will be transferred to Palma de Majorca for summer European cruises under long-term charter.

Norwegian Crown

Ownership of an 1,050-berth ship, 614-ft. ship was transferred in March 1996 from Royal Cruise Line to Norwegian Cruise Lines. The former *Crown Odyssey*, renamed *Norwegian Crown*, was originally built by Meyer Werft in Papenburg, Germany, in 1988, and was refitted in Miami upon ownership transfer. A relatively new ship for even modern day standards, *Norwegian Crown* can travel at a service speed of 22 knots, and has many of the facilities demanded by the discriminating public, including three dining facilities, five lounges, a casino and spa. The ship travels to the Caribbean, Europe, Alaska, South America and runs transatlantic voyages from Fort Lauderdale to Lisbon.



Island Breeze will undergo SOLAS outfitting in May.

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Seabourn Legend is pictured during its debut in New York City.

Cruise Literature Review



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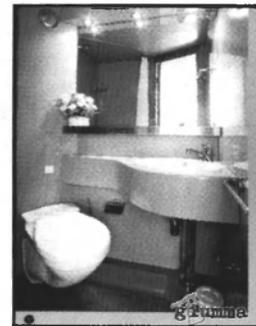
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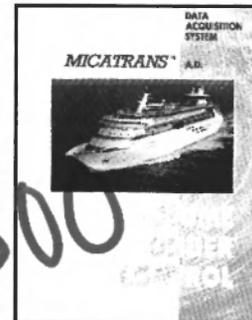
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Star Center's booth at the Cruise Shipping Convention will have photos and literature regarding its large selec-

tion of simulation training courses that meet STCW, USCG, IMO and other regulatory standards. STAR Center, mariners' training state-of-the-art simulators, including a 360-degree full mission bridge simulator for maneuvering in traffic, restricted and open waters.

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MacGregor completes turnkey retrofit of bow door arrangement

After two years, *Estonia's* sistership *Mare Balticum* has use of bow door

When *Estonia* went down in the Baltic in September 1994, the bow door arrangement was blamed for the sinking. As a result, the bow of the 17,955-grt *Mare Balticum* — a sistership fitted with an identical bow visor and ramp arrangement, plying the same routes — was sealed.

MacGregor, the Finland-based international hatch and door specialist, has now reopened the bow by fitting a completely different type of door arrangement to the original equipment.

Mare Balticum's bow was closed, as the visor was welded shut to become an integral part of the hull. Substantial reinforcing girders and trusses were fitted on the Meyer Werft-built vessels. Additionally, the bow ramp was cut below the weather deck and welded to the hull, and a fixed collision bulkhead was erected behind the bow ramp. So for the past two years, the vessel has loaded and discharged vehicles only through its stern door.

When the vessel was about to move to a new service between Helsinki, Finland, and Tallin, Estonia, the new charterer, Tallink, requested that the owner investigate the possibilities of reopening the bow

After two years of having its bow door welded shut, *Meloodia's* (formerly *Mare Balticum*) new bow access was a welcome, efficient addition.



to avoid the inconvenience and delays of stern-only operation. It was at this time that MacGregor entered the picture, and the decision was made to adopt a completely different concept, with side-hinged bow doors.

The order for a complete turnkey delivery was placed with MacGregor, and the work carried out at Finland's Turku repair yard where the vessel was drydocked in August 1996.

Cable Maintenance Vessel Design Gets Boost

Western Geophysical evaluates, orders innovative boats

In August 1995, *MR/EN* documented the development (by U.K. based Advanced Boat Construction Ltd. [ABC]) of a

small, innovative cable maintenance vessel (CMV). Houston-based Western Geophysical, having carried out extensive evalua-

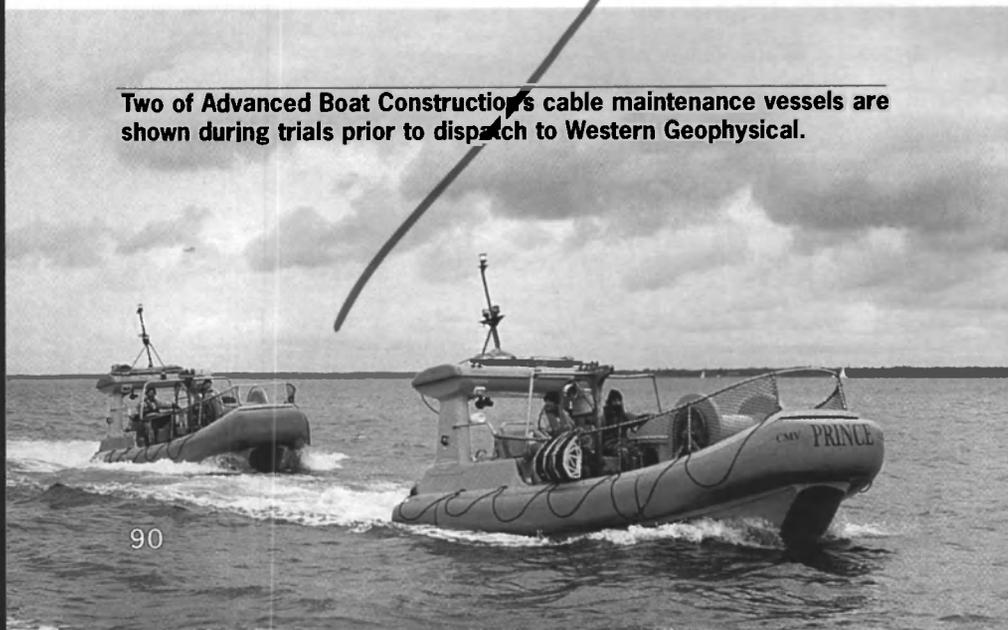
tion trials on the prototype, has finally purchased this vessel for training purposes and ordered three slightly longer versions for its worldwide operations with option for a further six.

ABC's Managing Director, **Michael Souter**, told *MR/EN* that the first of the new production versions was already in operation off the African Coast and that the prototype was being readied for shipment to Texas while construction proceeded on the first batch of longer CMVs. He explained that the new design, which has significant operational and safety advantages when dealing with seismic streamers deployed from survey ships in open ocean conditions,

benefits from Western Geophysical's field experience with the prototype, as well as input from Norwegian naval architects **Arable & Stokke**.

Originally sized at 22.6 x 10.2 ft. (6.9 x 3.1 m) in order to fit onboard the mother ship in place of a standard MOB rigid inflatable rescue boat, the new production versions have been lengthened by 2.5 ft. (0.65 m) to increase payload, handling and stability. However, the craft retain the basic principles of the prototype and are of twin waterjet propelled catamaran type with rounded underwater sections enabling them to be easily maneuvered into "straddle" positions with seismic cables running through the

Two of Advanced Boat Construction's cable maintenance vessels are shown during trials prior to dispatch to Western Geophysical.





MacGregor's RoRo Conversion Team from Gothenburg, Sweden, had discussions with the owner and visited the vessel several times, together with designers and colleagues from the

Mare Balticum's new bow doors were built piece by piece on the original shell plating. The new aperture was cut after complete welding of the structures and installation of hinges and operating cylinders.

Turku Service Division.

The owner's schedule was extremely tight, and in order to minimize revenue loss, the plan was to take the vessel out of service for just four weeks. Time available for design work and subsequent approval was also short, and to compound the problem, much of the activity coincided with European summer vacation periods. Given all of these factors, though, only seven weeks elapsed between order placement and vessel drydocking. Current rules specified by the classification society and Nordic Maritime Authorities had to be applied, and special arrangements were made to obtain swift approval of drawings from Bureau Veritas.

More than 90 tons of steel were needed for the conversion, and about 20 tons of existing structures were removed from the vessel. Preparations for the bulk of the work were carried out over a two-week period while the vessel was in normal service between Stockholm and Tallin. When the vessel finally arrived at the Turku yard at the end of August, a 24-hour working system was organized and all the work was carried out by MacGregor personnel; only craneage, gases and power were supplied by the shipyard. Now renamed *Meloodia*, the vessel started its new service between Helsinki and

Tallin on schedule.

According to MacGregor, conversion projects present a particular challenge, and within its own organization, the company has instituted a close cooperative relationship between its product divisions and its Global Service Division. Due to the nature of the conversion business, dedicated modernization and conversion teams have been established for running these projects. Reliable information regarding the current state of the vessel concerned is a vital element in preparing a conversion tender, and a realistic idea of the working conditions onboard must also be established. Important items of information are, for example, the dimensions of structures in the area where equipment is to be installed, the actual location of piping and ventilating ducts in the area, and hydraulic and electrical system details. The emphasis is on the word "reliable" because in most cases the original drawings of the vessel are not likely to have been updated after earlier alterations.

In the conversion of the bow door arrangement of *Mare Balticum*, MacGregor was responsible for the entire project management, all design and strength calculations, the reinforcement of hull structure in bow area, and the design and installation of new side-hinged bow doors. In addition, the company modified the bow ramp into a folding type and installed a new inner bow door in place of the collision bulkhead.

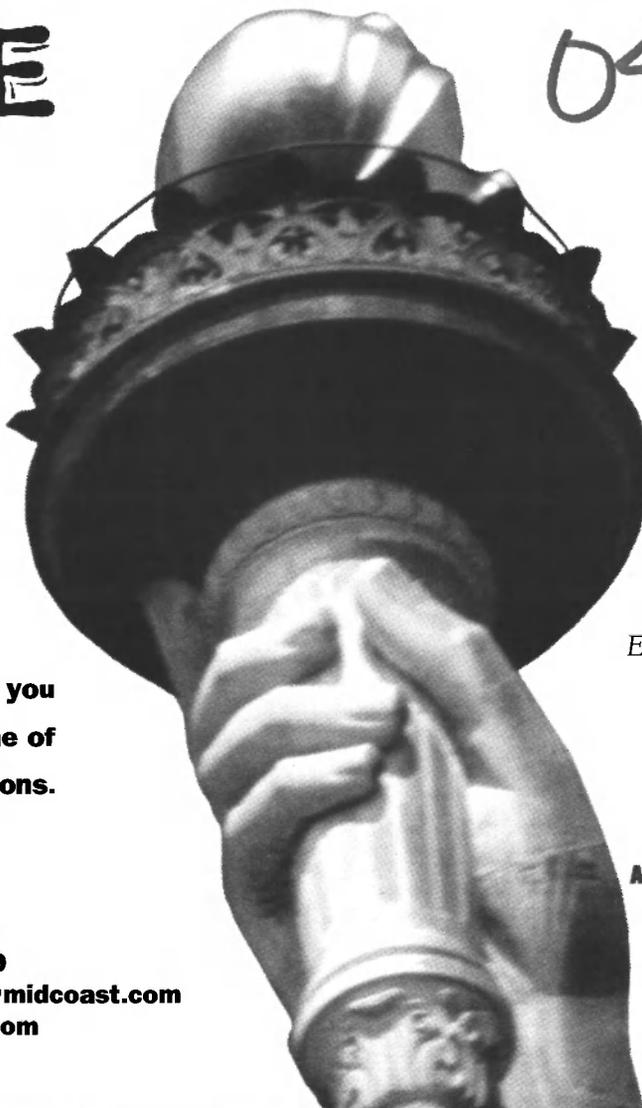
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EUROPEAN UPDATE

tunnels between the hulls. Light-weight hatches within the CMVs can then be removed to reveal moonpools, allowing work to take place on the cables.

Hydraulically controlled arms with horizontal axis rollers are used to raise cable above water level in the center of the moonpool for inspection or handling. Two specially developed clamps, one connected to a rope and winch, the other attached to the forward end of the moonpools, allow a new 250-ft. (75-m) section of cable to be inserted from a hydraulically operated drum on the forward deck, while both separated ends of the deployed streamer reliably secure vessels. Defective sections can then be winched onto the empty drums. Throughout the entire operation, CMVs form a mechanical link in the streamer "chain".

The new vessels are powered by a pair of Mermaid Turbo-Four II turbocharged and intercooled marine diesels which use the Ford New Holland four cylinder "Genesis" engine, popular in tractor applications worldwide and marinized by U.K. specialist Mermaid to develop 200 hp. These drive Vosper

Thornycroft PP115 waterjets through flexible couplings to give fully-laden top speeds of approximately 24 knots and efficient free-running service speeds of 15 knots. More important, however, the larger than usual jets give a bollard pull of around 1.3 tons—sufficient to tow a seismic cable approximately 6 km long in most sea conditions. Twin jets also give a high degree of maneuverability, including the capacity, in experienced hands, to move craft sideways over deployed streamers. The hydraulic systems which operate the cable lifting arms, forward seismic cable drums and rope winch are belt-driven from the main engines on the port side.

To counter the effect of a heavy machinery payload, weight has been saved in the hull construction of these vessels with the use of an advanced composite incorporating Kevlar, S Glass and epoxy resins. A single skin with foam cored stiffeners forms the lower part of each hull and the deck consists of a foam core sandwich construction. The "all-round" fender comprises five sections of polyurethane skinned polyethylene foam.

Another Australian fast ferry for Europe

Following the launch described in the Australian Maritime Focus feature in the October 1996 issue of *MR/EN*, *Felix*, Austral Ships' latest 270-ft. (82-m) Auto Express ferry, has completed its 11,500-nm delivery voyage to Sweden and has begun service on the short Linnhamn-Dragor route for joint Swedish and Danish owners, SweFerry and DSO. The vessel has been registered at the Port of Malmo and is only the second fast ferry worldwide to fly the Swedish flag.

Although the eight-mile crossing could be comfortably completed by the 40-knot vessel in well under 15 minutes, 22 crossings of 25 min. duration per day have been scheduled. The predicted turnaround time of 20 minutes is being easily achieved due to the drive-through garage and efficient mezzanine deck layout.

Restricted port access, especially at Dragor, and frequently strong wind conditions, prompted the operators to opt for the installation of bowthrusters. Installed in each hull and fully integrated with the KaMeWa waterjets, the bowthrusters maximize maneuverability for effective docking in all but the very worst weather conditions.

Differing from the previous Austral Auto Express deliveries of *Delphin* to TT-Line and *Cat-Link III* to DSB Rederi earlier this year, *Felix* does not feature the company's "Ocean Leveller" ride control system. The vessel's semi-swath hull form was considered to provide sufficient passenger comfort without ride control on such a short crossing. However, provisions have been made to incorporate the ride control system at a later date should the vessel be

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moved to a longer route. Manually operated stern flaps are fitted for trim optimization.

Felix has the capacity to carry 676 passengers and 156 cars, or 10 buses and 54 cars. The drive through garage comprises eight main deck lanes and six lanes on the full length mezzanine decks. Four 79-ft. (24-m), 24-ton buses can be carried in the two central lanes.

The split-level wheelhouse features 360 degree visibility from the control station on the upper level and enclosed wing stations on the lower levels.

The ship's electronics package includes fully integrated Kelvin Hughes navigational equipment with twin ARPA radars and MFD electronic chart navigation, a monitoring and control system which allows a close check to be kept on all machinery and systems throughout the ship from the engineer's console, and a closed circuit television system to monitor the vessel at strategic locations. Satellite telephone and ship communications systems are provided by Satcom M and GMDSS equip-

ment.

Four Marine Evacuation System (MES) stations by Liferaft Systems Australia, each with 100-person liferafts and escape slides, are located amidships and aft to port and starboard, accessible from the main passenger deck. Four additional 100-person liferafts, one for each MES, are located on the upper deck above each station.

The quadruple diesel/waterjet/gearbox propulsion system comprises diesel engines, each developing 6,000 kW driving four KaMeWa 112 S11 waterjets, through four Reintjes VLJ 4431 gearboxes.

On performance trials, *Felix* achieved 41.5 knots and 40.5 knots at 90 percent MCR. The vessel has an overall length of 270 ft. (82.3 m), a waterline length of 226 ft. (69 m), a beam of 75.5 ft. (23 m) and hull draft amidships measurement of 8.9 ft. (2.7 m). The vessel was built to Germanischer Lloyd +100A5, HSC-B, OC3, Passenger Ro/Ro classification.

The passenger accommodation was designed in collaboration with Scandinavian designer, Figura



Pictured is the Austal Ship-built *Felix*, which started service on the short Limhamn-Drager route for SweFerry and DSO.

Arkitektur, and crafted by Austal's outfitting department.

A large gabled skylight over the bridge and main decks amidships provides the passenger reception area with abundant natural light emphasizing the spacious interior. A total of 1,700-sq-m is dedicated to the passenger area.

According to Anders Erlandsson of Figura, the key features of the design were sim-

plicity, necessary for the short route, and a minimum of obstruction to ensure a smooth passenger flow. "The design is up to date and pushing ahead in a 'high tech' style that reflects the technological performance of the fast ferry," said Mr. Erlandsson.

The main passenger deck has seating for 528 in a variety of configurations, while 152 passengers can be seated on the bridge deck.

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Following is a listing of companies mentioned in this month's European Update, in the order they appear. For more information on these, circle the corresponding number on the Reader Service Card in this issue.

- MacGregor 1
- Bureau Veritas 2
- Advanced Boat Construction 3
- Vosper Thornycroft 4
- Austal Ships 5
- KaMeWa 6
- Figura Arkitektur 7
- Kelvin Hughes 8
- Liferaft Systems of Australia 9
- Reintjes 10
- Germanischer Lloyd 11

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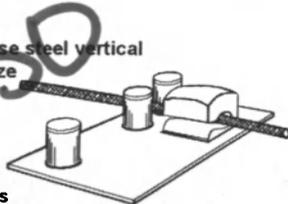
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Biggest U.K. Fishing Vessel Newbuild Program In Years Is Announced

Despite quota cutbacks and European Community decommissioning threats, 27 fishing vessels more than 40 ft. (12 m) in length and collectively valued at more than \$215 million are currently under construction for U.K. owners according to the 1997 edition of *Fishing Vessels of Britain & Ireland*. Yards in Norway, Poland and Spain as well as the U.K. are benefiting from the biggest newbuild program for many years which includes 40 ft. beam trawlers to 230-ft. (70-m) pelagic vessels. One Scottish yard alone reportedly has orders for eight trawlers out of the total; primarily in the 68 to 93-ft. (20.7 to 28.3 m) range.

Stone Vickers To Supply Royal Navy Frigates With Fixed-Pitch Propellers

Stone Vickers has introduced a high-screw, fixed-pitch propeller — a pair of which will be installed on one of the Royal Navy's latest Duke class frigates. Measuring 13 ft. (4 m) in diameter and weighing more than eight tons, the Stone Vickers propellers are cast in high specification nickel-aluminum bronze and machined on the seven-axis DNC (direct numerical control) facilities to meet requirements such as the complex geometric configuration of high-screw propellers. Stone Vickers has an armory of hi-tech equipment, including a 3-D CAD/CAM system and a computer-linked 3-D measuring system. The combined forces of Stone Vickers and Sweden's KaMeWa — both wholly-owned by Vickers plc — operate the European maintenance and repair center at Erith in Kent, England. Worldwide customer support is given through Vickers' service organization in 17 countries. Stone Vickers is the principal supplier of fixed-pitch and controllable pitch propeller systems to the Royal Navy, and also provides specialist services for warship propulsion.

For more information on Stone Vickers
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Litton Subsidiary Wins \$11M Navy Contract

PRC Inc., a subsidiary of Litton Industries, has been awarded a five-year recompetitively contract worth \$11 million from the U.S. Navy's Sea Systems Command.

The company will provide support to the Combat Systems Engineering (CSE) Division at Wallops Island, Va., in support of the Airborne Early Warning/Ground Central Environment Integration Systems (AEGIS) Combat Systems Center. The work includes automated information systems support, management and technical information support.

"This important win continues PRC's support to the Navy's leading AEGIS training and engineering center on the Eastern shore of Virginia for another five years," said PRC president Len Pomata. "This win represents CSE and PRC's seventh consecutive win of recompetes and a very exciting start to calendar year 1997."

Controversy Surrounds Future Of California Naval Station Facilities

Irate taxpayers on the U.S. West Coast have filed a lawsuit to prohibit the city of Long Beach, Long Beach Harbor and the state of California from destroying the facilities at the Long Beach Naval Station in order to build a cargo-container facility for use by a company owned by the People's Republic of China.

The suit demands that the naval base with its historical landmarks such as buildings, dormitories, recreational facilities and an Olympic-sized swimming pool, be used to benefit the general public and not a foreign company.

The plaintiffs claim that the land upon which the naval station is built is an asset of the California Tidelands Trust, which is protected from commercial use under California's state constitution.

Bouygues Offshore Wins Two Major Contracts

International oil and gas services contractor Bouygues Offshore S.A. has been awarded two contracts

which the company says illustrates its growing presence in the FPSO market.

Subsidiary UiE Scotland Ltd. has been named by Esso Norge AS to carry out the modification of the Balder FPSO, located in the North Sea west of Stavanger, Norway.

The contract has a minimum value of \$7 million and includes internal strengthening of the steel

hull and installation of additional risers on process units. The FPSO will drydock in March at UiE Scotland's Inchgreen drydock, and work is scheduled to be completed by summer.

Bouygues Offshore's 50 percent owned Saibos CML joint venture was awarded a \$8 million contract from Oceaneering International, Inc. to upgrade the process units of

the Zafiro oil field's FPSO in Equatorial Guinea, operated by Mobil.

The project is designed to increase the FPSO's production capacity, is slated to begin this month and to last for three months, and entails connection of two new production and separation modules as well as their integration into Zafiro's existing facilities.

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Maritrends '97 Set For New Orleans

Following an acclaimed 1996 convention, the Passenger Vessel Association (PVA), together with The American Waterways Operators (AWO) and the American Waterways Shipyard Conference (AWSC), will host Maritrends 97 at the Hyatt Regency in New Orleans, La., from February 22 to 25. This year, the show expands its program by combining three industry meetings to be conducted by PVA, AWO and AWSC.

PVA has been aggressively developing and promoting Maritrends '97 since attaining favorable results from last year's event. Statistics from the 1996 convention indicate that 96 percent of the attendees visited the exhibits to compare goods and vendors, of which one-third purchased on-site and 67 percent planned post-convention purchases.

With the expansion of the exhibit hall, more than 1,000 top-level delegates are expected to

attend Maritrends '97, making this show the largest in PVA history. "We're very pleased that our attendees and exhibitors view our show so highly," said **John Groundwater**, executive director of PVA. "Perhaps what is most exciting is the amount of money spent by our attendees as a result of the show," added Mr. **Groundwater**. According to PVA surveys, more than half of the attendees plan to spend as much as \$25,000, and another 10 percent expect to spend more than \$500,000 by the end of this year as a result of the show.

In addition to the newly expanded trade show, Maritrends '97 will showcase a broad array of the industry's latest products, services and equipment, as well as afford delegates the opportunity to get answers to the most pressing operational questions. Maritrends '97 will also provide seminars, workshops and special

events aimed at enhancing company bottom lines. Industry experts will cover everything from creative ship financing options, vessel construction and design management, to drug testing in the workplace and trends in employee benefits.

Three of the scheduled workshops for Maritrends 97 are: Passenger Vessel Parametrics; Using Your Travel Agents; and Interiors: Eliminating Project Nightmares.

For more information on Maritrends '97, contact PVA 1997 Annual Convention at Maritrends '97, The Passenger Vessel Association, 1600 Wilson Blvd., Suite 1000A, Arlington, VA 22209; tel: (703) 807-0100, fax: (703) 807-0103.

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D

DataMed International
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(continued on page 98)

PVA Schedule of Events For Maritrends '97

Friday, February 21

9 a.m. - 5 p.m. PVA Committee Meetings
2 p.m. - 5:30 p.m. Registration Open
5:30 p.m. - 6:30 p.m. "Early Alligator" Cajun Night

Saturday, February 22

8 a.m. - 2 p.m. PVA Board of Directors Meeting
8 a.m. - 5:30 p.m. Registration Open
2:30 p.m. - 3 p.m. First-Timer Orientation
3 p.m. - 3:45 p.m. Exhibitor Pre-Show Meeting
4 p.m. - 5 p.m. Exhibition Opening/Reception
6 p.m. - 10 p.m. Mardi Gras World Dinner Gala

Sunday, February 23

8 a.m. - 5:30 p.m. Registration Open
10 a.m. - 11 a.m. Exhibition Hall Open
11 a.m. - 1 p.m. Captain's Brunch
1:30 p.m. - 5 p.m. Exhibition Hall Open
2:15 p.m. - 3 p.m. Workshop Sessions: Trends in Employee Benefit Packages; Using Your Travel Agents; Drug Testing in the Work Place; Interiors: Eliminating Project Nightmares; Passenger Vessel Parametrics
3:15 p.m. - 4:15 p.m. Workshop Sessions Repeated
6 p.m. - 7:30 p.m. "Networking on the River," A Reception Aboard Natchez

Monday, February 24

8 a.m. - 6 p.m. Registration Open
8:30 a.m. - 9:30 a.m. PVA Regional Meetings

10 a.m. - 11 a.m. General Session With Featured Speaker Radm. James C. Card, Chief, USCG Office of Marine Safety

11:30 a.m. - 2 p.m. PVA Public Policy Lunch and Program: Senator John Breaux (D-La.) and Rep. Billy Tauzin (R-La.)

2 p.m. - 8:30 p.m. Exhibition Hall Open
2 p.m. - 3 p.m. Safety Seminar: Emerging Issues in Safety and Risk Management

3:15 p.m. - 4:15 p.m. Sales Seminar: Maximizing Your Sales and Marketing Resources

Tuesday, February 25

8 a.m. - 9 a.m. PVA Special Interest Council Meetings

8 a.m. - 6 p.m. Registration Open

9 a.m. - 10 a.m. Workshop Sessions: Ship Finance; Pressing Legal Issues in the Passenger Vessel Industry; Regulatory Issues Facing PVA Members; Getting the Most Out of Your CVB; Alexander & Alexander Insurance Presentation

10:15 a.m. - 11:15 a.m. Workshop Sessions Repeated

10:30 a.m. - 1:30 p.m. Exhibition Hall Open

12 p.m. - 1:30 p.m. Exhibition Hall Luncheon

1:30 p.m. - 3 p.m. PVA Business Meeting: Regulatory and Legislative Issues Update

6 p.m. - 8:30 p.m. PVA Closing Reception and Banquet

9 p.m. Buses Depart for American Queen Optional Cruise

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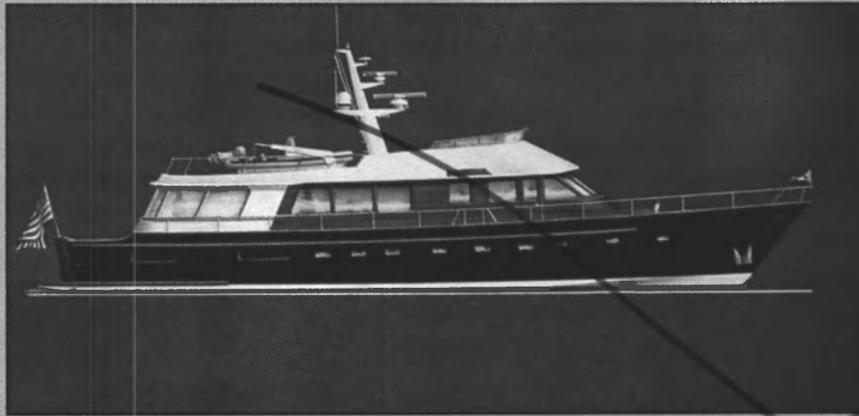
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(continued from page 97)

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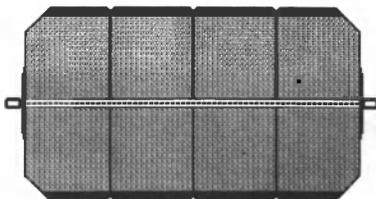
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Forum To Be Held At Maritime College

The 45th Annual Fort Schuyler Forum sponsored by The Society of Marine Port Engineers, New York, is scheduled to be held on March 6, 1997, at the State University of New York Maritime College, Fort Schuyler, Bronx, N.Y. For more information on the forum, contact the Society of Marine Port Engineers' office at (908) 381-7673.

USCG Alerts Of Potential Problems With Life Vests

The U.S. Coast Guard (USCG) has announced potential problems with the automatic CO₂ back-up inflation systems of some automatic inflatable life vests. There is a risk that a life jacket may not automatically inflate in certain situations. These potential problems affect Mustang Survival's Crewfit Inflatable life vests with the following model numbers:

- C10173/C11603 — Red or blue, harness models with automatic back-up;
- C10171-C11601 — Red or blue, non-harness models with automatic back-up; and
- C10014-C10019 — Spare CO₂ and recharge kits.

This problem only concerns products that were shipped from Mustang between October 1995 and October 1996. If you own a Mustang Crewfit Automatic vest with any of the above model numbers, contact the local dealer where the equipment was purchased or call Mustang Survival Commercial Customer Service at 1 (800) 526-0532. Instructions will be given to you on the correct procedures for refitting vests.

February, 1997

Halter Marine Purchases Autoship-Pro Hull Design Software Packages

Halter Marine Group of Gulfport, Miss., has purchased two additional Autoship-Pro hull design packages, bringing the company's total hull design program purchases

from Autoship Systems Corp. to five. In addition, Halter Marine has made Autoship-Pro its main hull design and fairing tool.

Ohsawa Technical Design Co. Ltd. has installed Autoship programs on its 56-ft. (17-m) aluminum alloy catamaran *Yumekaina*, reportedly one of many companies in Japan using

Autoship systems.

The latest program from Autoship-Pro — 6.1 — includes a new Report Editor with a spreadsheet interface which allows for on-line editing within all Autoship Systems programs.

For more information on Autoship Systems Corp. Circle 25 on Reader Service Card

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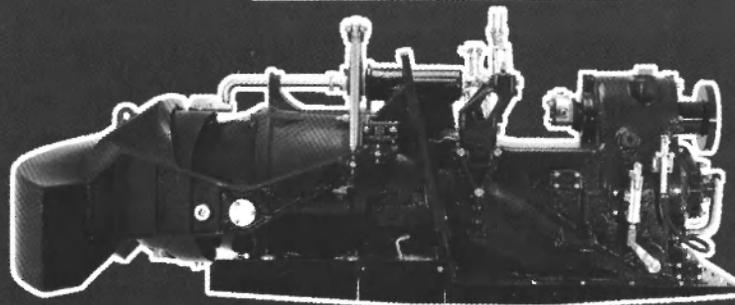
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Singapore Telecom Offers Global Coverage

Singapore Telecom announced that as of February 1, global coverage of its Inmarsat-A services are available via the Sentosa Land Earth Station (LES). The company also said that information regarding the Sentosa LES is available on

the worldwide web at <http://www.singtel.com/sentosaLES>.

For more information
Circle 70 on Reader Service Card

Daedong To Build Tankers

South Korea's Daedong Shipbuilding Co. reportedly signed a contract to build three 45,000-ton

oil and chemical tankers — for a reported \$33 million apiece — for Russia's Primorsk Shipping Co.

Greek Shipowners Abandon Greek Registry

Last year a reported 8.5 percent of Greece's merchant marine fleet (136 ships) deserted the Greek flag

for convenience flags. Meanwhile, only 48 new ships were added to the registry.

Economics are the reason for the flight, as Greece puts a cap on the number of foreign crew allowed on its nationally flagged ships.

Mawei Builds Cargo Vessel For German Owner

China's Mawei Shipyard recently built a 660-container, multi-purpose cargo vessel for a German company. The yard has previously built two vessels of the same kind. The Chinese shipyard has reportedly received orders for 11 new ships and a total of 172,600 TEU. A new 10,500 TEU container vessel will mark the beginning of the yard's capability to build such ships.

Oceaneering Lets North Sea ROV Contract

Oceaneering AS won a three-year contract from Statoil to provide remotely operated vehicle (ROV) services. Six vehicles, including four workclass Hydra MAGNUMs, will be installed onboard four mobile offshore drilling rigs to provide support for production drilling and subsequent subsea well completions, as well as installation of AAsgard, Norne and Gullfaks satellites. One ROV has been mobilized and the remaining will be deployed by March 1997.

NNS Announces Board Member Additions

Newport News Shipbuilding (NNS) has announced the addition of four new members to its board of directors, namely: Admiral **Leon A. Edney**, USN (ret), former Vice Chief of Naval Operations and Supreme Allied Commander Atlantic; **Dr. William R. Harvey**, president of Hampton University, Hampton, Va.; attorney and former Virginia Governor **Gerald L. Baliles**; and **Stephen R. Wilson**, executive vice president and chief financial officer of *Reader's Digest*.

"We are very pleased that we have been able to assemble such a talented and distinguished group of national leaders. Their knowledge of business, government and our industry will be a significant strength for us as we begin operations as an independent company," said **William Fricks**, NNS president and CEO.

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Ship Orders For Export Drop In Korea

The Korea Shipbuilders Association reported that South Korean shipbuilders received orders for 142 ships weighing 6.9 million gt from overseas last year, down 2.8 percent from the previous year. In 1995, South Korean shipbuilders received orders for 194 vessels weighing 7.13 million gt, up 11.9 percent from 1994.

FELS' Quick Work Promise Seals Deal

Repairs to an oil drilling rig that partly collapsed in South Australia's Gulf Saint Vincent will be repaired at FELS in Singapore. The owner had reportedly received a competitive bid from an Australian company, however FELS could reportedly complete the repairs sooner.

New Atlantic Ocean Container Service Consortium Launched

Kawasaki Kisen Kaisha Ltd., China Ocean Shipping Co. (COSCO) and Yang Ming Marine Transport Corp. of Taiwan will reportedly form a consortium to launch a weekly Atlantic Ocean container service, marking the first time any of the three will operate an Atlantic route.

Four 2,000-TU containerships are scheduled to service the route.

Acord Joins Trico Board

Trico Marine Services announced that **H.K. (Kent) Acord**, recently retired executive vice president, International, for Mobil Oil Corporation's Exploration and Production Division, has been elected to the company's board of directors. He replaces **Carl Ferenbach** who resigned from the board to devote more time to Berkshire Partners' ongoing investment activities. Mr. Acord has more than 40 years of experience in the energy industry, primarily in the international arena.

EC OKs Peene Werft Aid

The European Commission (EC) has approved DM130.6 million in aid to cover the expenses of massive staff reduction and dismantling of old facilities during the

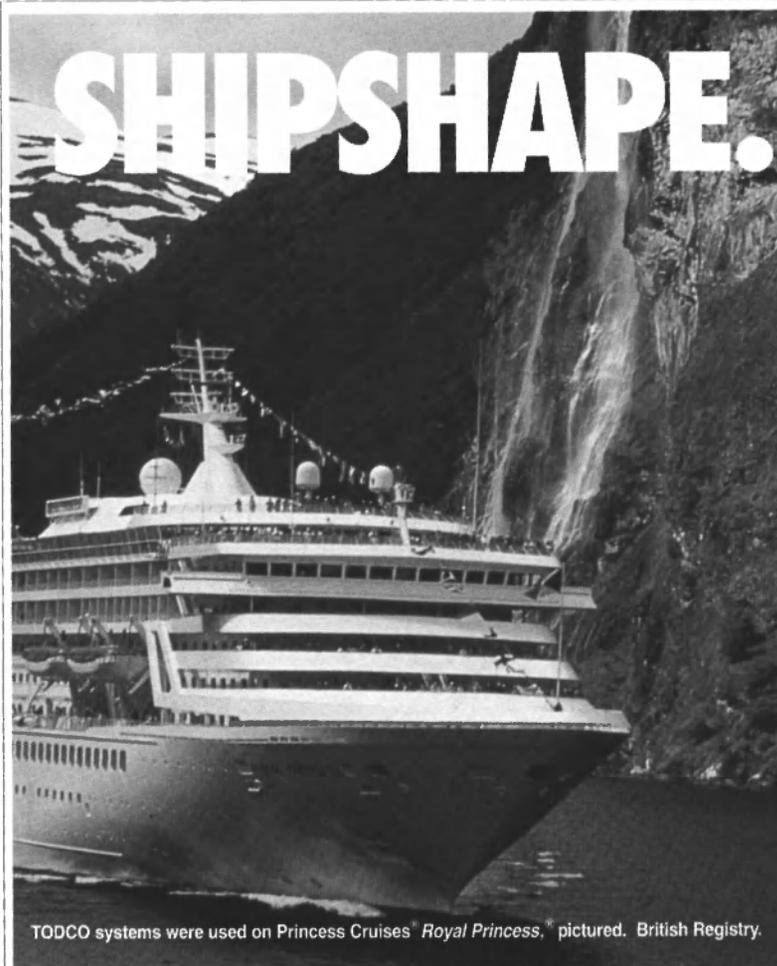
restructuring of Peene Werft, an east German shipyard situated in Wolgast Mecklenburg-Vorpommern. This aid is the final part of the restructuring aid package that was deemed necessary at privatization in 1992. The investments for the partial conversion of this former GDR naval yard were virtually completed in 1995.

Inmarsat-3 F3 Enters Service

Personal mobile satellite phone service became available for those who do business, live or venture off the beaten track in the Pacific Ocean region. The third satellite in the Inmarsat-3 series entered service on Saturday, January 25. Inmarsat-3 F3 joins two other sim-

ilar satellites already in operation, and reportedly extends to about 95 percent of the world's land-mass that benefits from the new personal Inmarsat-phone service. The spacecraft also boosts capacity for Inmarsat's other commercial maritime, aeronautical and land-mobile communications systems.

For more information on Inmarsat Circle 101 on Reader Service Card



TODCO systems were used on Princess Cruises' Royal Princess, pictured. British Registry.

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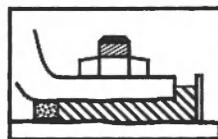
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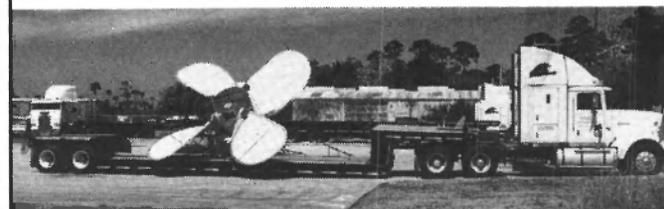
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Dejong & Lebet Reports On Recent Work Log

The 120-ft. (36.5 m) motor yacht *Eye Deal* — which was built by Azimut in 1983 and lengthened 15 ft. in 1992, is undergoing major conversion by 10-person naval architectural firm Dejong & Lebet at Keith Marine in Palatka, Fla.

The conversion consists of changing the second deck from flybridge, open entertainment and toy storage to a skylounge and small, open deck. The entire vessel was constructed of fiberglass reinforced plastic. The addition, however, will be made of aluminum, due to weight and stability considerations. In addition, construction is underway on *Liberty Belle III*, a

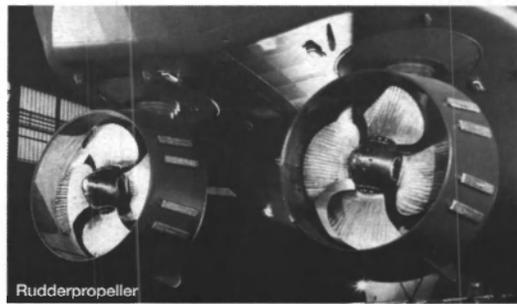
140 x 140-ft. (43 x 43-m) stern-wheeler, designed for dinner/cruise service in Philadelphia, Pa. The vessel is being constructed on-site in Philadelphia by On-Site Marine of Springfield, Mo., and is being designed by naval architectural company Dejong & Lebet, Inc.

Liberty Belle III is designed for U.S. Coast Guard certification under Subchapter K, and will

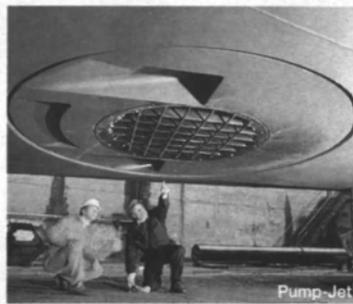
carry a maximum of 600 passengers. The vessel is powered by a pair of Detroit Diesel engines through Twin-Disc gears. *Liberty Belle III* will be fitted with a 150-hp Schottel bowthruster and electrically powered by a DC motor and controls furnished by Propulsion Systems, Inc. Financing and contracting for the vessel were arranged by Pinnacle Marine.

For more information on Dejong & Lebet
Circle 73 on Reader Service Card

Producing Thrust



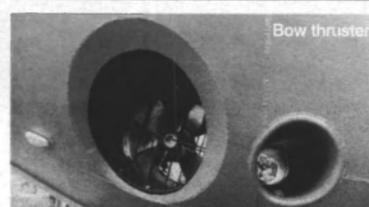
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Industry Groups Donate Navigation Database

The Center for Maritime Education and Electronic Marine Systems (EMES) have joined forces to provide an advanced inland river navigation database for high precision navigation training at the Seaman's Church Institute's new river training facility in Paducah, Ky. EMES will provide the river database information which will be used by the school in the development of inland river simulations.

Singmarine Clinches \$28M Contract

Singmarine Industries Ltd. (Singmarine) to be renamed Keppel Marine Industries, Ltd., has clinched a contract worth \$28 million, through its subsidiary Singmarine Dockyard and Engineering PT Freeport Indonesia has contracted for the construction of a self-unloading coal/oil barge and two pusher tugs. The vessels will be classed by ABS.

For more information on Singmarine
Circle 129 on Reader Service Card

Detegasa To Supply Inert Gas System For Texaco

Spanish company Detegasa, which produces the Delta line of products, has contracted to supply an inert gas systems for FPSO *Texaco Captain*. The order includes supply of a complete module for deck installation comprising: an inert gas generator, blowers and controls; as well as valves, piping, wiring, communications, fire detectors, fire dampers, lighting, ventilation, and access door and hatches. Detegasa has a quality system in accordance with ISO 9001 and has been certified by BV.

For more information on Detegasa
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Circle 236 on Reader Service Card

Maritime Reporter/Engineering News

Tank Operators Combine Forces To Form New Venture

ISO tank operator NewPort Tank Containers, Inc. and Nedlloyd Road Cargo will be combining forces with Hay Pollock Intl. and European operator NWM. The new cooperation will operate under a single trade name, NewPort Tank Containers and will focus on deep sea routes between Europe and North America with a combined fleet of 2,400 tanks.

Perma Ballast Operating Under New Company

Minerals Research & Recovery, Inc. has divided into two companies. Since the beginning of the year, its fixed ballast materials and installation division, Perma Ballast, has operated as Universal Minerals, Inc. There has been no change in ownership or management and Universal Minerals has assumed all existing contracts. Recently, the company received contracts to provide fixed ballast requirements for the shipbuilding industry as well as for the offshore industry in the Gulf of Mexico.

Halter Delivers Tugs

The first two of a series of up to six 95-ft. (29 m), 4,400 hp multi-role reverse tractor tugs, *Z-One*

and *Z-Two*, built by Halter Marine Inc., Lockport, La., of the Halter Marine Group Inc. have been delivered to Tugs International L.L.C., Cleveland, Ohio, and are working under charter to Hvide Marine, Inc., Fort Lauderdale, Fla., out of Mobile, Ala.

For more information on Halter Marine
Circle 100 on Reader Service Card

Blessey Adds Towboat

Blessey Marine Services recently christened its 17th vessel, *M/V Bill McNeal*. The boat was delivered from Verret Shipyard. The vessel features a segregated pumping system for discharge of waste oil to an approved waste oil reception facility.

Read full technical details on the newest Blessey tug in next month's edition of MR/EN.

Marco Delivers OSRV To Clean Bay

Marco Pollution Control has delivered Coastal 48 Class oil spill recovery vessel (OSRV) *Sentinel* vessel to Clean Bay Inc. of San Francisco, Calif., a non-profit cooperative of oil refineries and transportation companies aimed at providing effective regional control of oil spills. *Sentinel* has an overall length of 49.6 ft. (15 m), with a beam over guards of 15 ft. (4.6 m) and a molded depth of 4.7 ft. (1.4

m). *Sentinel* is powered by a pair of 280-hp Caterpillar 3116TA marine diesels driving 27-ft. (8.3 m) Kruger propellers through Twin Disc marine gearboxes. Auxiliary power is provided by two Alaska Diesel generator sets, with power distributed through a switchboard and electrical system by Harris Electric. Pilothouse electronics include a Standard

VHF radio, Furuno radar and depth sounder, and a Garmin GPS. In addition to the Marco filterbelt oil and debris recovery system, deck gear on *Sentinel* includes a Hiab hydraulic knuckle-boom crane fitted with a Pullmaster winch providing 330 degree rotation, a reach of 14.1 ft. (4.3 m).

For more information on Marco
Circle 95 on Reader Service Card

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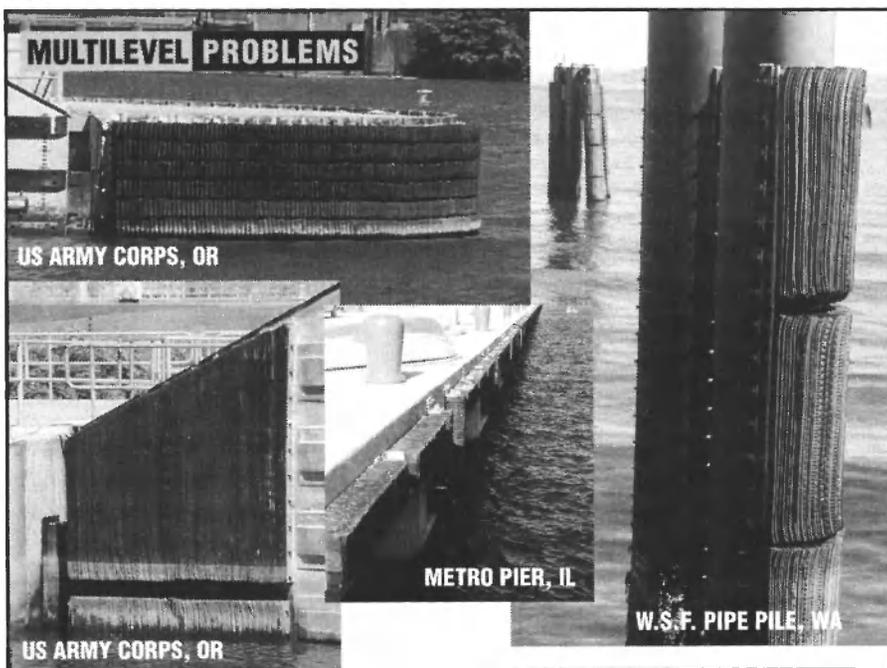
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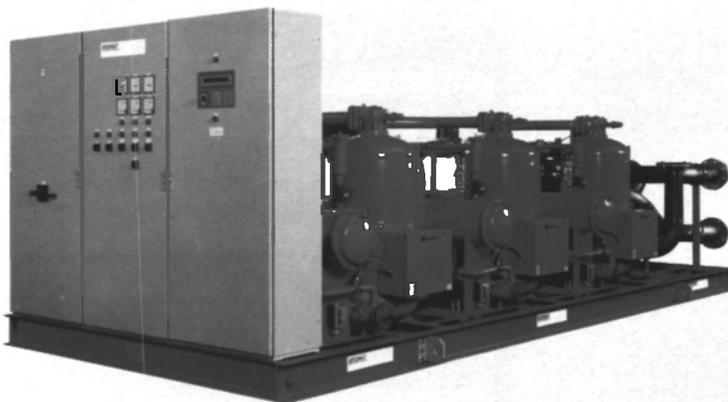
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COMPANY FOCUS: ULSTEIN

UT700s play dominant role in offshore sector

Ulstein's UT700 designs, drawing on 20 years' experience, continue to set the pace in the offshore support vessel sector, and are backed by a range of equipment supplied by Ulstein Group companies.

The mainstay of the Ulstein Group's shipbuilding division, Ulstein Verft, remains securely in offshore tonnage, and a healthy orderbook emphasizes the company's presence in this market sector. More than 250 vessels of UT700 designs have now been built by Ulstein or under license at other shipyards around the world, and of the 275 vessels delivered by Ulstein, 100 have been for offshore duties.

Recent successes include *Northern Gambler*, a UT745 support vessel, delivered to local Norwegian operator Sovik Supply in July 1996.

A UT723 survey vessel for the Korean Institute of Geology, Mining and Materials (KIGAM) was due for delivery at the end of 1996. This tailor-made vessel design was based on Ulstein's experience in designing and building a series of six seismic vessels for Western Atlas between 1991 and 1995 (designated UT743, UT743 II, and UT747 designs).

The Korean vessel was scheduled to be followed by a UT736 cable-layer for Care Offshore in early January. Ulstein's most recent contract is for three UT720-design AHTS vessels for Swire Pacific Offshore of Singapore. Deliveries are scheduled for April, June and October of next year.

Further refinement of both the UT745 and UT746 designs is found in UT750, the first of which, *Far Supporter*, was delivered to Farstad Shipping by Ulstein in March. This is Farstad's first UT700 vessel built by Ulstein or licensees, and continues the two companies' long association which spans more than 20 years, dating back to 1975 when Farstad was the first company to contract the UT704 design at Ulstein. Farstad's fleet already includes a UT745, *Far Service*, delivered by Soviknes last year. In early September 1996, Farstad also ordered another vessel of UT722 design from Langsten Slip.

An Ulstein UT722 design package has been chosen for an AHTS vessel to be built by Aukra Industrier for Simon Mokster Shipping of Stavanger, scheduled for delivery this April. This is the third example of the design to be built; Ulstein Verft having delivered two UT722 vessels to Farstad in 1993.

For more information from Ulstein
Circle 47 on Reader Service Card

Aker Marine Acquires Lazer Shares

Aker Marine, Inc., the marine contracting arm of U.S. based Aker Maritime, Inc., recently announced the complete acquisition of 80 percent of the shares of Louisiana based mooring service company Lazer, Inc.

For more information on Aker
Circle 125 on Reader Service Card

Caterpillar Engine Monitoring Expanded

Engine monitoring is now available for Caterpillar 3500B series engines utilizing the ECM/CCM communications protocol. This has been accomplished by use of a standard Servowatch gateway product with custom communications software. (The initial product supports a single engine and occupies 96 channels. Caterpillar is planning to introduce the capability to monitor eight main engines and three generators via one CCM module which should be available in 1997.

For more information on Servowatch
Circle 124 on Reader Service Card

Unitor Announces 1996 Results

The Unitor Group's 1996 turnover totaled NOK 2.69 billion, compared with NOK 2.846 billion in 1995.

Operating results before allocations and depreciation totaled NOK 131 million, compared with NOK 141 million in 1995. Costs

were allocated for expenses associated with restructuring and staff reductions, the sale of non-core business activities, the discontinuation of projects related to HVAC for cruise ships, and the discontinuation and sale of industrial activities.

For more information on Unitor
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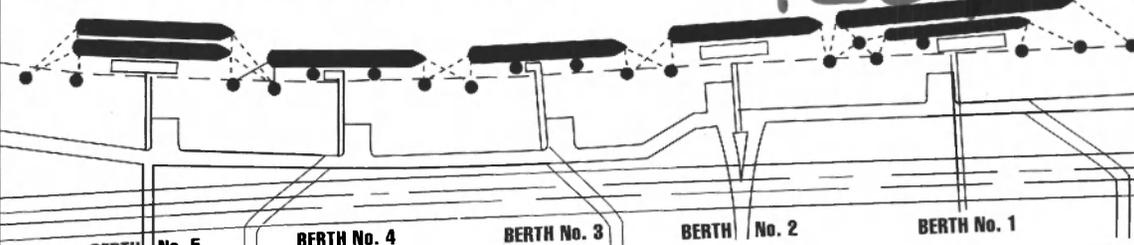


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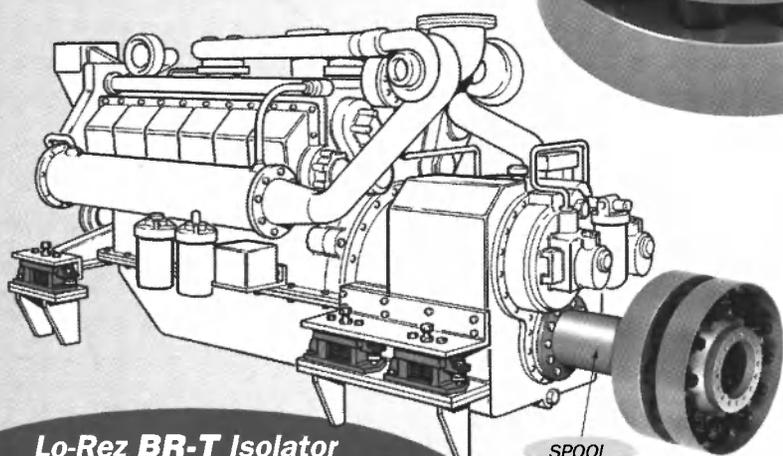
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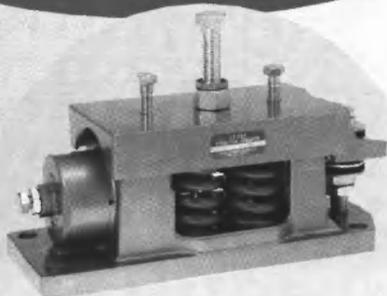
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Jurong To Construct Tanker To Pelmatic Design

Pelmatic Group will design an 11,500-dwt chemical and product tanker for Jurong Shipyard in Singapore according to a contract with Sweden's Rederi AB Veritas Tanker. The design was developed

by Pelmatic Goteborg AB and the basic design and detail work will be split between this company and Pelmatic NEG Pte. Ltd. in Singapore. "The deal is a result from almost one and a half years of negotiations with shipyards" said Ulf Lindhe, marketing manager.

For more information on the Pelmatic
Circle 128 on Reader Service Card

OSI Reports Record Year

Offshore Systems International (OSI) announced that November 30, 1996 marked the end of the most successful year in its history. The fourth quarter with sales of \$2.3 million, is the highest level of quarterly sales ever recorded and contributed to a record breaking

year. The company saw revenues increase 78 percent (\$3.6 million) from the previous year. Over the year, the OSI has more than doubled the installed base of systems. Significant revenue was also generated through the sale of electronic charts.

For more information on OSI
Circle 132 on Reader Service Card

Statoil Orders Three Ships

Statoil reportedly has ordered three new shuttle tankers from Astilleros Espanoles SA. The 125,000-dwt vessels will have the capacity to carry 850,000 barrels of oil. Two of the tankers are reportedly due for delivery in the fall of 1998, with the third in 1999.

For more information
Circle 133 on Reader Service Card

Computervision's Innovative Product Attracts High Profile Contracts

Demonstrating that Electronic Product Definition (EPD) is a cross-industry product development trend, Computervision Corp. announced important fourth quarter 1996 contracts totaling more than \$20 million in software and services revenues with a number of high-profile international companies. EPD makes it possible to concurrently create, manage, share and reuse electronic product information in a collaborative environment throughout a product's life cycle and across a distributed value chain. Raytheon, Halliburton and Lockheed Martin are among the companies which have recently contracted for EPD.

For more information on Computervision
Circle 127 on Reader Service Card

MTS Forms New Committee

Formation of a Dynamic Positioning Committee was approved by The Marine Technology Society at its recent national meeting. The purpose of the new committee is to provide a dedicated forum for exchange of information, discussion of technology, training and education, improvement of reliability, and other issues pertinent to dynamic positioning. The new committee is planning a seminar in Houston for mid to late 1997. Anyone wishing further information or society members who wish to join the committee should call MTS headquarters at tel (202) 775-5966.

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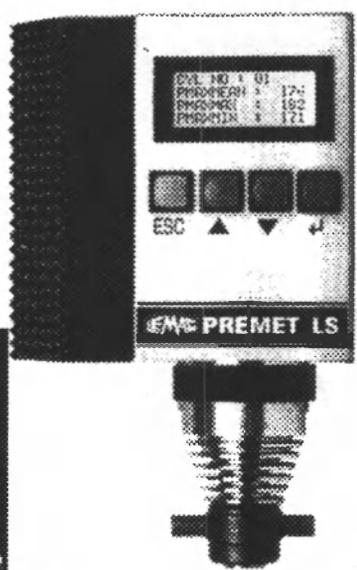
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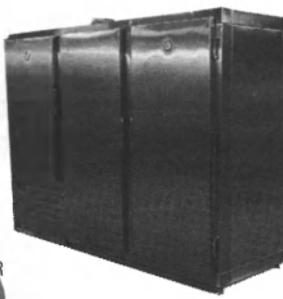
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Bollinger To Buy McDermott Shipyard

McDermott International, Inc. announced that its McDermott Shipbuilding, Inc. subsidiary has reached an agreement to sell its shipyard near Amelia, La. to Bollinger Shipyards, Inc. of Lockport, Louisiana.

The sale will include the assets of the shipyard including its current backlog of work.

The companies expect to complete the transaction by the end of February. The price has not been disclosed.

"It's a strategic move for our future," said Donald "Boysie" Bollinger. "It's a new line of business for us, as we were not in the multiple barge building business."

The sale does not include the

marine construction fabrication yard operated by McDermott's J. Ray McDermott subsidiary, also located near Amelia.

Bollinger reportedly intends to continue to operate the yard, which primarily manufactures

fuel, hopper and cargo barges. Bollinger will assume McDermott's work in progress, including a three-year contract to build a series of river hopper barges.

Bollinger Shipyards, Inc. owns and operates 20 drydocks in six

shipyards in the New Orleans and southern Louisiana area. Bollinger also provides new construction equipment for energy, military and general marine interests, both for domestic and international customers.



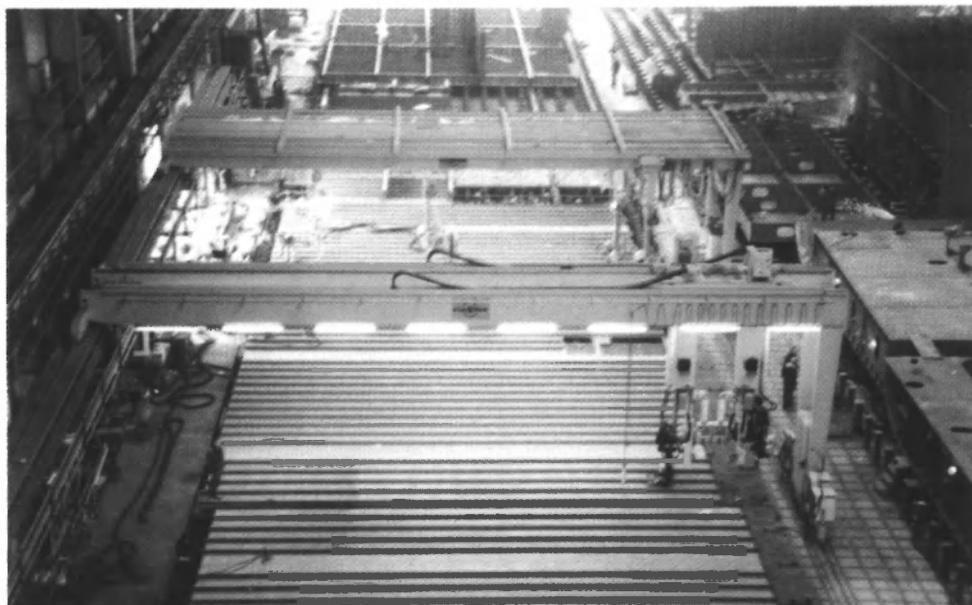
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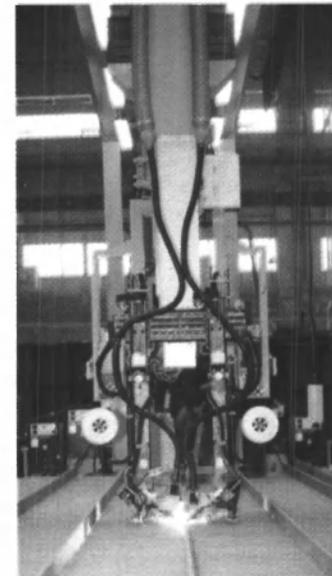
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Circle 354 on Reader Service Card

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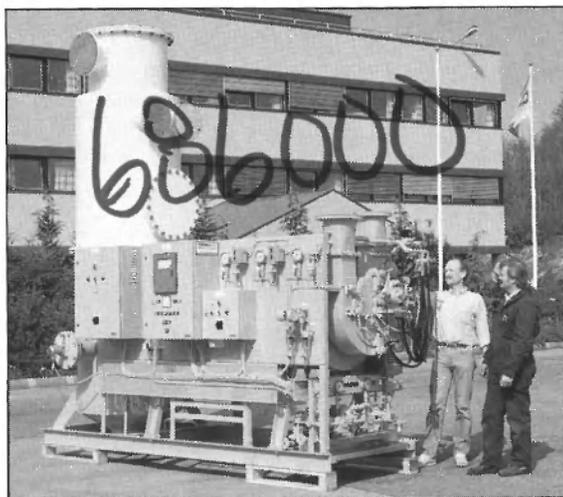
Bainbridge International has focused on supplying high standard, high strength flame retardant temporary protection systems to the international maritime market. Cover Guard, one of its products, has and is being used by major shipyards, naval facilities, cruise lines, ferry operators, ship management and outfitters worldwide to offer maximum protection. The product is available in a range of thicknesses and widths, to suit walkways, public areas, stairwells, weatherdecks, furnishings, electrical equipment, machinery spaces, gally areas, control rooms and the bridge. The Cover Guard offers maximum protection from foot traffic, worker activity, dirt and debris, spillages and paint overspray situations.

The company also touts the products ease of installation and removal as a significant contributor to cost savings.

In its continuing effort to serve the market's needs, Bainbridge is planning two major product launches in 1997: one range aimed specifically at the extremely harsh and long-term protection; the other range targeting lightweight, short-term protection for high volume users.

For more information on Bainbridge
Circle 123 on Reader Service Card

Proven Gas Generation Systems



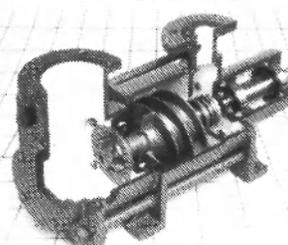
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Hovermarine Appoints Joint Administrative Receivers

Peter Buckle and **Edward Klempka** of Coopers & Lybrand have been appointed joint administrative receivers over hovercraft manufacturer Hovermarine International Ltd. The company is reportedly continuing to trade

while the receivers seek a buyer for the business on a "going concern" basis. In its prime the company employed more than 60 at its factory premises in Southampton, U.K., but reductions in light of falling demand resulted in a workforce on only 10 people at the date of receivership. Hovermarine has been involved in the design and manufacture of hovercraft, rigid

side wall craft and fast ferries for more than 30 years and has reportedly sold more than one hundred of these vessels in more than 30 countries around the world.

Mobil Supports Research

Mobil Corp. announced a \$10,000 grant to Bowdoin College of Brunswick, Maine, for the purpose

of assisting the college's marine research laboratory in applying aerial photography and satellite images to determine the impact of various oil spill clean-up techniques.

AMT Hires Sales Manager

Advanced Marine Technology (AMT), a manufacturer of computer-based marine electronics, announced that **Scott Williams**, former national Sales manager of Sea Technology Co., has joined the company in the same capacity. He will be responsible for international and domestic sales growth, and will introduce new products to new and existing markets as the company diversifies its product line throughout the year. AMT designs and manufactures ZDCIS and ECS in order to meet the navigational needs of the maritime community.

Oceaneering Announces Appointments

Oceaneering International, Inc. announced the promotion of **Kevin McEvoy** to vice president of Integrated Services. He was formerly vice president of the company's Subsea Products Group. **Bruce Crager** has been named senior vice president of Oceaneering Production Systems (OPS).

He joined Oceaneering in 1988 to start up this division and has served as its vice president and general manager for the past nine years. **Jim Dunbar** has been appointed to vice president of Subsea Products, with responsibility for Oceaneering Multiflex divisions and Oceaneering Intervention Engineering.

MMS, Litton Sperry Sign Alliance

Marine Management Systems Inc. (MMS) and Litton-Sperry Marine have formed a strategic alliance that call for the companies to integrate the MMS Fleet Management System with the Sperry Vision 2100 Integrated Bridge and other Sperry Marine systems.

For more information on MMS
Circle 116 on Reader Service Card

For more information on Sperry Marine
Circle 117 on Reader Service Card

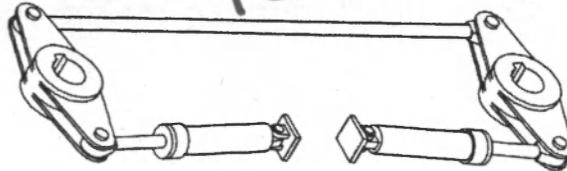
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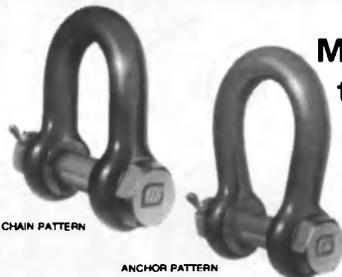
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This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers 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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Ervin Industries, Inc., 3893 Research Park Drive, Ann Arbor, MI 48106-1668

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Predict/DLI, 253 Winslow Way West, Bainbridge Island, WA 98110
BBN Acoustic Technologies, 70 Faucett St., Cambridge, MA 02138

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Adrick Marine, 141D Central Ave., Farmingdale, NY 11735
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Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024

Orkot Engineering Plastics, 2535 Prairie Rd., Eugene, OR 97402
Railko Ltd., Loudwater, High Wycombe, Bucks Hamshire ENGLAND HP1090VQ

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IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06061

MMC International, 60 Inip Dr, Inwood NY 11696
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

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Offshore Marine Laboratories, 22994 El Toro Rd., Lake Forest, CA 92630

Lifebeam Watersystems, Inc., P.O. Box 634, Huntington Beach, CA 92647

Matrix Desalination, 3295 S.W. 11th Ave., Fort Lauderdale, FL 33315

DIESEL ACCESSORIES

General Thermodynamics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02360

Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101

DIESEL ENGINE ANALYZER

FCS, Inc., 22 Main Street, Centerbrook, CT 06409

DIESEL ENGINE — Spare Parts & Repair

Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107
Brigantine Services Ltd, 48 Wang Lok St., Yuen Long Industrial Estate, New Territories, HONG KONG

Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610

Cummins Engine Co., 4500 Leeds Ave., Ste. 301, Charleston, SC 29405-8521

Cummins Mid-South, Inc., 110 E. Airline Highway, Kenner, LA 70062

John Deere, John Deere Rd., Moline, IL 61265
DMI Norshippo Co., P.O. Box 2100, Norfolk, VA 23501-2100

GE Transportation Systems, 2901 East Lake Rd., Erie, PA 16531-0001

GEC ALSTHOM Diesels Inc., 10801 Kempwood Drive, Suite 1, Houston, TX 77043-1412

Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231
GTC Chemical Services, Inc., 8920 Lawndale Suite A, Houston, TX 77012

In-Place Machining Co. Inc. 1929 North Buffum Street, Milwaukee, WI 53212-3793

Kiene Diesel, 325 S. Fairbanks, Addison, IL 60101
Klattenberg Marine, 17 Grandview Ave., W. Orange, NJ 07052

MAN B&W Diesel AG, Stadtbachstrasse 1, D-86153 Augsburg 1, GERMANY

MAN B&W Diesel A/S, Tegholmsgade 41, DK-2450 Copenhagen SV, DENMARK

MAN B&W Diesel, 17 State St., New York, NY 10004
Motor-Service AB, Box 2115, S-144 04 Ronninge, SWEDEN

Motor Service-Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315

Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND

Ulstein Bergen AS, PO Box 924, N5002 Bergen, NORWAY
Wartsila Diesel, 201 Defense Highway, Annapolis, MD 21401

Resolution Management, 11 Eves Drive Suite 140, Marlton, NJ 0 8053

DIVING & SALVAGE

Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178
H.J. Merrihue, P.O. Box 23123, New Orleans LA 70183

JW Fishers, 65 Anthony St., Berkley, MA 02779
Muldoon Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731

DOORS - MARINE & INDUSTRIAL

Branton Ind., 1101 Edwards Ave., Jefferson, LA 70181
Jamestown Metal Marine Sales, Inc., Corporate Plaza, Suite 400, 4710 Northwest Second Ave., Boca Raton, FL 33431

Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
Mapeco Walz & Krenzer, Inc., 90 Forest Ave., Locust Valley, NY 11560

DRIVE SHAFTS

FLEXIBLE COUPLINGS

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

FUEL CONSERVATION

Instruments Computer & Controls, Inc., 70 South Bow Rd., Hookset, NH 03106

FUEL DECONTAMINATION

Enviro Response Prod., P.O. Box 4011, Ft. Meyers, FL 33932

GALLEY EQUIPMENT

Cospolich Refrigerator Co., 949 Industry Rd., Kenner LA 70062
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Lang Manufacturing, P.O. Box 905, Redmond, WA 98073

GANGWAYS, LADDERS

Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

GEAR REPAIR

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

GENERATOR

Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107
Sasakura Engineering, 7-32, Takeshima 4-chome, Nishiyodogawa-ku, Osaka, JAPAN

HATCH COVER SEAL RENOVATION

Baywood Inc., 3841 Soundway, Bellingham, WA 982263

HEAT EXCHANGERS

Alfa-Laval Separation Inc., 955 Meams Rd., Warminster, PA 18974
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130

HOISTS

JD Neuhaus Corp., 2603 Rolling Rd., Gwynn Oak, MD 21207

HORNS/WHISTLES

Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

HOSES

Apollo International, 78 Degraw St., Brooklyn, NY 11231

HYDRAULICS

Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken, NJ 07030
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlsbad, NJ 07072

Engine Monitor, Inc., 179 Hickory Ave. Harahan, LA 70123
Hamilton Jet, P.O. Box 709, Christchurch, NEW ZEALAND
Ultra Hydraulics Limited, Cheltenham Road East, Gloucester, GL2 9QN, ENGLAND

INDUSTRIAL & MARINE CLEANING SERVICES

GTC Chemical Services, Inc., 8920 Lawndale Suite A, Houston, TX 77012

INERT GAS SYSTEMS

Hiller Systems, 3710 Lakeside Court, Mobile AL 36693

INFORMATION TECHNOLOGIES

Marine Management Systems, 102 Hamilton Ave., Stamford, CT 06902

INSTRUMENTATION

Instruments East, Inc., 1037 West 45th St., Norfolk, VA 23508

INSULATION

Blohm & Voss Light Insulation, Bartels & Laders GmbH, Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Nordereibstrasse 1S, 20457 Hamburg GERMANY
Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501

Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123

INTERIORS

Custom Ship Interiors, Inc., P.O. Box 237, Lusby, MD 20657
Hopeman Brothers, 435 Essex Ave., Waynesboro, VA 22980

Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031
TODCO, Inc., P.O. Box 1087, Marion, OH 43302

JOINER—Watertight Door—Paneling—Ceiling System—Decking
All Alpha Intl., Inc., P.O. Box 498985, Cincinnati, OH 45249

Branton Ind., 1101 Edwards Ave., Jefferson, LA 70181
CustomShip Interiors, Inc., P.O. Box 237, Lusby, MD 20657

Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123

Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Sidd Systems, Inc., 220 Carpenter St., Greenport, NY 11944
Walz & Krenzer, Inc., 90 Forest Ave. Locust Valley N.Y. 11560

KEEL COOLERS

R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

The Walter Machine Co., Inc., 84-98 Cambdige Avenue, Jersey City, NJ 07307

LIFEBOATS/RAFTS

American Eagle Mfg., Inc., 780 Pearle Jensen Way, LaConner, WA 98257
Dunlop Beaufort, 12351 Bridgeport Rd., Richmond, B.C. CANADA V6V1J4

Norsafe AS, P.O. Box 115, N-4818 Faervik, Norway
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

LIFESAIVING EQUIPMENT

MGI International, 119-225 West 1st St., North Vancouver, B.C. CANADA
Stearns Manufacturing, P.O. Box 1498, St. Cloud, MN 56302

LIGHTING SYSTEMS / EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247

Archway Marine, 4501 Swan Ave., St. Louis, MO 63110
Datrex Inc., P.O. Box 1150, Kinder, LA 70648

Golten Marine, 160 Van Brunt St., Brooklyn, NY 11231
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Pauluhn Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearland, TX 77581
Francis Searchlights/Stam Supply Co., 4415 6th N.W., Seattle, WA 98107

LIQUID LEVEL GAUGES

King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106

LIQUID LEVEL INDICATORS

Midland Mfg. Corp., 7733 Gross Point Rd., Skokie IL 60076-0226

LIQUID OVERFILL PROTECTION SYSTEMS

E.R.L. Marine Products, P.O.Box 1026, New Albany, IN 47151-1026

Metritape, Inc., 59 Porter Rd., Littleton, MA 01460

Midland Mfg. Corp., 7733 Gross Point Rd., Skokie IL 60076-0226

LOGISTICS

Newport News Shipbuilding, 12129 Jefferson Ave., Newport News, VA 23603

VL Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs, MS 39564

LUBRICANTS

Exxon Co. USA, 800 Bell St., Houston, TX 77002

Royal Lubricants, P.O. Box 518, East Hanover, NJ 07936

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

Del Gavio, 619 Industrial Rd., Carlsbad, NJ 07072
Golten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231

Maritime Power 200 Henderson St., Jersey City, NJ 07302
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

Wallace Coast Machining, 1920 Waukegan Rd., Glenview, IL 60025

MARINE ACCOMMODATIONS

Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980

Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave., Boca Raton, FL 33431

Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE CEILING

Hydro-Aluminium, Vik Verk, N-5880 VIK I SOGN, Norway
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501

MARINE DECKING

E.H. Dineff Co., Inc., 1405 Chippendale Road, Lutherville, MD 21093

Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Selby, P.O. Box 1500, Sapulpa, OK 74067

MARINE DOCKING

Tribar Industries, 1705 Wint Rd., Downsview, Ontario CANADA

MARINE DRILLING/BLASTING

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

MARINE ELECTRONICS

Frank L. Beier Radio, 2001 Ridgeway Drive, Metairie, LA 70001
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Saab Marine Electronics AB, Box 13045, 40551 Goleborg, SWEDEN

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

MARINE ELEVATORS

McElroy Machine, 1101 Lorraine Rd., Biloxi, MI 39535-4454

MARINE EQUIPMENT

Bohnet & Associates, 1150 Rule Michelle, Sidell, VA 70458
McElroy Machine, P.O. Box 4454, Biloxi, MS 39535-4454

MARINE FINANCING

Sateco Credit Co. Inc., 4909 56th Ave. NE, Redmond, WA 98052

MARINE FIRE PROTECTION

Hiller Systems, 3710 Lakeside Court, Mobile, AL 36693
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813

MARINE FURNITURE

Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave. Boca Raton, FL 33431

Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

MARINE GEARS

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, MI 38701

MARINE INSURANCE

John G. Alden, 1300 SE 17th St., Fort Lauderdale, FL 33316

MARINE INTERIORS

Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431

Johnson Construction Specialties, Inc., 3420 Rusk P.O. Box 1360 Houston, Texas 77251

Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031

MARINE PUMPS

Gilkes Inc., P.O. Box 628, Seabrook, TX 77586

MARINE SURPLUS SALES

Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114

MARITIME ARTWORK

Sarba Art Studio, 6 Ridge Drive, Old Saybrook, CT 06475

MOTOR PROTECTION EQUIPMENT

Marine Sale Electronics, 37 Stalfen Dr., Concord, Ontario L4K

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202

Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235
Donald L. Blount, 2550 Ellsmere Ave., Ste. K, Norfolk, VA 23513

C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609
CDI Marine Co., 4040 Woodcock Dr., Suite 200, Jacksonville, FL 32207

Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., P.O. Box 505804, Chelsea, MA 02150

Crane Consultants, 15301 First Ave S., Seattle WA 98148
C.R. Cushing, 18 Vesey St., New York, NY 10007

CT Marine, 56 Crooked Trail, Rowayton, CT 06853
Cunningham & Walker, 1762 Providence Hollow Lane, Jacksonville, FL 32223

Arthur D. Darden, 3200 Ridgeway Dr., Suite 407, Metairie LA 70002

DeJong & Lebet, Inc., 1734 Emerson Street, Jacksonville, FL 32207

Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129

Designers & Planners, 2120 Washington Blvd. Ste.200, Arlington, VA 22204

Elliott Bay Design Group 5301 Shilshole Ave. N.W. Ste. 200, Seattle, WA 98107

Encon Mgmt. & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706

GHM Inc. (Ind. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601

Gibbs & Cox, Inc., 5 West 23rd St., New York, NY 10010
John W. Gilbert & Assoc., Inc., 199 State St., Boston, MA 02109

The Glosien Assoc., Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104

Guido Perla & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104
Morris Gummick Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104

C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110
Hydrocomp, Inc., 202 C Packets Court, Williamsburg, VA 23185

IMA 20 Ridgely Ave., Annapolis, MD 21401
JFI Inc., 3412 Progress Dr., Bensalem, PA 19020

A.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Kvaerner Masa Marine Inc., 201 Defense Highway, Suite 202, Annapolis, MD 21401

James S. Kroger, 799 Brickell Plaza Ste. 701, Miami, FL 33131
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225

MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

John J. McMullen Associates, Inc., 1 World Trade Ctr, Ste 3000, NY, NY 10048

Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401
Marine Design & Operations, Inc., 225 E. 1st Ave., Roselle, NJ 07203

Marine Management Systems Inc., 102 Hamilton Ave., Stamford, CT 06902

Marine Power Associates, 1010 Turquois St., Ste 217, San Diego, CA 92109

Maritech, Seaciff, Bay Road, Newmarket, NH 03857
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257

R.J. Mellusi & Co., 71 Hudson St, New York, NY 10013
Nautical Designs, Inc. 2101 S. Andrews Ave, Suite 202, Ft Lauderdale FL 33316

Ocean Motions Co., P.O. Box 130, 49 Shore Drive, Barrington, RI 02806-0130

Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777

M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulson St., Ste. 301, San Francisco, CA 94107

Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 975, Barnegat Light, NJ 08006; 2001 N. Beauregard Street, Alexandria, VA 22311; 50 Vashell Way, Orlando, CA 94563

George G. Sharp, Inc., 100 Church St., New York, NY 10007
R.A. Steam, Inc., 250 N. 1st Ave., Sturgeon Bay, WI 54235

A.K. Suda & Ass., 301 19th St., Metairie, LA 70002-4989
TIMSCO, P.O. Box 9150, Mobile AL 36691

NAVIGATION & COMMUNICATIONS EQUIPMENT

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
ICS Electronics Ltd., Unit V, Redford Industrial Estate, Ford, Arundel, West Sussex, UK

KVH Industries, Inc., 110 Enterprise Center, Middletown, RI 02842-5268

Mackay Communications, 300 Columbus Circle, Edison, NJ 08837
Negron Marine Consultants, 840 Bond Street, Elizabeth, NJ 07201

Offshore Systems Ltd., 107-930 West 1st St., North Vancouver, B.C. V7P 3N4 CANADA

Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboten, NORWAY

Sea, Inc., 7030 220th S.W., Mountlake Terrace, WA 98043
Simrad, 19210 33rd Avenue West, Lynnwood, WA 98036

Simrad Robertson, 10801 Hammerly, Suite 100, Houston, TX 77043-1923

Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009

Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086

Waterway Communications System, Inc. 453 E. Park Pl., Jeffersonville, IN 47130

NOISE CONTROL

Soundcoat, One Burl Drive, Deer Park, NY 11729

NOZZLE SYSTEM

Custom Nozzle Fabrication, P.O. Box 547, Pascagoula, MS 39568
Rice Propellers, Av Rios Espinoza #88, Mazatlan, MEXICO 82180

OIL—Marine—Additives—TESTING

Mobil Oil Corporation, 3225 Gallows Road, Fairfax,

Omnitruster, Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND
Philadelphia Gear 181 South Gulf Rd., King of Prussia, PA 19406
Rolla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828 Balerna SWITZERLAND
S & S Propeller Co., 27-18 College Point Blvd., Flushing, NY 11354

Karl Senner Inc., 25 W Third, Kenner LA 70062
Schottel-Werft, Manizer Strasse 99, D-56322 Spay/Rhein, GERMANY
Schottel North America, Inc., 1505 Corbin Ave., Hammond, LA 70403
Siemens Electric Ltd., 1180 Courtnepark Rd., Mississauga, ONTARIO
Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey LA 70059-0008
Thrustmaster of Texas, P.O. Box 840189-12227 IFM 529, Houston, TX 77284-0189
Uistein Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY
GERMANY U.S. Rep: Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021
Ultra Hydraulics Limited, Cheltenham Road East, Gloucester, GL2 9QN, ENGLAND

PUMP—Repair—Drives

Ampco Pumps, 4000 West Burnham St., Milwaukee, WI 53215
Gilkes, Inc., PO Box 628, Seabrook, TX 77586
Hamworthy Marine, Inc., 1129 Hospital Dr. Ste 3C, Stockbridge, GA 30281
Jerry B. Leach Co., Box 71, 647 State Rd., Cheraw, SC 29520
Vita Motivator, 566 Parker St., Newark, NJ 07104

RADARS—ARPAS

Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017

REFRIGERATION EQUIPMENT/SERVICES

Adrick Marine, 141D, Central Ave., Farmingdale, NY 11735
Ashland Chemical Co., Drew Marine Co., One Drew Plaza, Boonton, NJ 07005
RTF Mfg., RD #1 Route 66, Hudson, NY 12534
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813

REMOTE VALVE OPERATORS

American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906
Elliott Manufacturing, P.O. Box 773, Binghamton, NY 13902

RIGID INFLATABLE BOATS

American Eagle, 780 E. Pearle Jensen Way, LaConner, WA 98257
Willard Marine, Inc. 1250 N. Grove St., Anaheim, CA 92806
Zodiac of N. America Thompson Creek, P.O. Box 400, Stevesville, MD 21666

ROPE—Manila—Nylon—Hawsers—Fibers

Allied Signal Inc., Fibers Division, 101 Columbia Rd, Morristown, NJ 07962
American Mfg. Co., 200 Southpark Rd., Lafayette, LA 70508-3609
Bayer AG, D-41538, Dormagen, GERMANY
Puget Sound Rope, 1012 Second St., Anacortes, WA 98221

RUDDER BUSHES

Vesco Plastics, P.O. Box 40647, Cleveland 2022, South Africa

SAFETY LIGHTING

Datex, Inc., P.O. Box 1150, Kinder, LA 70648-1150

SALVAGE/SPILL RESPONSE

Donjon Marine, 1250 Liberty Ave., Hillside, NJ 07205

SANITATION DEVICE—Pollution Control

Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130
Elitech International Corp., 1110 Industrial Blvd., Sugarland, TX 77478
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
ITT Jabsco, 1485 Dale Way, Costa Mesa, CA 92626
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Jered Brown Brothers, Inc., 1608 Newcastle St., Brunswick, GA 31521-0904
Research Products Blankenship, 2639 Andon Dallas, TX 75220

SATELLITE COMMUNICATIONS

American Mobile Satellite Corp., 10802 Parkridge Blvd., Reston, VA 22091
Boatrac, Inc., 6440 Lusk Blvd. #D-201, San Diego, CA 92121-2758
IDB Mobile Comm., 6903 Rockledge Dr., Ste. 500, West Bethesda, MD 20817
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27604-1851
Maritime Cellular Network, 560 Village Blvd., W. Palm Beach, FL 33409
Norwegian Telecom, Postboks 6701 St. Olavs Plass, N-0100, Oslo, Norway
PTT Telecom, Station 12, P.O. Box 30150-2500 JD The Hague, NETHERLANDS
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017
Scientific Atlanta, Inc., 1650 International Court, Norcross, GA 30093
Singapore Telecom, 15 Hill Street, Telephone House, 2nd Storey, Singapore 0617
Telstra Mobile Satellite & Radio Services, 79 St. Hilliers Rd., Auburn NSW 2144, AUSTRALIA
Westinghouse Wireless Solutions Co., 930 International Dr., Linthicum, MD 21099

SCALE MODELS

Markitect, PO Box 225, Oconomowoc, WI 53066
Scale Reproductions, 16346 County Road 13, Fairhope, AL 36532
Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay WI 54235

SEALS

Blohm & Voss Industrie GmbH, P.O. Box 10 07 20, D-20457 Hamburg, GERMANY
U.S.A. Reps: Simplex-Turmar Inc, P.O. Box 168, Little Neck, NY 11363-0168
Kobelco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19, Yaesu 1-Chome, Chuo-ku, Tokyo, 105 JAPAN
U.S.A. Rep. Roland Marine Inc., 90 Broad Street, New York, NY 10004
John Crane Marine, 1536 Barclay Blvd., Buffalo Grove, IL 60089

SEALANTS

Boatlife, Inc., Div. of Life Ind., 205 Sweet Hollow Rd., Old Bethpage, NY 11804

SEATING

H.O. Bostrom Co., 818 Progress Ave., Waukesha, WI 53186
Stidd Systems, Inc., 220 Carpenter St., Greenport, NY 11944
Turnbull, Inc., 3818 134th St. NE, Marysville, WA 98271

SHIP CERTIFICATION

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

SHIP/EQUIPMENT

Jered Brown Brothers Inc., 1608 Newcastle St., Brunswick, GA 31521-0904
Metric Systems Corp., 645 Anchors St., Ft. Walton Beach, FL 32548

SHIP LIFTS

Synchrolift Inc., Two Datan Center, 9130 S. Dadeland Blvd., Miami, FL 33156-7850

SHIP REPAIR

Curacao Drydock Co., P.O. Box 3012, Curacao, Netherlands Antilles
Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231

SHIP VALUATION

Capt. E.S. Geary, P.O. Box 1246, Fajardo, Puerto Rico 00738

SHIPBOARD FURNITURE / SWITCHING SYSTEMS

Engineered Data Products P.O. Box 565, Woodbury, N.J. 08096
Metric System Corp., 645 Anchors St., Ft. Walton Beach, FL 32548

SHIPBUILDING—Repairs, Maintenance, Drydocking

American Eagle Mfg., 780 Pearle Jensen Way, La Conner WA 98257
Amfels, Inc., P.O. Box 3107, Brownsville, TX 78523
Astilleros Espanoles S.A. Ochandiano, 14-16 28023 El Plantio SPAIN

Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652
Atlantic Marine, Inc., 8500 Weckscher Dr., Jacksonville, FL 32226
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250

Cardoc, P.O. Box 1147 Port Of Spain, Trinidad, W.I.
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmo, SWEDEN
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381

Fincantieri SpA Cantieri Navali Italiani, Via Cipro 11, 16129 Genoa ITALY
Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231
Gulf Coast Fabrication, Inc., P.O. Box 539, Lakeshore, MS 39558

HDW, Kiel, Germany, USA Rep., Roland Marine Inc., 90 Broad St., NY, NY 10004
Halter Marine Group, Inc., 13085 Industrial Seaway Rd, Gulfport, MS 39503
Hitachi Zosen, Hitachi Shipbuilding & Engineering Co., 1-1-1 Hitotsubashi

Chiyoda-Ku Tokyo 100 Japan
Intermarine (USA), Inc., 301 N. Lathrop Ave., Savanah, GA 31402
In-Place Machining Co., Inc. 929 North Buffalo Street, Milwaukee, WI 53212-3793
Jacksonville, Shipyards, 750 E.-Bay St., Jacksonville, FL 32202

Jeffboat, Inc., P.O. Box 610, Jeffersville IN 47130
Kvaerner Masa-Yards Oy, Box 12, SF-00151, Helsinki, FINLAND
Leevac Shipyards, P.O. Box 1150, HWY 90 East, Jennings, LA 70546

Lindenaу GmbH, Skagakeruler 10, Postfach 9093 D-2300 Kiel, Friedrichsort GERMANY
McDermott Shipbuilding, Inc., 160 James Dr. East, St. Rose, LA 70087
Motor-Service AB, Box 2115, 144 04 Ronninge, SWEDEN
Munson Hammerhead, 780 Pearle Jensen Way, La Conner WA 98257

Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Peterson Builders, Inc., 101 Pennsylvania Ave., Sturgeon Bay, WI 54235-0650
Thomas Marine, 37 Bransford Street, Patchogue, NY 11772
Samsung Heavy Ind., 25, 1-ka, Bongrae-dong, Chung-ku, Seoul, Korea

SeaArk, P.O. Box 210, Monticello AR 71655
SeaFab, P.O. Box 1651, 4111 Cedar St. Pascagoula, MS 39567
Service Marine Industries, P.O. Box 3606, Morgan City LA 70381
Skipperliner Shipyards, 621 Park Plaza Dr, Dept 21, LaCrosse WI 54601

Steiner Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509
Swath Ocean, 979 G Street, Chula Vista, CA 92011
Westport Shipyard, P.O. Box 308, Westport, WA 98595
Willard Marine, inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevesville, MD21666

SHIPYARD / CABLES

Americable, 350 Bailey Road, El Dorado, AR
American Shipyard Corp., One Washington St., Newport, R.I. 02840-0943
Norshipco, P.O. Box 2100, Norfolk, VA 23501
T.A.S.T. Corp. PO Box 10392, Fairfield, NJ 07004

SILENCERS

Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
Nelson Division, Exhaust & Filtration Systems, Hwy. 51 West, P.O. Box 428, Stoughton, WI 53589

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Wooster Products, Inc., 1000 Spruce Street, P.O. Box 896, Wooster, OH 44691-6005

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Jastram Engineering, 485 Mountain Hwy N., North Vancouver, B.C. CANADA V7J 2L3

STERN TUBE BEARINGS

Blohm & Voss, Industrie Gmb H, P.O.B 100720, D-20457, Hamburg GERMANY
Kobelco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19 Yaesu 1-Chome, Chuo-ku, Tokyo 103, JAPAN
U.S.A. Rep: Roland Marine Inc., 90 Broad Street, New York, NY 10004
Raikoo Ltd., Loudwater, High Wycombe, Bucks Hamshire ENGLAND HP109QV

STERN TUBE BUSHES

Blohm & Voss, Industrie Gmb H, P.O.B 100720, D-20457, Hamburg GERMANY
Kobelco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19 Yaesu 1-Chome, Chuo-ku, Tokyo 103, JAPAN
U.S.A. Rep: Roland Marine Inc., 90 Broad Street, New York, NY 10004
Raikoo Ltd., Loudwater, High Wycombe, Bucks Hamshire ENGLAND HP109QV
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South Africa

STERN TUBE SEALS

Blohm & Voss Industrie GmbH, P.O. Box 10 07 20, D-20457 Hamburg, GERMANY
U.S.A. Reps: Simplex-Turmar Inc, P.O. Box 168, Little Neck, NY 11363-0168
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MMC International, 60 Irip Dr, Inwood NY 11096
Saab Marine Electronics AB, P.O. Box 13045, S-402 51 Goleborg SWEDEN

Technical Marine Service, 6040 North Cutter Circle, Portland, OR 97217

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TESTING SERVICES

Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

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Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
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Cygnus Instruments, 1935 Moreland Parkway, Suite 202, Annapolis, MD 21401
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T.W. Spaetgens, 186 W. 8th Ave., Vancouver, BC, CANADA, V5Y 1N2

Vibranalysis Engineering Corp., 9300 Gamebird, Houston, TX 77034

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.

Jack Faulkner, 2419 Caddy Lane, Flossmoor IL 60424

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Marine Safety Int'l., Marine Terminal Laguardia Airport, NY 11371
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Stacey Fetterolf Corp., P.O. Box 103, Skippack, PA 19474
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Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637
Loeffler Corp., 201 E. Lineoln Hwy., Penndel, PA 19047-4097
MMC International, 60 Irip Dr, Inwood NY 11096
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226
Service Valve & Fitting, P.O. Box 9665, Mobile, AL 36609

VAPOR RECOVERY CONTROLS

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Novenco Hi-Press A/S, P.O. Box 310, Roskildevej 325A, DK-2630 Taastrup, DENMARK

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Vibranalysis Engineering Corp., 9300 Gamebird, Houston, TX 77034

VIDEOS

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WATER PURIFIERS

Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974

Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Lifestream Water Purification Equip., 16611 Gemini Lane, Huntington Beach, CA 92647
Offshore Marine Labs, 22994 El Toro Rd., Ste. 105, Lake Forest, CA 92630
Rochem Separation Systems 3904 Del Amo Blvd. Suite 801, Torrance, CA 90503

WEATHER INSTRUMENTS

Aanderaa Instruments, Fanaveien 13B, 5050 Nesttun, Bergen, Norway

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Bug-O-Systems, 3003 W. Carson St., Pittsburgh, PA 15204
Welding Consultants USA, 10399 Paradise Blvd. #101, St. Petersburg, FL 33706

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Ashland Chemical/Drew Ameroid Marine, One Drew Plaza, Boonton, NJ 07005
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813

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MMC International, 60 Irip Dr, Inwood NY 11096
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Blioxi MS 39535-4454

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
Smith Berger Marine Inc., 516 S. Chicago St., Seattle, WA 98108
Skookum, Inc., P.O. Box 280, Hubbard, OR 97032
T.C.W., 1607 Port Barmouth Pl., Newport Beach, CA 92660

WIND MONITORING SYSTEMS

Aanderaa Instruments, Fanaveub 13B, 5051 Bergen, NORWAY

WIRE AND CABLE

Anixter Inc., 2617 Edenbom Ave., Metairie, LA 70002

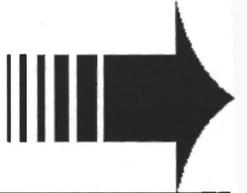
WORKBOATS

Ambar Marine Inc., 221 Rue de Jean, Lafayette, LA 70508

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Gladding-Hearn Delivers First Composite Catamaran

Gladding-Hearn Shipbuilding delivered two high-speed, passenger catamarans, which are the shipyard's first to combine kevlar and carbon fiber composite hulls with aluminum superstructures. The vessels were built for Water Transportation Alternatives. The vessel features: Detroit Diesel engines; Twin Disc gears; MJP waterjets; Alaska Diesel gensets; Raytheon radar, depth sounder and loud hailer; ICOM VHF; and a Ritchie compass.

For more information
Circle 122 on Reader Service Card

Raytheon Outfits Lifeboats

Raytheon Marine has equipped the first of up to 140 motor lifeboats for the U.S. Coast Guard with its state-of-the-art radar and electronics equipment. Built by Textron Marine & Land Systems of New Orleans, the vessels have a self-righting capability.

For more information on Raytheon
Circle 118 on Reader Service Card

Valmet Gearboxes Chosen

Valmet Power Transmission was tapped to design and manufacture the propulsion gear drive for Stolt-Nielsen's new chemical tanker, which is being built by the U.N.M.A. Shipyard. The tanker, one of three, is scheduled for delivery in August. The 5,400-cu-m chemical tanker has a diesel-electric power station machinery, and is equipped with Wartsila diesel engines and Valmet reduction gear.

For more information from Valmet
Circle 120 on Reader Service Card

Zodiac Introduces New Boat

Zodiac of North America has introduced the 380 Deluxe yacht tender. "With the 380 Deluxe, Zodiac can offer its customers a smaller boat with features that usually come with larger craft," said J.J. Marie, president of Zodiac.

The Zodiac 380 Deluxe features a white, fiberglass hull fitted with removable buoyancy tubes which slide on and off the hull reportedly eliminating the need for the vessel to be transported in case of repair.

The 380 Deluxe is designed to hold five passengers, and the vessel features molded-in seating and console, custom padded steering wheel, inboard fuel tank with 10.5-gallon capacity, and navigational lights

For more information on Zodiac
Circle 93 on Reader Service Card

OMI Seals Deals

OMI Corp. completed the sale of one of its U.S.-flagged product tankers and its last U.S.-flagged dry bulk carrier, and contracted to dispose of its only LPG carrier, the 1975-built *General*. The company also completed the wrap-up of its Wilomi, Inc. joint venture with affiliates of Anders Wilhelmsen & Co. of Oslo, Norway. The wrap-up results in two of the joint venture's Suezmax crude carriers being wholly-owned by OMI, and the joint venture's product carrier and a newly delivered vessel being wholly-owned by Wilhelmsen. OMI's fleet currently totals 32 vessels, aggregating approximately 2.7 million dwt.

M&K Wins Rebuilding Project

Mjellem & Karlsen (M&K) has won the contract for a major upscaling of seismic survey vessel *R/V Western Regent* — owned and operated by the Western Geophysical Division of Western Atlas International, Inc. The project will start this month and end in April. The ship's streamlining capabilities will be upgraded; the recording and gun source control rooms will be stripped down and rebuilt to install the latest and most advanced systems for high-volume seismic data acquisition; propulsion motor capacity will be augmented to increase the vessel's bollard pull; and the aft ship hangar will be outfitted with seismic equipment and piping.

For more information on M&K
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LEVELCOM 100 LIQUID-LEVEL COMPUTER WHY GAMBLE WITH MERCURY CONTAMINATION? WHY PUT UP WITH UNRELIABLE DATA?

The TMS LevelCom 100 Liquid Level Computer offers solutions...

Using the existing tank sense lines or analog input, the LevelCom 100 is a direct replacement for obsolete mercury tank level indicators.

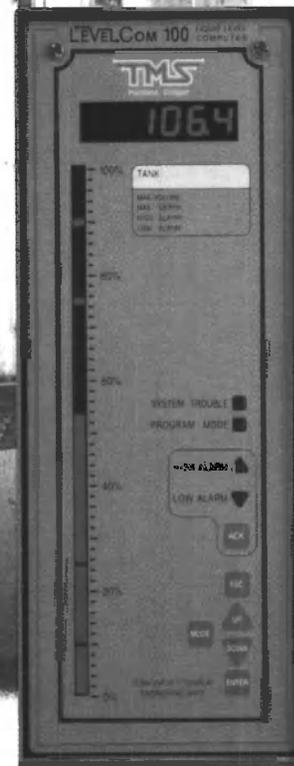
Designed to be reliable, flexible and simple to operate, the LevelCom 100 accurately tracks and displays depth, volume and weight in liquid storage tanks regardless of the contents or shape of the tank.

Fully programmable with alarm, control and communication functions, the LevelCom 100 is the new standard for tank level indicators.

For more information on the LevelCom 100 and other TMS products and services please contact us at the number below or visit us at <http://www.tms-usa.com>

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Voice: 503/285-8947
FAX: 503/285-1379
E-mail: info@tms-usa.com

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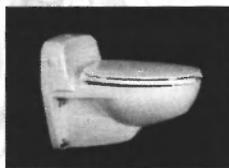
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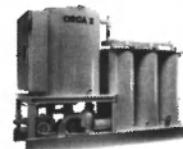
EVAC 90 Toilet



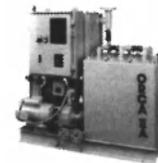
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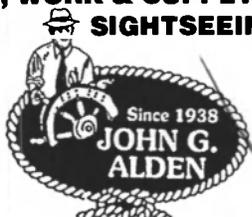
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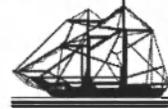
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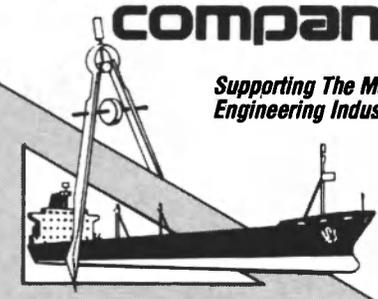
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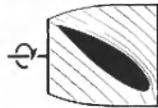


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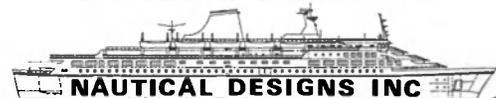
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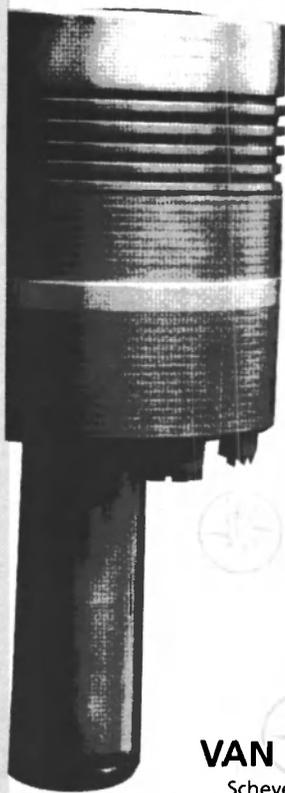
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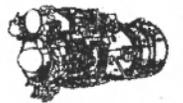
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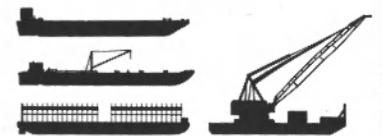


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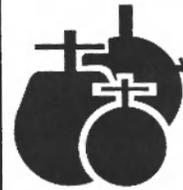
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Scorpion To Distribute Connector Products

Scorpion Oceanics Ltd. has announced its appointment as exclusive distributor for the U.K. and Ireland on behalf of Birns Inc. Connector Products of Oxnard, Calif. The agreement covers all Birns' product lines, including cables, ropes, terminations and mouldings as well as a high quality connector range.

HSBC Gibbs Expands Into Marine Reinsurance

International insurance broker HSBC Gibbs has completed the package of services offered by its Marine Division by establishing a presence in the marine reinsurance market. Michael Vandervord has been appointed divisional director in the Marine Division. He has more than 20 years of experience in marine reinsurance, and has been employed by Hogg Robinson and Steel Burrill Jones, Andrew Hinds, formerly of Alwen Hough Johnson, will also join the reinsurance team.

SARS Wins Two New Appointments

London-based Shipping Agency Representation Services Ltd. (SARS) has been appointed U.K. representative for two international shipping agency companies — South America's Ian Taylor Y Compania SA and Sullivan Shipping Agencies of Malta.

White Joins TT Club

Jim White, soon to retire as director general of the British International Freight Association (BIFA), will join the TT Club as a consultant. Having started his working career with British Rail, Mr. White joined Sea Containers in 1969 and then moved into freight forwarding with Transtec International Freight Services in 1974.

In 1986, he joined the U.K. Institute of Freight Forwarders, ascending to the position of general director, and in 1989 was instrumental in the creation of BIFA, an organization embracing more than 1,100 companies operating in international freight services.

The TT Club provides liability and equipment insurance to ship operators, stevedores, terminal and depot operators, port authorities and freight forwarders.

Madrigal-Wan Hai Announces New Vietnam Service

Madrigal-Wan Hai Lines, a leading carrier of rolling stock, industrial machinery and other breakbulk and project cargo between the U.S. West Coast and Asia, has announced a new service to Vietnam. Effective Dec. 10 with the sailing of

National Honor, breakbulk cargo will be accepted for the Port of Ho Chi Minh City. Cargo will be transhipped over Manila resulting in a transit of approximately 26 days. At this time, the line does not have plans to provide container service into Vietnam.

Samoa Joins IMO

The membership of the International Maritime Organization (IMO) — the United Agency concerned with shipping safety and the prevention of pollution from ships — has increased to 154. The Independent State of Western Samoa became the latest country to join when its instrument/ accepting the IMO Convention was deposited with the United Nations on Oct. 25.

Straub Marine Appoints Distributor

Marine Ventures Ltd., an ISO 9002 certified company based in Reading, England, has announced its appointment as the exclusive U.K. marine distributor for Straub pipe couplings.

The company has supplied IMO-approved, anti-pollution equipment to ship operators, shipbuilders and ship repairers for more than 22 years. Straub's couplings are reportedly designed with built-in dampening effect and a fitting tolerance that joins misaligned pipes securely.

Dutra Group Appoints Executives

Harry K. Stewart has recently been promoted to chief operating officer of The Dutra Group in San Rafael, Calif. A 14-year veteran of the firm, prior to this latest appointment he served as East Coast division manager based in Miami. **Richard Jackson** will fill the role of East Coast division manager.

Uniservice Hires Myers

As part of its worldwide expansion efforts, Uniservice Americas, Slidell, La., has hired **Bill Myers** as a senior account representative. He has 20 years of experience in the marine chemical industry, with expertise in water treatment technologies and ballast tank coatings. He will work directly with the company's worldwide coatings and inspection team, and will operate out of Slidell.

Naess Joins Automar Board

American Automar, Inc., Bethesda, Md., has announced the election of **Michael R. Naess** to its board of directors.

Mr. Naess joined the Automar board following the merger of Arethus (Offshore) Ltd., a public drilling company of which he was chairman, into Diamond Offshore Drilling, Inc., controlled by Loews Corp.

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