A black and white photograph of an offshore oil rig under construction. The rig is a complex structure of steel beams, ladders, and platforms, with several large cranes extending from its upper levels. The rig is set against a cloudy sky. The overall scene is industrial and technical.

**MARITIME
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APRIL 1997 EDITION

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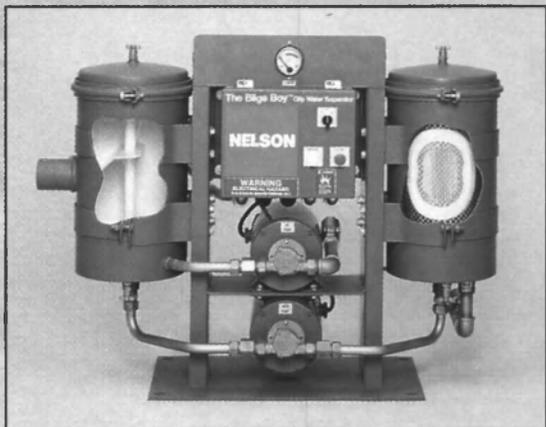
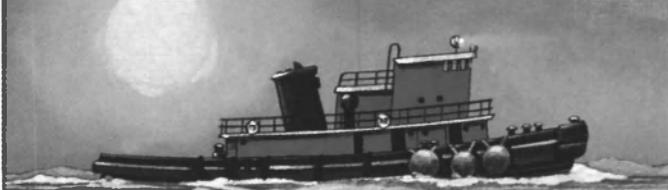
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On The Cover

Pictured on this month's cover is the Hibernia platform following the successful mating of its topsides in late February. The progress of the massive Hibernia project is covered in this month's Offshore Business section, starting on page 33.

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Repossession: When a loan goes bad, getting the ship back is a challenging task.

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The cruise industry's fantastic voyage upward shows no signs of slowing, according to the people who buy the ships.

— by Bridget Murphy, senior editor

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South Korea continues to win ship orders despite political problems and labor unrest...softening yen lends Japanese builders a boost.

— by Alan Thorpe, international editor

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The crucial mating of Hibernia's topsides with its concrete Gravity Base Structure was recently executed in Canada.

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Wartsila has unveiled a new engine with improved power, consumption and reduced componentry to the fiercely competitive engine sector.

— by David Tinsley, technical editor

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A bevy of regulations, stemming from high-profile loss-of-life incidents, is significantly affecting the maritime equipment supply arena.

— by David Tinsley, technical editor

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Germany's maritime industry has endured significant consolidations. Through it all, the country's maritime builders and suppliers have stuck with its hallmark: providing technologically advanced solutions.

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EDITOR'S NOTE

As the offshore boom marches forward, it continues to create lucrative business opportunities for hundreds of marine equipment suppliers and boatbuilders. However, with all of the revelry comes an air of caution. Memories of profitable times gone awry are fresh in the mind of any business planner who has been in the maritime industry for an appreciable length of time. The notoriously cyclical maritime industry demands that companies capitalizing on lucrative markets today simultaneously conduct hard target searches for tomorrow's growth opportunities. One niche that will seemingly provide endless opportunities is the cruise ship market. Senior Editor Bridget Murphy was on-hand at the recent Cruise Shipping exhibition and conference in Miami to scope out the market movers' financial predictions for 1997. Her report is filed on page 10.



Coverage of the still-burgeoning offshore industry starts on page 33. This month's offshore editorial focuses on drilling technology, which continues to be a major impetus for expansion. The Hibernia project is the latest high-profile drilling wonder to make the news, and an update on the project (which is also pictured on the cover) is offered in this section. The critical topsides mating process was completed in late February, and the unit is scheduled for tow-out in May or June. Next month's offshore oil exploration story will focus on activities in the North Sea.

Visiting the ASNE exhibition last month helped drive home the effects of the corporate consolidation binge, with Lockheed Martin, Northrop Grumman and other defense technology giants issuing a dominating presence. One by one, major suppliers are being consumed by even larger companies, and it is rapidly changing the way in which products are developed, delivered and serviced in the maritime industry, including in the marine electronics and satellite communications sector, coverage of which starts on page 66.

Gregory R. Trauthwein

Gregory R. Trauthwein, editorial director

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REPOSSESSION

Collecting on maritime loans gone bad isn't easy

And the repo agents think they have it bad.

Recovering a ship from an owner which has defaulted on a loan is not quite as easy as hooking up a car to a tow truck in the middle of the night. The legal and logistical challenges involved are quite daunting, and require a very specialized expertise. Marine Risk Management Group (MRM), a Swiss-based loss recovery specialist enterprise, has carved its niche in this unique and growing market segment.

As all shipping bankers know, not all loans for ships turn out good. Once it has been determined that a loan has turned bad, the (obvious) question is, what should be done? More often than not, the answer is not clear.

Frequently, the loan is secured on a ship, and there are few or no other assets to liquidate. The financial institution's only recourse is to obtain and sell the ship. This is not, of course, something for which banks are equipped, as most bankers are used to handling money, not finding, crewing and navigating ships.

For many reasons, the mortgaged ship may be in the wrong place for the bank to place it under arrest. Although the bank holding the first mortgage normally has a high priority when it comes to claims against the ship, laws vary by jurisdiction, some of which look out for the interests of local suppliers and contractors first. However, almost universally, maritime lien claims rank first.

Where the value of the ship is not high — say \$1 to 2 million — crew wages and court fees can consume the biggest chunk of the funds if the arrest and post-arrest are not handled properly and expediently. Also, it is important to remember that a bad crew can rapidly drive down a ship's value — below recovery value — in the event of a delay.

Marine Risk Management Group (MRM) works with banks, lenders and investors in these situations. MRM operates a service called

Maritime Asset Recovery and Protection (MARAP), which specializes in finding and returning "missing" ships, to expedite the turnover into cash for the lender.

This work has taken MRM all over the world. Successful recoveries have been reportedly executed in Asia, Africa, Europe and North and South American, and out of some of the most difficult locations and jurisdictions imaginable, including Nigeria, Egypt, Tunisia, Brazil, Uruguay, Mexico, China, Taiwan, Japan and India. MARAP is even equipped to board and seize ships in deep ocean.

MARAP has been active in many of the recent high-profile actions to recover ships. Notably, MRM was appointed by a number of banks who had loaned money to Panagis Zissimatos' Adriatic Tankers, and also worked to recover ships from Silver Carriers, managers of *Stolidi*, a VLCC which blew up.

MARAP operations have also become embroiled in dramas. In Brazil, armed military police (Federales) and the striking crew nearly came to full-scale battle over a ship that MRM was to seize. The MARAP officer was able to help calm both parties before sailing the ship transatlantic.

In another case, unknown to MARAP, one of the crew feared personal arrest at the destination port, so he tried to set the ship ablaze. More than once, owners of seized ships have tried to retake the ship, normally by sending illegal orders to the master, sometimes by attempting boardings.

Working The Crew

A key to success in a recovery operation is the handling of the existing crew. Customarily, the crew has not been paid and their onboard conditions are poor. They usually do not understand what has happened, and are angry with everyone coming onboard.

To help mitigate these problems, MRM has built a strong relationship with the international crewing

New Contracts

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

Owner/Operator	Shipyard	Type	No	DWT	Deliv	\$(M)
SANKO STEAMSHIP	KVAERNER KLEVEN AS	AHTS	2	—	1998	—
FREEMPORT INDONESIA	SINGMARINE DOCKYARD	BARGE	1	15,000	1998	8.5
ARKLOW SHIPPING	BARKMEIJER-STROOB	BULK CARRIER	2	3,200	—	—
ASAHI SHIPPING	MITSUBISHI H.I.	BULK CARRIER	1	170,000	1999	33.6
ASAHI SHIPPING	MITSUBISHI H.I.	BULK CARRIER	1	153,800	1999	—
COSCO	KAWASAKI H.I.	BULK CARRIER	1	45,000	1999	21.1
DREYFUS	NIPPON KKK	BULK CARRIER	2	170,000	1999	36.8
FAIRMONT SHIPPING	ISHIKAWAJIMA HARIMA H.I.	BULK CARRIER	1	43,000	1998	21
FAR EASTERN SILO	IMABARI SHIPBUILDING	BULK CARRIER	1	72,000	8/97	25.5
GOLDEN OCEAN GROUP	HITACHI ZOSEN	BULK CARRIER	2	71,400	1998	56
GREAT CIRCLE SHIPPING AGCY	CHEUNG KU MARINE IND.	BULK CARRIER	4	18,000	98/99	—
HYUNDAI MERCHANT MARINE	HYUNDAI	BULK CARRIER	1	135,000	1998	—
KASSIAN NAVIGATION AGENCY— (PAPADAKIS GROUP)	MITSUMI	BULK CARRIER	—	75,000	3/99	27
MITSUBISHI	SUMITOMO	BULK CARRIER	1	73,500	1997	—
SANKO STEAMSHIP	NAMURA ZOSENSHO	BULK CARRIER	5	49,000	1999	—
SHINWA KAIUN	IMABARI SHIPBUILDING	BULK CARRIER	2	28,000	1999	—
SHINWA KAIUN	NAIKAI	BULK CARRIER	2	28,000	1999	—
SHOWA LINE	NIPPON KKK	BULK CARRIER	3	—	1999	—
SHOWA LINE	NKK CORP.	BULK CARRIER	1	150,000	6/98	—
SHOWA LINE	NKK CORP.	BULK CARRIER	2	170,000	1999	—
—	GUANGZHOU	BULK CARRIER	2	28,800	1999	—
—	I.H.I.	BULK CARRIER	2	45,000	1998	40
—	TSUNEISHI	BULK CARRIER	1	45,000	1998	—
—	BROOKE DOCKYARD	BUOY TENDER	1	200	1997	—
—	HANJIN	CABLE SHIP	1	3,500	1998	—
DAIICHI CHUO KISEN	SHIN KURUSHIMA	CEMENT CARRIER	1	15,000	1997	—
MARICHEM EUROPE	LINDENAU	CHEMICAL TANKER	1	12,000	1998	—
NISSHO SHIPPING	MURAKAMI HIDE	CHEMICAL TANKER	3	8,500	1998	42
SEATREND SHIPPING	TUZLA GEMI	CHEMICAL TANKER	2	5,250	1998	—
STENERSEN	JIANGNAN	CHEMICAL TANKER	1	13,700	1999	—
AMBITIOUS LINE	IMABARI SHIPBUILDING	CONTAINER	2	18,000	1/98	—
BERTRAM RICKMERS	SZCZECIŃSKI SHIPYARD	CONTAINER	1	—	1997	—
COLUMBIA SHIPMANAGEMENT	MAWEL	CONTAINER	2	—	1999	27.4
COSCO	ALABAMA SHIPYARD	CONTAINER	4	23,650	1999	157
HENRY BREIJER	LSI SIETAS	CONTAINER	1	—	1997	—
HERMAN BUSS KG	MTW	CONTAINER	2	22,525	1998	60
KASIF KALKAVAN	SEDEF GEMI	CONTAINER	1	12,200	1/98	—
MITSUMI BUSAN	IMABARI SHIPBUILDING	CONTAINER	1	23,830	1998	30
NEW WORLD SHIPPING	YICHANG	CONTAINER	4	—	1999	—
NORASIA LINES	HOWALDTSWERKE DEUTSCHE WERFT	CONTAINER	5	—	98/99	—
NORASIA LINES	JIANGNAN	CONTAINER	5	—	98/99	—
SHIKISHIMA LINE	MURAKAMI HIDE	CONTAINER	4	—	1997	—
—	VIANA DO CASTELO	CONTAINER	1	4,800	1998	—
—	VIANA DO CASTELO	CONTAINER	4	7,500	1999	—
NAVIX LINE	MITSUBISHI H.I.	CRUDE CARRIER	1	260,000	6/99	83
NISSHO SHIPPING	HITACHI ZOSEN	CRUDE CARRIER	1	260,000	1999	83
NOBIL HYDRO	HITACHI ZOSEN	DRILLING RIG	1	20,000	2/99	300
PHILIPPINES GOVERNMENT	ASTILLEROS GONDAN	FISHERIES RESEARCH	1	—	1997	8.2
FORDE REEDEREI	SOLSTRAND	FISHING	1	—	1997	—
SEETOURISTIK GROUP	WESTCON	FISHING	1	—	1997	9.99
O AHLSTROM	WESTCON	FISHING	1	—	1997	9.99
S CLAESSON	ALSA-TROON	FISHING	1	—	8/97	—
SAITOH	KVAERNER R BERG	FPSO	1	—	2000	1000
NORTH ATLANTIC FISHING	YSSEL-VLIET COMBINATE (VVC)	FREEZER STERN TRWR	1	—	1998	—
KYOKO KAIUN	MIURA	GENERAL CARGO	1	1,957	1997	—
—	MIURA	GENERAL CARGO	1	4,500	1997	—
—	MIURA	GENERAL CARGO	1	9,000	1997	—
FINNISH NATIONAL BOARD OF NAVIGATION	FINNYARDS	ICEBREAKER/	—	—	5/98	62.5
CHINESE PETROLEUM CORP. TECHNO MARINE	MITSUBISHI H.I.	OFFSHORE SUP.	1	65,000	1999	—
—	MIURA	LNG	1	1,999	1997	—
—	JIANGNAN	LPG	5	17,900	1999	200
BRIESE SCHIFFFAHRT GMBH	SLOVENSKE	MULTI-PURPOSE	1	3,800	1997	—
HAI SUN HUP	HITACHI SINGAPORE	MULTI-PURPOSE	2	—	1999	35.5
IRAN ISLAMIC REPUBLIC	GUANGZHOU	MULTI-PURPOSE	5	22,800	2000	—
—	VOLHARDING	MULTI-PURPOSE	1	—	1997	—
OW SHIP MANAGEMENT DISTRICT OFFSHORE/ BROVIG OFFSHORE	HITACHI SINGAPORE	MULTI-PURP. CARGO	4	19,150	98/99	—
SCHIFFARTSKONTOR	KVAERNER KLEVEN AS	OFFSHORE	1	4,000	6/98	26
ALTES LAND	LINDSTÖL	PASSENGER / FERRY	1	—	—	4.7
KVAERNER	DAEWOO	PLATFORM	1	—	8/99	85
EIDESVIK & CO.	KVAERNER KLEVEN AS	PLATFORM SUPPLY	1	—	3/98	31
SANKO STEAMSHIP	BRATTVAG SKIPSVERFT AS	PLATFORM SUPPLY	2	3,000	1998	—
SEA TRUCK SHIPPING	BREVIK MARINE	PLATFORM SUPPLY	1	—	1998	—
AP MOLLER	GUANGZHOU	PRODUCT TANKER	2	35,000	1999	55
PACIFIC CARRIERS	ONOMICHI	PRODUCT TANKER	1	46,500	1998	31
—	ELBEWERFT BOIZENBURG	PRODUCT TANKER	3	2,400	1998	—
—	SAMSUNG	PRODUCT TANKER	2	105,000	1999	86
YUKONG LINE	DALIAN SHIPYARD	RIG	—	—	8/98	22.7
OCEAN RIG	KAWASAKI H.I.	RoRo	2	9,500	1999	—
EUROPEAN MARITIME	C.N. VISENTINI	RoRo	1	1,500	1998	—
F VISENTINI	FOSEN MEK VERKSTEDER	RoRo	1	8,800	1/99	40
SEATRANS	HALTER MARINE INC.	SHIPDOCKING VESSEL	2	—	1998	—
HVIDE MARINE	—	—	—	—	—	—
BONA SHIPPING	SAMSUNG	TANKER	3	110,000	—	126
CM LEMOS	DALIAN SHIPYARD	TANKER	2	110,000	—	80
GOLDEN OCEAN GROUP	HITACHI ZOSEN	TANKER	1	310,000	1998	—
GREAT EASTERN SHIPPING CO.	SAMSUNG	TANKER	2	105,000	1998	80
HALLA MERCHANT MARINE	HALLA	TANKER	1	301,000	1998	—
HONAM OIL	DAEWOO	TANKER	2	300,000	98/99	240
JOHN FREDRIKSEN	HYUNDAI	TANKER	2	301,800	98/99	164
LOLLU-GHETTI	3 MAJ	TANKER	2	70,700	1999	74
MISC	HYUNDAI	TANKER	2	105,400	1998	80
NOVOROSSISYSK SHIPPING CO.	NKK CORP.	TANKER	4	95,000	98/99	160
OMI CORPORATION	DAEWOO	TANKER	2	158,000	1999	104
—	DAEWOO	TANKER	1	300,000	1998	80
CHINESE GOVERNMENT	DONGHAI SHIPYARD	TUG	3	—	97/98	—
RIMORCHIATORI RIUNITI	CANTIERE NAV. TOMMASI	TUG	2	—	5/98	—
KUWAIT OIL TANKER	HYUNDAI	VLCC	2	—	1998	170

(continued on page 22)

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Cruising's Top Players Link Up For Marketplace Discussion

by Bridget Murphy, senior editor



It has been said that the French debate with their hearts and vote with their wallets, and according to Cruise Lines International Association (CLIA) Chairman and Princess Cruises executive **Rick James**, that same pragmatism holds true for cruise investors, who "have taken a look at the industry and voted with their wallets."

Equally bullish statements dominated the state of the industry debate at the annual cruise sniping show held recently in Miami — a scene comparable to college basketball's March Madness in the U.S., when a few big teams dominate the spotlight as other competitors scrap for a "Final Four"

bid among powerhouses.

It is with little question that Carnival can claim bragging rights for the best performance in FY96, during which time it sealed a partnership with Airtours, introduced and booked to capacity the world's largest passenger ship, announced plans for an Asian sister company and beat out the competition by successfully negotiating the acquisition of an additional fleet of ships based in Italy.

Flushed with personal success from a literary co-authorship which produced title *Selling the Seas*, Carnival President **Bob Dickinson**'s delivery at the show was dynamic: "Business is fabulous. In the case of Carnival, we've made tremendous strides this year." He said that Carnival's 1996 initiatives were structured around providing passengers with variety and a casual atmosphere, or "cruising their way," explaining, "We're not trying to be a country club at sea."

While sharing **Dickinson's** favorable outlook, Royal Caribbean CEO **Richard Fain** injected caution into the debate, which seemed

appropriate since despite solid bookings and the debut of new tonnage last year, Royal Caribbean was forced to jump hurdles as highly publicized negotiations with Costa Crociere fell flat and serious environmental violations were brought to light.

Fain discussed the growing specialization of ships as well as the need to understand passenger demographics. He characterized the cruise audience as subsets of people with fundamentally different needs and explained the rebranding of his company to Royal Caribbean International as a way of stressing the provision of vacation services, not just a cruise product. In terms of growing business across the board, **Fain** said that CLIA's \$8 million generic ad campaign is not a panacea for expansion, and warned, "There is no silver bullet; there is no magic solution."

For his part, P&O and Princess Cruises CEO **Tim Harris** minced no words in a discussion of two issues shaping the business future of the sector: consolidation and globalization. "I think the major

North American lines are well positioned to grow internationally," said the cruise executive.

Harris said that the success of globalization or "internationalization" will be measured by how readily the North American product can be transplanted into different markets, provided the cruise lines accommodate the business climates and cultures of Europe and Asia. "If you're talking about local markets for non-Americans you have to be very careful," advised **Harris**, adding, "If we can generate the growth in these markets, it will be good for all of us."

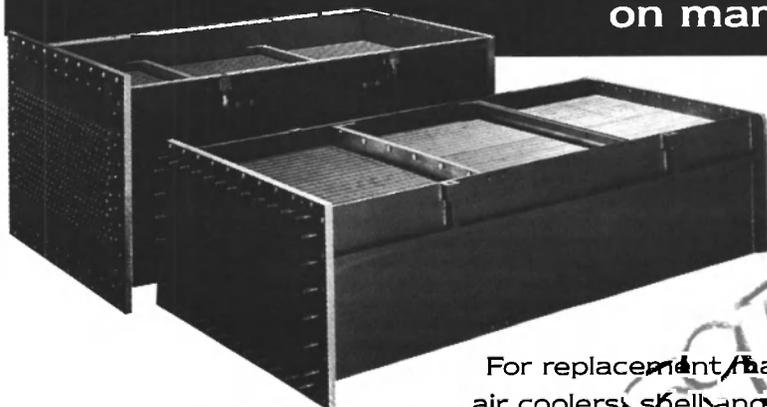
Holland America Line-Westours (HAL) veteran Chairman and new CEO **Kirk Lanterman** spoke of the constantly shifting nature of the business by referencing ex-Cunard chief **Peter Ward's** assertion 12 months ago that the industry "needed to grow up". Money, time and energy directed at improving U.S. Coast Guard relations and the protocol surrounding crew training and safety and environmental requirements in 1996 evidence the industry's maturation, according to **Lanterman**.

He said improved onboard products and cruise ship management were also key factors in 1996. "I think '97 for the industry and major players will be better than '96," stated the HAL exec, pointing to fleet renewal schemes as a method of catapulting cruising into the mainstream.

Steering away from discussing Kvaerner's rumored intentions to dump Cunard, freshman cruise CEO **Antti Pankakoski** spoke about attracting first-time passengers and debunking misperceptions about cruising. "We are obviously here to make money and we can only do this if we have happy customers and enough customers," said **Pankakoski**.

The Cunard exec said that cruise lines should "saturate the marketplace with the unbeatable benefits of a cruise vacation," and that cruising should be made relevant for new market segments by tracking passenger lifestyles and offering theme cruises, family cruises and adventure cruises.

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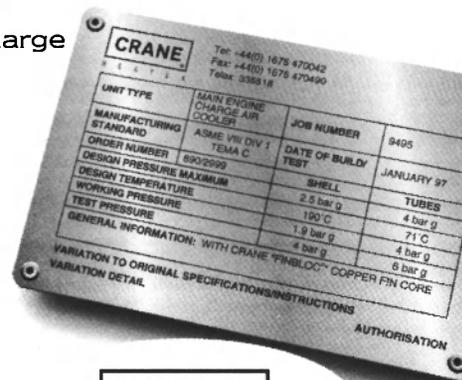
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(continued on page 104)

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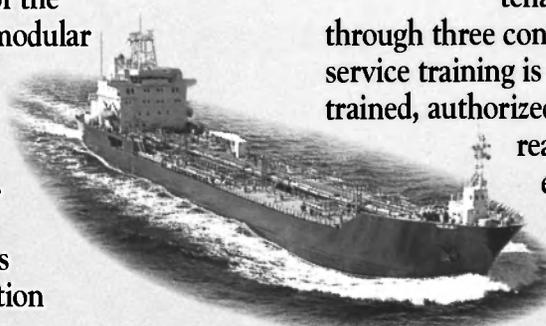
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MARINE FINANCE — CONTRACTS

Singmarine Clinches \$12 M Contract

On Feb. 3, Singmarine Industries Ltd., to be renamed Keppel Marine Industries Ltd., announced the award of a \$12 million newbuilding contract from repeat customer PT Freeport of Indonesia. Subsidiary Singmarine Dockyard

and Engineering Pte. Ltd. will reportedly construct a 15,000-dwt copper concentrate, self-unloading barge which is expected to be completed in the second quarter of 1998.

Other construction work currently underway at the yard includes an 8,000-dwt self-unloading coal/oil barge and two, 5,000-bhp pusher tugs, both for PT Freeport.

Other contracts include two coastal tankers for FT Everand & Sons and two harbor tugs for Keppel Smit Towage Pte. Ltd. In addition, a supply training vessel was recently delivered to the United Arab Emirates' Lamnalco Ltd.

For more information on Singmarine
Circle 92 on Reader Service Card

Kockums Announces Tribon Contracts

Massachusetts Heavy Industries, Inc., a new commercial shipyard in Boston's South Shore city of Quincy, has reportedly purchased the initial design, hull, work preparation, materials and the complete outfitting applications of Kockums' Tribon system.

Other Tribon contracts were recently signed with South Korea's Cheung Ku Marine Industrial Co. Ltd., Singapore's Hitachi Zosen Singapore Ltd. and Netherlands-based Van Dam Marine Contracting B.V.

For more information on Kockums
Circle 93 on Reader Service Card

MAN B&W Engines, Sperry IBS Specified For Containership Series

German owner Rickmers has reportedly decided to outfit its latest series of 2,200-TEU containerships — six in all, which are building at China Shipbuilding Corp. — with dual MAN B&W 7S70MC diesels as main propulsion units and dual 5L28/32H auxiliary engines. Each 668-ton main engine has a 70-cm bore and will yield 20,880 kW at 95 rpm. Both the main and auxiliary engines will be built by licensee Hyundai Heavy Industries in Korea.

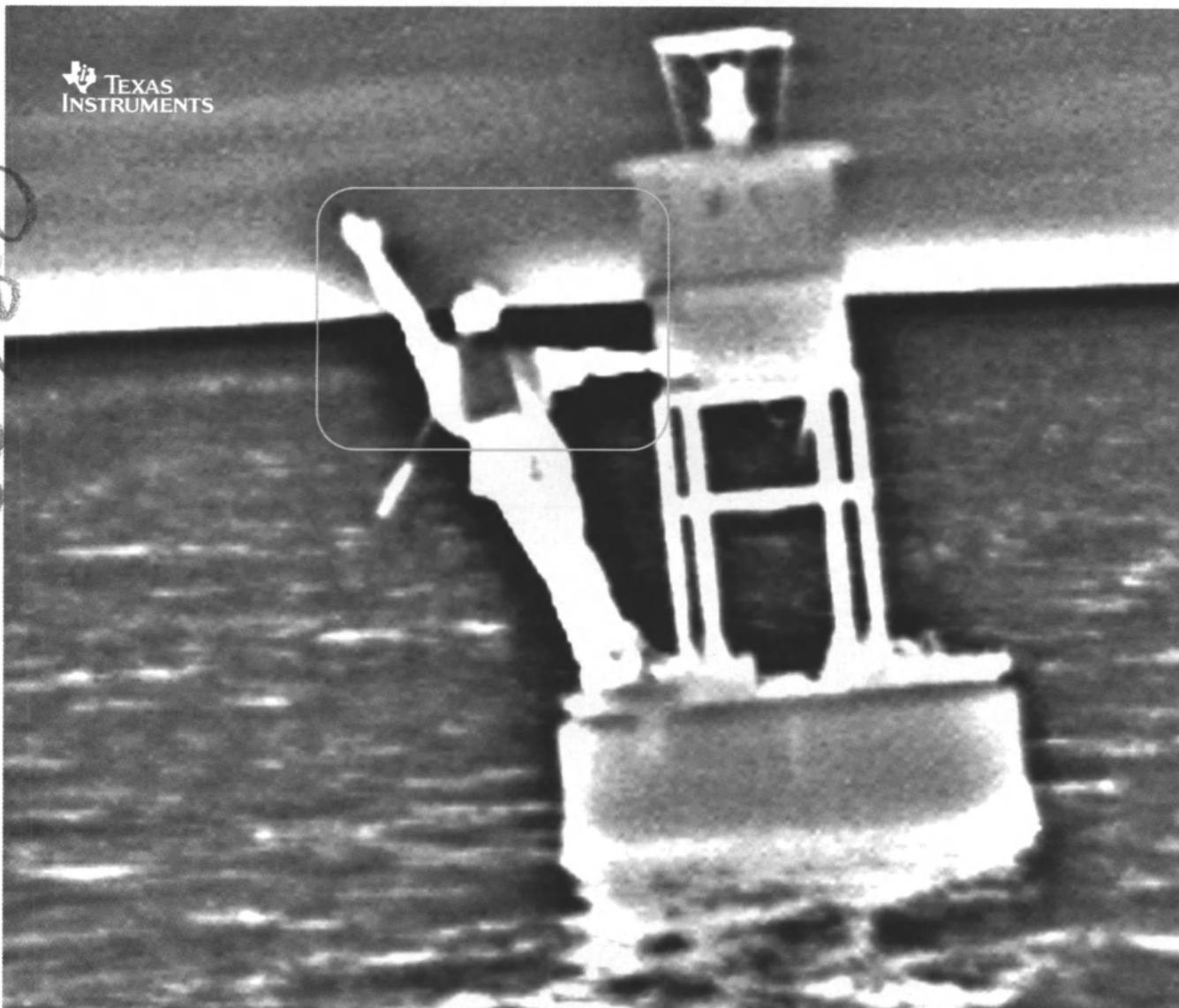
In addition, Litton-Sperry Marine has contracted to supply its Vision 2100 integrated bridge system for the ship series. The principal equipment scheduled for installation includes the Sperry Voyage Management System VT containing a navigation station/ECDIS, ARPA radars, gyrocompass, autopilot and steering control system and dual-axis speed log.

For more information on
MAN B&W Diesel
Circle 94 on Reader Service Card

For more information on Sperry
Circle 95 on Reader Service Card

Fincantieri Newbuilds Will Feature GE Turbines

Four GE LM2500 aeroderivative gas turbines have been ordered for use on two MDV 3000 fast ferries building in Italy in Fincantieri for Tirrenia Lines in Naples. The two



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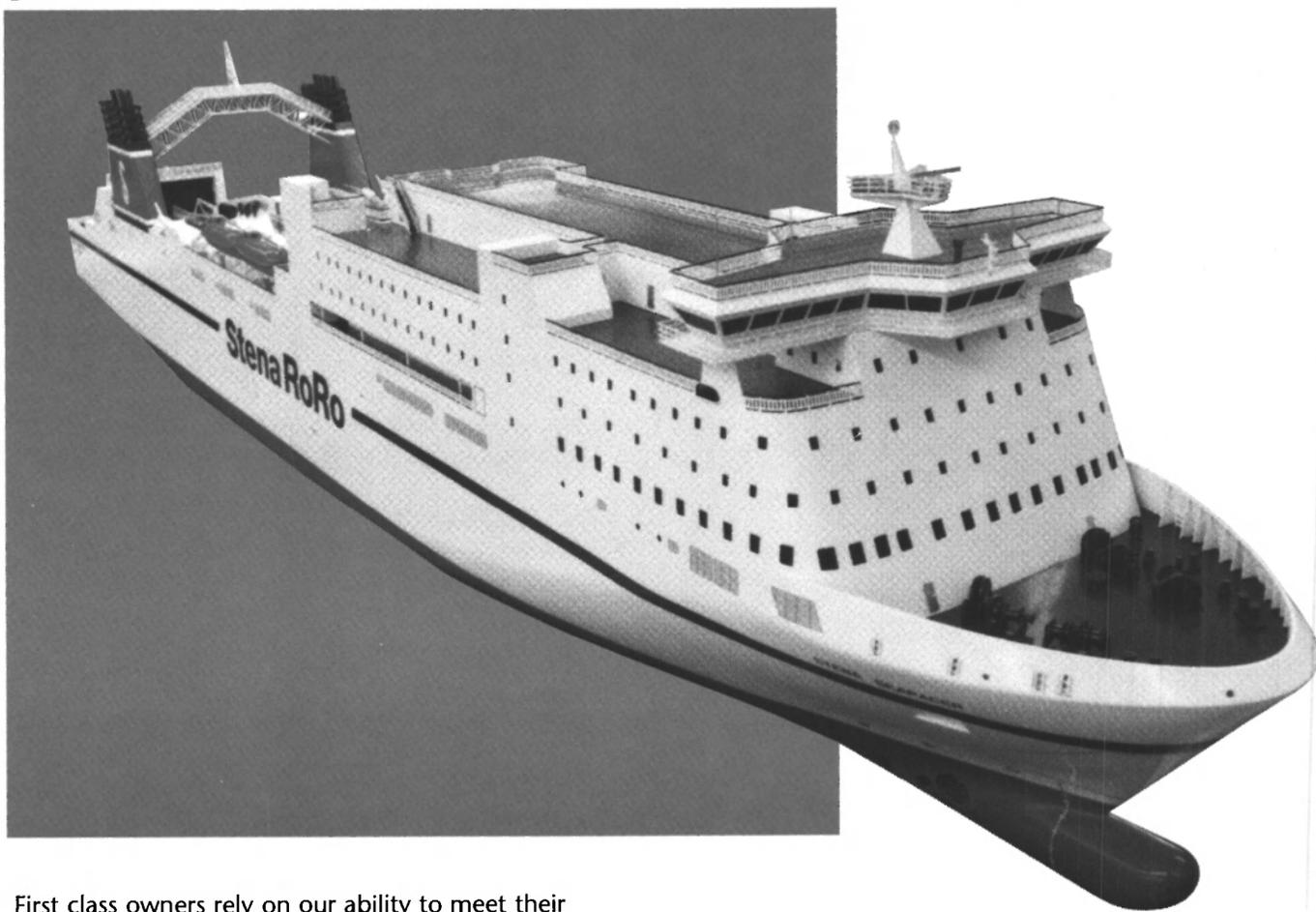


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MARINE FINANCE

units will be used with four MTU diesels in a combined diesel and gas turbine (CODAG) configuration for each vessel.

When the first monohull high speed ferry begins commercial operation in the spring of next year, it will reportedly be more than comparable in terms of size and speed to the Stena HSS 1500 class ferries.

"This order demonstrates that Tirrenia is very satisfied with the LM2500 performance and outstanding reliability on its Rodriguez Aquastrada class fast ferries and is now committed to using GE aeroderivative gas turbines to take their fast ferries to the next size and speed plateau," said GE's **John Ferrera**.

For more information on GE
Circle 96 on Reader Service Card

Atlas Marine Completes Galley Renovation

From Miami, Atlas Marine Services, Inc. President **Jack Zollinger** has reported that his company completed a galley renovation project on Royal Caribbean International's *Viking Serenade* during the ship's drydocking at Cascade General Shipyard. Work completed included gutting the preexisting galley and designing and fabricating custom refrigerators and other industrial units. The company will begin work remodeling a portion of M/S *Crown Princess* this month.

For more information on
Atlas Marine Services, Inc.
Circle 97 on Reader Service Card

Conoco Awards FPSO Contract

Petroleum Geo-Services ASA (PGS) announced that Conoco awarded it a major contract to construct and operate a Ramform design FPSO in connection with the development of the Banff field in the U.K. sector of the North Sea. The company expects the contract to generate approximately \$350 million of revenue over the first seven years of operations. The vessel hull will be constructed in Korea by Hyundai Mipo Dockyard Ltd., and the topsides will be fabricated and installed in the UK. The full system is expected to be delivered and ready for operation in June 1998.

"PGS' clear goal revolves around finding innovative ways to reduce the cost of finding and producing hydrocarbons for the petroleum industry," commented PGS CEO **Reidar Michaelsen**.

With an overall length of 939.6 ft. (120 m) and a width of 177.1 ft. (54 m), the ship will initially be equipped to produce 60,000 bpd. The introduction of this vessel into

PGS' fleet will allow the company to deploy its full complement of technology to provide Conoco with the most sophisticated seismic information available. PGS reportedly expects to build additional FPSOs over the next several years, utilizing technology to help oil companies maximize production. PGS has subcontracted with North Sea FPSO operator Atlantic

Power for this project.

PGS CFO **J. Chris Boswell** stated, "While the oilfield service industry has yet to find the perfect FPSO, we believe that the industry is clearly demanding an efficient, low-cost alternative to produce deepwater and marginal fields. Our Ramform production ship has a significant cost advantage over competing vessel designs



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Marine Electronics Merger Introduces New Player

Simrad has merged with Kongsberg Norcontrol in a move to expand its presence in the marine electronics market. The new company, Kongsberg Maritime, combines more than \$300 million in annual revenues from Simrad and Kongsberg and will account for more than half of all of Kongsberg's

businesses, which include defense and aerospace products.

To best accommodate the maritime market, Kongsberg Maritime has been organized into four main operating divisions geared to serve specific markets. The new departments are: Kongsberg Norcontrol for the merchant marine;

Kongsberg Norcontrol Systems for marine training and traffic management; Kongsberg Simrad for offshore and ocean science study; and Simrad for yachting and fisheries. The company also seeks to develop an extensive international network by employing 600 of its 1,600 workers in 20 different coun-

tries.

"Each of the companies was already in a world-class league in its own niche," said Kongsberg Maritime President and CEO **Jan Erik Korssjoen**. "Current market trends indicate that the new company will have much brighter prospects for the future than the two operations would have had separately."

An order for an advanced shuttle tanker to be built by Astilleros Espanoles SA's Sestao yard will combine Kongsberg Simrad's dynamic positioning and process control with Kongsberg Norcontrol's integrated bridge systems.

(continued from previous page) which, in turn, should allow PGS to earn a better rate of return."

General Maritime Services Establishes New Dept.

General Maritime Services has established a separate department within its main office in White Plains, N.Y., to act as an agent for overseas consolidators, groupage operators, NVOs, forwarders and other overseas transportation entities. This new department will represent firms in various countries and will not represent more than one competing firm in the same region to avoid conflicts of interest.

Boatrac Reports Significant Profits

Boatrac Inc. reported record revenues of \$3.5 million for 1996, compared with \$2.6 million for 1995, an increase of 31 percent. Net loss for the year was \$905,000.

"Messaging revenues for the year increased 52 percent over 1995," said **Michael Silverman**, president and CEO. "This is due primarily to increased usage as our customers more fully integrated the Boatrac system into their overall operations. We anticipate this trend to continue." Revenues for the fourth quarter 1996 were \$762,000, up from \$598,000 for the same quarter a year ago. Net loss for the quarter was \$268,000 compared with a net loss of \$289,000 in the same quarter a year ago, a reduction of seven percent. The loss for the year is attributed to continued software development costs, associated expenses for additional sales personnel and costs related to the development of the European market.

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Atlantic Dry Dock Wins \$76 M Contract

Atlantic Dry Dock Corp. was awarded a \$76 million contract to convert a 754-ft. (230-m) RoRo cargo ship to a Marine Corps pre-positioning vessel. Atlantic Dry Dock will perform the work under a subcontract with Tarago Shipbuilding Corp. of Bethesda, Md., which owns the ship and won the Navy contract.

The ship is Bahamian-flagged *Tarago*. It is scheduled to arrive at Atlantic Dry Dock this fall, and work will take approximately two years. The project, which will entail the addition of a deck and cranes to the ship, is the biggest single ship project yet for Atlantic Dry Dock.

Atlantic Dry Dock, a subsidiary of Atlantic Marine Holding Co., is located on the St. Johns River and Intracoastal Waterway in Jacksonville, Fla. The facilities are equipped with two marine railways, with a lifting capacity of up to 4,000 long tons.

For more information on the yard
Circle 13 on Reader Service Card

Princess Places Order With Fincantieri For New Ship

Announcing its annual results on March 25, Princess Cruises' parent company, The Peninsular and Oriental Steam Navigation Co. (P&O), said operating profits for its cruise division increased 43 percent in 1996, growing to \$250 million from \$175 million in 1995, and positioning P&O/Princess as the second most profitable cruise line in the industry.

The company's confidence in its performance and in the growth of the industry was further underscored with an announcement that it had ordered yet another sister-ship to the 1,950-berth *Sun Princess* from Fincantieri for delivery in late 1999.

The new ship will be named *Ocean Princess*.

"Our strong performance in 1996 clearly confirms that our strategy is on course," said **Tim Harris**, chairman and CEO of P&O/Princess Cruises. "Our achievement of a 43 percent growth in profits, compared to an increase in capacity of 13 percent, is an impressive showing, particularly in today's competitive envi-

ronment."

The next new Grand class ships — first *Dawn Princess*, then *Grand Princess* and *Sea Princess* in 1998, and now *Ocean Princess* in 1999 — will grow Princess' capacity by 65 percent.

For more information on Fincantieri
Circle 165 on Reader Service Card

Royal Caribbean And Kvaerner Sign For Second Eagle Class Liner

On March 20, Royal Caribbean International announced that it exercised its option with Kvaerner Masa-Yards to build a second

130,000-ton, 3,100-passenger Eagle class vessel at Turku, Finland and additionally granted an option to a third ship of the same size.

"It's especially pleasing to be partners once again with Kvaerner

(Continued on page 106)

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Major Ship Repair Facility Planned For Southern End Of Red Sea

Yemen's Ministry of Transport plans to privatize the government-owned ship repair yard located in the Port of Aden. International Maritime Associates (IMA), a U.S.-based marine consulting firm, is assisting both the Ministry and World Bank to identify and select a company capable of developing

the shipyard into a world-class facility.

Current yard capabilities

Aden Dockyards, which dates back to the 1920s, currently has the capability and equipment to perform virtually all types of ship

repair. Two floating drydocks are available for performing hull maintenance and repair on small to mid-sized ships. There is a 262.4-ft. (80-m) transverse slipway for drydocking small vessels. A full range of shops is available for machining, electrical work, welding, carpentry, etc. Billing rates

are reportedly competitive — and a core staff of skilled/semi-skilled workers is in place.

Yard location

There are few locations in the world more desirable for a ship repair facility. Aden is a natural deepwater port, protected from wind and swell on three sides and subject to little siltation. The port is situated at a crossroads of shipping where a vacuum of ship repair capability now exists. More than 1,250 ships transit the Suez Canal each month, passing close to Aden as they enter or exit the southern end of the Red Sea. There is also a continuing flow of tankers moving between the Arabian Gulf and western destinations via Africa, passing close to Aden on their voyages. On top of this, ship traffic in the port can be expected to significantly increase over the next several years as a billion dollar project has begun to develop a free trade zone in Aden and establish the port as a megahub for container transshipment in the Arabian Sea.

Planned sale or lease

With World Bank assistance, the Ministry of Transport plans to sell or lease the ship repair facility to a commercial firm interested in establishing a world-class repair yard at the existing site. The goal is to select a company which will expand the current facility and add one or several Suezmax size floating drydocks able to lift large containerships and tankers. An open, transparent bidding process will be used for the transaction. Pre-qualification of bidders is now underway and a contract for sale or lease is expected to be negotiated soon. A number of major ship repair firms in Asia and Northern Europe have expressed keen interest in this project. IMA is also assisting in privatizing the government-owned shipping line, which will also be conducted in an open, transparent bidding process. Making this particularly attractive are contracts for carriage of government cargo that will be transferred with the sale of the shipping company.

Further details

Information is available from **Jim McCaul** at IMA in Washington, D.C.; tel: (202) 333-8501; fax: (202) 333-8504.



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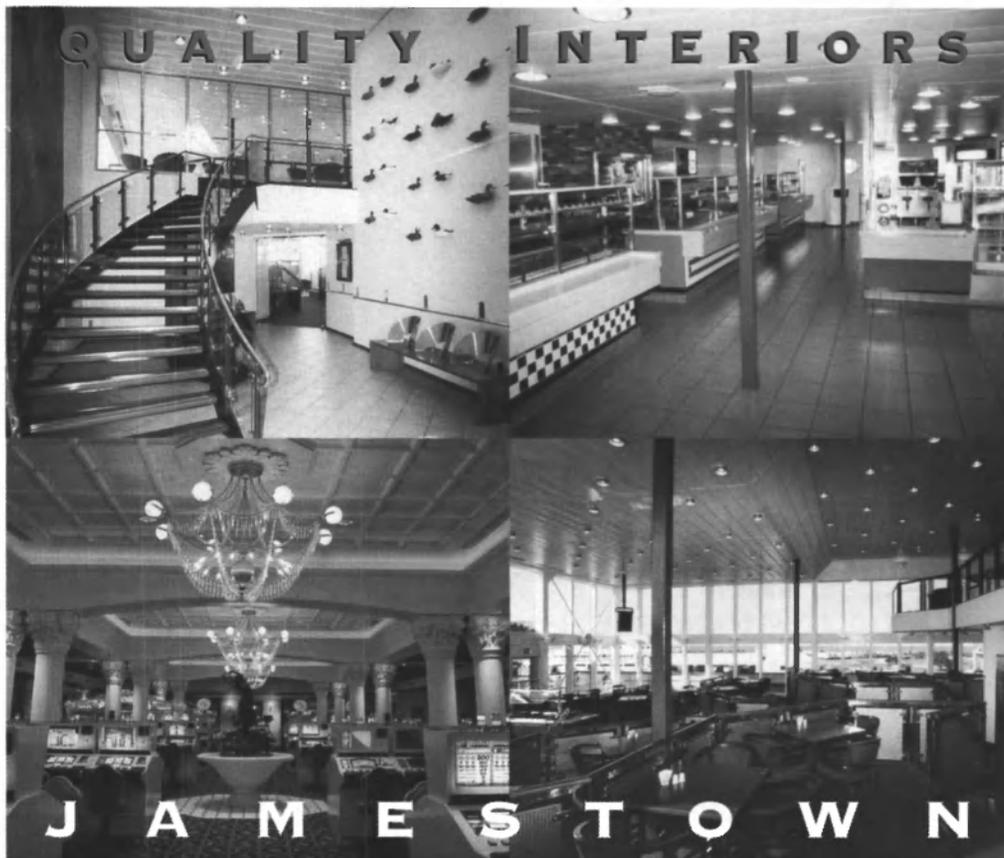
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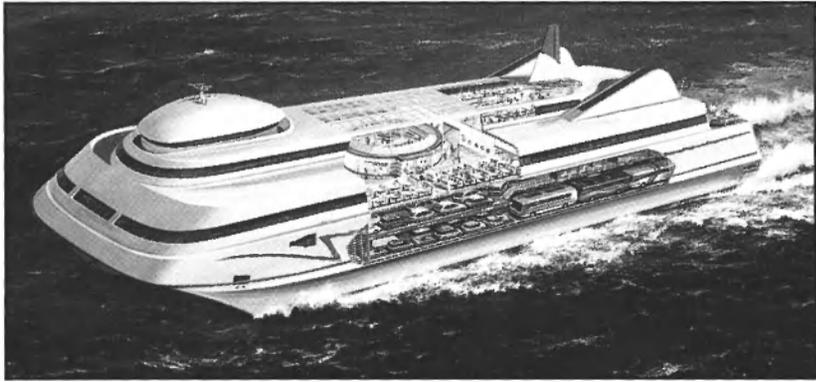
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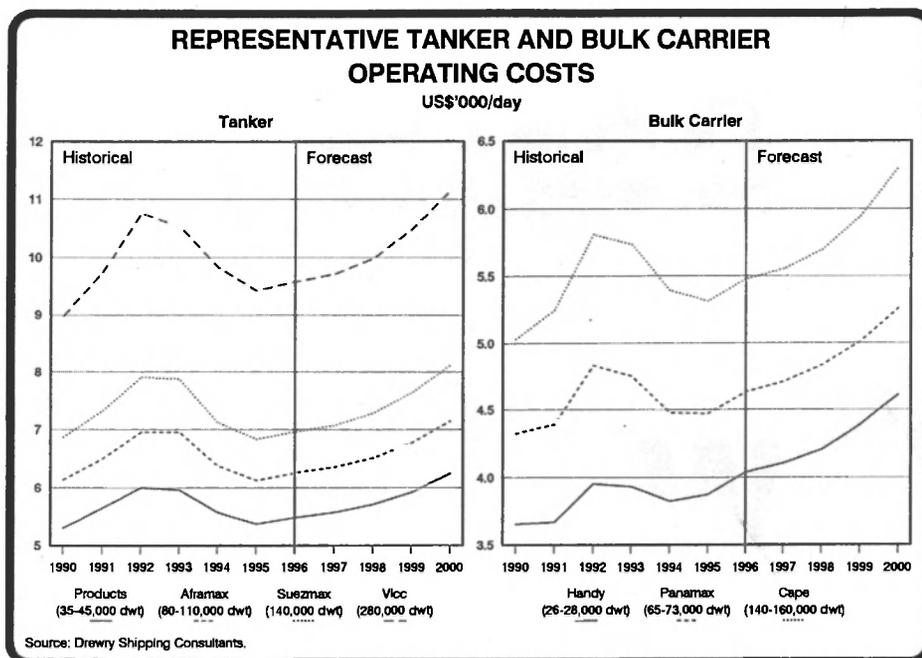
SHIP COSTS: The Economics Of Acquisition And Operation

A new report from Drewry Shipping Consultants — *Ship Costs: The Economics of Acquisition and Operation* — examines many of the current and future issues faced by shipowners.

Newbuilding prices, finance, repair, crewing and insurance are tackled in this report. Drewry warns that issues regard-

ing crewing will prove critical, forcing owners to re-focus and re-evaluate budgets.

Concerning insurance, the report notes that the recent history of Hull & Machinery (H&M) outgoings has been dramatic. The 1990s began with a shake-out in insurance capacity, and included a host of major insurance claims (not all marine



REPOSSESSION

(Continued from page 8)

union, the International Transport Workers' Federation (ITF). MRM often seeks the crew's cooperation in keeping the ship in good order and sailing it, under MRM's control, to the destination. MRM also works in handling crew payoff and repatriation. In a recent case during Christmas, MRM helped charter a private plane to fly the crew home.

A problem encountered by MRM is being called upon late in the game, and as a result finding a ship in poor condition, possible out of class and with canceled insurance.

Because MRM is primarily a surveying and loss control company, MARAP operations and voyages can be fully insured — hull and machinery, as well as P&A — even when the ship is out of class. MRM has obtained cargo cover for delivery of existing cargoes, and can also obtain conventional trading cover.

Another task vital to the execution of recovery operations is negotiating the lifting of existing arrests — which is often for relatively small sums — by local suppliers. MRM likes to handle this negotiation itself, as it has found that the bank's arrival "on the scene" can trigger a flurry of new arrests. An arrest is a security for a maximum claim, however the actual sum agreed to is normally well below that figure. In MRM's experience, a deal to lift

an arrest has to be honored quickly so claimants have no time for second thoughts.

The purpose of the "relocation" voyage is to move the ship to a port where the jurisdiction is quicker, the results are more certain, and the court fees, legal fees, port dues and holding charges (including crewing charges) are lower. MRM has a schedule of ports where the jurisdiction is efficient. Its port of preference is Birkenhead, U.K., on the River Mersey, near MRM's U.K. operational headquarters.

Due to the fact that the number of abandoned ships is growing, organizations representing crews have started to look more closely at shipowners' financial suppliers.

A growing sentiment exists that banks should bear some responsibility, morally if not in law, for humanitarian relief of crews. As this trend continues, the "Jasper Stonyheart" image a bank may engender by refusing this aid will cost a lot more than the million dollar bill of a recovery operation.

The preceding article was submitted by MRM's Philip Rankin.

For additional information on
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related) and fears over the future of Lloyd's. Shipowners caught the backlash, and premiums soared between 1990 and 1992, while the levels of deductibles pushed onto owners' accounts also took a sharply upward hike. Since then, costs have dropped dramatically.

Currently, according to Drewry,

excess capacity is apparent in the hull market with competition for business still forcing premium levels down. The likelihood, however, is that this sector has hit, or is close to, its lowest point. The consensus looks to be moving toward higher hull premiums within six to 18 months.

The P&I sector of the insurance market looks scarcely more promising, and Drewry expects that cost levels will increase here, too. The reasoning can be summed up in one word — liabilities. The insured risks are primarily in respect to claims involving third parties. These claims tend to

become increasingly litigious, while awards are likely to become higher.

Some (financial) solace can be found in the fact that newbuilding prices have yet to soar, despite a busy newbuilding sector. On top of that, the number of banks and financial institutions looking to lend money to the shipping industry has again risen, suggesting finance shall remain competitive.

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World Orderbook Drops By 3.2 M GT

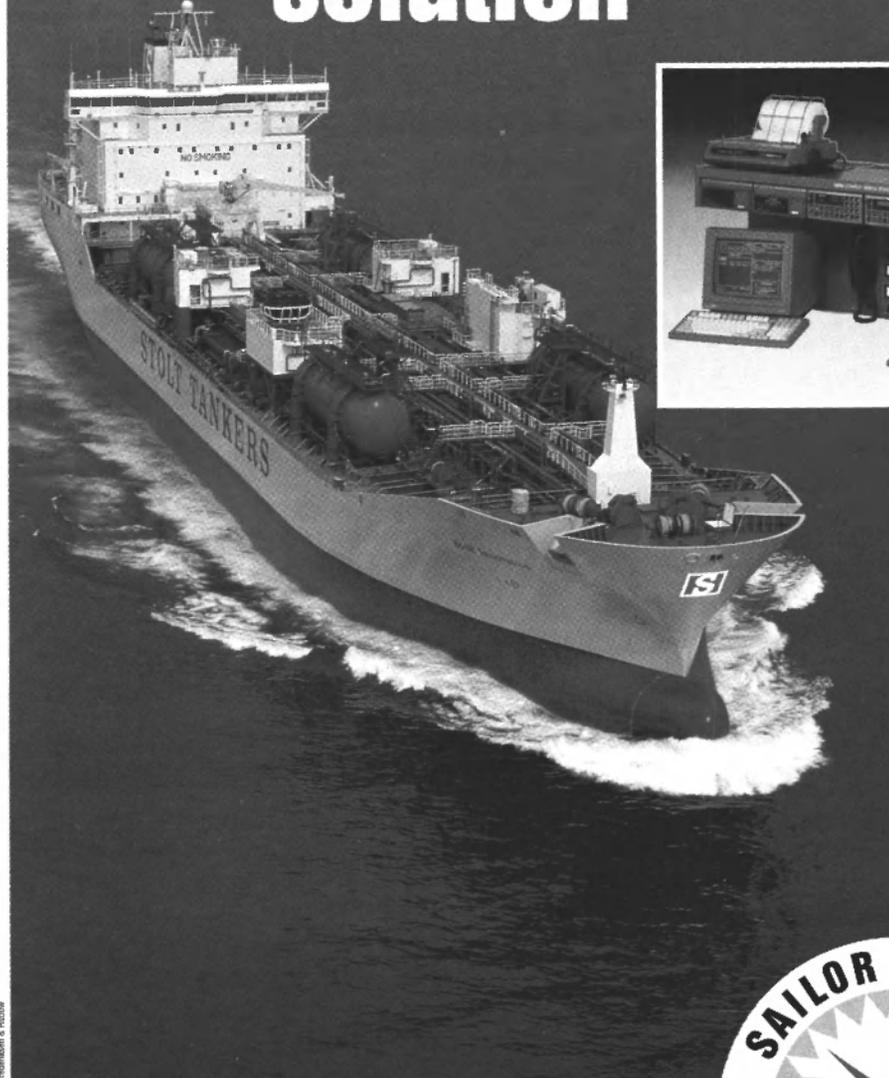
The world ship orderbook has fallen by 3.2 million gt, according to Lloyd's Register (LR). The orderbook to date stands at 45.3 million gt (as of the quarter ended Dec. 31, 1996), compared to 48.5 million gt at the end of December 1995. The statistics, published in LR's quarterly *World Shipbuilding Statistics*, indicate that Japan remains the world's top shipbuilding nation, with an orderbook of 13.7 million gt, representing roughly 30 percent of the market. Japan is closely followed by Korea, which claims 13.2 million gt, or 29 percent of the market. The remaining 41 percent is split between Western Europe (8.3 million gt); Eastern Europe (4.8 million gt); and the "rest of the world" (5.3 million gt).

New Maritime Company Listed On Oslo Exchange

Bergen-based Seateam Technology ASA is to be listed on the Oslo Stock Exchange (OSE), specifically on the SMB list (for small and medium-sized businesses). The company has wide interests, including the ownership and operation of offshore vessels, shipping activities, geo-technical research and survey services.

The company has been formed by a merger between DSND Survey K/S, a geo-technical deepsea drilling specialist and Arcade Offshore B.V., an offshore survey company. Seateam Technology ASA's main area of operation is the North Sea, with other activities in West Africa, Brazil, Asia and Russia. The listing of Seateam Technology brings the number of companies listed in the OSE's special shipping and offshore sector to 47.

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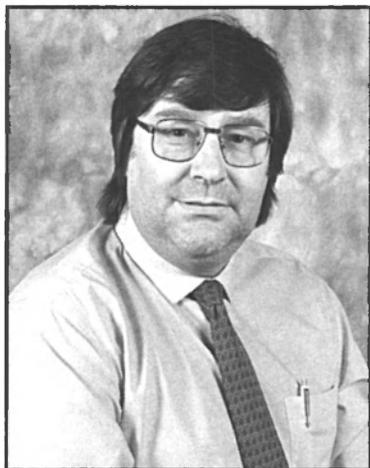
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Ship Orders Unhalted By Industrial Unrest



by Alan Thorpe, international editor

South Korea continues to win ship orders despite its current political problems and industrial unrest. The South Korean shipbuilding industry received foreign shipbuilding orders last year totaling 6.9 million grt, down from 7.1 million grt in 1995, according to the Korean Shipbuilders Association. Ships built during 1996 for foreign owners totaled 7.7 million grt compared with a previous figure of 5.7 million grt, while outstanding orders stand at 13.1 million grt, down 13.8 million grt.

Hyundai Heavy Industries (HHI) said it aims to receive orders on an overall basis worth approximately \$9 billion in 1997, up from \$6.8 billion in 1996. The company said shipbuilding orders for 1997 are expected to reach \$3.4 billion, compared with \$2.2 billion in 1996. The company has set its export target at \$3.6 billion for 1997, up 10.3 percent over 1996 levels.

Orders for South Korea during the first part of this year have included a \$49 million, 172,000-dwt dry bulk carrier for Norway's Bergesen from South Korea's HHI. The ice-class vessel will be chartered to British Steel for 15 years, the first long-term charter secured by Bergesen with the U.K. company.

Samsung Heavy Industries has secured a breakthrough in the crude carrier newbuilding market by sealing its first export contract for tankers of ULCC size. Under the deal, which involves New York investment bank Cambridge Partners, two, 308,000-dwt crude carriers will be built for operation by Chevron Shipping, marking the first of the San Francisco-based oil group's planned large tanker replacements. Deliveries are scheduled for late 1998 and early 1999, respectively, with construction to be undertaken in the Koje Island yard's No. 3 dock.

Meanwhile, Japan's NYK has placed an order with SHI for the construction of a 105,000-dwt Aframax tanker. This is in addition to two vessels already on order from Samsung. The vessel is due for delivery at the beginning of 1999.

South Korean operator Pan Ocean Shipping has provided **Hyundai Mipo Dockyard (HMD)** with an entry into the deepsea vessel newbuilding market. HMD's contract calls for the construction of two geared bulkers of approximately 30,000 dwt.



South Korea's HHI has good prospects despite political unrest.

More details have now been released regarding HMD's Vietnam project, which comprises a new shipbuilding and repair yard to be located at My Giang Village in Ninh Hoa district. The yard, named **Hyundai-Vinashin Shipyard**, is a joint venture between HMD and Vietnam Shipbuilding Industry Corp. (Vinashin), and will comprise a 400,000-dwt graving dock for repairs and conversions, as well as an 80,000-dwt newbuilding dock. The yard is scheduled to become fully operational by March 1998.

Hanjin Shipping has increased its post-Panamax containership program with two more (the sixth and seventh) of the 5,300-TEU Hanjin London class, and is considering ordering another two sisterships. The two firm additions to the orderbook at Hanjin Heavy Industries' Pusan yard are due for completion in late 1998 and early 1999, respectively.

The 4,000-TEU *Ville de Orion* has been delivered by South Korea's **Daewoo Industries (DHI)**. The vessel was ordered in October 1995 and will be on long-term charter to CMA from German owners Conti Reederei, with the option to purchase. Green Ocean Bulk Shipping, a joint venture between Australian mining group BHP and Japan's K-Line, has taken delivery of a new 169,900-dwt bulk carrier, *Saraji Trader*, from DHI.

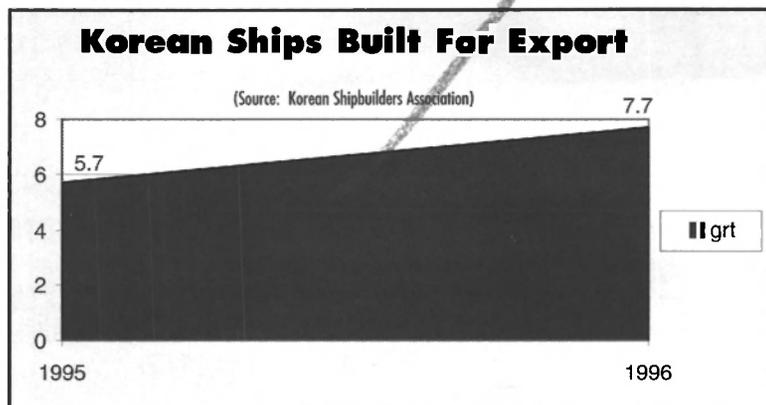
With regard to overseas investments, DHI has finalized a \$53 million deal giving it a majority stake in Romania's 2 Mai Shipyard in Mangalia. Local opposition, which threatened to thwart the plan, was overcome by a pledge to maintain newbuilding activity in addition to repair. DHI's proposal to take 51 percent in the enterprise was criticized, mainly by those fearful of increasing domination of Romanian industry.

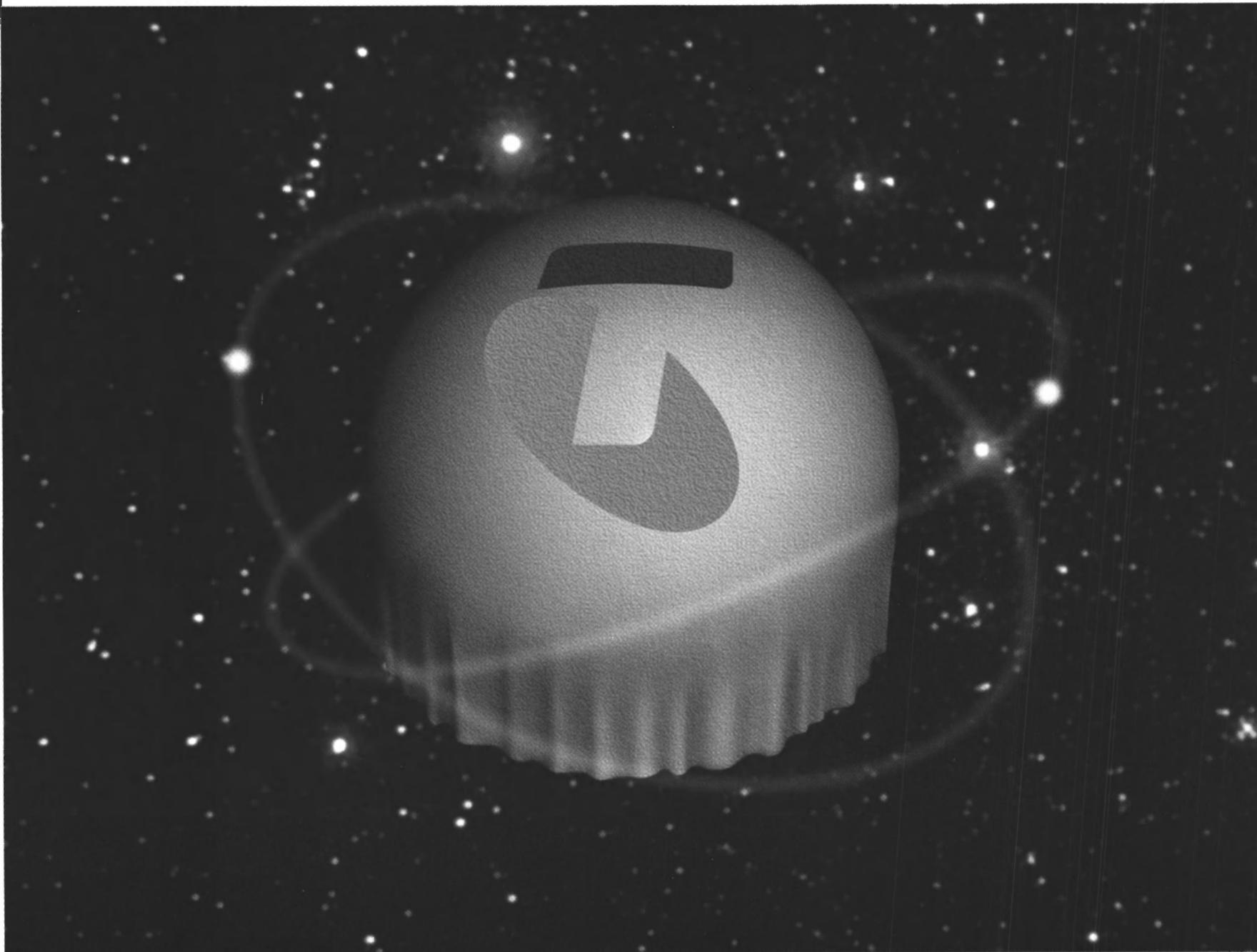
Daedong Shipbuilding is hoping to clinch an export deal for its shipyard at Chinhae, which was just commissioned in 1996. Worth an estimated \$100 million, the project calls for the construction of three product tankers in the 40,000 to 45,000-dwt range for Russian operator Primorsk Shipping.

For your information...

For more information on the shipyards listed in this section, circle the appropriate number on the Reader Service Card.

- Daedong Shipbuilding 231645
- Daewoo Heavy Industries 231150
- Hitachi Zosen 402210
- Hyundai Heavy Industries 134147
- Hyundai Mipo Dockyard 424365
- Imbari Shipbuilding 136
- Minami Shipbuilding 137
- Mitsubishi Heavy Industries 597330
- Namura Shipbuilding 616020
- NKK Corp. 640120
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A D V A N C I N G A U S T R A L I A



FAR EAST UPDATE

Softening Yen Provides Boost To Japanese Builders

With regard to the Japanese shipbuilding industry, price levels have become much more competitive following the yen's softening against the U.S. dollar. The National Shipping Co. of Saudi Arabia (NSCSA) took delivery of its fifth VLCC, named *Safaniyah*, during early January, from Mitsubishi Heavy Industries (MHI).

NKK's Tsu Shipyard has recently undergone an automation upgrade.

MHI has also delivered a new high-speed car ferry capable of cruising at 35 knots. The single-hulled, 1,500-grt ferry, measures 331.4 x 49 x 34-ft. (101 x 14.9 x 10.3-m), and has a capacity of 423 passengers and 106 vehicles. The first vessel was built at the Shimono Seki yard, and delivered to Tokyo-based ferry operator East Japan Ferry for development on the Aomori and Hakodate service. It can reportedly cover 115 km in just two hours.

Naikai Zosen Corp., an affiliate of Hitachi Zosen, is to invest \$13.8 million in new technology over the next two years at its Hiroshima yard. The project entails a 3-D computer-aided design and manufacturing system, and an extension

to the microprocessor-based LAN. The scheme reflects the company's bid to boost its newbuilding competitiveness and productivity.

Three, 1,950-TEU cellular containerships on order with Imabari Shipbuilding are to be chartered by Mitsui OSK Lines (MOL). The three newbuildings, based on a self-sustaining design incorporating two deck cranes, are due to be completed between the second half of 1998 and the first half of 1999.

MOL is also to have six 1,950-TEU containerships built, contracted equally between Imabari and Minami Shipbuilding, with completion scheduled for the end of next year and early 1999. The vessels, equipped with two deck cranes, will be deployed on the carrier's Japan/Far East/South American east coast service under long-term charter contracts.

Two subsidiaries of Japanese shipbuilder Hitachi Zosen are to be merged after April 1. Tokyo-based Hitachi Zosen Information Systems will merge with Osaka-based Hitachi Zosen Computer. Hitachi hopes the merged company, which will be capitalized at about \$146 million, will better use management, personnel and technological resources. The merged unit has sales targets of 20 billion yen its first year.

Japanese trading house Itochu Corp. has ordered a 74,000-dwt Panamax bulker from Imabari Shipbuilding for use by the Taiwan-based shipowner Kee Yeh Maritime. The project re-establishes a link the Taipei company, Itochu and the Japanese yard forged nearly 12 years ago. The latest contract, calling for delivery in May 1999, follows the completion in April of a slightly smaller Panamax unit for the Itochu/Kee alliance.

NKK Corp. has started work on a 2,050-grt research vessel for the Japan Fisher Agency. Constituting a highly specialized, single-vessel project production of bulkers, crude carriers and LNG tankers, the survey vessel is intended as a replacement for the 13,630-grt *Shoyo Maru*. Following scheduled delivery in spring 1998, the vessel will be deployed in migratory fish research and oceanic environmental surveys around the world.

Japan's Sanko Steamship has confirmed an order for five 49,000-dwt, open-hatch, box-shaped dry bulk carriers with Namura Shipbuilding in Osaka. Industry

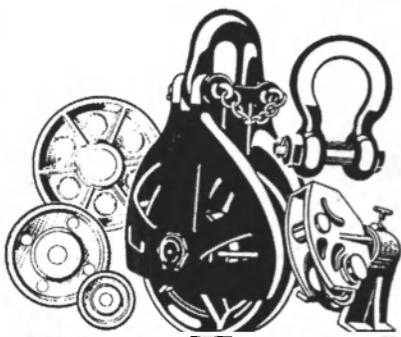
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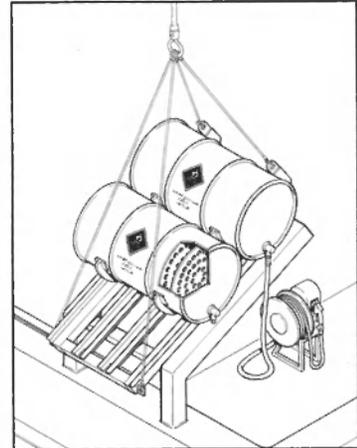
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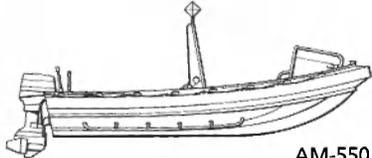
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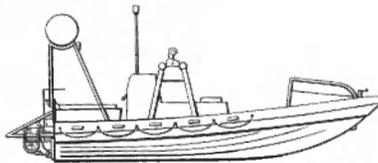
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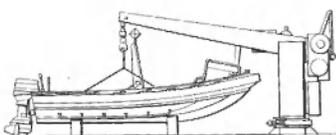


AM-700

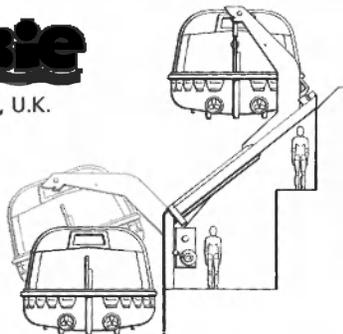


Brierley Hill, West Midlands, England, U.K.

Davits



Rescue Boat Davit



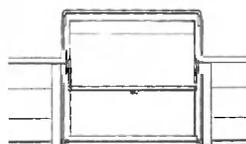
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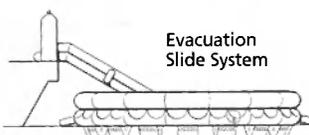


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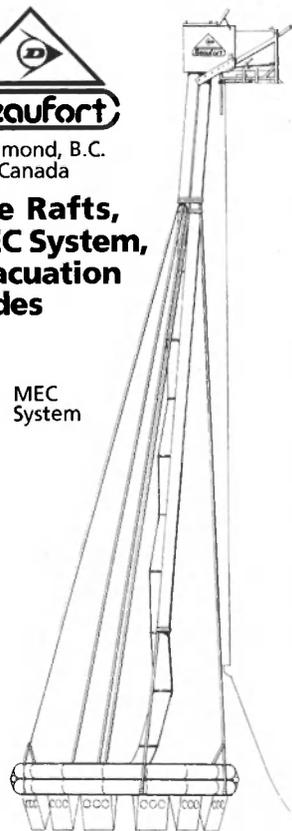
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FAR EAST UPDATE

sources believe the deal could represent an investment of about \$147.5 million. Provisional agreement for a contract was reached in mid-1996, and it is understood that financing details are being negotiated. Sanko has returned to Namura, which built 10 similarly configured vessels of 42,000 dwt in 1994/95, to negotiate delivery posi-

tions of 1998 and 1999 for the latest ships. Novorossiysk Shipping Co. (Novoship) recently signed a \$160 million contract with NKK for four Aframax tanker newbuildings. It marks a strategic diversification into the Aframax market for Russia's leading tanker owner, and underlines Japanese yards' renewed aggression to win new

orders. Delivery is set for between November 1998 and May 1999.

NKK Corp. has implemented an automated sub-assembly line using newly developed multi-welding robots at its Tsu complex. Ten such robots are employed on the line, which provides parts for hull cargo sections and bow and stern sections with complicated shapes.

High-speed rotary arc welding torches are attached to the robotic machines. The construction of double-hulled VLCCs by leading Japanese shipping companies is gaining momentum in Japan, as Nissho Shipping and Navix Line have demonstrated as much, by placing orders with leading Japanese shipbuilders to build VLCCs in the country. It looks certain that orders for five more VLCCs will be placed in Japan within the next few months, with deliveries scheduled for 1999 or later. Navix Line has placed an order with MHI for the construction of a 260,000-dwt, double-hulled VLCC under a 10-year contract with Mitsubishi Oil, with an option for another 10 years.

Kawasaki To Begin Shipbuilding In China

A Chinese joint venture equally owned by Kawasaki Heavy Industries Ltd. and its Chinese partner will reportedly begin shipbuilding operations in the year 2000. The venture has already secured land, and has begun building an assembly plant and a dock. After construction is completed, operations will reportedly focus on orders from the Chinese partner's parent company, major worldwide shipper China Ocean Shipping Co. Construction costs are expected to total about \$148.3 million. The facility will be designed to build 150,000 to 160,000-ton ships.

Hitachi Zosen Completes Bulk Carrier

Glorious Wind, a 72,119-dwt bulk carrier ordered by Drake Shipholding S.A., was completed by Hitachi Zosen's Mizuru Works. The Panamanian-registered bulk carrier is the sixth Hitachi Panamax Optima vessel that embodies several improvements over the original version. These include a larger propeller for further fuel savings, as well as increased tonnage and cargo efficiency.

The ship is outfitted with an energy-efficient Hitachi Zosen MAN B&W 6S60MC main diesel engine and the Hitachi Zosen Super Stream Duct (SSD) is located at its stern, for increased propulsive efficiency.

For more information on Hitachi Zosen
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ASRY Reports Record Revenue

ASRY reported that it had a successful 1996, achieving record ship repair sales of \$89.5 million, an increase of 21 percent over 1995. Net operating profit rose by 14 percent to \$9.7 million, and net profit more than doubled to \$3.4 million. In all, the yard repaired 131 vessels, of which 116 were docked. Of these, 24 vessels were VLCCs and 28 were medium-sized vessels, consisting mainly of tankers and OBOs.

ASRY reportedly made a good start in the conversion market with the conversion of tankers *Jurupima*, a 131,200-dwt vessel for Petrobras, and *Knock Taggart*, a 140,000-dwt vessel for Red Band, to FSO vessels. The yard is currently seeking more FSO and shuttle tanker conversions prior to entering the FPSO conversion market.

Expansion is now underway to increase berthing capacity by more than 1,200 ft. (400 m). The new berths will be arranged alongside the two floating docks, with a new dolphin between the two existing dolphins on either side. The plan, which will cost \$6.2 million, includes the installation of new cranes, compressed air and fresh

and seawater piping. A more extensive, longer term project includes the dredging of a channel and the creation of new piers suitable for conversion work and new land installations.

For more information on ASRY
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Aries SB, a 41,213-dwt bulk carrier, in one of ASRY's floating docks.



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Royal Netherlands Navy Christens Rotterdam

Amphibious transport ship *Rotterdam*, commissioned by the Royal Netherlands Navy, was to be christened on February 22. The ship — built by Schelde Shipbuilding — was designed in cooperation with the Spanish Navy, which is having an identical ship built by Bazan in El Ferrol.

Rotterdam is a unique vessel for the Royal Netherlands Navy because of its amphibious capabilities. The main tasks of the ship will be to transport to shore and support a battalion of approximately 600 marines. The ship is equipped with an internal dock from which landing craft can be dispatched, and a flight deck for helicopters. The vessel is 544 ft. (166 m) long and displaces 12,750 tons.

For more information from
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Draft (max.op.)	15'	Liquid Mud	3,800 bbls.
Deadweight: ..	1,800 L-tons	Dry Bulk	8,010 cu.ft.
Cargo Deck	143' x 46'		18 accommodation spaces

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Depth	18'	Water	280,000 gal
Draft (max.op.)	15'	Liquid Mud	4,250 bbls.
Deadweight:..	2,300 L-tons	Dry Bulk	9,345 cu.ft.
Cargo Deck	150' x 46'		30 accommodation spaces

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Crucial Mating Of Hibernia Topsides A Success

Operations involving the mating of the Hibernia topsides and the concrete Gravity Base Structure (GBS) in late February took place at Bull Arm, Trinity Bay, in Newfoundland, Canada. Mating the 40,000-ton topsides with the 605,000-ton GBS formed the completed Hibernia offshore oil production platform, and although similar operations have taken place many times in the North Sea, this was reportedly the first in North America.

The platform has two main components: the massive concrete Gravity Base Structure (GBS); and the topsides drilling and production systems. A third component of the platform is the crude oil loading system.

In order for the two components to be joined into one integrated unit, the topsides drilling and production facility was towed one mile from the assembly pier to the deepwater construction site, where the GBS is now positioned. At that point, the GBS was partially submerged so that only 20 ft. (6 m) of the 365 ft. (111 m) high structure was visible above the water line.

The mating went off rather smoothly, however, some higher than anticipated winds did cause a slight delay.

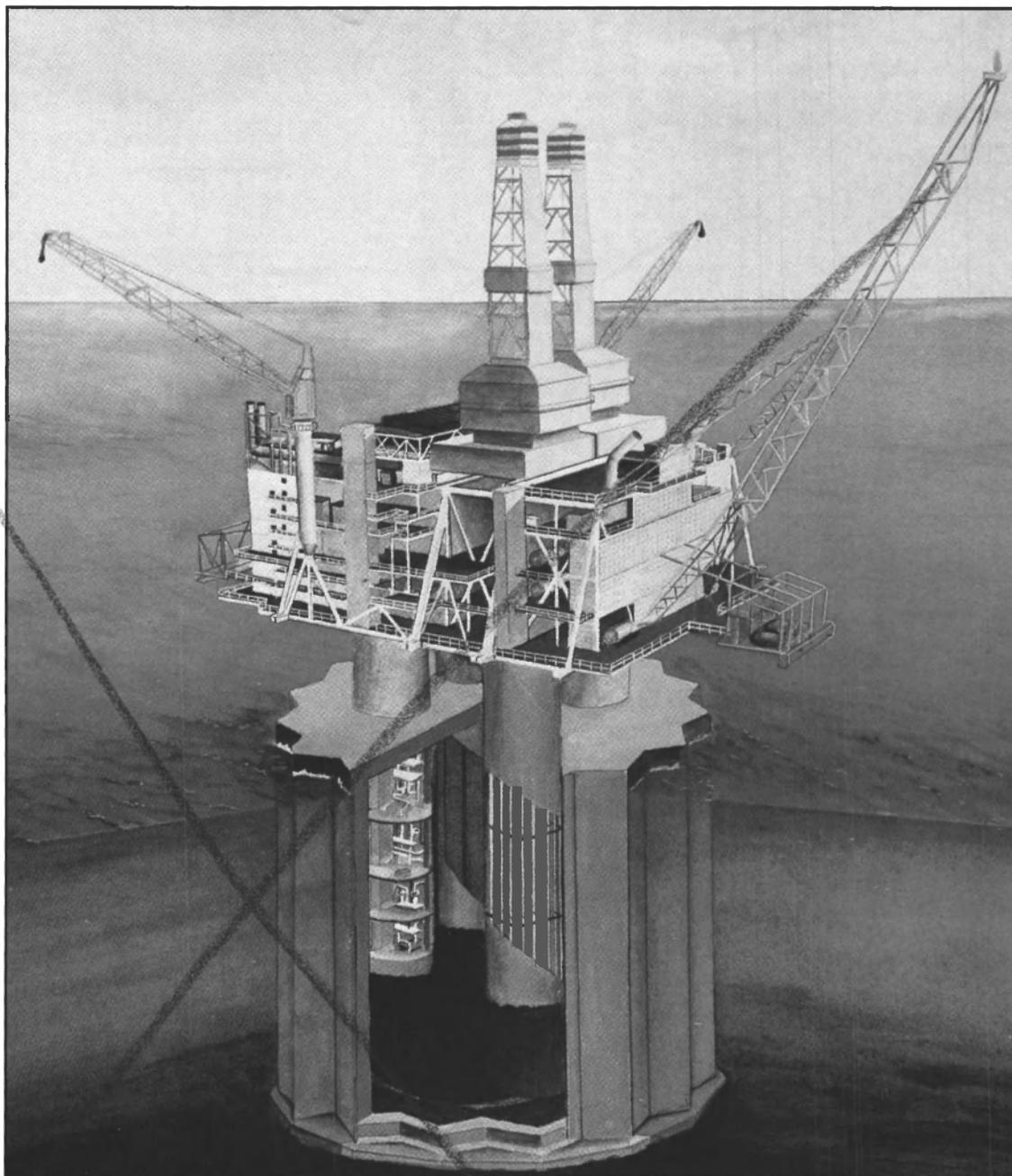
"We were somewhat concerned that the wind would be too high for our 10 knot criteria, but the forecast looked good," said **Henk van Zante**, Construction general manager with the Hibernia Management and Development Company Ltd. (HMDC). "We met with our insurance representatives early in the day to determine if we should proceed. We mutually agreed to wait until mid-afternoon to see if the winds would drop, as predicted by our weather forecaster, and by 5:00 p.m. NST the weather conditions were excellent.

"We started to move the topsides on two giant barges at 5:20 p.m. and within 45 minutes it had cleared the assembly pier. It then took six hours to tow the topsides to the GBS — a distance of 1.5 km. After the topsides were moved into position, water was pumped out of the GBS to allow it to begin lifting the topsides. What made this part of the operation even more spectacular was that the majority of it occurred under the cover of darkness, and it happened much quicker than was scheduled.

"This is one of the most important and challenging tasks involved with Hibernia construction, and the last major milestone before towout," said Mr. **van Zante**.

"In June, the platform is scheduled to be towed to the Hibernia offshore oil field, where it will be positioned on the sea floor," he added.

The Hibernia oilfield is located on the Grand Banks of Newfoundland, 195 miles east south-east of St. John's. The field contains approxi-



mately three billion barrels of oil, of which 615 million barrels are estimated to be recoverable. The platform is scheduled to produce first oil in December.

A Promising Future

The Hibernia field is owned by Mobil Oil Canada (33.1 percent), Chevron Canada Resources (26.8 percent), Petro-Canada (20 percent), Canada Hibernia Holding Corp. (8.5 percent), Murphy Oil (6.5 percent), and Norsk Hydro (5 percent).

Once the fixed production platform is installed offshore in June 1997, the completed platform will weigh approximately 1.2 million tons, and will stand more than 720 ft. (219 m) high. Development drilling will begin in August.

A 50-ft. (15.2-m) thick ice belt provides protection from sea ice and icebergs which pass through the Grand Banks during the spring. The ice belt can withstand the impact of a multi-million ton iceberg, the size of which will only be witnessed once in 10,000 years.

The platform has a design production capacity of 150,000 bbls/day, and during plateau production will be producing an average of 135,000 bbls/day. This plateau period is expected to commence in 1999 and continue for a period of six years.

Testing The GBS

Preparation for the mating operation began weeks in advance, with activity focused on the GBS and topsides barges. The GBS was floating at its deepwater site in Bull Arm since its

tow-out from drydock in November 1994.

Submergence tests on the GBS began two weeks before the scheduled mating operation. Water was gradually let into the GBS and valves were shut off at several depth intervals, to inspect for leaks and to verify that all systems were performing properly. During these tests, the GBS descended

from its mooring draft, which has a freeboard of 108 ft. (36 m), to a mating draft with a freeboard of 18 ft. (6 m).

The GBS was kept upright by adding and removing water through a network of ballasting pipes and compartments, and by the sheer weight of its base slab. Six lengths of mooring chain were anchored to the shore to hold it in

place. After tests, the GBS ballasted to a waiting draft of 285 ft. (95 m).

Meanwhile, two massive barges — measuring 96 x 450 ft. (32 x 150 m) — which were used to ferry the topsides to the GBS mating site, underwent submergence tests to check their ballast control systems.

FPSO Fitted With Twin Schilling Mariner Rudder System

A twin Schilling Mariner rudder system from Hamworthy has been fitted to FPSO *Petrojarl IV*. The vessel, converted for the Norwegian interest Golar-Nor at the Astano shipyard in Spain, is now on station as part of the first phase of the BP Finhaven operation in the U.K. sector of the North Sea.

The twin Schilling Mariner rudder system reportedly provides exceptional maneuverability for large vessels, and recent sea trials on FPSO *Berge Hugin* reportedly confirmed positive tank test results.

For more information from Hamworthy
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Hvide Places \$11 Million Order With Halter

Hvide Marine has signed contracts with Halter Marine Group, Inc. for the construction of a prototype 205-ft. (62.5-m), deepwater platform supply vessel (PSV) and a third Ship Docking Module (SDM). (The original order for the first two SDMs was reported, with color illustration, in the March 1997 edition of *MR/EN*). The approximate value of the contracts, excluding peripherals associated with the Ship Docking Modules, is \$11 million.

The first platform supply vessel is scheduled for delivery by year-end. It will be assigned to Hvide's Seabulk Offshore, Ltd. subsidiary in Lafayette, La., for offshore work in the Gulf of Mexico. It is the first newbuild supply boat in the Seabulk fleet and will be SDLAS-ready for worldwide trading.

"Given the size of our fleet and the growing sophistication of the market as it moves into the deeper waters offshore, we need to develop our next generation of supply boats," said J. Erik Hvide, chairman, president and CEO. "This vessel will be capable of dynamic positioning and will be outfitted with independent high-lift rudders and other state-of-the-art features that our customers are demanding, particularly in the growing deepwater segment of the market."

The SDM is touted as a revolutionary, double-ended ship-docking vessel. Designed in conjunction with Elliott Bay Design Group, Hvide has filed a patent applica-

tion for the design of the SDM. Halter will build the SDMs for approximately \$3 million each.

Including certain owner-furnished equipment, professional fees and contingencies, the total cost of each vessel is approximately \$4.75 million.

Two of the vessels will be assigned to Hvide's Mobile Bay Towing unit in Mobile, Ala., and the third will be stationed at Port Everglades, Fla.

Ulstein Benefits From Offshore Boom

The Ulstein Group won contracts valued at NOK 3.4 billion last year, an increase of more than NOK 1.1 billion compared with 1995, due in large part to the offshore vessel building boom.

The company said that half of the

offshore vessels ordered from Norwegian or foreign yards over the past two years have been developed by Ulstein, and that the market for offshore vessels is the cornerstone of its business. While there have been many cautionary notes regarding the exuberance of the worldwide offshore market, Ulstein vice president **Steinar Siversten Kulen** does not think

saturation is a threat. He predicted that shipowners — with the North Sea as their principal market — will continue to order new tonnage in 1997, although activity should decline by year end, and the slack will be picked up in other areas, including the Gulf of Mexico and the Asia Pacific region.

For more information on Ulstein
Circle 90 on Reader Service Card

Maryland Company Jumps Into Offshore Boom

Bill Brown Enterprises (BBE) has expanded its operations into the booming offshore construction market.

The company is primarily involved in supplying heating, ventilation and HVAC systems for the passenger vessel market. BBE has expanded its HVAC system contracting activities, and has recently completed several offshore rig contracts, including:

- Design and installation of the HVAC system for new-build *Gorilla V* jack-up rig for Rowan Drilling, built at the LeTourneau Shipyard in Mississippi;
- Installation of a new HVAC system on rig R-90 *Endurer* at the Amfels Shipyard in Brownsville, Texas;
- Provision of HVAC system modifications in conjunction with the repairs and conversion of Trans Ocean offshore rig *Marianas* at Amfels; and
- Installation of a modified HVAC system for the conversion of Trans Ocean offshore rig *Amiranted* at Amfels.

For more information on
BBE products and services
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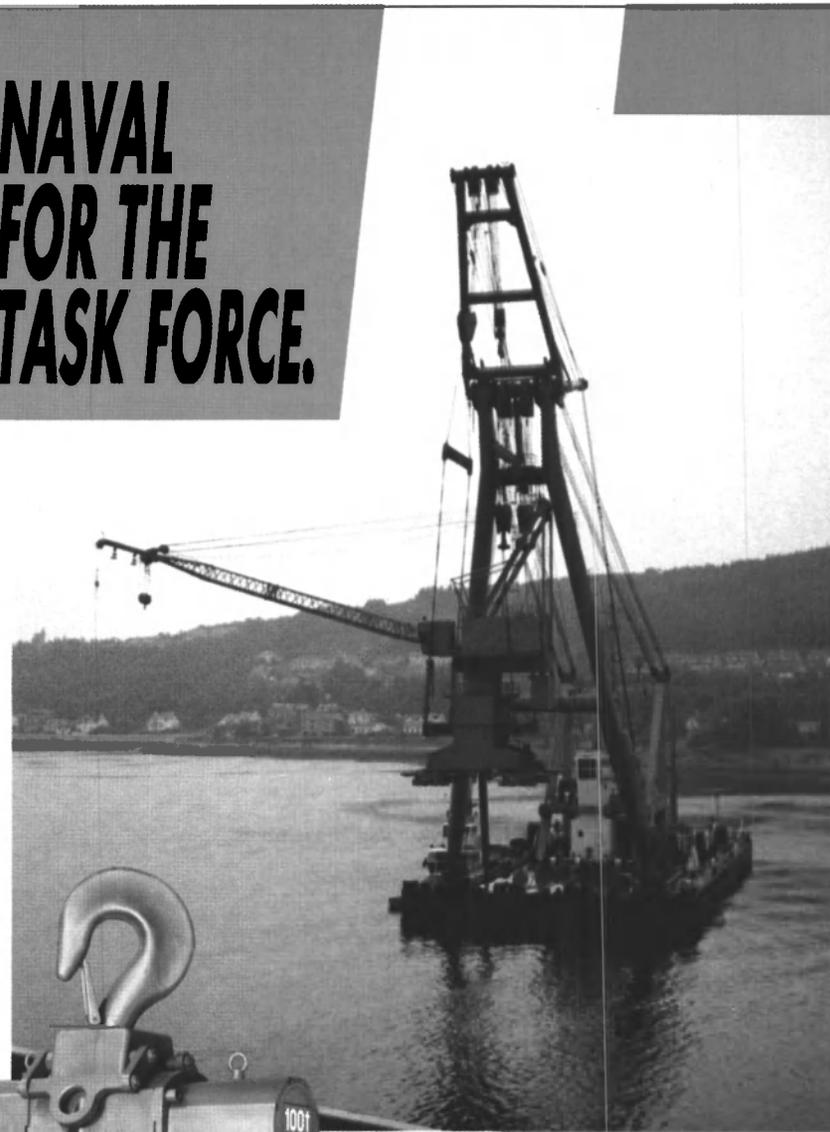
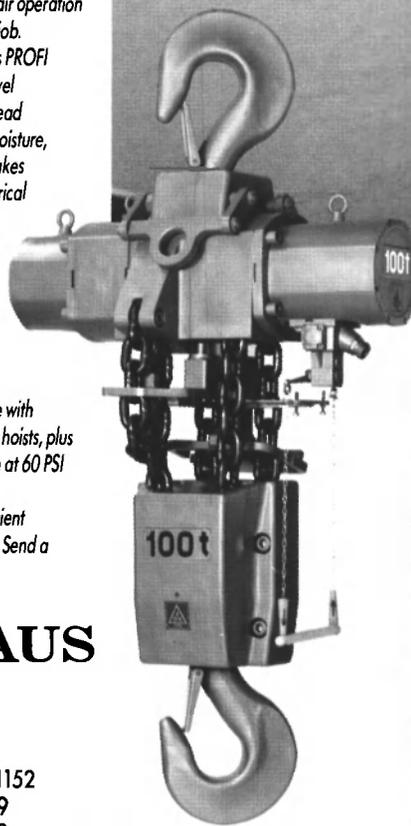
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Sec 212/2114
18 November 1987

From: Commander, Charleston Naval Shipyard
To: J.D. NEUHAUS, Baltimore, MD 21207
Subj: DELIVERY OF TWO 100 TON PNEUMATIC OPERATED CHAIN HOISTS
ON CONTRACT N00012-87-TS31
Encl: (1) NAVSHIPYD CHAIN Photograph of New AFM-7 Crane Lift
in Holy Loch Scotland (3 copies)

1. The purpose of this letter is to commend your Mr. Donald T. Plettenberg for his dedicated support and exemplary performance in the handling of many details for delivery of the two 100 ton chain hoists on our Contract N00012-87-TS31. NAVSHIPYD Charleston appreciates the quick action and delivery to support our schedule for loading the two new portal cranes and shipment to Holy Loch.

2. Enclosure (1), shows the new (310 ton lift) cranes being moved in Holy Loch by SNEY (INCORPORATED) floating crane, TAK LIFT-6 to US Navy Drydock, USS LOS ALAMOS (AFB-7). Your 100 ton pneumatic powered chain hoists are used to level the new portal cranes so that the six-ton wheels will land on the rails simultaneously. The project was a great success as one new crane was loaded in the morning and the other one in the afternoon.

3. Please present one of these photographs to Mr. Plettenberg with our sincere appreciation for a job well done.

A. H. ANDERSON
Acting

457151
OTC Booth #6732 - 3

Circle 251 on Reader Service Card

KMY Floats Out Njord Field FSU

The Floating Storage Unit (FSU) (KMY) for Norsk Hydro Production was recently launched. The FSU, due for delivery in June, will be

anchored in a water depth of approximately 1,082 ft. (330 m) using a Submerged Turret Loading (STL) system anchored on the sea bed. Njord will be one of the first fields on the Norwegian continental shelf to incorporate this technology.

The field will be equipped with subsea wells tied back to a Floating Production Unit (FPU), located directly above the completed wells.

Oil production in the field is scheduled to start in October, and the vessel will have a storage capacity of 112,000-cu-m, or roughly that produced in 10 days.

The passive turret mooring system is located in the forebody of the FSU.

Crude oil from the FPU is transferred via a flexible riser and a swivel through the turret into the vessel.

The main electrical power supply (11 kV) will be transferred through the turret via electrical cables and a slip ring unit.

The FSU can reportedly be operated without a crew during normal operation.

The offloading of stabilized oil to shuttle tankers is arranged through a flexible hose in the stern of the FSU.

The offloading rate is 8,000 cu. m./hr. The FSU will be equipped with a 2.5-MW azimuthing thruster, located in the aft, which will be used for heading control at the offloading phase. The vessel is to be classed to DNV standards.

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Japan Presents Gift Of Oil Combat Vessel To Jordan

U.K.-based Amble Boat Co. Ltd. completed its first aluminum vessel since taking over the boatyard in Amble in May, 1995. The 65.6-ft. (20-m) monohull oil combat vessel, ordered by the Japanese government at the beginning of 1996, has been delivered to the Jordanian Port Authority as part

of a large consignment of oil combat equipment given as a gift of aid to the Jordanian government. *Hamzah 1* has been named after the King of Jordan's son, and will be stationed at the Port of Aqaba.

Built from all-welded marine grade aluminum alloy, the vessel has been designed by McCaig

Watson to carry a deck cargo of oil combat equipment up to 15 tons. Once at the scene of a spill, it can hold 45 tons of recovered oil in three integral tanks. A towing bollard with a capacity of four tons can be used to tow oil booms or other vessels. The vessel also has firefighting capabilities and features a Palfinger PK5800MA marine crane.

Hamzah 1 is powered by twin Caterpillar 3176B marine diesel engines developing 525 hp at 2,300 rpm. The engines drive twin Ultra 450 waterjet units via ZF IRM311A gearboxes, with a 1.5:1 reduction. An Onan MDKAE 16-kW generator installed in the engine room powers the 240-volt AC electrical system. All electrical design, installation and commissioning work was carried out by

William Osborne Electrics Ltd. An electronics package consists of Raytheon R4XX radar, Autohelm GPS, Autohelm Navcentre and ST50+ tri-data, and Furuno VHF radio.

To facilitate night work, *Hamzah 1* is fitted with two 22-in. Francis searchlights, two Aquasignal 24 volt DC, 50-watt decklights, and two 24-volt, 200-watt decklights mounted forward of the wheelhouse.

The vessel was built in compliance with BV standards.



Hamzah 1 is a monohull oil combat vessel built by Amble Boat Co. The vessel was a gift from Japan to Jordan.

For more information on the companies mentioned in this article, circle the appropriate number on the Reader Service Card in this issue.

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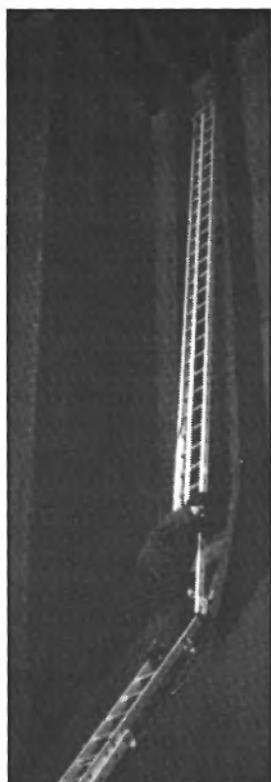
• This equipment complies with all current Classification Society and Intercargo recommendations and International Maritime Organisation (I.M.O.) resolution A713 (17) dated 6th November 1991

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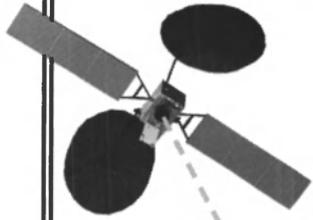
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RISE System Enhances Safety, Flexibility Of Cable And Pipe Ducting

The RISE (rubber insert sleeve expanding) system from Beele Engineering is used for multiple cable and pipe ducting through bulkheads and decks onboard vessels and offshore rigs. The system is specially designed for applica-

tions where pipes or multiple cables are ducted through conduit openings for which conventional conduit frames are not suited. The RISE system reportedly offers a high level of fire resistance, as well as provides a gas and water tight

seal. All of the cables in the conduit opening are surrounded by a protective sleeve made of the fire-resistant rubber, PRR/EHF.

For more information, Circle 89 on Reader Service Card



Stolt Comex Wins Flowline Lay, Mooring Installation Contracts

Stolt Comex Selway has won two contracts, one in Norway and the other in the Arabian Gulf for flowline lay and mooring installation.

One contract is with Saga Petroleum ASA for the installation of a mooring system for the Varg Oil Production and Storage Vessel. The \$7 million contract is for the engineering, procurement and installation of 10 pile anchors.

The other contract has been awarded by Saudi Aramco in the Arabian Gulf for the installation of flexible flowlines and umbilicals, together with the tie-in and commissioning of various flowlines, risers, umbilicals and J-tubes onto existing platforms, including those in the Berri, Marjan and Zuluf oil fields.

Oceaneering Sells Ocean Ruler To Marathon

Oceaneering International announced that Marathon Oil has acquired the jack-up production unit *Ocean Ruler*. Oceaneering had acquired the unit last fall, in anticipation that it would be able to reach an agreement with Marathon to add additional oil production processing equipment and lease the unit to Marathon under a day rate lease.

However, the companies were unable to reach an agreement, and Marathon acquired the unit pursuant to a purchase option which Marathon was granted at the time the unit was initially acquired by Oceaneering.

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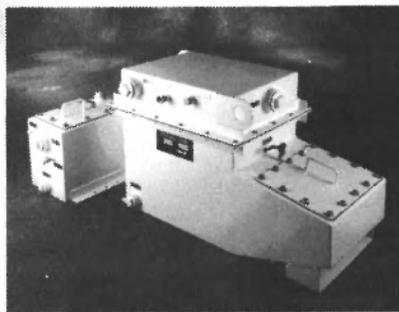
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Wärtsilä Engine Unveiling: A New Contender In the 320-mm Bore Stakes

by David Tinsley, technical editor

One of the market's most successful classes of medium-speed engines, the Vasa 32, has been

joined by a new 320-mm bore contender. The Wärtsilä 32 brings higher unit power, enhanced fuel consumption, significantly reduced componentry and integral comput-

er control to a fiercely competitive sector of the engine business.

This new type has been engineered to deliver 460 kW per cylinder at 750 rpm in marine applica-

tions, compared with the maximum 420 kW attained with the Vasa 32 at the same crankshaft speed. The fact that the Vasa 32 has achieved such a prominent market standing and set new standards in key performance areas has caused Wärtsilä Diesel to set rather high technical attainment levels for itself, in regards to the new generation of machinery.

The unusually long, two-year test program for the Wärtsilä 32 in-line prototype testifies to the thorough preparation that preceded the release of the engine for commercial production in March. An 18-cylinder V-engine was fired up on the testbed one year ago, and is now being installed in a pilot powerplant for extensive field trials.

Although the Wärtsilä 32 is viewed as the long-term replacement for the Vasa 32, sales of the latter show no sign of diminishing. Investments at the Vasa factory in western Finland provide for economic, overlapping production of both generations of 320-mm bore machinery as long as market demand is steady. The buoyant level of business for recently introduced Vasa 32 models, notably the low NOx (nitrogen oxide) version, colors the company's thinking.

Offered in the usual in-line and V-form cylinder numbers, the new Wärtsilä 32 spans the power band up to 8,280 kW. It is undoubtedly an attractive powering option, given its technological level and high output within a compact envelope, fuel-burning and exhaust emission performance, overhaul intervals and maintainability. Nonetheless, the continual upgrading, refinement and adaptation of the Vasa 32 since the original series was released in 1977 has ensured the enduring competitiveness of the class, currently covering the 1,480 to 7,380 kW range.

Last month, overall sales of the type had reached 2,621 engines of an aggregate 8.9 m kW. The marine market accounts for 1,888 engines, equating total power of 5.3 m kW. Therefore, in the Wärtsilä 32 project, the designers had to look to outperform the already high-performance Vasa 32 in every key area. The fact that the latest low NOx version had achieved emission targets well below the IMO curve, while yield-

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ing improved specific fuel consumption (sfc) figures made the task that much harder.

Over the years, the Vasa 32 has been the platform for the introduction of new technology in medium-speed engine design, including such innovations as pressure-lubricated piston skirts and anti-polishing rings.

However, the fact that the original design margins have been fully utilized, through the progressive upgradings, necessitated the development of a new generation that could accommodate ever-higher operating parameters over the long term. The Wartsila 32 is the means by which the major player in the global four-stroke engine business can look to build on an already commanding 60 percent share in one of the hottest categories of the engine market.

While retaining the same bore size of its predecessor, the Wartsila 32 has a longer stroke at 400 mm, compared with the 350 mm of the Vasa 32.

Mean piston speed is correspondingly higher, at 10 m/sec. The engine's long providing period has indicated that targets for the new design have been achieved at 179 and 178 g/kW-hr at nominal output in the in-line and V configurations, respectively. Lube oil consumption is .5 g/kW-hr, and a 20,000-hour TBO (time between overhaul) interval is reported.

The Wartsila 32 is exceptionally clean-cut, with a 40 percent lower component count. There are no external, low-pressure fuel pipes — which have been replaced by ducts integrated into the injection

pump design — while ducts for water and oil have been incorporated in the engine block. Ease of maintenance has been one of the key considerations. Thus, the multi-duct containing the water system and exhaust and air piping stays in place when lifting the cylinder head, and the rocker arm cover is suspended on hinges. A one-piece lube oil module is used and mounted directly on the engine, while the proven hydraulic jack method for moving main bearings caps has been adopted.

The engine computer is the central unit in the Wartsila engine control system (WECS), which includes monitoring of main bearings and cylinder liner temperatures, as well as individual exhaust valves.

The NOx levels for the new generation are less than half the values stipulated in the IMO proposals.

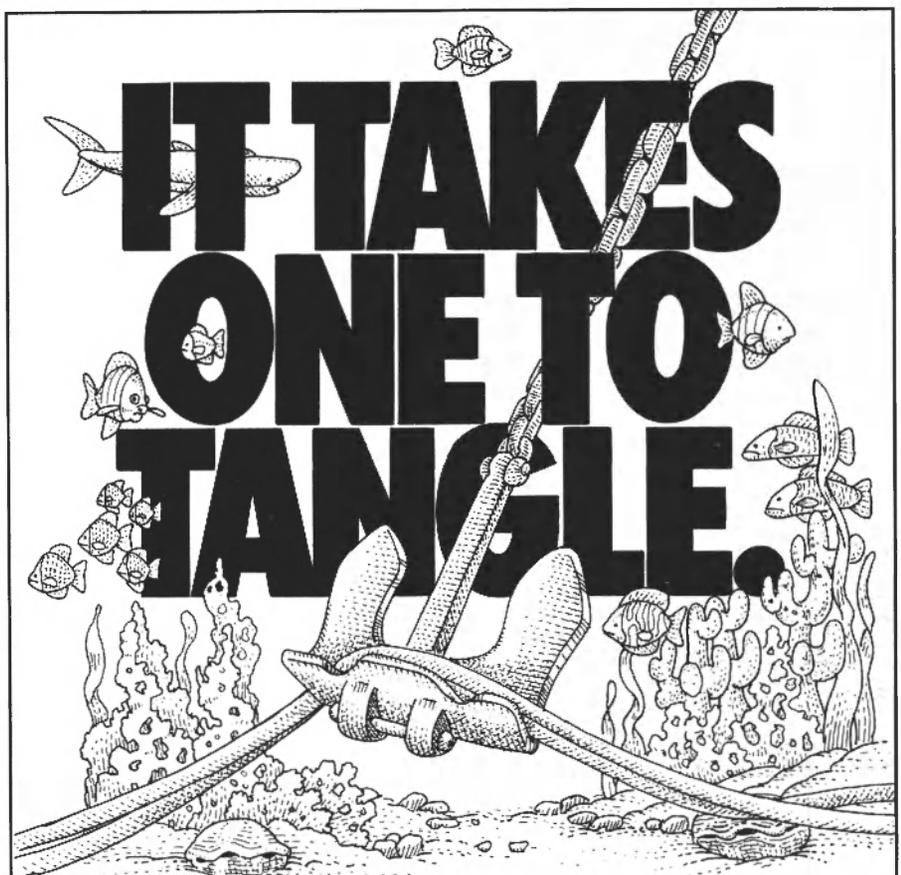
Even more significant is the fact that further improvements in fuel consumption have been achieved along with enhanced environmental acceptability. At the official unveiling in London on March 19, Wartsila Diesel management reported that a total of 18 engines of the Wartsila 32 type had been sold as pilot installations, with the first examples set to go to sea towards the end of April.

The initial newbuilding application entails two eight-cylinder, in-line units as the 3,520-kW prime movers in a 4,500-dwt platform supply vessel nearing completion at the Brattvaag yard in western Norway. The Wartsila Propac propulsion package for the

Johannes Ostensjo-owned newbuilding also includes Wichmann PR90.41 CP propellers and a Wichmatic 2 propulsion control system.

Four six-cylinder L32 engines developing 2,640 kW each, plus an auxiliary unit of the same type

have all been specified for 14,000-gt cruise ship *Columbus*, under construction in Wismar, Germany. Following the vessels scheduled for delivery by MTS Schiffswerft this summer, *Columbus* will operate under long-term charter to Hapag-Lloyd.



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MR9704

Wartsila 32 Performance Fuel consumption

	In-line	V
At nominal output	179g/kW-h	178g/kW-h
In optimal point	178g/kW-h	177g/kW-h

Without engine driven pumps, ISO conditions at IMO NOx values, 3 percent tolerance.
Lube oil consumption .5 g/kW-h.

Maintenance interval 20,000 h for fuels with ash content less than or equal to .05 percent.

Main technical data

Bore	320 mm
Stroke	400 mm
Stroke/bore ratio	1.25
Speed	720, 750 rpm
Mean piston speed	10 m/s



COSCO Launches Ships To Handle Trade Increase

Containership *Lu He* sailed into the Port of Long Beach, marking China's entry into the era of mega-ships. China Ocean Shipping Company (COSCO) will have six of the large vessels calling at Pacific Container Terminal (PCT) by the

end of the year. The new ships will help handle the recent rise in U.S.-Chinese trade. Long Beach currently handles more than 25 percent of all U.S.-Sino trade, accounting for approximately \$15 billion in two-way trade.

"The development of the new, large ships will certainly help in strengthening links between China and the U.S. and especially

the state of California," said **Ma Ze Hua**, COSCO America president.

To accommodate this increase, the Port and PCT parent company Stevedoring Services of America worked together to extend the booms on three container cranes at the terminal. The improvements reportedly allow the cranes to reach across 16-container-wide ships. In addition, the Port is planning the construction of a 145-acre, \$200 million terminal for COSCO. The facility would be the company's first dedicated terminal in the U.S., and would be located on the site of the former Long Beach Naval Station. This proposal, however, is being hotly protested by a number of citizens' groups in Long Beach who believe that the area should be set aside for public use.

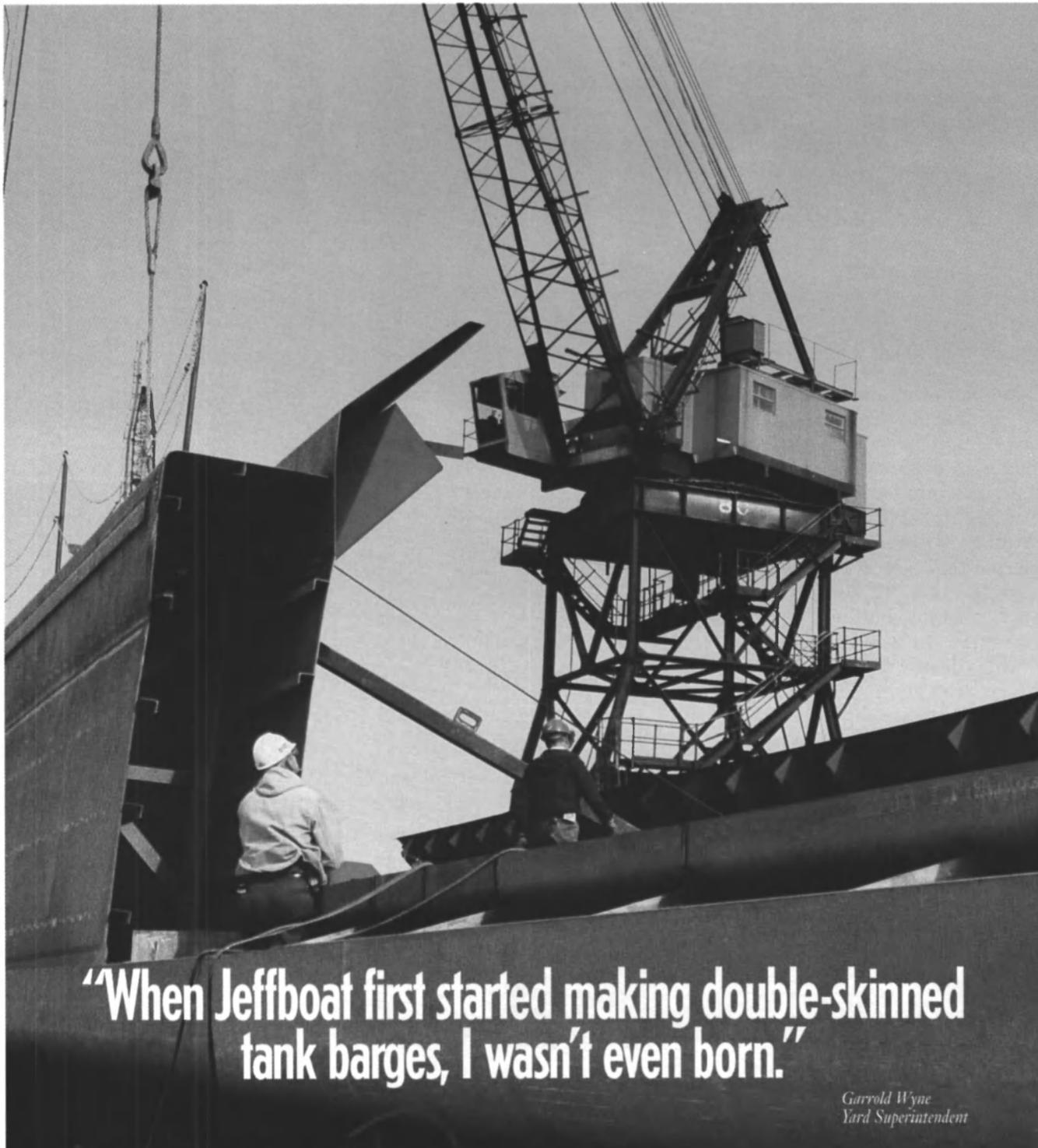
The new terminal will have a 2,500-ft. wharf and berth depths of 50 ft. Six new cranes will reach across 18 to 20 rows of containers, and a dockside rail yard will handle COSCO's intermodal shipments. The terminal is reportedly expected to open next year.

USS Enterprise Returns To NNS For Maintenance Work



USS *Enterprise* is shown arriving at NNS for a six-month maintenance period.

Aircraft carrier USS *Enterprise* recently returned to Newport News Shipbuilding (NNS) for a six-month maintenance contract valued at approximately \$70 million. The NNS-built ship arrived on February 13 for Extended Selected Restricted Availability (ESRA), part of an incremental maintenance program which the Navy began with its carriers to meet budget demands. Aircraft carriers will now undergo more frequent four to 10-month maintenance periods rather than the usual 18 to 24-month complex overhauls. Work during the maintenance period will include radar upgrades, redecking of two eleva-



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*Garrold Wyne
Yard Superintendent*

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tors, and miscellaneous repair and upgrades in the propulsion and reactor plants.

Enterprise was launched at NNS in 1960, and was the first nuclear-powered aircraft carrier to join the U.S. Navy's fleet. The company redelivered *Enterprise* to the Navy in 1994, after a major, four-year overhaul.

Harland & Wolff Completes Suezmax Tanker Repair



Harland and Wolff Shiprepair and Marine Services was scheduled to complete repair work this month on Suezmax tanker *Sea Empress*, which was severely damaged after running aground off Milford Haven. In addition, according to Yard Manager **Jim Eccles**, the yard is actively seeking further work on the conversion of FPSOs, and is taking the opportunity to re-enter the cruise and passenger ship repair market.

The recent conversion of FPSO *Glas Dour* was also carried out by Harland & Wolff with the assistance of the company's Repair division. The project included major engineering work and the complete fabrication and installation of a helideck.

"It is a well-known fact that there will be a growing demand for these large floating production and storage vessels to serve the marginal oil fields which cannot justify the huge expense of fixed or semi-submersible platforms," said Mr. **Eccles**. "We are already a provider of services to the offshore industry, and the yard's position makes it ideal for repairing the larger vessels servicing the deep-water terminals of Port Talbot, Milford Haven and Sullom Voe."

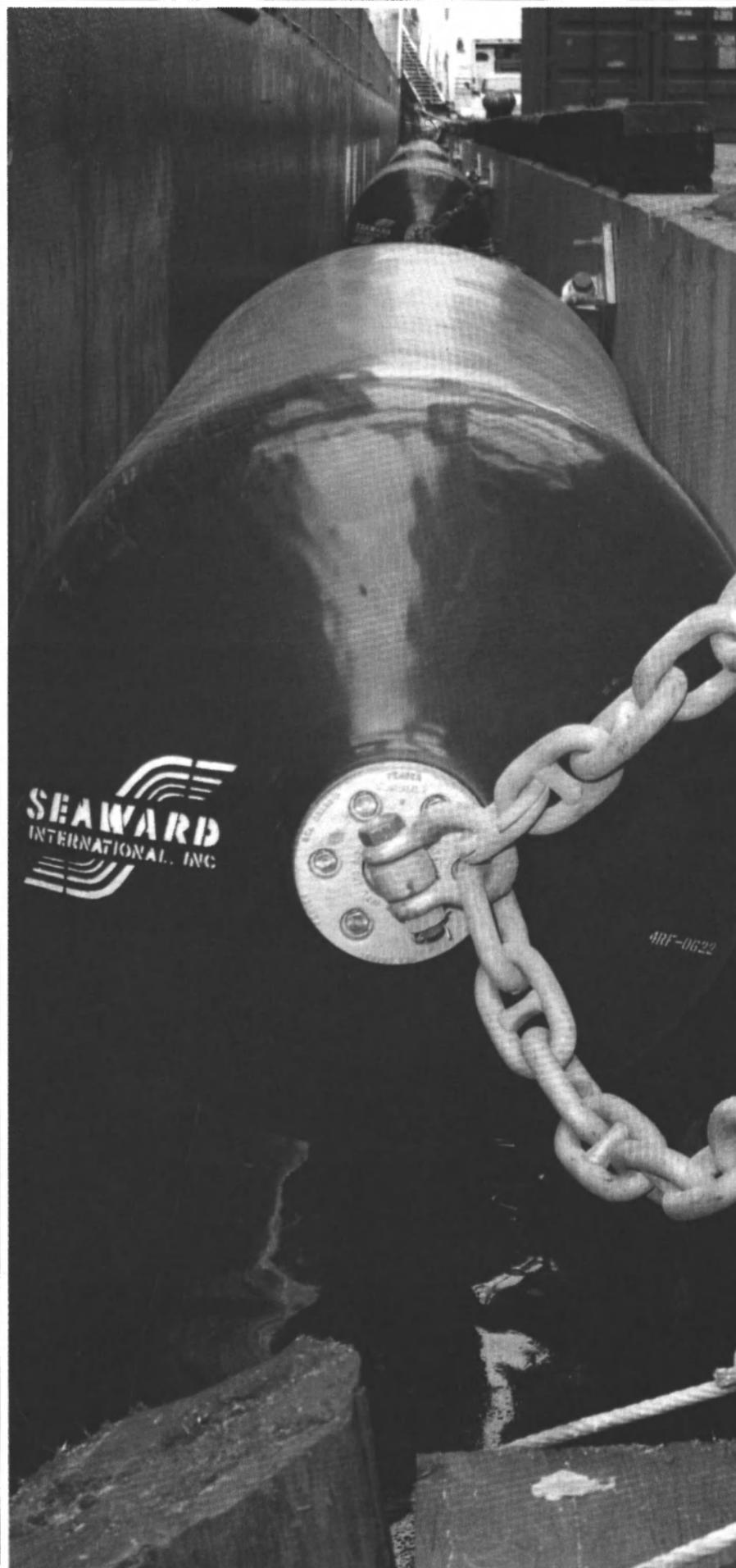
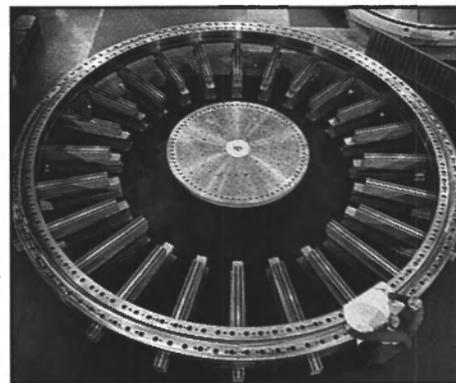
Hoesche Rothe Erde Manufactures Giant Bearing For Brazilian Tanker

Hoesch Rothe Erde GmbH has

manufactured what the company touts as one of the largest and heaviest anti-friction bearings ever made for Sofec Inc. Weighing 46 tons with a diameter of 34 ft. (10.3 m), the bearing is intended for converter tanker *Vidal de Negreiros*, which is stationed in the Albacora oil field off the coast of Brazil, and operated by Petrobras SA. A Floating

Production Storage Offshore vessel (FPSO), *Vidal de Negreiros* doubles as an oil extracting operation and an intermediate store from which raw oil is transferred to tankers. The advantage of this process is that oil extraction can continue uninterrupted.

Pictured is the Hoesche Rothe Erde anti-friction bearing, to be installed on tanker *Vidal de Negreiros*.



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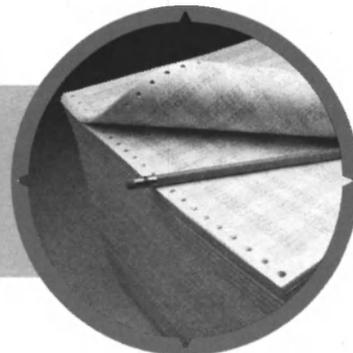
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Sabroe Provides Climate Control For New Cruise Ships

Sabroe Marine provided Celebrity Cruises' 73,850-gt cruise ship *Galaxy* and Royal Caribbean International's 73,600-gt cruise ship *Grandeur of the Seas* with air conditioning and refrigeration systems. The company provides water chiller units with a product range covering capacities of up to 6,500 kW per individual unit, as well as a range of standardized condensing units for cruise ship provision stores.

Galaxy is one of three Meyer Werft-built sisterships to be equipped with Sabroe air conditioning refrigerating plants; the other two being *Century*, delivered in 1995, and *Mercury*, due for delivery at the end of this year. *Galaxy* is equipped with four Sabroe water chillers, each with a capacity of approximately 4,500 kW. Each unit is mounted on vibration dampers to eliminate the transfer of vibration to the hull, and all pipe connections to and from the unit are of the flexible type.

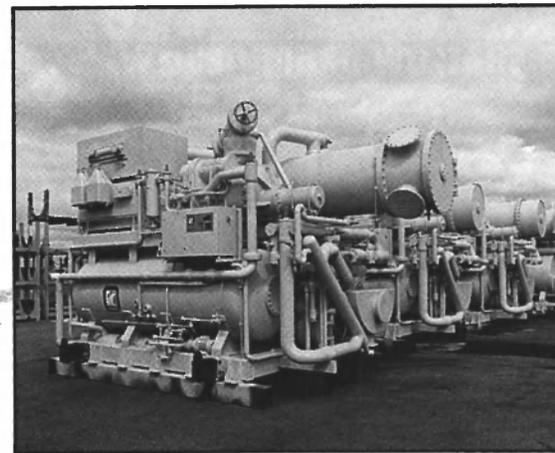
The main air condition refrigerating system for the accommodation areas of *Grandeur of the Seas* comprises four screw-type, flooded water chiller units, type PLCY

447M/1440, each with a capacity of 4,373 kW. Each unit is operated by water-cooled, high-voltage motors, 6.6 V, 60 Hz, 920 kW. An identical system is to be installed on *Grandeur's* sistership *Enchantment of the Seas*, which is due for delivery in September.

Sabroe Marine specializes in the

development of new refrigeration equipment for the passenger cruise liner and jumbo ferry markets.

Sabroe Marine water chillers are shown, ready for delivery to Celebrity Cruises' *Mercury*, building at Meyer Werft in Germany.



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Dockwise Transports Four Of Eight Cranes

Dockwise N.V. has successfully transported a fully-erected container crane from Dubai to Los Angeles. The company was awarded a contract to transport eight container cranes, built by Noell in Dubai for Los Angeles.

The transportation contract was to be carried out in two separate shipments by *Tern* and *Teal*, two of the four Swan class semi-submersible, heavy-lift vessels in the Dockwise fleet. This was the first time the company moved four giant container cranes transversely stowed on one vessel. The cranes measure 351 ft. (107 m) high, with boom lengths of 406.8 ft. (124 m). Dockwise operates a fleet of 15 semi-submersible, heavy-lift vessels — nine of which are in the oil, gas and petrochemical industry; three of which focus on the crane and dredging material markets; two of which focus on the subsea cable laying market; and one which is involved in luxury yacht transportation.

Bisso Adds To Tug Fleet

Bisso Towboat Co., Inc. has added tugboat *Capt. Billy Slatten* to its fleet of harbor and coastwise tugs. The vessel entered service in January, assisting ships on the Mississippi River. Rated at 5,200 hp, the triple-screw tug joins sister vessel *Scott T. Slatten* as one of the most powerful and maneuverable tugs assisting ships on the Mississippi River.

Capt. Billy Slatten is powered by three Detroit Diesel 16V-149TIs engines driving three Twin Disc MG 540 reduction gears with a 7:1 ratio which, in turn, drive three, four-blade stainless steel propellers set in 81-in. diameter stainless steel Kort nozzles. The tug is equipped with Mathers pneumatic shaft brakes and John Crane shaft seals. Electrical power is supplied by two Lima 75-kw generators driven by two GM 6-71s. Additional equipment aboard *Capt. Billy Slatten* includes a Smatco CB20E vertical capstan and an 80-ton

capacity Washington Chain & Supply model RSRH-80 rotary quick release tow hook with remote release in the pilothouse. For fire fighting duties, the tug is equipped with a SSM model MK-150/VR-150 foam/water monitor rated at 2,000 gpm. The monitor is powered by a GM engine driving an eight-in. Peerless pump.

Auxiliary equipment includes Skipper steering, Centofanta pneumatic engine controls, an EMI 36 point engine room alarm system and 2-One fire and smoke alarm system, Robertson autopilot and gyrocompass, Garmin GPS, Ritchie compass, Furuno radar, SEA VHF radios, and Standard loudhailer and intercom.

The new tug is of single chine hull design and measures 110.8 x 33.8-ft. (34 x 10.3-m), with an operating draft of 12 ft. (3.6 m). The tug features a unique rudder system, in which its center rudder operates independently from the two outboard rudders, reportedly increasing its ability to maneuver



in tight spaces. This vessel is also outfitted with an stainless steel tow bits and bullnose, which will reportedly help prevent chafing and wear of the Spectra 900 fiber rope slings. This is the third tug in the Bisso fleet to be outfitted with these slings.

Capt. Billy Slatten was constructed by Main Iron Works, Inc., Houma, La., in 10 months and carries an ABS International loadline. This is the fourth new tug constructed at the yard in the past five years for Bisso Towboat Co. The vessel will be positioned in the Mississippi River in the St. James/Convent area, providing assistance to large tankers and bulk carriers calling in the area.

For more information on the companies mentioned in this article, circle the appropriate number on the Reader Service Card:

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Furuno	123
Garmin	121
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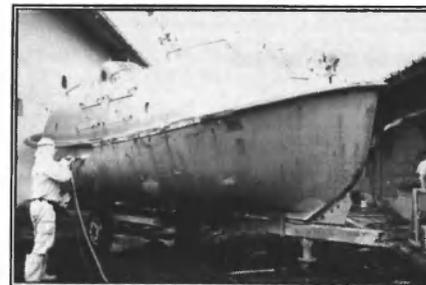
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Spar caisson weldout of the FPS Neptune "next-generation" offshore production platform. Ingalls fitted and joined two massive, 72-foot diameter caissons together — a historical first — to form the 705-foot-long Spar hull, and completed the installation of spiral hull strakes to stabilize the structure against ocean currents.

And during 1996, the Mississippi Gulf Coast shipbuilder delivered as many as three hopper barges a week to an inland waterways towing customer, processing 900 tons of steel per week and demonstrating Ingalls' quick-reaction steel fabrication capabilities.

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SHALLOW DRAFT REVIEW

(continued from page 47)

cause oil spills, damage to property and the environment and loss of life. The two courses include both classroom and simulator bridge sessions.

Wheelhouse Management Training is designed to teach mariners how to recognize and break potential error chains. An integral part of the class is

Offshore Systems' Electronic Chart Precise Integrated Navigation System (ECPINS), which has been installed to continuously determine vessel position in relation to land, charted objects and unseen hazards. The Emergency Readiness course places mariners in threatening towboat wheelhouse conditions to teach them how to deal with situations such as

loss of steering and propulsion, changing currents and volatile traffic conditions.

For more information on the courses
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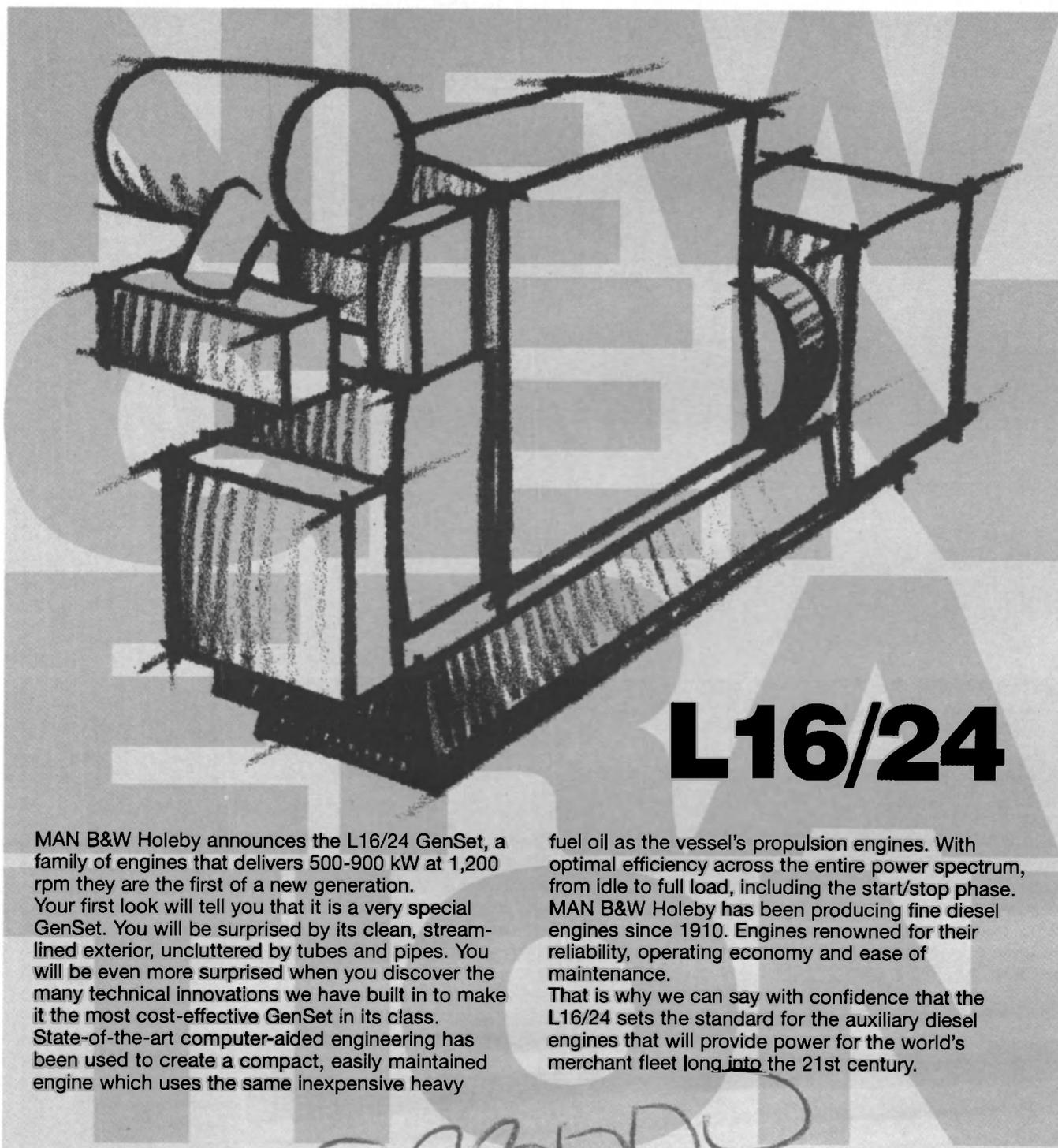
DIB Offers USCG-Approved Ship-To-Shore RIB

Demaree Inflatable Boats, Inc.

(DIB) has made available the first U.S. Coast Guard (USCG)-approved ship-to-shore rigid inflatable boat (RIB) designed for the passenger vessel industry. The 22-ft. (6.7-m) vessel, dubbed *Ship-to-Shore*, is designed to transport 14 passengers and two crew, reportedly making it the first hard deck, soft hull boat certified by the USCG to carry more than six passengers to shore in U.S. waters. With the recommended 55-hp Mercury tiller control as the primary motor and a 9.9-hp Mercury auxiliary motor, the boat operates at a cruising speed of 10 knots fully loaded. Clipper Cruise Lines took delivery of the first two ship-to-shore vessels last spring, and uses them aboard 257-ft. (78.3-m) cruise ship *Yorktown Clipper*.

For more information on
Demaree Inflatable Boats
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MAN B&W Holeby announces the L16/24 GenSet, a family of engines that delivers 500-900 kW at 1,200 rpm they are the first of a new generation.

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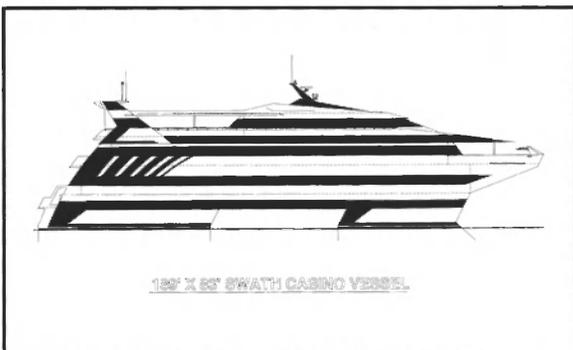
Halter Gulf Repair Stretches Barge

Penn Maritime's 385-ft. (117.3-m) double hull heated asphalt barge *Gulfstream* was fitted with an additional pair of cargo tanks at Halter Gulf Repair, Inc., a Halter Marine Group shipyard. In addition to minor repairs, the barge was cut in half and a new 64.5-ft. (19.6-m) midbody section was added. The barge now measures 449.3 x 56 x 25-ft. (137 x 17 x 7.6-m), and has 25 percent more cargo capacity. The new midbody section was fabricated at Halter Gulf Repair from panels provided by Halter Marine Group's Equitable Shipyard. According to Halter Marine Group President and CEO **John Dane III**, Halter Gulf Repair has successfully installed two 250-ft. (76.2-m) midbody sections in two other barges while in the water.

"The challenge to us with the *Gulfstream* was to develop a procedure to make the cut and rejoin the barge hull without risk to the environment. That is why we chose to do everything out of the water," said Mr. Dane. "As a further precaution, containment booms were deployed and recovery equipment was at hand. While *Gulfstream* was being modified, Penn Maritime had new main engine refuelling gears and minor repairs done to M/V *Marlin*, the notch tug which pushes *Gulfstream*."

Second Dejong & Lebet SWATH Gaming Vessel On Its Way

With its first 600-passenger SWATH under construction at Leevac Shipyard, Inc., Dejong & Lebet, Inc. is in the process of developing its next-generation gaming SWATH, a 189 ft. (58 m) long, 83 ft. (25.2 m) wide, three-deck, all-steel vessel. It will contain 575 slot machines, 250 table games, eight poker tables and a sports bar. The third deck lounge will be capable of accommodating up to 200 passengers, while the open portion of the third deck will be capable of holding 500 passengers. The vessel has a total passenger capacity of 1,000. Powered by a pair of 1,250-hp engines, the vessel will have an approximate cruising speed of 12 knots. While the first SWATH currently under construction has one long strut on each side, the new SWATH will have two struts on each side to facilitate rougher seas. The new vessel will classify as a K-Prime passenger vessel.



For more information on Dejong & Lebet
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Australian Gaming Company Gets Go Ahead In U.S.

Melbourne, Australia-based gaming company Structured Data Systems Pty Ltd. (SDS) has broken into the U.S. gaming market with a license from the Louisiana State Police to manufacture and supply The Racing Game, a multi-media gaming system. Louisiana will become the first U.S. state to license the system, joining international markets such as South Africa, Belgium, Peru, Scandinavia, the Czech Republic, Slovakia

and several cruise ships already operating The Racing Game.

According to **Marcel Dayan**, SDS managing director, the game has been designed to be networked from a central site to multiple locations such as clubs and hotels, or can be utilized by one property such as a cruise ship or casino. "There are 15 riverboats, three Indian casinos and one land-based casino in the state of Louisiana, and each of these locations has the potential to install The Racing Game," said Mr. **Dayan**.

The license enables SDS to install a 90-day trial system of The Racing Game onboard one selected riverboat within the Louisiana market for operational approval. This vessel will be *Belle of Baton Rouge*, which operates on the Mississippi River. Following the successful conclusion of the trial, the system may then be installed on other riverboats and in casinos in Louisiana.

For more information on Structured Data Systems Pty Ltd.
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Barge-Mounted Powerplant Delivered

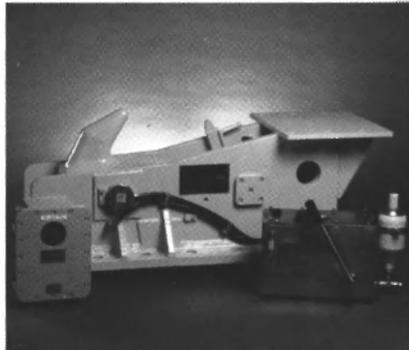
A barge-mounted gas turbine powerplant is shown in the Trinity shipyard in Beaumont, Texas, shortly before its delivery to Puerto Plata, Dominican Republic. The barge is the first phase of what will be an 186-MW, barge-mounted, combined-cycle plant. Owned by Smith/Enron Cogeneration Ltd., the plant will supply power to the Corporacion Dominicana de Electricidad. General Electric Industrial & Power Systems and Raytheon Engineers & Constructors are supplying equipment and services for the plant.



The Mooring Specialists

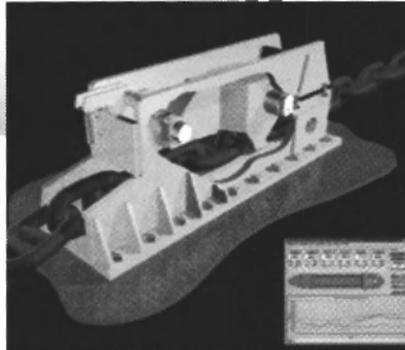
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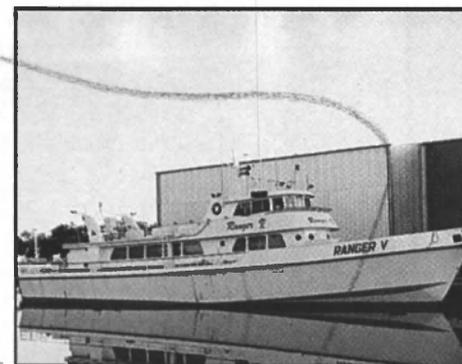
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Blancke Marine Completes Major Conversion Project

Sun Dancer II, the newest member of Peter Hughes Diving, Coral Gables, Fla., has completed its transit voyage and is in regular service in Palau. The Belize-flagged vessel carries 20 passengers and six crew on week-long,

live-aboard scuba diving tours in its home waters in Micronesia. The all-aluminum vessel is the result of a major conversion of *Ranger V*, a Robert E. Derektor passenger vessel. All design and engineering was performed to U.S.

Coast Guard standards by Blancke Marine Services, Inc., Woodbury, N.J. Work began at Gulf Craft in Patterson, La., where a deep skeg was added to improve the original hull's directional tracking. Side hull sponsons were added to the

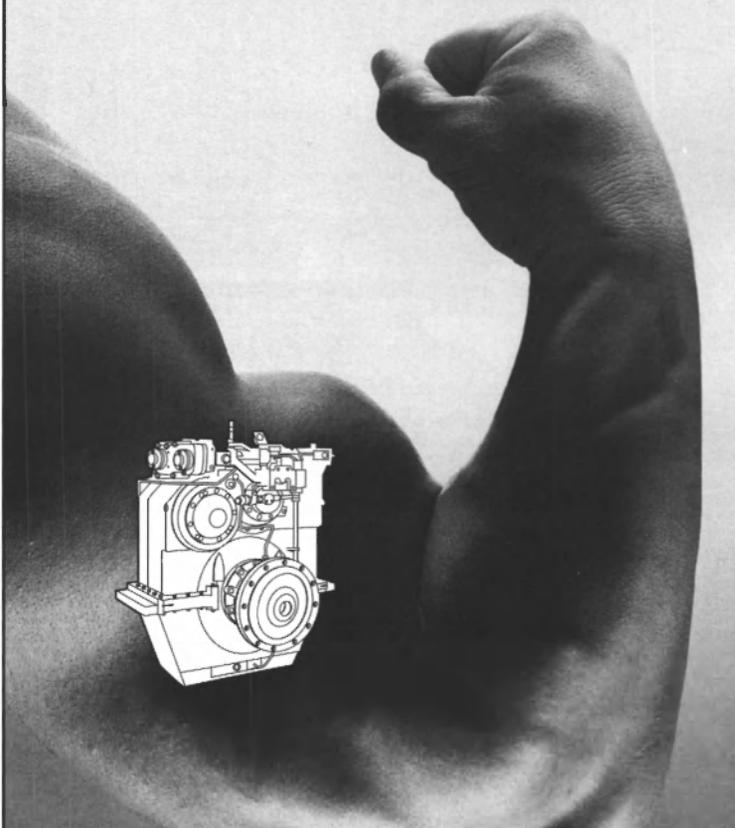


Pictured is passenger vessel *Ranger V* before its conversion.



Pictured is revamped *Ranger V*, as the new *Sun Dancer II*.

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vessel, incorporating main engine exhaust trunks. Bilge keels were added and a set of wide steps recessed into the transom, providing access to a new swim platform. The vessel now measures 122 ft. (37.2 m) overall, with a 25-ft. (7.6-m) beam and a 7.3-ft. (2.2-m) draft. The remainder of the conversion was completed by Network Marine in Pierre Part, La.

Original Detroit Diesel 16V-149s drive 42 x 31-in. four-blade propellers, providing a 15-knot cruising speed. A pair of 75-kW 6-71 gensets and a lazarette-mounted 50-kW 4-71 night generator and 1,600-gpd FCI watermaker were installed. Aqua Air provided a 20-ton chill water A/C system with individually controlled air handlers for each stateroom. New and modified double bottom tanks hold 2,500 gallons of fresh water, 1,725 gallons of sewage and 7,500 gallons of fuel. A large passenger accessible bow pulpit was added, serving as a combination anchor fairlead and stowage pocket.

The main deck aft is the vessel's diving center, with individual gear stations for each passenger, Nitrox and air fill stations, dive tables, dip tanks and deck showers. The lazarette contains compressors and 10,000-cu-ft. capacity, high pressure air receivers.

The revamped vessel is suited for worldwide operation. It functions as a dive platform itself or as a

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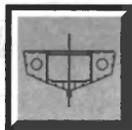
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ShipCAM97 / CAD-Link97 NC-Pyros97

from Albacore Research Ltd.



Integrated ship production for Win95/NT. **ShipCAM97:** Fairing and lofting including frames with cutouts, plate expansion, shell expansion and inv. bending. **CAD-Link97:** AutoCAD13 based 3D structural modeling as easy as 2D drafting plus weight & CG. **NC-Pyros97:** NC-code generation from CAD drawings.

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base of operations. Diesel-powered and jet-propelled, *Sun Dancer II* carries 20 divers and two dive masters for remote excursions or pick-up service in high current diving environments.

IRPT Seeks Additional Funding For Waterway Maintenance

The Inland Rivers Ports & Terminals (IRPT) is joining with beneficiaries of the U.S. Army Corps of Engineers in the National Waterways Alliance to seek additional funding for waterways development and maintenance.

"A declining construction program and maintenance deferrals have taken their toll on America's energy efficient waterways system," said **Glen Cheatham**, IRPT president. "With the need to dredge our channels and modernize an aging lock and dam system, the Corps can not sustain any more cuts."

The Administration's \$3.7 billion Corps budget calls for full funding of construction projects through the year 2002. The proposal increases the Corps budget in 1998, but may lead to deferring needed investment over the five-year period. "The Administration wants Congress to acknowledge up front the implications of undertaking new starts, rather than starting a project with a small fraction of the money that may ultimately be necessary," said Mr. **Cheatham**. The Administration also budgeted a 14 percent cut in the Mississippi River and Tributaries Account and a \$79 million cut to the Operations and Maintenance Account.

Cegelec Outfits Norwegian Training Center

The Marine Systems Div. of Cegelec Projects is to supply a ships maneuvering simulator to Stord/Haugesund College in Norway. The simulator, Cegelec's DPS 902 Dynamic Position Control System, will provide hands-on training with equipment that is increasingly being selected for use in offshore operations. The DPS 902 is a duplex system being designed as two identical but independent systems. With full system redundancy and the facility for

automatic changeover from stand-by to on-line, vessel positioning is assured for critical operations.

For more information from Cegelec
Circle 14 on Reader Service Card

DEMS Presents Spill Removal Options

Donjon Environmental Marine

Services (DEMS) now reportedly welcomes citation of its oil spill removal capabilities in OPA 90 vessel and facility plans without charge to plan holders.

This gives plan holders the ability to increase plan capacity at no cost and the flexibility to choose DEMS in instances of need. DEMS' offer provides ship and facility operators with immediate

access to a pool of nearly 500,000 barrels of Effective Recovery Capacity, 60 miles of boom and seven million barrels of temporary storage for planning purposes, mobilization and use in the event of a casualty.

For more information on Donjon Environmental Marine Services
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Circle 340 on Reader Service Card

Legislation Affects Equipment Supply Side

By David Tinsley, technical editor

Technology is providing advanced new tools for the processes associated with ship design evaluation and preparation, which is fortunate given the ever more demanding nature of the task, and heightened requirements as to precision and timescale.

Optimized operational performance and maximized revenue-earning capacity from a hull and outfit that can be assembled to the requisite specification in the most cost-efficient manner are the fundamental priorities. But the regulatory scenario has grown substantially in influence, impacting constructional and configurative design and practically every facet of shipboard equipment.

While legislative and commercial pressures in combination are increasing the complexity of the newbuilding design task, ameliorated only by the availability of increasingly sophisticated computer-based tools, the global population of existing ships is progressively coming under the aegis of new regulatory requirements.

Many of the important changes fostered by loss of life in passenger ferry disasters and by severe environmental damage arising from tanker casualties are now in force. But much of the legislation included in the previous guidance remains pending and has in many cases been increased by new amendments adopted at SOLAS conferences and by meetings of IMO committees concerned with maritime safety and pollution prevention.

The net effect is that, before the end of this century, a multitude of new regulatory requirements will apply to vessels constructed after specific dates, while existing vessels will increasingly be brought within the net of earlier initiatives.

The unilateral decision by the Norwegian Maritime Directorate in August 1995 to enforce the fitting of flood control doors to the garage decks of all Norwegian ferries operating internationally provided an initial boost to the design-

ers and suppliers of such equipment.

Manufacturers of devices such as side and top stowing flood defense doors can also look to a period of sustained demand, through the activation as of the first of this month of the Stockholm Agreement and the progressive introduction, as of July 1, of new stability standards governing existing ships.

The Stockholm Agreement makes it mandatory for ferries engaged on certain northwest European and Baltic routes to comply with the SOLAS 90 damage stability standard with 50 cm of water on the main vehicle deck. This will be phased in over five years starting this month, as ships which have a stability value defined as less than 85 percent of A/Amax will now have to be upgraded to 100 percent.

On the same theme, IMO legislation will require all existing passenger RoRo vessels built before July 1, 1997, to comply with a phased modification program. Thus, ships that meet only 85 percent of the SOLAS 90 damage stability criteria will be required to achieve full compliance by October 1, 1998, and those meeting 97.5 percent and above will have to fall in line by October 1, 2005.

Specific requirements have also been adopted for RoRo vessels certified for 400 or more passengers, on the basis of a similar timescale with July 1, 1997, as the operative date. The measure is intended to phase out one-compartment ships and ensure that such vessels can survive without capsizing in the event that two main compartments flood following damage.

The tranche of SOLAS rules due to take effect on July 1, 1997, includes new requirements concerning watertight integrity from the bulkhead deck to spaces below, and the need for watertight forepeak bulkheads to extend to the next full deck above the bulkhead or main RoRo deck.

All RoRos carrying 12 or more

passengers are to be fitted with public address systems reaching every part of the ship and audible above all other noise. The measures relate to newbuildings from July 1, while current ships will have to fit or enhance their systems at the first periodic survey after that date.

Other elements in July's SOLAS package concerning ships certified for 12 or more passengers call for a fast rescue boat to be carried, a helicopter landing and pick-up area, means of rapidly recovering survivors from the water, and enhanced requirements for life jackets.

From October 1, all passenger ships constructed before October 1, 1994, and arranged for more than 36 passengers will have to be fitted with a smoke detection and alarm system, in addition to automatic sprinklers and fire detection and alarm arrangements.

Other requirements relate to escape route illumination (discussed later in this report) and remotely controlled and monitored fire doors.

The IACS (International Association of Classification Societies) influence, witnessed last year in new structural criteria for bow door visors, is set to grow. A raft of measures to be activated on July 1 calls for an appropriate loading instrument on new and existing bulkers of 492.1 ft. (150 m) or more in length, new stability criteria for seagoing tankers, and enhanced structural parameters for side and stern doors on RoRo passenger vessels.

Increasing the regulatory threshold still further this year, IACS has laid down specific new structural requirements for bulk carriers, which translate into steelwork enhancements for many existing vessels as they come up for scheduled drydocking.

A host of safety and environmental initiatives are also to be phased in over the course of 1998, including a further cluster of SOLAS amendments on July 1, next year.

The implementation date for IMO's stipulation that all vessels other than tankers and bulkers carry approved cargo securing manuals has been deferred from this July to the first of next year.

Meanwhile, exhaust emissions performance of diesel machinery is occupying engine designers and manufacturers in the run up to the implementation of proposed IMO limitation values.

Measures directed against atmospheric pollution take other forms, such as Norway's commitment to reducing non-methane, volatile organic compound (VOC) emissions by 30 percent from 1989 to 1999. Offshore loading of oil is the main source of such fumes. New technology developed for energy group Statoil by Trondheim Research Centre opens the way to shuttle tankers being fitted with special recovery plants designed to convert the vapor into fuel for the ships' engines.

One new edict that has prompted a practical response offering clear operational and safety advantages has been the requirement for emergency towing provisions fore and aft on tankers.

Every crude carrier, product tanker, chemical tanker and liquefied gas carrier of 20,000 dwt and above has been brought within the compass of the SOLAS amendment. While all newbuildings have to comply with the regulation, as has been the case since the outset of 1996, existing ships have until January 1, 1999, to be fitted with the requisite towing stations.

IMO has called for approved arrangements to be installed or made operational on vessels already in service during the first scheduled drydocking in the period up to 1999.

The objective is to ensure that a strong and reliable towing connection can be quickly made at either end of a tanker in the event of a "dead ship" situation. In the case of a disabled vessel, where shipboard power has been lost, towing gear is far too heavy to be handled

aboard. Quick action will be needed if the vessel has been abandoned, or in situations of fire or explosion, or if there is otherwise a risk of stranding, grounding, collision or pollution.

It is imperative that gear is pre-rigged and located precisely where it will be needed, ready for use at all times so that the connection with a tug can be made with the minimum number of ship's crew in the minimum time.

Under the relevant SOLAS amendments, IMO specifies the major components and working strengths of the equipment, which has to be positioned close to the point of the bow or right aft on the transom.

While newbuilding projects offer scope for a more rational way of incorporating emergency systems, retrofits to existing ships often present more of a challenge, requiring compactness, minimal structural modifications, and possible use of existing mooring devices.

Towage and salvage expert Smit Tak has devised an effective system known as the Safe Fast Emergency Connection. Key components include a 200-ton load-capacity strongpoint on deck, known as the Smit Bracket, to which a heavy duty chain is made fast, of a length that would extend when deployed some 13.1 ft. (4 m) outboard of the fairlead.

The fairleads are strengthened and located to facilitate towage from either side of the bow or stern. A pennant or hawser of approximately 328 ft. (100 m) is positioned for ready connection, or already shackled to the inboard heavy tow chain. It is possible in new ships to incorporate below-deck stowage for the pennant in the forecabin.

The Smit system also specifies a messenger line of at least 328 ft. (100 m) of polypropylene connected to the pennant, with the whole fed through the fairlead to the tug.

Compact design and ease of installation, whether for new or existing ships, are hallmarks of the system offered by Norwegian winch and deck machinery company Maritime Pusnes, which supplied its first emergency towing deck gear to North Sea shuttle tankers more than 10 years ago.

The three main components are the towing bracket, storage drum with tow wire and the pick-up gear. The latter consists of two floating buoys equipped with automatic lights actuated when afloat, plus

pick-up rope and messenger.

In an emergency, tanker crew have only to deploy the pick-up gear. This can be recovered by the tug, with the ensuing pull then drawing the tow pennant from the drum.

The initial IMO resolution on emergency towing in 1983 was

revised in 1994 in recognition of the advanced arrangements formulated by the industry in response to the SOLAS legislation.

Prompted by the *Scandinavian Star* disaster in 1990, all existing vessels certified for more than 36 passengers have until October 1, 1997, to illuminate escape routes

using low location lighting.

The requirement was first introduced for newbuildings in October 1994, and is intended to ensure means by which a route to a disembarkation point can be better followed by passengers in a fire when the normal emergency light-

(Continued on page 64)

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Lockheed Martin System Improves Navy Ship Survivability

Next-generation information system uses off-the-shelf products to keep costs down

Lockheed Martin Information Systems has delivered, to Bath Iron Works, the initial DDG 51 Flight IIA Machinery Control System, which is designed to significantly improve a ship's survivability.

Designed for the Aegis-class destroyer, the system provides visual and computer data information regarding critical operating functions to a central command center, guiding decision making in a crisis situation. The computer-based environment uses U.S. Navy standardized workstations and damage control software that can be used across the U.S. fleet. The Aegis class destroyer, DDG 79,

scheduled for launch in September 1998, will be the first U.S. Navy ship to operate with this system. "Our new Machinery Control System relies upon the insertion of commercial off-the-shelf products

into a ruggedized military hardware environment," said John Hallal, Lockheed Martin Information Systems president. "A commercial-product design that uses sound engineering practices

provides a more cost-effective development and maintenance approach to military systems."

For more information on Lockheed's system
Circle 193 on Reader Service Card

Ammonia Ship Gets New Management

Unocal's Rivergate Terminal said that management of its ammonia ship, SS *Cornucopia*, will be transferred to Keystone Shipping Co. of Bala Cynwyd, Pa. Previously, the SS *Cornucopia* was managed by West Coast Shipping (WCS), a wholly owned subsidiary of Union Oil Company of California.

The transfer took place because Unocal completed the sale of its West Coast refining, marketing and transportation assets to Tosco Corporation on March 31. Because of the sale, WCS will no longer be available for ship management.

"Keystone is a highly experienced ship management company with over 78 years in the business," said Jay Yost, general manager of Unocal's Marketing & Distribution department. "We're pleased to be working with them and confident that they share our strong commitment to ensuring the safety of our employees and the community at all times."

WCS, Unocal, Keystone and the U.S. Coast Guard worked closely to ensure a safe and smooth transition. All new crew members were to undergo additional specialized training after the ship is formally transferred to Keystone. The replacement crew will consist of a combination of personnel remaining with the ship and experienced personnel from Keystone who have been certified by the U.S. Coast Guard.

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Circle 354 on Reader Service Card

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Paducah Training Center Prepares To Go Online

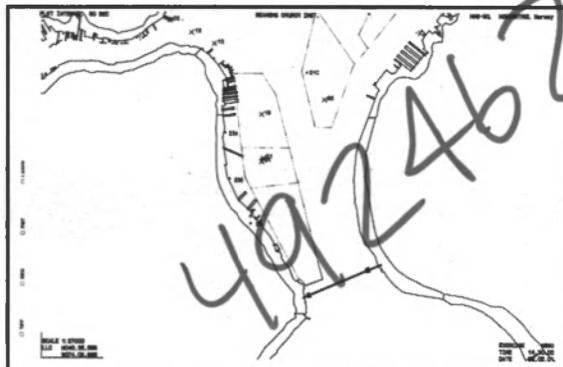
This month in Paducah, Ky., a training center will open for the purpose of teaching safe navigational practices to mariners by way of innovative simulation technology. The Paducah Center for Maritime Education — the brainchild of The Seaman's Church Institute (SCI) — overlooks the confluence of the Tennessee and Ohio rivers, and thus training provided by the center will focus on inland waterways navigation.

SCI Director **Eric Larsson** has reported that nine companies have already made commitments to train their captains and pilots at the new facility, including Mobil Oil, American Commercial Barge Lines, Ingram Barge Co., Midland Enterprises, Mid-South Towing, Marine Equipment Towing Co., Ashland, Crouse Corp. and Canal Barge Co.

A four, own-vessel simulator has been purchased from Kongsberg Norcontrol Inc. Norcontrol Project Manager **Einar Hardus** told *MR/EN* in February that the equipment will include a cylindrical screen which projects

from above, as well as "live instrumentation," including sound and vibration systems.

Each wheelhouse will resemble a towboat wheelhouse with a one-person maneuvering console, a Furuno 2100 series radar and DGPS mapping and positioning capability. Four different towboats will be available for training,



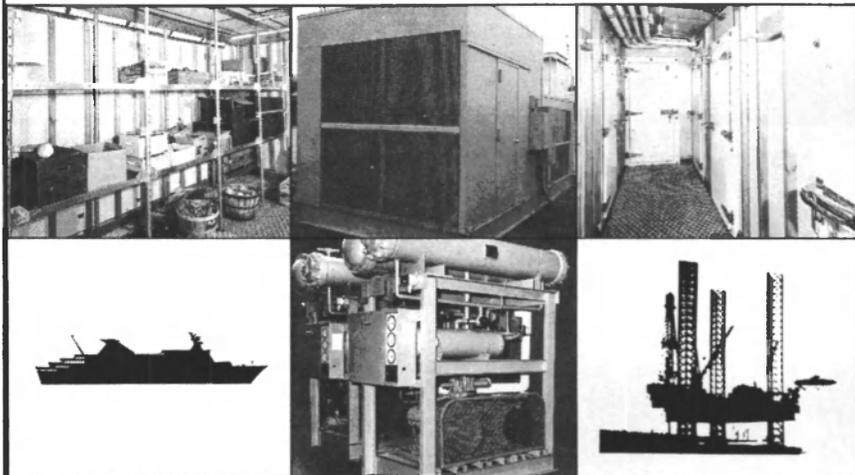
Simulator printout generated from mariner exercise at Seaman's Church Institute training center in New York City.

including a three-wheel towboat with a 35-barge dry cargo tow. Twelve areas of the inland waterway system were modeled for the simulator by SCI's **Brian Donohue** in the Imaging Science and Engineering department. He told *MR/EN* that nine different configurations were created for each area, taking into account conditions such as visibility, current and time of day. Mr. **Donohue** also emphasized that the simulator will break new technological ground in its use of phototexturing, which provides an extremely high resolution look and therefore, a heightened sense of reality. In fact, the Lockheed Martin video imaging system is expected to increase functionality substantially.

"We're taking the upfront risk in building this facility," SCI Executive Director Rev. **Peter Larom** confided to *MR/EN*. And in return, the maritime industry has booked the facility for the next five years.

For more information on Norcontrol
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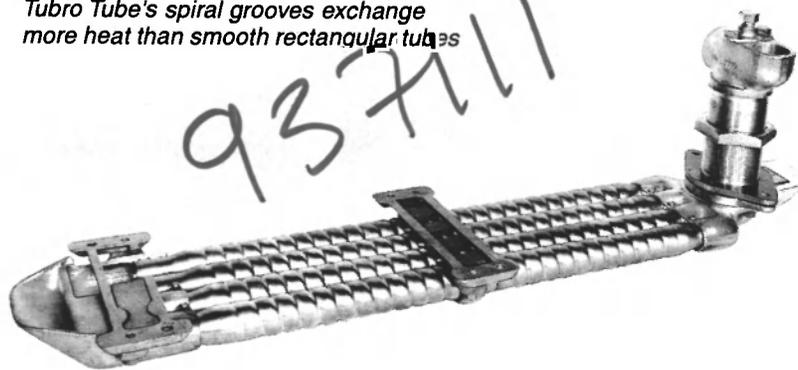
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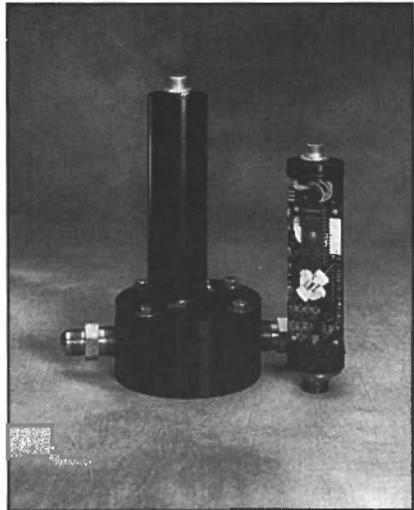
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The FuelCom net fuel monitoring system was designed to reduce emissions from primary or secondary power generating systems by ensuring that engines are operating at optimal fuel efficiency levels.

The system reportedly operates based on measurement of flow for both the supply and return sides of a recirculating fuel system, the signal from which is processed by a transmitter, which also provides for temperature and viscosity compensation.

For more information on Flowdata products
Circle 148 on Reader Service Card

Drew Marine Spill Kits Meets OPA Requirements



Shipboard oil spill kits such as this one aid tanker owners in achieving OPA 90 compliance.

Drew Marine's shipboard oil spill kits were designed to handle on-deck oil spills on tankers.

Available in three sizes, the kits reportedly provide clean-up capac-

ity for spills of various proportions as stipulated by Federal Regulation 33 CFR Part 155.

The kit is designed to contain and absorb up to 12 barrels of oil which is the regulatory standard for vessels of 400 ft. (121.9 m) or greater.

Equipment contained in the kit includes corrosion-resistant containers, a hand scoop, a shovel, a bucket, a pump and protective clothing.

For more information on Drew Marine products
Circle 149 on Reader Service Card

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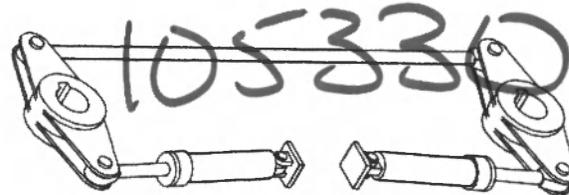
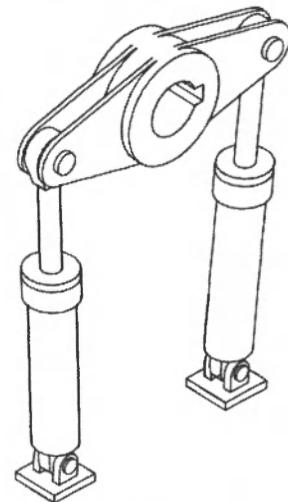
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M.V. Queen of Coquitlam, 139 M, 12,600 HP Ferry.
(Photo courtesy of B.C. Ferries Corp.)

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Designs by Paul Wagner



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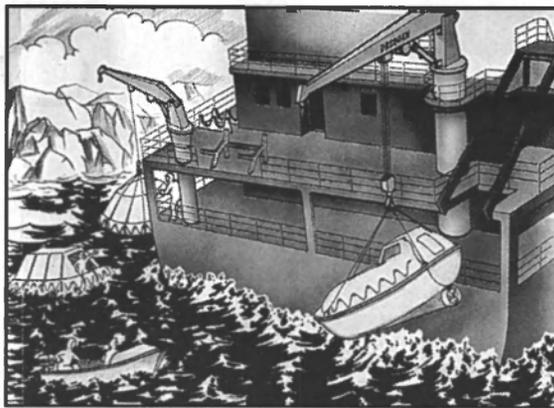


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SAFETY & ENVIRONMENTAL EQUIPMENT



Pictured is a rendition of Dreggen cranes handling lifesaving equipment.

the equipment for safe operation of rescue boats, liferafts and freefall lifeboats. There are two cranes involved in the company's latest project; one for operation of rescue craft; and one for operation of freefall lifeboats in icy waters. This equipment was reportedly developed in close cooperation with Germaischer Lloyd, and designed specifically to enable cranes to operate at dead ship and within SOLAS regulations.

The lowering is accomplished hydraulically by gravity, the hoisting is done by a speed machine developed by Dreggen, and the slewing of cranes is done with stored power accepting necessary operation towards 20 degrees of heel.

For more information on Dreggen equipment
Circle 150 on Reader Service Card

SAIT Marine Provides GMDSS Training



Operators are shown seated at GMDSS training consoles in SAIT Marine's Belgium facility.

SAIT Marine, a member of the Radio Holland group, offers Global Maritime Distress and Safety System (GMDSS) training at its training center in Antwerp, Belgium. The center's training regime is focused on helping sailing officers obtain General Operator's Certificates (GOCs). The basic course embodies the general principles and features of maritime mobile service, as well as the basics of Inmarsat usage, Digital Selective Calling (DSC) facilities, fault locating, Emergency Position Indicating Radio Beacons (EPIRBs), search and rescue radars and maritime safety

information.

The course emphasizes the need to learn the English language for the purpose of communicating in a satisfactory manner in practices relevant to the safety of life at sea.

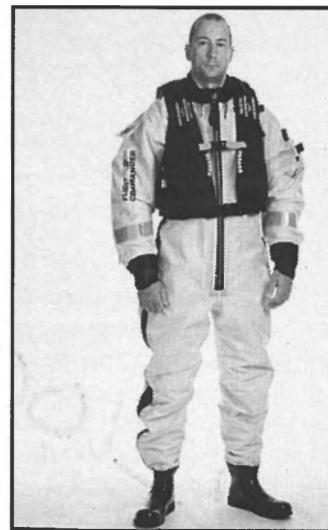
For more information on SAIT Marine courses
Circle 151 on Reader Service Card

Mustang Survival Suits Used In Hibernia Project

Mustang Survival of Richard, British Columbia, and I.M.P. Group Ltd. of St. John's, Newfoundland, were awarded contracts to supply survival suits for the personnel involved in the Hibernia platform transit. The contract included supply of marine abandonment suits and life jackets for platform evacuation purposes. The five-year contract is valued at \$2 million.

Mustang Survival plans to market its survival products to similar offshore applications worldwide.

For more information on Mustang Survival
Circle 152 on Reader Service Card



Mustang immersion suit.

Latin American Shipping Companies Form New Venture

Transportacion Maritima Mexicana (TMM) and Flota Mercante Grancolombiana (FMG), have formed a new, jointly owned company to be headquartered in Bogota. The new venture, Transportacion Maritima Grancolombiana (TMG), was inaugurated on January 23.

Trans-American Steamship Agency (TASA) has been named general agent in the U.S. and Canada for TMG, and effective March 1, it will assume full responsibility for TMG's U.S. Gulf and West Coast services.

Operational responsibility for TMG's East Coast offices — which will be located in New Jersey, Baltimore, Charleston and Miami — will be assumed by TASA on May 1.

Maritime Reporter/Engineering News

37100

Derbyshire To Supply Lift-Raft Inflation Valves To U.S. Agencies

Derbyshire Machine & Tool Co. has reportedly been named as the new supplier of pneumatic inflation valves for all U.S. Navy and Coast Guard 25-person Mark 6 lift-rafts. Designed and qualified in accordance with Naval Sea Systems Command, Naval Surface Warfare Center, Centerrock Division specifications, the valve operates with 5000 psi inflation cylinders meeting MIL-C-24604, Type II, or the equivalent.

For more information on Derbyshire
Circle 9 on Reader Service Card

Geoteam-Wimpol Acquires Advanced Survey Ship

An advanced survey vessel for worldwide deepwater operations has been acquired by Geoteam-Wimpol Ltd., part of the Fugro Group. Dubbed *Geo Prospector*,

the 238.1 ft. (72.6 m) long vessel has a cruising speed of 16 knots. The vessel is equipped to support exploration by pinpointing shallow deposits of gas that could prove hazardous to drilling operations. *Geo Prospector* will also undertake pipeline route studies and site surveys of the seabed and underlying sediments to provide engineering data for the installation of fixed structures and subsea production facilities.

Built in 1970 and converted in 1989, the 1417-ton *Geo Prospector* is powered by two 1,295-kW, eight-cylinder Deutz diesels driving an Escher Wyss variable pitch propeller. High resolution digital seismic survey equipment includes a 240-channel streamer and 12-channel recorder. For seabed surveys, a Simrad multi-beam echo sounder with 5,000 m depth capability is used, along with a single beam sounder, side scan sonar and single channel profilers.

Geo Prospector is based in Aberdeen, Scotland, and joins Fugro European/African ships *Geo Scanner*, *Geo Searcher*, *Geo Surveyor* and *Red Fulmar*.

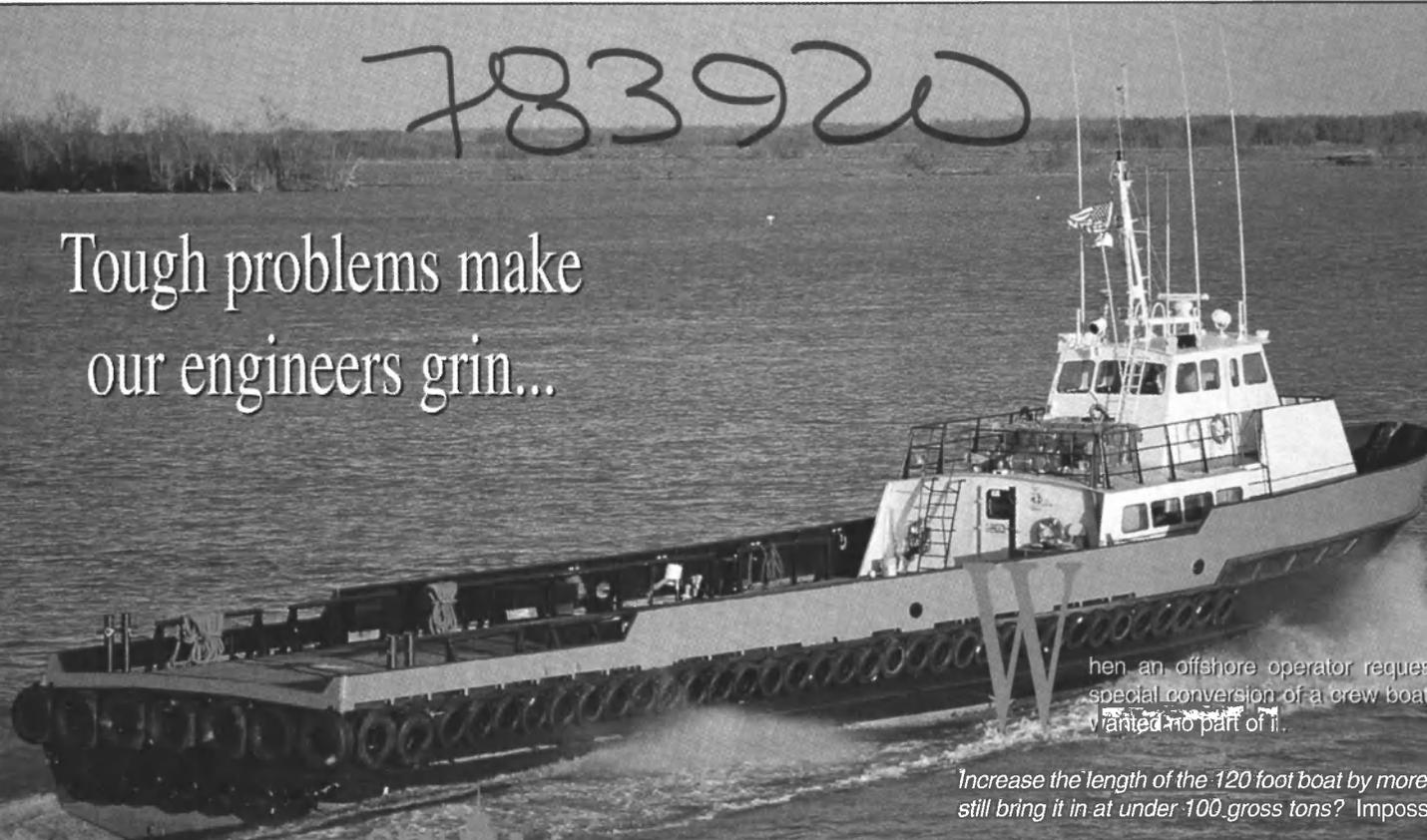
European Commission investigates possible misuse of shipbuilding aid

The European Commission has decided to initiate a procedure concerning the possible misuse of previously approved aid to Indonesia in relation to the purchase of three dredgers constructed at the German yard, Volkswerft Stralsund. At this stage, the Commission considers that the manner in which these dredgers are being exploited do not comply with the approval given by the Commission which emphasized that the vessels were exclusively of domestic use in Indonesia. In 1994, the Commission approved a development aid which was to be granted to Indonesia in relation to a purchase of three dredgers constructed at Volkswerft Stralsund. When the Commission approved the aid it was emphasized that the vessels were exclusively of domestic use in Indonesia (see IP/94/365). In a letter from the European Dredging Association (EuDA), the Commission was informed that the dredgers were used outside Indonesian waters.

Subsequently, the Commission requested the German authorities to provide a series of precise answers concerning the operation of these vessels.

In the light of the answer given by the German Government, the Commission at this stage considers that the manner in which these dredgers are being exploited do not comply with the approval given by the Commission and has therefore decided to open a procedure in this case.

Tough problems make
our engineers grin...



Service Marine Industries

6887 Highway 90 • Gibson, Louisiana 70356
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When an offshore operator requested bids for the special conversion of a crew boat, the competition wanted no part of it.

Increase the length of the 120 foot boat by more than 13 feet, and still bring it in at under 100 gross tons? Impossible, they said.

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So, next time you've got an impossible problem, do your part to make our engineers happy. Challenge us!

New Caterpillar Engine Tops 7,000 kW

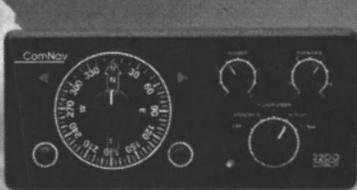
Caterpillar's Engine Division has developed the CAT 3618, a high power-to-weight ratio, 18-cylinder design with a fast commercial vessel application rating of 7,200 kW at 1,050 rpm. The new engine is the product of a cooperative effort between Caterpillar Inc. and

Spanish diesel engine builder Bazan Motores. The CAT 3618 is designed specifically for the fast marine transport industry. Its 7,200-kW fast commercial vessel rating is application specific, based on a realistic fast ferry load profile of 85 percent of operating hours at

rate power, with 15 percent of hours maneuvering at less than 50 percent rated power. The 3618 will use the ABB TPL65 E, a new, high efficiency, single-stage turbocharger design. The new crankshaft is counterweighted for optimum balance of rotary mass, and new

designs/materials will be incorporated in the gear train, bearing connecting rods, pistons, rings and liners. The new engine will also feature a Caterpillar electronic monitoring and control system which collects information from sensors throughout the engine, displaying relevant data to the operator, automatically adjusting engine operating and recording operating conditions and trending information.

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Dockwise Adds Swan Class Vessels To Fleet

Dockwise N.V. has announced the addition of four Swan class vessels — *Swan*, *Swift*, *Teal* and *Tern* — to its fleet. The addition to the Dockwise fleet has reportedly resulted in greater scheduling flexibility and reduced mobilization time and cost.

The Swan class of vessels, similar in concept to the Super and Mighty Servant class, have dual cargo capacity and can carry heavy lifts up to 25,000 tons on deck or up to 32,000 cu.-m. of clean product cargo in their cargo tanks. The vessels also have a sophisticated ballasting system with more than 50 tanks — 12 of which are cargo tanks — and two additional slop tanks.

Norex Industries Listed On Oslo Stock Exchange

An offshore and shipping investment company — Norex Industries Inc. — was approved for secondary listing of its common shares on the Oslo Stock Exchange's main list.

Norex Industries (former Norex America) is an investment company with holdings in oil and gas industries, and the offshore and shipping sectors. Investments include holdings in the Oslo listed companies Det Sondenfelds-Norske Nampskibsselskab, Transocean Offshore and Norwegian Cruise Line.

The move by Norex Industries represents the first OSE listing of an investment company specializing in the offshore and shipping sector.



GERMANY, KIEL CANAL, 1996. Salvage of 2900 ton container vessel "SABINE D" in winter ice conditions.

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NAMIBIA, 1996. Wreck removal of the flooded Diamond Dredge "BIG RED" (Top Left)
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(Continued from page 55)

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Norex Industries is incorporated in the Cayman Islands, and is listed on the American Stock Exchange.



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GERMANY, KIEL CANAL, 1996. Salvage of 2900 ton container vessel "SABINE D" in winter ice conditions.

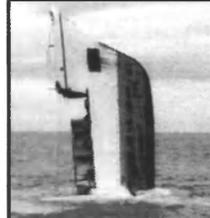


NAMIBIA, 1996. Wreck removal of the flooded Diamond Dredge "BIG RED" (Top Left)

MIAMI, FLORIDA, 1996. Salvage of the 13000 DWT LPG/C "IGLOO MOON" (Top Right)

BRAZIL, 1996. (not shown) Refloated the 15,000 ton freighter "AL JOHFFA"

GALAPAGOS ISLANDS, 1996. (Right) Refloated wreck of 2200 ton passenger vessel. (both vessels scuttled at sea)

Circle 206 on Reader Service Card

Bring Them Back Onboard Alive

With the increasingly intensive focus on crew and passenger safety, Land and Marine Products — manufacturers of Jason's Cradle, a recovery unit used to retrieve individuals who have gone overboard — is well-positioned to help vessel

owners increase the safety of their vessels.

Jason's Cradle is a recovery system which allows crew, while stationed safely onboard the vessel, to recover a large individual or object from the water. For example, the system was reportedly used by Millers Launch Service, in a single-handed rescue, to pull a 295-lb. seafarer out of New York Harbor.

Similarly, the system was employed by an Enesco supply boat to retrieve a nearly full, 55-gallon drum from the Gulf of Mexico.

The Gulf of Mexico crewboat market poses a big opportunity for the company, according to **J. Patrick Moran, Jr.**, president and CEO.

The U.S. Coast Guard has accepted Jason's Cradle as supple-

mental rescue equipment that can be purchased for use on standard boats, or as a boarding ladder replacement for lifeboats and rescue boats on U.S. registered ships, or as a possible alternative to the rescue boat requirement for T-Boats, as determined by the USCG on a case-by-case basis.

For more information on Jason's Cradle
Circle 164 on Reader Service Card

Company Provides Equipment For Perilous Seas



Technicians manipulate survival systems at the home factory in Belfast.

RFD Ltd.'s latest product offerings include Survival liferafts, which are constructed from lightweight polyurethane-coated nylon and are available in throw-over or davit-launched models. The rafts accommodate four to 24 people and are suitable for all types of military and commercial craft.

For more information on RFD Ltd.
Circle 146 on Reader Service Card

Smoke Hoods Shield Airways

According to Brookdale International Systems, Inc., three out of four fire fatalities are caused by smoke inhalation. The company's new EVAC U8 smoke hoods are designed to provide safe air supplies for personnel for up to 20 minutes. Built into each individual canister unit is a multi-stage, air-purifying chemical catalytic filter that removes carbon monoxide and other deadly gases present in fire.

A translucent hood, which is fitted over the head of personnel, reportedly resists temperatures up to 800 degrees F, protecting eyes, head and neck from transient flames. The canister also features a powerful luminescent bottom to make it easy to locate in the dark or in unfamiliar places during a crisis situation.

For more information on Brookdale products
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EVAC U8 smoke hoods can provide filtered air to crew during emergencies.



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(Continued from page 55)

ing is less effective or obliterated due to smoke. It acknowledges that often the only way for passengers and crew to move safely in the most adverse, smoke laden conditions is on hands and knees.

SOLAS calls for passageways, corridors, exits and stairways to be marked by electrically powered lighting or photoluminescent (PL)

indicators placed no more than .9 ft. (.3 m) above the deck. While long employed in the aviation industry, the application of the concept of low-level emergency lighting in the maritime field has stimulated new design thinking based on the particular environmental, maintenance and scale considerations for shipboard installations. The aesthetics of

systems intended for ferries and cruise ships, where the nature and quality of interior design is governed by an increasingly discerning passenger clientele, are a factor. Although photoluminescent material is an officially sanctioned option, most ship operators to date have selected purpose-designed electrically-powered systems devised by established marine sup-

pliers and by several newcomers to shipboard applications.

Electrical arrangements include incandescent bulbs, light emitting diodes (LED), electrofluorescent lamps and electroluminescent (EL) strips or lamps. Simplicity in design and installation, to emphasize high reliability, has been a keynote of such systems.

Aqua Signal's 3L system was the first in the world to gain Lloyd's Register's type approval certificate, and it is based on the use of EL foil lamps similar to the type used in civilian aircraft. It is triggered both by mains failure and by insufficient ambient brightness, as associated with smoke build-up. Light sensors in the passenger flow areas are used for switching.

Low-level emergency lighting from Louisiana-based Datrex Marine Safety Equipment, as used in November's *QE2* refit, employs EL means of illumination. Solid state lamp cells encapsulated within a robust, seamless polymer extrusion provide a visible delineation in a system that is easy to fit and compatible with high-grade passenger ship interiors.

Enhancing operational factors are the relatively large light source of high intensity offered by each cell and the lower current demand compared to LEDs and incandescent lights.

For its part, U.K. supplier Existalite argues that most types of proximity lighting, including EL strips, do not provide as effective a level of illumination in a smoke-filled environment as that afforded by LEDs. Its Guide-Lite system, based on a continuous track of high-intensity LEDs, has been designed to offer durability and low maintenance, and to be aesthetically compatible.

German company PermaLight, a leading advocate of PL systems, recently widened its scope with an electrical LED system. Recognizing the market's requirement for different solutions, PermaLight says electrically-based wayfinding often best suits passenger recreation areas, whereas PL is effective for corridors, stairwells and crew spaces. The fact that it does not require an ongoing power supply renders the photoluminescent option advantageous from a design planning perspective, and also minimizes maintenance costs and the risk of failure or malfunction. Zinc sulfide crystals in PL products store artificial or natural light, emitting a green-yellow light in the event of power failure or smoke.

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New USCG Safety Program Piloted On RoRo Vessels

by Zbigniew J. Karaszewski, chief,
Shipbuilding Design and Operations
Facilitations, USCG

The U.S. Coast Guard (USCG) is developing an improved approach to addressing the safety of marine systems, in which risk-based technology (RBT) will play a significant role. USCG calls this new safety assessment effort the Marine Safety Evaluation Program (MSTEP). MSTEP has been designed to provide the maritime industry with methodologies and clear guidance for addressing system safety criteria and alternative strategies for regulatory compliance.

The MSTEP effort is being supported by a coalition consisting of marine industrial interests, academia, engineering consultants and government groups. This wide spectrum of expertise was assembled to assure the utility of MSTEP for the maritime industry.

To demonstrate the utility of the MSTEP risk-based approach for determining alternative regulatory compliance, various candidate systems were considered for proof-of-concept. The basic selection criteria for a candidate system was that the system have a high cost-to-safety ratio, and also be a good representative of all other applicable systems. The MSTEP team chose the cargo hold lighting system installed aboard a U.S. Maritime Administration (MarAd) reflagged Cape H and Cape W RoRo vessels. This system was chosen because of its high retrofit cost for compliance with federal regulations and class society rules.

The analysis of the cargo hold lighting system set out to answer two essential questions: was the current hazardous location classification of the cargo spaces consistent with the true safety risks; and, were installed lighting fixtures adequate if the cargo space was reclassified?

Risk-Based Technology (RBT)

MSTEP proposes to use RBT to evaluate the safety risks of complex ship systems. RBT uses a top-down approach to define hazards and accident scenarios, and is based on answering three fundamentals: what can go wrong (si); what is its likelihood (li); and what are the consequences (xi)? A rank-ordered list of major risk contributors is developed, and thereafter, efforts and resources are expended on systems with the highest consequences and frequency of failure.

Proof-Of-Concept

In the present proof-of-concept, a team of safety analysts and ship systems experts performed a Preliminary Hazards Analysis (PrHA) to demonstrate the RBT application. The decision-making process used for deciding whether to retain or replace lights currently installed on AFP RoRo ships was then executed.

PrHA Results

Over the course of the evaluation, the team

documented more than 50 potential accident scenarios, which had unfavorable consequences.

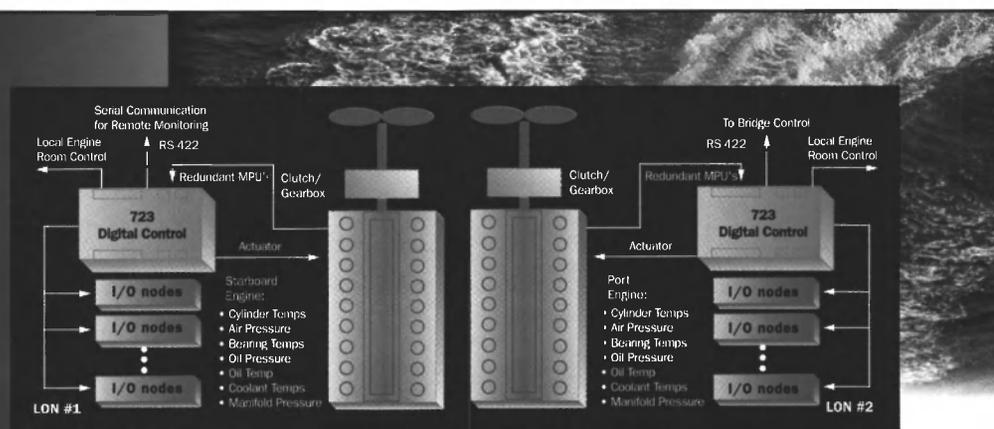
Conclusions

The evaluation concluded that there is a risk of personal injury due to inadequate emergency lighting for safety inspections, and the

likelihood of an explosion (with current lights providing an ignition source) is low. This is based on the amount of fuel that is required to be spilled and its ability to reach lower explosive limits at the location of the current lights. Thus, reclassification of the compartments in order to retain the current lights is

appropriate.

The MarAd lighting system analysis resulted in a savings of more than \$1 million for five ships. Operational, intrinsic design, and other risk mitigating features were given credit and provided the basis for the decision to retain the existing lights.



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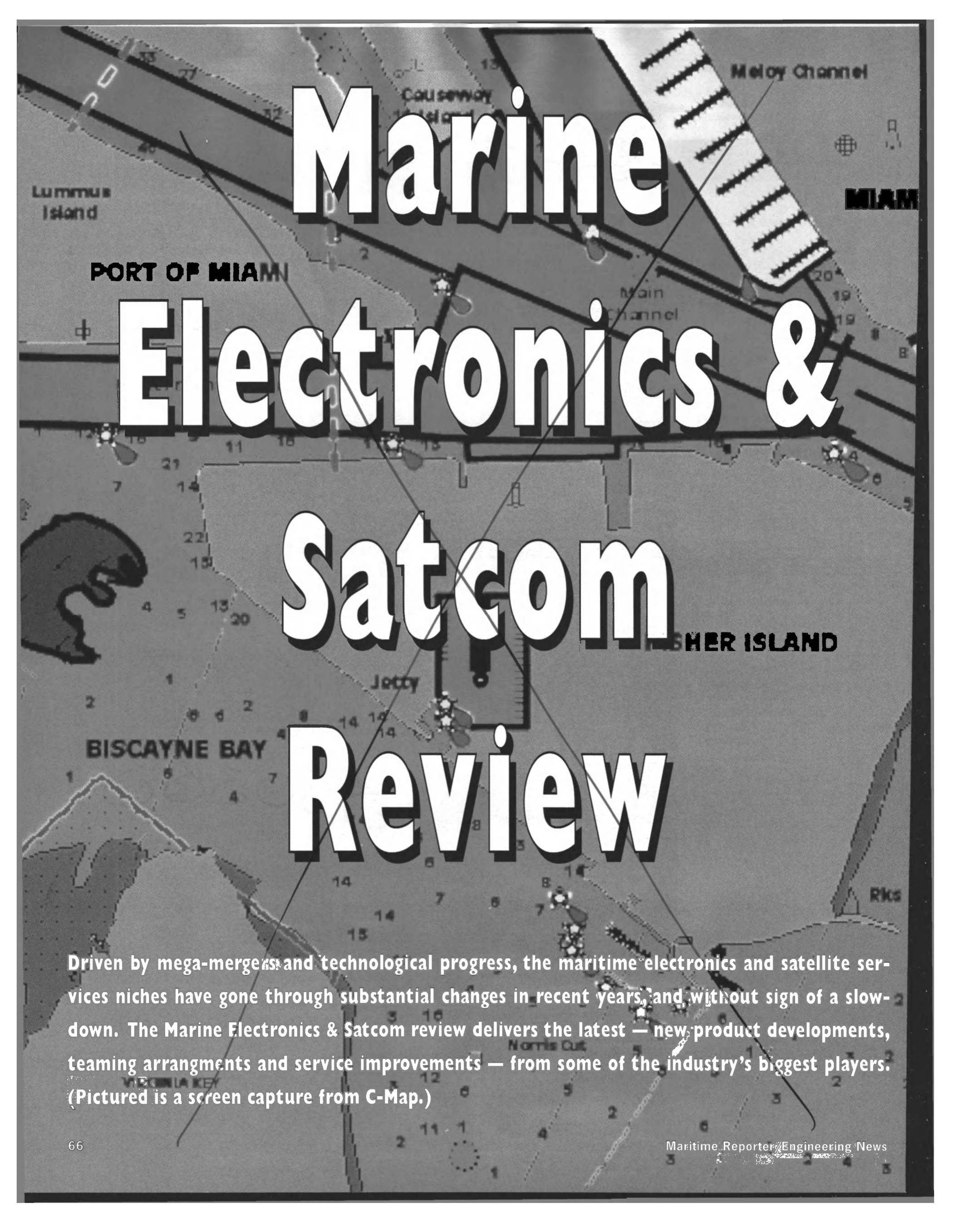
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Marine Electronics & Satcom Review

Driven by mega-mergers and technological progress, the maritime electronics and satellite services niches have gone through substantial changes in recent years, and without sign of a slowdown. The Marine Electronics & Satcom review delivers the latest — new product developments, teaming arrangements and service improvements — from some of the industry's biggest players. (Pictured is a screen capture from C-Map.)

Marine Electronics Solutions, Inc.

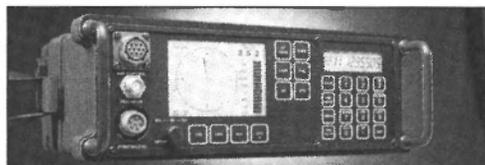
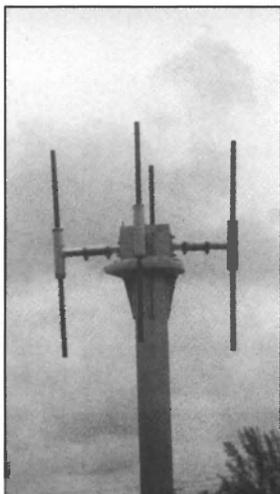
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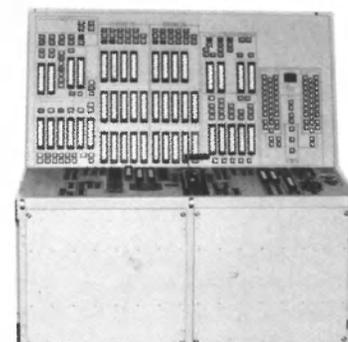
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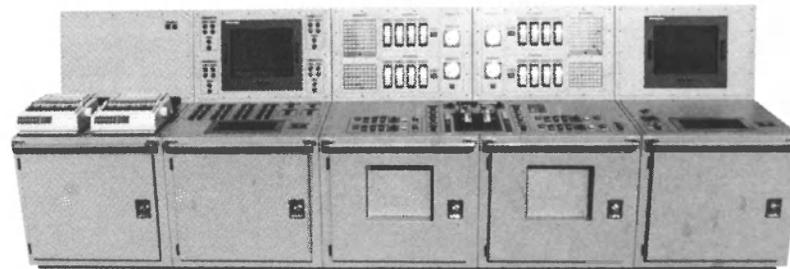
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EGS And C&C Form Strategic Alliance

Hong Kong-based Electronic & Geophysical Service (EGS) and U.S.-based C&C Technologies Inc. have formed an alliance that will provide EGS with advanced swath mapping technology and extend its existing subsea survey capability to full ocean depth.

Heading the alliance will be **Graham S. Evans**, director of EGS, whose responsibilities include developing activities in submarine telecommunications, power cable route planning and surveys, pre-engineering studies for submarine pipeline route selection and offshore hydrocarbon infrastructure development.

For more information on EGS
Circle 50 on Reader Service Card

Sperry To Jointly Market Infrared Imaging System

Litton-Sperry Marine Inc. and Enhanced Vision Systems have signed an exclusive marketing agreement for the worldwide distribution of the Advanced Maritime Infrared Imaging System (AMIRIS). Developed by Enhanced Vision Systems, the AMIRIS infrared imager is designed to enhance safety and navigation at sea by providing ship operators with visibility through salt spray, fog, high humidity and darkness. Used as a complement to radars, the AMIRIS measures temperature differences to a fraction of a degree and displays images of the ships' exteriors inside the ships' bridges.

For more information on Sperry
Circle 51 on Reader Service Card

UKHO Produces First Official Electronic Chart

The United Kingdom Hydrographic Office (UKHO) has produced its first official Electronic Chart (ENC) that complies with S-57 Edition 3 standards. UKHO has made its raster-based service available for use in Raster Chart Display Systems (RCDS), and is currently developing the vector-based ENC for use in Electronic Chart Display and Information Systems (ECDIS).

For more information on UKHO
Circle 53 on Reader Service Card

Inmarsat Improves Distress System

The Inmarsat-E satellite distress alerting system combines the position determination of Global Positioning Systems (GPS) with the geostationary satellite technology of the Inmarsat communication systems. Inmarsat-E reportedly proved to be 100 percent reliable in delivering a distress message within two minutes of an initial alert to Inmarsat-E Land Earth Stations (LES).

For more information on Inmarsat
Circle 54 on Reader Service Card

EMS Secures Several Contracts

Electronic Marine Systems (EMS) has been selected by the inland river division of Sea River Maritime in Baton Rouge, La., to develop an inland river navigation system employing the EMS Audited River Data Base and EMS advanced DGPS system. EMS has also been contracted by Arco to provide a Navigator DGPS and by the Panama Canal Commission's Dredging Division to provide a dredge automation system.

For more information on EMS
Circle 55 on Reader Service Card

Aanderaa Instruments

Aanderaa Instruments has released the Datalogger 3660, a low power, lightweight and watertight field operating device for displaying and storing data. The unit is suited for field data-logging applications such as Automatic Weather Stations, Road Weather Stations and Wind Monitoring Systems. Aanderaa Instruments has also announced plans to release its Wave and Tide Recorder (WTR 9), which measures wave and tide conditions using a precision pressure sensor.

For more information on Aanderaa
Circle 56 on Reader Service Card

CSSI Debuts Inmarsat B Terminal

Commercial Satellite Systems Inc. (CSSI) has introduced the Satlink BL Transportable Inmarsat B Terminal for worldwide mobile voice, fax and data communications. The Satlink BL operates through the worldwide

Inmarsat Moves Toward Limited Company

The formal process to change Inmarsat — the operator of the world's only global mobile satellite communications system — to a more commercially-normal structure has now started.

The culmination of this process could see Inmarsat reformed early in 1998 as a limited liability, nationally-registered company which retains links for intergovernmental oversight of its public service obligations.

Inmarsat, established in 1979 as an intergovernmental organization, has expanded rapidly from its pioneer role as a developer and provider of maritime satellite communications. Adapting its technology to customer needs in other areas, it now provides a broad range of communications services for mobile and remote applications on land. Its satellites also carry flight deck, operational and passenger telephone, e-mail and fax communications for most of the world's international airlines.

Late last year, it launched the world's first hand-portable global mobile satellite phone system, Inmarsat-phone. Since then, demand has far outstripped supply.

The first step in Inmarsat's formal change procedure was the receipt of a formal letter, dated January 31, 1997, from one of Inmarsat's 79 member-country governments proposing complete amendments to the Inmarsat Convention and Operating Agreement, the international agreements under which Inmarsat currently operates.

The amendments currently proposed would have the effect of turning Inmarsat's operational and commercial activities into a nationally-registered limited liability company, through which all existing and future business would be conducted. A small intergovernmental organization would remain with the purpose of overseeing and ensuring performance of the company's public service obligations, especially the satellite systems and services supporting the International Maritime Organization's Global Maritime Distress and Safety System (GMDSS). "After many years of discussion about how Inmarsat could change and what it should change into, it is gratifying to see the formal process actually started," said Inmarsat Director General **Warren Grace**.

"The clock is now ticking and the result could be a new, more commercially-agile Inmarsat early in 1998," he said.

This would follow adoption of the new structure by the Inmarsat Assembly, made up of representatives of the organization's 79 member governments, at its meeting in October this year. Mr. **Grace** said that the new company structure that would be created by the proposed amendments would best meet the wide range of expectations and ambitions that had been expressed during the negotiation process. He added that it was critical to Inmarsat's continued success that it be implemented as quickly as possible following the October meeting. He said it would offer many advantages, and the first program that could take advantage of the more flexible investment mechanisms is Project Horizons, Inmarsat's initiative to develop and diversify its business with its next generation satellite system, scheduled to be launched in 2001-2002.

Under the new structure, Inmarsat's commitment to the provision of public service communications, to serving the needs of the maritime and aeronautical communities, and to the delivery of its full range of commercial services, would continue.

Marine Electronics & Satcom Review

Kongsberg Norcontrol

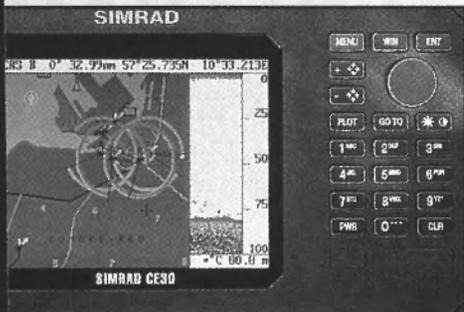


Kongsberg Norcontrol's BridgeLine system is an integrated bridge system for planning and implementing safe ship voyages. The system incorporates a

Global Positioning System (GPS), an electronic chart system that meets IMO standards and a route planning system. It is available in several automation configurations.

For more information on Kongsberg
Circle 57 on Reader Service Card

Simrad Introduces CE30 Chart Sounder



Simrad Inc. announced the addition of the CE30 Chart Sounder to its new MarineLine range of integrated marine electronics. The CE30 combines the properties of an echosounder, chart plotter and GPS receiver in one unit, and features a high resolution, six in. LCD display screen and detailed world maps with full over-zoom and grid capabilities.

The CE30 is also equipped with features previously only available in professional echosounders, including split-screen, A-scope, auto range, white line and bottom lock options.

Simrad Inc. has also added the Robertson AP11 and AP20 autopilots to its line of marine electronics.

For more information on Simrad
Circle 61 on Reader Service Card

Inmarsat system of satellites and Land Earth Station Operators (LESO). From a remote operating site, an international telecommunications network connection can be accessed allowing for two-way voice, fax and data transmissions

at 64 kbps. With the addition of appropriate applications software, the Satlink BL also allows full motion, color video teleconferencing.

For more information on CSSI
Circle 60 on Reader Service Card

SI-TEX Offers New Beacon For Improved GPS Accuracy

SI-TEX offers improved GPS position accuracy in the SBR-91

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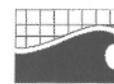
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PORT OF Marine Electronics & Satcom Review

differential GPS beacon receiver.

The SBR-91 automatically provides data from Coast Guard land-based, radiobeacon correction signals to most GPS receivers.

The SBR-91 is fully automatic

and operates by locking onto the strongest differential beacon signal and relaying that information to GPS receivers capable of reading RTCM-104 input.

The SI-TEX beacon receiver

warns users of unusable signals and recognizes Type 1, Type 2 and Type 9 broadcasts for immediate updates.

For more information on SI-TEX
Circle 62 on Reader Service Card

Racal Positions Rigs Using Glonass Satellites



Racal Survey successfully positioned the semi-submersible rig *Sedco 704* in the North Sea using the Russian GLONASS satellite positioning system. The trial was performed by Racal Survey on behalf of Shell U.K. Exploration and Production (Shell Expro). Although there was no significant improvement in accuracy, up to 18 satellites were constantly visible, providing greater reliability in restricted areas.

For more information on Racal Survey
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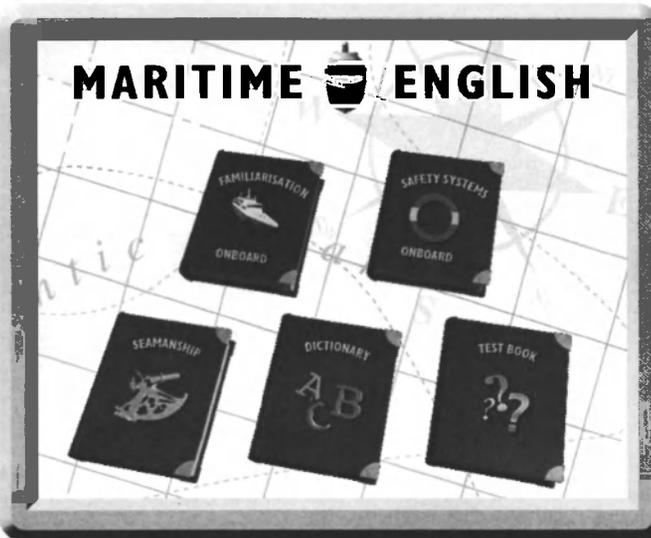
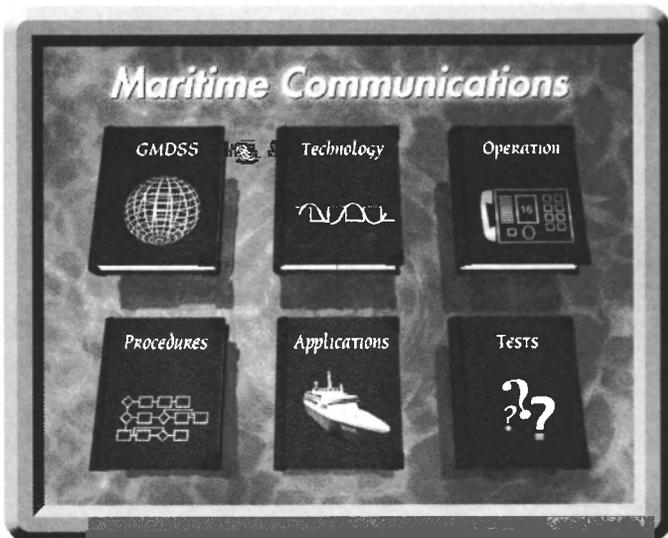
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Datainstrument AS



Datainstrument AS has introduced Mipeg 2000, an electronic load indicator and crane monitoring system designed to provide crane operators with the necessary information to meet worldwide government requirements for crane safety. The system comprises load, overturning and angle sensors with a micro computer that calculates the sensor data and provides an image of the crane's utilization on the operator's display.

For more information on
Datainstrument
Circle 102 on Reader Service Card

Maritime Reporter/Engineering News

Marine Electronics & Satcom Review

Westinghouse Introduces New Satellite Telephone System



Westinghouse Electric Corp. has introduced the Series 1000 Marine Satellite Telephone System for voice, data and fax communications throughout North American waters. From a Westinghouse-built ground communications station, the Series 1000 utilizes satellite technology to route calls to desired destinations. Global Positioning System and National Marine Electronics Association (NMEA) standard interfaces are built into the Series 1000, and it is reportedly compatible with all cellular services.

For more information on Westinghouse Circle 63 on Reader Service Card

Furuno Offers Radar Advances



Furuno has replaced its FR7041 daylight viewing radar with an updated 12-in. X-band model the FR7061. The FR7061 reportedly provides a 50-percent increase in output power, a maximum range scale of 64 nm, optimized user-friendly software and True Echo Trail for accurate target tracking. Standard features on the FR7061 include dual EBLs and VRMs, EBL/VRM offset, off-center, zoom, echo trail, echo plot, and aural/visual guard zone alarm.

For more information on Furuno Circle 64 on Reader Service Card

Reson Delivers Twelve Multibeam Systems

Reson completed deliveries for

12 SeaBat 8100 Series systems in the last quarter of 1996.

The orders were received from military, hydrographic offices, commercial survey companies and

fisheries in Europe, Asia and the U.S. The SeaBat 8100 is housed in a titanium and aluminum casing and features an advanced processor architecture that enables auto-

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automatic calibrations, self-diagnostics, use-definable custom settings and the downloading of new firmware from serial ports.

For more information on Reson
Circle 66 on Reader Service Card

Sea Inc. Offers New Sat Com System

Sea Inc. has introduced the SEASAT 2, an Inmarsat-C satellite communications system that provides data and fax communications. The SEASAT 2 connects to a

PC and printer through RS-232 ports and to other marine equipment via an NMEA interface. The system reportedly complies with the latest GMDSS regulations and features a two-stage alarm distress button.

For more information on Sea Inc.
Circle 71 on Reader Service Card

Icom Introduces New VHF Transceiver

Icom's IC-M59 marine VHF transceiver is available with an

optional UX-120 Digital Selective Calling (DSC) to meet U.S. Coast Guard's SC-101 proposal and GMDSS class F requirements. In an emergency, the IC-M59 with DSC automatically transmits a continuous call continuing the time, the vessel's ID and the vessel's position.

The IC-M59 receives all U.S., Canadian and international channels, and features a weather alert function that automatically locks onto NOAA emergency weather broadcast signals.

For more information on Icom
Circle 67 on Reader Service Card

Nobeltec Plans Release Of NavTrek 97



Nobeltec Corp. will soon release NavTrek 97, the fourth version of its flagship navigation software package. Enhanced features of NavTrek 97 include: a CourseUp chart display; support for BSB chart CD-ROMs; and import and export capabilities to and from other charting systems.

For more information on NavTrek 97
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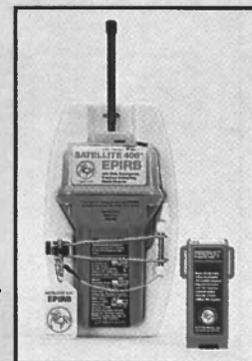
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ACR Satellite EPIRB Sports Compact Design

ACR's Satellite 406 EPIRB is reportedly the smallest 406 MHz EPIRB available, capable of transmitting at frequencies of 121.5 and 243 MHz in addition to the 406 MHz emergency beacon frequency.

It automatically activates at a depth of 15 ft. (4 m) and is capable of operating for more than 48 hours at 20 degrees Celsius. ACR's Class B EPIRBs transmit simultaneously on 121.5 MHz (civilian) and 243 MHz (military) search and rescue homing frequencies.

For more information on ACR
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Marine Electronics & Satcom Review

Hughes Offers Inmarsat Upgrade Package

Hughes Technical Services Company is offering the MX 0064 upgrade kit, a conversion package for the Magnavox MX 2400 marine Inmarsat-A terminal which allows owners to upgrade to Inmarsat-B service. Hughes also offers the MX 0064H upgrade kit for converting Saturn 3S-90 Inmarsat-A terminals to Inmarsat-B systems. The resulting terminal, the MX 2464H, reportedly meets all Inmarsat-B system requirements for marine terminals.

For more information on Hughes
Circle 72 on Reader Service Card

STN Atlas Elektronik Upgrades AMC Simulator

STN Atlas Elektronik's Simulation Division has been awarded a contract for the modernization of Australian Maritime College's ship-handling simulator at Launceston, Tasmania. Under the two-stage contract existing instructor stations and debriefing rooms will be equipped with new displays, ECDIS, GMDSS and monitoring and control facilities. The second phase of the contract will upgrade the bridge section to include the latest radar, navigation, communication and GMDSS equipment together with ECDIS

facilities.

For more information on STN
Circle 75 on Reader Service Card

Navionics Releases New East Coast Charts

Navionics Inc. has released a suite of electronic charts that cover the entire area between Sandy Hook, N.J., and Newport, R.I., including both shores of Long Island, New York Harbor and the Connecticut shoreline.

The new charts provide coverage of 45 major ports and include navigation aids, depth contours from two to 3,000 m and spot soundings for anchorage, harbors

and navigable rivers.

For more information on Navionics
Circle 73 on Reader Service Card

New DGPS Offers Added Flexibility

Leica has introduced 400BR, a dual-control DGPS marine navigator that allows GPS operation from two locations. It consists of two MX 400 receivers, one antenna, a data cable and control software. The system incorporates a library of up to 2,000 waypoints, built-in tide predictions, nautical almanac data and interface options.

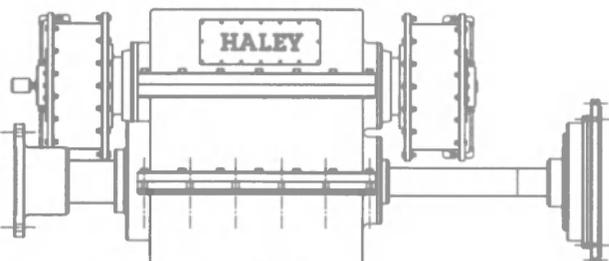
For more information on Leica
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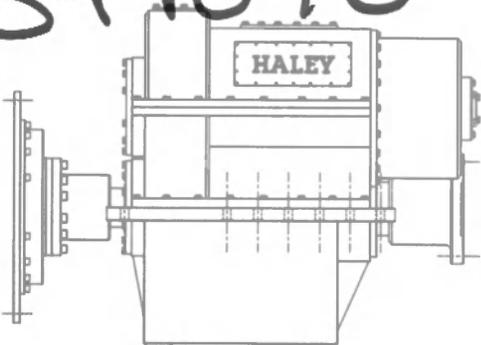
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Marine Electronics & Satcom Review

Horizons To Supply Map Scanning Services

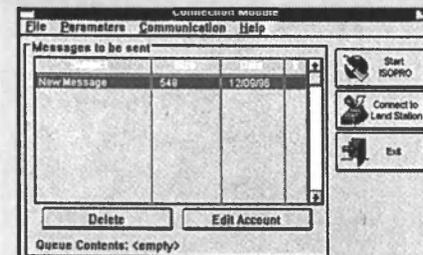
MapInfo Corporation has named Horizons Technology, Inc. (HTI) of San Diego, Calif., its

exclusive supplier of custom map scanning services and U.S. Geological Society (USGS) digital raster data. Horizons Technology's Sure Maps Raster is a series of digital geo-referenced USGS maps on CD ROM that utilize MapInfo

software to display topographical contours, detailed highway and transportation networks, and timely statistical and trend data.

For more information on Horizons Technology
Circle 77 on Reader Service Card

SAIT-RadioHolland Inaugurate Maritime Communications Package



SAIT Communications and Radio Holland Group have introduced ASTRA (mail), a communications package designed for both satellite and cellular communications. ASTRA (mail) provides e-mail, fax, data, telex and Internet communication to the maritime industry.

For more information on ASTRA
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Scan-Steering APS

Scan-Steering APS has introduced a new gyrocompass designed to meet IMO and SOLAS specifications. The SCAN-2000 gyrocompass transfers signals



electronically rather than mechanically, and eliminates the use of flotation liquid. SCAN-2000 is compact in design and has an automatic and manual adjustment of latitude.

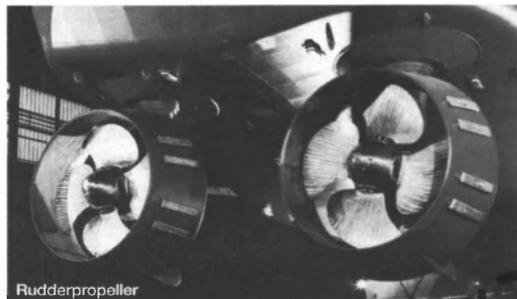
For more information on Scan-Steering
Circle 58 on Reader Service Card

Apelco Introduces Global Positioning Systems

Apelco Marine Electronics, a division of Raytheon Marine, introduced two global positioning systems (GPS) that use advanced satellite technology to provide digi-



Producing Thrust



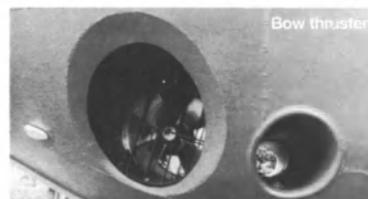
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Marine Electronics & Satcom Review

tal displays of position, distance and direction for recreational and commercial boaters. The Apelco hand-held GPS 11 and 6200 fixed-mount GPS both employ satellite technology, and both incorporate Raytheon's exclusive VeridicalView technology, designed to track up to 12 satellites simultaneously.

For more information on Raytheon
Circle 65 on Reader Service Card

KVH Unveils Satellite Phone For Mariners

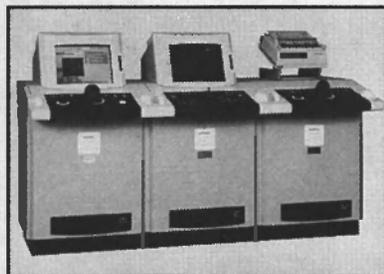


KVH Industries Inc. introduced the Inmarsat Tracphone, a compact communications system for use with the Inmarsat-3 generation of satellites.

The Tracphone provides worldwide phone, fax and data service and is designed to provide continuous Inmarsat satellite connections. With a fourth Inmarsat satellite expected to enter into orbit by mid-1997, KVH will increase its marine satellite communications service.

For more information on KVH
Circle 69 on Reader Service Card

New Positioning System To Upgrade Drillship



Cegelec Projects' DPS 903 triple voting position control system was scheduled to be installed on ex-Russian drillship *Neddrill Marabouko*. Once commissioning is complete, the ship will be chartered by Brazilian state oil company Petronas for deepwater drilling. The DPS 903 comprises a three-unit suite, each unit is independently capable of controlling the vessel.

For more information on Cegelec
Circle 52 on Reader Service Card

Telstra Increases Customer Service Reliability

Due to an increase in demand for Telstra's Satcom-A satellite ser-

vices in the Indian and Pacific Ocean regions, the company has installed switchable modems to maintain a higher level of customer service. The modems were installed at the Telstra Perth Land

Earth Station (LES) last year following a forecast that indicated traffic levels were set to increase significantly by the end of 1996.

For more information on Telstra
Circle 78 on Reader Service Card

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Circle 298 on Reader Service Card

BISCAYNE Marine Electronics & Satcom Review

EEV, Inc.

EEV, Inc. has introduced a new line of microwave components for marine radars. The new products include: circulators with and without STC control; MICs and circulators for both S and X-band.

For more information on EEV, Inc.
Circle 83 on Reader Service Card

Barco Marine Obtains GL ECDIS Approval

Barco Marine has attained Germanischer Lloyd approval for its ECDIS, making it ready for the company's ICD 321 shipboard dis-

play series. Barco's ICD 321 GL maritime display includes automatic stabilization and calibration tools, allows color perception during night and day and provides ambient light control, quick defaults functions and advanced electronic monitoring facilities.

For more information on Barco Marine
Circle 81 on Reader Service Card

Mackay Offers Global Satellite Services

Mackay Communications provides products and services for global satellite communications, including Inmarsat A, B, C, M and

AMSC mobile terminals, as well as video, high-speed data, e-mail and facsimile equipment. Mackay also offers trunk communications services.

For more information on Mackay
Circle 82 on Reader Service Card

MarineSat

MarineSat is a terminal distributor and service provider for the AMSC satellite system. MarineSat's rates start at less than one dollar. Its offices are located in Florida, Washington, New Jersey, Ohio, Louisiana and Texas.

For more information on Marine Sat
Circle 84 on Reader Service Card

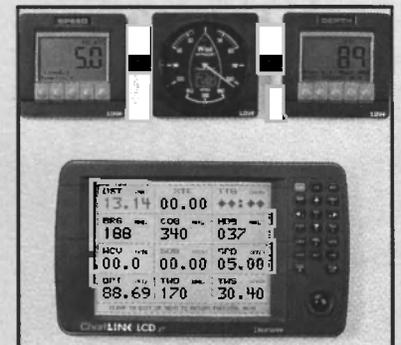
Koden Introduces New DGPS Beacon Receiver



The Koden KBR-91 differential GPS beacon receiver is capable of pinpointing locations within 10 ft. by automatically locking onto the strongest differential beacon signal it can detect. The KBR-91 recognizes Type 1, Type 2 and Type 9 broadcasts, and it is compatible with the RTCM-104 interface on most differential-ready GPS receivers.

For more information on Koden
Circle 79 on Reader Service Card

Datamarine



Datamarine's ChartLINK D7000 XT video navigator features C-MAP NT technology from C-MAP, user selectable spot depth soundings, EBL, VRM and Lat/Long conversion to Coran CTD. When interfaced to a LINK International Offshore system network, or other NMEA 0183-compatible instruments, the ChartLINK XT can display depth, boat speed, wind speed and direction.

For more information on Datamarine
Circle 103 on Reader Service Card

BT North America

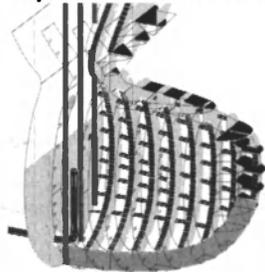
British Telecommunications plc (BT) announced the availability of its satellite phone Mobiq for voice, fax, data and e-mail transmissions. BT also provides interna-

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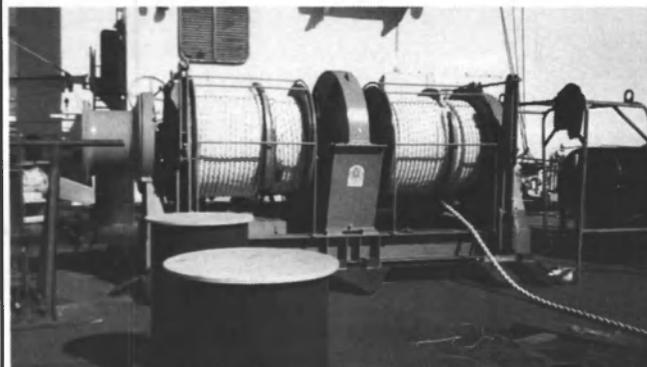
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Circle 345 on Reader Service Card

Marine Electronics & Satcom Review



tional communications services via Inmarsat satellite systems to more than 200 countries. Its services include low, medium and high speed data,

interconnection of digital and ISDN networks and office-based LAN systems, and audio and video conferencing. BT also provide call information in digital format for use with Excel, Lotus 1-2-3 and other spreadsheet applications.

For more information on
BT North America
Circle 80 on Reader Service Card

PinPoint Systems International



PinPoint Systems International has introduced Pinpoint Nautical Navigation, a charting system designed to utilize NOAA electronic charts on CD-ROM. PinPoint provides four communications ports for direct interface with GPS, Loran, autopilot, gyro, depth sounder or other navigational aids supporting standard NMEA data formats. All PinPoint systems include a NOAA prototype CD-ROM disk set that contains more than 150 official charts.

For more information on
Pinpoint Systems
Circle 104 on Reader Service Card

GN Comtext

GN Comtext, a London-based communications service and computer software provider for the

maritime industry, reported consistent growth in 1996. The company recorded new records for telex and fax message deliveries in January of this year. GN Comtext provides a range of international

messaging services, reportedly delivering telex, fax and e-mail to more than 3,500 corporate users worldwide.

For more information on GN Comtext
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Marine Electronics & Satcom Review

Stratos Mobile Provides Satcom Services

Stratos Mobile Networks offers advanced mobile satellite commu-

nications to the maritime, land mobile and aeronautical applications.

International service partners provide local access to Inmarsat A, B, C, M, mini-M and HSD voice

and data services. Stratos Mobile Networks is currently the communications supplier to the Hibernia project.

For more information on Stratos Circle 86 on Reader Service Card

Fluke Helps Troubleshoot

Fluke Corporation's ScopeMeter 123 electronic test tool integrates oscilloscope, multimeter and paperless recorder functions for troubleshooting machinery, instrumentation and control and power systems. The ScopeMeter uses proprietary circuitry to continuously analyze input signals, while its microprocessor uses the data collected to control the instrument settings.

For more information on Fluke Corp. Circle 105 on Reader Service Card

Boatrac's Contracted To Equip 105 Vessels

Boatrac's, Inc. was contracted by Deutsche Binnenreederei (DBR) to equip 105 of its vessels with Boatrac's satellite-based marine communications and tracking systems. The Boatrac's system allows for near real-time tracking of vessels and provides e-mail, phone, fax and two-way communications between vessels and base stations on land or other vessels at sea. Boatrac's currently has systems on vessels operating on U.S. coasts, Europe, Mexico, Canada, the Gulf of Mexico and inland rivers and waterways.

For more information on Boatrac's Circle 106 on Reader Service Card

S.P. Radio Offers Sailor Line

S.P. Radio A/S has introduced its Sailor line of maritime radio communications systems. The Sailor VHF system incorporates VHF Digital Selective Calling systems and is available in simplex, semiduplex and duplex VHF formats. S.P. Radio A/S also offers the Sailor Satellite Program for sea and land mobile Inmarsat B, Inmarsat C or Inmarsat M satellite communications.

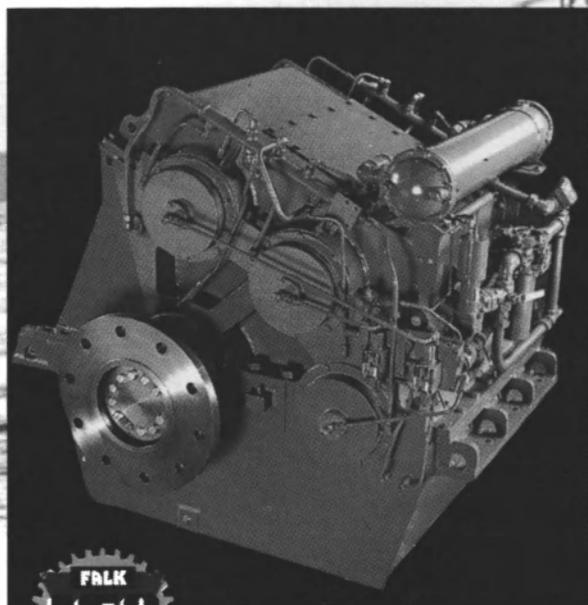
For more information on S.P. Radio A/S Circle 107 on Reader Service Card

Standard Communications Corp.

Standard Communications Corp. has introduced the Horizon HX255S portable communications system. Standard features on the

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Marine Electronics & Satcom

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For more information on Standard
Circle 108 on Reader Service Card

from Inmarsat's latest generation of satellites. Station 12 has made three subscription packages available — Altus Traveller, Voyager and Office — to meet different user needs.

For more information on Station 12
Circle 110 on Reader Service Card

C-Map Releases Enhanced Product

C-MAP released its latest electronic chart database, C-MAPNT. The database was derived from CM-93, C-MAP's SOLAS class database, which was designed according to International Hydrographic Organization's standards on electronic charts.

C-MAPNT's depth, intertidal and restricted areas on nautical charts can be displayed in colors and gray scales or in wallpaper fill for monochrome systems.

For more information on C-MAP
Circle 109 on Reader Service Card

Marnet Project Attains Approval

Marnet aims to create the world's first, multi-regional, real time logistics network. Marnet Project is a plan designed to speed up cargo throughput through ports and support monitoring service by means of an information network. The proposed two-year project was given a formal seal of approval by Eurymar and will culminate in the unveiling of a working prototype at the Lisbon Expo in 1998.

For more information on Marnet
Circle 111 on Reader Service Card

Station 12

Station 12, a subsidiary of PTT Telecom, recently inaugurated its Altus service for Inmarsat Mini-M satellite communications. The service provides portable voice, data and fax communications to Altus terminals using spot-beams

BMT Launches Maneuvering Simulator

BMT has introduced a new version of its Rembrandt real-time maneuvering simulator.

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Circle 226 on Reader Service Card

Maritime Reporter/Engineering News

131944
face (GUI) based on digital charts with the size and position of the vessel accurately overlaid.

For more information on BMT
Circle 112 on Reader Service Card

Maritime Communications Network

979998
Maritime Communications Network (MCN), a subsidiary of ICG Satellite Services, provides voice, fax and data communications via its MarineSat telecommunication system. MCN makes MarineSat service available in U.S. coastal waters, including Hawaii and Alaska, and throughout the Caribbean.

For more information on MCN
Circle 142 on Reader Service Card

Cable & Wireless Caribbean Cellular

118800
As a result of a recent alliance with Canadian-based TMI Communications, Cable & Wireless Caribbean Cellular is offering its MSAT Network satellite service to the maritime industry. The new satellite package, Cell/Bat, utilizes Westinghouse's Wavetalk marine satellite telephone, which provides digital communications throughout North American waters and the Caribbean.

For more information on Cable & Wireless
Circle 143 on Reader Service Card

Northern Airborne Wins NMEA Award

111500
For the third consecutive year, Northern Airborne Technology's Satfind-400 survival EPIRB has won the National Marine Electronics Association's (NMEA) award for Best EPIRB.

For more information on Northern Airborne Technology
Circle 144 on Reader Service Card

Comsat

209100
Comsat Mobile Communications provides a variety of mobile communications services to the maritime, aeronautical and land mobile industries. Comsat provides voice, facsimile, data and telex services to ships at sea, emergency response teams, news gathering organizations and natural resource exploration companies through the Inmarsat satellite system.

For more information on Comsat
Circle 171 on Reader Service Card

American Mobile Satellite Corporation

110570
American Mobile Satellite Corporation (AMSC) is a telecommunications company that provides satellite-based mobile voice and data communications services. AMSC's SkyCell Satellite Roaming Service complements existing cellular services and provides seamless mobile communications coverage throughout North America.

For more information on AMSC
Circle 172 on Reader Service Card

AT&T

9719200
AT&T Mobile Satellite Services delivers quality, reliable shore-to-ship and ship-to-shore Inmarsat services. AT&T Inmarsat A, B and M services, along with AT&T High Seas Direct, will reportedly provide a clear, cost-effective connection anywhere on land or sea.

For more information on AT&T
Circle 173 on Reader Service Card

(Continued on page 113)

April, 1997



Photo: Dario Acosta

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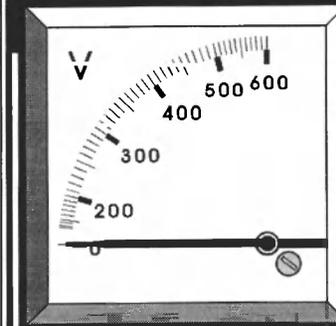
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The German maritime industry is a microcosm displaying the changes that are sweeping the maritime scene in Europe, and in fact, the world.

Competition for newbuild, repair and equipment supply dollars grows exponentially each year. There's always a new low-cost builder, product and/or service provider lurking around the corner, looking to steal market share.

German companies have not been spared this trend, and several momentous events — including the downfall of Bremer Vulkan and the purchase of Krupp-MaK by Caterpillar — have taken place in recent months. Just recently, the Wall Street Journal was reporting on Fried Krupp AG Hoesch-Krupp's intentions to launch a hostile takeover bid of the much larger Thyssen AG. While it appears this plan has been shelved, WSJ did report that the companies were initiating talks to discuss merging their businesses, a move that could, in effect, make the union one of the top five steel producers in the world. Even though the outcome is uncertain, this highlights an industrial consolidation trend seen throughout Europe and around the world.

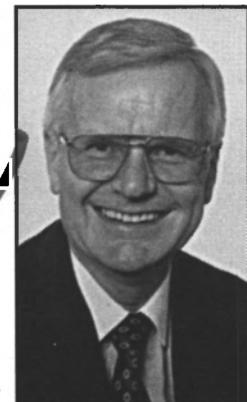
Whether alone or merged, German maritime companies are well positioned to prosper in this new environment, and will predictably provide stiff competition for all challengers. Renowned for technological excellence and innovation, German companies have earned a strong reputation as designers, builders and suppliers of top quality ships and equipment.

The ensuing pages provide updates on key German shipyards and equipment suppliers. Also, an editorial contribution from Wilfried Brune, managing director of VDMA, highlights some of his member companies' recent successes and future prospects.

A Driving Force In Technology And Cost Efficiency

by **Wilfried Brune**, managing director,
German Machinery & Plant Manufacturers Association

The German marine and offshore equipment industry comprises approximately 400 companies employing about 70,000 people in the development, construction, production and sales of marine equipment. Most of the companies are medium-sized, and approximately 80 percent of the companies are not exclusively maritime — but rather branches of larger industrial conglomerates. This arrangement leads to many synergies and benefits for all parties. German manufacturers offer a wide product range in the maritime sector, comprising: diesel engines; gears; loading and unloading plants; deck machinery; hydraulic aggregates; heating, climate and air control technology; water and wastewater plants; separators; environmental protection instruments; fish processing machines; navigation and communications systems; electrical and electronic plants; rescue and fire protection systems; consulting services; software; and steel and other semi-finished products. The Marine and Offshore Equipment Industries Division of the German Machinery and Plant Manufacturers Association (VDMA) regularly publishes a manufacturer catalog which gives details on the companies in these areas. The catalog contains their complete maritime manufacturing programs, and the latest edition is available in three versions: German-English, Chinese-English; and Russian-English. (See end of story for information on ordering a copy.)



Wilfried Brune

70% Of The Ship

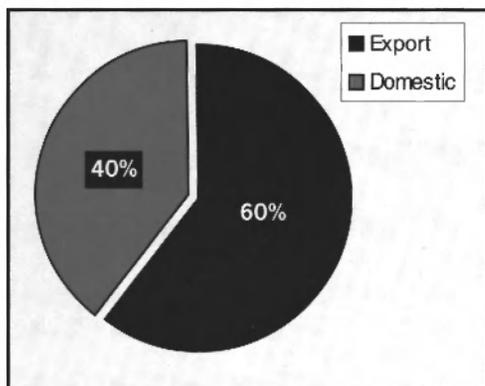
Seventy percent of a ship's value is contributed by marine equipment suppliers. This fact demonstrates the role of the marine equipment industry as a partner to shipyards and shipowners. Equipment manufacturers also play a part in ensuring that vessels are outfitted in compliance with environmental protection requirements. One of the German marine equipment industry's strengths is its ability to devise trendsetting maritime supply solutions. Aside from providing technological solutions, German manufacturers recognize that customer service is of great importance, and local sales offices and efficient after-sales services are in force worldwide.

In 1995, the German marine equipment industry's turnover was \$10 billion, 60 percent of which accounted for exports. In comparison to 1994, the overall turnover increased approximately 15 percent (export percentage numbers have been stable for years). Similar results are expected for 1996 and 1997. The intake orders from foreign regions/countries (from 1995) are:

Country	1995	1994
Australia, New Zealand and Oceania	2.3	2.5
Middle East countries	2.6	4.3
East European countries	7.4	14
Middle and South America	2.8	2.0
North America	11.2	5.7
EU Countries	40.4	38.7
Norway & Iceland	5.2	11.5
Southeast & East Asian Countries	26.7	20.1
Others	1.4	1.2
Total	100	100

Shipyards Offer Fresh Opportunities

The international shipbuilding market continues to operate under increasing price pressures. Consequently, shipyards must concentrate on key functions and transfer parts of production to the equipment industry. In this context, it is of great importance to note that the German equipment industry is in a position to offer complete systems instead of individual components. This kind of partnership between shipyards and equipment suppliers constantly requires the equipment industry to raise requirements, which have to be fulfilled accordingly.



International Competition Increases

As developing and newly industrialized countries first started building ships, these same countries systematically built up their marine equipment industries. Hence, local content, license contracts and different kinds of cooperation have become more important. As equipment is mainly produced individually or in small lots, the question arises as to whether production at several sites is the most economical arrangement.

The industry reportedly does not receive any direct order supports from government, and therefore has to vigorously and continually explore new avenues of cost reduction. This includes the partial transfer of production into foreign countries and the reduction of costs for external institutions, like classification societies. Inspection and approval accounts for an increasing part of the total costs. Mutual acceptance of certificants has to be practiced more often as well as pragmatic and short-term changes of proceedings of the classification societies.

The maritime industry worldwide is undoubtedly an extremely transparent market. From the point of the equipment industry, every measure has to be undertaken to keep the markets open. Middle-sized entrepreneurs need government support in order to dismantle non-tariff trade barriers.

VDMA is watching the U.S.'s hesitation to accept the OECD agreement. The reduction of subsidies will remain a decisive milestone for equal supplier competition.

Marine equipment suppliers in particular will play an increasingly important role in the transfer of goods to coastal and inland waterways, thus alleviating bottlenecks currently experienced on road and rail traffic. Economy in ship operation, security for ship and crew, replacement of the aging fleet, as well as innovations concerning new types of ships are essential challenges of the future.

For information on catalogs
Circle 49 on Reader Service Card

April, 1997

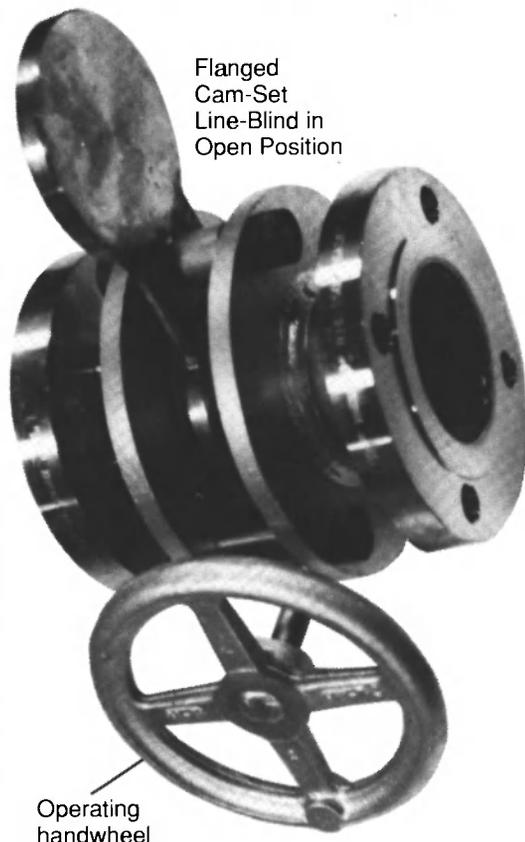
For Your Information...

For years, the German marine equipment companies have prepared themselves to accept the challenges inherent in today's shipbuilding market: providing technologically advanced, turnkey solutions. Due to this fact, German marine and offshore equipment industries have published the following brochures.

German Marine Equipment: Systems for Optimal Application: This 300 page publication consists of a description of 27 equipment systems installed on ships, as well as the corresponding components of German marine equipment manufacturers.

For information on ordering the book
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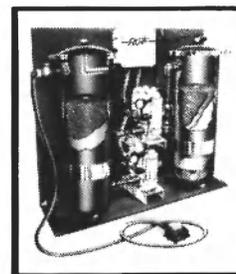
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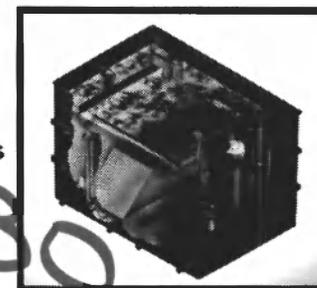
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Flensburger, SVA To Devise Optimal Containership Hull Form

In collaboration with Flensburger Schiffbau-Gesellschaft (FSG), SVA recently performed a ship form optimization for a containership. FSG regularly uses advanced Computational Fluid Dynamics (CFD) technology to provide optimal ship forms and maintain maximum design advantages. The aim of this project was to reduce total resistance without decreasing the number of transported containers.

In this project, many potential flow calculations were performed and many

bulb forms were investigated using a bulb optimization program. The length, the cross section area and the height of bulb nose were widely varied. After the optimal bulb was found, the ship form with the original and the final bulb shapes were computed using fine grids with SVA's Shipflow program. The calculated free surface, wave resistance and pressure distribution were used to improve the fore and aft part of the hull. During different stages of the project, more than five dif-

ferent versions of the hull form were developed based on the numerical results. The comparison of obtained wave patterns for the original form and one of the improved versions gives an explanation for the reduction of wave-making resistance. The end result is that the bow wave is slightly lower for the final shape, and the wave troughs at the forward perpendicular have almost disappeared.

For more information on SVA
Circle 35 on Reader Service Card

Prüftechnik Helps Eliminate Shaft Misalignments



The Optalign Plus laser optical shaft alignment system from Prüftechnik is a robust tool used to achieve accurate alignments in a comparably short time. The system is designed to handle real-world alignment problems, like gross misalignment, limited shaft rotation and coupling backlash. It also generates alignment reports automatically to fulfill ISO 9000 requirements. The large graphic display is designed to clearly show the alignment condition at the coupling and at the machine feet. Windows-based PC support allows alignment job setup.

For more information on the system
Circle 37 on Reader Service Card

Krupp Fördertechnik Equips New Russian Port

The government of the Russian Federation is having a new port built at Ust-Luga on the Gulf of Finland. The first sub-project will be to set up a coal terminal to handle approximately eight million tons of coal a year. Krupp Fördertechnik will be advising the company in charge of the project, Rostelneralugol, on planning and project engineering for the plant as well as equipment supply.

For information on the company
Circle 36 on Reader Service Card

Deutz Refocuses On Core Business

Big changes have been introduced not only for Klockner-Humboldt-Deutz AG, but also for the prime mover systems division with independently operating companies Deutz



Motor GmbH, Deutz Service International GmbH and Motoren-Werke Mannheim AG.

The company is now trading under the name Deutz AG and the new name clearly expresses the corporate mission to concentrate on the core business of diesel and gas engines.

For that purpose, the internationally known product name Deutz was chosen as the name for the company, which is involved in the international engine business with a range covering powers from 4.5 to 7400 kW. The process includes the integration of the previously independent companies Deutz Motor GmbH and Deutz Service International GmbH into the new Deutz AG. Motoren-Werke Mannheim AG and the MWM Diesel und Gastechnik GmbH will remain independent companies. To strengthen the Deutz MWM engine business, Holger Heinrich, until now in charge of the gas technology business, has been appointed universal agent of Motoren-Werke Mannheim AG.

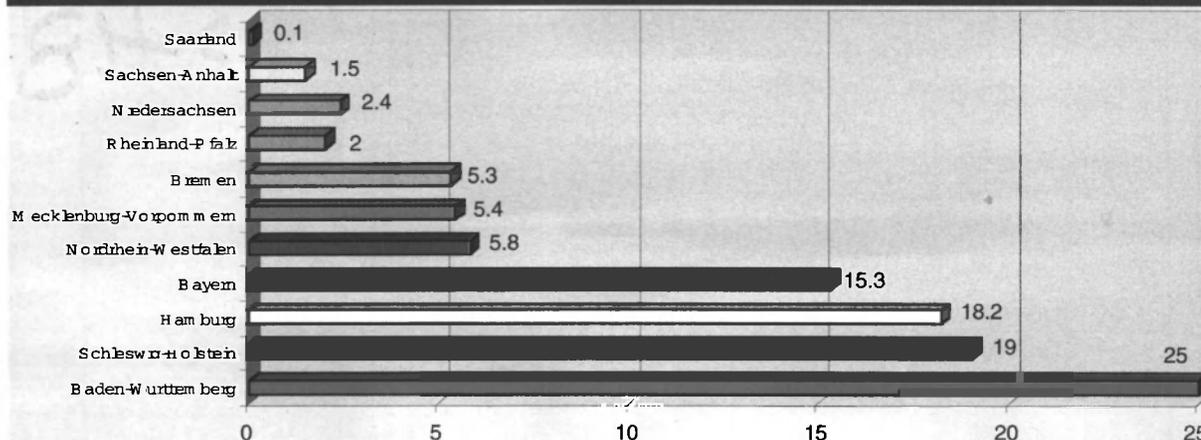
For more information on Deutz AG
Circle 42 on Reader Service Card

ZF Focuses On Fluid Technology

Gear maker ZF's corporate research and development team is reportedly breaking new ground in the field of lubricants by quantitatively defining particle size distribution in semisynths using an optical microscope and image analysis. This means that the fluid grease manufacturing process can be checked and controlled.

For more information on ZF
Circle 34 on Reader Serv. Card

1995 Marine & Offshore Equipment Turnover (by German States)



STN Atlas Taken Over

An Anglo-German consortium comprising Rheinmetall AG, Badenwerk AG and British Aerospace has acquired STN Atlas Elektronik, a leading electronic systems company and leading supplier of marine equipment.

The company was acquired from

the bankrupt Bremer Vulkan Group, and under the \$353 million deal, Rheinmetall and Badenwerk will retain a 51 percent holding of STN Atlas, with Rheinmetall assuming overall management control. British Aerospace's stake is 49 percent. The company will

continue to be based in Bremen.

The shake-up and takeover have not stopped the company from developing new, innovative products for the maritime community, and it recently introduced two multi-pilot systems, the Atlas 9102 and 9106.

Both multi-pilot models incorporate display functions taken from

STN Atlas' new Chartplot 9300 series of ECDIS-based navigation and planning workstations, with which all essential nautical data can be superimposed on electronics charts via a choice of 17, 21 or 29-in. color monitors.

For more information on STN Atlas
Circle 38 on Reader Service Card

MAN B&W Powers New Cruise Ships

Two new luxury cruise ships, equipped with MAN B&W Diesel four-stroke engines, were simultaneously sent to sea late last year. The 77,000-gt *Galaxy* is the second of a series of three ships built by Meyer Werft for Celebrity Cruises. The 1,896-passenger vessel is powered by a father/son system, consisting of two nine-cylinder and two six-cylinder four-stroke engines, type 48/60. The total output is 31,500 kW. Shipboard energy supply is provided by four 6L 40/54 four-stroke engines. The second ship was the 74,000-gt *Grandeur of the Sea* built by Finland's Kvaerner Masa-Yards, in Helsinki. It is equipped with a diesel-electric installation for propulsion and onboard services. Four 12-cylinder 48/60 engines, developing a total output of 50,400 kW, operate on two FP propellers via two electric motors, providing ship speeds of up to 23.5 knots.

For more information on MAN B&W
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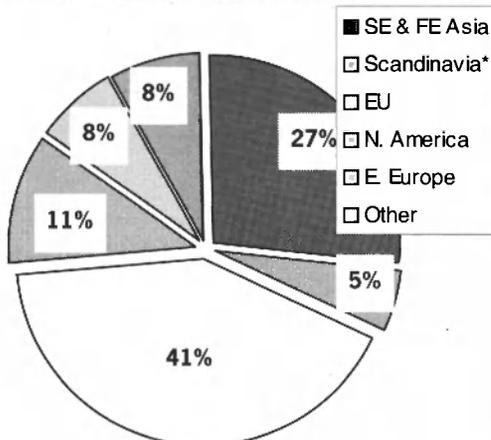


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KSW Helps Speed Cargo Along

Automatic Seaborne Pallet Handling (ASPH) from Germany's KSW is a unique hold concept for reefer vessels, applicable from barges to fast vessels, as well as traditional ocean liners. The vessel is basically an empty hull with

a closed weather deck, where traditional tween decks and gratings are replaced by a compact pallet storage system.

The system allows automatic loading and discharge under full weather protection, and the handling capacity is 500 pallets an hour.

For more information from KSW
Circle 40 on Reader Service Card

IMG Contracted For Scandinavian Yard Upgrade

IMG has received a contract to modify an existing 12-m panel line from a Scandinavian shipyard. IMG is to supply gantry with a special welding system using patented CLOOS twin tandem wire heads. The contract calls for

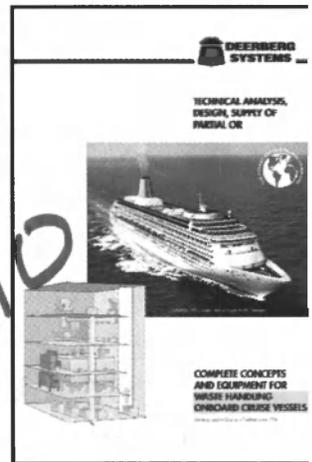
a welding speed of 1.6 m per minute, welding primed profile sections. Test results have achieved a 1.8 m per minute result, and profiles with primer removed have achieved a 2.2 m per minute speed.

For more information on IMG
Circle 39 on Reader Service Card

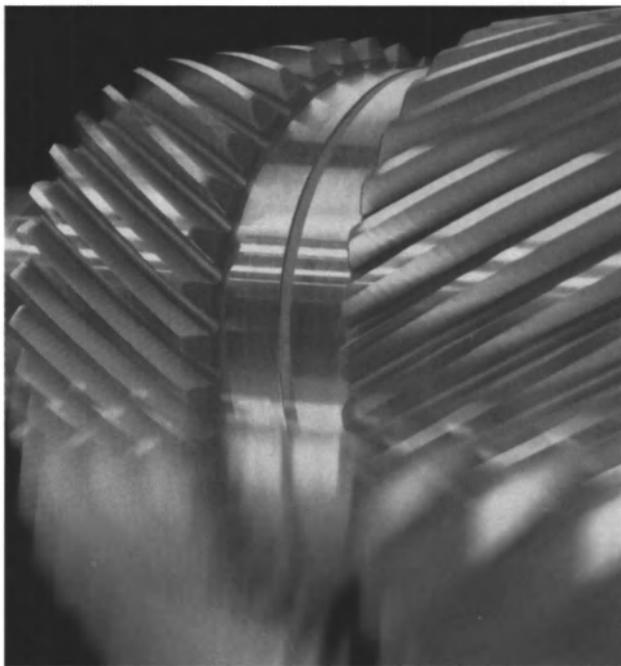
Deerberg Systems

Deerberg Systems' color brochure details the company's state-of-the-art multi-purpose waste management systems. During the past 15 years, the company and its partners have pioneered many philosophies and technologies for shipborne waste treatment. The brochure includes a complete passenger vessel reference.

For a copy of the brochure
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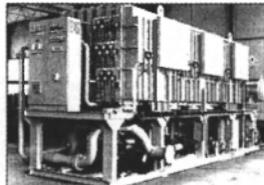
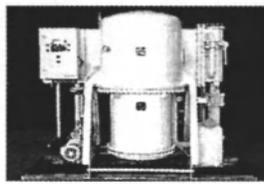
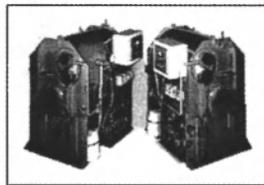
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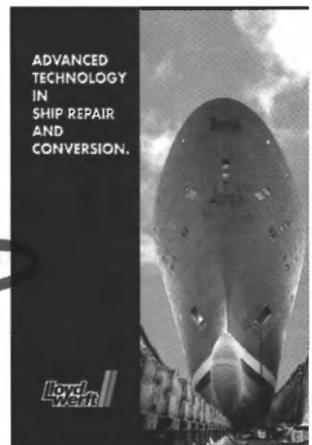
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Circle 291 on Reader Service Card

Lloyd Werft

Lloyd Werft's booklet details not only the company's vast repair and conversion resources, but also its rich history. The company counts many of the world's marquee ships as its clients, including QE2 and S.S. Norway.

For a copy of the brochure
Circle 44 on Reader Service Card



MüTec

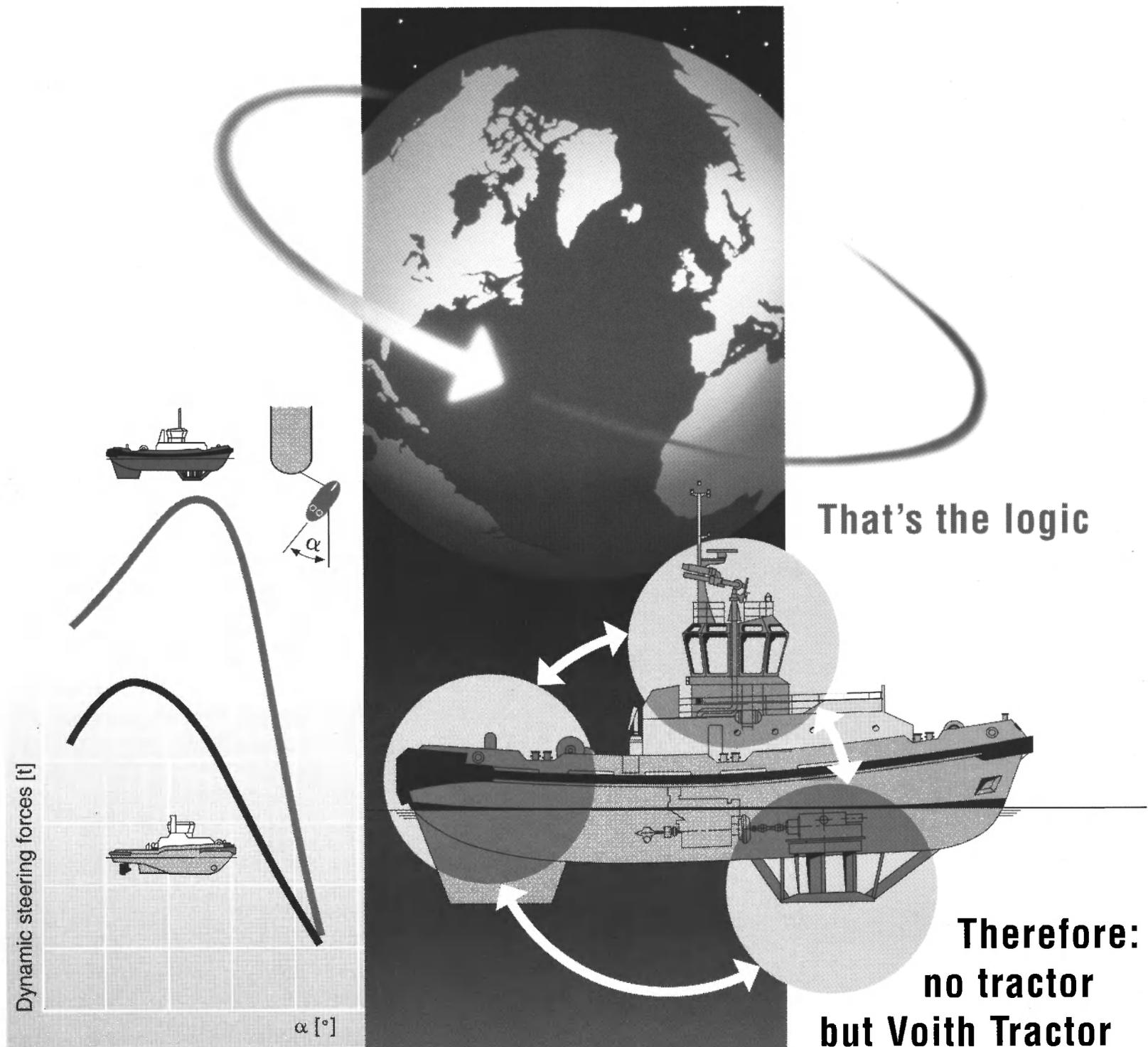
The company is small, but very active, and has gained an excellent reputation throughout Europe for the implementation of sensors, especially the sensor system LIST, in special applications.

For a copy of the brochure
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Internet Brings New Era To Ship Management

Maritime industry members recently gathered at the Grand Hyatt Hotel in New York City for the Joint Hellenic/Norwegian American Shipping Conference. Entitled *From Home Port To Home Page*, the conference focused on the new era of internet technology in the shipping industry. Some believe that despite efforts by companies such as Det Norske Veritas (DNV) and Telenor Marlink AS to display and tout innovative windows-operated ship management systems, the trepidation of publicizing company records makes privacy-conscious shipowners skeptical of this new technology.

DNV Exchange

As presented by Bjorgulf Haukelid of DNV, DNV Exchange provides subscribers with regular updates from DNV main databases which can be downloaded through the Internet or by e-mail. Features of the system include the following:

Own fleet status: This is the main module of the Exchange system. Overall classification of each of the vessels in the user's fleet is shown through charts, tables and colored lamps;

Class notation: Here, the vessels' current register information, including owner, manager, type, tonnage, signal letters and classification is displayed;

At-a-glance status lamps: A green lamp indicates all survey, certificates and conditions of class are fully up-to-date for the vessel in question. A yellow lamp shows there is a short time period remaining before a survey or certificate becomes overdue, and a red lamp indicates a survey is currently overdue;

Survey schedule: A summary of all statutory certificates, class surveys and (as an option) hull and machinery is displayed in graphic form,

providing users with visual overviews of vessels' classification status.

Data is extracted weekly from DNV's databases, keeping Exchange subscribers updated with information on fleet classification status. Updates are available on DNV's homepage and are reportedly protected by user name and password. Other information provided by the DNV system includes survey checklists, a DNV personnel directory and the latest legislative updates such as IMO requirements. As of the first of the year, DNV reported 250 subscribers.

Telenor Marlink AS

According to Hans Kristian Haram, Telenor Marlink AS representative, the company's goal is to create, develop and operate secure internet systems for information, communications and business transactions in the shipping industry via a full-function, online busi-

ness environment. Marlink will offer three major suites to shipowners:

- **A charter suite**, designed to meet the ends of the charting business;
- **A ship management suite**, featuring modules for essential services to improve speed, effectiveness and productivity in ship management with added value; and
- **A sale and purchase suite**, enabling easy and safe buying and selling of ships.

In its aim to cover every sector of the shipping industry, Marlink reports on all activities related to port calls between shipowners, port agents and suppliers in the port; handles business activities related to financing and re-financing ships; provides a link between shipowner, newbuilding yards and ship suppliers; and books liner cargo.

Privacy v. Technology

Ship management system providers are striving to provide a means to allow shipowners to computerize the most information with the most accessibility — which ironically is exactly what may be turning owners away. As brought up by conference attendee **Elias B. Frantzis**, president, Frantzis Marine Consulting Inc., competition is a major issue among shipowners. For example, a shipowner in Greece is in competition with not only owners in rival countries, but with other Greek owners. A main objective of shipowners is to keep records private. While innovative technology will always stir up excitement in the shipping industry, despite promises of security, owners may be hesitant to succumb to the internet bandwagon.

For more information on DNV
Circle 98 on Reader Service Card

For more information on Telenor Marlink
Circle 99 on Reader Service Card

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Thordon Helps M/V Advantage Get Back Underway Quickly



M/V Advantage, a 560-ft. (170-m) multi-purpose dry cargo ship, was recently equipped with a Thor-Lube stern bearing system.

When Red River Shipping's M/V Advantage experienced tailshaft bearings failure while underway, it was obviously an unpleasant surprise. The U.S.-flagged liner selected Thordon Bearings to provide a solution, specifically the Thor-Lube stern tube bearing system which combines Thordon XL bearings with Thor-Lube, a water soluble lubricant. The bearings were supplied in less than a week, helping to speed Advantage's return to service.

The installed bearings were designed and manufactured with overbuild on the dimensions, so that when the shaft was withdrawn and the exact dimensions obtained, the final design and machining could be carried out quickly. Red River's Engineering Manager Pat

Tarrant also touts Thordon's high resilience and capability to handle shock loads.

For more information from Thordon
Circle 11 on Reader Service Card

Crane Heatex Completes Safmarine Contract



One of Safmarine's "big white" vessels — S.A. Waterberg — in front of Table Mountain, Cape Town, South Africa.

Crane Heatex, a marine heat exchanger specialist, has completed a \$750,000 capital replacement project on four container vessels for Safmarine. The contract, which was carried out over a six month period, comprised three elements. Main engine charge air coolers, six per ship, were originally re-designed and built at Crane Heatex's headquarters. The company matched the duty of the coolers to the engines to ensure optimum performance. The second element of the contract required the re-tubing of the refrigeration condensers and evaporators. A total of eight evaporators and eight condensers were re-tubed with minimum disruption to surrounding equipment, ship routine

and other refit work. The third element of the contract involved the complete rebuilding of the auxiliary dump condensers from each ship.

Crane Heatex, accredited with ISO 9000 certification, designs, builds and refurbishes heat exchangers for marine applications worldwide.

For more information
Circle 29 on Reader Service Card

Bureau Veritas Launches ISM Training Course

Leading classification society Bureau Veritas (BV) is cooperating with South Tyneside College to present an ISM Code training course. The course, to be delivered by experienced BV auditors, will focus on the relationship between Quality Assurance systems and the ISM Code; the role of class societies, statutory bodies and auditing bodies; ISM Code practical implementation; the scripting of policies and procedures; and auditing techniques. The first course, which is four days long, was scheduled to begin on February 4.

For more information on BV
Circle 7 on Reader Service Card

New Sulzer Specifies Amot Valves

New Sulzer Diesel has ordered a number of Amot G-range, three-way control valves for the accurate regulation of fluid temperature in engine jacket water and auxiliary circuits. The Amot G valve reportedly has a simple, compact design which offers six flow modes and can be mounted in various positions, making it ideal for engine development test rigs.

For more information on Amot
Circle 8 on Reader Service Card

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Circle 318 on Reader Service Card

Ro-Clean Offers Refined Vacuum System

Ro-Clean Desmi, a manufacturer of oil spill recovery equipment, introduced the Ro-Vac MKII, a powerful portable vacuum system for the rapid recovery of all types of oil spills, liquids, sludges and solids up to 65 mm in diameter.

The Ro-Vac MKII is designed for near shore and land applications and features large diameter wheels for road and off-road towing, forklift channels, a fully galvanized frame and chemical dosing educator with pick-up tube and high pressure water pump.

Ro-Clean Desmi offers two different options for vacuum vessel storage, including a 200-liter aluminum hopper with adjustable legs and automatic emptying and a two-cu-m steel vacuum tank mounted on a base frame with road wheels.

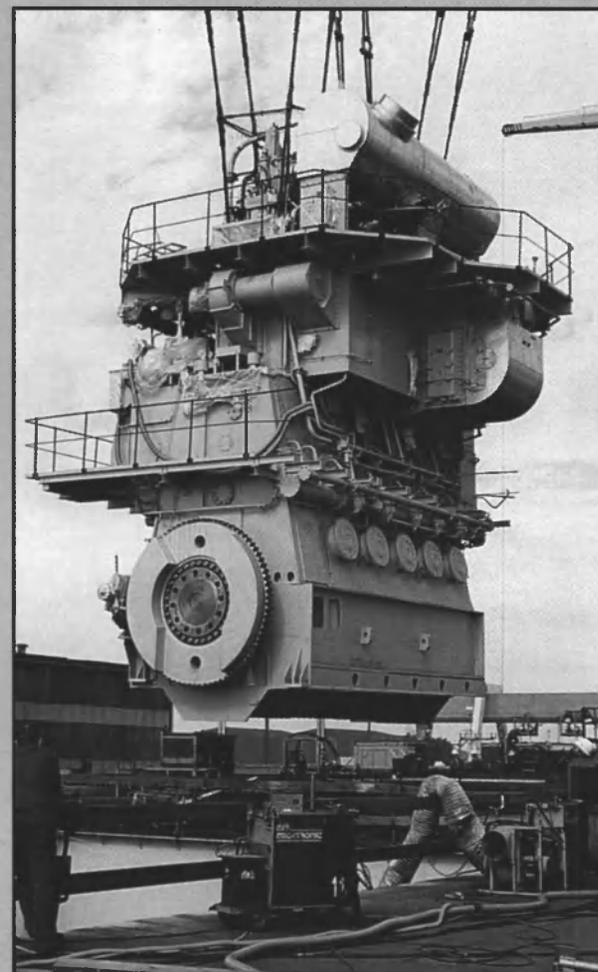
For more information on Ro-Vac MKII
Circle 10 on Reader Service Card

New Sulzer Offers More Compact Versions Of RTA-2U

New Sulzer Diesel Ltd. has introduced improved versions of its Sulzer RTA52U, RTA62U and RTA72U low-speed marine diesel engines. All new versions are shorter and lighter than the original designs, and each has been modernized with respect to installation ease onboard ships. Installation work is reduced through the use of fewer holding-

down bolts on the engines, and also by improving access to them.

In addition, the crankshaft has been given wider webs to further reduce stresses. However, it is key to note that there has been no change in any of the engines main parameters, including power, speed and consumption. The modernized RTA-2U engines are design-



nated the B versions in the technical documentation to distinguish them from the original designs. They incorporate many detailed design solutions from the RTA-T series, features that have already been well received by engine builders as well as shipbuilders.

The most visible change is the reduction in engine length of 255 mm for the RTA72U engines, 214 mm for the RTA62U and 175 mm for the RTA52U. These are equivalent to a reduction of about 2.8 percent in length of the six-cylinder models. The length reduction has been achieved by re-designing the after end of the engine with a shortened thrust bearing. The shorter structure also allowed the aftermost tie rod to be omitted. The engines are now equipped with the same electronically controlled cylinder lubrication system as the RTA-T engine series.

The multi-level accumulator system is retained, but it is served by lubricating pumps driven by a frequency controlled electric motor. Local oil distributors on each cylinder are designed to considerably reduce the number of pipes required.

The engine weights have been reduced by 15 tons for the RTA72U, 10 tons for the RTA62U and five tons for the RTA52U. The RTA-2U version B engines will be designed to meet planned IMO limits for NOx exhaust emissions without additional equipment.

For more information on the technical specifications of the new engines

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Circle 261 on Reader Service Card

Belgians Scoop Up Dredging Contracts

by Carol Fulford & Andy Smith

Straddling the border between Belgium and the Netherlands, the massive delta formed where the Rivers Maas, Waal and Scheldt meander into the North Sea constitutes the seaward end of a busy inland waterway network which includes the River Rhine. To maintain the smooth running of high volumes of commercial traffic, both nations have, over many years, built up expertise in the design and operation of dredgers.

Dredging International (DI), from its base in Antwerp, Belgium, is one company which has secured a number of major capital and maintenance dredging contracts around the world, thus confirming the preeminence of the so-called Low Countries in this particular field.

The company has become a dominant force in the Far East with extensive activity in Malaysia, Taiwan, Indonesia, Vietnam and Australia, and has ongoing projects in North Africa, South America and the Caribbean.

A significant boost for DI's Asia-Pacific Group came in mid-1996 with the award of a new contract at Port Klang, Malaysia, which involved deepening the five-mile long and 1,300-ft. (400-m) wide access channel. The task at this busy container port located 25 miles west of Kuala Lumpur involved the removal of six million cu. m. of material to a dump zone positioned approximately 10 miles offshore. The latest generation of containerships will now be able to call at the Port.

Pearl River, reportedly the world's largest

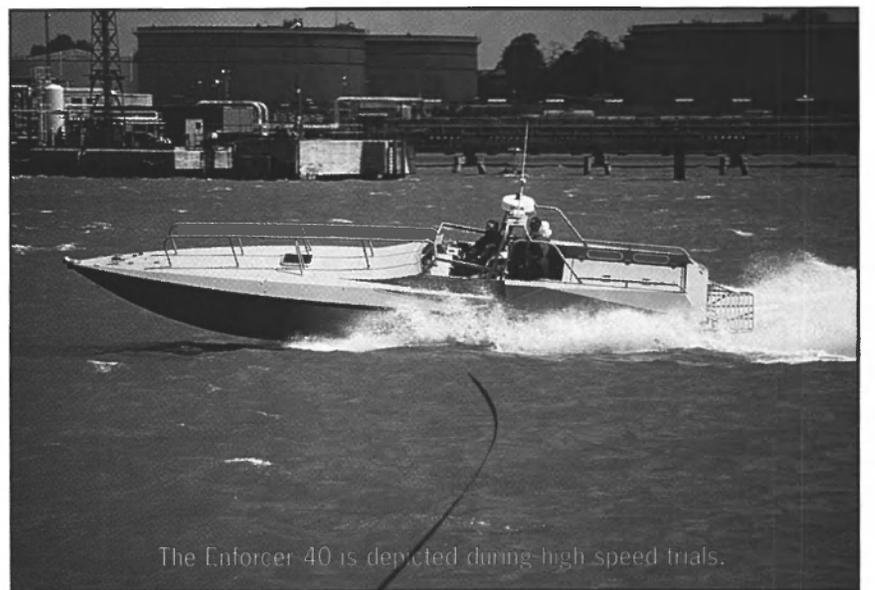
trailing suction hopper dredger with a capacity of 17,000 cu. m., was deployed for the project, while continuing to alternate between other jobs including the reclamation of 500 acres for a residential area and marina off Port Klang, and a reclamation project at Ancol Barat in the Bay of Jakarta. *Pearl River* is currently committed to a four-year maintenance dredging contract at the large LNG and general cargo port at Bintulu, Sarawak.

Last July, Far East Dredging, a DI/Wai Kee Holdings joint venture, began dredging the access channel to the Taiwanese Port of Tan Shui. Dredgers *Cap Martin* and *River Bee* were employed for this three million-cu.-m. dredge and fill operation, which posed a number of challenges, including unpredictable weather and sea conditions and the requirement to dovetail dredging operations with the construction of sea and quay walls.

At the same time, cutter suction dredger *Rubens* was deepening a six-mile long seaward access channel at the Vietnamese Port of Hon Chong to provide a local cement works with a more efficient transport option.

In October, DI will take over the second part of a two-year contract at the Port of Cochin, India, from joint venture partner Van Oord. *Pacifique*, a 430-ft. (131-m) trailing suction hopper dredger, will prevent the silting up of one of India's West Coast harbors and its access channel by removing 19 million cu. m. of mud.

DI will also soon begin clearing Martin Garcia Channel in the Rio de la Plata, Uruguay. Valued at \$180 million over a 10-year period, the project involves removal of 35 million cu. m. of material and will open up a number of Uruguayan and Argentinian ports. Cutter suction dredger *Amazon* will undertake the lion's share of the work in the more difficult northern part of the channel where the sea bottom comprises firm



The Enforcer 40 is depicted during high speed trials.

clay and rock.

Elsewhere in the world, DI teams are currently involved in reclamation work on Guadaloupe, maintenance dredging at five Tunisian ports and flood protection work in Brisbane, Australia. In Belgium, the company is involved in connecting Antwerp's second container terminal to the national and pan-European rail network with a land consolidation scheme. The rail link will eventually pass over a 20 to 26-ft. (6 to 8-m) layer of material dredged from Antwerp Harbour. Other local projects include erosion protection work on the River Scheldt and the construction of a new ferry terminal at the Port of Ostend.

New hybrid tug design

Holyhead Towing has recently taken delivery of a multi-purpose tug designed by the company's managing director, Capt. **Mark Meade**. Dubbed *Afon Goch*, the vessel's design is an attempt to combine the performance and sea-handling of a conventional twin-screw tug with the large open deck space of the Multicat style workboat.

In 1995, the company built a vessel at its own yard which broadly copied the Multicat concept made popular by Dutch builder Damen. Holyhead's version, *Llandwyn Island*, has a 70.5 ft. x 25.6-ft. (21.5 m x 7.8-m) hull, is completely rectangular in plan and features a raised deckhouse offset tight against the port gunwale. The vessel has an enormous deck area, although its square bow is less than ideal for offshore conditions.

The design ideas were taken to Hepworth Shipyard in Hull and a build contract was negotiated. Capt. **Meade** refers to *Afon Goch* as a Multitug, and the vessel resembles a conventional 78-ft. (23.8-m), twin-screw tug with a beam of 24.6 ft. (7.5 m). A small octagonal tug-style pilothouse is located near the vessel's centerline and there is a clearly defined bow. Twin exhaust stacks are angled to maximize visibility. Closer inspection reveals hardwood covered working decks with both anchor handling and towing winches located amidships in a tunnel formed beneath the pilothouse.

The vessel's conventional propulsion system



This unconventional Dutch RoRo design is from Schelde Shipbuilding.

comprises two Caterpillar 3412 DITA diesels each developing 725 hp at 1,800 rpm, turning propellers in stainless steel-lined Kort nozzles via Twin Disc MG 5202 gearboxes, augmented by a Kort KT120 bow thruster. A free running speed in excess of 11 knots and a bollard pull of 20 tons were reported on trials.

The vessel is well equipped with Wagner steering, Kobelt controls, Robertson AP 45 autopilot, two Furuno radars, Sailor VHF and a CCTV system allowing the tug master to observe operations at the two winches otherwise hidden below.

Also noteworthy, *Afon Goch* is the first U.K. newbuild to be fitted

with cut-tire loop fendering manufactured in the U.S. by Schuyler Ruhner.

Salvors put brave face on British legal decision

The House of Lords has made its final judgement in the *Nagasaki Spirit* case which effectively rules

that there should be no element of profit in the calculation of a 'fair rate' for tugs and equipment under the Special Compensation provisions of Article 14 of the Salvage Convention. Reacting to the decision, International Salvage Union president **Arnold Witte** said: "Naturally there is disappointment amongst salvors that earlier rulings which put the salvage industry at a disadvantage in the short-term have been upheld ... It is now up to us, together with shipowners, insurers and the P&I Clubs to join and reach a new understanding which ensures that this ruling does not erode the effectiveness of the system of pollution defenses put in place by the member governments of the International Maritime Organization."

The Lords decided that the Special Compensation provisions should run for the entire period of a salvage operation, until services terminate, which effectively removes any claim that Article 14 ceases to apply when a pollution threat has receded.

The *Nagasaki Spirit* case has dragged on since 1992, when the vessel was involved in a collision in the Mallaca Strait.

Semco Marine rendered salvage services in accordance with Lloyd's Open Form and although the claim against the cargo owners was quickly settled, the Special Compensation award was hotly contested.

The judge ruled in the original hearing that there is a difference between remuneration and compensation. As used in Article 14 of the Convention, compensation is deemed to mean recompense for expenditure and thus should not include an element of profit. The terms are bound to be changed in any future Salvage Convention.

Kuwait orders two more interceptors

U.K.-based high performance boatbuilder Cougar Marine has received an order for two more Enforcer 40 surveillance and interceptor craft from the Kuwait Coastguard Service, following the successful operation of a similar craft last July. The 45-knot vessels with surface drive propulsion systems are scheduled for a mid-1997 delivery.

Cougar representative **Pete Currington** told *MR/EN* that the new boats will be virtually identical to the original Enforcer but

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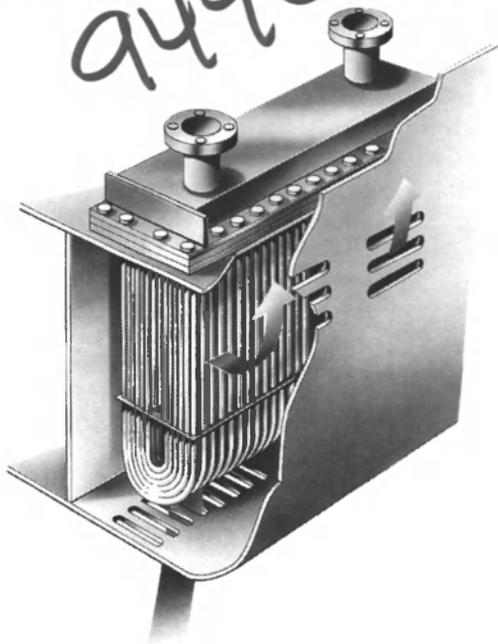
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EUROPEAN UPDATE

with some minor refinements resulting from operational experience.

"These will make the craft easy for the crews to use and offer greater protection from small arms fire," he said.

Derived from Cougar's renowned US1 monohull range, the Enforcer 40 has a deck layout designed to accommodate a crew of four and a 300-kg weapons payload. The construction comprises fiber reinforced polymer composite laminate incorporating uni-directional glass, and Kevlar Aramid cloths over foam and plywood core materials bonded with isophthalic polyester resin and gelcoat. The structure is classed to high speed service craft standards by Lloyd's.

The 40-ft. (12.1-m) hull has a beam of 9 ft. (2.7 m) and a maximum draft of over 2 ft. (0.8 m). The deep V-hull with a 24 degree deadrise offers outstanding sea-keeping qualities combined with low resistance figures which enable speeds ranging from 35 to 45 knots, depending on the load conditions.

Twin 380-hp Sabre turbocharged and intercooled diesel engines drive Twin Disc-Arneson ASD8 surface drives with Rolla six-blade surface-piercing propellers through Twin Disc MG5061 drop center gearboxes.

The craft has an operational envelope of between 200 and 300 nm, and to facilitate extended periods at sea in a covert surveillance role, it is equipped with four berths, a small galley and a toilet compartment.

According to Mr. Carrington, in addition to the Enforcer fleet, Kuwait already has 17 Cougar-built craft in operation with its defense forces, including three catamarans ranging in length from 30 to 41 ft.

He also said that an Enforcer 55 has reached the tank testing stage. Powered by 1150-hp MTU engines driving ASD12 Arneson drives, this craft is expected to have a sprint speed of 55 knots, both internal and external bridge positions and carrying capacity for a variety of weaponry.

Dutch Debut RoRo

With the increasing dominance of high speed ferries on the primary English Channel, Irish Sea, Kattegat and Mediterranean routes, it may seem that the days of the conventional passenger ves-

sel are numbered in Europe. In reality, the technology of the traditional ferry is often preferred, particularly in scenarios where economy, reliability and passenger comfort are of greater importance than speed.

For the short Vlissingen to Breskens route across one of the

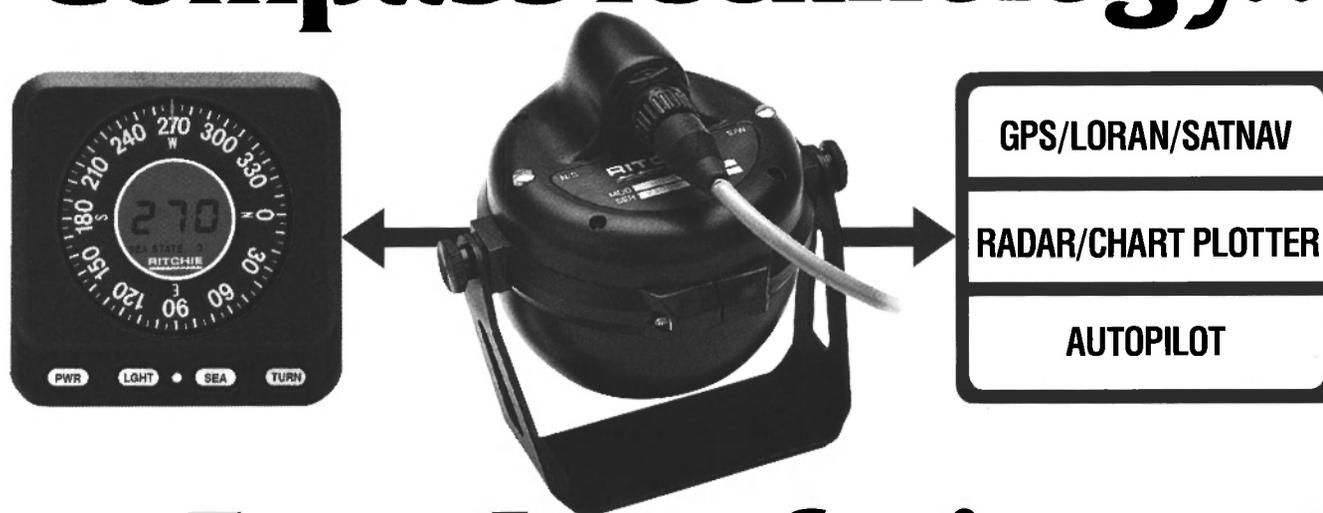
estuaries of the massive Maas-Scheldt delta in Holland, local operator Provinciale Stoombootdienst has selected a 16.6-knot RoRo ferry capable of carrying 1,000 passengers and 210 vehicles.

Designed and built by Schelde Shipbuilding in Vlissingen and due to be handed over during the sec-

ond quarter, the 372.7 x 62.8-ft. (113.6 x 19.1-m) *Prins Johan Friso* will be propelled by four electrical-driven Ulstein azimuthing thrusters — with two located at each end of the vessel.

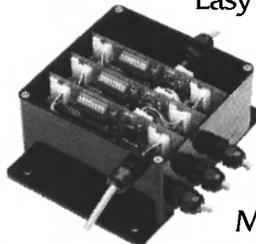
Power is to be provided by four, 1,665-kW Stork Wartsila engines turning ABB generators.

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COMPANY & PEOPLE NEWS

General Dynamics Names New VP

General Dynamics' board of directors has elected **Raymond E. Kozen** to the position of vice president for Planning and Analysis. He will be responsible for exploring and assessing new acquisition and business development oppor-

tunities for the company.

Previous to this appointment, Mr. **Kozen** served as staff vice president for Special Projects since 1987. He joined General Dynamics in 1978 as assistant director of Marketing for Advanced Programs, a position he held until 1980. From 1980 through 1987 he acted as corporate director for Cruise Missile and Strategic

Missile Systems.

Lykes Bros. Appoints New CEO

M. Lenny Pippin has been named president and CEO of Lykes Bros. Inc. He has replaced

Tom Rankin, who reportedly left the company to pursue personal interests. Mr. **Rankin** served Lykes for 28 years, and will continue to serve on the board.

Mr. **Pippin** was previously CEO of Albert Fisher, the North American division of Albert Fisher plc, a British-based diversified food company.



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Terpstra Joins HDR

John Terpstra has joined HDR Engineering, Inc. as national director of Ports in the company's Seattle office. A registered professional civil engineer, he was previously employed as executive director of the Port of Tacoma, Wash., the sixth largest containerport in North America.

HDR has completed a number of major ports projects, including design work and studies for ports in Seattle, Tacoma, Long Beach and Anchorage. HDR Engineering is one of a group of three companies providing transportation, water, waste and energy services.

Norwegian Cruise Line Announces Major Expansion

On March 5, Norwegian Cruise Line (NCL) announced a major expansion of the NCL fleet including the purchase of 1,050-passenger *Royal Majesty* (built in 1992) from Kvaerner ASA, a contract to take over operation of 800-passenger *M/S Crown Majesty* (ex-*Crown Dynasty*, built in 1993) currently on charter to Cunard Line from Silja Line; and the intention to enter into a newbuilding contract for a 2,000-passenger ship with Kvaerner Masa-Yards' Turku, Finland, yard.

The purchase price for *Royal Majesty*, including business on the books and the right to call on Bermuda is \$110 million, plus a minority interest in NCL's parent company, NCL Cruises Limited. The ship's delivery is expected this month.

NCL will take over the day-to-day operation of *Crown Majesty* following final negotiations. The ship is expected to join NCL during the fourth quarter of 1997. The 2,000-passenger newbuild, to be built at Kvaerner Masa-Yards, is expected to be delivered no later than June 1999.

COMPANY & PEOPLE NEWS

"We have been very upfront about our intent to build and/or acquire additional tonnage well before the end of the decade," said NCL Executive Vice President **Bruce Nierenberg**. "Now, we are in the fortunate position to be adding not one but two high quality vessels to the NCL fleet in a matter of months, thus increasing our overall capacity by more than 20 percent."

Offshore Systems Opens New U.S. Office; Welcomes New Managers

Offshore Systems has appointed **Frederick K. Ganjon** to the position of manager of New Business Development. Offshore has also announced the opening of a Mid-Atlantic office in Ellicott City, Md. Mr. **Ganjon** was previously with the U.S. Department of Commerce, and for more than 10 years, has been the NOAA representative on the International Hydrographic Organization (IHO) Committee on ECDIS. He also has been the NOAA representative on the U.S. delegation to the IMO Safety of Navigation Sub-Committee and the IMO/IHO Harmonization Group on ECDIS.

Also to his credit, Mr. **Ganjon**

initiated and chaired the 2nd International Conference on Maritime Law and the Electronic Chart.

In addition, Dr. **Lee Alexander** has been appointed as the company's Technical manager. Prior to assuming this position, he served as program manager for Integrated Navigation Systems at the U.S. Coast Guard Research and Development Center.

Carnival Names Asian Venture

Carnival Corporation and Hyundai Merchant Marine have chosen the name "Carnival Cruises Asia" for the new joint venture in the Asian cruise market. The new company will begin operating Asian cruises on what is currently operating as Carnival Cruise Lines' MS *Tropicale* in the spring of 1998.

"Over the past five months, we came up with a number of creative and imaginative names for our new company. However, our partners from Hyundai believed that, given the tremendous popularity of Western products in the Far East, Carnival Cruises Asia would be most effective in promoting cruises in the Asian marketplace," said **Ray Lutz**, Carnival Cruises Asia's

president and CEO.

He added that the vessel's name, *Tropicale*, will also be retained by the new company.

Carnival Cruises Asia will operate its initial season sailing from Inchon, Korea, to China and possibly Japan aboard the 1,022-passenger *Tropicale*, which will undergo a multi-million-dollar refurbishment before entering service next year. During the winter, the 36,674-ton vessel will be repositioned to other ports throughout Southeast Asia.

Former Wavemaster Director Joins Austal

Glenn Williams, former director and naval architect for Western Australian shipbuilder Wavemaster International, has joined Austal Ships in Henderson. He will serve on the company's marketing and sales team in a newly created position, and will concentrate marketing efforts in southeast Asia and in the Middle East.

"It is an exciting period in the development of the fast ferry industry and joining a company of Austal's strength, sense of direction and capability is a tremendous opportunity," said Mr. **Williams** in a press statement.

MAN B&W Involved In Caribbean Power Station Project



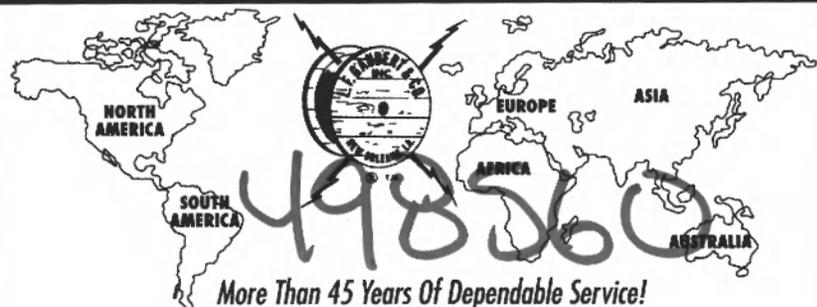
This Bahamian powerplant will receive engines and support services from MAN B&W and Manises Diesel Engine Co.

An order for a 30-MW extension of Nassau's Clifton Pier power station awarded to Spanish company ABB Generator S.A. calls for an engine and associated expertise to be supplied by Manises Diesel Engine Co. of Spain and MAN B&W Diesel A/S of Denmark.

A single MAN B&W Diesel 10K80MC, two-stroke, low speed engine, developing 33.1 MW at 102.9 rpm, is to be commissioned in 1998 as part of the extension of the power station which is operated by the Bahamas Electricity Corp. The new engine will complement two existing nine-cylinder engines of the same type.

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COMPANY & PEOPLE NEWS

New Leaders Appointed At Keppel

Choo Chiau Beng and Teo Soon Hoe have been appointed leaders at Keppel FELS Ltd. and Keppel Telecommunications and Transportation Ltd. (Keppel T&T), respectively. Both will serve as chairmen.

Mr. Choo has served as deputy chairman of Keppel FELS since 1994 and managing director since 1983. He takes over Loh Wing Siew's reins. Mr. Siew is managing director of Keppel Corp. Ltd. and chairman of Keppel Marine Industries Ltd. and Keppel Integrated Engineering Ltd.

Mr. Teo has been acting as chairman of Keppel T&T since Neville

Watson passed away in April of last year.

Alfa Laval Announces Appointments

Torggrim Stokkland has been promoted to the position of operations manager for Marine and Power in the Asia Pacific region for Alfa Laval. He will be situated in Singapore.

The company also announced that Stellan Lindstedt has accepted the position of business manager, Marine Operations, in the Marine and Power Division, and will provide overall leadership

for the division. In the past he has been employed with Network Shipping and The Stena Group.

Zodiac Hires New Divisional Director

Zodiac of North America has appointed Richard R. Scriven as director of its Professional Sales Division. A 20-year veteran of the U.S. Marine Corps, he will be responsible for heading the department which includes the company's liferaft, military inflatable and RIB product lines, and developing new business. Rick brings a rare and unique perspective to this position.

His background as a Marine Reconnaissance operator and Acquisitions officer give him invaluable insight into the professional sales market," said Zodiac CEO J.J. Marie.

T.L. James Hires New Manager

Allen Dupont has been appointed manager, Water Injection Dredging Division, for Gulf Coast Trailing Co., a subsidiary of T.L. James & Co., Inc. Gulf Coast Trailing is reportedly the sole U.S.-licensed operator for the patented water injection dredging (WID) process.

Mr. Dupont will spearhead an all-out effort to demonstrate the merits of this new, environmentally compatible dredging throughout the United States," said T.L. James President L.A. Hubert, Jr.

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COMPANY & PEOPLE NEWS

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Cummins Marine Appoints GM

On March 7, Cummins Marine announced the appointment of **William Wolpert** as general manager of the company's worldwide marine business. His promotion comes after 18 years with Cummins, most recently as director of the company's worldwide marketing and sales.

"We have made real progress as a group since our move to Charleston in 1992 including doubling worldwide sales and U.S. recreational market share, as well as introducing over 30 new ratings. I look forward to leading the marine team in our efforts to develop new products for our recreational and commercial customers," stated **Mr. Williams**.



William Wolpert

Oronite Appoints Sales Manager

John P. Stekla is the new sales manager for the Oronite Additives Division Americas region of the Chevron Chemical Co. He is responsible for sales, sales support and customer strategies for seven area offices covering North America and Latin America.

Most recently **Mr. Stekla** was vice president and area manager for Chevron Chemical International Sales Inc. in Geneva, Switzerland.

Carnival Reorganizes Holland America Senior Management

On March 10, Carnival Chairman and CEO **Micky Arison** announced a management reorganization of Carnival's Holland America Line Westours Inc. subsidiary.

Kirk Lanterman was named chairman and CEO of the sub-

sidiary, after previously holding the position of chairman and president, and serving the company for the past 14 years.

Additionally, **Peter T. McHugh** was named president and COO for the subsidiary.

Mr. McHugh will report to **Mr. Lanterman** and will direct marketing, sales and operational activities. For the past year, **Mr.**

McHugh has been executive vice president of Holland America, prior to which he held senior positions with Pan Am and TWA.

Mr. Arison emphasized that these appointments were directed at ensuring senior management continuity at Holland America Line-Westours in the face of the eventual retirement of **Mr. Lanterman**.

Ulven Announces Move

The Ulven Companies announced that Brooklyn Division Ulven Forging Inc. has moved to 2310 Industrial Ave.,



Linda S. Bye

273607

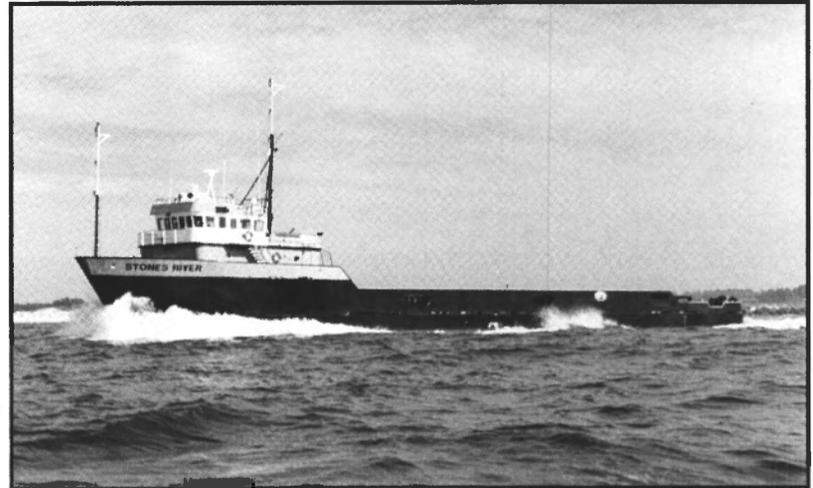


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Hubbard, Oregon. A CNC machine shop, Brookway's move allows for closer proximity to Ulven Forging Inc., also in Hubbard.

The offices of President **Andrew Ulven**, Chief Financial Officer **John Schrenk**, newly appointed Marketing Coordinator **Linda S. Bye** and the accounting staff have also relocated.

Bollinger Algiers Christens New Dock

Bollinger's new, 200-ton drydock *Miss Darby* was christened on Feb. 22 at Bollinger Algiers, a repair yard on the Mississippi River across from the foot of Canal Street in New Orleans. The drydock — named for the chairman of the board's granddaughter, **Darby Bollinger** — went to work immediately after the ceremony on 143-ft. (43.5-m) ocean tug *Ranger*, operated by Caribbean Towing Co. of Mandeville.

The new dock was designed by McDermott and built at the company's recently upgraded shipyard in Vera Cruz, Mexico.

The Algiers yard is expected to add 35 employees when a new wet dock facility is completed by the end of this year. According to **Donald T. Bollinger**, Bollinger Shipyards expects revenues of \$180 to \$200 million this year.

BV Launches Major U.S. Expansion

At a press conference at an industry show in Stamford, Conn., on March 18, classification society Bureau Veritas (BV) announced that it will launch an ambitious development project aimed at the U.S. market. **Gilberto Chaves** has been named as the new regional vice president of the Americas, and will reportedly take an office in the Miami area.

"We intend to improve the support we can give to our present international owners whose ships visit U.S. ports, and we intend to provide the U.S. shipping market with a new technical partner offering a complete range of consultancy services," said Mr. **Chaves** in a press statement.

Investment will focus on two BV subsidiaries in the U.S.: Bureau Veritas North America Inc., which will provide traditional ship classification and statutory certification; and a new company, Tecnicas North America Ltd., which will provide information, technical assistance, design, modifications and repairs, calculations, risk analysis and assistance with human factor-related regulations such as the ISM Code and STCW.

Additionally, BV announced a new Port State Control (PSC) initiative. The society will offer training to ships' crew concerning how to maintain vessels in order to avoid detention by PSC

authorities. The scheme will consist of a training package which will be introduced and delivered onboard by BV surveyors to ships' officers, who will then be equipped with computerized training programs on CD-ROM for training mariners.

New Electronics Company Forms In Netherlands

Mascom Marine Electronics is a newly formed marine electronics company, based in Oudenbosch, the Netherlands. The company was reportedly started by part of the former management of Radio Holland. Mascom will represent the complete navigational range of Raytheon high seas electronics, including radars, ECDIS and integrated bridge systems, as well Standard Radio GMDSS and communications products.

For more information on Mascom Marine Electronics
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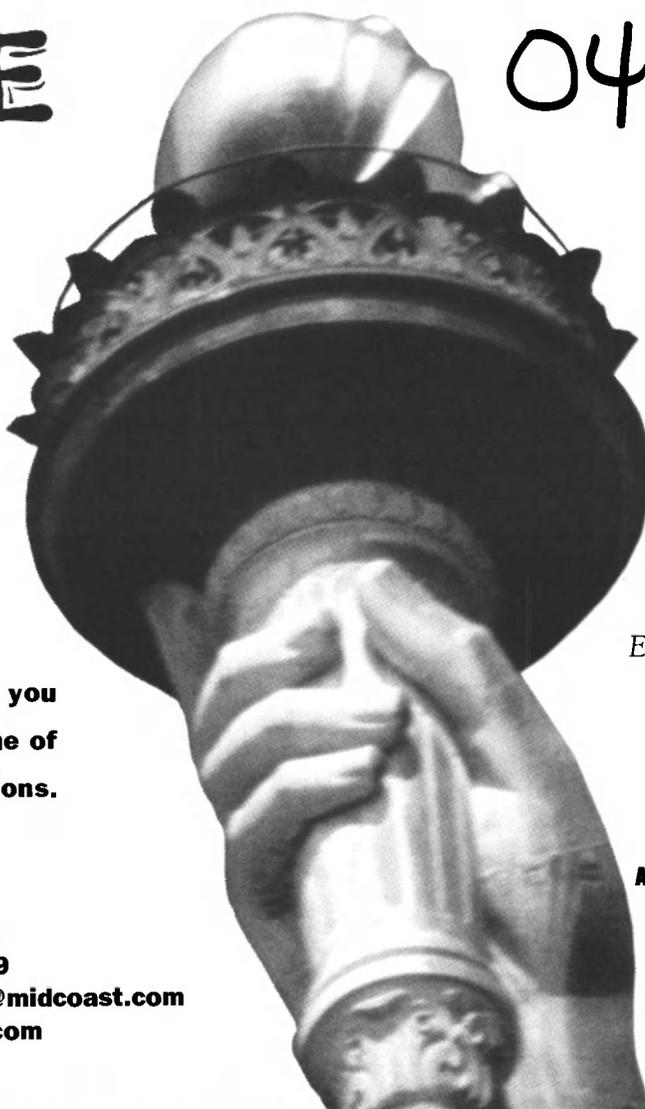
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Vanuatu Lowers Tonnage Tax

Vanuatu has reduced its tonnage tax for the first time since the shipping registry was established in 1981. The new annual tonnage tax will be (in \$US):

0 to 15,000 tons	\$0.25 per net ton
More than 15,000, less than 25,000 net tons	\$0.20 per net ton
More than 25,000, less than 35,000 net tons	\$0.15 per net ton
35,000 net tons and more	\$0.10 per net ton

"The new rates give Vanuatu an edge in competing for larger vessels," said Mr. Robert Bohn, president of the operating company for the registry. "This is one of a series of measures aimed at ensuring Vanuatu's place in the forefront of the international maritime community, in line with the expectations of our shipowners." Further maritime legislation is being drafted to ensure Vanuatu meets its obligations under International Maritime Organization conventions. The additional legislation will effectively reorganize the maritime administration in Vanuatu as well as port state control requirements, environmental protection and seafarer training. Vanuatu has approximately 450 vessels in its registry.

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

European Commission Supports Expedition To Determine Cause Of Derbyshire Wreck

The second phase of the expedition to re-examine the wreck of *Derbyshire*, the British bulk carrier lost in the Pacific in 1980 with its British crew, began in early March. A team of experts will perform sonar and photographic survey of the 1.5 x 1-km wreckage field.

The information collected will form the database from which the European Assessors — acting on behalf of both the U.K. Department of Transport and the European Commission — will seek to determine the cause of the vessel loss. The overall objective is understanding the loss to avoid similar tragedies by increasing the safety of bulk carriers. The European Commission's interest in the expedition is twofold: to provide an independent assessment of the data collected to solve a long-standing controversy over the actual cause of the ship loss, and; to obtain essential information on the structural problems of these types of bulk carriers.

The European Assessors team is comprised of two British members, Robin Williams and Douglas Faulkner, one Italian member, Remo Torchio of RINA, and is supported by two French scientists, P. Valdy and Y. Houard, both of IFREMER.

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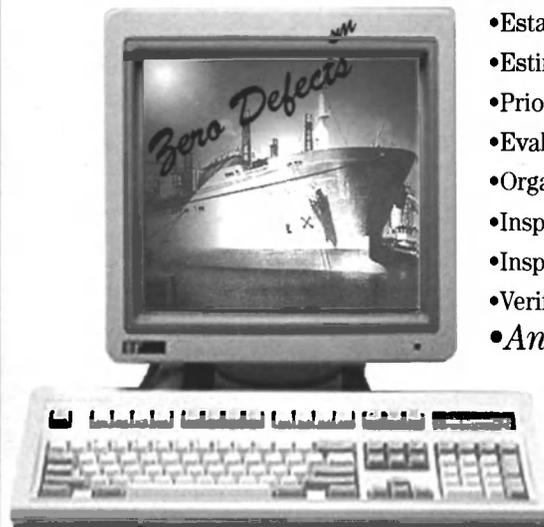
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Domestic Maritime Fleet Experiences Explosive Growth

The U.S. domestic fleet (defined as those vessels moving cargo within the U.S.) has experienced explosive growth in the last three decades, more than doubling from 861 large commercial vessels to 1,894, and tripling in cargo capacity, according to a new report from the Maritime Cabotage Task Force.

"This report demonstrates the value of the Jones Act fleet and shows that it is an important aspect of our domestic transportation system," said Senator **Jack Reed** (D-R.I.). "This report is gratifying evidence that our trust (in the domestic fleet) is well placed and I believe we should provide the legal support for the fleet to do exactly what the report's title says — move full speed ahead."

The study -- entitled *Full Speed Ahead* -- took into account all large commercial vessels in the U.S. domestic fleet, a.k.a. the Jones Act fleet. Previous studies, the organization said, have generally counted deepwater vessels only. "The decline of the U.S. domestic fleet is a myth, and, in fact, exactly the opposite is true," said **Phil Grill**, chairman of the Maritime Cabotage Task Force. "Not only are there more vessels in existence than 30 years ago but the vessels are faster, larger and more productive. Today's fleet is both bigger and better. That means more cargo capacity and better service for U.S. shippers."

The U.S. fleet now includes 1,703 large dry cargo and tank barges,

up from 438 in the 1960s. The report counted only super jumbo barges, those more than 250 ft. (76 m) long, which is the conservative equivalent of self-propelled vessels of 1,000 grt.

In all, there are more than 30,000 barges in the U.S. domestic fleet operating in nearly all domes-

tic trades. Barges, for example, transport almost 400,000 oceangoing containers each year along the U.S. East Coast. The report also focused on the increased productivity of the U.S. fleet, and found:

- Productivity in the deep-sea domestic trades has increased tenfold since the 1960s;

- A 1,000-ft. (305-m) self-unloading Great Lakes bulk vessel can deliver four times the cargo of an earlier generation Lakes vessel in a single sailing season; and

- Modern towboats have resulted in an increase in tow size of up to 20 percent in the last five years alone.

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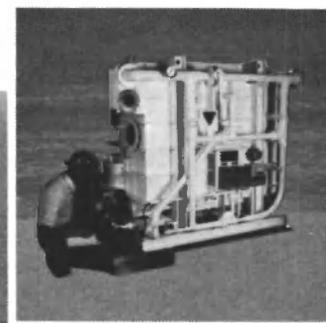
Kvaerner Warnow Wins \$220 M Order

Kvaerner Warnow Werft in Rostock-Warnemünde, Germany, has won a container vessel order from P&O Nedlloyd. The order, valued at \$220 million, is for five 22.5-knot containerships. The new vessels are to be the Warnow CV 2900 type, with a container capacity of 2,900 TEU each. The five ships are due for delivery in 1998-99. Each of these new builds will be constructed to allow the option of hull lengthening at a later date. The five new ships will boost the total number of Warnow CV 2900 container vessels built by Kvaerner Warnow to eleven. Four of these vessels were delivered in 1996; two more are to follow this month and in May.

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COMPANY PROFILE

Guide Perla Expands Ship Design Capabilities With Computer Interface

Founded in 1979, Guido Perla & Associates, Inc. (GPA) of Seattle, Wash., initially designed and supervised the building of large catcher/processor fish boats and tuna clippers. The firm has since performed naval architecture and marine engineering projects

involving ferries, offshore service boats, yachts, catamarans and other fast passenger boats.

Employing more than 30 people, including experts in ship design and engineering, GPA designs and builds gaming vessels and new classes of harbor tugs. GPA's expe-

rience encompasses all phases of ship design, from feasibility studies through contract and detail design to production engineering, shipyard inspection and contract administration.

GPA naval architects and engineers apply extensive knowledge of

commercial and passenger vessel design to projects, supported by the application of computer-aided design and engineering. Guido Perla will also coordinate interior decorating and outfitting firms for total solutions.

The company reportedly pioneered the use of computers in numerical control lofting of steel and aluminum. Structural parts are developed in the computer using information describing size and location. They are programmed with data indicating assembly information such as flanging, frame, water or buttock lines and end treatments as applicable.

Parts are nested on plate stock and appropriate numerical codes are generated. All parts are shown on three-dimensional assembly drawings providing a check of all parts generated. This results in a turnkey package of information for cutting, fabricating and assembling the structural components of a vessel. To date, GPA has lofted over 25,000 long tons of steel.

Detailed production information is also provided for mechanical and electrical distribution systems. Piping and wireways are initially routed on composite drawings.

As each area is completed, individual pipe spool pieces are extracted and fully detailed for shop fabrication. This level of production support greatly reduces fabrication and assembly time and lends itself to modular shipbuilding methods.

Guido Perla recently completed design and detail engineering for a 260-ft. anchor handling supply vessel for a European company for use in the U.S., as well as preliminary designs and engineering for the 120-ft. Protector class tugs built by Nichols Brothers Boat Builders for Crowley Marine Services, Inc.

GPA also provided production engineering for two casino boats now under construction. Majestic Star, a 360-ft., 3,500-passenger vessel designed for Barden Development Corp., will operate out of Buffington Harbor, Ind. The other boat is a 348-ft., 3,500 passenger vessel designed for Indiana Blue Chip for use at Michigan City.

The firm was also involved in the arrangement of modularized passenger staterooms for installation in American Hawaiian Cruises' SS *Independence*.

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Halter Gulf Repair Installs New Double Bottom

Blue Circle Cement's barge Alexandra is undergoing major surgery at Halter Gulf Repair Inc. The 420 ft. (128-m) unmanned, self-discharging, bulk cement barge is getting a new double bottom, and the 32-year-old electrical

system is being completely overhauled. To minimize downtime, the new double bottom was prefabricated in 21 modules, averaging just under 50 tons each. Corresponding sections of the existing double bottom are being cropped two at a time, in a checkerboard fashion, to minimize stress on the hull, a newly prefabricated and painted modules

inserted in their place.

Two Norberg 1,500 kW diesel unloading generators will be replaced by two 1,600-kW AC generators, each driven by an EMD 12-645F7B 12-cylinder engine, rated at 2,305 bhp at 900 rpm.

Existing switchboards, panels and motor control cabinets will be replaced as well as wiring associated with the unloading equipment.

The two 125-kW ships service generator sets will also be replaced with two new 200-kW gensets. All new deck equipment, refurbishment of many other systems, and a first-class coating system throughout the barge are being provided to ensure many more years of dependable service.

The project is scheduled for completion in May.

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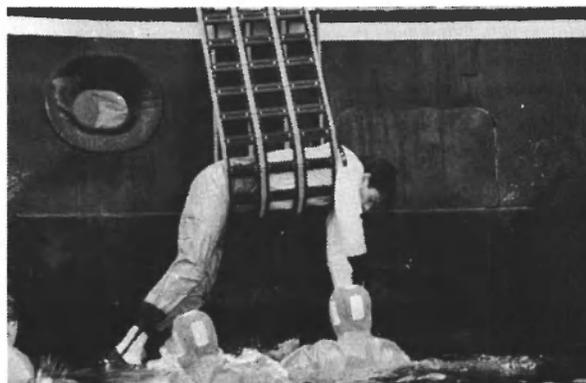
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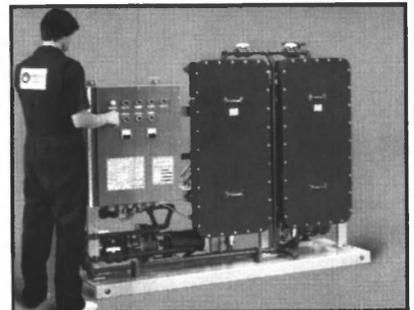
USCG has accepted JASON'S CRADLE as a possible alternative to the rescue boat requirement for "T-Boats" on a case by case basis and as a boarding ladder replacement for lifeboats and rescue boats on US ships.

Military Sealift Command Safety Office has recommended JASON'S CRADLE for fleet use on lifeboats and rescue boats.

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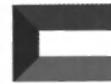
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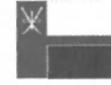
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Circle 358 on Reader Service Card

MARINE FINANCE

(Continued from page 10)

"The biggest opportunity in the industry is the 74 million who have expressed an interest in cruising," said **Pankajski**, stressing that effective communications with travel agents and the public, through p.r. efforts and the Internet, should be made a top priority in 1997.

When taking his stab at market-

place projections for this year, Celebrity Cruises CEO **Richard Sasso** assumed his usual straight-shooting manner. "I think we talk too much about supply and demand ... I think we don't spend enough time talking about the fundamentals that will drive the industry ... quality, variety and innovation (QVI)," said **Sasso**, continuing, "We cannot build ships

just for mere size ... we must focus on QVI."

Acknowledging the construction trend toward megaships, **Sasso** said that these ships should be designed for the specific markets they will serve and added that first-timers should be led to the ships not by price, but by the services they will provide.

Kicking a major company expan-

sion into gear days before the industry panel met, the Kvaerner contract-wielding Norwegian Cruise Line CEO **Kristian Siem** painted a picture of an industry supportive of not only growth, but economic recovery.

"In terms of Norwegian Cruise Line, we've come a long way. We've had some problems," said **Siem**, continuing, "Our most valuable resource is our people ... I believe NCL's future is bright ... I think as the cruise industry grows and develops, each company sees its role and there is more differentiation. I think this is good for everybody."

All in all, the predominantly rosy projections of cruising's top players seemed to satisfy the expectations of industry executives who tuned for financial updates. As voiced by **Rick James**, "Cruise industry executives know their industry keeps going and going and going like the Energizer Bunny."

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Notable Quotables:

"I think Carnival Cruise Lines' approach to globalization has been very successful."

— **Kristian Siem**

"There is a demand in Europe for an American-style product."

— **Richard Fain**

"By reducing and eliminating the panamax restriction, you can offer unparalleled choice."

— **Tim Harris**

"I think the big ships will move out of the Caribbean."

— **Kirk Canterman**

"I have some problems with the Phoenix (World City). I think it will be built when pigs fly."

— **Bob Dickinson**

"I believe we are more booking-oriented than this company was originally."

— **Antti Pankajski**

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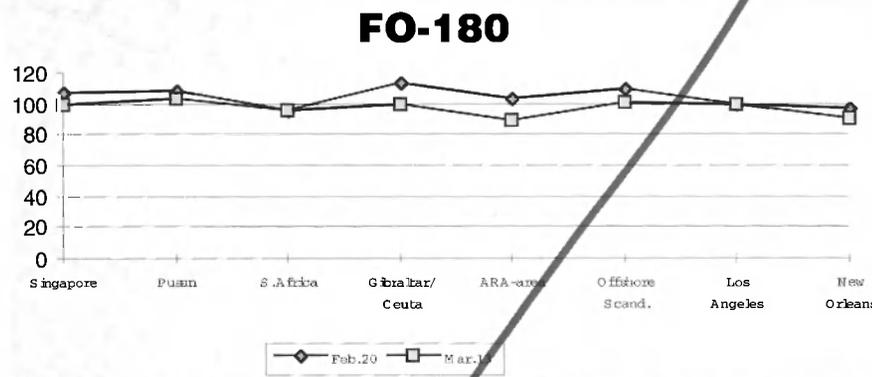
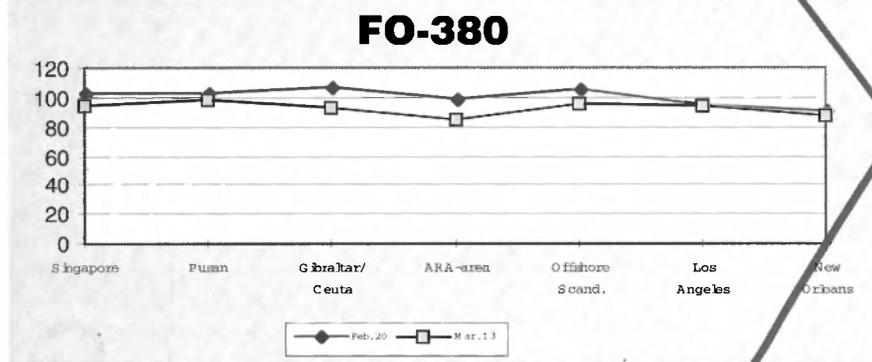
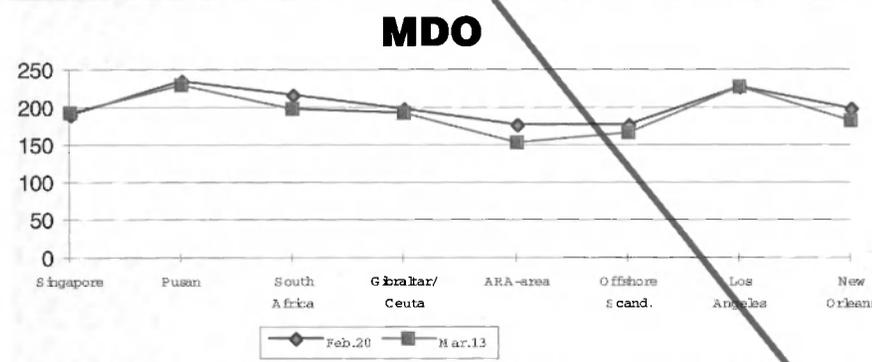
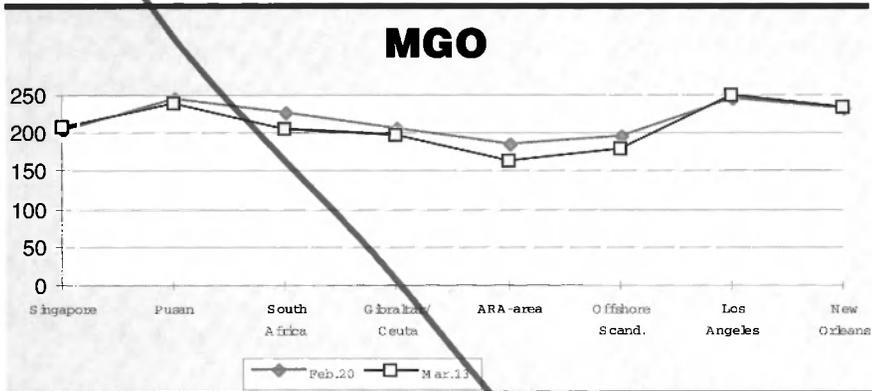


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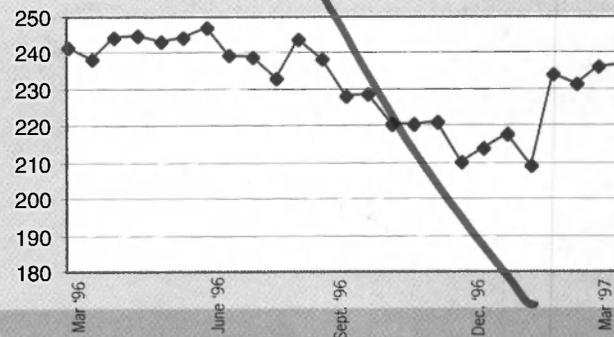
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Recent Ship Sales

This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers. For more information, call tel: (212) 997-0966.

Date reported	Vessel Name	Vessel Type	DWT	Year Built	Sale Price (M)
2/14/97	Fortuna	Bulker	2,930	77	\$1.1
2/14/97	Nora	Bulker	2,954	82	\$2.1
2/28/97	Oriental Hawk	Bulker	11,073	84	\$4.3
2/28/97	Uri	Bulker	12,271	83	\$5.5
2/21/97	Comity	Bulker	13,286	83	\$5
2/7/97	Ocean Peace	Bulker	20,162	76	\$2.5
2/28/97	Pu Tuo Ling	Bulker	20,330	85	\$4.9
2/28/97	Jin Ji Ling	Bulker	20,330	85	\$4.9
2/28/97	Magic Confidence	Bulker	21,317	82	\$6.2
2/21/97	New Moon	Bulker	21,380	81	\$5.8
2/21/97	Sea Dian	Bulker	21,520	85	\$7.9
2/21/97	Ocean King	Bulker	21,843	81	\$3.5
2/28/97	Grace Island	Bulker	25,413	82	\$7
2/21/97	Fir Grove	Bulker	27,934	89	\$12.5
2/28/97	Forum Island	Bulker	30,230	76	\$1.5
2/14/97	Mockingbird	Bulker	34,970	87	\$11.6
2/14/97	World Agamemnon	Bulker	37,451	76	\$3.5
2/7/97	Coltitz	Bulker	38,249	80	\$3.8
2/14/97	Bremnitz	Bulker	38,250	81	\$4.3
2/28/97	Stellar Joy	Bulker	45,654	96	\$21.8
2/21/97	Androleon	Bulker	45,779	76	\$4
2/14/97	Ikan Beliak	Bulker	64,957	80	\$9
2/21/97	Pacificway	Bulker	65,585	76	\$5.3
2/21/97	Bunga Kesidang	Bulker	65,960	82	\$9.5
2/28/97	Cemtex Yuan	Bulker	66,865	84	\$11.5
2/7/97	Ramona	Bulker	69,841	84	\$12.5
2/28/97	Maritime Nancy	Bulker	71,749	90	\$19.3
2/28/97	Forum Victory	Bulker	72,746	77	\$4.4
2/28/97	Chariot	Bulker	124,292	81	\$9.4
2/14/97	K. Prime	Bulker	136,211	81	\$11.6
2/28/97	Melvina	Tanker	3,336	84	\$3.4
2/28/97	Eloisa	Tanker	6,863	78	\$2.5
2/28/97	Panam Pacifico	Tanker	12,401	81	\$6
2/21/97	Mar Caterina	Tanker	14,534	81	\$5
2/28/97	Valiant Express	Tanker	29,900	88	\$18
2/28/97	Plumeria	Tanker	38,629	82	\$13.3
2/28/97	Galahad	Tanker	44,772	88	\$23.1
2/7/97	Asia Pioneer	Tanker	46,500	96	\$32.2
2/7/97	Olivia Maersk	Tanker	50,600	85	\$20.8
2/28/97	Norm Kristina	Tanker	77,788	86	\$26
2/14/97	Pennas Duyong	Tanker	80,954	82	\$15.5
2/21/97	Jahre Prospect	Tanker	86,966	81	\$13.3
2/21/97	Hitra	Tanker	94,236	84	\$22.3
2/28/97	New Tanna	Tanker	96,550	76	\$6.8
2/14/97	Bona Liv	Tanker	152,412	88	\$33.1

Index Fleet Valuation



Current Market Value (\$M): ... \$236.7
1 Month Ago: ... \$231
6 Months Ago: ... \$227.7
1 Year Ago: ... \$241.3

The Index Fleet Valuation is representative of the resale market for Bulk Carriers and Tankers as a whole. The Index Fleet consists of 15 vessels, nine Bulk Carriers and six Tankers, of various sizes and ages. Fluctuations in the value of the world fleet are mirrored in the Index Fleet. 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.

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MARINE FINANCE

(Continued from page 19)

Masa-Yards in the development and construction of the next generation of trend-setting vessels. We believe these ships will assure our dominance in the industry while increasing our competitive edge and market presence," said Royal Caribbean CEO **Richard Fain**. "We've been partners with Royal Caribbean for over 25 years," said **Martin Saarikangas**, CEO of Kvaerner Masa-Yards. "Together we have created some of the industry's most spectacular passenger ships. These Eagle class vessels continue that tradition and will be a spectacular addition to the industry, to Royal Caribbean and to the pleasure of the passengers who sail on them." The first two Eagle class ships will be delivered in 1999 and 2000.

For more information
Circle 155 on Reader Service Card

Exxon Signs Malaysian Production Sharing Contract

Exxon Corp.'s Esso Production Malaysia Inc. (EPMI) affiliate signed two new production sharing contracts with Petronas, Malaysia's national oil and gas company. The contracts cover two highly prospective blocks — B 302 and H — which include new deepwater acreage offshore Malaysia's state of Sabah. EPMI will hold an 80 percent interest in both blocks, with a subsidiary of Petronas holding the remaining 20 percent. EPMI will operate both blocks.

Grumman Lands \$45 M Navy Contract

On March 20, Northrop Grumman Corp.'s Antisubmarine Warfare (ASW) and Ship Systems business unit was awarded a \$45.8 million contract from the U.S. Navy to upgrade key elements of a simulator system used to train Navy personnel in airborne ASW techniques. The contract for the Generic Acoustic Simulation System (GASS) calls for the company to design, develop, manufacture and test a major acoustic shallow water simulation upgrade for four existing Navy ASW trainers. Northrop Grumman will incorporate commercial-off-the-shelf (COTS) signal processing architecture into GASS to reduce development costs, and a new distributed interactive simulation (DIS) capability will allow each of the host trainers to interact with other distant trainers via high-speed network links.

For more information
Circle 156 on Reader Service Card

Halter Marine Wins \$26 M Patrol Boat Contract

Halter Marine Group has been awarded a \$26 million contract for the construction and delivery of two, 199-ft. (60.6-m) Bahamas class offshore patrol craft, with options for four, 141-ft. (42.9-m) Nassau class craft for the Royal Bahamas Defence Force (RBDF). Options

Maritime Reporter/Engineering News

MARINE FINANCE

included, this contract is projected to be worth more than \$62 million.

The vessels will include components produced by two Halter Marine Group shipyards. Equitable Shipyards, Inc. in New Orleans will fabricate the boats' aluminum superstructures, which will be mated to the vessels' steel hulls at Moss Point Marine, Inc., Escatawpa, Miss., where the craft will be completed.

The two Bahamas class vessels will have 29.2-ft. (8.9-m) beams and fully loaded drafts of 8.5 ft. (2.5 m).

The patrol craft have a maximum speed of 24 knots and accommodations for up to 62 personnel.

For more information on Halter Marine
Circle 157 on Reader Service Card

Spill Companies Announce Deal

On March 11, Consolidated EcoSystems Inc. (ConEco), formerly Exsorbet Industries, Inc., announced the sale of its marine spill response and hazardous materials response business to Oil Mop, Inc. The sale revenues were reportedly in excess of \$1 million, and use of proceeds will be used to reduce conventional debt.

The two interests have reportedly also agreed to a long-term, cooperative relationship whereby Oil Mop will use ConEco personnel and equipment to supplement its forces should a spill exceed its local capabilities.

Stolt-Nielsen Orders Two Additional Chemical Tankers

Stolt-Nielsen SA's subsidiary Stolt Parcel Tankers Inc. (SPTI) announced that it has exercised options for two 22,460-dwt chemical tankers with Juliana Constructora Gijonesa, a yard in the Astilleros Espanoles group.

The two ships contracted are additions to an existing order for four sister ships presently under construction at the Juliana, Sestao and Bilbao shipyards. The double hull ships will have diesel electric propulsion systems, and the cargo sections will consist of 40 segregated cargo tanks and four deck tanks, all constructed of solid stainless steel.

According to SPTI, these orders

April, 1997

are part of an orderly fleet replacement program.

Hernis To Supply CCTV To Sea Launch Platform

Hernis Scan Systems AS was awarded a contract to deliver a CCTV system to the first ever floating rocket launch platform,

Sea Launch. A former drilling platform is reportedly being transformed into a special launch platform at Kvaerner Rosenberg, while the RoRo ship, which has the remote control system onboard is being built at Kvaerner Govan. During the launch the platform will be unmanned and the control will be solely from the RoRo located several miles away. The plat-

form is therefore equipped with several cameras, which transmit real time pictures to the ship to verify steps of the operation.

Sea Launch is a collaboration of Seattle-based Boeing Commercial Space Co., RSC-Energia in Moscow, Kvaerner AS in Oslo and NPO-Yushnoye in the Ukraine.

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Larose also offers its own USCG approved gas-freeing facility with fuel storage capacity of over 300,000 gallons that is complimented by a fuel circulating and filtering system.



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Bender Wins Navy Contract

Senator **Richard Shelby** (R-Ala.) announced on March 11 that Bender Shipbuilding & Repair Co., Inc. of Mobile, Ala., had been awarded a \$3.5 million contract by the Military Sealift Command for the drydocking and repair of USNS *Zeus* (T-ARC 7). The 503 x 73-ft. (153.3 x 22.2-m) ship's mission is to support Navy underwater cable

activities.

The work to be performed on *Zeus* over 60 days includes an upgrade and modification of the cable laying system, steel repairs and general drydocking work.

"It is always a pleasure to announce contract awards like this one which bring jobs to Alabama employers," said Sen. **Shelby**.

For more information
Circle 159 on Reader Service Card

Hanjin Shipping Selects Corrodeal Products

Korea-based Hanjin Shipping Co. has reportedly selected Corrodeal rust covering primer for use on its entire fleet of 61 container and bulk ships. This contract reportedly resulted from more than a year of product testing exclusively on Hanjin ships. Corrodeal successfully produced a formula, LC/HJ Formula, which increases the rust converter's ability to prevent running or sagging when applied to heavy rust on cargo holds and ballast tanks.

For more information on Corrodeal
Circle 160 on Reader Service Card

sels are scheduled for delivery in 1999. This order follows one placed by Chantiers de l'Atlantique for two cruise vessels building for Renaissance.

For more information on Cegelec
Circle 162 on Reader Service Card

Steiner Wins North Carolina Ferry Order

Bayou La Batre, Alabama-based Steiner Shipyard, Inc. will build a second 180 degree cycloidal propulsion vehicle/passenger ferry for the North Carolina Department of Transportation (NCDOT).

The first ferry, *Southern*, was delivered to NCDOT in December 1996. The new ferry, to be called *Neuse*, will be a sistership to this vessel, will measure 180 x 44 x 11-ft. (54.8 x 13.4 x 3.3-m), and will be equipped with a Voith-Schneider propulsion system and Caterpillar 3412 DITA main engines.

Neuse is scheduled for delivery in April 1998 and the vessel will be the yard's fourth for NCDOT.

For more information on Steiner
Circle 163 on Reader Service Card

Nautronix Wins Marinette Contract

Nautronix has been awarded a contract by Marinette Marine Corp. to supply six dynamic positioning systems for the new Keeper class coastal buoy tenders being built for the U.S. Coast Guard (USCG). Nautronix has already supplied some of these systems for USCG tenders.

The new vessels will be equipped with modern equipment, including oil recovery systems, and Nautronix ASK4000 station keeping systems, allowing the vessels to maintain position alongside floating aids to navigation.

For more information on Nautronix
Circle 161 on Reader Service Card

New Company Provides Offshore Living Quarters

Nautica Marine Services, LLC — a new company based in Lafayette, La., dedicated to building high quality offshore living quarters — offers a system of pre-engineered mini-modules that can be stacked three stories high and interconnected to form large open rooms. All-steel construction conforms to U.S. Coast Guard requirements for fire and safety. The buildings, along with a line of generator packages, watermakers and sewage treatment systems, are offered for lease or sale. In addition, Nautica Marine Services offers heavy duty A60 doors and windows, blast walls and custom fabrication.

For more information on Nautica Marine
Circle 166 on Reader Service Card

Kvaerner Names Fourth LNG Carrier For ADNOC

On March 21, the naming ceremony of *Umm Al Ashtan* (new-building No. 1333) — the final vessel in an order of four 135,00-sq-m ships by Abu Dhabi National Oil Company (ADNOC) in the United Arab Emirates — took place at

536300

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Cegelec To Supply Power For HAL Newbuilds

Fincantieri has contracted with Cegelec to supply onboard power generation and framelectrical systems for two new cruise ships building for Holland America Line at the Italian yard. For each ship, the propulsion system comprises two synchronous motors, each developing 13 MW of power at 130 rpm. Each motor is supplied by a 12-pulse synchroconverter. The electrical equipment for the ships will reportedly be delivered at the end of next year. The ves-

Kvaerner Masa-Yards' Turku New Shipyard. *Umm Al Ashtan* will be delivered to its owner next month. The first vessel, *Mubaraz*, was delivered in January 1996, followed by the second ship, *Mrawek*, in June, and the third, *Al Hamra*, which was delivered this January. The ships have reportedly been engaged in transporting LNG from Abu Dhabi Gas Liquefaction Company to Tokyo Electric Power Company in Japan, and are operated by National Gas Shipping Company.

Umm Al Ashtan main particulars

Length, o.a. 951.4 ft. (290 m)
 Breadth 158 ft. (48.1 m)
 Design draft 37 ft. (1.3 m)
 DWT 72,950
 Service speed 19.5 knots

For more information on KMY
 Circle 167 on Reader Service Card

VT Launches Sixth Sandown Minehunter For British Navy

U.K. naval shipbuilder Vosper Thornycroft (VT) has launched the first of a new batch of Sandown class minehunters for the Royal Navy at the company's Southampton shipyard.

HMS *Penzance* is the sixth vessel of its class for the Royal Navy, and the first of seven VT will build over the next four years.

The Royal Navy will ultimately have a fleet of 13 Hunt class and 12 Sandown class mine counter-measure ships, with 23 of the vessels built by VT.

"The Hunt class was the envy of navies around the world with its distinguished service in the Gulf conflict, and the Sandown class is equally regarded as one of the

Ingalls Launches Two LHDs

The 40,000-ton WASP class, multi-purpose amphibious assault ship *Battan* (LHD 5) was placed in drydock at Ingalls Shipbuilding in Pascagoula, Miss., following successful trials. After the vessel was relaunched, a second WASP class vessel, *BonHomme Richard* (LHD 6), was translated to the drydock and launched on March 14.

LHD 6 will be christened on May 17. *Battan* will be commissioned at Ingalls in September.

Ingalls-built LHDs serve principally as the centerpiece of an Amphibious Ready Group (ARG), transporting, deploying, commanding and supporting all elements of a Marine Landing Force in assault by air and amphibious craft. Ingalls was also contracted by the Navy to build seven of these ships, four of which are already in service.

For more information on Ingalls
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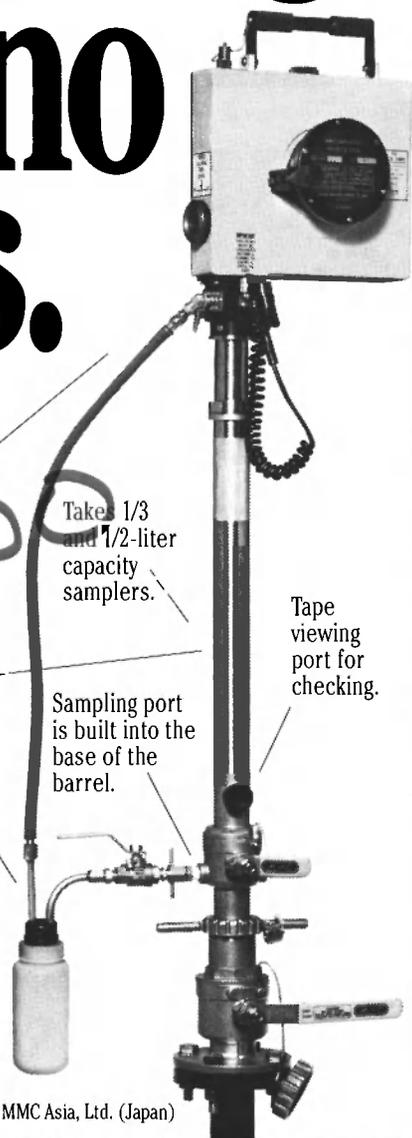
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Circle 368 on Reader Service Card

American Shipyard Completes Military Contracts

American Shipyard Corp. has successfully completed a government ship repair contract worth more than \$2.5 million.

Work included approximately \$1.5 million for the overhaul of two U.S. Army tugs based out of Baltimore, Md.

These contracts were secured last fall with the assistance of Rhode Island Congressman **Patrick Kennedy**.

American Shipyard is presently negotiat-

ing for more government contracts with the U.S. military fleet, and bidding on federal government contracts is scheduled to continue, along with repair and haulout work with local and regional private shipping interests.

New work for spring includes commercial contracts for barge repairs, overhaul and repair work for regional ferry operators and repairs and inspection drydocking for local

and regional shipping interests.

Negotiations are being completed for a four-ship contract for the U.S. Coast Guard, to commence later this year.

The shipyard also plans to expand its marina to hold ships 100 ft. (30.4 m) and larger.

For more information on
American Shipyard Corp.
Circle 168 on Reader Service Card

most effective ships available for dealing with mines. They are already highly valued by the Royal Navy and Royal Saudi Naval Forces," said **Martin Jay**, VT managing director.

Sandown Class vessels have an overall length of 172.2 ft. (52.2 m), a standard displacement of approximately 470 tons and can accommodate up to 40 crew.

The ships are built almost entirely of non-magnetic materials and designed to resist shock loads well in excess of the NATO standard.

For more information on Vosper Thornycroft
Circle 170 on Reader Service Card

KCS Offers Significant Upgrade To TRIBON

Kockums Computer Systems (KCS) recently released technical details of its new TRIBON Vitesse application. Touted by the company as a major enhancement to the TRIBON ship design and production software, TRIBON Vitesse is designed to enable users to write their own Vitesse programs based on direct access to the TRIBON Product Information Model. At the same time, the user has available all of the functionality of the other TRI-

BON applications. TRIBON Vitesse was developed in close cooperation between KCS and Chantiers de l'Atlantique ("Vitesse" is a French word meaning speed.)

The makers are confident that TRIBON Vitesse will enhance ship design efficiency through its rule-based automated design for different types of structural arrangements and outfit layouts. The program can be applied from the smallest design standard, right up to major sections of ships. The product was designed to save ship designers time and money, as it allows the writing of specialized Vitesse programs using an individual's unique skills and experience.

For more information from KCS
Circle 175 on Reader Service Card

MSHS Service Facility For Boll & Kirch Filters

Motor-Services Hugo Stamp Inc. (MSHS) has been appointed as a service facility for Boll & Kirch Filter applications, and will be able to provide service related spare parts as well as many filter supplies from its extensive spare parts stock. MSHS computerized parts department carries stock for Deutz/MWM, MaK and MAN B&W parts, as well as reconditioned items and various exchange components.

MSHS' parts department provides many additional maritime-related procurements for European manufactured items.

For more information on MSHS
Circle 176 on Reader Service Card

Portable Glass Grinder Helps Reduce Waste Volume

The Bottle Terminator is a portable glass grinder capable of grinding most any type of bottle into recyclable pellets, or into even smaller granules, helping to drastically reduce waste volume on board vessels. Instrumentation Design Technologies Inc. developed the grinder for International Compactor Inc.

For more information on the Bottle Terminator
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Arco Recognized For Tanker Safety

The crew of oil tanker *Arco Fairbanks* was honored in recognition of its unprecedented safety milestone by becoming the first of Arco's 10 tankers to record four consecutive years without a "lost time injury."

The crew, along with Captains

Dustin Johnson and **Robert Wells**, received the company's first Arco CEO Award from Arco Marine, Inc. President **Hersh Kohut**.

The tanker has made a weekly, 1,200-mile trip from Valdez to Cherry Point and back without

interruption for four years.

During these four years, and more than 113 trips, the vessel has delivered approximately 100 million barrels of Alaskan North Slope crude oil. *Arco Anchorage*, the only other Arco ship to log three consecutive years without a lost

time injury, is also on schedule to reach the four-year safety milestone in November. In addition, three other Arco vessels, *Arco Prudhoe Bay*, *Arco Texas* and *Arco Alaska* are each on schedule to achieve the three-year safety milestone this year. Arco Marine is a wholly-owned subsidiary of Atlantic Richfield Company whose oil tanker fleet it operates.

Foremost's Chia May Christened

Foremost Maritime Group announced the christening of the *M/V Chia May* on behalf of its principals at Tsuneishi Shipbuilding Co. Ltd.'s Tsuneishi Shipyard. The newbuilding is a 73,500-dwt ship which is 738 ft. (225 m) long.

Ship Production Symposium Set For New Orleans

The 1997 Ship Production Symposium is scheduled to take place April 20-23, at the New Orleans Hilton Riverside. This year's conference is packed with topics that are sure to be of high interest to many in the industry. The conference is split into three tracks, including the Executive Strategy Track, the Government/Industry Cooperation Track and the Technical Track. Topics are varied, and include: Shipyard Technology Development Strategies; PODAC - A Product Oriented Approach to Ship Cost Estimating; and Simulating the Shipbuilding Process: A Tool for Everyone. Along with discussions, the Technical Track features several workshops. For an updated list of conferences and topics, contact **Deborah Felts** at tel: (601) 935-2781; fax: (601) 935-6838.

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(Continued from page 81)

Comnav

Comnav Marine manufactures a complete line of marine autopilot systems, remote controls, hydraulic and mechanical steering drive units, rudder angle indicators and other marine accessories. Comnav products are reportedly sold by 200 dealers in North America and through distributors

in 34 countries.

For more information on Comnav
Circle 189 on Reader Service Card

Comsat

Comsat Mobile Communications (CMC) provides a variety of mobile communications services to the maritime, aeronautical and land mobile industries. CMC provides

voice, facsimile, data and telex services to ships at sea, emergency response teams, news gathering organizations and natural resource exploration companies through the Inmarsat satellite system.

CMC provides global coverage using its four land earth stations located in California, Connecticut, Turkey and Malaysia.

For more information on Comsat
Circle 171 on Reader Service Card

American Mobile Satellite Corporation

American Mobile Satellite Corporation (AMSC) is a telecommunications company that provides satellite based mobile voice and data communications services. AMSC's SkyCell Satellite Roaming Service complements existing cellular services and provides seamless mobile communications coverage throughout North America.

For more information on AMSC
Circle 172 on Reader Service Card

AT&T

AT&T Mobile Satellite Services delivers quality, reliable shore-to-ship and ship-to-shore Inmarsat services. AT&T Inmarsat A, B and M services, along with AT&T High Seas Direct, will reportedly provide a clear, cost-effective connection anywhere on land or sea.

For more information on AT&T
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ICS Electronics Ltd.

ICS Electronics Ltd. offers its DSC-2 Modular GMDSS for marine data communications. In conjunction with type approved computers and radios, the DSC-2 fully meets the IMO requirements for DSC and VDF. ICS also offers OEM system integrators a flexible family of type approved modules for building complete ship-borne area A3/A4 GMDSS communications consoles or coast station DSC systems.

For more information on ICS
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Sea Tel, Inc.

Sea Tel, Inc. is a manufacturer of stabilized satellite antenna systems for communications and video services in the marine environment.

Sea Tel antenna systems deliver satellite television programming, telephone, fax and data services to commercial and recreational vessels worldwide.

For more information on Sea Tel
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Autonav Marine Systems

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For more information on Autonav
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Marine Electronics Solutions, Inc.

Marine Electronics Solutions, Inc. (MES) provides systems integration, bid preparation

and procurement, and service and technical support for the electronics equipment on commercial and military vessels.

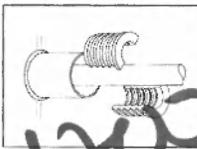
The company has reportedly provided solutions for U.S. Navy MK-V Special Operations craft and U.S. Coast Guard coastal patrol boats.

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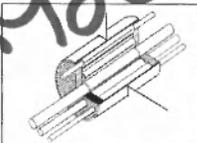
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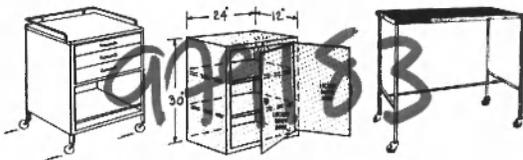
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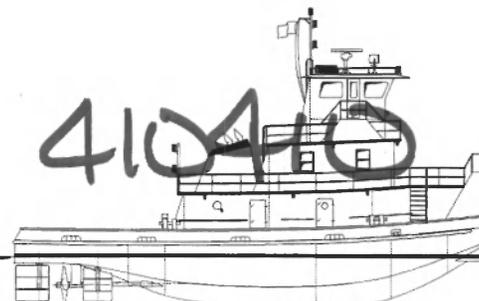
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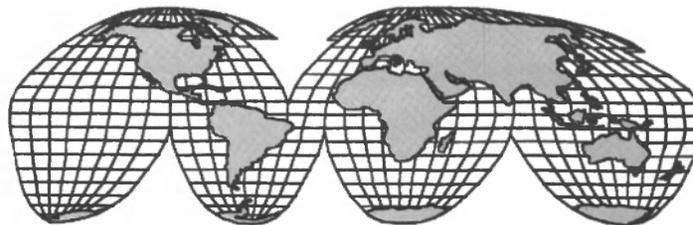
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CALENDAR

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.

Summer Flounder: A Case History In Fishery Management: April 8, University of Connecticut Avery Point Campus, Groton, CT.
Contact: Coastal Studies/UCONN Avery Point, tel: (860) 405-9026; e-mail: coastal@uconnvm.uconn.edu.

Innovative Technology For Challenging Environments: April 8-9, London, U.K.
Contact: Fleur Heapy, The Institute of Marine

Engineers, 76 Mark Lane, London EC3R 7JN, tel: +44 171 181 8493; fax: +44 171 488 1854; e-mail: conf@imare.org.uk.

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 Pentagon City, 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.

AAPA's Marine Terminal Management Training Program: April 7-11, Doubletree Hotel and Marina, Los Angeles, Calif.
Contact: Eileen Deane, P.R. director, American Association of Port Authorities, 1010 Duke St., Alexandria, Va. 22314, tel: (703) 684-5700; fax: (703) 684-6321, e-mail: aapa@ix.netcom.com.

Cape Town '97 International Fisheries Conference: April 9-11, Cape Town, South Africa.
Contact: Karin Sundmaker, MGH Bremer GmbH, Bischofsjadel 1 - 2, 28195 Bremerhaven, Germany, tel: +49 421 3630547; fax: +49 421 321485.

China Fast Ferry & Commercial Craft Show: April 13-16.
Contact: Craig Moyes, Frashow Ltd., 16 Chelsea Wharf, Lots Rd., London SW10 0CJ, U.K., tel: +44 171 376 7177; fax: +44 171 352 0818.

International Offshore Mechanics & Arcl Engineering Conference: April 13-17, Japan.
Contact: ASME International, 345 E. 47th St., N.Y., N.Y. 10017-2392, call tel: (212) 704 7037 for more information.

The Safety of High Speed Craft: April 11, 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, Chi Minh City International Exhibition and Convention Centre, Vietnam.
Contact: RAI Exhibitions Singapore Pte. Ltd., Maritime Sq., # 09-01, World Trade Centre, Singapore 099253, tel: +65 272 2250; fax: +65 272 6744.

1997 Ship Production Symposium: April 21-23, New Orleans Hilton Riverside, New Orleans, La.
Contact: Deborah Felts, P.O. Box 00 Pascagoula, MS 39567, tel: (601) 935-2700; fax: (601) 935-6838; e-mail: feltsdc@ingalls.com.

AAPA's Seminar On Port Administration And Information Technology: April 23-25, Embury Suites Hotel, Secaucus, N.J.
Contact: Eileen Deane, P.R. director, American Association of Port Authorities, 1010 Duke St., Alexandria, Va. 22314, tel: (703) 684-5700; fax: (703) 684-6321, e-mail: aapa@ix.netcom.com.

Marine Indonesia '97: April 23-26, Jakarta, Indonesia.
Contact: Overseas Exhibition Services Ltd., Manchester Sq., London W1M 5AB, U.K.

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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.

International Trade Fair for Logistics (LOG '97): April 29-May 2, 1997, Essen, Germany.
Contact: Essen Trade Shows, 70 W. 36th St., Ste. #605, N.Y., N.Y. 10018, tel: (212) 356-0406; fax: (212) 356-0404;
<http://www.dtsusa.com/dts/>.

MAY 1997

Offshore Technology Conference '97: May 5-8, Astrodome U.S.A. Complex, Houston, Texas.
Contact: Offshore Technology Conference, P.O. Box 833868, Richardson, Texas 75083-3868, tel: (214) 952-9494; fax: (214) 952-9435.

Managing A Non-Profit Center: May 6, University of Connecticut Avery Point Campus, Groton, CT.
Contact: Coastal Studies/UCONN Avery Point, tel: (860) 405-9026; e-mail: coastal@uconnvm.uconn.edu

The Safe Operation of Tankers in Coastal Waters and Approaching Terminals: May 8-9, The Cavendish Conference Centre, Duchess News, London, U.K.

Contact: **Jane Hill**, Conference manager, The Institute of Petroleum, 61 New Cavendish St., London W1M 8AR, U.K., tel: +44 171 467 1100; fax: +44 171 255 1472.

ASNE Midwest Section/Indianapolis Chapter Integrated Product Engineering Forum For Naval Ordnance and Electronics: May 13-15, Bloomington, Indiana Convention Center, Bloomington, Indiana

Contact: **Annette Verna**, American Society of Naval Engineers (ASNE), 1452 Duke St., Alexandria, Va. 22314-3458; tel: (703) 836-7727; fax: (703) 836-7491.

ORA '97 (The Second Int'l Conference on Marine Technology): May 13-15, Pomeranian Palaces' Castle, Szczecin, Poland.

Contact: **Sue Owen**, conference secretariat, Essex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, U.K. SO40 7AA, tel: +44 1703 293 223; fax: +44 1703 292 853; email: wit@witcmi.ac.uk.

Cruise + Ferry 97: May 13-15, Olympia 2, London, U.K.

Contact: BML Business Meetings Ltd., 2 Station Road, Rickmansworth Herts WD3 1QP, U.K., tel: +44 1923 776363; fax: +44 1923 777206.

1997 Transportation, Operations, Management and Economics Symposium: May 14-15, New York City.

Contact: **Edward Lewandowski**, chairman, SAME Publicity Committee, tel: (201) 216-112.

IPA's Facilities Engineering Seminar: May 13-15, Omni Waterside Hotel, Norfolk, Va.

Contact: **Eileen Dennis**, P.R. director, American Association of Port Authorities, 1010 Duke St., Alexandria, Va. 22314, tel: (703) 684-5700;

April, 1997

fax: (703) 684-6321, e-mail: aapa@ix.net-com.com.

JUNE 1997

Turbo Expo '97- Land, Sea & Air- 42nd Gas Turbine & Aeroengine Congress: June 2-5, Convention Center, Orlando, Fla.
Contact: ASME International, 345 E. 47th St., N.Y., N.Y. 10017-2392, tel: (404) 847-0072.

AUVSI '97 (Association For Unmanned Vehicle Systems International): June 2-6, Baltimore, Md.

Contact: **Daryl Davidson**, AUVSI executive director, 1200 19th St. NW, Ste. 300, Washington, D.C. 20036, tel: (202) 857-1889; fax: (202) 223-4579.

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Parts Manufacturing Exposition: June 3-5, 1997, Rosemont Convention Center, Rosemont, Ill.

Contact: **Glenn Bischoff** or **Debbie Trawczynski**, IFE '97, 191 South Gary Ave., Carol Stream, Ill. 60188-2092, tel: (708) 260-9700; fax: (708) 260-0395.

Emergency Diesel Generator (EDG) Owner's Group Industry-Wide Conference: June 3-6,



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GLOBAL AND REGIONAL INFLUENCES ON THE CRUISE MARKETS - SESSION 1

The World Cruise Industry at the Millennium Tony Peasley, Cruise Market Travel Analyst, UK

The Globalisation of the Cruise Industry Jay J Lewis, President, Market Scope Inc, Miami

Seasonal repositioning strategies - current and future trends for the main cruise markets Jacques Charlier, Research Associate, Universite Catholique de Louvain, Belgium

Volume, value and characteristics of maritime tourism in the Eastern Mediterranean George Michaelides, General Manager Marketing, The Lobby Organization, Cyprus

FAST FERRY KEYNOTE PRESENTATIONS-SESSION 2:

Fast and Faster Robert Clifford, Chairman, Incat Australia Pty Ltd, Tasmania

Limitations on operating - the day-to-day challenges Rob Bryce, Business Development Manager, Hart Fenton & Co, UK

Fast v Conventional Ferries - comparative advantages Erik Østergård, Business Development Manager, Scandlines (DSB Rederi A/S), Copenhagen

REGIONAL DEVELOPMENT AND CO-OPERATION IN THE CRUISE SECTOR - SESSION 3

The Role of the MedCruise Association in the Mediterranean region's bid to make it a value-for-money cruise destination Anne-Marie Sciberras, Secretary General, MedCruise Assoc, Malta

Cruise Europe: co-operation in Marketing Drive Captain Andre de Wilde, Executive Manager, Cruise Europe, Belgium

A successful attempt towards the development of cruise business in Japan Itoh Goiti, President, Taiheyo Ferry Co Ltd, Japan

EMERGENCY RESPONSE AND DISASTER MANAGEMENT - SESSION 4

Disaster Management - Lessons learned from TWA, a personal perspective Martha Reardon, The Harbor Consultancy International, USA

Emergency response and disaster management Chris Beesley, Senior Admiralty Manager, Ince & Co Solicitors, London

On board Emergency Training for Crews Jim Brand, Commercial Manager, RGIT Ltd, Aberdeen

Developing a flexible and cost-effective bridge simulator for crisis management training Goran Granholm, Research Scientist, VTT, Finland

REFURBISHMENT - SESSION 5

The classic refurbishment of the Savarona - Ataturk's yacht Kahraman Sadikoglu, President, Iuzla Shipyard and Tourism Inc, Istanbul

Avoiding accommodation refurbishment mistakes Anthony Dugdale, Regional General Manager, Trimline, UK

CRUISE SHIP DESIGNS INFLUENCES - WHICH WAY FORWARD? - SESSION 6

The evaluation and rating of cruise ships: the passengers' perspective Douglas Ward, President, The Maritime Evaluations Group Ltd, and author of the BERLITZ Guide to Cruising and Cruise Ships

Classic Voyagers Return Stephen M Payne, Senior Naval Architect and Project Manager, Carnival Corporation Technical Services, London

Design Innovation on the club ship Aida Kai Bunge, Senior Partner, Partner Ship Design, Hamburg

Discussion Panel: Njal Eide, Designer, Njal R Eide A/S, Norway (to be confirmed)

Petter Yran, Architect, P Yran & B Storbrauten Architect AS, Norway (to be confirmed)

John McNece, Chairman, McNece, London
Donald Mathias, General Director Passenger Ship Division, Samsung Heavy Industries, Korea

THE REMOVAL OF DUTY FREE AND FUTURE STRATEGIES FOR ONBOARD RETAILING - Part 1 - SESSION 7

Keynote paper: Which European Ferry Routes will still be viable by the Millennium? Peter Lies, Partner, MDS Transmodal, UK

A Millennium without duty free - the end of the Scandinavian Ferry and cruise ferry industries as we know them? Klas Brogren, Director, ShipPax Information, Halstad, Sweden

Report on the Campaign to Retain Duty Free William Gibbons, Board Member, Duty Free Confederation and Director, Passenger Shipping Association, UK

FUTURE STRATEGIES FOR ONBOARD RETAILING AND THE REMOVAL OF DUTY FREE - Part 2

Marine retailing into the 21st century Dee Maher, Retail Operations Controller, Allders, UK

Can the growth strategies of the airports be adopted by passenger shipping post non-tax-free? David Feldman, Mercer Management Consulting, Paris

The interiors of the new large fast ferries radically depart from aircraft styles and encourage passenger flow and spend Nils Beijer, Managing Director, Figura Arkitektur, Sweden

FAST FERRY PRESENTATIONS - SESSION 8

A new medium size fast ferry design from Bazan Juan A Mendiola, Technical Manager, San Fernando Yard and Juan L Tejedon, Program Manager, Bazan, Spain

Filling the Ferry - a new dual-purpose design for seasonal traffic routes Jennifer Knox, Naval Architect, Atlantic Inud Efterskift A/S, Copenhagen

A new range of twin-hull and mono-hull futuristic fast ferries Jukka Laitera, Vice President Sales & Design, Finnyards Ltd, Rauma

Philosophy of High Speed Craft Capt Amir Esmiley, Nautical Surveyor and Tom Allan, Chief Surveyor, Marine Safety Agency, UK

Seacomfort analysis of the operational parameters comparing a catamaran versus a monohull Jan Kvalsvold, Det Norske Veritas, Norway

SuperSeasat - from design to operation Vincenzo Farinetti, Technical Manager and Mauro Parodi, Project Manager, Fincantieri, Italy and Michael Simpson, Director, Hart Fenton & Co, UK

Classification and operational needs of the new generation of high speed ferries Robert Curry, Manager Rule Development and Michael Pearson, Head Safety & Environment Systems Certification, ABS Europe, London

CREATING THE ONBOARD VACATION AURA - SESSION 9

Design of Onboard Spas - a key area for passenger marketing Malcolm McDonald, Senior Partner, The Syntax Group

State-of-the-Art in Onboard Entertainment Technology Derek Gilbert, Managing Director, Glantre Engineering, UK

Switching the entertainment environment - lighting public spaces on cruise ships and ferries Peter E.C. Cruise Ship Market Manager, Strand Lighting, UK

NEW DESIGN DEVELOPMENTS FOR PASSENGER SHIPS - SESSION 10

Wind Comfort for Cruise/Passenger Vessels Andreas G Jensen, Torben Søndergaard and Flora M Livesey, Danish Maritime Institute, Lyngby

Sailing cruise liners for the next century Frank R MacLear, President and Chief Naval Architect, MacLear & Harris Inc, New York

New concept of passenger elevator for cruise ships Bjorn Stenwall, Senior Naval Architect, Passenger Ship Division, MacGREGOR Group

Fundamental rethinking of passengership design for economic operations by owners and construction by shipyards Markku Kanerva, Director - Business Development, Deltamarin Ltd, Finland

Improved noise control - the hidden consequences for the design of modern cruise vessels Christer Borjesson, Det Norske Veritas, London

Ventilation system design and maintenance for air quality on passenger ships A.D. Webster, Lloyd's Register, UK

STABILITY / SURVIVABILITY & FLOODING CONSIDERATIONS - SESSION 11

New damage stability standards and upgrading stability standards of existing passenger/car ferries Osman Turan, Dimitris Konovessis and Centekin Tuzcu, The Ship Stability Research Centre, University of Strathclyde, Glasgow

Retrofitting Ro-ro ferries - selecting safer systems Keith W Hutchinson, Research Associate, Argonautics Maritime Technologies Ltd, David Byrne, Managing Director, Transmarine Ltd, David Hewitt, Managing Director, Armstrong Technology Associates Ltd, UK

Flooding Risk Analysis - a design aid to passenger ships Chunsheng Hu, Lloyd's Register, UK

THE INTERNET AND CRUISE + FERRY - EXCITEMENT, SCEPTICISM AND CONFUSION - SESSION 12

The Internet for marketing and sales of cruise and ferry products in the future John Broughan, Partner, Travel Technologies Group, USA

Cyber Ships - cruising into the 21st century John Kimbrough, President, CruisePhone Inc, USA (to be confirmed)

Additional papers are invited for this session

CRUISE + FERRY 97 EVENING RECEPTION

The Cruise + Ferry 97 evening reception will be jointly hosted by the Australian Trade Commission and the Australian High Commission in Australia House on the Strand from 19.00 to 20.30h.

PROPULSION ADVANCES AND ECONOMY IMPROVEMENTS - SESSION 13

The New 4000 in fast ferry application Gerhard Hausmann, Director Marine Applications, MTU Friedrichshafen, Germany

Azipod propulsion now favoured for the large cruise ships Mikko Niini, Marketing and Sales Manager, Kvaerner Masa-Yards, Finland

Aeroderivative gas turbine cruise ship power system update Carl Brady, Advanced Programs Manager, GE Marine & Industrial Engines, Cincinnati, USA

The Propulsion hydrodynamics and manoeuvring features of Polarlys - one of the new Norwegian Coastal Express liners on the "Hurtigruten" services Leif Vartdal, Chief Hydrodynamicist, Ulstein Propeller A/S, Norway

Propulsion choice for a Danish ro-ro ferry project Erik Møller, Senior Design Manager, MAN B&W Diesel A/S, Denmark

LIFE SAVING - SESSION 14

The Practicality of Demonstrating Marine Evacuation Systems Geoff Billington, ML Lifeguard Ltd, UK

Safety - are we all in the same boat? Jens Peter Bie, Technical Administration Manager, Viking Life-Saving Equipment, Esbjerg

WORKSHOP SESSION on IMO Legislation

(Attendance to this 2-hour workshop is free to ship operators - see the appropriate section of the registration form)

SOLAS Amendments, Chapter II-2 fire protection, fire detection and fire extinction
SOLAS Amendments, Chapter II-1, construction - subdivision and stability, machinery and electrical installations

International Safety Management Allan Barrett, Senior Surveyor, and David Whittaker, Principal Surveyor, Construction Services Department, Lloyd's Register, London

To register for the conference: Fax or call the Cruise + Ferry Secretariat Tel: +44 1923 776363 Fax: +44 1923 777206
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CALENDAR

The Ambassador West Hotel, Chicago, Ill.
Contact: **Arthur G. Killinger**, MPR Associates, Inc., 320 King St., Alexandria, Va. 223-14-3238, tel: (703) 519-0200; fax: (703) 519-0224.

SNAME Joint Sections Meeting: Ferries and RoRo Cargo Ships: June 7-9, San Diego, Calif.
Contact: **Michael E. Dockter**, SNAME Publicity

chairman, tel: (619) 336-4615; fax: (619) 336-4616.

Nor-Shipping '97: June 10-13, 1997.
Contact: Norwegian Trade Fair Foundation, Sjølystsenteret - Sjølyst Exhibition Center, P.O. Box 130 Skøyen, N-0212 Oslo, Norway, tel: +47 22 43 91 00; fax: +47 22 43 19 14; e-mail: norges varemesse@norges-varmesse.no.

AAPA's Public Relations and Marketing Seminar: June 11-13, Portland Marriott, Portland, Ore.

Contact: **Eileen Denne**, P.R. director, American Association of Port Authorities, 1010 Duke St., Alexandria, Va. 22314, tel: (703) 684-5700; fax: (703) 684-6321, e-mail: aapa@ix.net-com.com.

18th Duisburg Colloquium in Marine/Ocean Technology: June 12-14, Mercator University, Duisburg, Germany.

Contact: **I. Schüller** or **A. Wittfield**, Institute of Ship Technology, Mercator University, Bismarckstr.69, D-47057 Duisburg, tel/fax: +49 203 379 27 79.

Ship Finance Conference: June 24-26, N.Y., N.Y.

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

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JULY 1997

Asia-Pacific Fishing: July 7-10, 1997, Cairns, Australia.

Contact: Baird Publications, 10 Oxford St., South Yarra 3141, VIC, Australia, tel: +61 3 9826 8741; fax: +61 3 9827 0704; or in U.K., 4A Carmelite St., London EC4Y 0BN, tel: +44 171 353 1085; fax: +44 171 353 1084.

U.S. Navy International Logistics Symposium (NILS): July 14-16, Hyatt Regency Crystal City, Arlington, Va.

Contact: **Sally Cook**, American Society of Naval Engineers (ASNE), 1452 Duke St., Alexandria, Va. 22314-3458; tel: (703) 836-6727; fax: (703) 836-7491.

Hunt Design Rendezvous: July 18-20, Fort Adams, Newport, R.I.

Contact: C. Raymond Hunt Associates, Inc., 69 Long Wharf, Boston, MA 02110, tel: (617) 742-5669; fax: (617) 742-6354; or **Sherry Marx**, The Museum of Yachting, P.O. Box 129, Fort Adams State Park, Newport, R.I. 02840, tel: (401) 847-1018; fax: (401) 847-8320.

Fast '97: Fourth International Conference On Fast Sea Transportation: July 21-23, 1997, Sydney, Australia.

Contact: Conference Secretariat, Baird Publications Pty. Ltd., P.O. Box 460, South Yarra 3141, VIC, Australia, tel: +61 0 3 9826 8741; fax: +61 0 3 9827 0794.

SEPTEMBER 1997

Offshore Europe '97: September 1997, Aberdeen, Scotland.

Contact: International Expositions, Inc., 1635 W. Alabama, Houston, TX 77006, tel: (713) 529-1616; fax: (713) 529-0936.

1997 American Intl Ship Expo (AISE): September 9-11, New York Coliseum, New York City.

Contact: McNabb Expositions, Inc., P.O. Box 418, Rockport, Maine 04856-0418, tel: (207) 236-6196; fax: (207) 236-0369.

World Fishing - Vigo '97: September 17-21, Vigo, Spain.

Contact: Nexus Media Ltd., Top Floor, 84 Ke Rd., Richmond, Surrey TW9 1PQ, U.K., tel: +44 181 332 9273; fax: +44 181 332 9335.

AAPA's 86th Annual Convention: September 22-26, Marriott at Sawgrass, Jacksonville, Fla.

Contact: **Eileen Denne**, P.R. director, American Association of Port Authorities, 1010 Duke St., Alexandria, Va. 22314, tel: (703) 684-5700; fax: (703) 684-6321, e-mail: aapa@ix.net-com.com.

Krupp And Volkswert Collaborate On Dredger Project

The Marine Technology division of Krupp Fordertechnik GmbH recently received an order to build a 8.75-cu-m hopper suction dredger for Jan de Nul of Aaist, Belgium.

The DM 95 million dredger will be built in cooperation with German shipyard Volkswert GmbH Stralsund, and is scheduled for delivery in August 1998.

Hopper Suction Dredger Data

Length	393.6 ft. (120 m)
Width	80 ft. (24.4 m)
Depth	32.8 ft. (10 m)
Draft	29.1 ft. (8.9 m)
Dredging depth	max. 124.6 ft. (38 m)
Speed	approx. 14 knots

The hopper suction dredger is reportedly the fourth project on which Krupp and Volkswert have collaborated.

The unit will feature a completely integrated alarm, monitoring and automation system and efficient dredge pumps.

Depending on the power required for either dredging or reclaiming, the dredge pump is designed by the manufacturer to have the capability to be driven by one or two diesel engines.

For more information on Krupp Fordertechnik
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German Companies Form Alliance To Dominate Waste Management Segment

The Marine division of Triton-Belco AG is cooperating with Deerberg Systems on comprehensive waste management solutions for cruise ships and ferries. The consortium has reportedly received three orders to equip cruise ships from two Italian and one German builder. Deliveries are scheduled to begin in the middle of this year.

Triton-Belco is optimistic that the pairing will lead to future success, and is anticipating a 20 percent turnover increase. It views the cruise ship market in a bullish manner, and is confident that its expertise — and the resultant innovative systems solutions — will help the companies win a fair share of orders.

A Cost-Effective Pairing

Deerberg Systems supplies the elements of systems which manage recyclable wastes, such as glass, aluminum, paper and kitchen refuse. The operator can opt for waste separation, or can dispose of wastes together. The subsystem provided by Triton-Belco's subsidiary Format-Chemie handles disposal of combustible refuse. It includes a waste silo, incinerator and kitchen refuse tank. Upcoming installation sites include onboard luxury liners *Superstar Leo* and *Superstar Virgo*, being built by Fincantieri; and *Topas*, being built for Deilmann by HDW.

The teaming arrangement will not only allow for efficiencies in the manufacture and installation of systems, but also in the marketing of both complete systems and individual components.

Format-Chemie has been producing biological waste management systems for ships of all types and sizes since 1971. It manufactures and markets fully biological waste treatment lines, as well as pyrolysis incinerators. The range of products for marine applications comprises vacuum and special tanks, and its services include pipelaying and system installations. All systems solutions reportedly meet international rules and guidelines regulating wastewater discharge and air pollution at sea. In addition, the Triton "Clean Ship System" can be found on many coastal vessels, freighters, ferries and passenger vessels. It comprises vacuum toilets, vacuum piping and a biological sewage treatment plant with integral vacuum generation.

For more information on Triton-Belco
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For more information on Deerberg Systems
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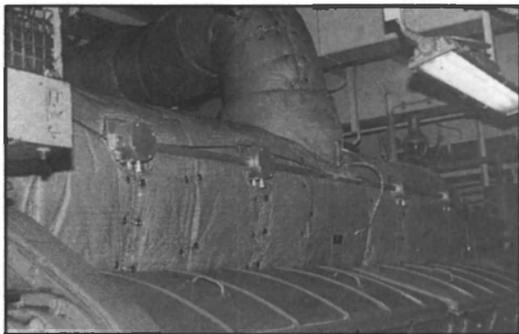
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Deepwater Projects Help Boost KaMeWa's Aquamaster Bottom Line

The offshore market upturn has propelled the bottom line of many builders and suppliers. Technology and the market are allowing and demanding that companies drill deeper to tap new reserves, and suppliers such as KaMeWa have been at the forefront in providing equipment designed to withstand the rigors of these deepwater operations.

"Reliability and efficiency are critical, particularly when you are faced with the technical and economic challenges of deepwater exploration", said **Jarmo Savikurki**, manager of the Kamewa Group's Aquamaster Offshore team. Recent Aquamaster orders include units for both newbuildings and conversions. One newbuilding (*Discoverer Enterprise*, the world's largest mobile offshore drilling unit) was ordered by Transocean Offshore. The rig will initially be outfitted for exploration and development drilling in water depths of up to 9,842 ft. (3,000 m). Last year, Transocean signed a contract with Astano for the construction of the hull and major marine systems. Propulsion and thrust for dynamic positioning will be supplied by six Aquamaster UUS 7001 units with total of 30,000 kW. The drillship has a multi-year contract with Amoco and will begin drilling activities in the Gulf of Mexico in the summer of 1998. A joint effort to explore the deepwater of the Gulf of Mexico by Conoco and Reading & Bates has resulted in a newbuilding contract for a next generation dynamically positioned (DP) drillship. The 722 x 141 ft. (220 x 43 m) vessel is being built by Samsung Heavy Industries, and will be capable of drilling at water depths up to 9,842 ft. The ship system uses six underwater demountable Aquamaster UUS 6001 azimuthing thrusters fitted with Kamewa's patented tilted nozzles, providing a total of 24,000 kW. A conversion project the company is involved in is a major conversion at Atlantic Marine in Mobile, Ala. of the drillship *Ocean Clipper*, owned by Diamond Offshore, Inc. *Ocean Clipper* is being outfitted with an upgraded positioning system based entirely on Kamewa Group products — a single top-side demountable Aquamaster USL 3001 azimuth thruster and five Kamewa TT 2400 fixed-pitch tunnel thrusters. To expand its ability to lay large-diameter pipe in deep water, offshore construction company Global Industries, Ltd. is converting the derrick barge *Hercules* at Atlantic Marine to a DP pipe-laying vessel

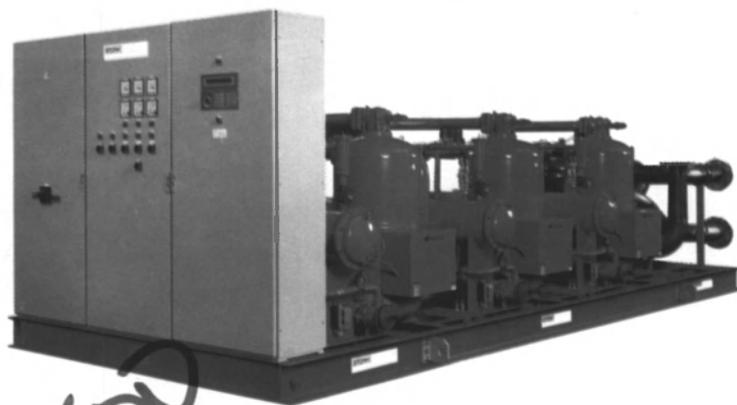
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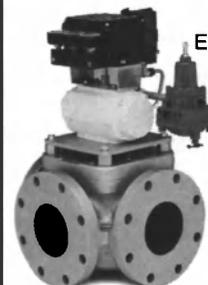
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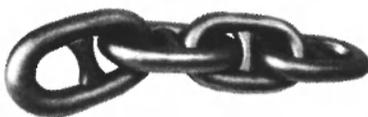
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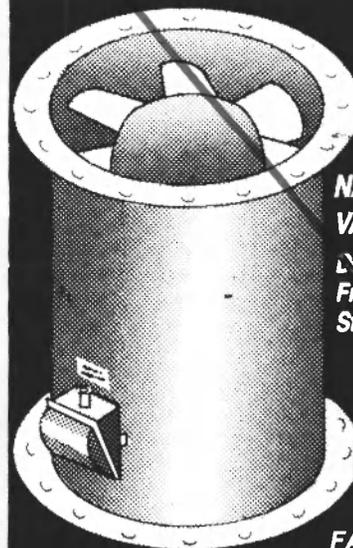
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In return for your expertise, we offer an outstanding compensation package, including medical/vision/dental/life insurance, profit sharing, paid training, relocation assistance, and 100% tuition reimbursement. Please send resume to: ATLANTIC MARINE, INC., Attn: Human Resources Manager, P.O. Box 3202, Gate "B" Dunlap Drive, Mobile, AL 36652, FAX: 334-690-7890 or call 1-800-650-WAVE. Equal Opportunity Employer M/F.

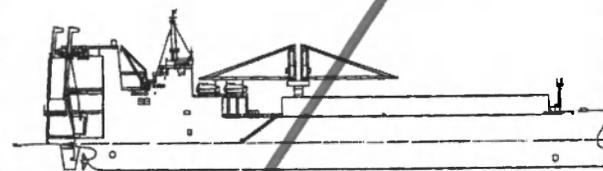


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Send your resume stating position of preference to: **Human Resources, Atlantic Dry Dock Corp., 8500 Hecksher Drive, Jacksonville, FL 32226; or FAX your resume to (904) 251-1579.** Equal opportunity employer.



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REQUEST FOR PROPOSALS

The City of Fort Lauderdale is seeking proposals for the purchase of one (1) each: **Trash Skimming Vessel**. This vessel will be used for the cleaning and disposal of floating debris throughout the almost 160 miles of waterway in the City. Contractors interested in obtaining a complete proposal package, including Technical Specifications, may call the Purchasing Division, City of Fort Lauderdale, at (954) 761-5140, and request of a copy of REP #372-7668.

The last day for questions of a material nature is **April 1, 1997**

All proposals are due no later than 2:00 P.M., EST on: **April 25, 1997**, in the City's Purchasing Division, 100 N. Andrews Avenue, Room #619, Fort Lauderdale, FL 33301

The City reserves the right to accept or reject any or all proposals, part of proposals, and to waive minor irregularities or variations to specifications contained in the document, and minor irregularities in the bidding process, when determined to be in the best interest of the City. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual basis, or such combinations as shall best serve the interest of the city.



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