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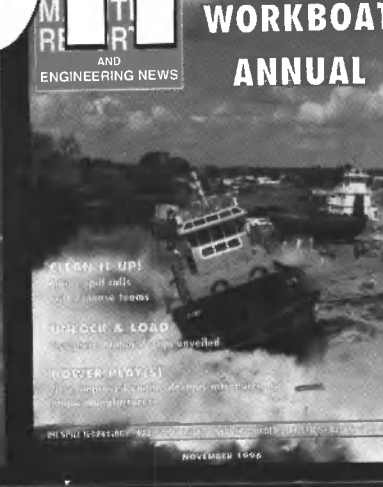
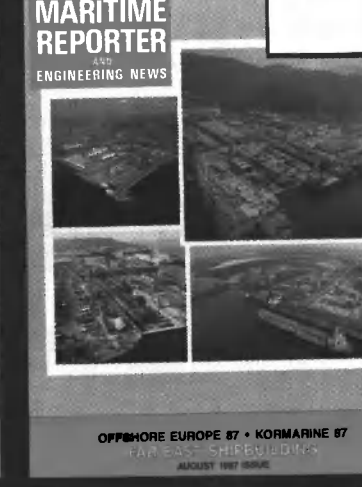
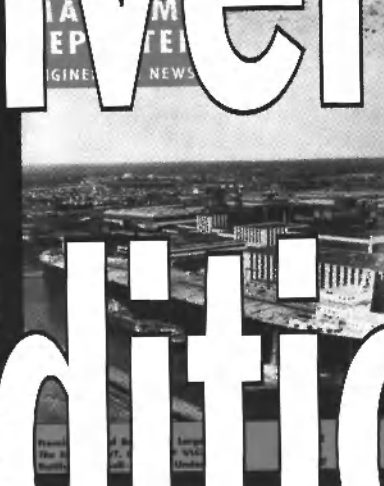
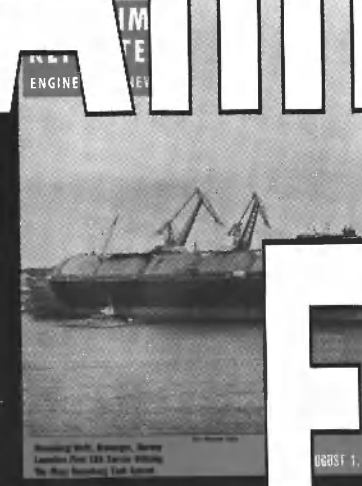
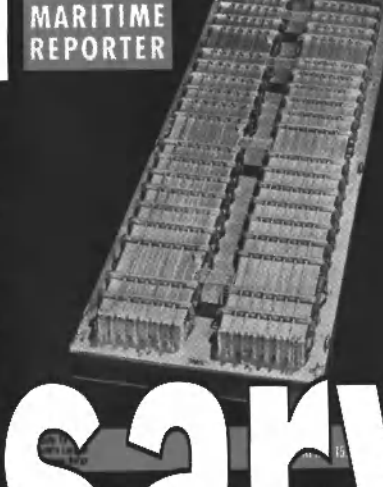
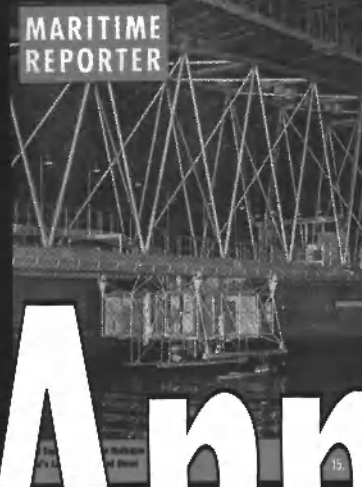
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MARITIME REPORTER AND ENGINEERING NEWS

BETHLEHEM LOW ON DELTA LINE SHIPS
Bethlehem Steel Corp. has secured a contract to build 10 Delta Line ships for the U.S. Navy. The ships will be built at the company's Bethlehem Steel Shipyard in Bethlehem, Pa.



60th Anniversary Edition

1985 NAVY ANNUAL

OFFSHORE EUROPE 87 • KORMARINE 87

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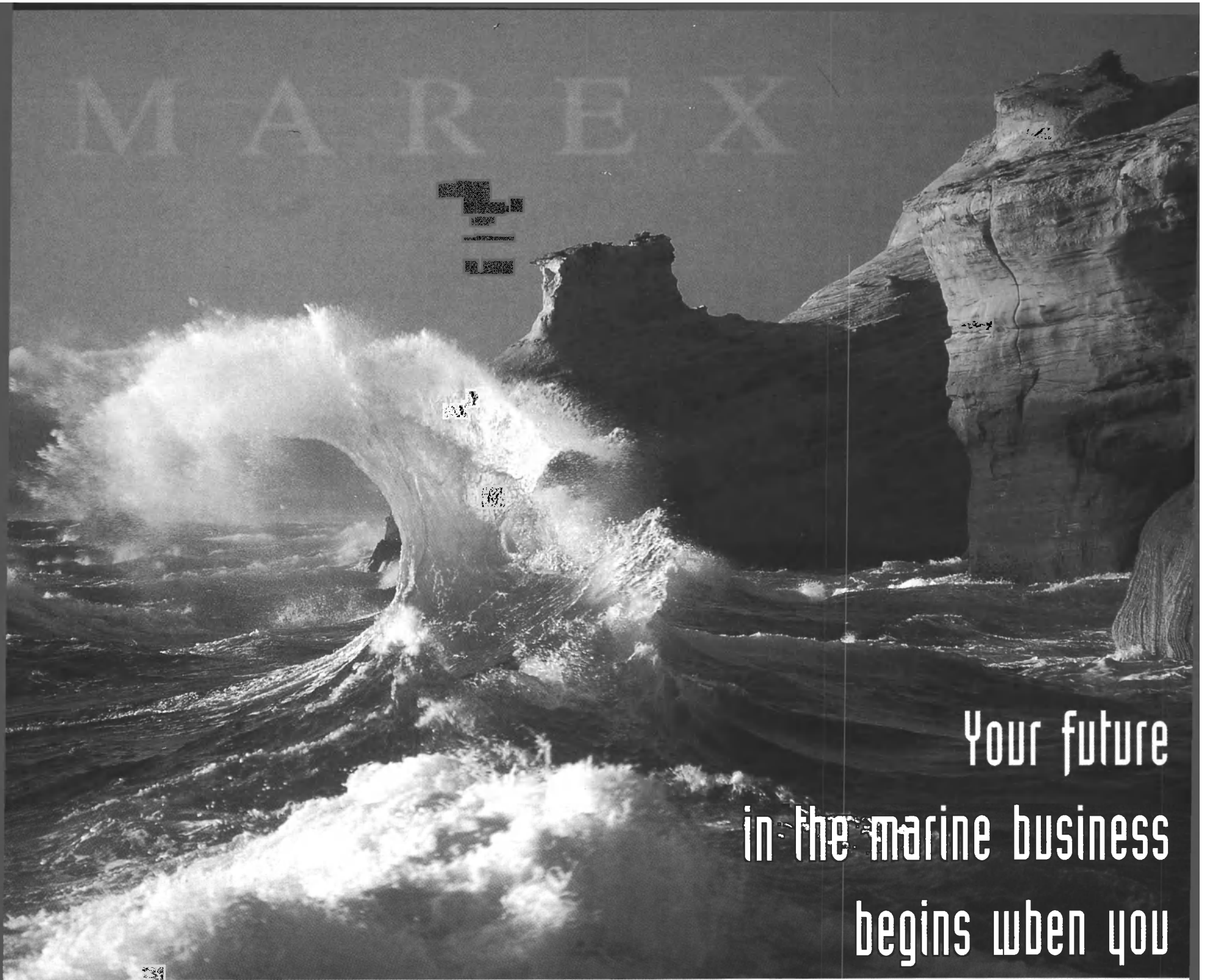


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On the Cover: This month *Maritime Reporter & Engineering News* celebrates its 60th year serving the maritime industry. Pictured on the cover are six decades of covers, starting in 1939 when it was a weekly dubbed *Maritime Activity Reports*.

8 The Japanese Way

In the face of tremendous competitive pressures, Japanese shipyards rely on technical and process expertise to maintain the edge.

31 Maritime Training

The Center for Maritime Education, situated in America's heartland, is helping to train South American river pilots to safely and efficiently navigate the Parana River.

40 VERA!

The Propulsion Performance Products report starts with a story of an innovative vessel under construction at Bollinger for Bisso Marine.

54 Is there anybody out there?

Despite some well-publicized bumps, advances in satellite communication products and services promises to make maritime a safer, more efficient industry.



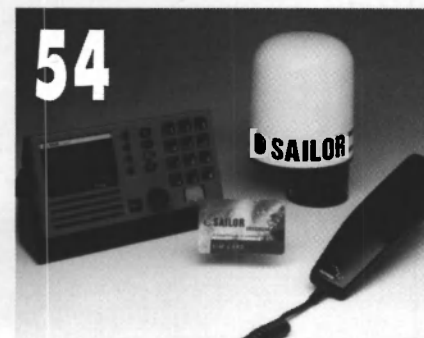
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60th Anniversary Edition

Special Anniversary Section

For more than 60 years, *Maritime Reporter & Engineering News* has served the informational needs of the international maritime community.

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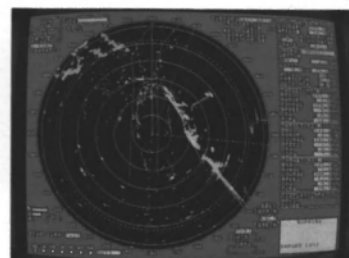
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EDITOR'S NOTE

For more than 60 years, *Maritime Reporter & Engineering News* has served the informational needs of the international maritime market. From its inception in 1939, when John J. O'Malley created and delivered the first edition of the new weekly publication — *Maritime Activity Reports* — the O'Malley family and its publications have reflected the company's deep commitment to the maritime market, as both an observer and participant.



Personally, my tenure with the publication spans a mere eight years of the 60, but when reflecting on this edition and the future of The Maritime Group — publisher of *Maritime Reporter & Engineering News*, *MarineNews*, *Maritime Week* and www.marinelink.com -- in 2000 and beyond, I quickly realized that eight years is a substantial 15 percent of the magazine's existence. Upon joining the publication in 1991, one of my first assignments was covering the SMM Exhibition in Hamburg. Prior to the exhibition I was hosted by Krupp MaK in Kiel for the introduction of a new engine, and that trip — among the seeming hundreds since — perhaps stands out most prominent because it was on this run through the German maritime environment that I made valuable personal and business contacts that I utilize for insight and information to this day.

The maritime market continues to fascinate me, mainly because of its eclectic mix of personalities, politics and players, from large corporate entities to its smaller — yet collectively large — private and family run organizations. As trite as it may sound, it is the people of the industry and the collective sense of community and history that makes the industry vibrant, in good times and bad. While the goal every month is to deliver the best stories available, I can honestly say that the absolute best stories — the ones that could fill volumes — are usually prefaced by "This is not for publication, but did you know..."

Respecting confidentiality and adhering to high editorial standards have been the hallmark of the publication since 1939, and are the primary reasons that it has become so woven into the maritime market fabric. A perfect example of this is reflected in a story by assistant editor Regina P. Ciardiello, who writes this month about one of *Maritime Reporter's* biggest fans, Brian Fournier, president of Portland Tugboat, who has faithfully followed the publication since he was four years old. When Regina, who met Brian during an outing in New York Harbor, first relayed the stories regarding how his grandmother would save copies of *Maritime Reporter* for her grandson, I thought she had gotten a bit too much sun that day. However, a picture being worth 1,000 words, I became a believer upon seeing a photo of four-year-old Brian holding his copy of *MRE/EN* from Santa Claus! (see story, page 2A of the center anniversary section.)

While *Maritime Reporter* remains the most visible and popular of all of The Maritime Group's publications, it is today surrounded by a family of maritime industry publications and information services that are designed to complement one another. The development of The Maritime Group as the premier provider of maritime industry information is again indicative of the mandate set down by John J. O'Malley 60 years ago, and carried through by his sons Charles O'Malley and John E. O'Malley, and fast-tracked into the next millennium today by his grandson John C. O'Malley.

Regina P. Ciardiello

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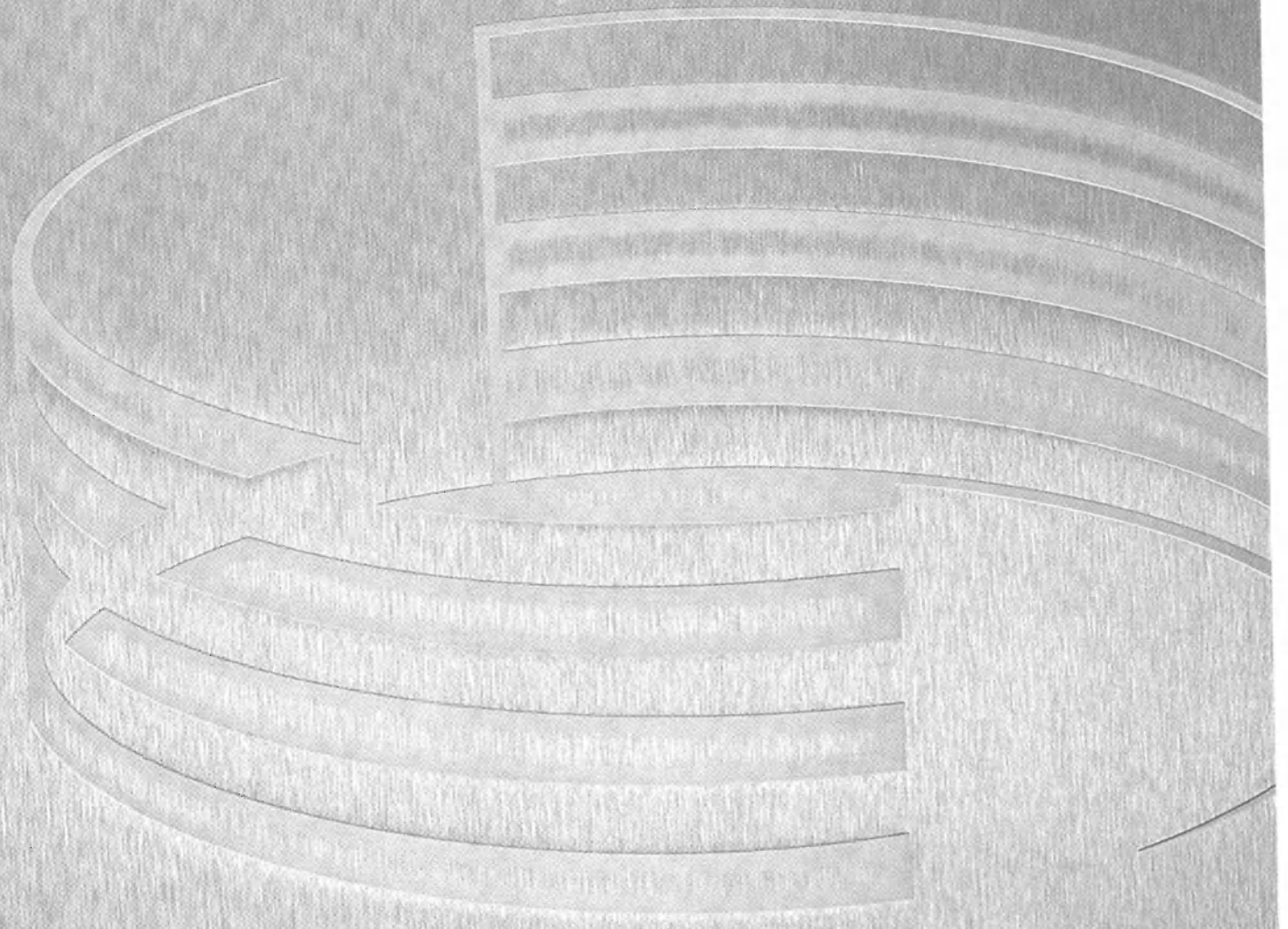
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by David Tinsley,
technical editor

The Fruit of the Orient

Through a longstanding blend of organizational discipline and an unerring drive for the highest levels of automation attainable in shipbuilding processes, the industry in Japan demonstrates resilience founded on continuing productivity advances.

Untiring efforts to seek new ways of reducing man-hours and lead times is wholly characteristic of Japanese companies, as they rise to the intensified challenge posed by equally resolute

South Korean yards.

Although designs from Japanese builders are necessarily production-oriented, shaping perceptions in the international shipowning market that tailoring can only be had at a substantial premium, there is no question about the quality obtainable at a competitive price.

Design-led endeavors directed at keeping an edge in man-output and raising manufacturing efficacy are especially pertinent to the complex tanker struc-

tures spawned by landmark legislation of the 1990s.

Design optimization had different ramifications in earlier years. But new initiatives to promote build precision now hold out the prospect not only of production gains but also long-term benefits in structural reliability.

As the latest expression of Japanese innovation, the first of a new breed of VLCCs embodying Kawasaki Heavy Industries' Apple Slot structural concept



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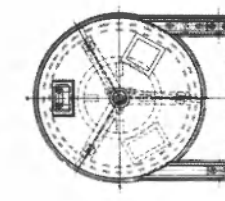
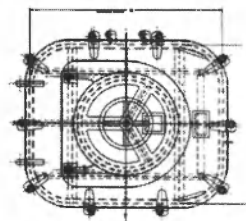
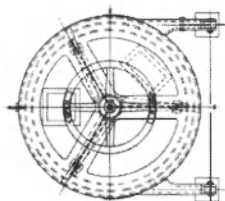
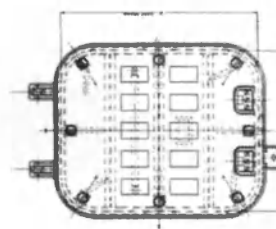
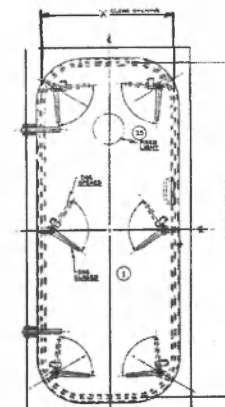
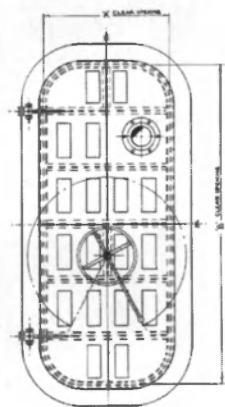
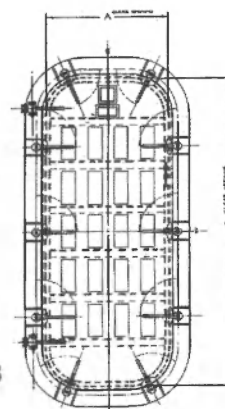
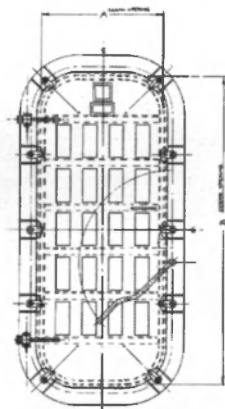
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Investment in Design

has been completed for the Golden Ocean Group. Fronting up a six-ship series from the Sakaide yard for the expansion-minded operator, the 300,000-dwt crude carrier embodies a patented concept aimed at reducing the multitude of conventional stiffeners on

the webs. With the mandatory requirement for double-hulling making for complex structures, Kawasaki's initiative actually simplifies and reduces the lightweight of the whole structure.

The term Apple Slot describes a specially-devised weight-saving and work-

saving connection between the longitudinals and transverse web plates, whereby the number of structural members is about 25 percent less than would normally be required in a conventional approach to double-hull construction. In addition to its impact on build eco-

nomics, the system is claimed to markedly improve overall fatigue strength and long-term design integrity, given that the connection points for the stiffeners can be especially prone to stress concentration in double-hulled tanker structures.

In essence, the conventionally fitted stiffeners on the transverse webs have been replaced by apple-shaped slots. Weld quality also benefits from the arrangements, observes Kawasaki, since automated welding can be more widely applied to the simplified hull structure.

Although originally developed for double-hulled VLCCs, the Apple Slot technique had its first application in the bottom section of a Sakaide-built Cape-size bulker, and is seen as suited for the gamut of large bulkers as well as Aframax, Suezmax and larger crude carriers. Scale is a necessary prerequisite for the efficient utilization of the idea.

The Golden Ocean tanker, which is understood to have attracted an initial two-year charter, has been dimensioned for a 2-million barrel-capacity, with the added advantage of a shallower-than-usual draft for a ship of her deadweight. Nonetheless, high propulsion efficiency has been obtained by optimizing the vessel's lines and fitting a rudder bulb with fins. Powering by a Kawasaki-manufactured MAN B&W 7S80MC two-stroke diesel should ensure a competitive laden speed of 15.6-knots at the design draft.

Poles break new ground

Time was when the Norwegians automatically looked to the Orient when planning new investment in bulkers of the open-hatch type, a well-proven, Norwegian-developed concept of lumber, pulp and container carrier distinguished by its stow optimization and cargo handling efficiency.

Poland's resourceful shipbuilding industry, however, has provided a viable European option for the construction of such tonnage, as soon to be demonstrated by the delivery of the first of a capacious new breed from Stocznia Szczecinska.

The fact that some of the leading lights in this specialized theater of operations have put their names to the project is most definitely a solid testament to the Szczecin yard's international competitiveness in a field, which has been dominated by Far Eastern yards for the past quarter-century.

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June 15, 1999

Frankie Fruge & Harry Schoell
Propulsion Systems Inc.
550 Fairway Drive Suite 103A
Deerfield Beach, FL 33441

Dear Frankie & Harry,

It has been nearly six months since the new PSI surface drives have been installed and I felt it was time to let you know exactly how things are going and how pleased we are with our investment.

Just to be clear, prior to the installation of the new PSI drives the previous outdrives were lasting 2 - 3 weeks. Each time we had a drive failure the rebuild cost was \$1600 and the round trip shipping for the repair of the drives was another \$500. If you add to it the maintenance time to install a drive, the opportunity costs of what the maintenance department could be accomplishing, the loss of customer revenue, and the customer dissatisfaction, the cost of each failure could easily be placed at \$3500.

The ongoing drive failures also placed the Resort in a position of high potential liability for passengers, on w, and vessel should the outdrive failure occur during a key maneuver or during inclement weather.

To sum it up the ongoing outdrive failures we were experiencing were costing the Resort dearly in both direct and indirect costs.

Now for the positive news. Since we have installed your PSI outdrives the boat has only been down for six hours which could be attributed directly to the drives. That is during nearly six months of operation! So for a conservative estimate I feel we have saved nearly \$26,000 in direct costs in the first six months.

Also, the installation of the PSI drives has benefitted us in two very unexpected ways. First, during the first few months of 1999 the water levels for Lake Havasu were the lowest seen in nearly a decade. It would have been virtually impossible to operate the boat in the marina or channel during this time had the new drives not been installed, the 10" - 12" lesser draft made it possible. If the old drives were in operation the failure rate would have doubled because of the inevitable hits taken from the lake bottom. Secondly, we are absolutely amazed at the



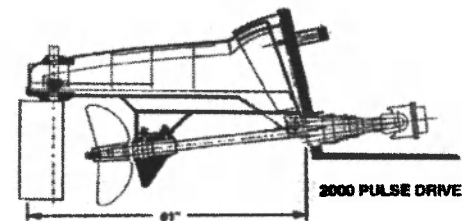
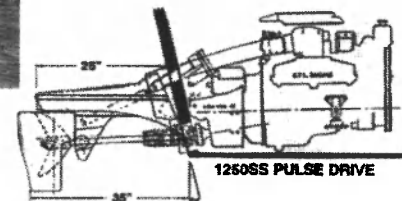
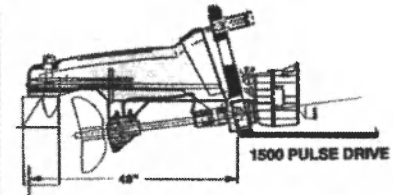
HAVASU LANDING RESORT & CASINO FERRY BOAT

improvement in fuel economy since the installation. We are currently running two Star Power 7.3 Ford Diesels and the fuel consumption has dropped by nearly 18% over last year during the same months. An unexpected savings of over \$600 a month!

The direct savings we have experienced since the installation of the PSI drives such as drive rebuilds, shipping, and fuel costs are easily calculated. However, the many other benefits such as improved customer satisfaction, captain and crew confidence, and overall Resort morale may be even more important to consider as part of the equation. I truly believe that when everything is counted the new PSI drives have fully paid for themselves in the short six months we have had them in use.

Thanks again for working with us in our remote geographic location. The confidence your drives have restored to our operations is fantastic. I would be happy to speak to any prospective purchasers to relay our story.

Sincerely,
Scott V. Mathews
Scott V. Mathews
General Manager



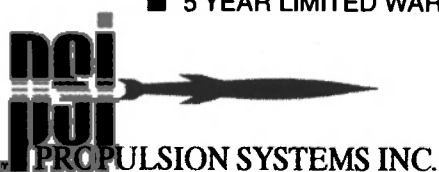
SPECIFICATIONS

PULSE DRIVE MODELS:	1000	1000 DUAL	1250SS	1500SX	1250 LONG	1250 DUAL	1500	1500 DUAL	1500 SS	2000	2500	3000
TYPICAL VESSEL SIZE	UP TO 20'	UP TO 26'	UP TO 26'	UP TO 26'	UP TO 36'	UP TO 42'	UP TO 42'	UP TO 50'	UP TO 36'	28'-50'	40'-65'	50'-85'
HORSE POWER RANGE (Approx)												
PLEASURE CRAFT RATING	120	TWIN 120	300	500	300	TWIN 300	650	TWIN 650	650	1000	1250	1600
TORQUE LIMITS IN FT.LBS. @ Propeller	220	TWIN 220	500	650	500	TWIN 500	800	TWIN 800	800	1800	3600	6100
MAXIMUM PROPELLER DIAMETER	12"	12"	15"	15"	18"	18"	20"	20"	20"	24"	28"	34"
SHAFT SIZE DIAMETER IN INCHES	1"	1"	1.25"	1.5"	1.25"	1.25"	1.5"	1.5"	1.5"	2"	2.5"	3"
WEIGHT IN LBS.	42	90	110	140	170	190	205	285	225	350	650	990
EXTERNAL LENGTH FROM TRANSOM	32"	32"	32"	32"	48"	42"	48"	48"	43"	60.25"	67.5"	81"
RUDDER ANGLE	80°	80°	80°	80°	80°	80°	80°	80°	80°	80°	80°	80°
PROPELLER TRIM	6°	6°	6°	6°	6°	6°	6°	6°	6°	6°	6°	6°
HOUSING MATERIAL	KNITTED UNIDIRECTIONAL FIBERGLASS/VINYLESTER COMPOSITE											

This page contains General Information and Specifications which are subject to evaluation by PSI. A PSI Data Sheet SHOULD be completed and submitted to our engineering department in order to assure the proper unit can be sized for the desired application. NOTE: Larger custom applications available.

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Investment in Design

The quartet of 39,780-dwt newbuilds ordered to the account of Singapore-based Masterbulk will be managed by Westfal-Larsen of Bergen and operated under charter to Star Shipping, one of the most skilled practitioners in the open-hatch mode.

Szczecinska had initially reasserted itself on the international market through its prowess in container ship construction, and has since carved a niche in the conbulker domain, while also taking on specialized tanker and multi-purpose vessel business. Adding

an extra dimension to the increasingly diversified production mix at Szczecin, the open-hatch bulkers are each equipped with two 40-ton deck gantries and suited for bulk commodities as well as lumber, other forestry goods and boxes.

Strengthening Turkish ties

The strong links forged between Denmark's marine engineering sector and the Turkish market have been reinforced by an early commitment to the propulsion version of MAN B&W's newly-developed L27/38 engine.

Contractual owner Turcas has selected an eight-cylinder version of the 270-mm bore design for each of two 4,500-dwt products carriers entrusted to Celik Tekne Shipyard, as part of a comprehensive propulsion package from MAN B&W's Alpha Diesel division.

The deal not only demonstrates confidence in the latest product addition to the portfolio at the accomplished Alpha works in Frederikshavn, northern Jutland, but also signifies a new chapter in the business relationship fostered with Turkey's private shipowning community. The Danish manufacturer is already the leading supplier of two-stroke propulsion plant to the yards in Turkey, most of which are clustered around Tuzla Bay, and mercifully unscathed by the horrendous, recent earthquake.

The new L27/38 four-stroke type, spanning the 2,775-4,160 bhp power band, augments and complements the range of machinery and comprehensive propulsion systems produced by the northern Danish bastion of marine engineering. The first seagoing reference in a propulsion application will be a six-cylinder model for an Icelandic deepwater fishing vessel ordered from a Chinese yard.

Besides the latest four-stroke project, Alpha's Turkish ties are also currently manifested in L35MC and S35MC two-stroke engines for chemtanker newbuildings. As a fresh endorsement of recent years' investments in new assembly and test facilities at the Frederikshavn factory, it has lately won an order for two further engines of the 7S50MC-C type, almost the largest that can be built in Denmark today, for fitting in 37,500 dwt chemtankers under construction at a Norwegian yard.

Since 1989, when it rolled-out its first small-bore MC-series engine, the Alpha works has delivered and contracted a total of 120 two-stroke engines. As the result of the bolstering of capacity, it can now supply single units of up to 17,160-bhp. Alpha thereby provides MAN B&W's two-stroke design fountainhead in Copenhagen with direct recourse to current production know-how in-house, rather than being wholly reliant on licensees' manufacturing expertise.

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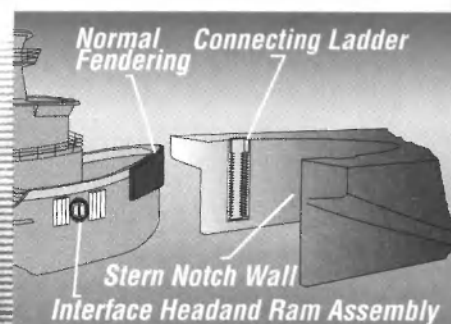
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	Beam, molded	40 ft
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	Draft	29 ft
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	Design speed combined unit	11 knots



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Offshore shares driving the Oslo market

Share prices in Oslo rose in August for the sixth consecutive month, and can thus show for positive share price move-

ments for 7 out of 8 months so far this year. While the All Share Index gained another 2.4 percent in August, the Ship-

ping Index was a little behind with a 1.4 percent increase. Shipping and Offshore shares are up 43.2 percent for the year.

The oil price continued to rise in August. For the first time since October 1997 North Sea oil for immediate delivery (Brent spot) was traded at more than USD 21 per barrel, doubling the oil price since January.

Oil-related shares are obediently following the oil price with the value of offshore shares on the Main List rising 11 percent in August after the July rise of 20 percent. TGS Nopec (TGS), Det Søndenfjeldske (SFJ) and Fred. Olsen Energy (FOE) all added more than 17 percent to their value in August.

Three offshore shares, all on the SMB List, fell dramatically more than the rest of the offshore segment during the month. Petrolia Drilling (PDR), performed the worst with a drop of 19 percent following the publication of second quarter results. Also Havila Supply (HAV) and Ocean Rig (OCR) fell more than 10 percent for the period.

Shipping shares could not keep pace with the offshore sector during August, but Bergesen (BEA and BEB) performed well with a rise of more than 7 percent in its class A shares and 6.5 percent in its class B shares. Swan Reefer (SWR) rose all of 20 percent, but the share was traded in very thin volume during August.

The market reacted negatively to the second quarter results of Jinhui Shipping and Transportation (JIN), sending its share price down by more than 11 percent for the month. Physical damage to one of the cruise ships of NCL Holding (NCL) following a crash with a container ship contributed to a fall of 5 percent in its share. Also Frontline, the tanker company, fell by just over 4 percent. Bona Shipholding (BSH) was delisted on August 25 following the merger with Northwest Maritime Inc., a subsidiary of Teekay Shipping Corporation.

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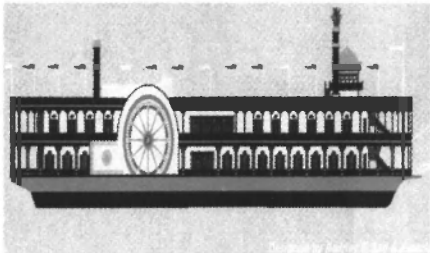
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Winners this month:		
Shipping	List	Change
Swan Reefer	SMB	+ 20.0%
Ganger Rolf	Main	+ 9.8%
Bergesen A	Main	+ 7.3%
Bonheur	Main	+ 6.8%
Bergesen B	Main	+ 6.5%
Offshore		
TGS Nopec Geophysic	Main	+ 20.4%
Det Søndenfjeldske	Main	+ 19.1%
Fred. Olsen Energy	Main	+ 17.1%
Smedvig B	Main	+ 15.8%
Nortrans Offshore	SMB	+ 15.0%
Losers This Month		
Shipping	List	Change
Jinhui Shipping & Tr.	Main	- 11.6%
Wilh. Wilhelmsen A	Main	- 7.1%
Wilh. Wilhelmsen B	Main	- 6.7%
Leif Høegh & Co.	Main	- 5.7%
NCL Holding	Main	- 5.0%
Offshore		
Petrolia Drilling	SMB	- 19.3%
Havila Supply	SMB	- 14.4%

Alabama Shipyard To Build New Casino Vessel



Alabama Shipyard and Hollywood Park have signed a contract to construct a casino vessel for the Belterra Resort and Casino in Switzerland County, Indiana. Known as a diversified gaming company, Hollywood Park received the last available license to conduct riverboat gaming operations on the Ohio River in September 1998. The 14th casino vessel to be built by Los Angeles-based Hollywood Park, the vessel measures 370 ft. (112.7 m) with a beam of 104 ft. (31.6 m) - making it one of the largest casino vessels in operation. Designed by Rodney E. Lay and Associates, the casino boat, which is to be delivered in July 2000, will feature 1,800 gaming positions.

Main Particulars

Length (o.a.)	370 ft. (112.7 m)
Length (hull)	330 ft. (100.5 m)
Beam (hull)	93 ft. (28.3 m)
Beam, (overall)	104 ft. (31.6 m)
Depth (molded)	16 ft. (4.8 m)
Draft	8 ft. (2.4 m)
GT	under 4,000
Passengers & crew	3,000

Halter And Friede Goldman Amend Merger Terms

Halter Marine Group and Friede Goldman International have agreed to amend the terms of their proposed merger due to developments related to a contract dispute with a significant customer, as previously disclosed by Friede Goldman. Under the revised merger agreement, each Halter share will be converted into 0.57 of a share of Friede Goldman. The closing under the revised merger agreement will also be subject to the arrangement to bank financing for the combined company on terms mutually agreeable to Halter and Friede Goldman. Announced on June 1, the merger proposal originally provided for the exchange of 0.4614 of a Friede Goldman share for each Halter share. The boards of directors of both companies have approved the revised merger terms, and the investment banking firms representing the two companies have delivered fairness opinions based on the revised terms. The merger is expected to close the merger early in 4Q 1999.

Cascade General Performing Repairs To Bulk Carrier

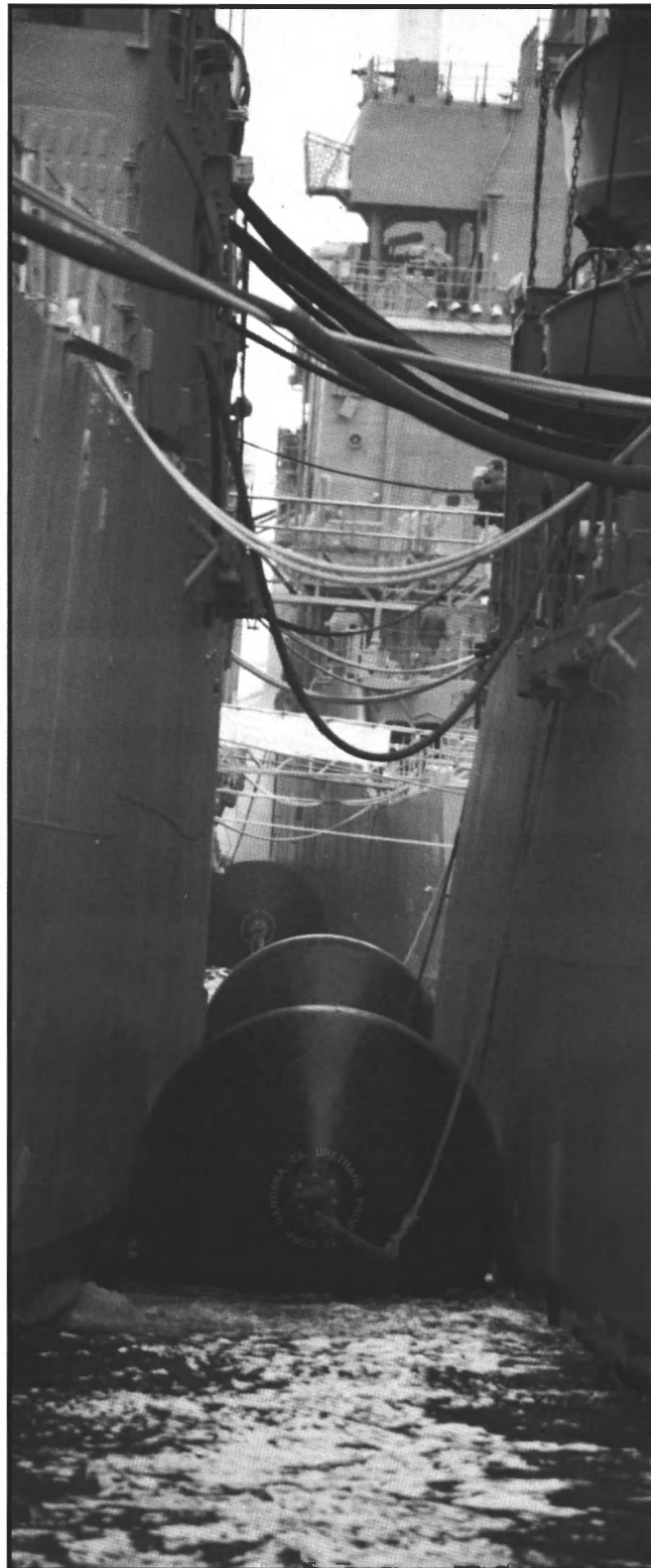
During its run along the Columbia River to unload steel in Vancouver, Wash., a 568 ft. (173 m), 36,788-ton Turkish bulk carrier, Cenk Kaptanoglu collided with the BHP dock in Kalama,

Wash., sustaining damages to its bow and port side.

Running from the starboard hawse pipe to diagonally across the bow to the portside of number one hold, the force of the damage's impact also partially collapsed the port side of the foredeck.

Following emergency patching and

partial discharge of cargo, the injured vessel underwent an exhaustive survey, in addition to further consultations between the United States Coast Guard (USCG) and Kapatanoğlu Shipping Group, which resulted in the carrier being moved to the Cascade General shipyard.



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CSAV Expects to Save \$54K Per Vessel During Test

After a two-year test using Mobilgard 570® cylinder oil, Mobil and the Chilean shipping company Compania SudAmericana de Vapores (CSAV) report that the cylinder-oil feed rate aboard two of CSAV's reefer vessels can be reduced by 40 percent when the Mobil product is used — with no difference in the liner wear rates. In addition, the evaluation resulted in oil consumption savings of \$54,148 per vessel for CSAV. The full two-year test was conducted aboard two 13,099-dwt. reefers powered with MAN B&W 6S 50MC two-stroke crosshead engines. When engineers from CSAV and Mobil compared Mobilgard 570 and another product's performance after 6,791 hours of operation, they found the Mobil product provided very good liner wear control with cylinder oil feed rates close to 40 percent lower than the engine maker's recommendations.

The test results showed the average liner wear rate for both Mobilgard 570 and the competitive oil after 6,791 hours was .02 mm per thousand hours. Based on the results achieved on the two reefers, CSAV expects to save \$54,000 on oil consumption per vessel, with wear rates similar to those achieved with the other product.

"Our objective is to optimize our customer's vessel performance so that

engines operate cleanly and efficiently, enabling our customer to save money on lubricant-related maintenance in the process," says **John ReShore**, Americas marine technical manager of Mobil Marine. "When your cylinder oil is formulated to produce exceptional results, this naturally yields substantial savings." The test on the two vessels is in keeping with the company's cost-conscious fleet maintenance philosophy. "For us, downtime is out of the question," says fleet manager **Ajoy S. Choudhury**. "We have a preventative maintenance plan in which cost, service and product quality are the key factors. Saving \$54,000 per vessel over a two-year period is significant to us." Such concern about maintenance goes back a long way at CSAV, which is headquartered in Valparaiso, Chile's major seaport. The company is the world's third-oldest privately held shipping company. It was founded in 1872, the result of a merger between two other Chilean shipping companies. Today, CSAV has a total of 18 vessels, with an oceangoing fleet aggregate of 344,297 dwt. The fleet includes containerships, reefers, bulk carriers, chemical and general cargo ships, modern car carriers and an open-hatch pulp carrier. Through a subsidiary, it also owns a fleet of 12 tugboats. Such a diverse fleet allows CSAV

to handle a broad range of products. Among other things, it is the largest carrier of Chilean copper, the country's leading export money-maker, and the largest carrier of Chilean fruit, most of which is shipped to the ports located on the east coast of the United States for distribution nationwide.

Mobil is a leading supplier of marine lubricants. According to the oil company, Mobilgard 570 is specially formulated to reduce wear and scuffing in large bore, two-stroke crosshead engines. These engines demand a lubricant that can combat wear and corrosion despite the challenges of higher temperatures, greater pressures and significant increases in the stroke to bore ratio—and the drive by shipowners to optimize cylinder oil feed rates.

Mobil says that Mobilgard 570 is made with carefully screened heavy neutral base stocks and a globally consistent additive system. It contains little or no bright stock.

In addition to sea trials, such as the one aboard the two reefers, Mobilgard 570 are rigorously tested in the Explorer, Mobil's full-scale Sulzer six-cylinder 380mm bore RTA 38 crosshead diesel test engine located in Gravenchon,



Mobil Marine Sales Engineer **Patricio Carballo** and CSAV Chief Engineer **Jorge Saez** in front of purifier. Mobil works with CSAV to optimize vessel performance, enabling the Chilean shipping company to save money on lubricant-related products.

France. This one-of-a-kind laboratory allows Mobil to fully test the properties of cylinder oil formulations and measure the impact of variations in engine operating conditions.

In the case of the two reefers, extensive testing of the engine wear included ongoing examination of used engine oil through Mobil's Progressive Fast Analysis (PFA) program. The global used-oil analysis program can gauge engine wear and predict equipment failures by measuring metals and other impurities introduced into the oil. "We will continue working with CSAV to reduce feed rates and extend liner and piston ring life on other vessels in the fleet," says Mobil Marine's ReShore. He adds: "Whatever a customer's needs, we are there to work with them to optimize vessel performance and save them money. Our customers expect nothing less."

Circle 63 on Reader Service Card

Podded Propulsion Selected For AMCV Cruise Ships

Ingalls Shipbuilding has selected Kamewa and Alstom Drives & Controls to supply Mermaid electric propulsion systems for two cruise liners, with an option for a third, for the shipowner America Classic Voyages. These vessels are the first cruise ships to be built in the U.S. for a number of years. Each ship will be equipped with two Mermaid-propulsors, each with a rated power of 12.5 MW. The Mermaid system is jointly developed by Kamewa and Alstom with Kamewa responsible for hydrodynamics and Alstom for the electric drive. The new order also includes power generation and high voltage distribution from Alstom Drives & Controls.

The first ship is scheduled for delivery in the beginning of the year 2003.

Circle 176 on Reader Service Card

ResidenSea Contract Signed

Although the end product will be smaller than originally planned, the contract to build the world's first ocean-

going luxury resort was signed late last month, and is scheduled to be afloat late in 2001. ResidenSea was reportedly able to secure financing with a scaled back ship design — 40,000 tons at \$350 million from an initial 86,000 tons at \$545 million — and has signed a contract with Norway's Fosen Mek. Verksteder AS. Germany's Howaldtswerke-Deutsche Werft was originally closely tied to the project, but delivery schedule availability made the Norwegian option more attractive in the end.

Carnival Cruise Lines Founder Dies

Ted Arison, founder of the world's biggest cruise line, died earlier this month in Tel Aviv at the age of 75.

Arison was listed in *Forbes* magazine as one of the world's richest men. He assumed management of a passenger shipping company in Miami in 1966, and started Carnival Cruise Lines in 1972 after buying his first liner, Mardi Gras. Carnival Corp. is now the world's biggest cruise operator, with 45 cruise ships and lines that include Cunard and

Holland America. Arison's son Micky is chief executive of Carnival.

Szczecin Shipyard Gets Ship Order

Poland's Szczecin shipyard late last month reportedly signed a contract for seven 722-ft. (220-m), 3,100-TEU, 42,300-dwt container vessels ordered jointly by Chilean firm Compania Chilena Sud America de Vapores (CSAV) and German company Peter Dohle Schiffahrtsgesellschaft GmbH & Co (PDS).

MGI Trains With Code Red Mariner

Since its incorporation in 1996, Code Red Mariner (CRM), the marine training affiliate of MGI International Marine Safety Solutions, has innovated total marine training solutions by mixing interactive multi-media courseware with hands-on practical training taught by an instructor.

Fulfilling its objective of comprehensive and customized marine safety training at lowered costs through computer

based training (CBT), CRM utilizes 2D and 3D animation, graphics, 3D simulation screens, digital video and quality audio. These features facilitate a self-taught system where the student studies procedures in an already familiar marine environment.

CRM illustrates real-life scenarios such as life raft launching and marine evacuation chute simulations through interactive custom kiosks, which consist of a flat panel touch screen, headphones and a card swipe unit. The program also includes ongoing quiz questions and exams at the end of each lesson.

The development of course curriculums, along with installation of hardware and software, and training can be managed by CRM. The student training record database is kept in an onboard kiosk, which is accessible to the master, human resources or specified personnel, can also be integrated with already existing business management software both onboard or at a remote location.

Circle 177 on Reader Service Card

For more on Marine Simulation Training, see story on page 31.

Marine Finance

Coflexip Stena Orders New Ultra Deepwater Drillship

Coflexip Stena Offshore came to an agreement with Hyundai Mipo Dockyard for the construction of its newbuild ultra deepwater pipelay and construction vessel, scheduled to begin operations in the second quarter 2001.

The future multipurpose vessel, which will be named later on, is designed for subsea construction and for laying rigid and flexible pipe and umbilicals down to 2,500 m. The newbuild will offer a wide range of capabilities covering subsea construction and installation in any deep and ultra deepwater fields in West Africa, the Gulf of Mexico and Brazil.

Groupe Desgagnes Expands Fleet

Group Desgagnes marked the Canadian registration of a new oil tanker purchased in China, as well as a Russian vessel purchased in August 1996. Constructed in China at the Qiu Xin shipyard in Shanghai, Maria Desgagnes is a technology-driven double-hulled, ice class 1A, type 2 oil and chemical tanker that can carry 12 types of cargo at once. Featuring a total capacity of 15,570 cu. m. and measuring 394 ft. (120 m) in length, the vessel will be chartered by Petro-Nav for the development of bulk liquid transport side of the business. Groupe Desgagnes also recognized the Canadian registration of M/V Anna Desgagnes (formerly Truskavets), a Russian ship acquired in late 1996. This ice class 1A ship is powered by a 10,330-bhp engine and has a total capacity of 24,935 cu. m.

Alton Belle Undergoes Conversion

M/V Alton Belle, the former 156 ft. (47.5 m) casino vessel is being converted to dinner cruise service by Cape Fear Riverboats of Wilmington, N.C. Renamed Henrietta III, the vessel's engineering will be completed by DeJong & Lebet Naval Architects. The vessel operated for several years in Alton, Ill. after undergoing a lengthening and conversion for casino service in 1991. This conversion will be DeJong & Lebet's second casino into dinner vessel conversion — the first was for Celebration Cruises' Joe Schadler, which was later renamed Celebration Belle.

Baltimore Marine Industries Awarded Various Contracts

Baltimore Marine Industries (BMI) has been granted several new contracts for ship work, including one valued at more than \$2 million for the drydocking

and maintenance of USNS Butte, an ammunition ship from the U.S. Navy's Military Sealift command fleet. Other contracts include: drydocking and maintenance of Carnival Cruise Line's MS Imagination (\$500,000); drydocking and overhaul of USNS Kanawha, a Military Sealift Command fleet oiler \$3

million); drydocking and maintenance of Princess Cruise Lines' MS Royal Princess (\$1 million); and the drydocking and maintenance of Maersk Line's Maritime Prepositioning Ship (MPS) M/V CPL. Louis J. Hauge (the \$3 million contract also provides for work on each of three additional MPS vessels).

Con-Tech Granted Contracts From Nigerian Navy

Con-Tech Power Systems has been awarded contracts from the Nigerian Navy for engineering and products required for the Naval vessel NNS Ofiom.



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Circle 311 on Reader Service Card

October, 1999

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Marine Finance

LR Wins LNG Carrier Contract

Lloyd's Register (LR) was granted a contract to class the first two export LNG carriers from Korea. The contract, with Hyundai Heavy Industries, Ulsan calls for two 138,000 cu. m. LNG Carriers under construction for Bonny Gas Transport of Bermuda.

LR's surveyors and specialists in Korea and LR's London headquarters will verify that the construction of the ships, cargo containment systems and all materials and critical components comply with LR's Rules for Ships for the Carriage of Liquefied Gases and the IMO IGC Code. As part of an ongoing

process, Lloyd's will also monitor the ship and cargo containment system production at HHI's Ulsan shipyard.

Main Particulars

Classification	Lloyd's Register
Length (b.p.)	899 ft. (274 m)
Cargo capacity	138,000 cu. m.
Speed	20 knots

Recent Ship Sales

Type	Name	YB	DWT	\$M
Bulker	Moorland	1985	37,916	\$7.30
Bulker	Global Bridge	1985	23,500	\$5.10
Bulker	Great Concert	1977	16,488	\$114/ldt
Bulker	Yannis K	1972	27,170	\$124 /ldt
Bulker	Elisa P	1968	82,445	\$126/ldt
Bulker	Georgios P	1968	82,325	\$126/ldt
Bulker	Gloria	1976	5,650	\$99/ldt
Bulker	Oriental Nova	1996	70,108	\$18.20
Bulker	Sea Success	1987	69,755	\$9.80
Bulker	Azusa	1994	45,210	\$15.80
Bulker	Fruition	1978	44,600	
Bulker	Devotion	1978	44,700	\$9
Bulker	Unison	1978	44,700	\$9
Bulker	Lautan Star	1993	69,616	\$14.30
Bulker	Chennai Nermai	1983	n/a	\$5.20
Bulker	Stellar Venus	1986	69,611	\$9.30
Bulker	Western Rams	1983	45,575	\$7.30
Bulker	Great Glen	1981	27,139	\$3.30
Bulker	Prabhu Parvati	1983	41,425	\$6.35
Bulker	Star Nitsa	1983	36,94	\$6
Bulker	Sea Winner	1997	28,426	\$14.20
Bulker	Dianne Green	1982	12,334	\$3
Bulker	Eiko Maru No.8	1992	5,400	\$2.10
Bulker	Glenita	1984	43,381	\$8.30
Bulker	Great Prize	1980	27,188	\$3
Bulker	Yvonne	1977	23,791	\$1.7
<i>(with SS recently passed.)</i>				
Bulker	Ma Quan Hai	1985	41,400	\$32
<i>en bloc</i>				
Bulker	Ma Shan Hai	1985	41,400	\$32
Bulker	Ma Long Hai	1984	41,400	\$32
Bulker	Ma Guan Hai	1984	41,400	\$32
Bulker	Pandias	1984	40,907	\$8.20
Bulker	Bugaz	1981	34,000	\$3.50
Bulker	Mina S	1982	25,530	\$2
Bulker	Vini	1977	15,200	\$1.30
Bulker/	Monterrey	1989	41,828	\$30.9
<i>en bloc</i>				
Container	TMM Oaxaca	1988	41,828	
B/C	Morelos	1987	41,828	
Containership	APL Emerald	1980	47,841	\$9
<i>(combined with 3-4 years timecharter back at \$18,000 daily)</i>				
Containership	APL Ivory	1980	47,841	\$9
<i>(combined with 3-4 years timecharter back at \$18,000 daily)</i>				
General	Lobo del Mar	1982	17,350	\$1.75
Ore	Taharua	1978	128,636	\$130/ldt
RoRo	Island Comm.	1995	5,215	\$25
Ro-Ro	Bribir	1979	7,478	\$1.10
Tanker	Monte Rotondo	1969	n/a	\$70/ldt
Tanker	Sarpindo	1979	16,319	\$5.6
<i>en bloc</i>				
Tanker	Sarpindo Prib.	1979	16,319	\$5.6
Tanker	Sarpindo Palapa	1979	16,319	\$5.6
Tanker	Acila	1982	n/a	\$7.90
Tanker	Leng	1986	10,628	\$11.90
Tanker	Sitara	1991	29,999	\$24
<i>en-bloc</i>				
Tanker	Sininni	1991	29,999	\$24
Tanker	Seletar	1983	10,885	\$3.50
Tanker	Delos	1974	277,748	\$130/ldt
Tanker	Ascension	1976	60,810	\$2.50
Tanker	Sanko Paragon	1992	96,136	\$19.20
Tanker	St. Katherinen	1999	37,000	\$27.5
<i>(with 3 years (option of further 2 years) timecharter to Oetker at \$15,000 daily and \$15,500 daily respectively)</i>				
Tanker	Hawaiian King	1974	91,007	\$126/ldt
Tanker	Alandia Force	1976	155,500	\$128/ldt
Tanker	Mega Sun	1975	135,900	\$129/ldt
Tanker	Oceanic	1976	87,076	\$129/ldt

Source: Recent Ship Sales courtesy of Shipping Intelligence, contact Sidney Levine @ tel: (212) 997-0966 & Reuters

Get Ship Sales information EVERY WEEK - subscribe to MARITIME WEEK. E-mail: rivera@marinelink.com for a FREE TRIAL COPY

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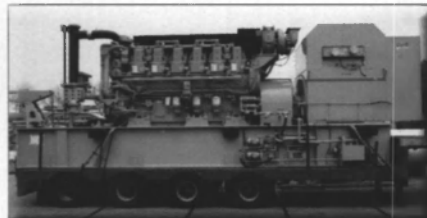
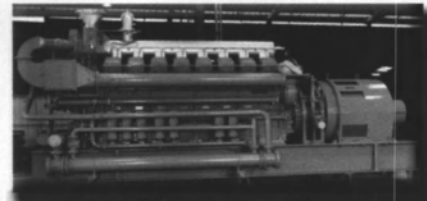
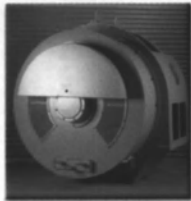
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Four Yards Get T-ADC(X) \$1.5 Million Packages

The next step in one of the most sought after Navy procurement projects has been taken, with four U.S. shipyards receiving a \$1.5 million study contract for the first phase of the U.S. Navy's Auxiliary Dry Cargo Carrier T-ADC(X)

Program. The four yards are NASSCO, Halter, Litton and Avondale.

The T-ADC(X) program, which is a new class of Dry Cargo Carrier auxiliaries for the U.S. Navy's Combat Logistics Force, is intended to replace

the Navy's aging Combat Stores Ships and Ammunition Ships that have exhausted their service runs.

NASSCO is one of the four competing shipyards to be granted a contract for Phase I of the program. During this

phase, each shipyard team will conduct trade-off studies and analyses to design an improved cargo handling system, which will require fewer people to operate and maintain over the life of the system.

The contract for Phase II, the Detailed Design and Construction of up to 12 ships will be awarded during 2000.

MacGregor Wins \$6 Million Equipment Order

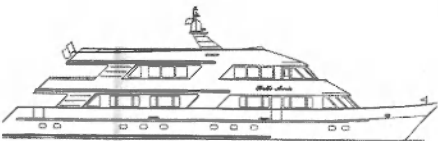
MacGregor was granted a contract from Aker Finnyards worth more than \$6 million for RoRo equipment and an outfit of six elevators to serve Irish Ferries' RoPax newbuilding.

Measuring 682 ft. (208 m) with a beam of 102 ft. (31 m), the 50,000-gt RoPax also features more than four km. of car/truck lanes. Scheduled for a January 2001 delivery, the vessel will be the largest ever built by Aker.

MacGregor's Passenger Ship Division is supplying six elevators - one scenic, three other passenger elevators and two service units.

Circle 48 on Reader Service Card

Horizon To Build Dinner Cruise Vessel



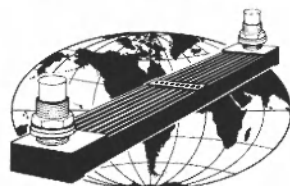
Horizon Shipbuilding has signed a contract for the construction of a 135 x 32 ft. (41.1 x 9.7 m) dinner cruise vessel for an unnamed client. Scheduled for a March 2000 delivery, construction of the vessel commenced at Horizon's Bayou LaBatre, Ala. facility. Designed by A.K. Suda Naval Architects and Marine Engineers, the vessel will be certified to U.S. Coast Guard Subchapter K regulations for vessels under 100-gt. Twin Caterpillar 3408 diesel marine turbocharged engines will power the vessel.

AMCV Awards Columbia Queen Contract

American Classic Voyages (AMCV), granted a \$6.4 million contract for construction completion and outfitting on Columbia Queen to Nichols Brothers Boat Builders of Whidbey Island, Wash.

The 161-passenger U.S.-flag riverboat, which will be readied by Nichols for service on the Columbia River system, will be operated under The Delta Queen Steamboat brand. Offering Pacific Northwest cruises beginning April 2000, Columbia Queen will travel the Columbia, Snake and Willamette rivers.

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Intertanko Applauds U.S. Supreme Court Action

On Friday, September 10, 1999, the United States Supreme Court issued a writ to the federal appellate court that reviews decisions in the western U.S. directing a review of that court's disposition of litigation challenging tanker regulations imposed by the State of Washington. INTERTANKO had petitioned the Supreme Court for issuance of the writ.

The challenged Washington State regulations imposed on U.S. and foreign tankers carrying oil in Washington waters a number of unique regulations governing on-board equipment, technology, crew training and qualifications, and operational requirements. INTER-

TANKO brought suit in 1995 challenging these rules as being constitutionally invalid given the substantial federal presence in the same areas of regulation. INTERTANKO also contends that the proliferation of variable local regulations governing vessel safety and environmental protection places at risk the international safety system that requires harmony among maritime nations - ultimately jeopardizing the natural environment that Washington State seeks to protect.

Based in San Francisco, the Ninth Circuit Court of Appeals, found in favor of INTERTANKO's attack on the State's equipment and technology rules, but

allowed the State of Washington's efforts to impose differential regulations on vessel manning and operational requirements.

INTERTANKO sought Supreme Court review of that portion of the appellate court's decision that left discretion to the State and was supported by the U.S. Government.

"We are most pleased with the Supreme Court's decision to review this important matter," said **Dagfinn Lunde**, the managing director of INTERTANKO.

"Very few cases receive Supreme Court scrutiny and we view this action as a concurrence with INTERTANKO's

assessment that state and local actions in the field of vessel safety present, at a minimum, serious constitutional issues in the U.S. federal scheme."


He added: "Moreover, if the individual states and localities can unilaterally secede from the demanding federal and international standards that the U.S. and other maritime nations, along with activist organizations like INTERTANKO, have promoted, all the progress we have made over the past twenty years is at risk."

The Supreme Court directed that the matter be briefed and argued on an expedited basis, with oral argument to be heard in early December.

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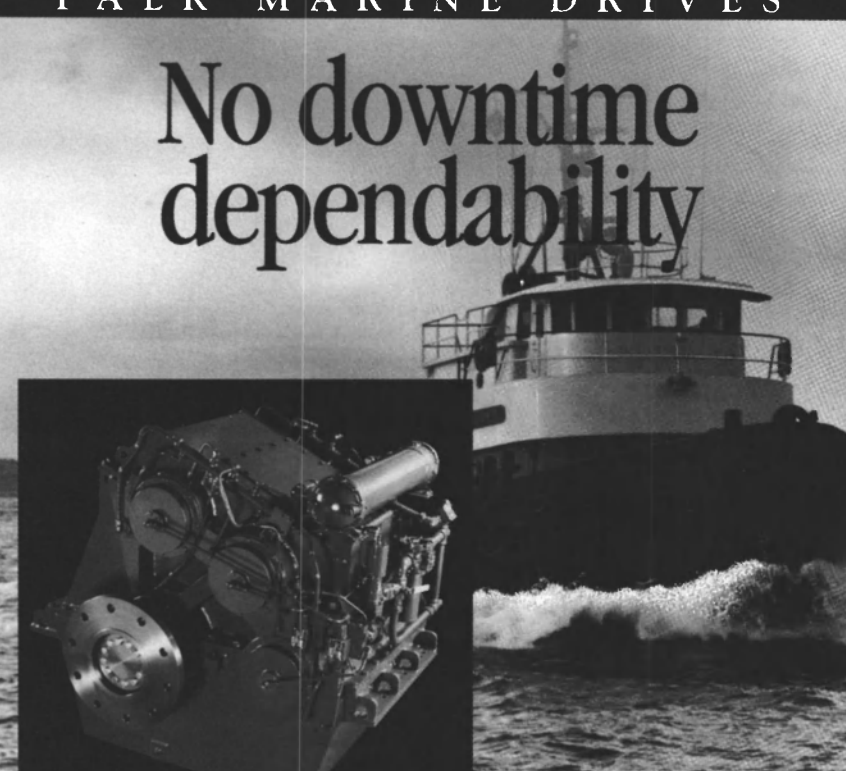


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Circle 235 on Reader Service Card

Authorization Conferees Support Navy, Shipbuilders

The Conferees on the Defense Authorization Bill, S.1059, for fiscal year 2000 wrapped up their conference after providing "Extended Lease" authority of 20 years or more to the Secretary of the Navy for the services of non-combatant ships, and rejecting an attempt by Senator **John McCain** (R-AZ) to repeal the three-year waiting period before foreign-built ships are eligible to carry preference cargo. The House Armed Services Committee has been working for three years to provide the Secretary of the Navy the authority to enter into long-term leases of the services of newly constructed non-combatant ships as an alternative to procuring the ships in the Shipbuilding and Conversion Account. This effort, championed by Representatives **Herb Bateman** (R-VA); **Neil Abercrombie** (D-HI); **Duncan Hunter** (R-CA); and **Norman Sisisky** (D-VA), had failed to receive the support of the Senate until this year when Senators **Olympia Snowe** (R-ME); **Mary Landrieu** (D-LA); and **Trent Lott** (R-MS) lent their support to the measure.

Section 1014 of the House Armed Services Committee bill, H.R. 1401, will give the Secretary of the Navy the authority to lease commercial type ships required to meet a multitude of DOD missions if the Secretary can demonstrate to Congress the merits of leasing rather than purchasing.

Congressmen **Herb Bateman** (R-VA) and **Gene Taylor** (D-MS) led the charge in the House to prevent a proposal by Senator **John McCain** (R-AZ) from being enacted in conference that would have repealed the three-year waiting period before foreign-built ships were eligible to carry government food aid. The overwhelming opposition to this proposal by the House, and Senators **John Warner** (R-VA), Chairman of the Armed Services Committee, **Olympia Snowe** (R-ME); and **Rick Santorum** (R-PA) speaks volumes to Congress' commitment to a strong shipbuilding industrial base and U.S.-flag merchant marine as dedicated transportation providers of taxpayer food aid to countries in need.

Excerpted, in part, from the Sept. 3, 1999 edition of American Shipbuilder, which is published by the American Shipbuilding Association.

McCain Introduces New PSA Reform Bill

Senate Commerce, Science and Transportation Committee chairman **John McCain** (R-AZ) introduced S.510 - The U.S. Ship Tourism Development Act of 1999. If enacted, S.1510 would repeal the Passenger Vessel Services Act

(PVSA), which requires passengers transported between U.S. ports to be moved on U.S.-built, crewed and owned vessels. If implemented, this bill would allow the Secretary of Transportation to issue a permit allowing foreign-flag vessels to carry passengers between U.S. ports for up to 200 days per vessel. The Secretary also has the authority to issue these permits for three years, thus giving these foreign-flag vessels until Decem-

ber 31, 2006 to utilize their 200 days of U.S. coastwise trade operating privileges. The bill also enables permitted vessels to continue to operate in the U.S. coastwise trades after December 31, 2006 — only if the ship has been issued a certificate of documentation with a coastwise endorsement and all of the vessel's operating crew are U.S. citizens or resident aliens of the U.S.

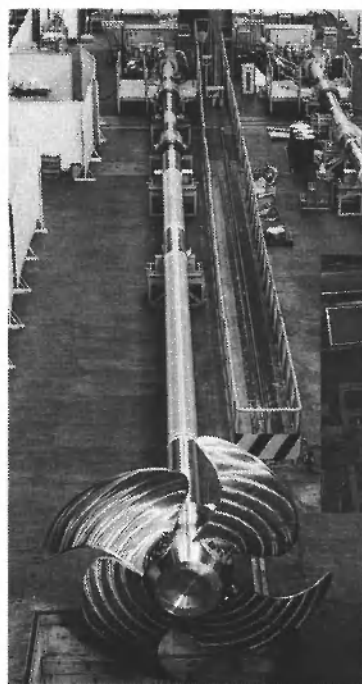
The prerequisite to receiving this cer-

tificate is that the operator of a foreign-built vessel must only demonstrate a plan to build a cruise vessel in the U.S., or that it has made substantial progress in establishing a contract to construct a cruise ship in the U.S. Included in this legislation are repair, maintenance, alteration or other preparation of the vessel for operation in the U.S. to be performed in a U.S. shipyard only after a permit to operate has been granted.

Kawasaki

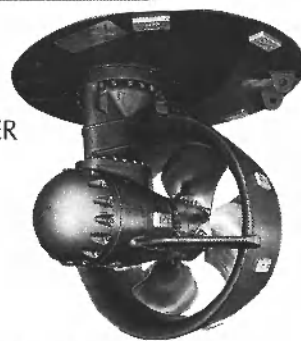
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Aspiring to provide excellent systems, Kawasaki, with a century-long experience, is continually researching and developing new propulsion systems.

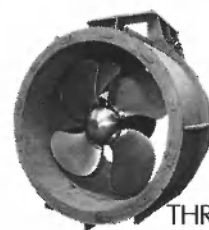


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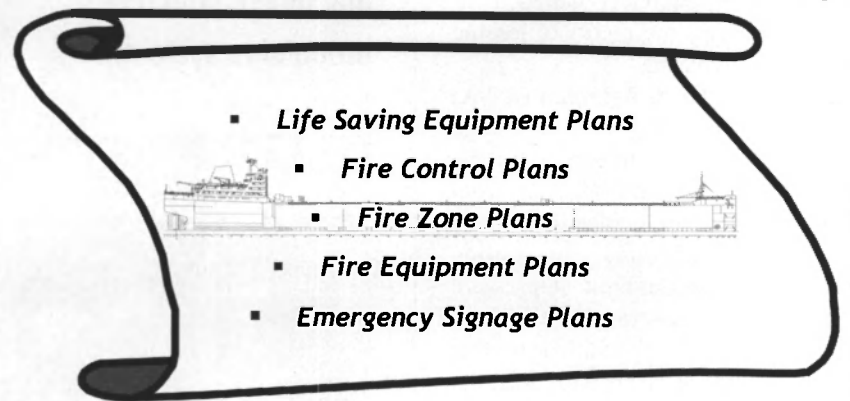
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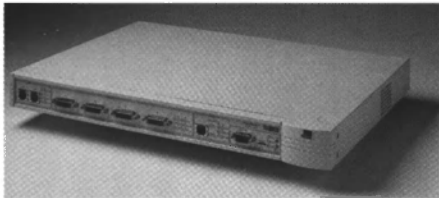
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USCG Uses 3Com Technology To Launch Virtual Private Networks



The U.S. Coast Guard (USCG) is deploying Virtual Private Networks (VPNs) based on 3Com's wide area network (WAN) systems). 3Com, which secures high speed communications between shore facilities and vessels docked at port facilities around the world, uses VPN connections. These connections allow the agency to quickly transmit mission-critical and pertinent administrative information from its land-based location to ships at any port where USCG vessel dock.

The process, which was first utilized in June on the cutter Dependable, will soon be branched out to all of the USCG's 250-plus vessels. Based on 3Com's SuperStack II NetBuilder SI routers, the \$1.1 million investment follows the implementation of the Standard Workstation III Local Area Network (LAN) Cabling Project that occurred last year. At that time, the agency introduced 3Com Fast Ethernet networks to its complete fleet, as well as many land-based facilities.

In addition to its high speed solution, the premier system is formatted to a tee of the specifications of the agency's Telecommunications and Information Systems Command (TISCOM) in Alexandria, Va. and is compatible with Microsoft Windows NT systems.

Working with TISCOM to understand the requirements of ship-to-shore connectivity, 3Com developed a solution via its proven VPN, which was equipped with all the USCG requirements. The two companies worked together in the simulation of the ship-to-shore and

WAN environment at TISCOM with three SuperStack II NetBuilder SI routers demonstrating the routers' tunneling capabilities. Following, the USCG performed a successful live pre-

sentation on Dependable, which subsequently led to TISCOM's purchase of 3Com VPN systems.

Although ships currently must be docked for a VPN to be implemented,

the USCG is looking into outlets for possible underway ship-to-shore connectivity and ship-to-ship VPN connections.

Circle 50 on Reader Service Card

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For more information, just call Chris Orth at 713.967.6345 or e-mail houston@fwav.com. We'd like the opportunity to guide you through the economics of OPA '90 compliance.

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McNeel Introduces New Version

Robert McNeel & Associates presented its newest ware - Rhinoceros (Rhino) 1.1, a new version of the company's NUBR (non-uniform rational B-spline) modeler for the Windows platform. Available later this fall, Rhino 1.1 is a conceptual design and modeling tool for industrial, product and scene designers; while bringing accurate, free-form curve, surface and solids modeling to demanding users. Resulting from its accuracy and ease of modeling free form curves, surfaces and solids, Rhino is an efficient companion to many CAD, CAM, CAE, 3-D, digitizing and rapid prototyping products.

Circle 56 on Reader Service Card

Software Solutions

Project Teams To Receive New Software Version

A more user-friendly version of the Navy Systems Support Group's (NSSG) Advanced Industrial Management (AIM) software used by naval shipyard project teams was released by the Group

on August 12. NSSG released the Windows NT version of AIM, available to all shipyards, which will train and test AIM NT before implementing it into production sometime before the end of October.

AIM NT replaces a UNIX-based software that had been in use by teams since

1994. The improved version should offer ease of tasks such as data entry and data manipulation — making them both faster and timelier. The program is also equipped with a comprehensive task-based help and computer-based training system, enabling users immediate accessible information and training.

The new system offers the familiar appearance that is present in other Windows NT software systems previously developed by NSSG such as AIM Xpress, MRQT and Supervisor's Desk. These four software tools are part of the AIM Suite of tools used to plan out depot maintenance projects from contract to closeout phases.

Xpress is designed for quick-turn-around ship repair and shipyard maintenance projects, while MRQT is utilized for the identification of a project's material requirements and SUPDesk can be used to enter time, attendance and work status information.

Designed to increase planning and execution efficiency by capturing and reusing planning information for joint operations and information exchanges across projects, more than 3,000 people are expected to use the AIM NT replacement to SCO BAIM software once it is installed at the four naval shipyards.

The software program, which took two years to develop and test, was designed using the Joint Application Design (JAD) method that engages system users interactively throughout the development process to maximize customer satisfaction, while minimizing design changes.

WNI Oceanroutes Introduces OceanWatch



WNI Oceanroutes has developed OceanWatch, its new online service to the maritime industry that integrates its complete fleet management system with real-time, interactive weather information. Previously, the maritime industry has utilized different software packages to track and manage fleet movements, schedules and weather conditions. With this new program, each separate software system is consolidated into one convenient service over the Internet. Its synthesized display of the latest fleet positions and weather information minimizes losses and cost delays that many shipping companies experience.

The product is also a useful source in offering ship managers the capability to plan and track ocean voyages and fleet movements while monitoring weather conditions anytime from anywhere around the world via the Internet.

In addition, OceanWatch offers enhanced services to meet these special



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McNeel Introduces

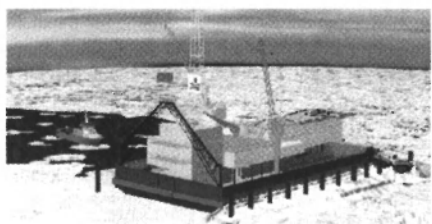
Latest Version

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Available later this fall, Rhino 1.1 is a conceptual design and modeling tool for industrial, product and scene designers; while bringing accurate, free-form curve, surface and solids modeling to demanding users. Resulting from its accuracy and ease of modeling free form curves, surfaces and solids, Rhino is an efficient companion to many CAD, CAM, CAE, 3-D, digitizing and rapid prototyping products.

Circle 56 on Reader Service Card

FTL Installs Drill Barge Monitoring System



Fleet Technology Limited (FTL) is completing the installation of an alarm system to monitor ice loads on a drilling barge for the Caspian Sea. In conjunction with Engine Monitor Incorporated Offshore, and Science and Technology Corporation, FTL has designed and integrated a data acquisition system to measure more than 150 channels of strain gauges, pressure transducers and environmental information. The software, which is customized by FTL, analyzes and stores the sensor information to provide a real-time ice load alarm system, giving the operator the ability to scan individual data channels in real time and set system alarms.

Since the year-round operating barge will be ballasted down onto a berm through which exploratory oil wells will be drilled, the potential ice loads on the drilling rig were a concern. The strain gauges measure the ice forces that are located on each major bulkhead, along with horizontal and transverse pressure transducers on the bottom of the rig. From these measurements, and measured rig/berm friction factors, the probability of the rig sliding or rotating is calculated.

Circle 58 on Reader Service Card

Anteon Subsidiary Releases FastShip Version Six

Analysis & Technology, a wholly-owned subsidiary of Anteon Corporation announced that its Proteus Engineering Unit is releasing an enhanced version of its FastShip design software. Since entering the technological scene

in 1983, FastShip is a full NURBS-based system used by shipyards, design firms, navies and universities worldwide. A unit of Proteus' FlagShip suite of ship design software; FastShip version six offers a hull form, appendage and superstructure modeling system. The package includes many new features, as well as a completely

redesigned icon-based user interface with dockable toolbars. This allows ease-of-use for new users and provides more efficient use for those who are already familiar with the program. Additional enhancements include real-time curvature measurements and a library of standard hulls.

Circle 57 on Reader Service Card



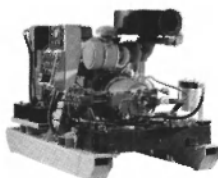
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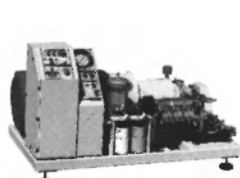


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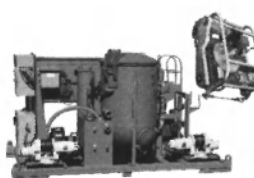
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Atlantic Marine Cuts Steel On AMCV Vessel

Atlantic Marine, Jacksonville, Fla., has accomplished its first cut of steel for its new fleet of 226-passenger U.S.-flag coastal ships, Delta Queen Coastal Cruises.

The steel cut begins construction for AMCV, who in May 1999, signed a \$60 million contract with Atlantic for construction of the first two vessels, as well as an option for a third. Measuring 300 ft. (91.4 m), the diesel-driven, coastal ships with nautical and Federal-style decor are scheduled to enter service in 2001 along the East Coast of America.

"This project is on a fast track," said **Scott Young**, executive vice president of AMCV and president of The Delta Queen Steamboat Co. "Four hundred tons of steel have been delivered to the shipyard and sub-assembly is underway on the vessel modules."

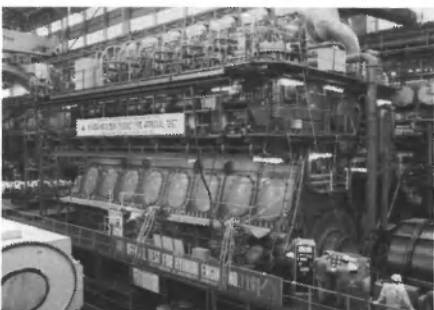
Circle 187 on Reader Service Card

Lokring Chooses W&O Supply

Lokring has chosen W&O Supply as its nationwide distributor of marine products. This venture, which allows Lokring to maintain its onsite customer service, also permits the company to continue to deal with its major ship-building customers throughout the U.S.

Circle 186 on Reader Service Card

First K98MC Engine Is Successfully Tested

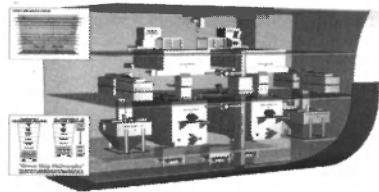


Earlier this year, MAN B&W's Korean licensee, Hyundai Heavy Industries began production of the first MAN B&W 7K98MC type engine. The structure was completed in August, precedent to an extensive prototype measurements that were taken to verify and record the calculations that formed the basis for the engine. Following successful completion of the prototype tests, results fulfilled all design targets for performance, heat load and stresses, as well as exhaust gas emissions.

Measuring 98-cm bore, the engine holds a catalog output of 7,780-bhp/cyl. With the first of its class powering a 4,800-teu container vessel for German owner Hapag-Lloyd, this 10-engine series, which will be followed by five 10-K98MC-C models, is scheduled for delivery in 1999-2000.

Circle 185 on Reader Service Card

Deerberg To Deliver Waste Management Systems



After three years of intensive negotiations, the Oldenburg Company Deer-

berg-Systems has been selected by the Royal Australian Navy to deliver waste management systems for two of the company's helicopter carriers. Utilizing modern waste management systems, the various waste quantities of up to 650 crew members undergo many different levels of treatment before being incinerated. Complying with the Green Ship Philosophy, Deerberg also abides by the environmental requirements such as Marpol V, USCG, USDA and EPA.

Michel Named VP Advanced Technologies

Global Industries has appointed **Drew Michel** to vice president of advanced technologies/business development. Michel, who joined Global in 1995 as vice president of deepwater technology, will continue to



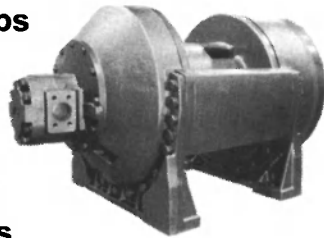
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Circle 309 on Reader Service Card

oversee the company's information technology and communications functions, in addition to assuming responsibilities related to business development.

DNV Opens Virtual Shipyard

Det Norske Veritas (DNV) opened the world's first virtual shipyard representing state-of-the-art within ship classification. Based on DNV's digital platform Nauticus, the program enables both

shipowners and shipyards with vitally upgraded access to relevant ship information. Established in the offices of the Technical University of Gdansk in Poland, the virtual shipyard aims to ensure efficient production of three dimensional graphical models as part of DNV's move towards active use of product models in ship classification. In the near future, product models will encompass all information related to classification during the lifetime of a ship, ensur-

ing optimal ship classification.

Circle 31 on Reader Service Card

OSL Forms Ballast Systems Alliance

OSL Offshore Systems & Deck Machinery has formed a business alliance to manufacture and supply turnkey ballast systems for offshore drilling and production rigs.

The alliance partners of OSL Offshore

Systems, Rotork Controls, FloTec and W&O forms a comprehensive organization that services the offshore industry with each group's strengths as leaders for process valves and value automation, integrated PLC controls and hydraulic power. The designs use proven technology that is superior to any system - technically speaking. The system continuously monitors the operational state of each of the valves as well as the overall system in real time, and is constructed to comply with all the latest certification requirements.

Mack Power To Market Diesel Engine

Mack Trucks will market its premier 12-liter diesel engine, the E7, as a power source for various industrial and marine market applications. The company's newest business unit, Mack Power, supports the marketing, sales, engineering, service and parts operations for E7's strategic move into several new market segments. An electronically managed engine, E7 will be available for the major industrial market segments of agricultural, construction, general industrial, material handling, pumps and compressors, and generator sets. Regarding the commercial and pleasure market marine segment, E7 will be offered in both E-Tech and mechanical models.

Circle 33 on Reader Service Card

Hvide Marine Announces Voluntary Chapter 11 Filing

Hvide Marine Inc. has submitted a voluntary Chapter 11 filing in the U.S. Bankruptcy Court in Delaware. This filing allows Hvide to operate its businesses in a regular fashion under court protection with adequate funding, while it continues discussions with representatives of specific major creditors and others on a restructuring plan that would deleverage its balance sheet, restore liquidity and enhance its competitive ability in the marketplace. To ensure liquidity throughout this period of reorganization, the Company has secured a new \$60 million debtor-in-possession (DIP) credit facility from its current bank syndicate, led by Citibank and BankBoston. Upon completion of this restructuring program, the Company expects to break off from Chapter 11 later this year or in early 2000.

Danos & Curole Reorganizes

Resulting from its recent Vision 2000 corporate reengineering, Danos & Curole has promoted **Dave McRae** to vice president of operations, and **Tommy Robichaux** to vice president of administration. McRae, who has been with the company for 17 years, previously served as labor division manager,

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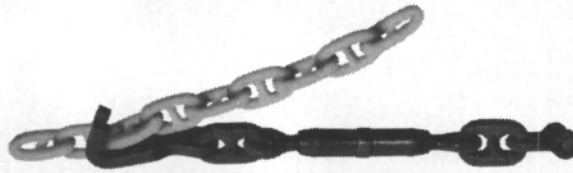
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Circle 306 on Reader Service Card

while Robichaux served as human resources manager before assuming his current position.

Urethane And Maritime International Complete Project

Urethane Products Corporation (UPC) and Maritime International finished a fendering project for the Alaska Railroad Corporation in Seward, Alaska.

Comprised of manufacturing and delivery of a Heavy Service Fender system for the Railroad's Cargo Dock Facility, specifically seven pieces of 3 ft. diameter x 12 ft. long Marine Guard Foam-Filled Marine Fenders. The product, which was constructed with heat laminated foam cores and a continuously wound filament tire cord reinforced non-marking gray urethane skin, also included 14 pieces of 48 in. O.D. x 24 in. I.D. x 48 in. long cylindrical rubber fenders.

Circle 34 on Reader Service Card

Keppel Hitachi Zosen To Buy Selected Businesses

Keppel Hitachi Zosen Limited (KHZ) has agreed to purchase the shiprepair/shipbuilding and related businesses of Keppel Marine Industries Limited (KMI) for \$167 million in cash. Total net assets include \$69 million, resulting in a gain of \$4 million for KMI. KHZ will acquire all of KMI's investments in Keppel Singmarine Dockyard Pte, Eagle Engineering Company (100 percent), Keppel Philippines Marine (11.6 percent) and Penguin Boat International (16.5 percent). Resulting from this acquisition, KHZ group will offer a full range of shiprepair, conversion and shipbuilding facilities.

Circle 35 on Reader Service Card

Tidewater Elects President

Tidewater Barge Lines, headquartered in Vancouver, Wash., has appointed **Stephen A. Frasher** as president and COO. Frasher, who holds an MBA from New York University, has 27 years of experience in the transportation industry, including time with Burlington Northern and Conrail.

Investment Firm To Create Focus Group

One of the nation's largest private equity investment companies will form a group focused specifically on investing and managing companies in need of management change or turnaround.

The new entity, Carlyle Management Group (CMG), is an affiliate of D.C.-based, The Carlyle Group. **B. Edward Ewing**, who is known for his record of turnaround management, currently serves as CEO of a Carlyle Company, U.S. Marine Repair (USMR). The

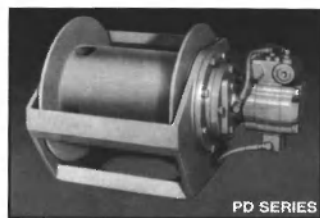
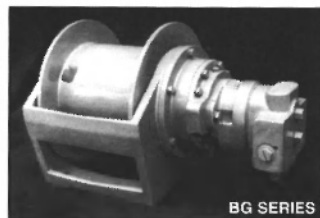
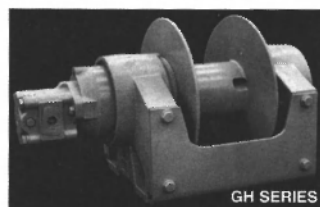
October, 1999

senior management team of this venture will include: **Raymond A. Whiteman** and **Dev Kapadia**, employees of the Carlyle Group; **Ted Beneski**, a former senior partner of Bain & Company; and **Daniel Ajamian**, senior VP for finance and CFO of USMR.

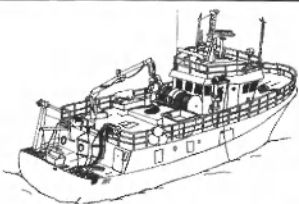
Strategically investing in ailing companies with strong market positions, Carlyle will be headquartered in Dallas.

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NNS Appoints Stabler

Newport News Shipbuilding named **Scott Stabler** to the position of vice president, assembly; and the retirement of **George Wade**, vice president of assembly, test and



trades. Stabler, who will be responsible for all assembly areas involved in the construction of carriers, submarines and overhauls, has been with Newport News since 1984. **George Wade** began his shipyard career as a designer in the Atomic Power Design Department. An employee with Newport News for 34 years, he retired on Sept. 1.

FGI And Ocean Rig To Settle

Friede Goldman International (FGI) has decided to arbitrate its differences with Ocean Rig ASA with respect to FGI's claim for additional costs and delay damages associated with the construction of two Bingo 9000 rigs in FGI's Pascagoula, Miss. shipyard. The company intends to avail itself of all

rights and remedies under the contracts with Ocean Rig while concurrently seeking collection of its claim in arbitration that was heard on Sept. 3.

Friede Goldman will pursue arbitration claims against Ocean Rig seeking compensation for contract changes and damages in excess of \$75 million, while Ocean Rig intends to seek liquidated damages and damaged at large for delay of up to \$28 million.

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Lang Manufacturing Appoints Various Positions

Lang Manufacturing has elected **Michael H. Beck** as vice president of sales and marketing. He will oversee the development of new business strategies and manage all sales, marketing and service efforts. **Stephen Rennick** was appointed director of training and corporate services. **Deanna Stearns** was named marketing manager, and will spearhead a target market customer analysis and develop an advertising program. **Mark Sparacio**, a six-year veteran of the company, has been promoted to national sales manager.

Foss Kit Meets California Regulations

Foss Environmental Products has released its new Foss On-Deck Spill Kit to comply with impending California regulations — regulations, which require non-tank vessels to carry a seven-barrel spill kit for ondeck oil spills when conducting bunkering operations in California marine waters. The kit has sufficient capacity to absorb seven barrels of oil spilled ondeck.

Circle 184 on Reader Service Card

Century Bridge Establishes New Ports Service

A new service between China and U.S. East Coast ports has been launched by Century Bridge Container Lines, which provides direct ports of call to Houston, Miami and N.Y.

Lasting only 28 days to arrive to the Gulf, the port rotations encompass Xingang, Qingdao, Shanghai, and Shenzhen (port of Chiwan). With immediate effect, cargo moving on CY/CY basis from Southern China to U.S. on board the company's "all-water East Coast Service" ships.

Thrustmaster Appoints New Manager

Thrustmaster of Texas has elected **M.J. "Duke" Miller** as general sales manager and **Michael Thomson** as a quality manager. Miller, who has extensive experience in the marine industry, replaces **Syd Smelt**, who will retire from Thrustmaster on October 15.

Training

CME Creates Computer Simulations of Remote Waterways

A barge transporting a large quantity of petroleum moves slowly down the middle of the Parana River in South America. Though it is early evening, the pilot is enclosed in torrid heat, fetid smells from the jungle's rotting vegetation, rampant palms that reach toward him on each side of the river, and the strange, floating beauty of blue and purple hyacinths, now swaying in his wake.

The insect cries are deafening, louder than a New York subway. He does not pause to swat a mosquito, for there are none. Too small for this world, they have themselves been devoured by the far more populous insects half a foot long.

Floating beside the barge are frogs larger than a small dog, the easy prey of jacares, another bloated amphibian that can outgrow a crocodile.

The pilot must turn a bend upstream in one mile, and the area is uncharted, like many parts of this river. But, he has heard a description of it from an old retired river pilot, a Guarani Indian, a few weeks ago when the two were on land, drinking mate on the jungle floor.

That will be his safety as well as the safety of his cargo. He touches a small stone in his pocket; it is almost perfectly circular, a gift from his young daughter who found it in the jungle. He thinks of it as a sign that something perfect can come from the jungle's chaos. And, he thinks of his daughter and then of his family as the barge makes its turn into the now darkening waters, barely known, upstream.

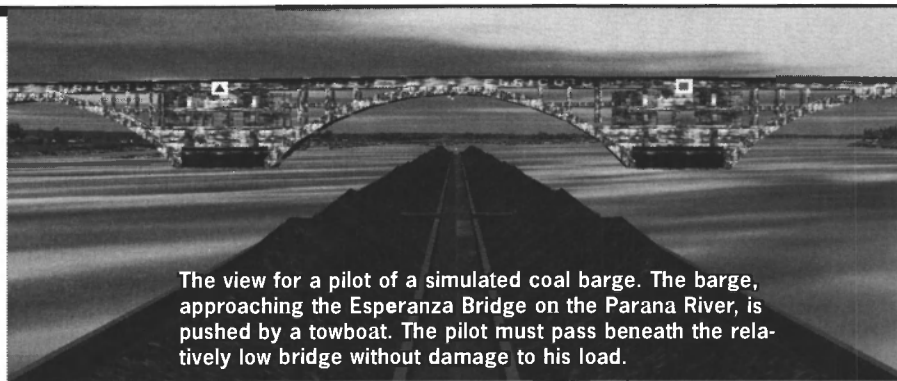
This moment can serve as an introduction to the problems encountered by South American river pilots, problems The Center for Maritime Education (CME) in Paducah, Ky. has been engaged in solving for the past two years. One of the largest transportation companies in North America, ACBL, has — for two years — sent its South American pilots to CME for training in towboat piloting.

The courses have used situations simulating details of the Parana and Paraguay Rivers, which flow through Brazil, Paraguay, Uruguay, and Argentina. On these rivers, the pilots will use the skills they have learned.

CME previously offered training on its computerized simulator to pilots who work on North American rivers. The ACBL project brought another continent into its realm of database development and created simulations of rivers comparable in length to the Mississippi.

The virtual environment devised by

CME is a fully simulated visual scene as it would appear to the eye through eight synchronized windows of a pilothouse



The view for a pilot of a simulated coal barge. The barge, approaching the Esperanza Bridge on the Parana River, is pushed by a towboat. The pilot must pass beneath the relatively low bridge without damage to his load.



Riding
the seas

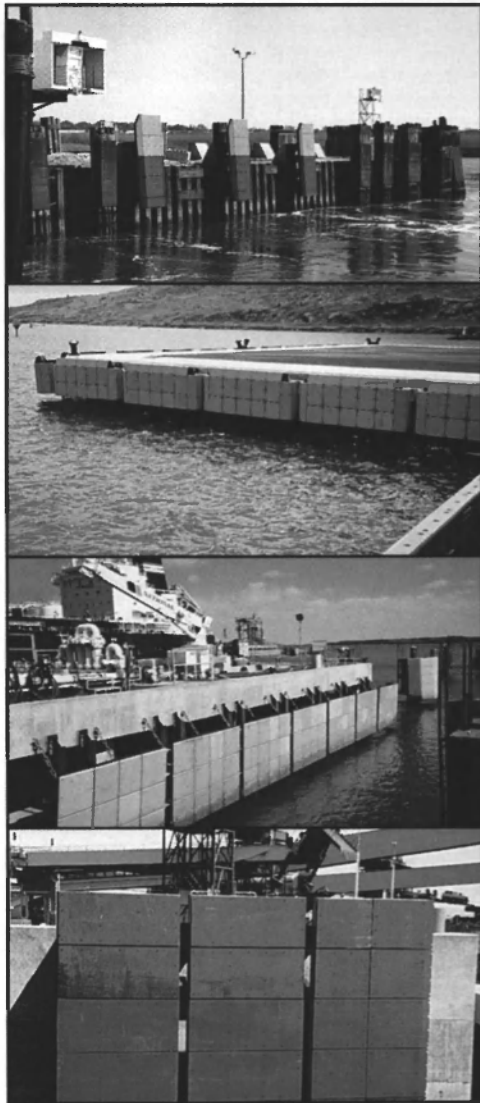
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Training

as a towboat is advancing along the Parana or Paraguay River. A control panel is present, and the simulation sequence changes, based on the decisions the mariner makes as he manipulates the controls and "pilots" the vessel. Types of data utilized go far beyond visual video footage and include the hydrodynamics of the vessel's configuration, the effect of river currents, the bathymetry, or profile of underwater forces and objects as the boat passes, as well as many other information categories. This technology now adds new capabilities and databases every month and is used both in training and planning for economic development.

Computer Visualization

Simulations that recreate the perceptual world of the human eye have always been some of the most complex ever created, frequently employing supercomputers, mainframes, and enormous numbers of PCs. One example is the Jet Propulsion Lab "flyby" which begins with streams of binary data from various space probes and ends with the world seen by the eye moving throughout the solar system, as though looking out the window of a moving space station. This particular computer graphics application has formed visions of the solar system more completely than any other.

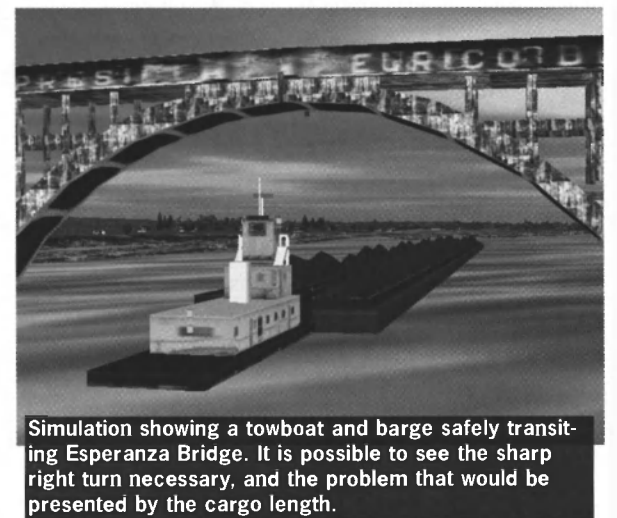
Computer visualization is now the leading edge of all the sciences because it can translate the chemistry and physics of nature into the eye's "language" images. Many databases are too complex to be understood as numbers; they can only be grasped as an image or as a sequence of animation.

An example would be a famous university study of galaxy formation that tried to answer whether the astronomical data we now possess, going back to microwave remnants of the Big Bang, favors a relatively even distribution of matter in the universe or, alternatively, the characteristic "clumps" of matter found in galaxies. The answer was to assemble and "rerun," with computer visualization, the spectral data processed by astronomers.

The data for this experiment was so multitudinous it had to be processed using the computer facilities of two dozen different universities worldwide, each working on a part of the puzzle for months. When the whole puzzle was re-assembled, it was presented as a "fast forward" motion picture of the universe's evolution as it would appear to the eye in a few minutes. The clumps of matter in galaxies were clearly the outcome.

The technology was first introduced in the flight simulations of World War II, to be further refined in the marine and radar simulations of the 1970s that taught subjects to correctly perceive relative motion.

River navigation simulation is more complex than flight simulation because a plane is traveling much



Simulation showing a towboat and barge safely transiting Esperanza Bridge. It is possible to see the sharp right turn necessary, and the problem that would be presented by the cargo length.

faster than a barge, and is less perceptible to the eye as the plane passes along its trajectory. Both the database and the modeling required to create images from it are therefore more detailed and substantial in river simulation.

Visual recording of the scene is only the first step. Many different visual sequences may unfold, depending on the choices the pilot makes, from coasting in the center of the river to ranging dangerously close to the shore. The database and the visual experience must contain both the basis for choice and the consequences of it. It could be said the simulation is the "whole pilot" interacting with the "whole river."

When all the data has been assembled, it is modeled by computer from video and photographic imagery to produce the simulation as a visual experience. ACBL's training at CME has resulted in greater safety of operations as well as a substantial decrease in the cost of fuel and fleet maintenance. CME has applied this technology to rivers for the first time; its training is therefore unique.

CME is also mindful of the dangers of piloting, both on the ocean and the river, since mistakes may result in loss of life or damage to the environment. An American admiral was once quoted as saying, "On the sea, 8 to 9 of each 10 fatalities are the result of human error." So, far more destructive than the forces unleashed by nature or technology is human error itself. Training is designed to minimize this.

The most important part of each course is the student's opportunity to pilot the simulator. He stays in the pilot-house for twenty minutes or so, during which time a navigational challenge is slated to occur, which he resolves without any instruction or commentary from instructors. Then he goes into another room for discussion and debriefing.

"This is where all the real learning occurs," says Dr. **Bill Douglas**, who directs the Paducah center. "Our students are not neophytes. They're here not because they wish to learn skills as such, but because they wish to improve. The Responsible Carrier Program proposed by the American Waterways Operators encourages constant learning and improvement in piloting. Incidents of environmental damage in the past from piloting errors are also an inducement to improve."

The simulation and its various databases have no definitive boundaries. The sole criterion of effectiveness is whether the experience seems real to the trainee piloting the system. Among effects to be calculated in each instance are variable weather, wind, time of day or night, restrictions of vision, influence of larger development projects like dams, dredging, alteration of river banks, links, smooth versus rocky river bottoms,

effects of river stages and flow conditions, etc.

In the South American project, one of the earliest sources of such data was **Brian Donohue's** trip down the Parana. Donohue, who directed design of the simulator's databases, boated down the river for two weeks, videofilming and recording digital stills of the twists and turns in the river. To georeference his position, he employed a hand-held

device that used the Global Position System (GPS). This is only visual information, however. Donohue took some of his hydrodynamic and bathymetric data mentioned previously from published records and navigation charts of local hydrographers; other data is based upon either his notes while traveling or verbal memories of local pilots.

Consequently, some types of data are easier to collect than others. Brazil, for

example, requires those who want statistics of the river must physically come to the country to receive it.

The Parana and Paraguay in South America is thus far represented by seven individual databases incorporating conditions and densities of traffic as well as sharp turns in the river. The databases also cover towboats, tugboats, barges, and effects of towing.

The hardware includes swing meters



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Training

and rate-of-turn indicators so pilots can respond to the information provided. As in the example at the beginning of this discussion, when the student begins a simulation, it is a particular time of day with particular weather, traffic in the river, development conditions, presence or lack of information, etc.

In South America, according to Donohue, the Parana is a tremendous lifeline, connecting all settlements, the only direct line to the interior. He believes the countries of South America want development of the Parana, seeing it as the most likely route to prosperity.

Rivers offer the least expensive form of transportation in South America. They are conveniently placed for transport and connection with the interior; and the land is marshy and unsuitable for other forms of transportation and development. Also, barge traffic doesn't conflict with natural formations and minimizes environmental effects.

There are several operational and environmental concerns in the Parana project, according to Donohue, including:

(1) The rivers have rocky bottoms, as opposed to the smooth bottom of the Mississippi River.

(2) South American rivers are not well-charted.

(3) Vessels don't operate at night, yet continuous towing is necessary for efficient use of rivers. The simulation must have an "at night" condition in the database. Pilots from ACBL in South America began training at CME in 1997. Since then, 8 to 10 students come twice a year for a week at a time, according to Douglas. Facilitators who speak English and translate accompany them, since the language barrier is a challenge.

"Pilots sent to Paducah from ACBL vary in experience," Douglas said. "Their training includes much of the subject matter covered in our classes for North American ACBL pilots; however, they can examine problems and challenges unique to their area of operation. What they take back to their workplace correlates closely with the training aspirations of North American ACBL pilots. We expect this to elevate the standards of professionalism in the South American waterways while the industry is accelerating."

What's been outlined are the types of variables that must be present in a simulation so it functions as a realistic learning situation. However, another fact to consider is these data are also processed by an extensive system comprised of 42 computers, a computer for ship model-



Is it real or is it ... A comparison of the original photography of a spot on the Parana River to the simulation reveals the accuracy of the simulation. The simulation is not at quite the same point on the river, but it's close. Different data as to the time of day and level of the river has been entered. (hint, the real photo is on the left.)

ing, a database computer, four office computers and four training computers.

The system's software the Polaris Simulation System and Seaview Graphics is the true simulation system, since it coordinates all the mathematical models used to create the visuals, including last-minute conditions and information entered by an instructor.

Ordinarily, the system would update all the visuals each second. However, additional visual computers interpolate an update 30 times a second, or better "refresh" than home movies. One of the most fascinating issues of this entire technology is what the future might bring. According to Donohue, "Everyone's interested in this technology because it can also be used for economic planning. It's the same hardware and software. You just enter different infor-

mation."

Imagine: through a time machine, the U.S. 150 or so years in the past, possessing simulation technology. It would be possible to plan the modern development of the country and see its effects long before the effort was made, the impacts felt, and the money spent.

The greater efficiency of development is obvious. South America is at just this point, Donohue added, relatively undeveloped yet capable of purchasing the ideal technology to guide its own development. This is one of the most exciting applications of simulation technology, and as much training as CME has done with its simulator, it is also watching and waiting for greater opportunities.

Bev Jafek is a New York metro-based science journalist.



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SUMMARY OF FUEL OIL SAMPLES ANALYZED AT SELECTED PORTS (August, 1999)

	D@15C	V@50C	MCR%	ASH%	H2O%	S%	V	NA	AL+SI	TSP%
BALBOA, PANAMA										
AVERAGE	977.2	331.7	14.1	.05	.17	2.31	176	7	27	0.01
MAX	978.7	374	14.8	.06	.20	2.64	243	9	--	0.01
BUSAN, KOREA										
AVERAGE	975.7	343	11.1	.03	.08	3.23	83	6	26	0.03
MAX	983.9	378	12.4	.03	.15	3.57	89	6	--	0.03
CEUTA, SPAIN										
AVERAGE	973.5	258	10.2	.03	.30	2.89	112	37	55	0.02
MAX	978.1	341	11.7	.04	.40	2.97	134	47	--	0.03
DURBAN, SOUTH AFRICA										
AVERAGE	983.3	170.6	15.5	.04	.05	3.36	156	15	27	0.05
MAX	989.8	192	17.9	.05	.05	3.46	208	22	--	0.05
FUJAIRAH, UAE										
AVERAGE	969	343.8	15.1	.04	.22	3.16	126	31	6	0.02
MAX	983.9	464.6	19.9	.2	.60	3.8	170	54	--	0.07
GENOVA, ITALY										
AVERAGE	989.5	271	10.4	.03	.18	3.51	92	18	48	0.02
MAX	989.6	333	12.1	.03	.25	4.53	122	34	--	0.02
GIBRALTAR, SPAIN										
AVERAGE	983.8	307.9	14.1	.03	.12	3.39	172	27	23	0.02
MAX	989	371	16.7	.06	.15	3.93	236	54	--	0.05
GOTHENBURG, SWEDEN										
AVERAGE	986.9	358.6	15.8	.03	.12	2.38	163	18	22	0.03
MAX	989.9	385	17.2	.04	.70	3.23	214	31	--	0.04

	D@15C	V@50C	MCR%	ASH%	H2O%	S%	V	NA	AL+SI	TSP%
HOUSTON, TX										
AVERAGE	985.6	203.4	14.6	.04	.09	3.05	116	9	19	0.02
MAX	994	340.5	17.9	.09	.20	4.17	235	21	--	0.04
LISBON, PORTUGAL										
AVERAGE	987.8	312.5	13.1	.03	.10	3.45	183	7	21	0.01
MAX	996.4	414	13.8	.04	.15	3.45	208	7	--	0.01
LOS ANGELES, CA										
AVERAGE	985.4	272.1	10.0	.04	.30	1.86	96	12	27	0.03
MAX	996.6	378.4	13.9	.08	1.00	2.88	274	24	--	0.1
MOBILE, AL										
AVERAGE	984.5	335	14.5	.05	.15	2.83	99	19	6	0.01
MAX	984.6	369.8	14.5	.05	.20	2.92	105	21	--	0.01
MONTREAL, CANADA										
AVERAGE	986.4	319.8	16.3	.03	.06	1.61	58	5	36	0.04
MAX	991	373.8	18.2	.04	.10	2.14	75	13	--	0.09
NEW ORLEANS, LA										
AVERAGE	988.6	204.5	14.4	.03	.07	3.94	110	15	17	0.03
MAX	990.1	239.4	16.1	.04	.10	4.13	110	19	0.05	
NEW YORK, NY										
AVERAGE	980.2	234.5	11.6	.06	.52	2.68	194	15	18	0.05
MAX	991	359.1	19.2	.09	.90	3.37	291	25	--	0.16
PUERTO GABELLO, VENEZUELA										
AVERAGE	967.5	318.7	10.8	.04	.12	2.13	143	9	25	0.01
MAX	970.5	389	11.6	.05	.15	2.24	172	12	0.01	
ROTTERDAM, NETHERLANDS										
AVERAGE	939.4	341.5	13.7	.03	.19	3.35	133	24	26	0.03
MAX	1009.5	474	18.5	.07	.80	4.47	302	69	--	0.05
SEATTLE, WA										
AVERAGE	984.2	374.4	13.4	.03	.13	1.73	55	14	15	0.02
MAX	994.8	712.2	17.1	.05	.20	2.23	71	25	--	0.03
SINGAPORE										
AVERAGE	983.2	337	14.6	.03	.53	3.46	65	10	29	0.03
MAX	988.3	405	17.9	.05	5.80	3.97	79	36	--	0.09
SOUTHAMPTON, U.K.										
AVERAGE	982	321.2	11.5	.02	.05	2.05	76	4	34	0.01
MAX	985	360	12.0	.02	.05	3.22	120	9	--	0.02

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Swedish Club: Stability In Stormy Markets

While the impact of poor freight rates and low oil prices have been felt in all quarters of the Scandinavian maritime industries, the region's hull underwriters and P&I Clubs continue to benefit from the relatively strong domestic shipping and energy sectors. Scandinavian

marine insurers have demonstrated resilience in challenging market conditions. The global hull market remains in a downswing of unusual severity. As for the P&I sector, the past 12 months have had a nervous character, with talk of mergers and the increasing profile of the

fixed premium players.

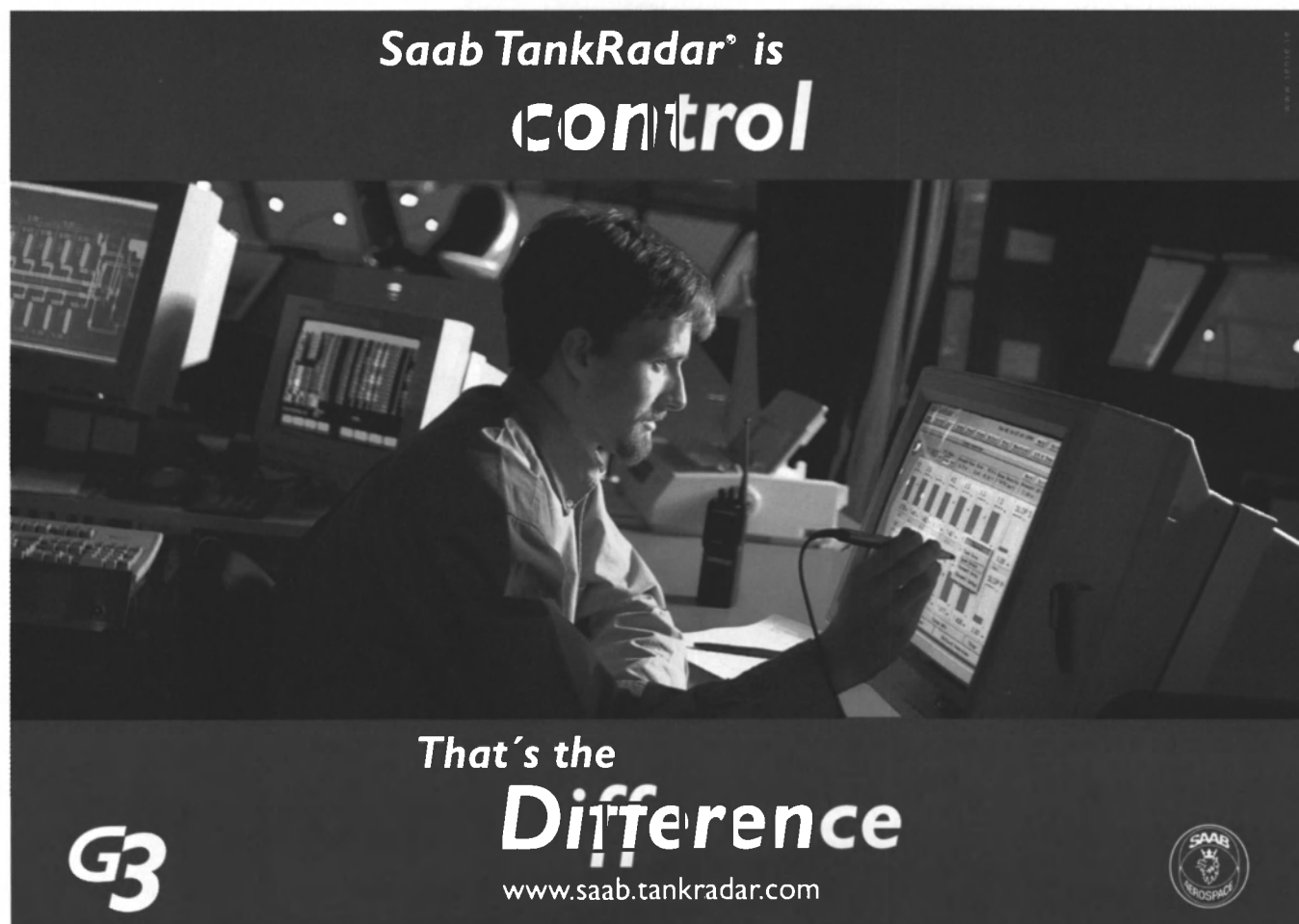
The Swedish Club, the Gothenburg-headquartered marine mutual, is committed to both sectors — providing total package hull and P&I services. In the hull sector, the Club has refused to follow the market in its downward spiral.

Director of underwriting & marketing Claes Lindh says: "Many players have poured vast sums into their attempts to defend market share. It would be unthinkable, however, for a marine mutual such as The Swedish Club to use members' funds to 'buy' new business by offering heavily discounted rates."

He adds: "Our primary aim in this difficult market is to defend the paramount principle of sound underwriting: premiums must cover claims."


The Swedish Club expects a major shakeout to develop in the global hull market, as conditions begin to harden. Many parties now locked into multi-year deals at cut-throat rates are bound to suffer. Few, if any, will escape heavy losses. At the mid-year point, Members' Agent Sedgwick Oakwood forecast breakeven for Lloyd's in 1997 and a loss of \$198 million for 1998. In the marine sector, they predict a 2.51 percent loss, as against a 1.66 percent return for 1997. In this stormy environment, The Swedish Club focuses on providing certainty. The hull portfolio now consists of 649 vessels, of around 20 million-gt, with the Club writing around 12 million-gt. Despite the market's freefall during the past two years, the Club's average order remains at around 52 percent. This reflects consistent performance within a framework founded on long-term relationships with members and reinsurers.

In the P&I sector, The Swedish Club portfolio continues to expand. In the year to the last renewals date (February 20), the P&I-entered fleet increased by 12 percent in terms of vessel numbers and by 25 percent in tonnage. On this issue of merger, The Swedish Club made it clear two years ago that it had no interest in this option for future development. This policy was reaffirmed at the Club's annual meeting in Gothenburg in June of this year. The possibility of mergers elsewhere within the P&I com-




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Celsius To Create Substantial Submarine Builder

Swedish defense group Celsius announced it is merging unit Kockums Naval Systems with Germany's Howaldtswerke-Deutsche Werft (HDW) to create a leading global player in submarines as the defense sector consolidates. Celsius reportedly signed a contract with Babcock Borsig and HDW parent company Preussag, Germany's tourism and industrial group, to form a European shipbuilding company. HDW's new ownership structure, to be reviewed after 2000, will comprise of Babcock Borsig with 50 percent plus one share, Celsius with 25 percent plus one share and Preussag with 25 percent minus two shares.

Celsius said an agreement had been reached between Celsius and HDW settling the acquisition of Celsius's 49 percent stake in Australian submarine builder, Australian Submarine Corp.

munity, however, are seen as growth opportunities — with the Club providing a fresh option for high quality owners of young tonnage looking for new alternatives.

With its focus on quality fleets, the Club has yet to lose a single vessel to the fixed premium P&I providers. Lindh adds: "We consider ourselves a fixed premium facility, in the sense that we have had no supplementary calls for the past eight years. In this way, we provide certainty."

Financial strength is a factor of crucial importance. The Swedish Club's free reserves now approach \$90 million. This allowed the Club to discount the 1998/99 P&I premium by 10 percent, freeze the 1999/2000 P&I premium and close the 1998 hull year at 95 percent of premium for existing members.

During the past year, The Swedish Club has made significant progress in enhancing its loss prevention services for members. The Club's current loss prevention program includes two major initiatives: continued support for Bridge Resource Management (BRM) training and a project aimed at reducing the incidence of main engine damage.

The Swedish Club, six other maritime organizations and the SAS Flight Academy signed a new BRM operating agreement earlier this year. This marked the sixth anniversary of the establishment of this global training program, which focuses on developing positive human

behavior, which contributes to the safe and pollution-free operation of vessels.

As for main engine damage, the Club has taken measures to ensure that members are fully aware of the risks and problems associated with specific engine types, based on a careful analysis of engine damage

cases. This has allowed the Club to offer the engine manufacturers a new dataset on engine performance in service.

It is now engaged in discussions with the manufacturers, to encourage new initiatives designed to reduce main engine damage.

Another One Bites The Dust

The consolidation craze sweeping maritime markets has claimed its latest victim, as Norway's Frontline last month won a two-year, often acrimonious battle for Swedish tanker company ICB Shipping. The final sale, however, required that four of 12 ICB tankers be sold to a new group set up by key ICB players. The deal means that Frontline—headed by shipping magnate **John Fredriksen**—is now one of the world's biggest tanker groups with a fleet of 37 Suezmax and VLCC tankers. In connection with the deal, ICB's board sold four VLCCs to a newly established company — ACOL Tankers Ltd. — for \$189 million. All four vessels currently operate on the market. ACOL will also acquire ICB's 30 percent shareholding in Stockholm Chartering at book value.

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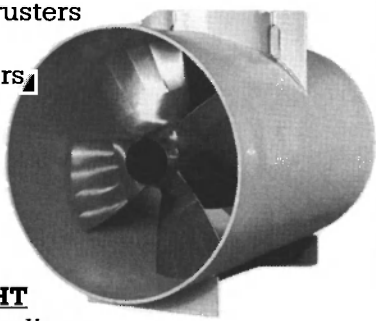
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Circle 329 on Reader Service Card

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New & Notable

Hitachi Completes Bulk Carrier for Golden Door

Hitachi Zosen Maizuru Works has completed Golden Nerina, a 75,484-dwt bulk carrier, for Golden Door Corporation of Liberia. The Panamanian-registered vessel was delivered on August 5 and is equipped with an energy-efficient Hitachi Zosen-MAN-B&W6S60MC (MK-6) type main diesel engine, as well as the Hitachi Zosen Super Stream Duct (SSD) at its stern.

According to Hitachi, the dwt and cargo capacity of Golden Nerina is considerably greater than previously built vessels. It is also the fourth bulk carrier in a sequence built with an ABS Safe Hull.

Circle 59 on Reader Service Card



Main Particulars

Classification	ABS
Length	712 ft. (217 m)
Breadth	106 ft. (32.2 m)
Depth	73 ft. (19.1 m)
Full Draft	45 ft. (13.8 m)
GT	39,714
DWT	75,484 metric tons
Main Engine	Hitachi Zosen-Man-B&W6S60MC
	(MK-6) type diesel engine
Speed	16 knots
Capacity	25

Lever Orders Charter Boat

Lever Diving has ordered a 116 x 27 ft. (35.3 x 8.2 m) charter boat designed with a yacht-like quality for the millennium. Scheduled for a spring 2000 delivery, Nautilus Explorer will be constructed at Sylte Shipyards in Maple Ridge, British Columbia, and will have more than 4,000 ft. of interior space.

With a cruising speed of 12 knots, the vessel's main engines are a pair of six-cylinder Cummins NTA855 rated at 335-hp. Tankage will be provided for 10,000-U.S. gallons of diesel and 7,000 gallons of portable water. Other features include a water-maker, and a 220,000 BTU Boiler for ample cabin heat and shower water.

Ailsa-Troon Launches First of Ten For Royal Navy

Ailsa Troon launched its first craft of a series of 10 on schedule for the Royal Navy. British Aerospace Defense Systems awarded Ailsa Troon the contract



exactly a year before the launch. The landing craft are part of the Royal Navy's program to improve its capability and will be used in conjunction with two new landing platform dock vessels, HMS Bulwark and HMS Albion, which are under construction at the Marconi Marine yard at Barrow-in-Furness.

Noble Announces Fourth Semi Conversion A Success

Noble Drilling said its fourth successful EVA-4000™ semisubmersible conversion, Noble Amos Runner, began drilling in the Gulf of Mexico on August 15 for its contractors — Kerr-McGee Corp., Marathon Oil and Murphy Exploration and Production Co. The semi, which is capable of drilling in water depths of 6,600 ft. (2,011 m), underwent mooring sea trials before it began its five-year drilling project in the Gulf.

Noble Drilling, also announced that its second conversion, Noble Paul Wolff, drilled a well for Petroleo Brasileiro S.A. (Petrobras) in 8,017 ft. (2,443 m) of water, reportedly setting a new world record.

Latest Luxury Liner From Germany

The second of four cruise vessels to be constructed at the Meyer Werft Shipyard for Star Cruises, the Asian-based company recently accepted delivery of Superstar Virgo on August 2 — two weeks prior to its originally agreed delivery date.

The 76,800-grt vessel, which combines Asian-inspired decor with sophisticated technology, offers cabins with private balconies and an array of first-rate entertainment and dining options. Virgo boasts a technically advanced diesel-electric propulsion plant, as well as the most up-to-date interactive communication systems and state-of-the-art stage equipment.

After acceptance by Star Cruises' Eemshaven location in the Netherlands, the vessel will depart for Singapore, followed by a presentation in Alexandria/Egypt. From there, Virgo will pass the Suez Canal, and then return for its first official cruise departing August 20 from Bombay, India to Singapore.

Circle 3 on Reader Service Card

Main Particulars

Flag	Panama
Classification	DNV
Length, (o.a.)	881 ft. (268.6 m)
Length, (b.p.)	773 ft. (235.6 m)
Breadth	106 ft. (32.2 m)
Depth (to bulkhead deck)	38 ft. (11.5 m)
Number of decks	14
Draft	26 ft. (7.9 m)
Tonnage	76,800-grt
Total engine power	4 x 14,700 kW
Propulsive power	2 x 20,000 kW
Speed	more than 24 knots
Passengers	2,475
Officers and crew	1,125

Top to bottom:

•The 76,800-grt cruise vessel, Superstar Virgo.

•Passengers enter in style upon entering the vessel's Grand Piazza.

•Four diesel generator sets by MAN B&W type 14V 48/60 are installed aboard Superstar Virgo.

•Surrounded by four whirlpools and a stage, the apex of the vessel's main bathing area is a 46 x 16 ft. (14 x 5 m) Greek-inspired "Parthenon Pool."



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MARCO Shipyards Signs Local Contract

MARCO Shipyard Seattle signed a contract to build a new tug for Harley Marine Services Inc., of Seattle, the parent company of Olympic Tug & Barge. Recently, MARCO completed a series of nine tractor tugs operating in Alaska, California, and Hawaii.

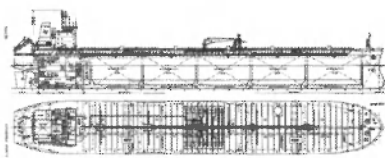
Measuring 105 ft. (32 m), the new tug will be used by Harley Marine as a ship assist and towing service for the west coast. Except for some pilothouse modifications and the addition of barge fendering, the tug will be similar to the Gyrfalcon, owned and operated by Harley Marine in Dutch Harbor, Alaska.

Scheduled for a February 2000 delivery, the tug will be powered by twin Caterpillar 3516B diesels, providing a combined 4,400-hp driving Olsten 1650H Z-drive units, each fitted with Ulstein's nozzle and skewed Kaplan-style propellers.

Circle 61 on Reader Service Card

Croatian Shipyard Delivers Oil Tanker To Doria Shipping

3.Maj Brodogradiliste (MAJ), of Rijeka Croatia, delivered the first oil tanker of a series of four to Doria Shipping. In March, 1997 3.MAJ was contracted to build four 71,345-dwt oil tankers for \$150 million. With the financing help of



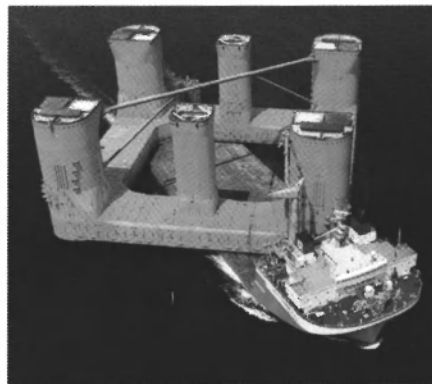
Merrill Lynch International of London, and the full support of the Croatian government, the company successfully finalized this order. Built for the transportation of crude oil and oil products, M/T Margara has five pairs of cargo and one pair of slop tanks. Double sides were applied in fuel tanks for the vessel's compliance with all international environmental requirements.

Circle 62 on Reader Service Card

Main Particulars	
Flag	Malta
Classification	ABS
Length (o.a.)	750 ft. (228.5 m)
Length (b.p.)	722 ft. (220 m)
Breadth	106 ft. (32.2 m)
Depth	69 ft. (20.9 m)
Draft	41 ft. (12.5 m)
DWT	60,913
GT	40,705
Speed	15.3 knots
Main engine	Wartsila NSD
Max. output	12,000 kW @ 105 rpm

Dockwise Successfully Completes Last Of 10

Heavy transport shipping specialist Dockwise safely delivered the 18,000-ton Asgard "B" GVA70 FPU (Floating



Production Unit) hull to Stavanger, Norway. After successfully completing nine voyages for the Asgard project, the Mighty Servant 3 loaded the FPU hull, which measures 336 x 315 x 148 ft. (102.4 x 96 x 45 m) at the Daewoo construction yard in Okpo, Korea.

Since departing Korea on July 16, the Mighty Servant arrived after a six-week voyage offshore Stavanger, via the Suez Canal on August 31.

Since commencing in December 1997 with a transport of three Asgard "A" FPSO modules from Sicily to Norway, seven consecutive piggyback voyages - with a total of 25 onshore modules have been executed from Holland to Norway.

TDI-Halter Delivers Drilling Barge To Sedco Forex

TDI-Halter, a Halter Marine Group, Inc. company, Gulfport, Miss., delivered Prisa 103, the last of the trio of newly-

built drilling barges to Sedco Forex, the drilling division of Schlumberger Limited. Measuring 180 x 75 x 15 ft. (54.8 x 22.8 x 4.5 m), Prisa 101, 102 and 103 are part of an overall conceptual design approach — an approach in which Sedco Forex has permanently integrated the Well intervention structure, equipment and systems to facilitate conventional light drilling and well re-entry with coiled tubing and other well intervention operations. Joining the first two member of the trio, Prisa 103, which began the tow to Venezuela this past March, is currently deployed in the country's Lake Maracaibo for a 10-year contract with PDVSA.

Circle 5 on Reader Service Card

USN Christens RoRo

The U.S. Navy christened its newest RoRo cargo ship, USNS Red Cloud at National Steel and Shipbuilding Company (NASSCO), San Diego, Calif. The vessel is the newest in the Watson class of large, medium speed RoRo sealift ships constructed at NASSCO, measuring 950 x 106 ft. (289.5 x 32.3 m).

Keppel Marine On Its Way To Completing AHTS Vessels



Keppel Marine Industries, through its flagship company, Keppel Singmarine Dockyard, is set to put the finishing touches on its third and fourth Anchor Handling Tug/Supply (AHTS) Vessels the company is constructing for the AP Moller Group (Maersk).

The third and fourth of a six-part series ordered by Maersk, the vessels are one of the world's most advanced types of AHTS.

Christened Maersk Supplier and Maersk Seeker this past July, the AHTS vessels can operate in deep waters, and are equipped with special high capacity split type stern roller and contemporary anchor handling and towing winches.

Circle 4 on Reader Service Card

Main Particulars	
Length	269 ft. (82 m)
Breadth	62 ft. (19 m)
Draft	25 ft. (7.5 m)
Engines	Four units medium speed diesel @ 18,000-bhp
Speed	15 knots

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Vera Bisso: Cutting an Imposing Figure

Why is a story on a new 105-ft. tug leading off the propulsion performance products section? Because the Vera Bisso, a new 32-m multi-purpose, double-hull tug, being built at Bollinger Shipyards' Lockport, La. yard for E.N. Bisso & Son, Inc.— offers some interesting propulsion system enhancements to improve and broaden its capabilities. — by Chris Palermo, managing editor, MarineNews

Similar to other tugs built by E.N. Bisso & Son during the 1990s, Vera Bisso is designed for dual applications. Its initial focus will be on ship assist work along the Mississippi River, for which the vessel possesses exceptional maneuverability. However, with its sturdy build, Vera Bisso is also capable of performing offshore work.

According to **Walter Kristiansen**, president of E.N. Bisso & Son, the vessel's design resulted from comments solicited from company workers, as well as colleagues. "We started with a blank piece of paper for this tug," said Kristiansen. "We asked customers, ship mas-

ters, pilots, our captains, engineers, deckhands and shoreside employees what characteristics they needed. We then attempted to identify ports worldwide with similar conditions as the Mississippi River, and visited with companies that had overcome those conditions. We considered every available technology, and the result of that input and effort was Vera Bisso."

For example, one common request was for a quicker response for the propulsion system. Kristiansen says the company installed propeller shaft braking, so when the captain shifts to neutral, the brakes inflate, stopping the propeller immediately. Since each shaft is equipped with these shaft brakes, the response time between ahead and astern has been greatly improved.

Another concern for captains involved visibility. Vera Bisso was designed with glass surrounding the pilothouse all the way to the deck. In the pilothouse itself, a seven-ft. void was created and all machinery placed within the air-conditioned area. The only machinery required in the pilothouse, are repeaters.

The one blind area on the vessel — near the deckhouse on the stern — has been remedied through the use of a closed circuit television in the pilot-

house, allowing the captain full visibility of the vessel. "While E. N. Bisso & Son is an established customer at our dry-docks for regular inspections, conversions and repairs — with 16 dry-dockings in the last 18 months — this is our first new construction contract with the company," said **Scott Theriot**, Bollinger executive vice-president/new construction. "This tug will showcase Bollinger quality and Bisso innovation. Because of built-in design features she will be equally effective in port and offshore operations. She is environmentally friendly, has a high bollard pull to hp ratio, is responsive, maneuverable and maintenance- and crew-friendly. I think she will set new standards which will be incorporated into work boats yet-to-be designed."

Among the other features included on the vessel is a wide clearance between the side shell of the tug and any structure on the tug that might come in contact with a ship, during assist work. In fact, even the tug's stacks are angled inward, permitting the tug to get very close to the bow of any ship.

The engineroom is laid out with maintenance in mind, with both generators in separate spaces, which also helps with noise control, said Kristiansen. For deckhands, safety was the prominent concern. To that end, the company has installed high strength, inherently safe plasma lines on the two Markey deck winches, which have a breaking capacity of at least 560,000-lbs. Also, except for emergency stop switches, controls of the deck winches are located only in the pilothouse, removing the necessity of requiring personnel to be near operating equipment, thereby reducing the possibility of injury.

Overall, Vera Bisso is 105 ft. (32 m) in length, with a 40 ft. (12.1 m) beam and deep loaded draft of 16 ft. (4.8 m). Main propulsion is provided by two EMD 16-645 E6 diesel engines developing a total of 3,900-hp at 900 rpm. They drive two Kaplan four-blade, 138-in. diameter, 111-in. pitch, stainless steel propellers through Haley reverse/reduction gears with a ratio of 6.1:1. The propellers are set in Kort nozzles and steering is provided by six rudders—two main and four flanking. Bollard pull is expected to be more than 66 tons.

Hydraulics for the steering system has been purposely "over designed" to ensure excellent response in all operat-



Vera Bisso is under construction at Bollinger's Lockport yard.

ing conditions and orientation. Rudders will turn through 90-degree arcs instead of the usual 70 degrees, greatly improving maneuvering characteristics. Each rudder will also have two hydraulic cylinders to improve steering response. The rudders can be operated in either a "combined" or traditional mode in which they turn together, or in a "split" mode in which all rudders can be positioned independently improving the tug's maneuverability.

Although not required by law or regulation, "gray water" such as from showers and sinks, is retained aboard for discharge ashore and there is no overboard discharge of any cooling water. Additionally, each fuel tank "vents" to a fuel overflow tank, rather than to the deck, eliminating spills from overflowing any fuel tank.

The tug's double hull reduces the possibility of flooding and its wide beam will reduce its chances of "tripping." The bulwarks are 39-in. high providing for greater crew safety from falling overboard and there is a minimum of seven feet clearance between the deckhouse side and the bulwarks — providing a much wider and clearer area for work on the main deck. All but one of the tug's ladders is inclined, not vertical. The ladder between the engine room and the deckhouse is enclosed and insulated, providing an effective airlock between these spaces, an important feature for fire fighting and noise control.



The new vessel is named in honor of **Vera Bisso**, wife of **Joseph A. Bisso**, one of the company's co-founders, and mother of three of the company's present stockholders. Delivery is planned for November 1999.

Main Particulars

Builder	Bollinger Shipyards, Inc.	Fuel capacity (offshore ops)	120,000 gallons
Owner	E. N. Bisso & Son, Inc. Metairie, La.	Potable water	12,000 gallons
Concept design	Design Associates	Wash water capacity	25,200 gallons
Length, o.a.	105 ft. (32 m)	Lube oil capacity	750 gallons
Molded beam	40 ft. (12.1 m)	Hydraulic oil capacity	800 gallons
Depth midship	17ft. (5.1 m)	Gear oil capacity	700 gallons
Deep loaded draft	16 ft.	Salt water ballast capacity	41,700 gallons
Main engines	EMD	Oil water retention capacity	2,100 gallons
Reduction gear	Haley	Fuel overflow tank capacity	2,000 gallons
Deck Winches	Markey	Sewage retention capacity	1,500 gallons
Radars	Furuno	Fire fighting foam capacity	12,200 gallons
Fuel capacity (port ops)	36,400 gallons	Gray water retention capacity	2,000 gallons

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maritime marvels

No. 8

History of the Containership

APRIL 15, 1997

Volume 9

By Angus Kress Gillespie, Ph.D.,
Associate Professor of American Studies, Rutgers University; New Brunswick, N.J.

Faster and cheaper and more efficient. Nearly everyone agrees that the rapid change from break-bulk cargo handling to the containership has been revolutionary. It is perhaps the most startling development since the shift from sail to steam. In the world of shipping, the change has been so profound that we can readily refer to it as paradigm shift.

How do we explain the change? Professional historians are often reluctant to attribute major cultural changes to a single individual. Many factors, large and small, play into the making of any major change so that historians typically try to avoid "the great man" explanation.

For example, the American Merchant Seamen's Manual (Sixth Edition,) edited by William B. Hayler, carefully avoids attributing the development of the containership to a single individual. This account takes note of the military developments in World War II. To be sure, U.S. military planners did experiment

with some odd-sized container boxes as well as ammunition boxes, but most of the cargo was still handled in the old-fashioned piece-by-piece method. The book then goes on to say, "A few United States companies began to standardize the size of their containers and build or convert ships for carrying them." This is a customary way of rendering a historical account. It sounds as if the containership somehow just happened as a result of inevitable historical forces.

What's missing in this account? Most industry observers would agree that the account overlooks the specific contributions of one man — Malcolm McLean. This is one of those instances where it is reasonably clear that one man made a big difference. The story by now has been told so often that it is practically an industry legend.

Oliver E. Allen gives one of the best accounts in the article, The Man Who Put Boxes on Ships, which appeared in *American Her-*

itage Magazine. It seems that in 1934, McLean founded McLean Trucking Company, which was headquartered in North Carolina. The initial idea for containerization occurred to McLean one day in 1937 on a pier in Hoboken, N.J.

"I had driven my trailer truck up from Fayetteville, N.C.," McLean told Allen, "with a load of cotton bales that were to go on an American export ship tied up at the dock. For one reason or another I had to wait most of the day to deliver the bales, and as I sat there, I watched all those people muscling each crate and bundle off the trucks and into the slings



Malcolm McLean, the founder of container shipping.

(continued on 14A)

Famous Faces

Gracie Allen Christens Tanker At Sun Shipbuilding



With her husband, George Burns stands by in a heavy downpour, Gracie Allen, radio and screen star, holds the tanker SS Hubbardton down the ways of the Sun Shipbuilding and Dry Dock Company, Chester, Pa. Mrs. Burns donated the \$1,000 war bond given by the company as a launching gift to be used as a reward for John G. Pew, Jr., president of Sun Shipbuilding and Dry Dock Company, is shown to the left of Mrs. Burns.

Gracie Allen & Husband, George Burns christened a tanker in 1945.



President Eisenhower graced our June 15, 1956 & October 1999 covers.



"Pee Wee" Reese (second from right), short-stop with the Brooklyn Dodgers, celebrates the launch of two subchasers. Also pictured, from left: Major William O'Dwyer, Eileen McAllister, Reese and Mr. McAllister.

MARITIME REPORTER
ENGINEERING NEWS



This idea just didn't fly!

Touted as a means to expedite container handling, this 1967 cover of MR/EN depicts attempts to utilize helicopters to off-load containers.



Wind Power!

The world's first sail-assisted RoRo, the 1,560-dwt Ryoei Maru.

The Fan(atic)

No. 8

Still an avid reader to this day, **Brian Fournier**, 29, a self-proclaimed tugboat enthusiast has been collecting copies of *Maritime Reporter & Engineering News* before he could even read. Born into a family of tugboat owners, he learned all the ins and outs of the maritime world through his MR collection - which he still uses as a reference tool to keep up with industry products and innovations.

MR recently met with Fournier aboard Weeks Marine's tugboat *Robert* at the Intrepid Tugboat Races held during Labor Day Weekend in Manhattan.

By Regina P. Ciardiello, assistant editor

He loved *Maritime Reporter* so much that he failed a class project for it. Yes, it's true that when he was an eighth grader in Boston, **Brian Fournier** sadly realized that he received an "F" on a book report that he had written on MR for his English class. Fournier didn't receive his failing grade for his lack of knowledge



2A

on the subject or for "lying his way through the assignment" as his teacher thought. He did everything he was supposed to do — he read the material thoroughly sometimes six or seven times over, he had the basis of the industry down pat and he chose something that he was interested in. It was only until he realized that his "book" did not suit the task at hand. According to the future tugboat company president's teacher, the reason behind his unfavorable grade was simple — *Maritime Reporter* was not a book.

Even though his teacher didn't see MR as a book, Fournier would emphatically disagree, for he regards it as his bible. It was through the magazine that Fournier would learn and absorb all the information he could about an industry that is and always has been the center of his family life.

Fournier boasts that he holds every issue of MR that has been published since he was born on September 29, 1970. For the past 29 years, he gained his know-how and knowledge not by reading books, but by leafing through the pages of MR and working on his dad's tugboats. His father, **Arthur Fournier** has been an instrumental force in the tugboat industry since purchasing his first tug for \$1 in 1953. After buying and selling a variety of tug companies in Boston, the elder Fournier relocated to Maine where he started Portland Tugboat in 1985.

Though his father was in Maine most of the time working on the family business, Fournier would look forward to those times when he and his older brother, William would sit with their dad as he enlightened the boys with stories of his days on the tugs.

"My dad would get home from work and he would take out MR and show us pictures of different engines and ships," reminisced Fournier, who joined the family business in 1989. "He would quiz

... and keep 'em forever!

Still loyal after 29 years — Fournier owes much of his industry knowledge to MR — even after becoming president of Portland Tugboat in 1995.

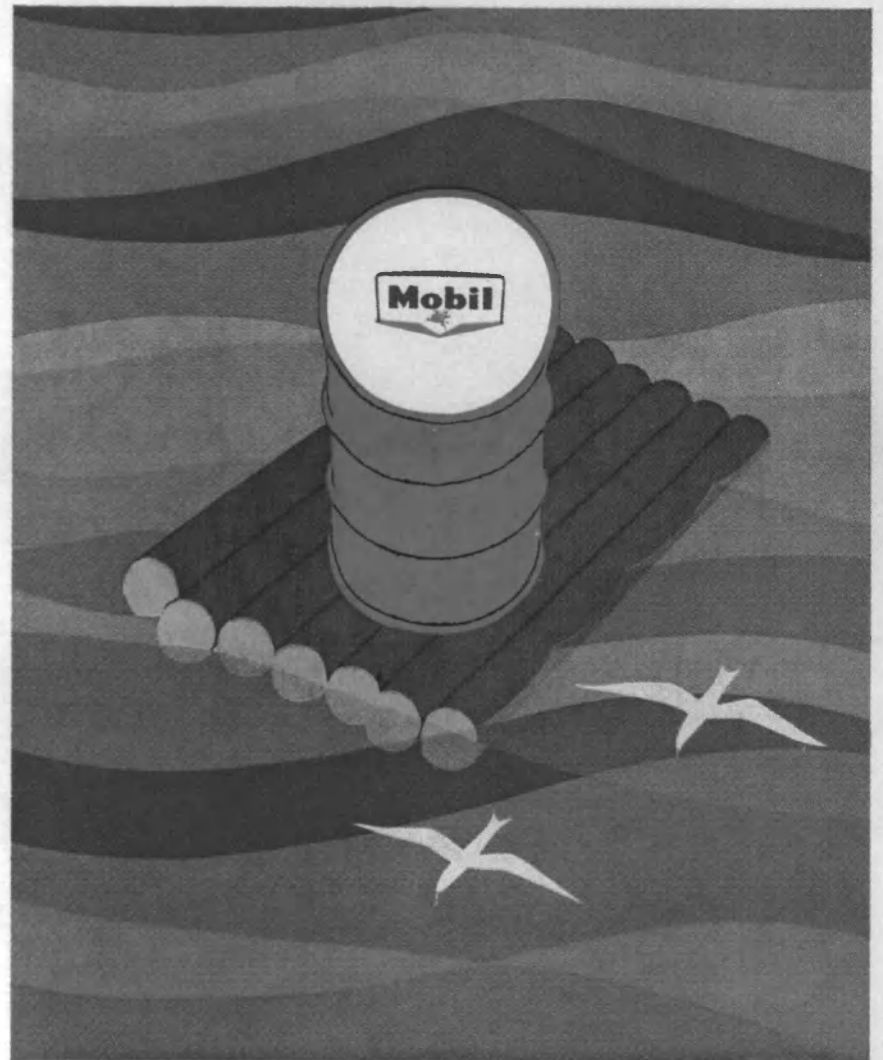
APRIL 15, 1947

both of us by asking us to name the type of engine or ship that we saw in each photo."

Those lessons with dad were probably

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At just four years old, **Brian Fournier** presents Santa Claus with the December 1974 edition of *Maritime Reporter* featuring McCallister Towing's Christmas ad.



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the reason why Fournier, is where he is today — a licensed Captain since 1994, and president of his father's company, Portland Tugboat since 1995.

MR and cold Sunday dinners - A perfect match

Through the years, the Fournier family would spend Sunday afternoons stopping by the docks to check out the tugboats and then heading over to Grandma Catherine Fournier's home in Boston for dinner. If anything, it wasn't the food that Fournier would remember about those afternoons, but the times that he would sit on his grandmother's stairs and engross himself in the latest editions of *MR* that she had saved for him.

"I would spend hours sitting on those stairs with a stack of magazines," said Fournier, who cites the Navy Annuals of the 1980's as his favorite issues," while my friends were reading sports magazines, I was picking up the latest editions of *MR*."

Since he had so intently been reading his MRs, he would completely forget about the time and would have to face a cold Sunday dinner — a small inconvenience for being able to read about what he dubs as his "livelihood."

Years later, it was Fournier's grandmother, who once again provided him with his livelihood — even after her death in 1993. As he sifted through her belongings, Fournier found a big cardboard box that looked as though it had been collecting dust — knew he hit pay dirt when he discovered it was filled with old issues of *MR*.

As he moved on to high school, he tried once again — and succeeded — in incorporated his love for the magazine into another class project — a collage for art class encompassing various naval ships and tugs pasted together.

The 1980's also brought tragedy for the tugboat-oriented family, as it was on April 11,

1985, that Fournier's older brother, William, 20, died while trying to rescue one of his crewmembers from suffocating in the tug's hatch. When the crewman hadn't returned, William went to look for him and passed out - eventually succumbing to lack of oxygen - just as the crewman had. A news item that ran in the June 1985 edition of *MR* mentioned William's heroic efforts, as well as his accomplishment of sailing a jack-up barge from Louisiana to the Dominican Republic at just 18 years-old.

"I was proud that *MR* did that for my brother," Fournier quietly said.

The Fournier Tradition Continues

Today, as president of the family business that his father has built upon through the years, Fournier owes much of his love for tugboats and the sea to his "industry bible." Even though he should have been studying instead of reading *MR*, he was only contributing to one thing in his life, besides his family that is important to him - his dedication to the maritime industry.

"I was brought up to love tugs and the maritime industry," he said. "Not only is it my livelihood — it's my life."



Grandma Catherine Fournier, who gave her grandson his "livelihood" — his prized *Maritime Reporters*.

Captain William Fournier



Capt. William Fournier

Captain William Fournier, vice president of the Fournier Marine Corporation died April 11. He was 20 years of age and resided in Belfast, Maine. Mr. Fournier was captain of the company's self-propelled jack-up barge Harold Holder, and, at the age of 18, sailed her from Homa, La. to Santo Domingo, Dominican Republic as master.

Mr. Fournier and crew member Daniel Govoni died in an attempt to rescue a third man, Richard Lisa, who was trapped in a barge.

The Fournier Marine Corporation operates a subsidiary in Belfast, Maine, the Penobscot Bay Towing Company, where the accident oc-

curred. A place in maritime history — the original piece on William Fournier's death that ran in the June 1985 edition of *MR/EN*.

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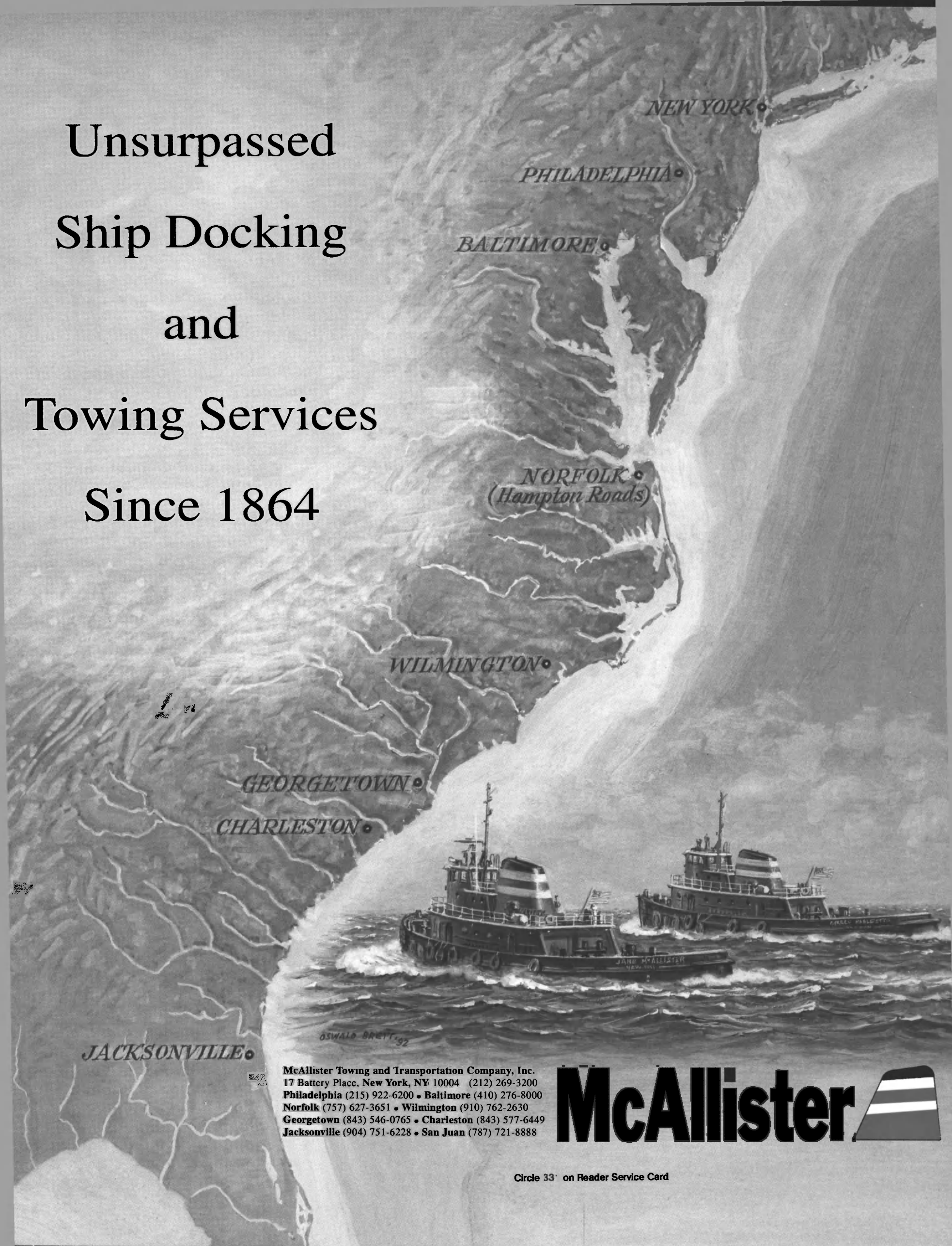
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American Shipbuilding Poised For 21st Century

By Cynthia L. Brown, president American Shipbuilding Association

A National Publication for the Marine Executive

The American Shipbuilding Association (ASA) represents the six largest shipbuilding companies in the United States: Avondale Industries, LA; Bath Iron Works, ME; Electric Boat, CT and RI; Ingalls Shipbuilding, MS; National Steel and Shipbuilding Company, CA; and Newport News Shipbuilding, VA and CA. These shipbuilders are the largest private manufacturing firms in five states and represent hundreds of thousands of supplier manufacturing jobs in 46 states.

On behalf of the American shipbuilding industry, it is my pleasure to share with the readers of *Maritime Reporter & Engineering News* the agenda and focus of the American Shipbuilding Association (ASA) as we enter the next century. In order to appreciate the significance of our agenda for the future, it is important to first state the tremendous challenges and technological transformation that our industry has undertaken to survive the 1990's, and to position ourselves to rebuild an American naval and commercial fleet unsurpassed in the world.

ASA shipbuilders are emerging from a seven-year period in which we have experienced the lowest rates of ship production since the height of the Great Depression of 1932. Naval orders have averaged only six ships per year and our orderbook for large oceangoing commercial ships has totaled only 15 since 1994. In the face of these low rates of ship production, ASA member companies have been forced to slash their workforce by 33 percent and re-engineer

the way in which they design and build ships to enhance productivity, reduce cost, and continue to lead the world in the design and construction of the most technologically advanced ships. This on-going revolution has entailed tremendous investments in facilities, in technology, and in training our workforce to maximize the use of computers in the design and manufacturing process.

This is one of the most exciting and challenging eras of the American shipbuilding industry. As we enter the 21st Century, ASA shipbuilders represent the cutting edge of technology and are poised to demonstrate through the cost and quality of our products the quantum leap we have achieved. To fully realize and use this technological edge, a significant increase in the rate of naval and commercial ship production is essential. We must be able to operate at or near capacity to maximize the efficiencies of these new manufacturing investments and processes.

Sustaining a 300-Ship Navy

The Department of Defense and the Congress recognize that America and the Free World cannot allow the U.S. Navy's fleet to fall below a minimum of 300 ships and still meet the Nation's essential security commitments. To sustain even a 300-ship Navy, a stable build rate of 10 to 12 ships per year is required. In fiscal years 2001 through 2004, however, the Navy will request funding for only eight ships per year. This number must be increased or the Navy's fleet will continue its dangerous

nose dive to 200 ships. The number of Virginia Class submarines procured per year will have to be doubled from one to two per year beginning in fiscal year 2003, and amphibious assault ships and destroyers will need to be added to the six-year building plan.

The American Shipbuilding Association will continue to stress to the Department of Defense and the Congress the importance of pursuing commercial ship acquisition and financing practices such as Multi-Year Procurement (MYP) contracting, incremental funding, and long-term leasing to make the Navy's required fleet of combatant and auxiliary ships more affordable. The Multi-Year Procurement Contract on the DDG-51 class of destroyers is saving the taxpayer \$1.4 billion. This contracting method should continue for future destroyer acquisitions and be applied to the Virginia Class submarine program beginning in fiscal year 2003. Because large deck amphibious ships and aircraft carriers are bought in few numbers and take years to build, these ships should be bought in incremental payments throughout their construction rather than in their entirety before construction even begins. And lastly, the Navy should be encouraged to employ long-term lease financing of auxiliary and support ships through the National Defense Sealift Fund.

Congress has already begun to stress the need for greater Navy ship production and to encourage greater use of these cost saving acquisition practices. This year, Congress accelerated the construction of the LHD-8 amphibious assault ship and authorized that it be procured incrementally. The Conference Committee on the Defense Authorization Act also granted the Navy the authority to enter leasing contracts of 20 years or more for its auxiliary ships, and it extended the Multi-Year Procurement contract to the last six destroyers planned for procurement in fiscal years 2002 and 2003.

Whereas in the past, the Navy designed its ships in-house and then turned to industry to build them, the Navy has recognized that this process prolonged the design and construction time, limited the insertion of advanced technology, hampered innovation, and increased the cost to the taxpayer. With ASA shipbuilders now designing the Navy's 21st Century fleet, it is imperative that the Navy and Congress ade-



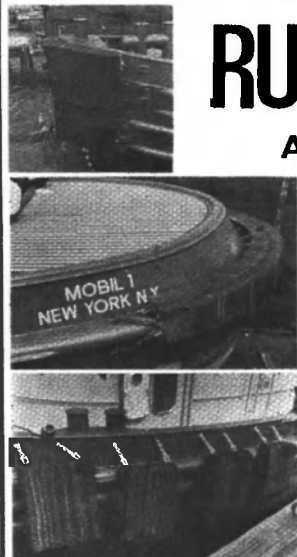
Cynthia L. Brown

quately budget for ship design early in the process to enable the industry to introduce into the fleet superior technologically designed and operating ships at a reduced risk -- and on an accelerated time schedule.

While Navy shipbuilding orders plummeted in the 1990's, ASA shipbuilders realized an increase in commercial business as a result of legislation enacted by Congress during that period. These were:

- The Oil Pollution Act of 1990, which mandated the transportation of oil only in double hulled tankers by 2015 and required that single hulled tankers be phased out of service based on their age and weight.
- The 1993 National Shipbuilding Initiative, which revived and amended the commercial Ship Financing Guarantee Program and established an industry/government maritime technology cost share program called MARITECH.
- The 1998 U.S.-Flag Cruise Ship Pilot Project to begin the development of an American cruise ship industry.

Since 1994, as a result of these initiatives, ASA shipbuilders have built or taken orders for the construction of 13 double hulled oil tankers and two, 2,000 passenger cruise ships. In the year 2000, ASA will work to expand upon these and other legislative initiatives to grow our commercial orderbook of environmentally safe tankers, cruise ships, container and other commercial ship types.



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Commercial Ship Financing

To this end, ASA is urging the Administration and Congress to budget at least \$50 million per year for the Title XI Ship Loan Guarantee Program in fiscal year 2001 and beyond. This loan guarantee fund must be replenished to enable ship buyers to secure commercial financing for the construction of more cruise ships, double hulled tankers, and fast cargo ships for which applications are either pending or expected to be submitted later this year.

Amendments to the Tax Code

Legislation is also expected to be introduced later this year to significantly grow the cruise ship construction market in the United States through changes in the tax code giving American shipbuilders tax parity with our foreign competitors. Suggested tax changes will include tax credits for builders of cruise ships; the payment of taxes on earnings derived from cruise ship construction only after completion of the contract; expansion of the Capital Construction Fund to include not only the non-contiguous trades but also the domestic point-to-point trades and "cruises to nowhere", and removal of deposits into Capital Construction Funds as an alternative minimum tax adjustment item.

National Defense Features Program

ASA will also be working with Congress and the Administration to urge robust funding for the National Defense Features Program (NDF) of the National Defense Sealift Fund. The NDF program was established to encourage the construction of dual-use ships in the United States by allowing the Department of Defense (DOD) to pay for the defense features built into a commercial ship provided that ship was made available to DOD to meet surge sealift requirements in time of national emergency. Studies by DOD have indicated that NDF surge sealift ships, because of their design and complement of a fully trained crew, would be more effective and two to three times cheaper than what DOD is currently paying to purchase used commercial ships, converting them, and maintaining them in a lay-up status while waiting to be called into duty. The existing reserve lay-up fleet numbers roughly 90 ships, which are old, outdated, and past their scrapping date.

This year, Congress expanded the NDF program in the Defense Authorization Bill to give the Navy the authority to pay up-front, in one lump sum payment, the cost of not only constructing the defense features, but also the private sector cost for the design, maintenance, and operation of the features over the life of the ship. This statutory change

will eliminate the annual budget uncertainty that would otherwise be associated with payments owed by the government to the private sector for costs incurred annually and make participation in the program more attractive.

For example, FastShip, Inc. is interested in participating in the NDF program and has determined that the life time cost of defense features that would be designed into its 40-knot fast cargo ships would be \$40 million per ship. If the NDF program is not funded by November of this year, however, FastShip will proceed with a pure commercial variant and the DOD will be denied the benefit of a fleet of militarily optimized dual-use ships. The Administration and Congress need to budget \$300 million annually for the NDF program to provide for the construction of 7.5 NDF ships a year to replace the existing inactive fleet of reserve ships that are in dire need of replacement.

Extended Lease Authority for DOD Auxiliary Ships

ASA is also optimistic that in the year 2000 Congress will expand on its initiative to encourage the Navy to enter long-term leasing contracts for its auxiliary ships by directing the Office of Management and Budget to score such leases as operating rather than capital leases. This is critical because a "capital lease", under current government budget rules and anomalies, dictates that the cost of the entire term of the lease be scored in

(continued on 12A)

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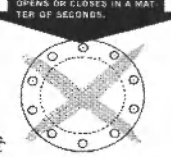
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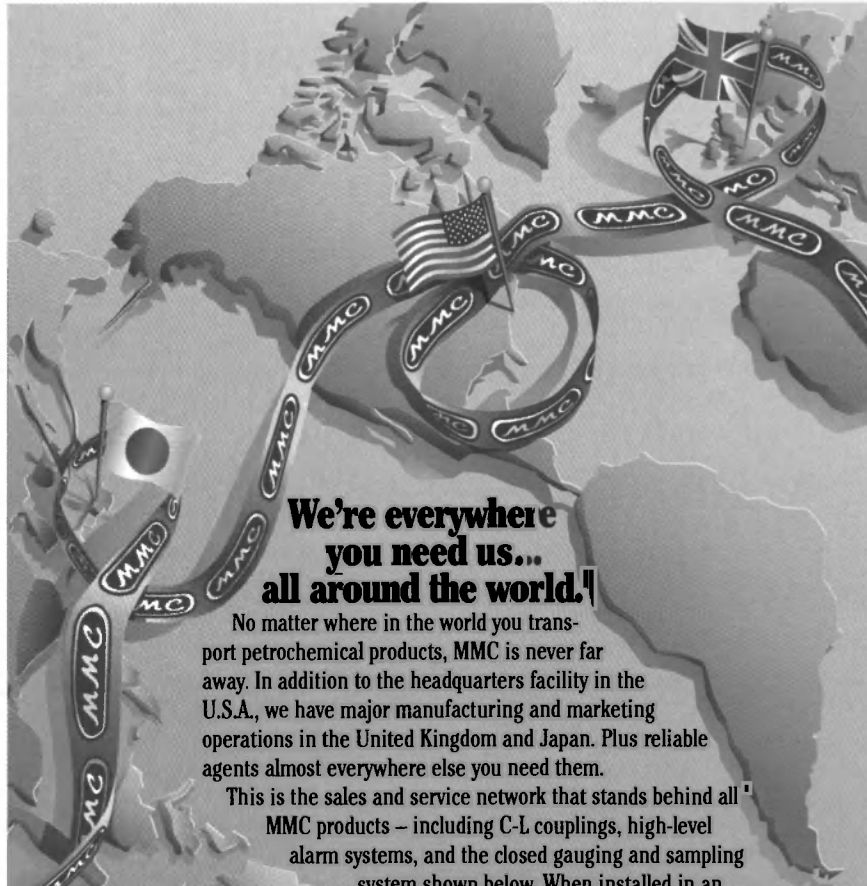


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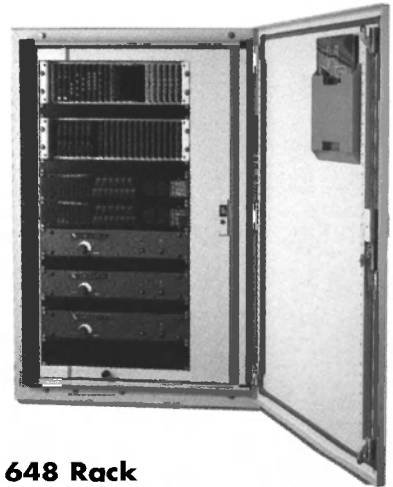
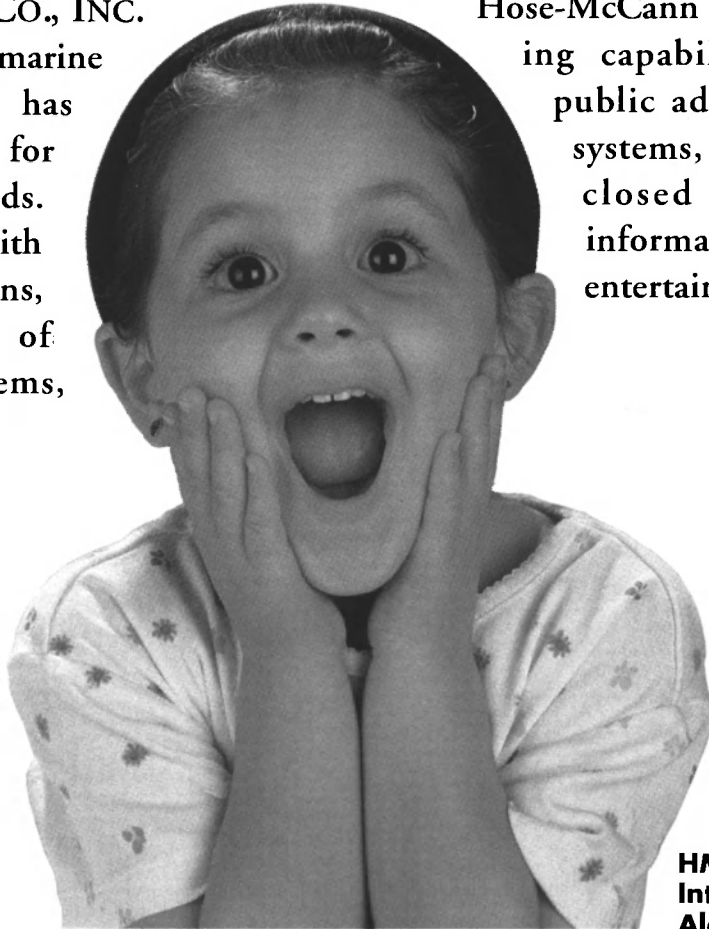
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maritime marvels

Creating the VLCC



Since the birth of the very first large crude carrier (VLCC) - the 206,000-dwt Idemitsu Maru in 1966, the stage was on the verge of being set for another 1,000 large tankers of VLCC size and above that would be built over the next 30 years. VLCCs are tankers ranging in size from 200,000-320,000-dwt, with a smaller sized version less than 275,000-dwt - equivalent to about two million barrels, which is a common cargo consignment size. The largest VLCCs are 275,000-dwt and above. Idemitsu Maru was delivered by Japan's IHI shipyard at a time in which tanker sizes were escalating at a very high pace. The vessel, which was constructed to transport oil from the Middle East to Japan, measured 1,128 x 164 ft. (344 x 50 m), with a fully laden draft of 58 ft. (17.7 m). This new vessel fared well as the Suez Canal was closed in 1967, thus making it more economical to deliver oil in large tankers to the U.S. and Europe.

Although most of this oversized fleet was built early on in its inception period, their claim as the largest ship afloat soon became short-lived when in the 1970's, several large ultra-crude carriers (ULCCs), some as large as 550,000-dwt were ordered. The 10-year period proceeding the delivery of Idemitsu Maru spawned the construction of about 650 VLCCs and ULCCs. Some even thought that the ULCCs would be ousted by an even bigger vessel — the million-ton behemoth, which, in actuality never did happen.

The second Arab-Israeli war in 1973 forced the price of oil to skyrocket — right in the midst of this surge of tanker newbuilds. As a result, two-thirds of these new ships were left unwanted — forcing the bottom to drop out of a market that had been on its way to succeeding as the leader in its industry. This oversupply vs. demand, combined with a worldwide economic slump, forced the VLCCs to be moved straight into layup.

The 1980s were not much better as no new tankers were developed during the 20 years that it took just to downsize the massive oversupply of tonnage. But, jumping ahead to the 1990's, the older already existing ships that had been the products of the 1960's VLCC boom now needed upgrades and repairs. This new interest in larger tankers is planted specifically on VLCCs since the once popular ULCCs were now thought of as impractical for today's trading patterns.

Despite all the production and delivery halts that the VLCC market has experienced over the years, these ships have also endured regulatory changes as well - specifically as a result of the Exxon Valdez incident.

Since the infamous incident occurred in Prince William Sound in 1989, all tankers ordered since 1993 must now have required double hulls - a more complex structure than the usual single hull. Although this new rule is one that will help to avoid any future disasters, it places some new constraints on the older, single hull tankers that are closing in on their final runs - about 140 of which will turn 25 within the next three years.

The Marine Pollution (MARPOL) Convention says that if the lifespan of these ships is to be extended to 30 years, they must pass a rigorous special structural survey. Proceeding these surveys, the tankers then must either use a method of carrying cargo called hystrostatic balance loading or be reconfigured with segregated ballast tanks — both options, which cut down the amount of cargo that can be carried. Today there are approximately 80 VLCCs totaling 24,000,000-dwt now under construction for about \$70 million each. Currently the only VLCC producing countries are Japan, Korean and newcomer China.

Source: *The Tanker Newsletter: A Publication of Intertank*

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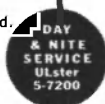


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Victory Heads Home



Captain
John C. Timmel

On September 8, 1999, there was a welcoming event at the Tampa Port Authority Terminal in Florida for SS American Victory, where the vessel will be converted into a mariners memorial and museum. The vessel is a Victory-class merchant ship built during World War II that served the Korean and Vietnam wars, carrying troops, equipment, ammunition, and supplies to support U.S. military operations.

For the past 30 years, SS American Victory, was anchored in the James River Reserve Fleet in Norfolk, Va., and sailed only four months in 1985, performing sea trials as part of a program designed to assess the time and expense necessary to activate Reserve Fleet Victory ships for use as cargo/troop carriers during military deployments.

The welcoming event held at Terminal six, included a reception, dockside welcoming celebration, and a dignitary presentation. Keynote speaker of the event was Admiral Gordon S. Holder, Commander of the Military Sealift Command, who held sea-duty assignments on USS William C. Lowe, USS Brumby, USS Boulder, and USS Hermitage.

SS American Victory was towed to Tampa Bay by a 129-ft. (39.3 m) tug, M/V Sharon Dehart, operated and donated for the welcoming by Gulfcoast Transit/TECO Transport. The ship will be converted into the American Victory Mariners Memorial and Museum Ship (AVMM&MS), which will honor mariners who served the U.S. in times of war and peace.

The founder and president of AVMM&MS is Capt. John C. Timmel, an accomplished mariner, an active participant in marine-related organizations, and a native of Florida. Timmel currently works as a harbor pilot with the Tampa Bay Pilots Association, piloting American and foreign-flag vessels in-and-out of the local ports. He graduated from State University of New York - Maritime College at Fort Schuyler in 1981, receiving a B.S. in marine transportation. Timmel also holds a U.S. Coast Guard Master's and marine pilot licenses.

In October 1996, Timmel attended a Propeller Club convention, in Baltimore Md., aboard the reconditioned WWII-era Liberty ship, SS John W. Brown, and it was then that he began birthing the concept of bringing a similar ship to

Tampa. In February 1998, Timmel learned through Capt. Brian Basel, (Tampa's USCG captain at the time), that several Victory ships in the U.S. Maritime Administration (MARAD) reserve fleets were destined for scrap if not acquired for memorial purposes. He then investigated the possibility of bringing a Liberty or Victory ship to Tampa and conducted an informal feasibility study. The results Timmel yielded proved that he could carry-out his venture. As a result, the AVMM&MS is now docked nearby the Florida Aquarium and at her new home port of Tampa Bay, its currently being operated by The Victory Ship Inc., a non-profit organization formed to secure SS American Victory, and operate the memorial and museum.

1958

Sperry Develops Smallest Gyro-Compass



A new precision Gyro-Compass, believed to be the world's smallest, has been designed and developed by the Sperry Gyro-Compass Company, Great Neck, N. Y., and was introduced to the public at the 1958 National Motor Show. It is distinguished above all other gyro-compasses by its miniature experimental compass, 7 1/2 inches in diameter and only nine inches high, is even smaller and lighter than the Sperry Mark 22, now used on Navy landing craft.

The new navigation instrument holds fast to headings despite ship movements caused by heavy seas. Operational simplicity and ease of maintenance of this gyro-compass was proven in the rigid performance tests aboard Sperry's experimental ship Wanderer.

According to W. R. Oswald, Sales Manager for Sperry's Marine Division, "This is the first in a series of new highly developed products designed especially by Sperry for the small boat operator."

RTCM Schedules Spring Meeting

The spring meeting of the Radio Technical Commission on Marine Services will be held May 13-14 and 15 at the Benjamin Franklin Hotel in Philadelphia, according to an announcement made recently by R. T. Brown, Executive Secretary.

Seaway Corp. Buys Westchester Ferryboat

The Westchester Ferry Corporation ferryboat John J. Walsh, which served the Yonkers-Alpine Line for 19 years, has been bought by the St. Lawrence Seaway Development Corporation for use between Roosevelt, N. Y., and Cornwall, Ont.

John J. Walsh, Superintendent of the Westchester Ferry Corporation, said that the company also plans to sell the Weehawken, last of its fleet of ferryboats that plied the Hudson River for 33 years. The ferry service ended December 23, 1956.

February 1, 1958

In New Orleans M

Shell Oil Company's new port and materials department now located in the Maryland Building across Canal Street from the Shell Building in New Orleans, B. Dykstra, president, announced recently that four formerly functions are located floors of the Maryland Building under the new and materials department K. W. Martin.

E. R. Vorenkamp, a special assistant to the and materials manager Slagle, formerly a senior engineer in the port department, succeeded Vorenkamp as transport manager.

The remaining two Mr. Martin are the division and crude oil Winham continues as division manager and as crude oil rep-

SwRI Conducts On Ship Struct

A thorough survey of design theory of structures is conducted in order to such principles may the structural design merchant ships. The made in the researching Mechanics Research Institute, Tex., and is being conducted under the sponsorship of the Committee of the study of sciences research Council.

An important guide for naval will embody the information related to structures. It will be readily accessible charts and tables caption by the bureau.

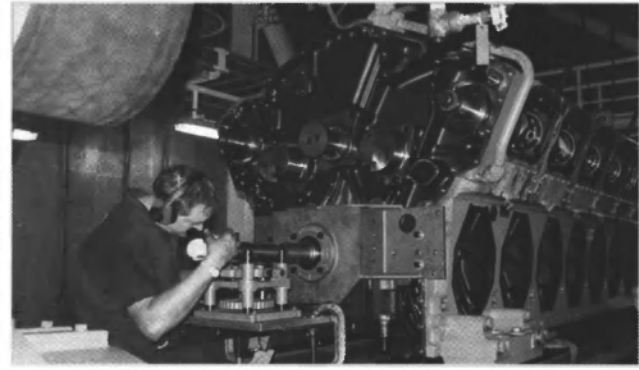
Directing the Edward Wenk, Mechanical Engineer, Thein Wah, Senior Engineer. Dr. Wenk, 14 years' experience, David Taylor Model Basin, he directed fundamental research applied research structures, which of the new project in the Albion powered submarine.

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1971

Litton Ship Systems Launches

SS Austral Envoy— First Ship Launched From New Shipyard

The recent christening of the Austral Envoy at Litton Industries' new \$130 million shipyard in Pascagoula, Miss., inaugurated a new method of ship launching in the United States. With the exception of the splash from the champagne bottle, the new Farrell Lines containership was not launched in the usual fashion. Instead of a slide down the shipway as in a traditional launching, the Austral Envoy was transferred from land to water by way of a new launch platform system designed by Crandall Dry Dock Engineers, Inc., Cambridge, Mass. This system is part of the assembly-line production process being utilized by Litton Ship Systems in the building of the Austral Envoy and her three sisterships, Austral Ensign, Austral Endurance and Austral Entente.

The Austral Envoy was sponsored by Lady Phyllis Bates, wife of the Hon. Sir John Bates, C.B.E., Australian general consul in New

The new Litton "shipyard of the future" employs new shipbuilding concepts of fabrication, handling and assembly of ship components, which are all brought together in an integration area adjacent to a waterfront bulkhead. The launching of this integrated system of ship construction. The floating dry dock, of the Crandall Dry Dock Engineers' sectional self-docking type with the wing on one side removable for transfer, was selected for this operation because of its unique qualities. Launching is accomplished from the yard, located 12 feet above water level, to a floating attitude as shown in the photographs to the right and as described in the February 15, 1971 issue of Maritime Reporter/Engineering News. This dock has the capacity to launch vessels weighing up to 35,000 tons light displacement. It has an overall length of 960 feet and width of

313 feet (the clean width between



1. The Austral Envoy prior to launching on the shipyard's various modules of the ship were joined together to form it



2. In this view the ship has been moved onto the launch platform from shore to platform by means of a special transfer distance is about 300 feet and required four hours was moved at a rate of 22 inches a minute. The platform



"Econoships," which were very big with enormous carrying capacity. They weighed nearly 59,000 tons and they could carry 4,480 TEUs at a speed of only 18 knots. The ships were built by Daewoo in South Korea. Delivered in 1984-1985, they were named after American states like American California and American Alabama. It was a clever idea in theory, but it did not work out in practice. The ships were too slow, and the United States Line went bankrupt.

From this hard-won lesson, most of the next generation of containerships operated by big companies like Maersk and Evergreen settled on ships of Panamax dimensions with normal service speeds of about 23 knots. In the 1990's containerships have gotten bigger and bigger. For example, Regina owned by the Maersk Line, was built in Denmark in 1996 and was designed to carry 6,000 TEUs, spanning 17 containers across the deck. It is considered an ultra-large container vessel (ULCV). Contrast this capacity with Malcolm McLean's Ideal X that carried only 58 containers. It is a stunning increase from a few dozen to thousands of containers. One of the world's largest ships, Regina is 80 ft. (24.3 m) longer than the cruise ship Queen Elizabeth 2. With a length of 1,043 ft. (318 m), Regina could easily carry three football fields placed end-to-end and still have room to spare. Or put another way, the ship is longer than the Eiffel Tower (990 ft.) is tall.

When Regina visited the Port of New York and New Jersey on July 22, 1998, it created quite a stir because it had to

carry less than its maximum capacity so it would not run aground. The message was clear: deeper and wider channels would be needed to accommodate a fully-loaded Regina.

And this is not the end of the story. The ships just keep getting bigger. Launched in 1998 was the Sovereign Maersk at 1,138 ft. (347 m), 95 ft. (29 m) longer than Regina Maersk. The Sovereign is able to carry 6,600 TEUs, a 10 percent increase.

Where will it all end? Could we some day be looking at 10,000 TEU vessels? It's possible if we can keep up with the necessary dredging. We would need very deep and wide channels to provide the necessary turning radius. In addition, we would need more cranes with a greater outreach since the new ships are 17 containers wide. Few cranes today can reach that far.

Today, Malcolm McLean is heading up a new company, Trailer Bridge, in Jacksonville, Fla., which he started in 1992 as the world's first company to build vessels exclusively for 53-ft. (16.1 m) containers. Trailer Bridge is a motor carrier providing truckload service between the U.S. and Puerto Rico with domestic service covering the Eastern half of the U.S. With two sailings a week, Trailer Bridge provides safe and efficient freight transportation between the U.S. mainland and Puerto Rico. Meanwhile McLean can now look back on a long and productive career with satisfaction. It is likely that the history books of tomorrow will honor him along with Henry Ford, Thomas Edison, and the Wright Brothers.

Did McLean "invent" the container-ship? Not exactly, since most of the pieces of the puzzle were already out there waiting to be put together. McLean was operating in the classic American role of the "tinkerer," a person who enjoys repairing and experimenting with machinery. Thus, McLean was very much like Ford, Edison, and the Wrights. So we can reasonably say that if McLean did not invent the container-ship, he certainly is the man who made it happen.

Back in the 1930's no one would have predicted that a North Carolina truck operator would become a giant in the maritime industry, but history will long remember McLean. He was recognized on May 12, 1999 by the Maritime Association of the Port of New York and New Jersey as "The Man of the Century," and Forbes Magazine described him as "one of the few men who changed the world."

About the Author: Angus Kress Gillespie Ph.D.

A graduate of Yale University and a Fulbright Scholar, **Angus Kress Gillespie** is an associate professor of Ameri-

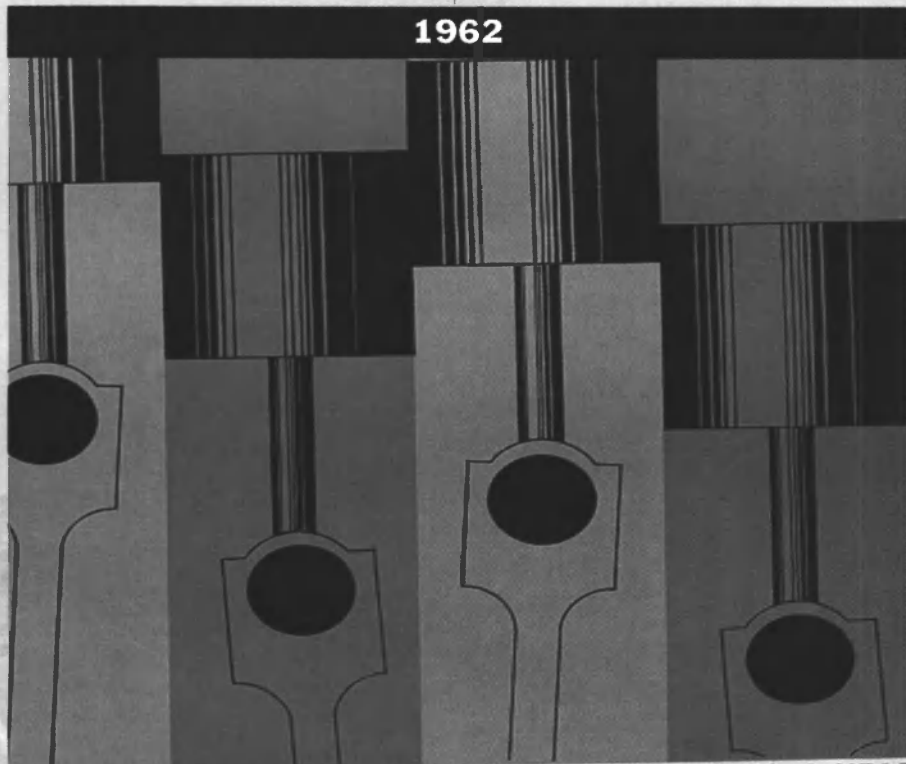
can Studies at Rutgers University. Author of several books and numerous articles, Gillespie teaches courses on maritime history and culture and is frequently consulted and quoted by the media. He has often shared his feelings with radio listeners on National Public Radio, and he has appeared on the television show "Good Morning America."

Volume 9



MR/EN extends special thanks to "Container-ship" author **Angus Kress Gillespie**.

1962



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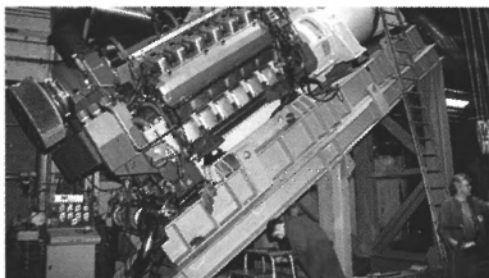
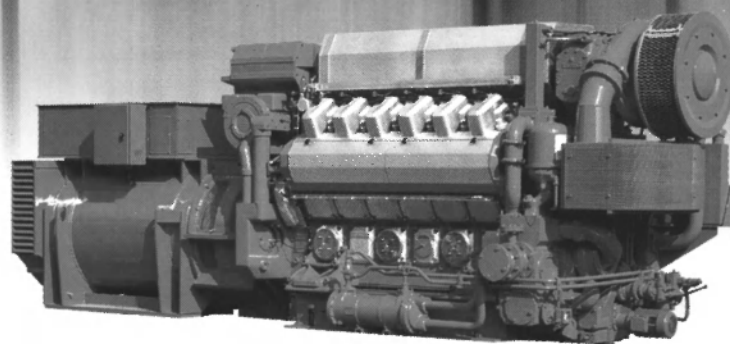
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Propulsion Performance Products

Alstom Outfits Advanced AHTS Vessels With DPS

A series of six new 216 ft. (66 m) Anchor, Handling, Tug, Supply (AHTS) vessels for Singapore's Swire Pacific Offshore feature a full complement of advanced machinery and systems,

including advanced dynamic positioning systems (DPS) from Alstom Drives & Controls. Built by Norway's Ulstein Werft to the proven and popular UT 720 design, the six identical vessels were

built with economical and efficient performance in mind. This thought is carried out through the dynamic



position control systems, including economic tunnel thrusters and minimum complexity, install and test time. For its part, Alstom proved not only the technical advantages inherent in its systems, but its ability to expedite the installation and testing, as each of the six systems was proved in under a day, as compared to the five days per vessel that had been allowed.

When Swire decided to expand its considerable fleet of offshore market vessels, it settled on the AHTS because of its broad capabilities to handle routine duties as well as have potential for future, exacting applications such as ROV support and cable laying, duties which demand exacting DPS performance.

Power + Performance

The six vessels are each driven by a pair of 4,500-kW diesels, which feed the twin 4,500 kW, 154 rpm propulsion drives. Position control on station is via three 663 kW tunnel thrusters, two mounted forward and one astern.

Alstom's DPS 900 position control system fulfills three main roles: DP primarily used for off-loading; manual maneuvering via joystick for tug/anchor handling duties; and to support enhanced duties, such as ROV deployment and cable laying.

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Swire AHTS Particulars


Length, o.a.	216 ft. (66 m)
Breadth	48 ft. (14.6 m)
DWT	2,100
Accommodation	25
DPS	Alstom Drives & Controls

Waukesha Bearings Introduces New Concept

In response to market demands for alternative sourcing, purchasing and flexibility, Waukesha Bearings Corp. introduced the J2000 program of self-equalizing thrust bearings recently at the Turbo Machinery Show in Houston. Providing complete assembly and part interchangeability with standard six-pad J and B style thrust bearings, the J2000 line offers customers a web-enabled credit card purchasing option, 24-hour order to ship, and web access to inventory and technical information.

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MAN B&W Holeby L28/32H

Dominates Niche

MAN B&W Holeby's L28/32H engine has steadily built a solid reputation in more than a decade on the market. According to its manufacturers, the diesel genset has a commanding 69 percent market share in the 1-2 MW segment for engines operating on heavy fuel oil (HFO). Launched in 1987 and first delivered in 1988, the company has worked to build the genset's reliability and hence popularity through a continuous development program.

The engine is built in two versions, the H version from Holeby for genset applications and the A version from MAN B&W Alpha for propulsion applications. Since its entrance into the marine market, there have been a total of 1,434 engines sold, including 1,265 H versions (1,145 in-line, 120 V) and 169 A versions (114 in-line, 55 V). In addition, the engine is built under license in Korea, Poland and China.

Reliability = Repeat Business

The main factor contributing to the engine's success is its reliability and excellent performance. At the time of the engine's introduction, the recommended interval between major overhauls was 12,000 hours. At the beginning of the 1990s, the standard interval was 16,000 hours. Today, many vessels are operating with intervals of 20,000 hours and longer.

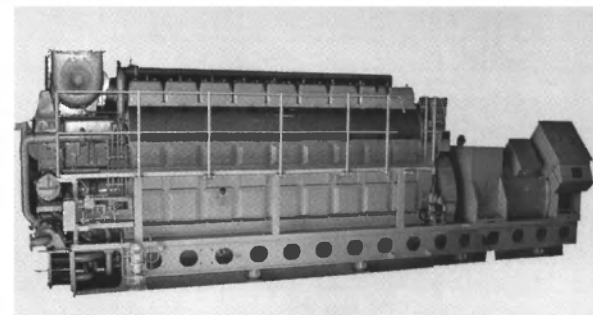
In addition to excellent upfront engineering and manufacture, the engine has benefited from Holeby's continuous development design concept. The product is subject to constant improvement, meaning that even though the engine is today more than a decade old, it remains up-to-date. Holeby has focused on increased maintenance-friendly design and actions to prolong the interval between major overhauls and the lifetime of components, a philosophy, which is designed to lead to a reduction of spare parts consumption.

In order to make the engine enhancements cost and time effective for the end-user, the company has taken great pains to ensure that many of the repairs be undertaken by crew members. An example of this is the Lambda controller, a simple system that ensures the injection of more air into the combustion chamber when major changes in load occur. The process not only speeds up the engine's reaction time, but also substantially reduces the amount of non-combusted fuel during load changes, leading to less smoke and

internal pollution, as well as reduced wear. The first versions of the Lambda

controller were equipped with electronic control; now it has a simple mechanical control instead.

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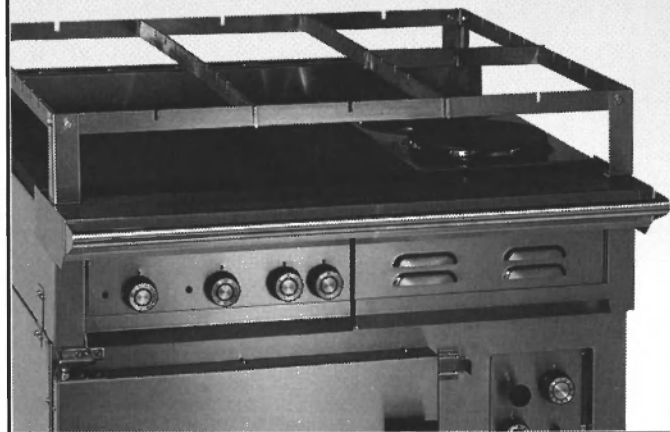
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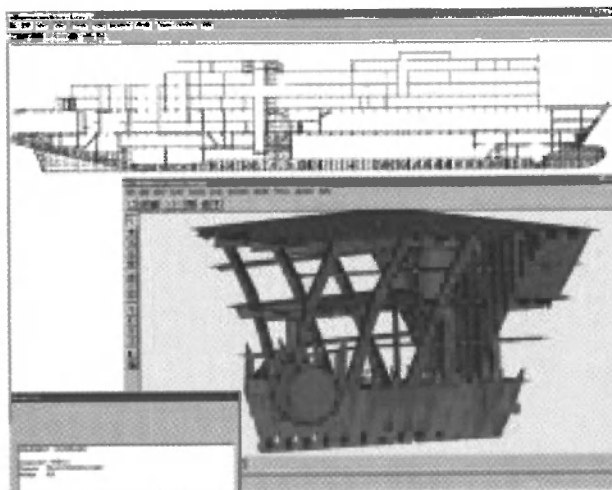
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Propulsion Performance Products

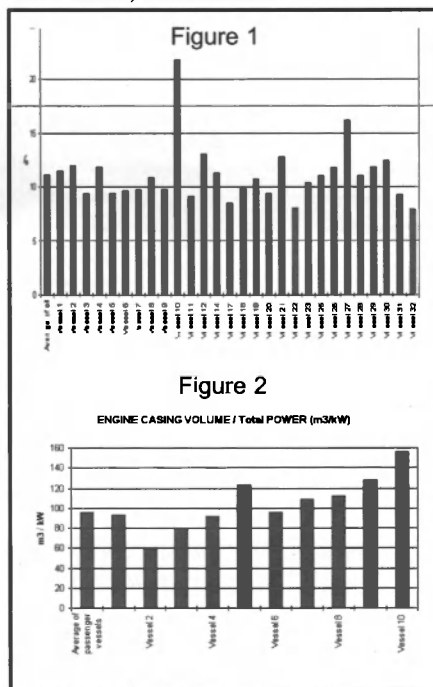
Cruise Ship Design: Propulsion Choices, Space Optimization Key To Ship Profitability

Technical development in ships has been tremendous during the past 10 years. New technology has been introduced faster than ever before in the ship-building history. The new stricter rules have been the generator for many new solutions, but especially the total economical, conceptual approach has made it possible to introduce new systems, equipment and arrangements into a typically conservative market. Investments are considered on basis of lifetime cycle costs, but taking into account also possible additional revenues.

The issue is to maximize the efficient revenue generating space at minimized investment and running costs, but taking into account availability and environmental impacts as well. These items are to be clarified and their impact on the lifecycle economy of the vessel calculated before a decision can be made, (e.g. between different machinery configurations).

The tendency is clear and promising, new products and innovations are introduced and completely new machinery and ship configuration are developed for efficiency and economical reasons.

Considering cost efficiency we end up with four items: space, weight, power and equipment (materials). The efficient area and volume of the vessel compared with the total area and volume is a good indication of revenue generating capability and costs. Weight is directly related to building and fuel costs. Installed power onboard relates to the efficiency of hull, propulsion system and power generation. Equipment and materials are directly and indirectly, through required man-hours, cost related.



Space efficiency

Deltamarin has gathered and analyzed more than 50 recently built passenger cruise ships of all sizes. Rather big and sometimes amazing differences can be found in space utilization. Figures 1 and 2 present good examples.

Figure 1 shows machinery space volume compared with the total volume of the ship. Smallest value is eight percent and highest 17.5 percent, the average being 11.3 percent, one exception being at 22 percent.

A further study of engine casing volume of selected vessels, figure 2, shows the same kind of variation. Some of the differences can be explained by different vessel speeds, but for example both diesel electric and diesel mechanical types are included, and that gives no explanation, nor the year of build.

Bearing in mind that the machinery spaces and especially engine casing are located in the most centralized area of a vessel, it is certainly worth while considering carefully the efficiency and location of machinery spaces and casing. Space efficiency can be considerably increased through clever machinery configuration selection and design. There are four different steps and selections to be considered:

- power generation
- propulsion system
- machinery type
- machinery location.

Electric power generation gives the freedom to select optimum power source and optimum number of power generating units. This leads to direct and indirect space savings.

Figure 3

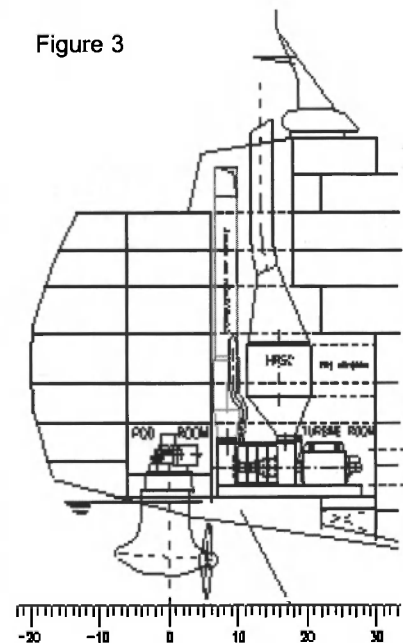


Table 1 Exhaust gas emission comparison between COGES and diesel-electric power plant.

Relative	COGES	D-E HFO
NOx	1	3,32
SOx	1	10,22
S- percent (typical)	1	10,00
CO2	1	1,02
Particulates	1	up to 68,60

Environmental awareness and space savings, i.e. additional passenger cabins were the most important arguments for the Royal Caribbean International to select COGES plant.

Today the big challenge is the pod-propulsion. Pod-propulsion is an industry standard today in passenger cruise ships and has been applied also for product tankers (two refits), icebreakers and offshore vessels. Space saving is obvious, big propulsion motors are moved from the tank top outside the ship. Other benefits are potential for propulsion power savings, up to 15-20 percent, standardized, simplified hull forms, simple construction, installation man-hour savings, safer handling of the ship, etc.

The selection of machinery type has typically been between different types of diesels, but presently gas turbines have made their entrance into fast ferries and passenger cruise vessels, again with high space savings. In the new Panamax size RCI newbuildings, 'Vantage' and 'Millennium' class ships, it was possible to gain 50 additional passenger cabins by changing into combined gas and steam turbine electric machinery (COGES). Gas turbine machineries are now studied for all coming cruise ship projects but interestingly also for other types of commercial vessels, such as fast conventional ferries, RoRo ships, car carriers and even tankers. Space saving again playing a major role.

All aft machinery

Locating the machinery in the aftmost area of the vessel is normal and typical in many types of cargo vessels. The same philosophy, 'all aft machinery', we applied for a Panamax size 80,000 grt cruise vessel with a COGES plant together with pod propulsion, and reached 100 additional passenger cabins in comparison to conventional diesel-electric arrangement, (see figure 3). On top of the additional passenger revenue space, it was possible to completely rearrange and separate passenger, service and crew spaces avoiding mixed flows and gaining additional space efficiency. This arrangement was named 'all down service'. Thus, it was easy to guarantee also the additional service and public spaces for the increased passenger number and reach better well separated service functions.

Fuel efficiency and exhaust gas emissions are directly linked. The lower the

total fuel consumption at all operating modes with all the required functions onboard the lower the emissions. Pod propulsion has shown potential for vast power savings already in cruise ships.

When comparing exhaust emissions, it is essential to look not only at propulsion and service power generation but also fresh water generation, fuel heating and similar, which typically require oil

fired heaters and boilers, as well as other energy production which is connected to the main machinery. Table 1 shows a comparison of exhaust gas emissions for a Panamax cruise vessel in the Caribbean service between diesel-electric and COGES machineries. The total amount of fuel and lube oil burnt on an annual basis was close to 1,000 tons higher for the diesel configuration,

mainly due to the boiler fuel required for fresh water production. Lube oil consumption was also higher for diesels whereas engine fuel consumption was higher for COGES plant.

Circle 182 on Reader Service Card

The preceding was excerpted from a presentation by Markku Kanerva, M.Sc., Director, Business Development DELTAMARIN LTD.

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* Marine Log, Nov. 1998

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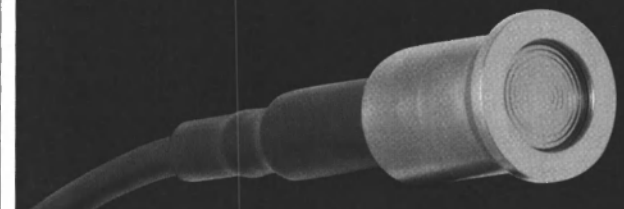
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Propulsion Performance Products

Marine Propulsion Introduces New Product

Marine Propulsion, a distributor and manufacturer of propulsion, thruster and power transmission equipment, recently introduced Marprop Wet Removal Thruster System. Available in a power

range from 150 to 1,000-hp, the thrusters are designed so that all wearing components — including propellers — can be removed internal to the vessel, helping to effectively limit drydocking opportunities.

Circle 197 on Reader Service Card

Thordon Outfits Empress

Noted for their environmental benefits, Thordon's water-lubricated Compac shaft bearings were once again specified for a high profile cruise ship project. The Regal Empress, built in 1953, was recently converted to the Compac sys-



tem during its 12-day drydocking at Bender Shipbuilding and Repair in Mobile, Ala., earlier this summer.

Thordon Compac bearings can also be found on the cruise ships Norway, Grand Princess, Independence, Disney Magic and Disney Wonder.

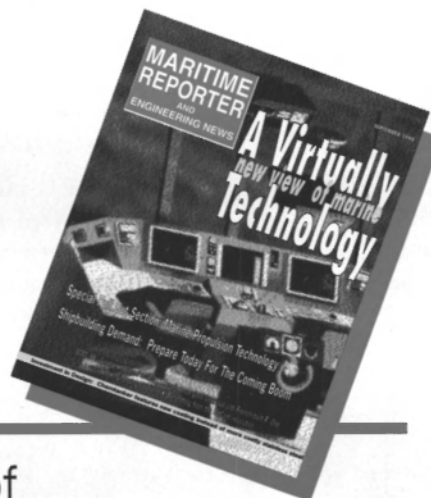
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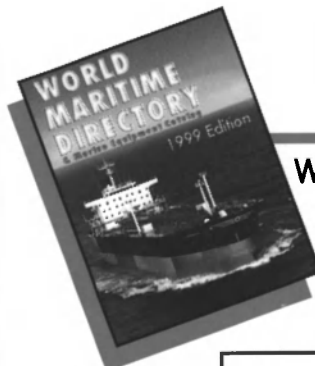


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First Cargo Cat Is Commissioned

The first Cargo Cat was sent out this past November equipped with four LIPS waterjets type LJ150D, each driven by 7,200 kW diesel engine. The vessels, which are being constructed by Incat, are the first of a four part series. LIPS is also tuning into industry trends with ongoing techniques and developments mainly, its support of the international conference on the latest developments in waterjet propulsion, organized by the Royal Institution of Naval Architects (RINA) on October 22-23 in Amsterdam.

Circle 75 on Reader Service Card

MJP Introduces New Pump Category

Through its new pump geometry, MJP Waterjets has introduced a new pump shape designed to offer more thrust at lower cavitation limits. Since the shape's presentation, two new vessels have been fitted with the product and are currently running with positive performances. Specifically touting the pump is a catamaran Discovery Bay operating in Hong Kong as rescue vessel for the Discovery Bay fleet. Measuring 82 ft. (25 m) with a pull of 120 tons, the training/tug vessel is fitted with two MWM engines and MJP 550 DD jets. Reportedly operating smoothly without any traces of cavitation noise or vibration, the vessel runs at 28 knots under normal conditions.

Circle 76 on Reader Service Card

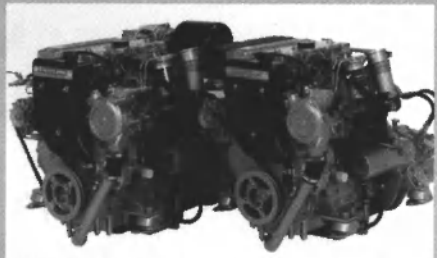
Accurate Engine Peak Meter

Kistler Instruments is offering a new engine peak meter, type 2515, complete with advanced electronics with convenience and upgraded accuracy over mechanically operated versions. Boasting quartz pressure sensors that record the full pressure curve, the hand-held instrument automatically stores a complete cylinder pressure curve using supplied Windows-based software.

Circle 73 on Reader Service Card

Maritime Reporter/Engineering News

Perkins Sabre Unveils New Engines



The new Perkins Sabre M92 (right) and the new Perkins Sabre M115T.

Available to boatbuilders, owners and operators throughout the U.S., Perkins Sabre has introduced the newest additions to its 65 to 800-hp marine diesel range.

The four-cylinder model M92 is a 4.2 liter, naturally aspirated 92-hp engine, while the 4 liter, turbocharged M115T runs 115-hp at 2,400 rpm.

Replacing one of the most renowned and successful Perkins marine engines to date — the company's naturally aspirated M90/4.236, which has operated in the U.S. for many years.

With upgraded performance, economy and environmental credentials, both the M92 and the M115T are reportedly quick and straightforward, credited to each engine's sharing of identical engine mounts and exhaust positions.

Extensive trials have shown that both engines are equally appropriate for pleasure and commercial use and offer improved cooling due to their respective water pumps, which is based on the company's 1000 Series Darwin engine.

In addition, an analysis of its competitors performed by Perkins revealed the Sabre 92 as having the lowest fuel and oil consumption.

Replacing Perkins' "workhorse" M90 with the M92 is Silver Line Cruisers of Banagher, Ireland. Known as one of Ireland's premier fleet companies, the company operates a fleet of cruisers between Lough Ree and Lough Derg.

Measuring 37 ft. (11.3 m), GRP Silver Crown is the first to be repowered in the current Silver Line fleet.

The installation upholds a strong tradition at Silver Line, which has resulted in all of the company's fleet being repowered by Perkins engines.

Circle 74 on Reader Service Card

Regulateurs Europa Goes Digital

Regulateurs Europa has introduced a new Viking digital electronic engine management system — Viking 25 and digital electronic engine governor — Viking 24. Designed to provide cost-effective control of diesel, dual fuel and spark ignition gas engines in generation,

propulsion and traction applications, Viking 25 will operate in conjunction with various leading electronic fuel systems.

The hand-held operator device is designed to offer a more economical route to system setup and commissioning both for service engineers and customers.

Circle 28 on Reader Service Card

New Vibration Processor

Akasanka Diesels Limited has formulated the AVP 8110 tensional vibration processor, an optical sensor-based non-contact precision tensional vibration processor. Effectively used for measuring torsional vibration of marine propulsion shafting systems, the product is compact and light for easy portability.

Circle 27 on Reader Service Card

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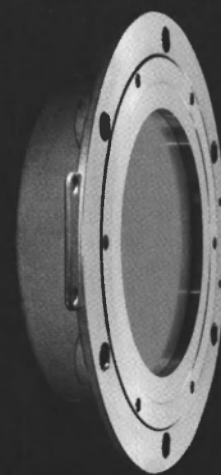
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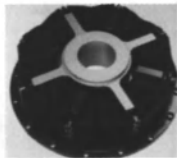
Propulsion Performance Products

Renold Couplings Is Granted New Status

The MSC Coupling developed by Renold Hi-Tec Couplings has been given Millennium Products status by the Design Council. Established after U.K.

Prime Minister **Tony Blair** challenged businesses to show that the U.K. is high in terms of creativity, this distinction labels products as

Fail-safe coupling joins millennium collection.



being short-listed for display in the Millennium Dome. Labeled in terms of its innovation and creativity, the MSC Couplings are lightweight and compact, reliable with a unique fail-safe design and are known for their low linear stiffness.

Circle 77 on Reader Service Card

Coastal Prop Technology Offers Prop Scan

Before Prop Scan entered into the U.S. market, there was virtually no way to measure the exact pitch of a propeller. Varying pitch differences between blades caused problems, and in twin screw vessels, the pitch differences between the left and right propeller led other components to become suspect. By integrating its strong computer technology with newly developed repair techniques, Prop Scan helps to produce a propeller that is in tune perfectly to transmit the engine power to the water in the most efficient way possible.

Circle 30 on Reader Service Card

New Thrust Nozzle From Rice Propellers

Rice Propellers has delivered two systems for a new 98 ft. (29.8 m) tugboat being built in Chile by Detroit Diesel shipyard to work in the Maracaibo Lake in Venezuela. A sister boat (identical) to Neeltje P. The vessel has two 103 in. diameter Kort 37 system with the following:

Bollard Pull Ahead:	54.4 tons
Bollard Pull Astern:	39 tons
Free Running Speed:	12 knots

Neeltje P was equipped with two 106 in. diameter Rice Thrust Nozzles and skewed propellers.

Bollard Pull Ahead:	61.3 tons
Bollard Pull Astern:	42 tons
Free Running Speed:	13 knots


Results were certified by Bureau Veritas. With its new nozzle design, Rice has eliminated the decision for users between increasing thrust but losing speed, or gaining speed and losing thrust. Now, users can have both thrust and speed with the hydrodynamic profile of the Rice Thrust Nozzle.

Circle 81 on Reader Service Card

Prüftechnik Adds Vibrocord Data Collector


Prüftechnik has a new addition to its product line — the Vibrocord data collector and FFT analyzer with patented Vibcode location recognition. This feature allows even non-specialists to collect trending data and expertly-guided diagnostic spectra quickly and reliably. The product uses two-level strategy to limit analysis effort to some cases where intervention is needed. For instance, when programmed with alarm limits and contingency measurement plans for





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Circle 26 on Reader Service Card

SMI Reps for Propulsion Companies

Ships Machinery International, Inc., is a leading manufacturer of tunnel thrusters, sales and service in the U.S., designing and developing its own product line, and working in partnership with some of the world's leading marine equipment producers. SMI is the Brunvoll representative in the U.S. for new equipment sales, parts and services. Brunvoll is the supplier of high quality thruster systems, for maneuvering and main propulsion of ships. The company specializes in controllable and fixed pitch bow and sternthrusters, azimuthing (rotatable 360-degree) thruster and thruster control systems for normal duty and dynamic positioning systems.



Circle 78 on Reader Service Card

Marine Propulsion Controls

Marine Engine Controls, Inc., offers Gear-Trol E/P propulsion controls, designed to eliminate plastic control heads, shuttle valves and tubing, maintenance and loose operation of cable controls, electro-mechanical servo-motors and micro-processors and out-of-sequence hydraulic controls. Components include an air prep unit, shaft brake module, throttle actuator, Mark VII air clutch panel, reduction gear actuator and clutch pressure throttle interlock.



Circle 80 on Reader Service Card

New UltraJet 305

Ultra Dynamics, the manufacturer of the UltraJet range of marine jet drives, has introduced a new jet propulsion system, which utilizes the power available from higher rated diesel engines, up to 400 bhp. The new jet, the UltraJet 305, is derived from the UltraJet 303.

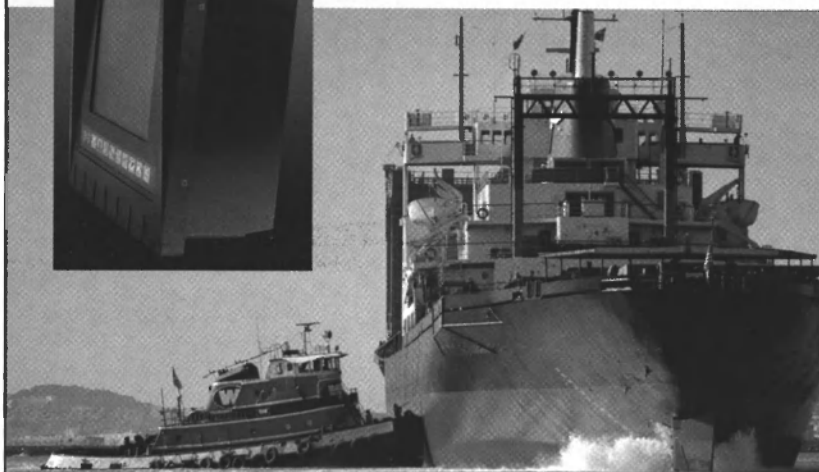
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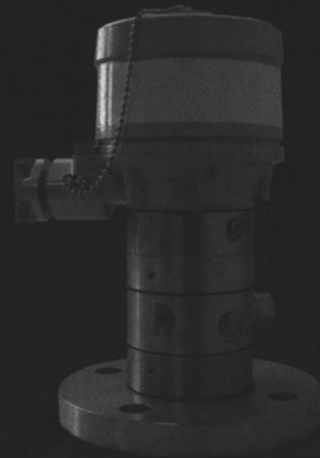
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The 12 in. diameter stainless steel impeller gives superb performance and a generous margin of thrust where most needed, says the company: At the transition from displacement to planing condition, especially when the vessel is fully loaded.

The new jet features new sealed drive bearings for reduced maintenance, new reversing deflector for improved reversing, new inboard hydraulic cylinder for reversing deflector operation and a standard rubber tail

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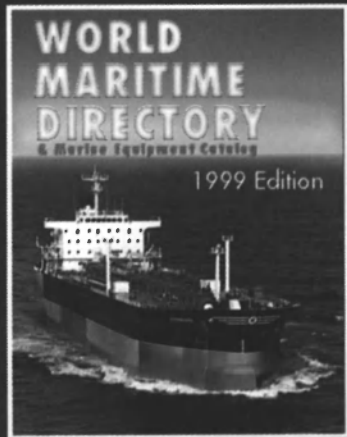
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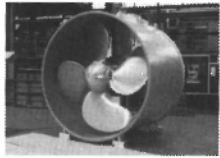
Propulsion Performance Products

bearing and option composite bearing for dry-run capability.

Circle 82 on Reader Service Card

Kawasaki Side Thrusters

Kawasaki Heavy Industries offers the KT-B series of side thrusters, developed according to modern



engineering concepts and extensive marine experience, says the company. The series features small size and a high degree of noise and vibration reduction, and provides easier ship maneuverability when used in combination with Kawasaki's controllable pitch propeller.

The company also manufactures the KST series of steerable thrusters for various working vessels, offshore oil drilling rigs and other applications.

With a 23 percent reduction in tunnel length compared to former models, the KT-B thruster can be installed closer to the vessel's fore or aft end, enlarging the distance between the thruster and the vessel's gravity center, thus increasing the vessel's turning moment. For ease of maintenance, each propeller blade is easily replaced inside the tunnel. When replacement is done afloat, the thruster tunnel is kept above sea level by a hull ballast adjustment.

Circle 83 on Reader Service Card

Extended Range of Waterjet Propulsion

The new TAMD74C engine is one of the new engines coupled with Kamewa waterjets, making up the extended range of Volvo Penta's complete, integrated waterjet propulsion system. The packages are all delivered complete from Volvo Penta, including engine, waterjet, gearbox, shafting and control systems. The TAMD74C will be coupled with the Kamewa K32 waterjet, and will be available for rating 3 and 4, as will the 12-liter TAMD122, available for ratings 2, 3 and 4. The 16-liter TAMAD163 comes with the Kamewa40. Both the TAMD122 and TAMAD163 will be available with the Kamewa36 during the coming year.



Circle 84 on Reader Service Card

Control Heads

Available from Mathers Controls, the MicroCommander Control Heads feature single-lever control of direction and speed, station transfer button, station-in-control indicator light for port and starboard and precise, instant response. A

complete MicroCommander system includes one control head with one or two levers to control single or twin engines. An option is for up to four additional heads to be connected to the actuator. The control stations can be installed wherever desired: Cockpit, bridge, bow or stern. Station transfer buttons efficiently switch control from

one station to another.

Circle 85 on Reader Service Card

Schottel's Rudderpropeller

The Schottel Rudderpropeller (SRP) is a combined propulsion and steering system that not only converts the engine or motor power into optimum thrust, but also — due to 360 degree rotation of the

underwater assembly — enables the full propulsive power to be used for maneuvering the vessel as well.

The SRP is designed for maximum maneuverability, optimum efficiency, safe and economical operation, space-



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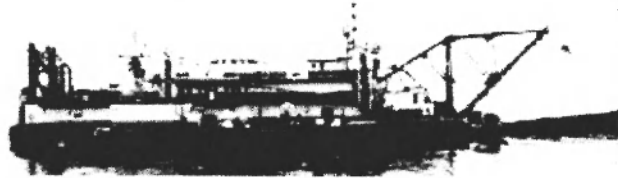
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Propulsion Performance Products

saving installation and easy maintenance, says the company.

The company designs and manufactures standard systems rated at up to 6,000 kW. For special applications, such as a magnetic, shock-resistant and low-noise propulsion units, the company offers installation variants.

Circle 86 on Reader Service Card

PropExpert V4.1 With E-Mail

HydroComp offers an upgrade of PropExpert to version 4.1. PropExpert is a software tool for the selection and analysis of propeller systems for workboats and pleasure craft. New features in the upgrade include e-mail, database import and export and a "cubic" prop

curve.

The addition of e-mail into PropExpert allows a user to send a formatted summary report and/or technical appendix to clients and co-workers quickly and efficiently. This eliminates the need for printed reports.

Circle 87 on Reader Service Card

American Vulkan Shafts Help Improve Performance

Composite Shafts from American Vulkan can help to improve vessel performance in terms of fuel consumption, maintenance cost, lower weight, reduced noise and vibration and fewer shaftline bearings. The Applied Composites shafting system gives a new perspective to lightweight composite shafts. Due to the high stiffness and vibration-absorbing properties of the material, carbon-fiber shafts have a higher critical speed than shafts made of steel or light metal. This allows the operator to save on weight and fuel while enhancing performance.

Circle 88 on Reader Service Card

Scot Forge Expands

Scot Forge has expanded its capabilities in the production of forged spindles/stepdown shafts with the addition of its new 4,500-ton hydraulic open die press. Scot Forge now offers sound-centered spindles with diameters up to 65 in. OD and weights up to 80,000 lbs. The spindles are available in any combination of round, square, flat or polygonal dimensions, concentric or eccentric configurations, and in tapers or custom shapes. Scot Forge also offers complete machining, turning, milling, boring, trepanning, heat treating and testing capabilities as well, to meet virtually any requirement. Additionally, parts can be ordered on a single-piece or high-volume quantity basis.

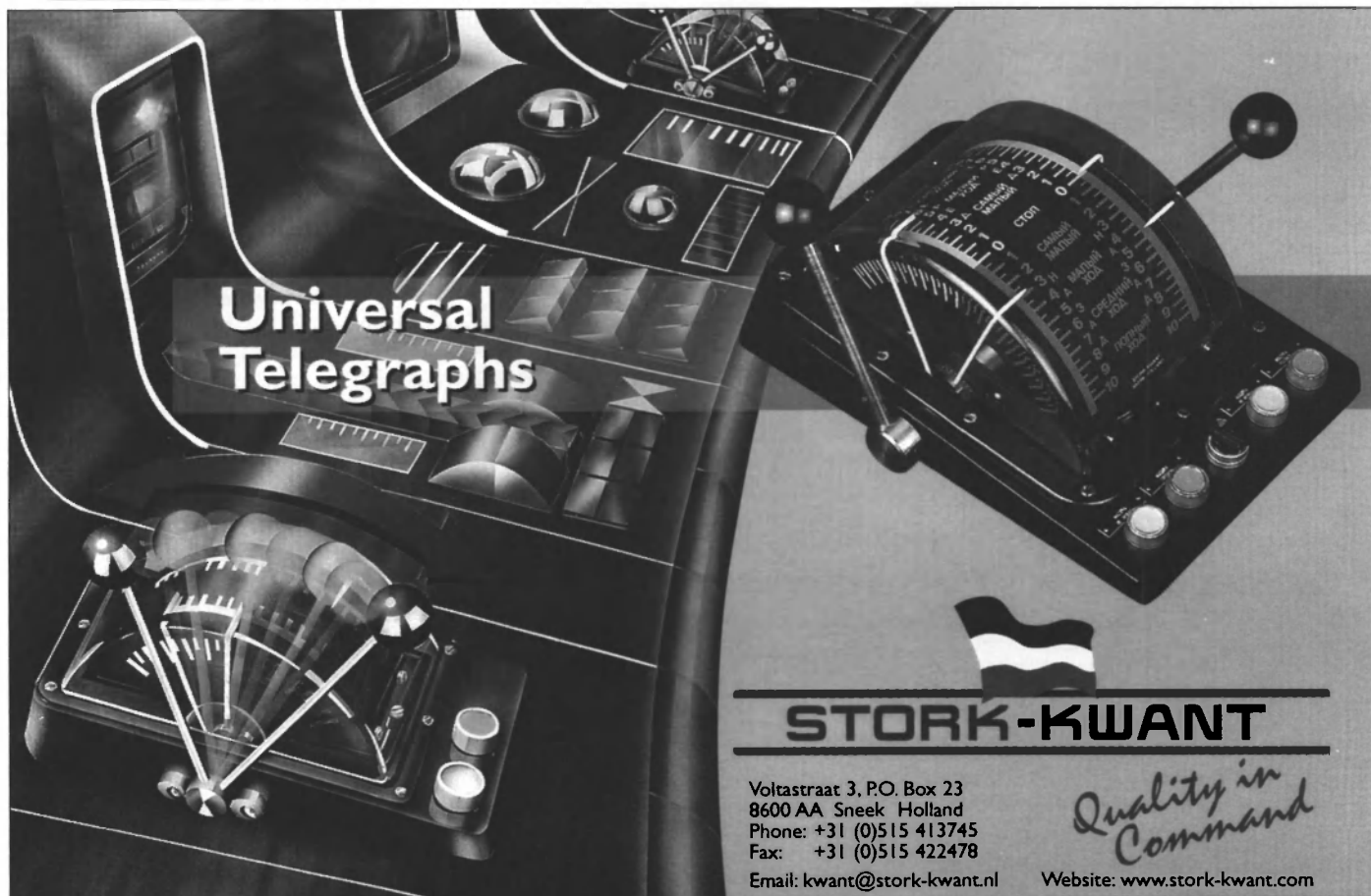
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Replacement Lufkin Drives

Lufkin Industries has developed a cost-effective solution for marine owners and operators faced with maintaining and repairing aging or discontinued non-Lufkin propulsion drives. Lufkin specializes in the design and manufacture of drop-in replacement units, which are designed to reduce repair costs, eliminate the search for hard-to-obtain parts and keep downtime to a minimum.

Lufkin's RLS2100 requires no structural changes and is dimensionally interchangeable with the discontinued Caterpillar 7271, fitting the original foundation hole pattern and tail shaft coupling. The high-performance RLS2100 replacement unit meets AGMA Quality Class 13 Ratings, as well as ABS Certification, and is rated for up to 2,000 hp @ 1,600 rpm per ABS rules, enabling the vessel to be re-powered with new high-speed engines.

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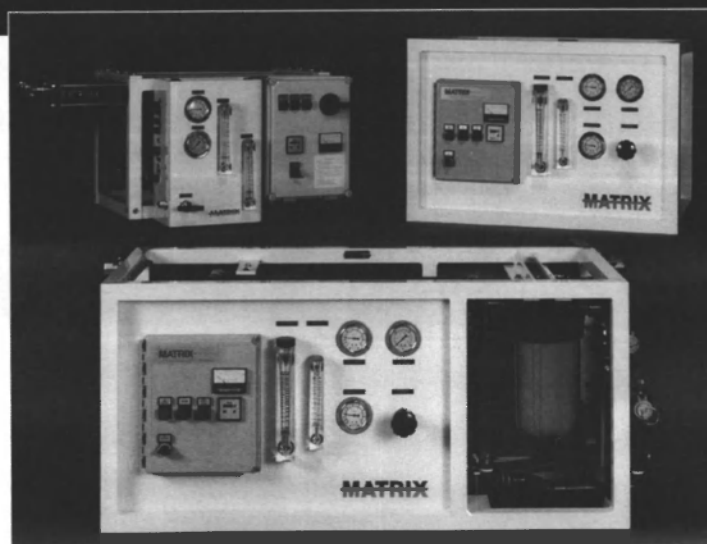


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Centalink Silent Drive Shaft

Centa Corporation's Centalink drive shaft uses links with cylindrical flexible bushes connected radially to the hub, and spheroidal flexible bushes connected axially to the flange. The result is a maintenance-free shaft, which compensates for considerable axial, radial and angular misalignment, while reducing transmitted noise. The torsionally stiff shafts have been proven in ship propulsion applications with shaft lines up to 82 ft. Shafts are either steel or composite. Composite shafts are designed to considerably reduce weight and allow lengths up to 26 ft. per section.

Circle 91 on Reader Service Card

Haley Excels In Propulsion Products

Haley Marine Gears manufactures top-of-the-line gears, clutches and couplings for marine applications. An original equipment manufacturer, Haley engineers its couplings, clutches and gears to exacting specifications in a wide variety of sizes and configurations. Located in Greenville, Miss., Haley manufactures a diversified line of hydraulic and pneumatic gears ranging from 800 to 6,000 hp, single and double reduction reversing gears. Haley Clutch and Coupling Co. manufactures clutches and couplings for many uses, including exceptionally high-torque applications.

Circle 32 on Reader Service Card

LR To Class New Bulk Carriers

Lloyd's Register (LR) received two contracts to class a total of five new 38,700-gt Panamax bulk carriers, to be built by Namura Shipyard, Japan. The contracts are with Angelakos (Hellas) SA, Piraeus, for four vessels with the option of two; and clients of Alcyon Shipbroking and Trading Ltd., for one vessel with the option of one.

Inmarsat Unveils Mobile ISDN Service

Inmarsat presented its new Mobile ISDN service at IBC, the International Broadcasting Conference in Amsterdam from September 10-14.

This new service, developed with valuable input from the New Media Committee of the World Broadcasting Union, will support a range of news-gathering tools at a communications rate of 64 Kpbs, while using portable satellite terminals the size of a notebook computer. Weighing 9 lbs, these terminals are a quarter of the size of the equipment that is used to relay video via Inmarsat's global satellite network.

October, 1999

3M Simplifies Effective Marine Firestopping



3M has introduced a new fire protection material for cable penetrations in shipboard bulkheads and decks that is designed to sim-

plify handling and reduce installation labor - 3M Marine Fire Wrap. Maintaining the integrity of fire-rated structures for up to an A60 (IMO) and H60 (UL) rating, this new cable firestop material has also been classified by the U.S. Coast Guard for its watertight reliability.

The flexible, graphite-based intumescent product expands up to 25 times in

thickness under the heat of fire, allowing the wrap to effectively fill in the voids around and between cable bundles. When expanded, the fire wrap forms an effective thermal insulator and with an approved sealant, closes openings to hinder the spread of deadly smoke.

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The Storm Before The Calm?

Advances in satellite communication product and service technology seem to have out-paced many of the markets they seek to serve. However, despite some jittery times for the big three global satcom providers, it appears that maritime and offshore markets stand to gain real, bottom-line-driven results by adopting the latest communication technology solutions.

The maritime industry has traditionally — with its generous mix of large corporate and small independent ownership — taken considerable flak for its collective conservative nature in regards to the integration of advanced technological products and systems onboard vessels, large and small. Much of the criticism is undeserved, as vessel owner operators around the world have embraced advances in propulsion and electronics (although, it must be noted, that many changes have been “forced” by legislative and/or prevailing market demands.)

Communication technology advances, particularly the ability to communicate ship-to-ship and ship-to-shore via satellite links, have truly been astounding in the past few years. In general, as the world drives (but sometimes stumbles) toward the theoretical global economy, it becomes more critical that instantaneous communication is always available, from any spot on the earth to any other spot.

Enter the “Space Race” 1990s style, with companies investing billions of dollars building global satellite communication coverage. The players — Iridium, Globalstar and ICO — are well known, as they have been covered within these pages as well as those in other business and consumer press for the better part of the decade. But the industry that could seemingly reap a rose from nearly any seed it had sown has suddenly lost a bit of its bloom, at least in investor’s eyes, as serious questions are being raised in the wake of Iridium’s Chapter 11 filing late this summer.

At press time Iridium was in full swing re-organizing its balance sheet and marketing plans, and current management seems determined to keep the network, which cost an estimated \$6 billion to put in place, alive. Key to the system’s future will be the continued commitment from Motorola, which owns about 18 percent of

the company. Next to step into the box is Globalstar, which was scheduled to debut service on its own \$3.8 billion network late last month. Before it even flicked its switch “on,” however, Globalstar has already felt the power of association, as investors recently punished the company to the tune of about 30 percent, mostly from the effects of Iridium’s troubles. However, Globalstar is betting on its higher flying, less technically complex satellites and more modest pricing (estimated \$1,200 to \$1,500 for a handset and up to \$3 per international call minute (estimated)) to hit the air running, so to speak, and attract many customers in key markets such as fishing and offshore. (It is worthy to note that Iridium has slashed its prices for both handset and airtime, and today matches those presented by Globalstar.)

With ICO scheduled to enter the fray next year, the choices of product and system will expand considerably.

When the competitive smoke screens do clear, however, it will be abundantly clear that advanced, global communication capabilities will exponentially enhance the process of shipping products across the world’s oceans, as well as along the millions of miles of coastlines and inland rivers.

Every day there are new examples of how companies are using technology to make operations more safe and efficient, from the use of satellite communication to update electronic charts to beaming signals regarding scheduling back to headquarters. As prices drop even further, new markets will open naturally, much as has happened within the cellular telephone service community. Crew aboard a variety of smaller workboats and fishing vessels may be compelled to purchase phones and service to keep in touch with family and friends, while innovative operators may even use this type of service to maintain crew loyalty and retention.

In the offshore realm, the advent of deepwater oil and gas discovery and recovery mandates communication systems which can adequately service the rigors of the operational environment. And despite the recent downturn in offshore production around the world, the market is a good long-term bet for providers of advanced

satellite communication products and services.

According to the U.S. Department of the Interior’s Minerals Management Service (MMS), deepwater drilling (1,000 ft. and deeper) shows the greatest potential of development. By year-end 2003, the MMS estimates as much as 63 percent of the oil production and 29 percent of the daily gas production will come from deepwater reserves.

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ARCOMS To Acquire CruisePhone

ARCOMS, formerly known as BOATRACS, announced it has entered into a Letter of Intent with a privately-held corporation, CruisePhone, located in Florida. ARCOMS plans to acquire 100 percent of the company's outstanding stock.

CruisePhone provides satellite communications services for the cruise and leisure industry, using B.E.S.T. technology — a soft-

ware networking solution for satellite communication developed by Innovative Communications Technologies Inc.

Circle 92 on Reader Service Card

ViaSat Receives \$6M Contract From Star

ViaSat, designer and producer of advanced digital communications products, will provide Star Cruises' fleet with satellite networking products.

Circle 93 on Reader Service Card

Globe Wireless Offers Global Radio Network

Globe Wireless provides cost-effective messaging and data file transfer services via satellite and via the Global Radio Network of digital high frequency (HF) stations to the marine industry. Ships can send and receive e-mail, fax, Telex and transfer data files by satellite or through the network using the Globe Communications Center.

Circle 95 on Reader Service Card

Telstra and TerraSystems To Pursue Satcom Alliance

Telstra, provider of mobile satellite systems for maritime markets through Inmarsat, and TerraSystems, a software electronics company, have signed a memorandum with possibilities of performing a strategic alliance to develop specialized satellite communications,



Michael Smith, GM of Telstra Global Satellite; and **Peter Clifford**, MD of TerraSystems demonstrate a Vessel Monitoring System at a recent conference on satellite technology.

vessel monitoring and fish-catch reporting solutions for the fishing industry.

The focus of the alliance is to

provide fishing authorities around the world with the communications and monitoring facilities in order to help manage the reportedly depleting levels of fish stocks in the oceans, sustain profits, and secure the industry's future. Telestra will develop and manage the satellite communications infrastructure required.

Circle 96 on Reader Service Card

S.P. Radio A/S Opens New North American Office

S.P. Radio has opened a sales office, SAILOR USA, in Fort Lauderdale, Fla. The company plans to market



a new line of products designed for power boats, yachts, work boats, and fishing vessels. One of its new products is the SAILOR Iridium Channel SC4000, a satellite communications phone that provides global access including the polar region. The omnidirectional unit has a separate outdoor antenna, a remote control handset that can be operated indoors.

Circle 192 on Reader Service Card

ICG Expands Satellite Service With SatMex 5

ICG Satellite Services Inc. signed a five-year contract with Satmex of Mexico for satellite capacity to keep up with increased demands for Internet, telephone, and international private lines. Under the terms of the agreement, Satmex will provide two transponders for continental region coverage on the Satmex 5 satellite, with a total bandwidth of 72 MHz. Using the SatMex 5, a high-power HS 601 satellite, the company will now expand into Latin America, according to ICG, the system will span 48 continental states down to Argentina.

Circle 97 on Reader Service Card

MTN Signs Contract With NCL

The Maritime Telecommunications Network (MTN) signed a contract with Norwegian Cruise Line (NCL) to provide Internet service for its fleet using the company's satellite technology. As NCL's newest ship, Norwegian Sky will be the first to offer guests and crew with the service — followed by the Line's S/S/ Norway.

Circle 98 on Reader Service Card

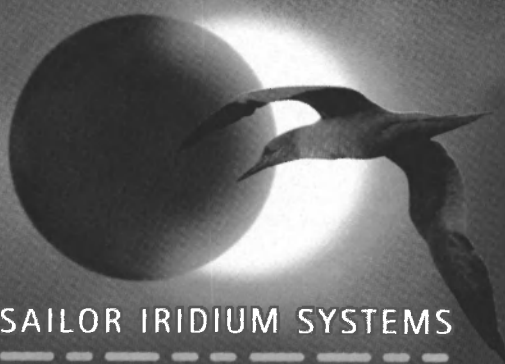
Vir-tek Introduces CommBox

Vir-tek, a designer and producer of communications and data networks, has introduced CommBox, an Internet and mail server for the maritime industry. The company designed this service using routing and bulk transmission, and an optional feature of a time-saving, high-speed routed connection. CommBox is a separate unit that can be mounted into system racks, or attached as a separate unit to the on-board network system.



Circle 193 on Reader Service Card

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which is an important part of all Sailor Iridium Systems, means that — unlike many other systems — the Sailor Iridium telephone can also be operated from indoors. Sailor Iridium systems are designed as a powerful add-on for any

maritime communication set-up which can easily be integrated into the unique Sailor GMDSS consoles.

Therefore the extremely compact and robust Sailor Iridium satellite telephone systems are the perfect choice for harsh sea environments, both now and in the future.

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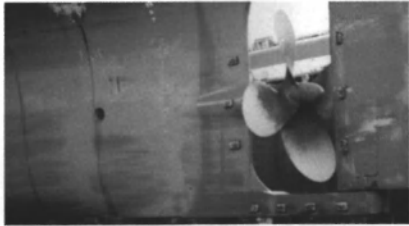
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Vessel Maintenance Products & Systems

Chugoku Marine Paint Launches Innovative Coating

Chugoku Marine Paint (CMP) was at the forefront of presenting organo-silyl antifouling technology in 1995, which was based upon experience from the



Sea Grandprix 1000 at 31 months service used on a 24,200-dwt vessel.

previous ten years with polishing tin-free antifouling. As a result, globally-located customers specified Sea Grandprix 100 and 200 for its performance advantages over existing tin-free technology, such as ablative or hydration

(Continued on page 59)

ShipRepair & Conversion 99



M/V Advantage during repair.

After last year's impressive increase in visitor numbers, this year's ShipRepair & Conversion Exposition is well on its way to comparable success with more than 180 companies already registered to exhibit their wares at the show.

The expo, which includes representatives from more than 35 countries, will be held November 10-11 at London's Olympia Hall.

Boasting a large variety of attendees such as shipowners, ship managers, marine engineers and conversion specialists, ShipRepair & Conversion 99 expects to be 20 percent larger than last year's expo.

Returning exhibitors include: BP Shipping, Shell International, Stena Line, P&O Cruises and P&O North Sea Ferries. A slew of first timers will be on-hand at the exhibit as well, mainly Dolphin Ship Repair, Fleet Support, Jotun-Henry Clark, Kockum Sonics, Vickers Ulstein Marine Systems and Viktor Lenac.

Now in its eighth year, ShipRepair & Conversion 99 is known as the only dedicated exhibition for this continually growing market. In addition to the showcases of various companies who will be exhibiting, attendees will also have the opportunity to develop new and strengthen existing business links with colleagues and contacts from the industry. Registrants may also choose to attend one of the conferences offered at the show, which include speakers and delegates from around the world offering their views on topics concerning the future of the ship repair, conversion and maintenance industry. To pre-register for ShipRepair & Conversion 99, an save \$24 (all applications must be received by November 1), please call the visitor hotline at +44 (0) 192 690640 or visit the Web site: www.llplimited.com/shiprepair99.

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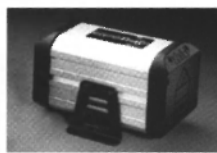
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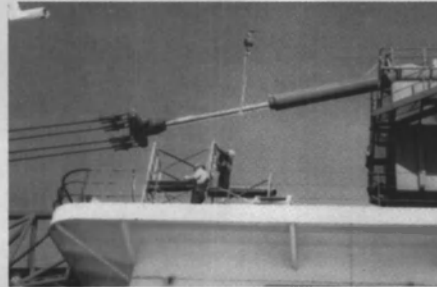
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Circle 245 on Reader Service Card

Vessel Maintenance Products & Systems

Getting To Where The Gouges Reside



The Pitting lifting cylinder used for off-loading Kaye E. Barker, a Great Lake ore carrier needed repair, but was located 60 ft. (18.2 m) above the deck.

The crew of the Great Lakes ore carrier Kaye E. Barker had enough. They had just finished up another season of dealing with leaks from the heavy-duty lifting cylinder that powered the ship's off-loading boom. So far, they were only able to bandage the problem. Each passing year meant another set of replacement seals. Yet several months into the new season, hydraulic oil drips dotted the deck beneath the cylinder. Management at Interlake Steamship Company, the owner of Kaye E. Barker, wanted the next fix to be the last one for some time. "You add up the problems we had with this cylinder," notes Mark Barker, Fleet Engineer with Interlake, "and you get an on-going repair nuisance."

"Top it off, the leading hydraulic oil is a safety and environmental hazard."

The job of this massive one-foot diameter cylinder is to elevate the 250-ft. (76.2 m) boom so that the vessel may self-discharge its cargo to shore. Stresses created by the load and the unforgiving environment took its toll on the ram. Gradually the chrome was flaking away from the surface of the ram — the visible flaking and deterioration evidencing the chrome breakdown. Within time, gouges as deep as .5-in. formed along the surface, chewing up every set of seals applied to the ram and leading to the annoying leaking problem.

"In addition to the other hassles," points out Barker, "the progressive leaking made our ability to hold pressure in the cylinder difficult."

"During off-loading we had to carefully watch the cylinder to make sure that it did not extend causing the unloading boom to drop and inch or two."

Like all ships during winter lay-up, plans were made for a variety of maintenance projects as Kaye E. Barker pulled

into its dock in Duluth. In anticipation of the cylinder problem, Interlake got together with Metal Surgery, a world-wide repair specialist to discuss strategy for re-plating the cylinder.

"We went into this project thinking we would need to pull the cylinder off the ship to do the re-plating," recalls Barker. "After all, these cylinders are 60 ft. above the main deck."

Running the numbers on detaching the cylinder, Metal Surgery concluded they could cut costs by setting up at the site of the cylinder. And based upon their experience with past brush plating projects, they felt no problem. Exposing a repair crew to a typical Duluth winter presented a major challenge. Considering the need to pre-heat the cylinder for plating and the working location, the repair crew was facing finger-numbing sub-zero weather and high velocity winds accelerated by the height of the work. So instead of taking the cylinder into the shop, Metal Surgery built a shop around the cylinder. In about a week the



The cylinder is restored to factory specs with no disassembly from its mountings required.

crew set to work erecting scaffolding and building a heated house to enclose the cylinder and shelter the crew while providing sufficient working room.

The crew spent roughly another week applying copper plating to the damaged areas of the cylinder. Brush plating builds up worn parts to their original specifications by bonding applied metal to the parent metal at the molecular level. Based upon their involvement with a number of critical specialty projects, Metal Surgery has developed techniques to bring this process into the field. Metal Surgery developed water cooled anodes for controlled application of the plating. This approach stops over heating of the deposited material to prevent its degradation.

The brush plating process progressively restored the plating on the cylinder ram, and once plating was complete the copper areas were hand finished to contour. Finally, the surface was flashed with nickel tungsten to acquire hardness and corrosion resistance to its original specifications.

The following week was spent disassembling the housing and scaffold.

Circle 64 on Reader Service Card



Copper areas are hand finished and then flashed with nickel tungsten.

Vessel Maintenance Products & Systems

type products. This along with the product's strong biocide package has allowed CMP to coat more than 800 deep-sea vessels.

This coming spring, CMP will introduce Sea Grandprix 1000 and 2000, based on the highest grade of hydrolysable organo silyl antifouling paint. Protected by CMP's basic patent and other improved patents covering silyl copolymer, the company expects to introduce the product into the main marine markets.

Circle 65 on Reader Service Card

Delta T Enhances Insulating Materials

Offered by Mascoat Products, Delta T Marine is a spray on insulating coating designed to replace or enhance thermal conventional insulating materials found on shipboard construction. The coating, which has been applied on more than 60 vessels including high speed ferries, barges and cruise ships, contains no solvents, or harmful VOC's and is UL and USCG approved. With a 40 mil layer, Delta T Marine insulating coating can be as effective as 3 in. of conventional insulation on substrate bulkheads, sidewalls, stiffeners and overheads.

Extremely lightweight and bonding to almost any surface, the coating's additional benefits include an efficient surface barrier protection and a vapor barrier—all in one coat.

Circle 66 on Reader Service Card

Uniservice Granted Additional IMO Approval

Uniservice received written confirmation from the USCG, U.S. Dept. of Transportation, regarding the approval of an additional 10 products by the International Maritime Organization (IMO). This now raises the company's total to 20 products that are approved by IMO as Tank Cleaning Agents, under provisions in subsection 1.8.2 of the Standards for Annex II, to the International Convention for the Prevention of Pollution from Ships.

Circle 67 on Reader Service Card

Acid Attack Alert Issued For Chemical Tankers

The Salvage Association has discovered some discernment among marine underwriters regarding the carriage of calcium hypochlorite chemical cargoes in containers.

Tunisia, which is reportedly a major exporter of phosphoric acid, uses chemical tankers with stainless steel tanks. The Association's Singapore office has reportedly been involved in two cases where the steel was attacked by the acid,

leaving large black stains on the surface. The worst case to date though, left pitting and grain boundary attack. Although the structural strength of the tanks is not affected by this problem, it is still detrimental to other sensitive cargoes with its unattractive appearance that could lead to its rejection by cargo surveyors. The attacks stem from an imbalance of chlorides to iron and alu-

minum in the acid. While analyzed samples were varied, the results concluded that the phosphoric acid contains a high percentage of destructive constituents.


This unfavorable situation can be remedied by tank washing with seawater, and later, with nitric acid. The chlorides, which remain in the roughened stainless steel surface then form hydrochloric acid, which is detrimental

to stainless steel.

Seymour Provides Quick Fix With Primer

Seymour of Sycamore has developed spray-on yellow-zinc phosphate primer and green zinc phosphate primer, both of which can be used for spot repair and surface protection against rust and cor-






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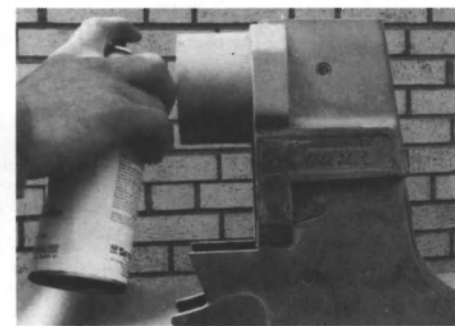
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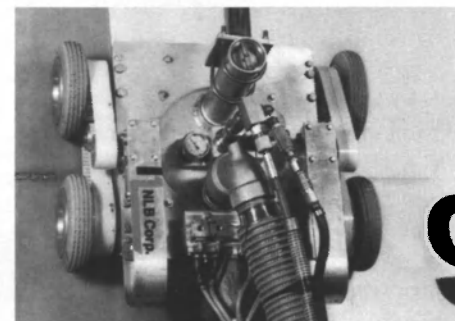


rosion. Especially recommended for use over aluminum, the sprays also chemically bond with steel and ferrous metals to form a hard, adhesive coating.

Dry in about 10 minutes (and can be painted over in 30 minutes), the smooth-textured chromate- and lead-free primers are effective with two coats and are extremely resistant to abrasion.

Circle 69 on Reader Service Card

NLB Introduces Spin Jet



A new Spin Jet® crawler from NLB Corp. automates the preparation of tanks, ship hulls and other large, vertical surfaces with ultra-high pressure water jets. Easy to maneuver, the SRT-10 unit systematically removes coatings with rotating water jets, saving operators the job of hand lancing.

Reportedly able to leave a cleaner surface than grit blasting without the noise, dust and disposal problems, SRT-10 enhances productivity and labor-saving advantages of water jetting. The unit also removes epoxies, anti-skid and rubberized paints, rust and other build-up.

The crawler operates at a maximum pressure of 40,000 psi (2,800 bar), with a maximum flow of 6 gpm (23 lpm). While the system includes winches and a full-function remote control, an NLB Ultra Clean 40 ultra-high pressure pump unit supplies the water.

Circle 70 on Reader Service Card

Future Of Marine Coatings To Be Discussed at PCE 2000

Coatings specialists in shipyards, ship owner technical staff and shipyard application contractors will present the views on the future of marine coating technology at PCE 2000 in Genoa from March 8-10.

This annual European conference an exhibition for the protective and marine coatings industry is supported by 23 technical societies dealing with corrosive paint application and paint technology.

that are official sponsors of PCE.

Session chairs include Jan Bjerkan of Odfjell ASA; Mauro Balzarini of SIBA S.P.A.; Yves Ollivier of Chantiers de L'Atlantique; and Bill Woods of Milbros Shipping.

The conference will also encompass a concurrent session of 20 papers on the technology of protective coatings, as well as technical program that includes 10 half-day classes on basic technology taught by industry experts.

Venice Utilizes Tin-Free Coatings



The city of Venice has taken action against tributyltin (TBT) based antifouling paints with its replacement - Baseggio's tin-free Sirena ASR coatings. Based on Sea-Nine 211, an antifouling agent developed for professional paints by chemical manufacturer Rohm and Haas, Sea-Nine was granted the Green Chemistry Challenge Award in 1996 by the U.S. Environmental Protection Agency. The high-quality, self-polishing antifoulants are available in a variety of colors with more than 100 vessels relying on Sirena ASR to reduce both their drag and impact on marine life.

Circle 71 on Reader Service Card

Sherwin Williams Eases Coating Selection Process

Sherwin-Williams has made it easier for applicators and facility managers to recognize coatings products that are VOC-compliant and comply with other environmental regulations. The company now classifies many of its high-performance waterborne coatings as part of the EnviroSpec™ Line - as identified by a special icon on data pages and containers marking them as environmentally friendly. The designated products perform just as well as solvent-based coatings and provide easy application.

Circle 45 on Reader Service Card

Seaworthy Systems And Decision Dynamics Partner

Seaworthy Systems and Decision Dynamics have joined together to offer a DynaStar shipboard and shoreside computerized maintenance management system for the maritime industry.

The joint venture involves Seaworthy market and support SeaStar, which

combines Seaworthy's knowledge of ship operations and marine engineering expertise with DynaStar 2000™ computerized maintenance management system from Decision Dynamics.

SeaStar, which allows ship owners and operators to construct informed and cost-effective strategic and operational decisions, also offers engineering services on a turnkey or individual basis. Namely, maintenance and inventory database development; systems installa-

tions; training; hardware configuration and supply; and on-line support.

Circle 9 on Reader Service Card

Coflexip Stena Upgrades Unit

Coflexip Stena will upgrade CSO Constructor for more than \$30 million, allowing the Group to offer a heavy duty subsea construction vessel, capable of rigid or flexible pipelay in deepwater. The investment will greatly expand the

capabilities of the vessel, which will commence its approximate five-month conversion in March 2000. CSO Constructor's hull and deck will be lengthened by 49 ft. (15 m) and widened by 16 ft. (5 m) to bring its pipeline payload to 3,000 metric tons. After conversion, the vessel will be able to install rigid lines with the patented M-J Lay system, or flexible lines, stored in a carousel under deck, using the patented Vertical Laying System (VLS), down to 6,500 ft.

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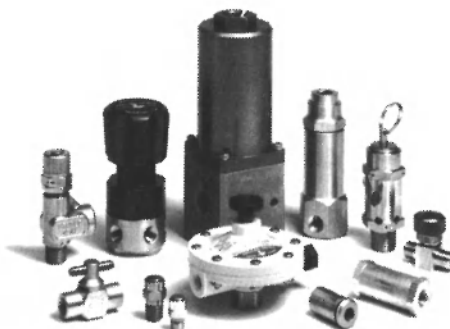
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Circle 212 on Reader Service Card

Bureau Veritas' Boisson Authors Maritime Safety Book

Philippe Boisson, communications manager and legal advisor to Bureau Veritas' Marine Division, has recently authored a book, *Safety at sea: policies, regulations and international law*, focusing on preventing accidents and evaluating safety at sea.

Boisson, who has been following safety system developments for more than

twenty years, researched recent sea disasters, such as Braer in 1993; Estonia in 1994; and Sea Empress in 1996. The book is the result of five years research that set out to answer a myriad of questions that, according to Boisson, "always arise after the aftermath of an accident." Specifically: Could disasters at sea be prevented? Are safety levels

adequate? Are protective measures appropriate? Is the present system obsolete, unable to cope with the upheavals of the modern world?

Geared toward seafarers, shore-based shipping company staff, insurers, ship-owners and transport auxiliaries; the 550-page book reportedly, analyzes all technical and legal regulations affecting

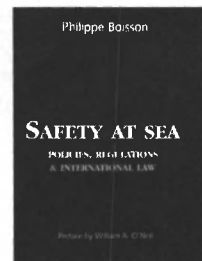
shipping. Among other issues are the safety of car ferries, new regulations on bulk carrier structures, the International Safety Management Code (ISM), the Convention on Training and Qualification of Seafarers (STCW), electronic charts, the Global Maritime Distress and Safety System (GMDSS), and Vessel Traffic Services (VTS). Boisson sheds light on international maritime safety precautions; strategies and policies adopted by states, organizations, and the maritime industry sector, which all set out to reduce the number of accidents and curtail consequences.

Safety at sea is divided into three main sections - the first part of the book lists the sources of international law on safety, its various public and private promoters on both national and international levels, procedures for setting standards, regulations and various legal instruments intended to prevent accidents.

The second section deals with actual regulations, determining the administrative, technical, behavioral, and operation requirements that ships must satisfy. Boisson also analyzes worldwide shipping standards, regulations, construction, equipment, operation and navigation.

The last section concentrates on establishing policies, surveillance and inspecting, and penalties for breaching regulations. Boisson concludes the book with an assessment of safety at sea and the prospective trends for the millennium. Ten basic trends are examined, including the emergence of IMC auspices, the end of global regulations and transparency of information or ships.

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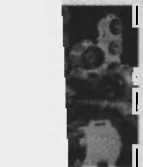


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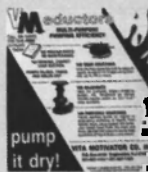
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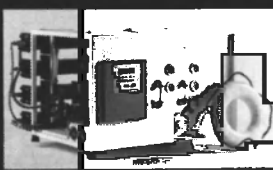
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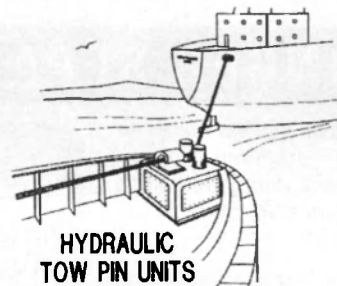


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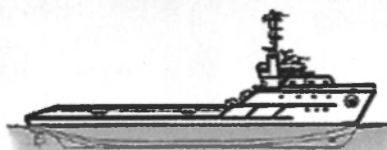
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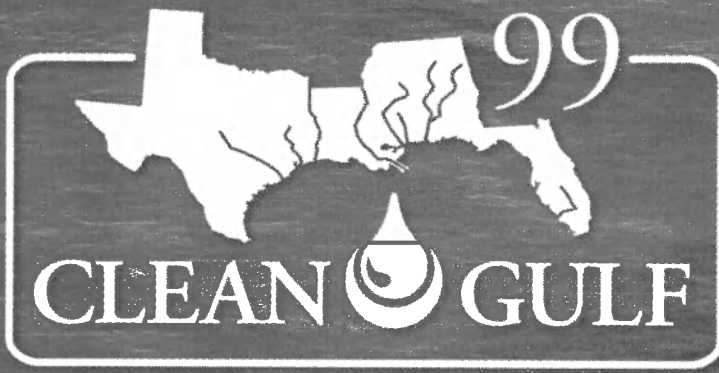


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March 8, 1999

MARITIME WEEK

Cruise Shipping Report

Unprecedented Cruise Options Await New Generation of Seas

Will 20 new ships entering service in 1999, including an existing ship that is being lengthened. It is a wonder that Cruise Lines International Association (CLIA) is projecting a record 11 percent increase in the number of cruise passengers and will take to the high seas this year. From yacht-like ships to mega-liners, the new vessels will accommodate from 400 to 3,000 guests.

According to James G. Givonax, president of the 23-member cruise line association, the industry has enjoyed an average year-over-year annual growth of almost 8 percent since 1980, when 1.4 million people took a cruise.

Additionally, it is today's megayachts and megacruisers that are driving the industry forward. CLIA's membership includes 14 cruise lines, including 11 of the world's largest cruise lines, with a combined fleet of 1,000 ships. The industry's total capacity is estimated at 1.4 million passengers annually.

These figures are based on the 1998 cruise season, which ended in October. The ship will arrive in Port of Miami to operate 10 seven-day cruises to the Bahamas and Western Caribbean on alternating Saturdays.

Disney Cruise Line introduces the 2,400-passenger Disney Wonder on

Passenger Seven Seas
and Royal Caribbean's
Explorer Voyager of the
wide, the cruise fleet
approximately 223 vessels c
9.5 million passengers
to Washington, D.C.

AMCV Cruise Ship At Ingalls Close To Reality

The bid to build cruise ships in the U.S. is essentially the American Cruise Line's bid to build the Project America ship by the end of February, forcing its competitors to cancel their bids.

AMCV is to construct the largest cruise ship ever built in a U.S. shipyard. The ship will be the largest 490-foot Seven Seas

Charters To Build Two Ships For Festival Cruises

Charter de l'Atlantique, a unit of Atkinson, won an order to supply Festival Cruises with a new vessel, with an option for an additional vessel. The 240-cabin vessels will be built at Saint Nazaire and are to enter service for producers in the European markets between 2001 and 2002.

No price was given but according to industry sources the vessels will cost approximately \$300 million each. The contract is expected to take effect next month as soon as Festival Cruises has finalized financial arrangements.

Atkinson Marine order book now comprises 12 cruise ships, one of which is an option, two high-speed ferries, 11 tug boats and one service tender vessel. The Feb. 23 Atkinson announced confirmation of an order for two 1,000-cabin cruise ships from Royal Caribbean Cruises Ltd.

Good in Cruise Industry

For his part, Canada's Saginaw, U.S. Northeast, says in fact, it is a cruise line that is driving the industry's growth. The Saginaw's systems are being used on a number of new ships.

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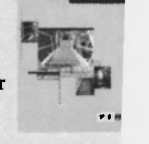
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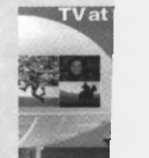
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Bailey Refrigeration Co., 2323 Randolph Ave., Avenel, NJ 07001
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Stork Canada, 47 boul. Marie Victorin, Candiac, Quebec, Canada, J5R 1B6

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Schoelhorn-Albrecht, - P.O. Box 22110, St. Louis, MO 63116
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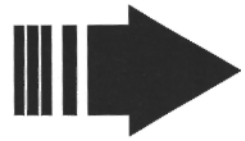
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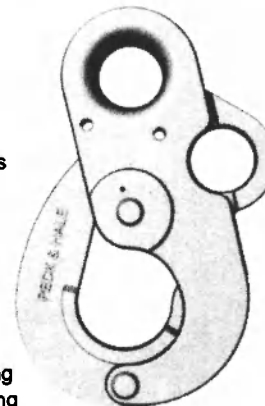
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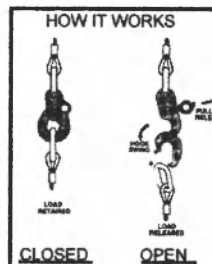


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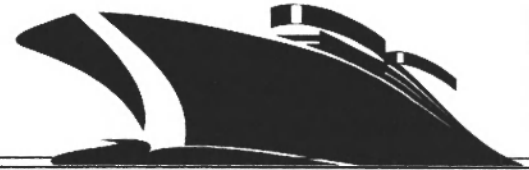
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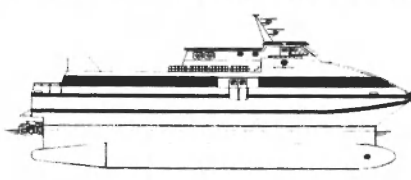
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