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June 2001

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# World Yearbook

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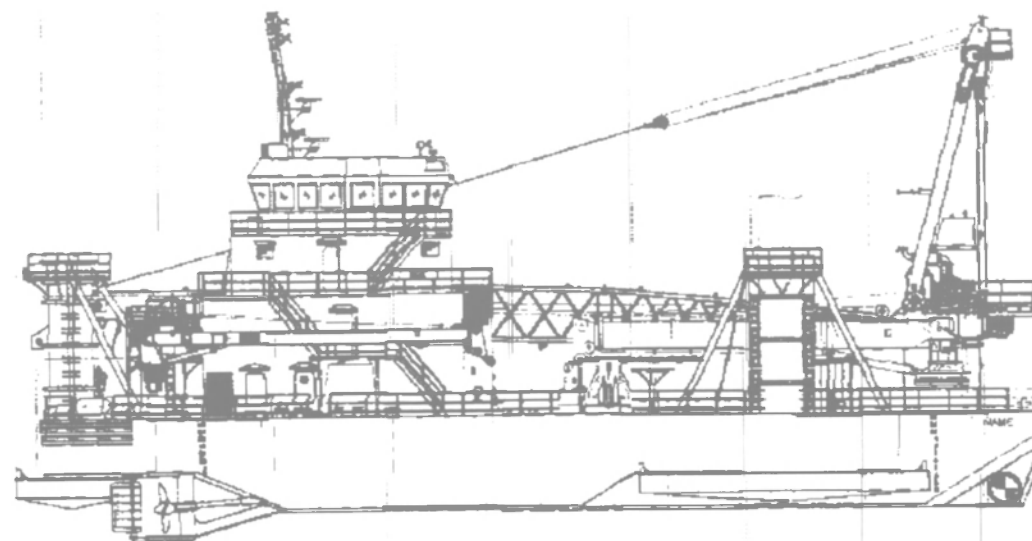
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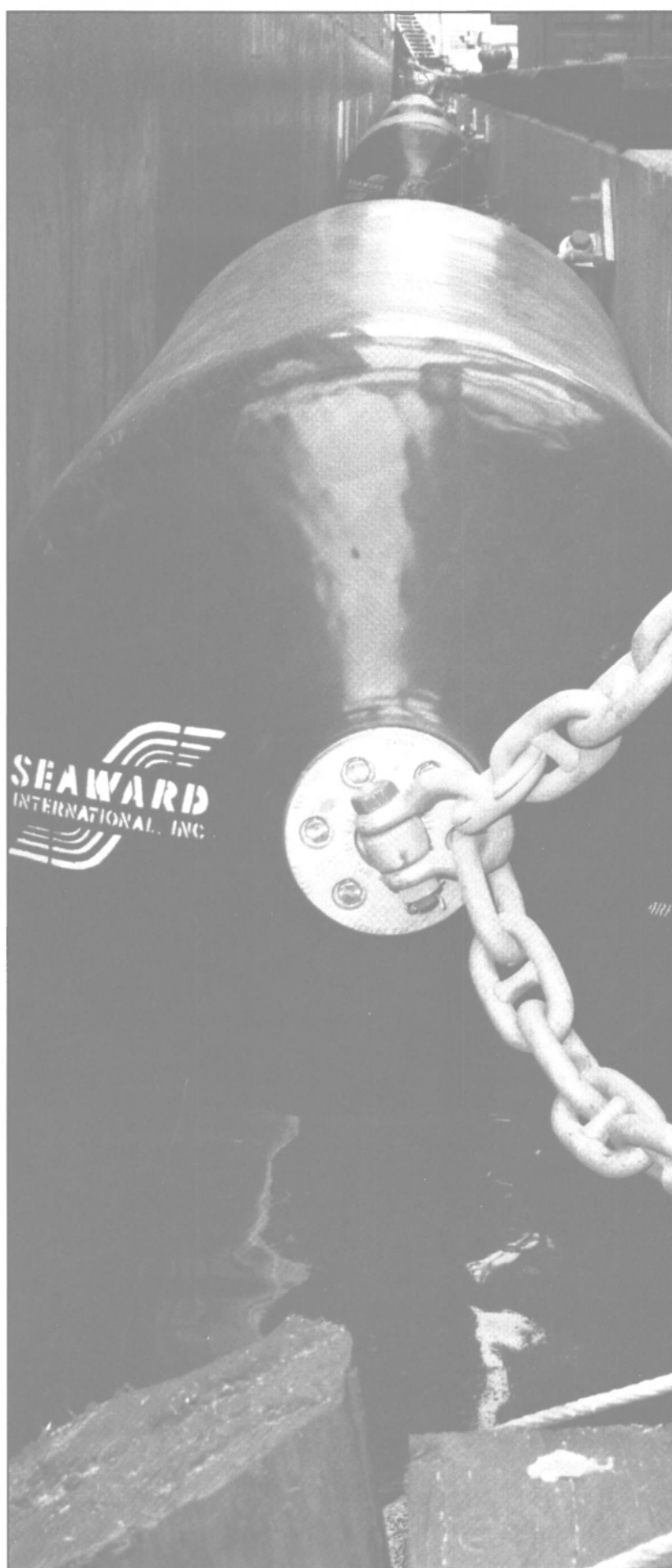
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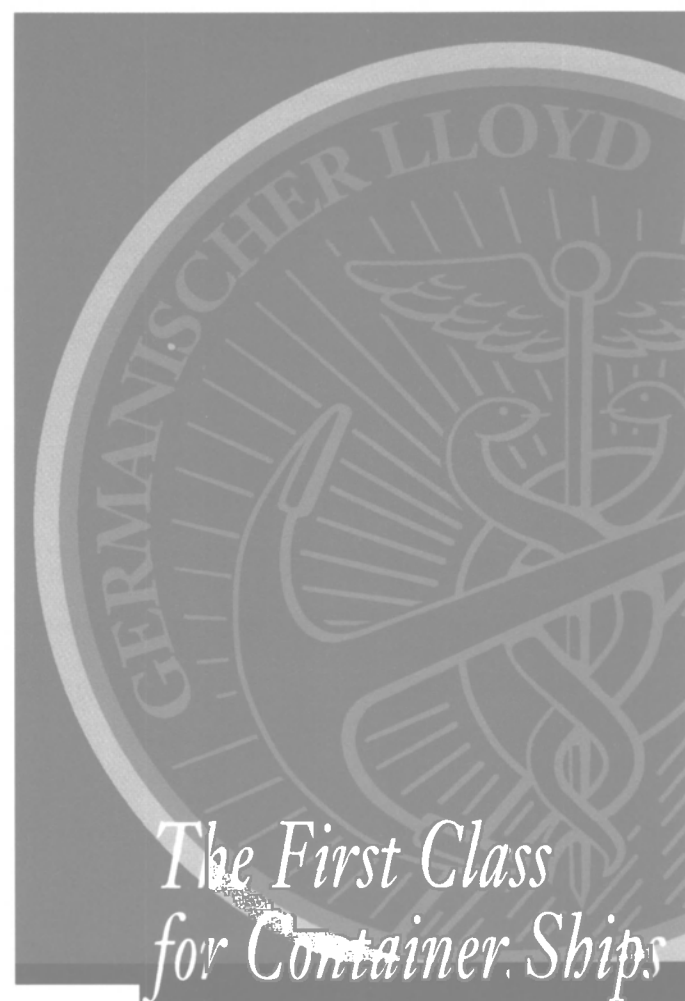
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**8 Galician Grit**

Independent Spanish Shipbuilder Hijos de J. Barreras has recently delivered a pair of specialized ships, a compact pure car carrier and a new RoPax ferry, and taken in three new contracts which keep it fully booked into mid-2003. — by David Tinsley, technical editor

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As an eight-year-old, Retired Admiral Dick Camacho — presently a senior vice president for Government Business at United States Marine Repair (USMR) — lived through the bombing of Pearl Harbor. With USMR's pending acquisition of Marisco, Camacho is returning to his roots as he adds the Hawaiian facility to his watch. — by Regina Ciardiello, senior editor

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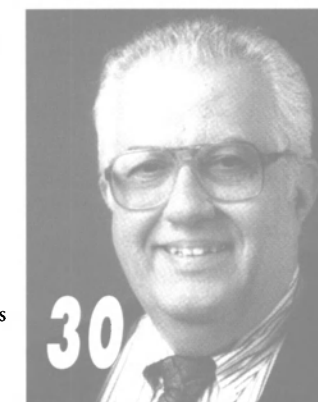
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### Volvo Rumored To Be Selling Penta Engine Unit

Volvo recently made it known to investment banks that all or part of its profitable Penta marine and industrial engine unit would be up for sale at the right price, Reuters reported. Analysts said Volvo probably would require a high offer for Penta, one of its smaller but more profitable units, and would sell

only if it needed the cash to fund a tempting acquisition in its core business in trucks, buses and industrial equipment. But Penta's strong recent financial performance could justify an expensive price tag, an analyst noted, and that cash would be useful if Volvo had a large acquisition in the pipeline. Volvo declined to comment. Volvo Penta makes engines for leisure boats, workboats and other markets.

### Frontline Sells Suezmax Tanker

Frontline has entered into an agreement to sell one of its 2000-built Suezmax tankers, Front Archer. The vessel was designed and built with future employment as shuttle tanker in mind and is equipped with controllable pitch propeller and thruster tunnel. It is the buyer's intention to use the vessel in

shuttle operations. Frontline took delivery of the Front Archer in February 2000 and the vessel has traded in the spot market from delivery. The vessel is expected to be delivered to the buyer in July/August 2000. Frontline expects to book a profit of approximately \$20 million and to release about \$32 million in liquidity.

### Vosper Prospers With Diversity

Britain's Vosper Thornycroft Plc, posting a two percent rise in year profits, said its diversification strategy was bearing fruit, with 55 percent of operating profits coming from non-shipbuilding activities. The group reported pre-tax profits before goodwill of \$51.49 million in the year to March 31, 2001, up from 35.5 million last year and just above market forecasts. Vosper said a slide in shipbuilding operating profits — from \$26.2 million to \$16.7 million — had been more than compensated for by growth in its support services and marine products divisions.

### Cammell Laird Cuts More Jobs

Cammell Laird, which has entered into receivership, is to cut another 248 jobs in Britain over the coming weeks. PricewaterhouseCoopers, which is acting as receivers for the shipbuilding group, said that the cuts were necessary due to declining volumes of work. "The work is running down. We have workers surplus to requirement as dictated by workload..." said a spokeswoman for Ian Stokoe at accountancy firm PricewaterhouseCoopers.

The company also announced that it had companies interested in purchasing its Teesside shipyard.

### Russia Strikes A Deal To Raise Kursk

Russia signed a deal with Dutch salvage and heavy transport firm Mammoet to raise the wrecked nuclear submarine Kursk, which plunged to the bottom of the Barents Sea last year killing all 118 sailors on board.

Stage one will begin in mid-July and be completed about September 8-10. The second phase, the direct lifting of Kursk, will happen between September 10-20. Mammoet emerged at the last minute. On the eve of the signing, a consortium comprising Dutch firms Smit Internationale NV and Heerema and U.S. firm Halliburton said Russia had rejected their bid for the contract after more than six months of negotiations. Smit said there was too little time to prepare safely to raise the Kursk this summer as Russia demanded.

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## Editor's Note

**B**uoyant is perhaps the best word to describe the overall status of the world marine market. As you flip through the pages of this year's Annual World Yearbook, you will find a number of articles, from the status of the U.S. Shipbuilding market, to the pending boom in the offshore oil and gas markets, to the staggering climb in dayrates for the tanker and bulk-er markets, which clearly show the industry is on the way up. That said, there are a number of challenges to be faced, challenges with solutions that will help to define the maritime market for decades to come.



The construction of large commercial oceangoing ships was dominated last year by South Korea, which claimed a staggering 46 percent of all new orders, or about 18.5 million cgt, according to The Platou Report 2001. The method by which these contracts are secured, and the need for further expansion of the South Korean shipbuilding machine, are the heart of an ongoing dispute. The European Union is poised to launch on June 30 a formal dispute via the World Trade Organization for South Korea's alleged use of shipbuilding subsidies. South Korea, meanwhile, contends that increases in productivity are at the heart of its yard's order winning binge. Regardless of the outcome, look increasingly for politics and creative finance to drive the shipbuilding business for years to come, as upstarts in countries with cheap and voluminous amounts of labor (ie. China) take market share from traditional players.

More so than political squabbles, however, the issue of quality ships and equipment — Safety at Sea — has taken and will command center stage for some time to come. As the number of accidents which sullied European shores climbed through 2000, lawmakers pushed for and received a solution through the International Maritime Organization, resulting in a phase-out of single hull oil carriers in lieu of modern double hull tonnage. OPA '90 — which was lambasted at the time — looks visionary in retrospect, as countries increasingly demand that ships plying their waters are built and maintained to a high standard. While the prospect of fleet replacement is never a welcome bit of news to shipowners, the move toward quality will bode well for those owners that have an established practice of running safe ships, and help to squeeze out the minority few which deliver the industry ulcers.

*Gregory R. Trauthwein*

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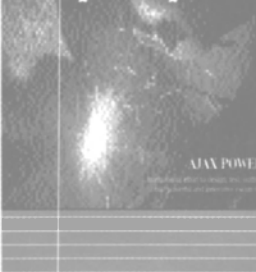
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## Investment in Design

# Galician Grit

by David Tinsley,  
technical editor



Independent Spanish shipbuilder Hijos de J Barreras has again showed its mettle by delivering two specialized vessels within the space of just a few days, and by landing a three-ship contract to take its orderbook into mid 2003. Three years after being spun-off from the former Astilleros Espanoles (AESAs), the Vigo yard demonstrates how a well-managed and motivated undertaking can successfully make the transition into private control. It provides a template for broader Spanish endeavors to slim the state's holding in a number of industrial sectors, not only shipbuilding.

Barreras always displayed something of an independent style within AESA (now IZAR), of which it was part for nearly a quarter-century. The disposition of its people, as in all such situations, has been a key factor in ensuring business development outside the state-owned fold. The maintenance of a sub-

stantial in-house design resource and the continuous plough-back of profits into the shipyard also give solid expression to the long-term commitment displayed by the yard's owning consortium.

Ensuring competitiveness and viability with a broad range of vessel types and a preponderance of 'one-offs' is a necessary prerequisite of a medium-sized shipbuilding enterprise. If blueprints can be used again for repeats or variants at some stage down the line, then that is a bonus. But the economics of the business hinge on being able to make money from a mixed production base, such that this sector of shipbuilding ranks among the most challenging of all fields of industrial production.

During early May, the Galician yard dispatched a compact pure car carrier (PCC), intended for the buoyant vehicle export trade out of Spain, a prominent and growing European auto manufactur-

er. The vessel was closely followed down the mountain-fringed Ria de Vigo by the first of a new breed of RoRo passenger (RoPax) ferry for national operator Trasmediterranea. Named Sorolla, the 23.5-knot ferry provides for 1,000 passengers and 1,800 lane-meters of RoRo garaging, and denotes a new phase in the upgrading of the traffic between the Spanish mainland and the Balearic Islands.

As a mark of its business versatility, Barreras has also supplied the detailed design for the second ship of the class, entrusted to Trasmediterranea to IZAR's showcase Puerto Real yard at Cadiz.

Meanwhile, the Vigo orderbook has been augmented with a deal from Lineas Suardiaz for three RoRo vehicle carriers based on the design adopted for 15,300-gt sisters L'Audace and La Surprise, delivered by Barreras to the same owner in 1999 and 2000. Suardiaz has also

made a 10-year charter commitment to the Gran Canaria Car, the 1,146 car-capacity PCC which preceded Trasmediterranea's Sorolla out of the yard by a couple of days. Gran Canaria Car is owned by Naviera del Odiel, one of the shareholders in Barreras.

Another of the maritime interests with a stake in the yard is Albacora, Spain's biggest operator of deepsea tuna freezer fishing vessels. A company linked to the Albacora group has a refrigerated fish carrier under construction there. The diversity of the Barreras production is further evident in outstanding contracts for a pair of 1,100-TEU containerships, to be operated by Trasatlantica Espanola, plus two 1,500 car-capacity RoRos to be built for the Greek company Neptune Shipping Agencies.

Many of the sleek modern generation of large, deepsea tuna seiner vessels that homeport in Vigo have been turned out

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## Investment in Design

by Barreras, although recent years have seen the shipbuilder demonstrate equal prowess in the RoRo disciplines.

### Visionary Approach to Tanker Trades

With the first of Concordia Maritime's revolutionary class of V-Max tanker set to cut a new figure in crude oil trade into the Delaware River, parent Stena Bulk has embarked on plans to adapt the innovative design concept to other sectors of the market. Just as the intrinsic maneuverability and shallow draft of the twin-engined, twin-skeg V-Max has brought a VLCC shipment capability to ports hitherto limited to Suezmax tonnage, the nascent S-Max is intended to deliver Suezmax shipments to ports and terminals currently restricted to Aframax tankers.

Work has been implemented in Gothenburg on the wide-bodied S-Max, which would perpetuate, in the one million-barrel capacity league, the combination of economies of scale, exceptional operational flexibility, enhanced transportation dependability, safety and environmental protection manifested in Concordia Maritime's 313,000-dwt Stena Vision.

The V-Max tankers have been conceived with a clear customer focus. The objective has been reduce oil companies' logistic costs, by offering a 30 percent higher loading capacity on a limited draft relative to more conventional designs of newbuilding VLCC, on an equivalent bunker consumption. Stena Vision is claimed to be the first VLCC to satisfy Det Norske Veritas' requirements for the class notation RPS (redundant propulsion, separate). The premium entailed in a dual main engine installation, with two shaftlines and twin propellers, plus the associated special underwater form, is largely offset by the increased revenue-earning capacity and potential savings in unit transport costs.

Concordia's investment in the pioneering V-Max type was quickly vindicated by Sun Oil Company's three-year charter commitments to the newbuilding pair. As a consequence of the agreement, the twin-skeg Stena Vision, to be joined in July by Stena Victory, will become a regular feature of the traffic to Sun's two refineries near Philadelphia.

However, options on a further six such vessels appended to Concordia's contract with Hyundai Heavy Industries have not been exercised, in the absence of satisfactory agreements with other charterers. The reported 10-12 percent higher price commanded by each of the V-Max duo at the time of contracting, relative to more standard VLCC capacity, is a measure of the premium entailed in conferring such a high margin of safety.

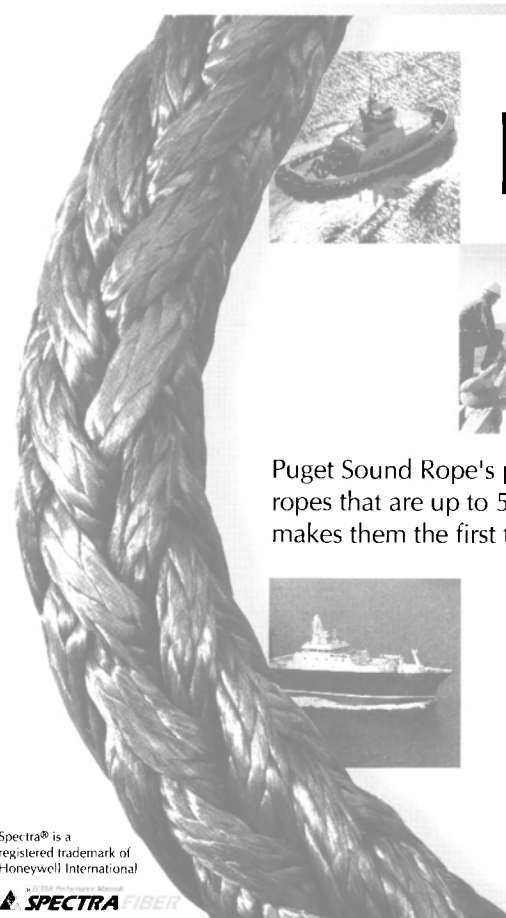
Although there would currently appear to be few charterers worldwide willing to pay significantly more for quality tonnage designed and engineered to confer very high safety factors, Concordia Maritime's managing director **Lars Carlsson** believes that the V-Max investment

will pay-off in the long-term.

Within the framework of Stena's Wide Body concept, the group's engineers have also developed a 10,000 dwt flexible coastal tanker type with a draft of only 20 ft. (6.1 m).

Optimized to reduce the prospective

oil company user's transport costs per barrel, the C-Max type incorporates diesel-electric propulsion and azimuthing thrusters and has provided the blueprint for a newbuild pair in Poland.



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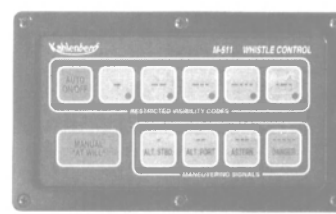
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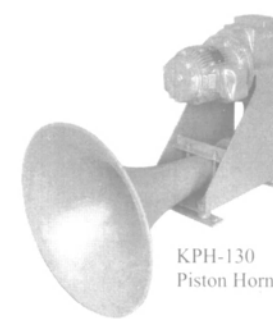
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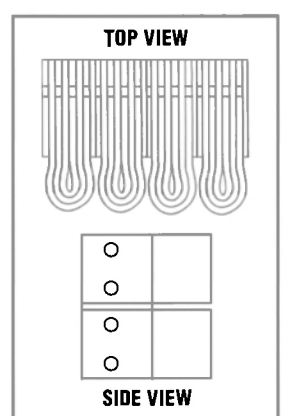
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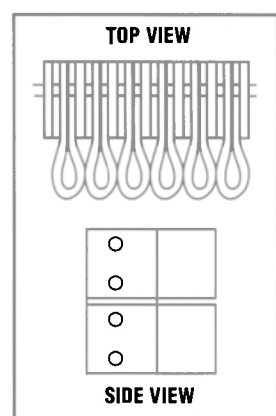
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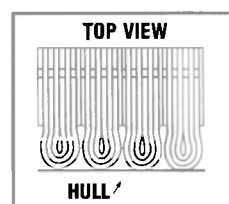
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## MariTel Completes Field Test of Wireless DSC VHF

MariTel, The Marine Telephone Company, has successfully completed field testing of its "Next Generation" wireless DSC (Digital Selective Calling) marine VHF radiotelephone Network. For the first time in the U.S., users have the ability to place direct-dial, private, automatically routed VHF telephone calls between ship and shore. The testing also demonstrates the Network's ability to provide accurate vessel location services, which will be used by vessel operators, cargo owners, family and friends. The test also proved that the MariTel Network exceeds the U.S. Coast Guard's (USCG) 20-mile minimum requirement for DSC VHF radiotelephone coverage for the mandated National Defense Replacement and Safety Modernization Program (NDRSMP). Telephone calls were routinely connected 25-30 miles from the tower sites MariTel's effective area is also determined by tower site topography and vessel antenna height, permitting coverage from up to 50 to 100 miles from shore.

The company plans to launch its first wireless Network coverage in the Gulf of Mexico and on the lower Mississippi River during the month of May, subsequent to the completion of commercial "Beta" testing.

The completion of the field test also confirms MariTel's ability to successfully apply its marine communications business model. The company owns all nine regional Federal Communications Commission licenses to provide wireless telephone interconnect in the marine VHF radio spectrum.

The company has also concluded a \$31 million private equity financing transaction, according to **Mitchell Hauser**, president and CEO. The company's list of investors includes American Tower Corporation, Wafra Partners, Harris Corporation, Williams Communications, Northwood Ventures and MCT Investors. With the announcement, MariTel has raised \$61.5 million in equity financing to date.

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### Freighter In For Repairs

The Norwegian International Register freighter *Lysfoss*, which sailed from Belfast on May 20, bound for Bremen to carry out repairs, sustained damage when it ran aground off the west of Scotland on May 7 carrying a small amount of hazardous waste plus 3,718 tons of paper and timber, and was refloated on May 12. At the time, the 3,728-dwt freighter was being escorted by a tug.

### Carnival To Sell Airtours

Airtours Plc stock price fell when Carnival Corp announced that it would sell its 25 percent stake in the company. The stake was worth around \$514.8 million at the time of the announcement. Investment banks UBS Warburg and Deutsche Bank are acting as joint bookrunners. Airtours, which is the largest distributor of Carnival cruises in the U.S., said the commercial relationship between the two companies would survive.

Maritime Reporter & Engineering News

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## Ship Repair

### ASRY Converts Heavy-Lift Crane Ship

Bahrain's Arab Shipbuilding & Repair Yard (ASRY) is currently carrying out a multi-million dollar conversion contract for the Iran Offshore Engineering Company (IOEC) — a first for the yard. Previously, ASRY has performed a total of

four modification projects of conventional tankers to Floating Storage Units (FSUs), and Floating Storage Offloading Units (FSOs).

The contract involves the heavy-lift crane ship Abouzar 1200, which will be converted to a deepwater pipe-lay barge capable of laying pipe in up to 100 m water, using the S-lay method. Abouzar

1200 will receive new pipe handling equipment in order to handle pipe from 8 to 60-in. diameter, fully coated. The vessel is currently equipped with a 1200 SHT main crane and an eight anchor mooring system with eight mooring winches, fitted with 2.5-in. wire extending 4,921 ft. (1,500 m).

The vessel will be used on Phase 1 of



the 120 km Iran South Pass development, which will carry natural gas to the refinery at Assaloueh.

With class inspection performed by Det Norske Veritas, Holland's Gusto Engineering carried out the design of the conversion, which entails the vessel's widening by 10 ft. (3 m) on both sides along the full 131 ft. (40 m) of its overall length.

Originally constructed as the Norwegian tanker Capto by Sweden's Eriksberg Shipyard, Abouzar was purchased in January 1985 by Hyundai Heavy Industries (HHI), and converted at Hyundai Mipo Dockyard (HMD) to a 1,200-ton heavy-lift crane barge. Known as HHI 1200, the vessel was operated by the yard until its purchase by IOEC approximately three years ago.

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### Transfer of Ownership Commences at Grand Bahama Shipyard

Due to a revised ownership structure for a recently opened ship repair yard in Freeport, Grand Bahama, the yard, which had been previously known (on two separate occasions) as Freeport Ship Care Facility and Lloyd Werft Grand Bahama, has been renamed Grand Bahama Shipyard.

The yard commenced operations in September 2000 under the supervision of Germany's Lloyd Werft, who ultimately decided to withdraw from the project due to an increased workload at its main Bremerhaven yard. The largest single shareholder in the new company will be the Grand Bahama Port Authority.

The yard opened for business last year, subsequent to a totally refurbished panamax floating dock had been installed. With a lifting capacity of 30,000 tons and clear internal dimensions of 879 x 110 ft. (268 x 33.5 m), the dock is fully equipped to provide services to all types of vessels and is fitted with two 25-ton cranes. The yard also boasts two 984 ft. (300-m) wet berths with 46 ft. (14-m) draft alongside, a new workshop complex and full supporting infrastructure.

Located less than 100 miles from Miami, Fla. on the island of Grand Bahama, the yard has completed repairs

## Ship Repair

on more than 30 vessels including 10 successful dry dockings on cruise vessels, ferries, containerships, bulk carriers and casino boats. Aside from the ship repair facility, the island of Grand Bahama itself is undergoing a significant restructuring period, which is exemplified by the rapidly expanding harbor. The island has a cruise terminal, RoRo terminal and container port capable of handling one million teu annually, as well as an oil trans-shipment and storage facility with deepwater offshore piers.

One of the yard's recent jobs was the dry docking of Norwegian Cruise Lines' Norwegian Wind, which has given other major cruise operators reason to check into this new facility, as it would be useful for some of their vessels operating on Caribbean itineraries.

Circle 16 on Reader Service Card

### Hydrex Breaks Ground with Repair

A 262 ft. (80-m) containership from Antwerp had an unfortunate collision in Boston, Mass. with some rocks and ended up with a large number of tears, ranging from one to seven meters, to its flat bottom.

Hydrex was called in to propose solutions for the major repair.

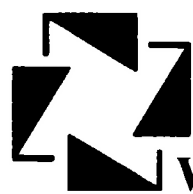
A team of eight was sent from Hydrex to begin the work in liaison with a local company, which provided backup, equipment and consumables. The work required five different kinds of patches to be welded to the flat of bottom. The largest one was 47 x 4 ft. (14.5 x 1.3 m) and weighed approximately 1,700 kg. Heavy-duty rigging equipment was required to get this into position. The technical work of how to securely attach

this to the ship was done by using a total of 170 screw dogs, an alternative procedure Hydrex has utilized around the world. A total of two-km of underwater weld seams were performed by divers to get all the plates securely attached.

The plates were designed with two concave surfaces on the inside meeting in the middle. This method allows the inside of the plate to press against the damaged area and increase the surface contact and pressure with the flat of bottom, ensuring better contact. Seals were placed all around the contact area and the empty space behind the plates was filled with concrete in

order to stabilize it, prevent vibrations, and prevent the liquids in the fuel tank and the ballast tank mixing as the tear ruptured between two spaces. Due to the extent of the damage, requirements for repairs set by class and coastguard were unusually high. Normally, plates of eight-mm thickness could be used when there was only one such tear, but this required 15-mm thickness throughout. Coastguard not only gave the crew authorization for the ship to sail back to Europe, but also allowed them to load up the ship again.

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## Ship Repair

### Detyens Shipyard Profits From Dredger Work

Detyens Shipyard continues to expand its dredge work, with numerous contracts at all three of its locations; the Main Yard in Charleston, S.C., the Wando Yard in Mt. Pleasant, S.C., and

its Jacksonville, Fla. yard.

Last year Detyens completed work for six different operators, Great Lakes Dredge and Dock, NATCO, Bean Stuyvesant, Norfolk Dredging, Marinex Construction, and Weeks Marine. In addition, it completed work on dredges from three different U.S. Army Corps of

Engineer divisions: Philadelphia, Wilmington, and New Orleans.

The U.S. Army recently docked the U.S. Dredge Wheeler at Detyens for an overhaul. The Wheeler had major work performed, including replacing the 47 ft. (14.3-m) tail-shaft, overhaul of the controllable pitch propeller hub, and the

rebuilding of the ship's bowthruster. In addition, the dredging system and hull were maintained and a 14 hopper door sets for inspection and replacement of the door seals.

Among the other contracts, repairs were accomplished on several split hull dump scows, cutter head dredges, a bucket dredge, and several barges. Work varied from routine drydockings, major hull repairs, renewal of crane rail track, fabrication and installation of sponsors, and modification of a dredge ladder.

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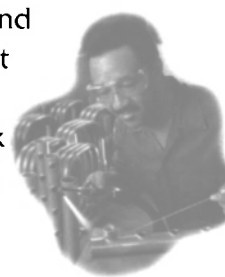
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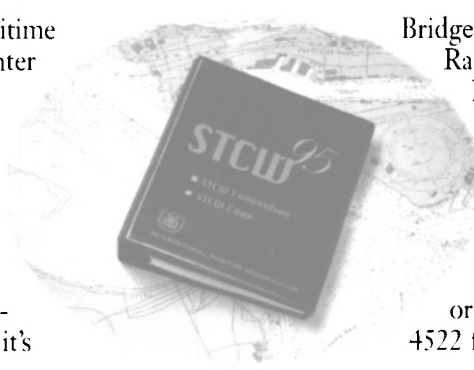
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### Jurong Wins \$80M FPSO Conversion

SembCorp Marine Ltd. said its wholly-owned subsidiary Jurong Shipyard Pte Ltd. won a project worth about \$80 million from U.S.-based Kellogg Brown & Root Inc. to convert a crude oil tanker into an oil platform.

The project involves the conversion of a 270,000 dwt crude carrier to a floating production, storage and offloading platform to be stationed offshore from Brazil. After the project's completion in the third quarter of 2002, the platform will have the capacity to produce 150,000 barrels a day of oil as well as gas compression capacity. Jurong Shipyard is also investing \$8.8 million for a 70 percent stake in a Brazilian joint venture for conversion and construction of floating production and drilling units for deep water oil and gas exploration and production. The Maua Group will hold the remaining 30 percent stake in the venture, it said. SembCorp said Jurong Shipyard will be using internal funds for the investment and it is thus not expected to have a material impact on its earnings.

### UMC Intl. Appoints Exclusive Agents in Mediterranean

International underwater ship maintenance specialists, UMC International Plc. has expanded its worldwide representation by appointing two exclusive agents in the Mediterranean region.

Elkco Marine SA, based in Greece, will represent the company in the Eastern Mediterranean and Monaco-based Victoria Maritime Services will take on a similar role in the Western Mediterranean and also certain regions within Central Europe. These include an underwater hull clean and propeller polish on a 77,300-dwt bulker; blanking of a sea aperture for a 37,659-dwt tanker at Dubai, and surveys on three tankers in the Middle East and Europe. Elkco Marine was established in 1987 as a shipping and technical organization to initiate activities in both the local and international shipping markets.



## New & Notable

### Seacraft Shipyard Delivers Victory

Seacraft Shipyard Corporation of Amelia, La. recently delivered the M/V Victory Rover to Rover Marine of Norfolk, Va. The vessel is Coast Guard certified for 150 passengers and will be used for sight seeing around the Naval




base in Norfolk.

Main propulsion is supplied by three 12 V 71 NA engines with Twin Disc MG 514 marine transmissions and 33 x 26-in. four blade propellers. The vessel's cruising speed is 20 knots. Electrical power is provided by two GM 3-71 engines and 30 kW Delco generators.

Located on the main deck level is a cli-

mate controlled cabin with a combination of aircraft style seating and lounge seating. Also located in the main deck cabin are a snack bar and two heads. On top of the main deck cabin is a large outside viewing area, partially covered with an aluminum canopy.

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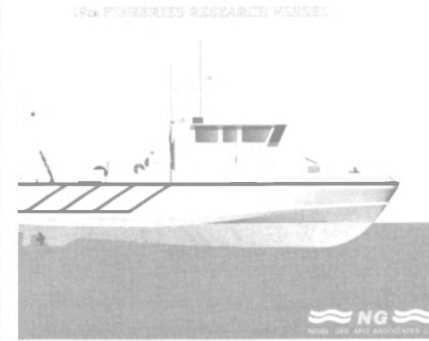
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### Derektor Signs Contracts For Two Vessels

Derektor signed a contract with the Sandy Hook Pilots Association for the supply of the third of a series of new pilot boats as part of the fleet modernization effort of one of the busiest Pilots Associations in the country. Scheduled for delivery in fall 2001, these 53-ft. (16.1-m) boats are all-aluminum construction on a design by Camarc Small Craft Designs. Powered by two Detroit 8V2000, the vessels are capable of top speeds of 25 knots.



Derektor also signed with the State of Delaware Department of Fish & Wildlife for the construction of a new Fisheries Research Vessel that will replace their current boat, a 100-year-old converted wooden sailboat. The new 62-ft. (18.8 m) vessel designed by Nigel Gee Associates, will be built by Derektor in aluminum with a hard chine hull. Behind the pilot house with aft-raked windows, the ample aft deck will be fitted with swinging A-Frame and cargo boom, net reel, trawl winch and dredge.

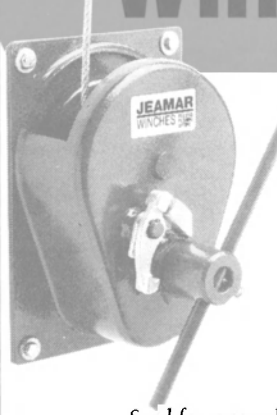
The twin Daewoo T180VIM (650 hp@2,100 rpm) engines will be resiliently mounted, driving twin fixed-pitch propellers through ZF gearboxes. Planned uses of the new vessel include study and sampling of the fisheries in the Delaware River and Bay.

Circle 44 on Reader Service Card

#### Main Particulars

Vessel Description	Research Vessel
Builder	Derektor Shipyards
Naval Architect	Nigel Gee Associates
Length, (o.n.)	62 ft. (18.8 m)
Length, (waterline)	75 ft. (22.8 m)
Beam, (o.n.)	18 ft. (5.4 m)
Draft	5 ft. (1.5 m)
Displacement	29.5 mt
Top speed	22 knots
Engines	2 x Daewoo T180VIM (650 hp@2,100 rpm)
Generator	1 x Northern Lights 20 kW
Complement	9

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**Rodriquez Cantieri Navali Wins \$57M, 10-Boat Contract**

Rodriquez Cantieri Navali SpA won an approximate \$57 million contract to build seven 148-ft. (45-m) double-ended Catamarans (type HC 18) and three 92-ft. (28-m) Catamarans (type MC 25) from Barcas S.A. in

Rio de Janeiro, Brazil. The contract was signed on May 4, and construction of the boats will begin in June 2001, with delivery of the first vessels scheduled for approximately 12 months later.

These vessels, designed and engineered by Rodriquez, are an extension of the CityCat range of catamarans and will serve the city of Rio de Janeiro

and its suburbs.

The 148-ft. (45-m) HC 18, built entirely out of aluminum, will connect downtown Rio with the city of Niteroi, a Route of only three nm but carrying approximately 22 million passengers per year. To facilitate the loading and unloading of the passengers, the HC 18 is a double-ended design with a command bridge at either end and will be able to transport 900-seated passengers with more than 300 standing. The vessel will be powered by four MTU 8V2000 M70 diesels, each connected to a dedicated CP propeller that will provide a service speed of 18 knots.

The 92-ft. (28-m) MC 25, also built entirely out of aluminum, will serve the Rio de Janeiro to Charitas route, which is a slightly longer route of about six nm and is not as busy as the one previously mentioned. As a result, the vessels are therefore slightly smaller with a capacity of 200 passengers but with a higher service speed of 25 knots. MC 25 is a "traditional" catamaran, i.e. not double-ended, and will be powered by two MTU 12V2000 M70 diesels.

Ettore Morace, sales & marketing manager of Rodriquez, after signing the contract said that "Rodriquez is a world-class shipyard with the technology and the know-how to be competitive against the leading shipyards from around the globe and can build advanced ships be they catamarans, monohulls or hydrofoils for any function such as military, commercial or pleasure."

As part of the ongoing investment at Rodriquez Cantieri Navali SpA, the company is in the midst of a major \$43.9 million investment into the Research and

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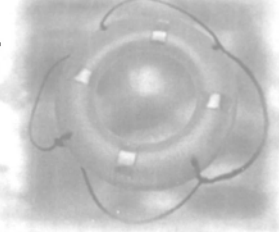


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Designed for 900 passengers and 200 cars, TBY 115 is a 147 ft (45 m) monohull ferry.

Development facilities as well as capital improvements at all the Rodriguez shipyard facilities. Included in this effort is the formation of a new company and shipyard in Rio de Janeiro to be named Rodriguez Cantieri Navali do Brazil. This new company, a wholly owned subsidiary of Rodriguez Cantieri Navali SpA, will be fully responsible for the construction of the ships for Barcas. Additionally, this new yard will have the capabilities to build all vessels in the current Rodriguez portfolio and will serve the entire South American continent.

Circle 29 on Reader Service Card

#### Main Particulars - HC18

Hull	Aluminum
Superstructure	Aluminum
Length, o.a.	148 ft. (45 m)
Beam	48 ft. (14.7 m)
Draft, hull	6 ft. (1.8 m)
Total Passengers	900
DWT	125
Displacement, fully loaded	300 tons
Class	RINA
Speed, max. lightship	22 knots
Speed, cruise (fully loaded, 90% mar)	18 knots
Engines	4 MTU
Propellers	4 CPP

#### Main Particulars - MC25

Hull	Aluminum
Superstructure	Aluminum
Length, o.a.	92 ft. (28 m)
Beam	31.5 ft. (9.6 m)
Draft (loaded)	5 ft. (1.6 m)
Total Passengers	200
DWT	25
Displacement, fully loaded	98 tons
Class	RINA
Speed, max	28 knots
Speed, cruise	25 knots
Engines	2 MTU
Propellers	2 FPP

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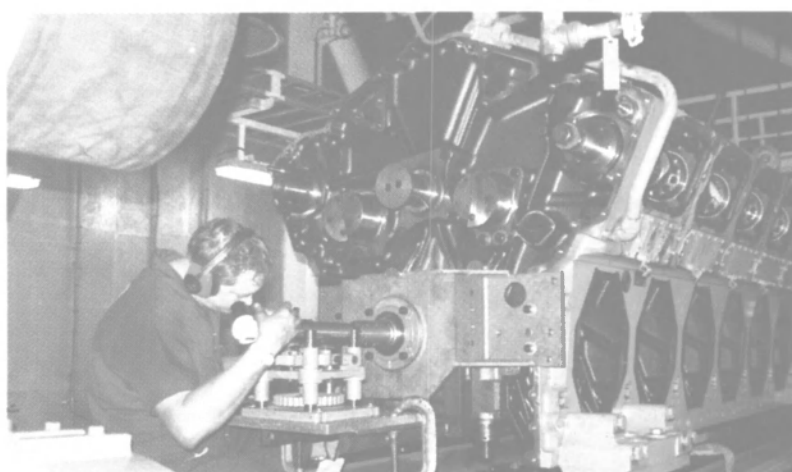
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17

## New & Notable

### Rodriquez Cantieri Navali Launches Largest Fast Ferry

Italian specialist shipyard Rodriquez Cantieri Navali launched the Federico Garcia Lorca on April 28 — its largest vessel ever built.

Subsequent to its inaugural festivities, the ship was towed to Savona, Italy for

final outfitting, commissioning and then sea trials. The vessel will then be delivered to its owner, Balearia Eurolines Maritimes in early June for service between Valencia, Spain and the Balearic Islands, i.e. Majorca, Ibiza, etc. Designed for 880 passengers and 200 cars, TMV 115 is a 377 ft. (115-m)

monohull ferry powered by four 7,200 kW Caterpillar 3618 diesels. The car deck uses an innovative combination of hoistable decks and ramps for extremely flexible vehicle loading alternatives — allowing 200 cars to be loaded on one of the two decks.

Ride comfort will be ensured via the



Rodriquez Marine Systems' stabilization system, which includes forward and aft T-foils with four lateral fins and transom mounted "Interceptor" tabs.

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### Freeport Shipbuilding Delivers Aluminum Research Vessel

Freeport Shipbuilding, Freeport, Fla., delivered a 163-ft. (49.6-m), 32-knot aluminum monohull research vessel, which was designed by DeJong & Lebet — marking DeJong's entrance into the high-performance workboat field.



This new design is a milestone in establishing DeJong & Lebet as a designer of high-performance workboats. The vessel was designed with three soft mounted MTU/DDC 16V 4000 propulsion engines each rated at 2,380 hp at 2,100 rpm, each driving a Hamilton model 811 waterjet. The drive train between the engines and jets consists of remote, hard mounted ZF model BW755 reverse/reduction gear coupled to the engines through a flexible Centa coupling. Cardan shaft assemblies manufactured by Driveline complete the link between the gears and waterjets, thus resulting in a high speed, low vibration vessel.

Constructed from aluminum, the less than 300 gt vessel has an ABS unlimited loadline, and is fitted with a Hydra-Pro model 40/18K hydraulic pedestal crane with a capacity of 18 LT, at 10 ft. and 4 LT at 40 ft. The helo deck, designed to handle a 6,000-lb. helicopter also provides shelter for two 20 x 8 ft. scientific modules. The monohull is also equipped with two tender vessels, a 28-ft. (8.5-m) aluminum Packman jet drive landing craft — built by Munson Manufacturing. The second tender is a smaller RIB type vessel.

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### Image Marine Delivers Aquacat To Blackbeard's Cruises

Designed to suit the requirements of a live-aboard charter operation and with the first year of its chartering service already fully booked, Image Marine's latest delivery, the 102-ft. (31-m) live-aboard dive charter vessel, Aquacat, is set to begin operation in Bahamas during June.

Built for Blackbeard's Cruises, one of the largest scuba resort operations in the world, Aquacat, which is classed to Lloyd's Register, offers a multi-purpose live-aboard chartering service with accommodations and a variety of amenities. With a cruising speed of approximately 14 knots, Aquacat's itinerary consists of seven-to-10 day cruises from Miami to the Bahamas, 41 weeks per year, with one-week excursions from the island of Nassau to the Northern Exumas.

Measuring 102 ft. (31 m), with a waterline length of 91 ft. (27.7 m), molded beam of 35 ft. (10.8 m) and hull draft of 5 ft. (1.5 m), the vessel's propulsion package is comprised of two Caterpillar 3406 engines, two Twin Disc reduction gearboxes and two Teignbridge propellers.

The vessel's interior has been fully customized for practicality, while still exuding style and comfort.

The lounge and dining area, which is situated on the upper deck, features "Tropicane" style furniture throughout with seating for 24 passengers and crew at any time. In addition, an alfresco dining area located on the upper deck, provides seating for up to 12; Kencord marine carpet is featured on all outdoor deck areas.

Aquacat accommodates 22 passengers in eleven cabins, each featuring a private ensuite with bathroom. Crew quarters for 10 are located both in the vessel's hull and top deck.

For those who want to partake in the vessel's dive feature, Aquacat is fitted with state-of-the-art dive equipment including two complete Bauer compressor systems fitted with Nitrox facilities to suite 98 - 131 ft. (30-40 m) dive conditions.

Storage facilities for divers' equipment are housed on the main deck in addition to fresh water washing tanks for diving equipment, five dive access points with dive platforms for easy access into the water and two fish freezing units for bait.

Aquacat also boasts two 17 ft. (5.3-m) Aquapro rigid inflatable tender vessels, located aft of the upper deck, which can be launched via a manual davit system and used for general transport purposes.

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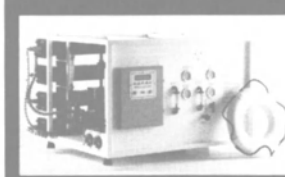
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## New & Notable

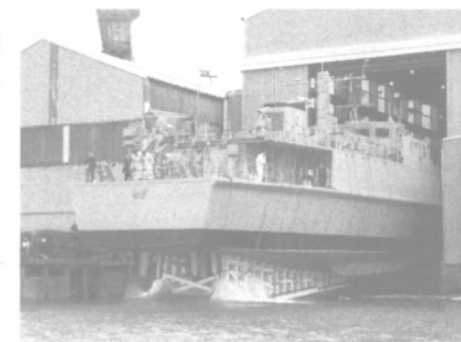
### VT Concludes Sandown Class

Vosper Thornycroft (VT) has once again, completed a successful shipbuilding project for the Royal Navy with the launch of the last minehunter in the Sandown Class at its Southampton shipyard.

HMS Shoreham, which was sponsored by **Lady Perowne**, wife of Admiral Sir **James Perowne**, Deputy Supreme Allied Commander Atlantic, is the 12th of these technologically-driven fiber reinforced plastic minehunters, all of which were built by VT.

VT, which collaborated closely with the Ministry of Defence in the design of this third generation FRP minehunter, was able to design the RN class via sophisticated computer aided design techniques.

The construction of HMS Shoreham



inaugurated many firsts for the yard, as the vessel was 90 percent complete at its launching and holds the designation as one of the first RN ships to be launched with its gun, a Bofors 30 mm, installed.

Equally impressive has been VT's ability to adapt during the life of the Sandown class program. More than 1,000 modifications have been made in the vessels — taking into account changing technology.

Scheduled for delivery later this year, HMS Shoreham measures 172 ft. (52.5 m) and has a displacement of 470 tons. Able to cruise at a maximum speed of 14 knots, the vessel's propulsion system is comprised of two Paxman Valenta engines and two Voith-Schneider propulsors.

Circle 34 on Reader Service Card

### VT Reaches Milestone With New RN Survey Ships

Construction of two new 295 ft. (90 m) hydrographic and oceanographic survey ships for the Royal Navy, under the prime contractorship of Vosper Thornycroft (VT), has taken another step forward with the initial blocks being moved to the berth in the covered Building Dock at Appledore Shipbuilders in Devon.

Appledore is constructing the vessels through a sub-contract from VT with the first vessel, HMS Echo, due for float out in early 2002; in-service will commence in Autumn 2002.

The initial production process commenced with a 102-ton steel block from the ship's central hull being moved into the construction dock at Appledore. Ultimately, both HMS Echo and its sistership HMS Enterprise will be constructed alongside each other in the large dock facility.

The prime contract, which was placed with VT in June 2000, is worth more than \$185 million, and includes the support of the ships throughout their 25-year service life. Both Echo and Enterprise will work with the Royal Navy fleet in worldwide frontline operational roles, including support of mine warfare and amphibious operations as well as the undertaking of specialist surveying tasks necessary for long-term effectiveness of the Royal Navy.



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## New & Notable

### Attica Receives New Superfast Ferry

Greek ferry operator Attica Enterprises took delivery of its new Superfast VII ferry, the first of four sister ships, from Howaldtswerke Werft (HDW) shipyards in Kiel, Germany. Attica's new ferries will be deployed in the Baltic Sea, serving routes between Germany and Finland, and Germany and Sweden. Superfast VII will start commercial operations linking the German port of Rostock with Hanko in Finland on May 17, with Superfast VIII joining it in about six months. Attica Enterprises said its new Baltic cruise-class ferries have a capacity for 626 passengers, 85 cars and 110 trucks each.

### Seabulk Receives Second 152 ft. Crewboat

Seabulk International has received a second modern 152-ft. (46.3-m) crewboat - concluding a two-vessel, \$5 million purchase from Crewboats, Inc. Both the Seabulk St. Martin, delivered in early May, and the Seabulk St. Landry, delivered in December 2000, are operated in the Gulf of Mexico by Seabulk Offshore, a global firm providing marine services to the offshore energy industry.

Built by Breaux's Bay Craft in 1996, the aluminum-hulled Seabulk St. Martin and Seabulk St. Landry each generate 4,400 bhp and are capable of speeds up to 25 knots.

Circle 56 on Reader Service Card

### Flender Werft Books Three More Contracts

Three shipbuilding contracts exceeding \$175.1 million became effective last week at Lübeck, Germany based Flender Werft. The contracts include a RoRo passenger ferry for Smyril Line of the Faroe Islands, which will be built in accordance with the plans and documents of Flensburger Schiffbau-Gesellschaft. In addition, a pair of 3,600-TEU containerships will be built for Hamburg-based shipowner Claus-Peter Offen. These newbuildings will be initiated directly following the Superfast Ferries currently under construction at the yard, and will keep the yard fully occupied to the start of 2003.

### OOCL Orders Three Containerships

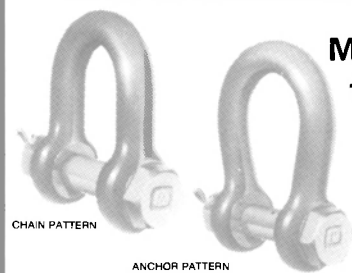
Canada Maritime and Orient Overseas Container Line (OOCL) have contracted Daewoo Shipbuilding and Heavy Machinery to build three containerships. The orders are the first in seven years by the two companies, which are long-term partners in the St Lawrence Co-ordinated Service (SLCS), said OOCL, a wholly-owned unit of Orient Overseas (International) Holdings Ltd.

The financial terms of order were not available. The three ice-strengthened, winterized containerships each measure 964 x 106 ft. (294 x 32.2 m), with a draft of 35 ft. (10.7 m). They will be deployed in trade between North Europe and North America, via Montreal.

The ships will be delivered in 2003.

June, 2001

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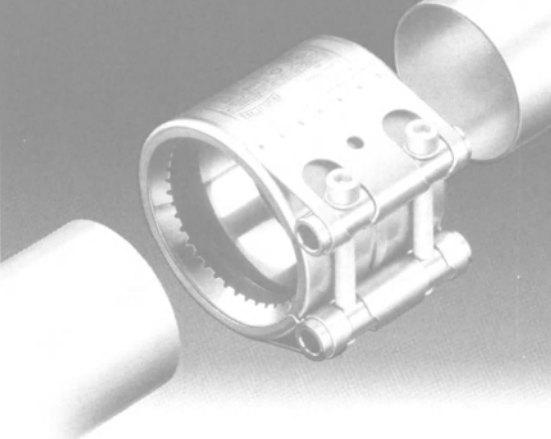
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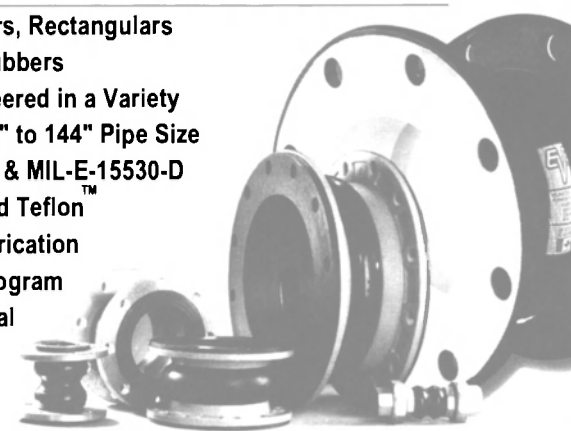
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## Delivery

### EuroFerry Takes First Auto Express 101

The first of Austal's Auto Express 101 ferries is scheduled to debut this month for Spanish operator, Euroferry, across the Strait of Gibraltar. The 331 ft. (101 m) Euroferry Pacifica is the largest of Austal's flagship Auto Express car ferries ever built, and is also reported to be the largest high speed catamaran in the world with diesel propulsion. With the capacity for 951 passengers and 251 cars, the new aluminum ferry will operate on the 16 nm route between Algeciras on the southern coast of Spain and Ceuta in Spanish Morocco, completing six return crossings per day.

Euroferry currently operates a 256 ft. (78 m) fast ferry and two conventional ferries on two separate routes. With a sizeable 750 dwt and the ability to carry semi-trailers, Austal's sales director, **Chris Norman**, said the capacity and flexibility of the Auto Express 101 will enable Euroferry to replace the 256 ft. (78 m) fast ferry and one conventional ferry currently servicing the Ceuta route, reducing operating costs while providing improved service.

To meet the customer's demand to haul a substantial number of commercial vehicles on a relatively short (16 nm) route, the vessel features a new Austal design innovation in the garage — a hoistable vehicle deck to facilitate a mix of vehicle and commercial/freight carriage.

Joaquin Gonzalez, president of Euroferry said, "We are absolutely delighted with the vessel from inside and out. We can now offer our customers the best in comfort and convenience. This vessel has, without a doubt, the best vehicle deck we have seen in the market and in such a competitive seaway, which is vital to our operation. It is very well designed. Vehicles drive through for easy loading and unloading. Caravans can park under the mezzanine decks and not take up valuable space in the freight lanes. This will have a significant effect on the smooth flow of our service."

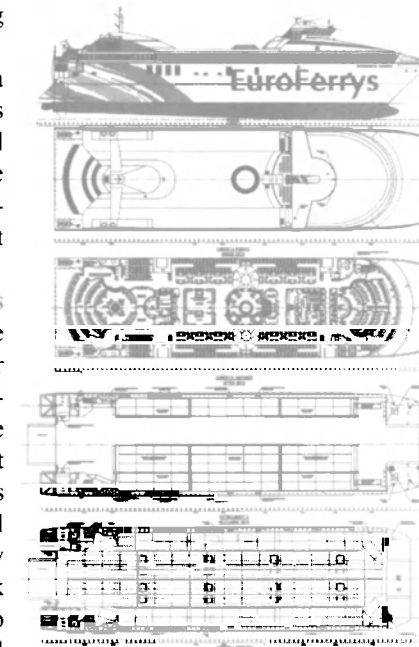
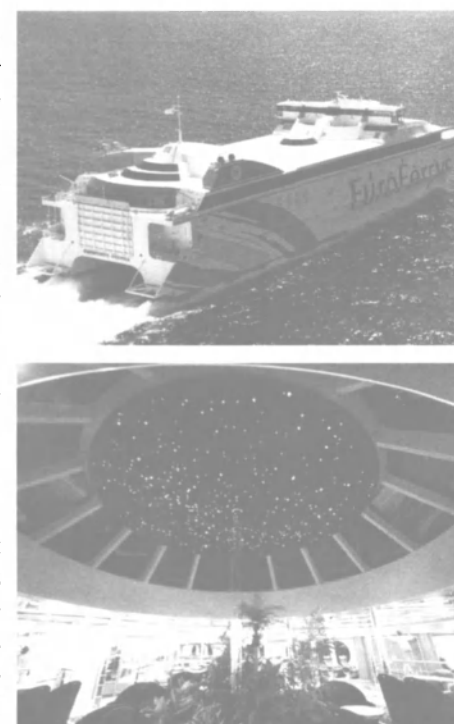
Auto Express 101's vehicle deck features approximately 1,190 lane meters, including 341 freight lane meters. The hoistable vehicle deck (full length of the vessel) has four hydraulically operated sections that can be operated together or independently and can be raised or lowered in less than one minute.

Fitted with four diesel engines generating 28,800 kW and the Seastate T Max high speed steering system, Euroferry Pacifica achieved 37 knots with 500 tons dwt at 90 percent MCR.

The wheelhouse is outfitted with the latest marine navigation and communication equipment including a suite of Kelvin Hughes ARPA radars and electronic chart navigation, a Vistar night vision anti-collision system and GMDSS A2 communication. The Austal developed Marine Link system provides extensive monitoring of machinery and systems throughout the vessel as required by class. While the main function of Marine Link is control and monitoring, it also has a powerful on-line documentation system to manage all user manuals and even the vessel's electrical drawings and documentation.

Four Marine Evacuation System (MES) stations are located forward and aft, to port and starboard and have been supplied by RFD. The systems can be activated locally or from the bridge. Harbor deployment trials successfully demonstrated the evacuation of 150 passengers from one station in eight minutes and 18 seconds.

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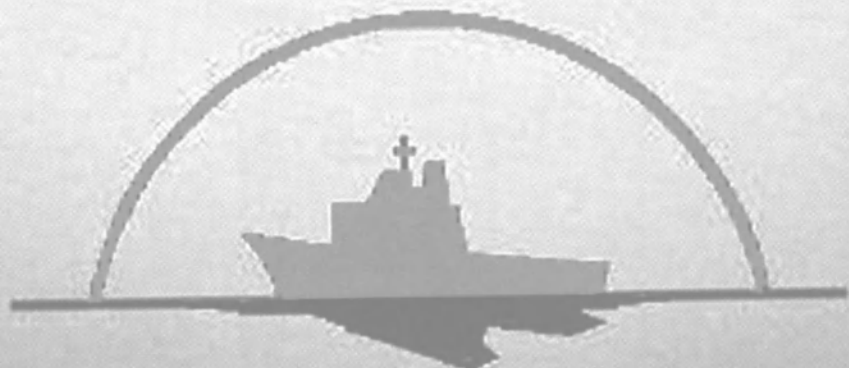




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News

## Caterpillar Introduces Compact Marine Propulsion Engines

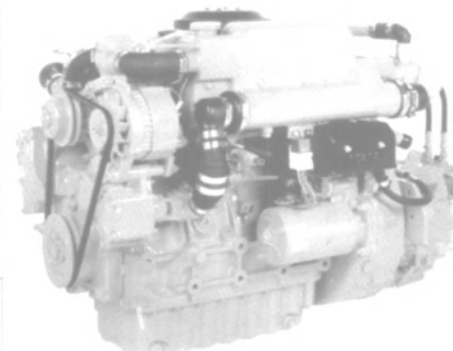
Caterpillar Inc. has launched its new 3034 DIT, 3034 DINA, 3054 DIT and 3054B DINA marine propulsion engines. The 3034, 3054 and 3054B engines are designed to offer outstanding

reliability and durability in a very compact package size.

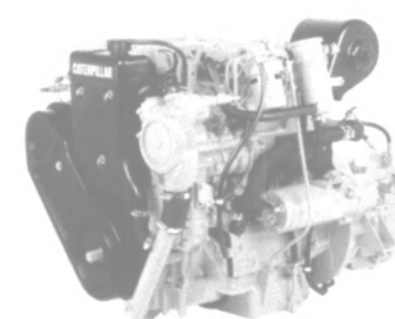
Expanding upon the Cat 3000 line of engines introduced in 2000, these versatile, powerful engines can be applied in

single or twin-engine workboat, fish boat, passenger ferry, patrol craft, sailboat or pleasure craft applications.

Caterpillar initially offered the 3056 propulsion engine as the first in a new



Caterpillar's 3034 marine engine



Caterpillar's 3054 marine engine

line of compact, fuel-efficient marine propulsion engines based on an environmentally friendly, in-line six-cylinder, four-stroke cycle diesel design.

Operation is quiet and clean with extremely low emissions levels, and the engines are environmentally friendly with no visible smoke throughout the engine's operating range.

The engine is designed to offer owners low fuel consumption, low cost of replacement parts and extended service intervals meaning overall low operation costs of the engines. Engine shipments to dealers will begin in July for the 3034 and September for the 3054 models.

The 3034, 3054 and 3054B engines feature a high-tech rotary fuel injection pump and low inertia injection system that use less engine energy to move fuel to the injectors. The state-of-the-art combustion chamber design provides the correct fuel/air mix for combustion efficiency, power and torque, and low fuel consumption and emissions. The combustion systems' relatively low peak pressure reduces mechanical stress within the engine to improve reliability and prolong engine life.

The recommended oil and filter change interval is 250 hours for the 3054, but engines in 'E' applications and some 'D' applications where load factors are less than 30 percent may be capable of an extended interval of up to 500 hours. Similar to larger Cat engines, both seawater and freshwater pumps are gear driven on the 3054 and 3054B. The 3034 is available with a gear-driven seawater pump and belt-driven jacket water pumps. On heat exchanger cooled engines, the heat exchanger is equipped with long-life cupro nickel tubes and replaceable end caps for easy service.

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- 13218 Martha's Vineyard to Block Island
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# ABB

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### Moran Towing Promotes Three

Moran Towing has announced three management promotions at its Jacksonville, Fla. location, beginning with **Donald J. Peck**, who has been appointed Southern Regional vice president. Peck previously served as Moran's Jacksonville port manager for the past 12 years. **Thomas W. Craighead** was promoted to general manager of Moran

Towing of Florida. Replacing Peck as port manager at Jacksonville, Craighead most recently served as general manager of Moran's Petroleum Transport Corporation (PETCO) Southeast Division. **Gregg Goldie** will assume the position of operations manager at Petroleum Transport Corporation. Goldie has been with PETCO since 1999 at the start-up of the FPL contract.

### Transas Navi-Sailor 2400 Now Used By USCG

The U.S. Coast Guard recently issued an All Coast Guard message that sanctions the use of the Transas NaviSailor 2400 ECDIS for paper-less navigation. This new policy applies to U.S. Coast Guard vessels less than 1,600 gt including the two new classes of Buoy Tenders, Medium Endurance Cutters, and

Coastal Patrol Boats. The Transas Navi-Sailor 2400 is installed onboard the U.S. Coast Guard Mako Class (WPB 87) coastal patrol boat.

The U.S. Coast Guard established this new policy guidance to deal with different types of electronic chart systems that have been installed and used onboard USCG cutters for several years. This includes both ECDIS and less capable Electronic Chart Systems (ECS). Collectively, the USCG refers to these types of systems as Electronic Charting and Integrated Navigation System (ECINS). This designation pertains to both government-developed and commercial electronic charting systems.

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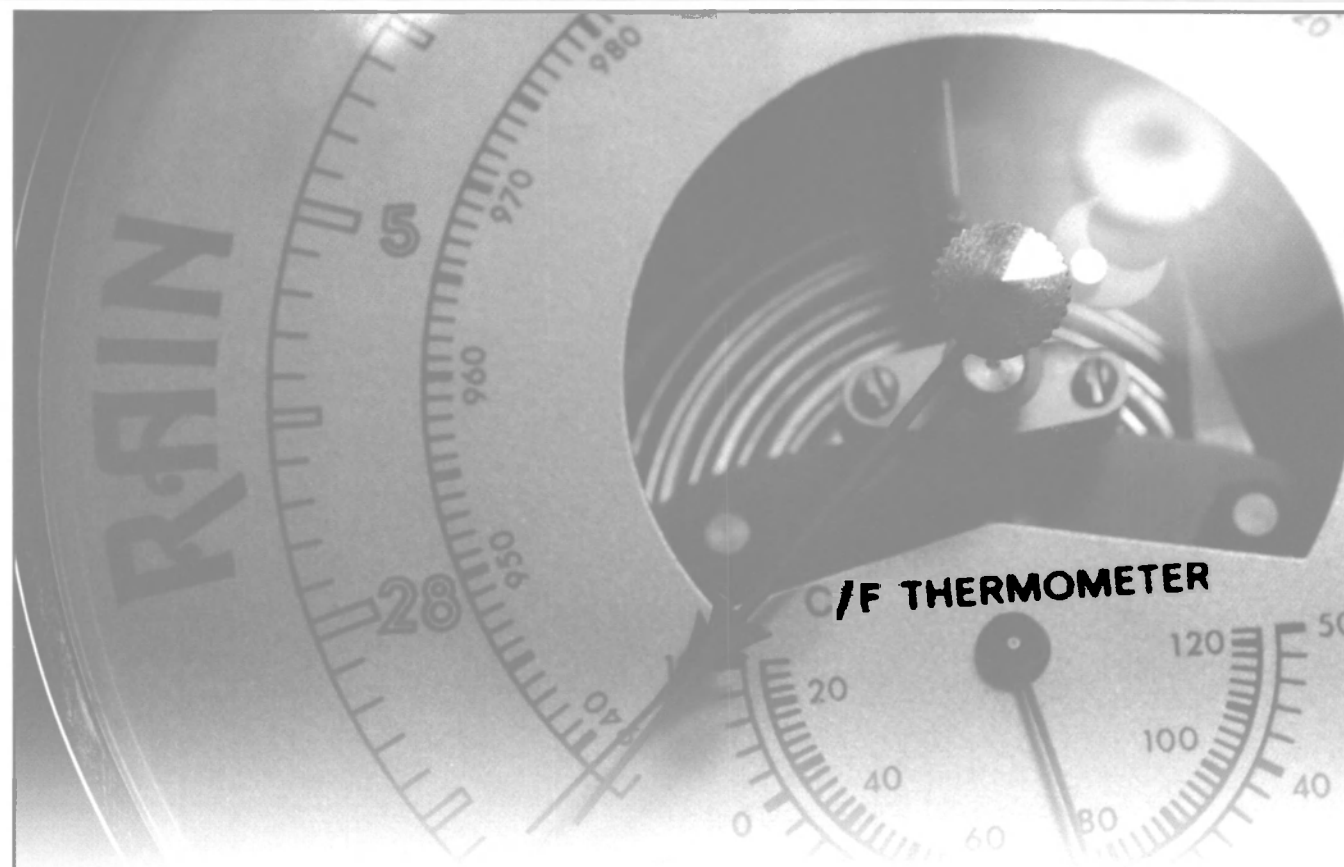
### redFox Relocates To New Facility in Louisiana

redFox Environmental Services, distributor of self-contained sewage treatment units, moved to a new 12-acre locale in April. The state-of-the-art facility contains a 6,000 sq. ft. highly-advanced fabrication area and 2,000 sq. ft. of office space. Centrally located, it is situated approximately 10 miles south of Lafayette, with easy access to Highway 90 and Interstate 10. redFox Environmental Services, 1513 B Chemin Agreeable Rd., Youngsville, La. 70592, tel: (337) 895-3709.

### Jotun Expands U.S. Presence

Jotun, manufacturer of paints and powder coatings, is in the midst of a major expansion of its U.S. resources. The expansion, which will serve the local marine fleets in the Americas, will be part of the Jotun global network for seagoing vessels. Jotun paints also holds a major presence in protective coatings, serving industry, and oil and gas installations. Jotun Powder Coatings globally produces functional powder coatings for protection of oil and gas pipelines. The Jotun Group remains as having a large portion of market share of its business in Europe, Middle East and the Pacific, while establishing a presence in the U.S. market. Headlining Jotun's entrance into the U.S. marketplace was the acquisition of a manufacturing operation last year in Belle Chasse, La. Equipped to offer its market a broader product range, specifically to the U.S. market, this new manufacturing and laboratory complex is benefiting from a series of investment programs to speed the production of a wider range of factory fresh paints and coatings to increase output efficiency while raising quality standards. Also, the company's Paints and Powder Coatings sales and marketing operation has relocated to new purpose-planned offices in Houston, linked to a nationwide network of offices and distributors.

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## Maritime World Joins Together at Asia Pacific Maritime 2001

With an expanded profile and vast interest from the marine industry, this year's Asia Pacific Maritime is scheduled to be the largest ever since its commencement in 1990.

The exhibition, which will be held from September 5-7, 2001 and orga-

nized by PSA Exhibitions and Reed Exhibition Companies, is expected to draw key industry members from more than 500 companies worldwide. International participation is from 12 country groups — including Belgium, China, Denmark, France and Norway.

With Germany holding the designation as this year's "Feature Country," the exhibition will showcase the latest technologies and services in shipping, ports, marine, communication and navigation systems, offshore technology, shipbuilding, and ship repair and conversion.



Singapore is this site for this year's Asia Pacific Maritime Exhibition.

Awarded this distinction for outstanding contribution to the international maritime industry and advancement in marine technology, the German Marine and Offshore Equipment Industries Association (VDMA) will be leading the German contingent of approximately 20 companies in a series of promotional activities leading to and during the event.

Another added feature is that exhibitors and pre-registered visitors can secure business meetings prior to the event via APM Contact, a free, online appointment scheduling system. Through Asia Pacific Maritime's web site [www.apmaritime.com](http://www.apmaritime.com), Contact serves an online matchmaker, bringing together visitors and exhibitors with similar business interests.

The exhibition will also boast myriad of pavilions including a Technology Transfer Pavilion, which will showcase a wide range of maritime products, services, technical know-how and financing options available to developing countries. A specialist clinic staffed by lawyers, insurers and bankers will offer consultation to visitors on how they can access these technologies and advise on implementing these capabilities.

The International Maritime and Port Authorities Pavilion will feature regulatory bodies in the maritime industry, which will provide updates on their plans for the development of ports, policies and services. In addition, a Maritime and E-Commerce Pavilion will hold major hardware and software providers showcasing technologically driven products and services for the industry.

Conferences and seminars will be an added bonus to this year's exhibition. Renowned speakers and participants will discuss directives and technical innovations facing the global maritime world today. Zeroing in on themes, "Technical Innovations for the Future," and "Is Bigger Better," each discussion presents an insightful argument on real issues and practical solutions providing unique opportunities to participate in discussions.

For further exhibition/conference information, contact: Jorinda Tan at tel: +65 434 3634; fax: +65 338 8548 or email: [jorinda.tan@reedexpo.com.sg](mailto:jorinda.tan@reedexpo.com.sg).

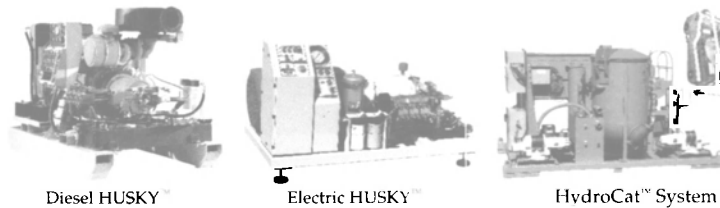


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The American Group announces name change:

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Each company can lay claim to innovations that set new industry standards. By joining the pacesetters of the last century and maximizing the strengths of each, one company was created with a common mission: leadership in rope technology into the next century.

To better reflect our common mission, and the strength of our combined histories, The American Group has been renamed. The new corporate name, Samson Rope Technologies, draws upon our combined past while reflecting our mission for the future. The Samson name, along with the trademark of Samson and the Lion is the oldest continuously registered trademark in the United States. It is a great symbol to represent the combined strength and performance of our product line. It also symbolizes strength over time; longevity which can only be achieved through commitment to continuous development and the creation of new fiber combinations and constructions to provide greater strength, safety and security.

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Samson trademark is registered to the J P Tolman Company.

**1888:**

Tolman incorporates Samson Cordage Works.

**1889:**

American Manufacturing Company Founded.

**1948:**

AMCO introduces synthetic 3-strand nylon ropes.

**1952:**

Herzog Rope founded in Canada. Specialize in ropes for the Northwest fishery.

**1955:**

First Washington Net Factory established. First company to produce nylon knotted netting to fishing industry.

AMCO introduces the first 3-strand polypropylene in the US.

**1961:**

Samson introduced the first all synthetic fiber double braided rope.

**1972:**

Samson Nyston is the first synthetic fiber rope used to moor an oil tanker to a loading buoy in the North Sea.

**1989:**

Herzog develops Permafex leadline for the seine fishery.

**1992:**

AMCO perfects coextrusion and produces Ultra Blue fiber, 30% stronger and 3 times more abrasion resistant than polypropylene.

**1993:**

The American Group is formed by merging AMCO, Herzog and Samson Ocean Systems.

**2001:**

Samson Rope Technologies is the banner that unites four illustrious cordage industry innovators under one name and one mission: Leadership in rope technology.



## Ship Repair Profile

# Camacho Returns to His Roots

December 7, 1941, "A day that will live in infamy," is undoubtedly a defining moment in U.S. history. The day the Japanese bombed Pearl Harbor is again in the public eye with the recent release

of Touchstone Pictures' epic Pearl Harbor this past Memorial Day weekend.

While the movie provides an interpreted portrayal of those events, no rendition could possibly compare it to a first-

hand account. Having lived through the attack as an eight-year-old boy, Retired Admiral Dick Camacho, remembers the day as one that left many people living in fear. Camacho, who now serves as senior vice president for Government Business at United States Marine Repair (USMR), recalls the drama and loss that



occurred during "wartime Honolulu." Camacho also recently has added, ironically, the responsibility of ship repair yard Marisco to his watch. Located on the site of the former Pearl Harbor Naval Yard, USMR recently signed an agreement to acquire Marisco. Mere proof that Camacho has once again "returned to his roots."

By Regina P. Ciardiello, senior editor

The acquisition of Marisco by United States Marine Repair (USMR) is expected to be completed soon. As one of two full service shipyards in Hawaii, USMR believes Marisco will provide a strong, local presence to help it win government and commercial ship repair.

With the U.S. fleet not getting any younger, government financial support dwindling, and a backlog of ships waiting to be repaired for deployment, the acquisition may be the first step in helping to ensure that the needs of the U.S. fleet are met. With USMR's family of shipyards located in the hubs of San Diego, Calif. and Norfolk, Va., the acquisition will add another strategic locale to USMR's well-positioned facilities, as well as serve the need for additional surface ship work on cruisers and destroyers home ported in Pearl Harbor.

While Camacho admitted that there is still a lack of funding to support proper levels of ship repair operations, he noted that Congress is set to provide supplemental funding of approximately \$400 million (evenly split between both coasts), to help achieve full readiness in 2001. While this alleviates the fleet's financial problems temporarily, Camacho feels "that it's wrong to ask for a supplemental (funding) every year."

Which lends to a question that has been asked for the last few years: When will the Navy's needs be adequately funded? According to Camacho, "Money will be funded through advanced planning, which will thus affect all major home ports."

While Marisco's work will focus on commercial and Navy work, the bulk will lie in the commercial realm, as the Hawaiian ship repair industry does not attract a large portion of Naval work.

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Camacho plans to focus on building up the yard's skill base by tapping local capabilities.

"Our first effort will be to utilize the local labor base," Camacho said. "From there we will tap the mainland and eventually the rest of the USMR yards." He added: "Our main concern is to develop a local base while meeting customer's needs.

Camacho plans to adhere to this promise by seeking out local talent, which in turn will not only provide an added number of jobs for the city, but a boost in its economic status as well. "We'll buy materials from local ports and what we can't get locally, we'll purchase from west coast vendors," he said.

#### Pearl Harbor Revisited

Interestingly, Camacho has returned to his Hawaiian roots two times since leaving the war-torn city in the 1940s. Holding strong ties to the area on both a nostalgic and historic level, Camacho, who

served a 30-year tour of duty as the commander of the Pearl Harbor Naval Shipyard, recalls the days when his father worked in the yard's machine shop at the height of the U.S. involvement in WWII. He remembers the night of the attack, which marked the U.S. entry into the war, and how his father did not return home for almost two days. As a yard employee, the elder Camacho worked round-the-clock shifts putting out fires and assessing damage control in order to salvage what was left of the Naval Shipyard.

"My family arrived in the islands in the late 1870's on the first ships from the Azores," said Camacho, whose family was active in raising coffee on the Big Island and on the sugar plantations on Oahu. "My dad went through the machinist apprentice program at Pearl Harbor and was supervisor in the machine shop on December 7, 1941 when WWII started."

Waiting for his father's safe return, Camacho remembers looking out from

the second floor window of his parents house as shells exploded all over downtown Honolulu. Fearing that an invasion was imminent, Camacho and his family would be forced to stay in the basement of their homes, which was also attributed to downtown Honolulu's Martial Law, which was established in response to the wartime activity — residents were forbidden to leave their homes after dark as a result.

Camacho always has had a strong interest in the Navy, which helped lead to his decision to attend the University of New Mexico — Albuquerque, via the Naval Reserve Officers Program, where he graduated with a degree in Naval Engineering.

From there, Camacho went on to attend the Navy's post-graduate school in Monterey, Calif. — where he picked up a degree in Electrical Engineering. He also managed to fit in courses at Harvard Business School.

His Naval career began as a line officer, and eventually brought him to

Charleston, S.C., where he served as the Commander of the Naval Shipyard there. Camacho then went on to serve what would be the first of two tours at the Pearl Harbor Naval Shipyard. On returning to his "home base" Camacho was taken aback by the changes that the yard had undergone since his time there. While everything obviously has been replaced since WWII, Camacho could detect the remnants of the time and was overcome by a sense of nostalgia as he walked through the area of the yard that housed the former machine shop where his father spent so many hours. During his tenure at the Pearl Harbor yard, Camacho played a dual role as both the yard's Commander and Supervisor of Shipbuilding, directing work performed in the private sector shipyards.

In 1986, he took on his current position in strategic planning at Southwest Marine in San Diego, working to ensure that all USMR shipyards meet all requirements — ultimately leading up to his current role at Marisco.

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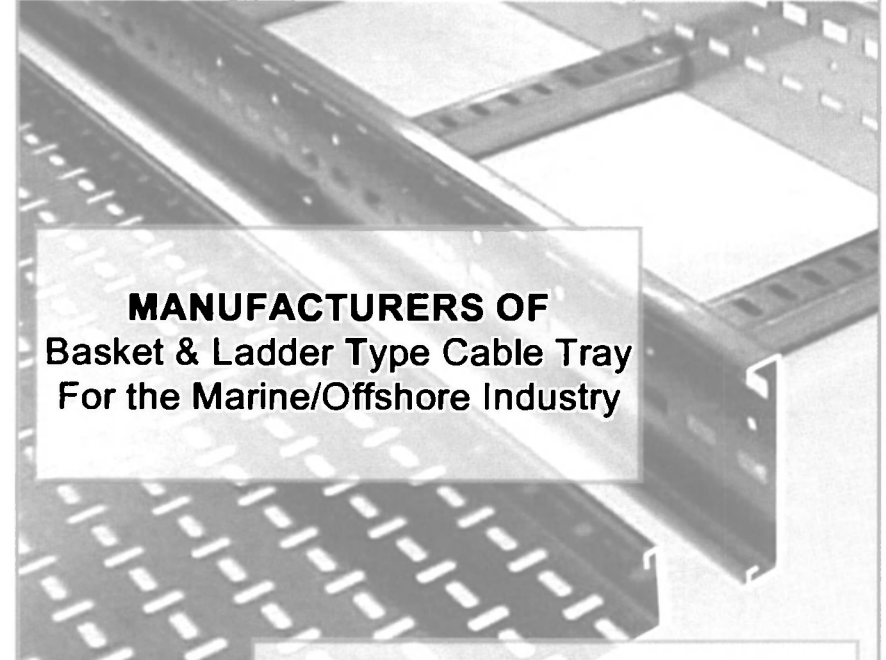
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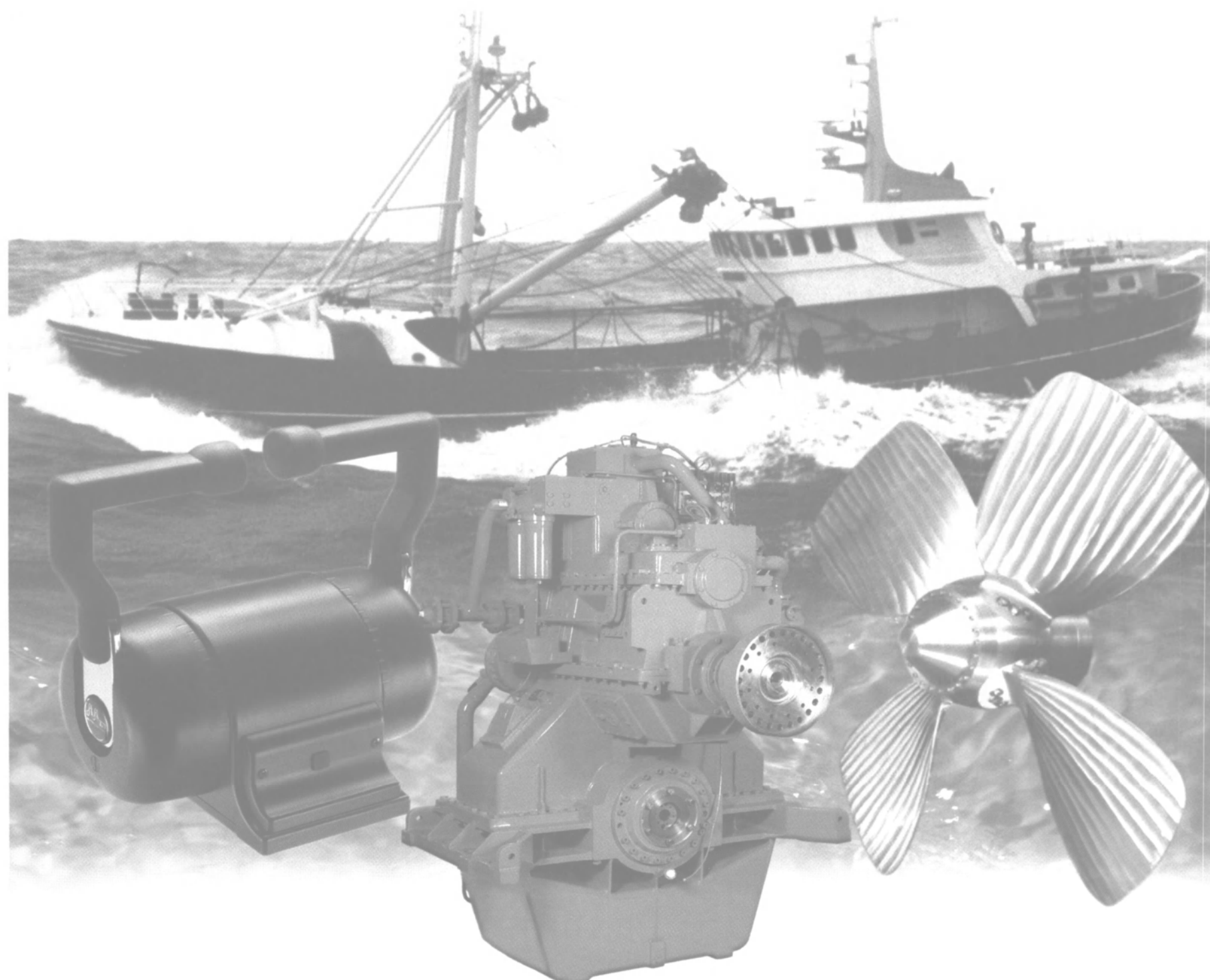
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# U.S. Shipbuilding Industry: A Bright Future Tempered with Challenges

By Allen Walker, president, Shipbuilder's Council of America



Not since the heady days of the late 1970s has the outlook for shipbuilding in U.S. yards looked brighter, but that outlook is tempered somewhat by the threat of federal budget cuts that could jeopardize many present and future shipbuilding projects. The U.S.'s decision to unilaterally eliminate construction differential subsidies and end tax credits for vessel construction in the early 1980s resulted in 15 years of stagnation, retrenchment and consolidation for the domestic shipbuilding industry. Today the domestic shipyard industrial base in terms of employment, active facilities and building berths/dry docks is approximately half as large as it was in 1981. Despite the dramatic decline in shipbuilding opportunities in the 1980s and early 1990s, the industry spent more than \$3.5 billion for capital improvements during that period to modernize facilities and ready itself for what is expected to be an extended period of significant construction activity.

#### Vessel Construction: The Outlook

Energy-related vessel construction is perhaps the most certain and strongest market for U.S. shipbuilders in the short term. The Oil Pollution Act of 1990 (OPA 90) requires that all single-hull tank vessels carrying petroleum products be replaced with double-hull vessels by 2015. Larger vessels, those over 5,000 gt must be replaced by 2005. With the first major phase-out milestone looming, many operators have begun their replacement building and conversion programs. Today, shipyards have signed contracts with options to build at least 20 articulated tug barges (ATBs) and tank barges greater than 5,000 gt. This is, however, less than one-half the number that must be built to replace the tonnage being phased out under OPA 90 by 2005. In addition,



Located in San Diego, Calif., Southwest Marine, which is a member of the United State Marine Repair group of shipyards, keeps busy with a balance of Naval and commercial work.

tion, there are currently seven self-propelled tankers under construction in U.S. yards, a contract for an additional tanker on which construction has yet to begin and options for two additional vessels. Tank vessel construction is expected to remain strong for the next five to seven years.

Another market sector that has seen some activity in recent months, but which is expected to increase significantly over the next year is offshore supply vessel (OSV) and crew boat construction. The average age of vessels in the current fleet is well past its projected useful life. In addition, with oil and gas exploration moving into the deepwater Gulf of Mexico (GOM), larger vessels are needed to service rigs and platforms. For years, the standard workhorse in the GOM has been the 180 ft. (54.8 m) OSV. Today operators are looking at OSVs in the range of 240 ft. (73.1 m) to 350 ft. (106.6 m).

The issuance on February 20, 2001 of the Mineral Management Service's (MMS) final Environmental Impact Statement (EIS) gave the green light to develop Floating Production, Storage and Offloading Systems (FPSOs) in the deepwater GOM. The U.S. Coast Guard predicts that as many as five FPSOs will be operating in the GOM by 2005. In all likelihood, FPSOs will not require a Jones Act endorsement to operate in the GOM; however, shuttle tankers needed to service FPSOs, like OSVs, must be built in U.S. shipyards. (See related story on page 42). At least two and possibly as many as four shuttle tankers will be needed to service each FPSO. Operators are looking at ATB and self-propelled tanker designs to service this need. Capacity for each vessel is expected to be in the 350,000 to 500,000 barrel range. Operators have already pre-approved six shipyards to build shuttle tankers and asked those yards to provide preliminary estimates for construction of ATBs and self-propelled tankers.

Today, there are approximately 40 containerships in the Jones Act trades. The average age of these vessels is over 25 years old. The majority of these vessels must be replaced over the next 10-15 years. Currently, NASSCO has contracts to build three containerships for the Alaska Trades and the Kvaerner Philadelphia Shipyard has begun construction of the first of two 2,500 TEU containerships.

#### Cruise & Passenger Vessels

For the first time in 40 years, two large cruise ships (with an option for a third) are being constructed in a U.S. shipyard — 1,900 passenger vessels being built at Ingalls. In addition, Atlantic Marine in Jacksonville, Florida recently delivered the first of two 224 passen-



Bollinger Shipbuilding, a medium-sized company with a diversity of facilities and capabilities, is a shining example of an American shipbuilder which has astutely positioned itself to weather the shipbuilding cyclical storms.

ger coastal steamers. The company also has an option for a third vessel. All of these vessels are being constructed for American Classic Voyages, Inc. Two other cruise ships were recently delivered for the U.S. market. Today, construction projects are pending for at least nine cruise ships.

Another market sector that is expected to experience significant construction activity over the next decade is passenger ferry construction. In fact, this market looks so bright that Australian ferry builder giants Austal and Incat have established operations in the U.S. to take advantage of strong market demands for ferry construction. Local and state transportation planners are increasingly looking at water options to alleviate overcrowded urban roads and transportation systems. There are currently projects pending to build at least 13 passenger ferries in U.S. shipyards for local, state and private entities. These vessels would carry both passengers and vehicles.

#### Inland Waterways

U.S. shipyards also expect a steady stream of barge and tug construction over the next several years to replace vessels built during the huge building boom of the late 1970s. Not only is the U.S. tug fleet aging, new technological developments are forcing older, less sophisticated vessels out of service. Although, construction of double-hull tank barges for the inland fleet has been going on for some time and a majority of inland tank barges in operation today are double-hulled, shipyards believe that approximately 400 double-hull tank barges for the inland market will be built over the next five to seven years.

The need to develop a vibrant domestic coastal ship-

ping industry is perhaps the brightest spot for U.S. shipbuilding in the mid-term. U.S. international trade is expected to double or triple in the coming years. More than 16 million more TEUs are expected to arrive at U.S. ports from overseas each year for the next 10 years. An additional 16 million TEUs equates to 11,000 FEU more arriving everyday on each coast. The Conrail acquisition will enable CSX/NS to move 11,000 more containers per day. It would take 10,000 trucks on the I-95 corridor every day to move the remainder — that is one more truck every 270 yards between Boston and Miami. And, these statistics do not consider increased need for domestic shipping. Movement by water is the only solution to projected shipping demands and substantial vessel construction will be needed to meet the demands of this new market sector.

There are already a few container barges operating on the east coast. It is expected that more will enter the trade, which will require new construction. With larger containerships becoming the norm and fewer of our ports having the infrastructure to handle them, feeder containerships will have to be built. In addition, shipyards are looking at innovative new designs for cargo-carrying fast ferries that can move large quantities more quickly than traditional barge movements. A group of shipyards, operators, ports and maritime labor has formed the Coastwise Coalition to promote government policies aimed at increasing our domestic coastal shipping capabilities.

**Title XI: An Uncertain Future**

Unfortunately, just when prospects for new building opportunities look brightest, the Bush Administration has proposed elimination of the Title XI Loan Guarantee Program. Title XI has been the engine of growth for the maritime industry since it was revitalized in 1993. More than \$5 billion worth of loan guarantees for vessel construction and shipyard modernizations have been approved since 1993 and the program has proved to be a revenue generator for the government. From FY 93 to the end of FY 2000, MarAd collected over \$160 million in application, investigation and one-time guarantee fees and interest. When that figure is offset by the cost of administering the program and two loan defaults, the government has realized net revenue from the program of over \$80 million.

Today, MarAd has more than \$5 billion worth of pending applications for Title XI loan guarantees and only enough money remaining in the Title XI account to fund less than 20 percent of those applications. Without a significant appropriation in FY 2002, many pending and future projects will not come to


fruition. The industry is working with Congress to fund the Title XI program. Recently, 61 House members and 38 senators sent letters to the Chairman of the House and Senate Commerce, State, Justice and the Judiciary Appropriations Subcommittees requesting \$100 million for new Title XI loan guarantees next

year. Funding this program at a level adequate to meet vessel construction demand will not be easy in this time of budget cuts; however, the industry understands full well that without the availability of Title XI loan guarantees, much of the hard work and sacrifice that our shipyards have endured over the last

decade will be for naught.

U.S. shipbuilders have learned that nothing is certain in the marketplace until contracts are signed and financing is secured, but if current building projections prove anything close to being accurate the industry can look forward to good times ahead.

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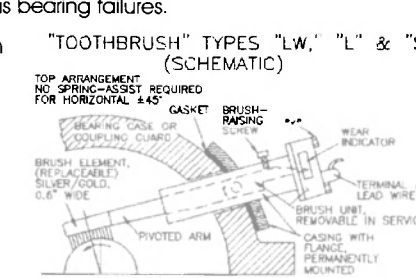
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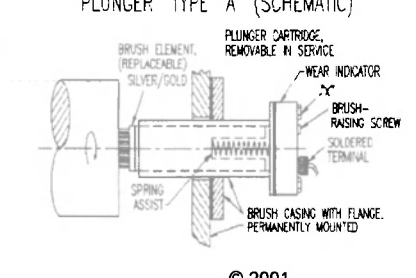
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# No Leg Left to Stand On - An Obituary for MarAd?

By John Graykowski  
Dyer Ellis & Joseph, P.C.

Unless things change dramatically, I am writing as the last Deputy Administrator of the Maritime Administration (MarAd). At least the MarAd we have known, sometimes loved, but always needed for the last 50 years. As I look at

the Administration's budget proposals to transfer management of the Maritime Security Program (MSP) to the Department of Defense (DOD) and eliminate funding for the Title XI shipbuilding loan guarantee program, I cannot help but conclude that MarAd's days are numbered as a freestanding federal agency.

This is not simply melodramatic doom saying from a former bureaucrat whose first credo in life is perpetuation of the species (or in this case the agency). No, my deep concern is rooted in my regard for MarAd as a little agency with a portfolio and reach that literally spans the globe. My pessimism is founded upon a belief that very few people in our industry understand or fully appreciate what MarAd means to this industry and to the country; and my feeling of resignation is that even fewer people are willing to expend political capital to not only fight these proposals, but to return maritime policy to our national priorities.

In my view, both the proposal to move the MSP program to the DOD and the elimination of funding for the Title XI loan guarantee program reveal that these are the first moves in a concerted and determined effort to dismantle MarAd. Neither of the proposals can be defended on the basis of sound public policy or cost savings. Moreover, it clearly cannot be asserted that the proposals were made after detailed analysis, in-depth review or anything more than a cursory examination of their purpose, effectiveness or the consequences of the proposed actions.

The MSP is a major accomplishment for MarAd and our industry. Under the leadership of Admiral Herberger, the Clinton Administration, the maritime industry and the Congress, it was conceived, developed and has been implemented as a partnership between the commercial maritime industries and DOD. MSP was specifically designed to be managed by MarAd, in close cooperation and partnership with DOD and the maritime industry. This was a decision affirmed by Congress in the statute that created the program, and implicitly in every appropriations bill since MSP was enacted. Contrary to an oft-cited misconception, it is not a subsidy program. Rather for the modest (what I've always called "insurance premium") of \$100 million per year, through its companion program, the Voluntary Intermodal Sealift Agreement (VISA), the United States gains access to \$8.5 billion in global commercial intermodal

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1. The Ultra-Deepwater Gulf of Mexico
  - Major plays in ultra-deepwater
  - Ultra-deepwater topography
2. Trend Toward Deepwater Production
3. Estimated Recoverable Reserves in Ultra-Deepwater
4. Active Ultra-Deepwater Leases
5. Activity on Ultra-Deepwater Leases
  - Two fields now producing
  - Five fields being developed
  - More than 140 wells spudded in ultra-deepwater
  - About 80 ultra-deepwater drilling permits
  - Almost 100 deepwater drilling plans
  - Currently drilling on six ultra-deepwater blocks
6. Undrilled Acreage in Ultra-Deepwater
  - Criteria used to segment undrilled leases
  - Short list of priority undrilled sites
7. Portfolio of 170 Ultra-Deepwater Development Sites
8. Constraints Imposed by Drilling Equipment
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  - Shortfall in current rig availability
  - Equipment supply will meter pace of development
9. A Scenario for Site Start-Ups
  - Fields in development stage — next 2 to 4 years
  - Sites already spudded — 3 to 6 years out
  - Drilling permits applied for — 4 to 7 years out
  - Drill plans filed — 5 to 8 years out
  - Big ticket undrilled sites — 6 to 9 years out
  - Other priority undrilled sites — 7 to 10 years out

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  - Estimated pipeline operating cost per barrel-mile
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  - Green Canyon 845 to Lake Charles
  - Garden Banks 949 to Lake Charles
  - Atwater Valley 113 to Lake Charles
4. Breakeven Distance to Infrastructure
  - Breakeven distance in rugged terrain

Breakeven distance in smooth terrain  
Base case breakeven scenario

#### III. SHUTTLE TANKERS REQUIRED THROUGH 2010

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  - Segmentation of sites
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2. Forecast of Shuttle Tanker Requirements
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  - Projected number of production sites
  - Projected daily oil production
  - Number and timing of required shuttle tankers
  - Sensitivity of the forecast

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1. Proposed Shuttle Tanker Designs
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  - Coastal product tanker conversion
  - Coscol Marine's design
  - Navion/Skaugen's design
  - Conoco's Gomax Simplicity class tanker
  - Selecting among the design options
2. Building Capacity in the U.S.
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  - Two yards could bid, but are geared to denser ships
  - Another yard has capability, but requires investment
  - Better business alternatives could limit competition
3. Financing Options
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  - Partnership among field operators to buy ships
  - Long-term charter, back-to-back building contract
  - Contracts of affreightment from field operators
  - Government guarantee of the ship financing
  - The financing options compared

#### APPENDICES

1. Ultra-Deepwater Leases in the Gulf of Mexico
2. Wells Spudded in Water Depth of 5,000 ft. or Greater
3. Applications for Permit to Drill in Ultra-Deepwater Since 1999
4. Ultra-Deepwater Drilling Plans Filed Since 1999
5. Deepwater Drilling Activity in the Gulf of Mexico as of April 2001
6. Portfolio and Mapping of 170 Ultra-Deepwater Development Sites
7. Merchant Marine Act 1920, Section 27
8. Cost Estimates and Assumptions for Transport Options from Four Fields to the Citgo Refinery in Lake Charles

For further information or to order the report please contact: International Maritime Associates, Inc. — 700 New Hampshire Ave., NW — Suite 103 — Washington, DC 20037 USA Telephone: 202-333-8501 — Fax: 202-333-8504 — E-mail: imaassoc@msn.com — Website: www.imastudies.com.

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transportation assets. That is a deal for the taxpayer, and one that may be threatened if this so-called "efficiency move" is allowed to take place. Shouldn't we expect the analysis to support a change of this magnitude in a carefully crafted and balanced program to be more than a couple of throwaway lines in the President's budget?

The Title XI proposal is even more baffling since it is justified by the catchall epithets of "corporate welfare" and "subsides" proclaimed by those experts in all things who reside in the ivory towers of the Office of Management and Budget. However, in making this damning assessment of the Title XI program, they have obviously neglected to take a close look at what might be a "golden goose" that they are killing.

Let me get this straight: Here we have a program that has, since 1994, done exactly what the Congress and President intended in an effective and cost-efficient manner, generating more than \$6 billion in shipyard work. It makes money for the government through the fees and interest that are collected (\$150 million since FY 1993 and more than \$1 billion of collected fees and payments returned to the Treasury in that same period). U.S. shipyards have made investments and become more efficient, which has produced benefits in our U.S. Navy shipbuilding programs. It results in the employment of thousands of people in shipyards and allied industries around the country. The vessels that have been constructed with Title XI primarily enter domestic service, providing critically needed employment opportunities for civilian merchant mariners. It has become the most consistent source of marine finance in the United States at precisely the time the domestic fleet, (both tankers and dry cargo), needs replacement, while the commercial banking sector has been lukewarm, at best, about continuing to pursue marine finance investments. Some Welfare Program!

Why should you care? Title XI and MSP are two of MarAd's main support legs that enable it to stand firmly as the only voice for commercial maritime issues in the entire federal government. If these are removed, MarAd has but one leg to stand on comprised of the rest of its portfolio, and I fear that leg will very shortly be too weak to sustain the agency through the next several budget cycles in government.

Along with Title XI and MSP, our industry would lose the tremendous work that MarAd does for the Maritime Transportation Initiative, ports and intermodal programs, Jones Act enforcement, cargo preference, ship disposal, merchant marine employment to name

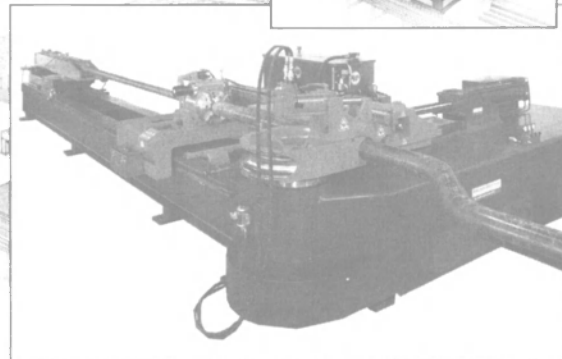
but a few. Those endeavors, as worthwhile as they are, do not engender the level of political support and public awareness necessary to sustain funding for MarAd, and while the work might continue in scattered locations through-

out the government, just as we are feeling the effects of losing our own standing committee in Congress, our industry would lose the benefits of a single source of knowledge, competence and advocacy.

I have always believed that MarAd occupies a unique place in government that is, in my view, unrecognized by the maritime industry. MarAd is the only agency in the entire federal government that has one, and only one mission:

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## U.S. Shipbuilding Report

namely the promotion, enhancement and protection of the maritime industries of the United States. The people at MarAd are, in large part, maritime transportation professionals, who "talk the talk" and many have also "walked the walk." MarAd is the industry's "seat at the

table" whenever issues that affect the industry are discussed in the U.S. government, or indeed worldwide. And believe me, in my tenure, all of the senior leadership at MarAd were included in countless meetings at the highest levels of government where our issues

were discussed, where we articulated the rationale for policies such as the Jones Act, Cargo Preference, anti-trust immunity for ocean carriers, inland waterway transportation, Marine Transportation System. We were heard and in most cases listened to, and we even made a

few converts to our cause. Didn't anyone ever wonder how in the last eight years so much was accomplished, and so many proposals that would have hurt our industry were defeated?

If MarAd is eliminated, the vacuum will be filled by the uninformed or, more likely, those who have an agenda designed to undermine and weaken the U.S. maritime industries to the point of extinction, and the certain loser in any debate will be our industry.

MarAd and the laws it administers are creatures of the wisdom of our past leaders who saw clearly the link between a strong merchant marine industry and our national security. Franklin Roosevelt in 1937 said that the "American people deserve vessels in keeping with our national pride and national need." What has changed today to make those words any less powerful, especially when we have seen the reliance of our military leaders on the commercial maritime industry grow exponentially in the last decade?

Before we let these proposals become law, I urge our friends in the Congress to insist upon a full, open and thorough examination of maritime programs, maritime policy and then make decisions based on fact and analysis, not catch phrases like "corporate welfare." I am confident that if we have our day in court, this industry and MarAd will make believers out of agnostics, and zealots among our friends.

*John Graykowski served as Deputy Maritime Administrator and Acting Maritime Administrator 1994 through 2000. He is currently a partner with Dyer Ellis & Joseph, P.C., a Washington, D.C.-based law firm with a domestic and international practice involving transportation, shipping, finance, corporate, securities, legislative, environmental, and trade matters.*

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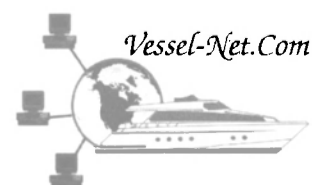
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### Bordelon Marine To Christen First of Three Utility Boats

Bordelon Marine of Lockport, La., will host a river-front christening for the first of three mini-supply boats being built at Bollinger Shipyards. The delivery of the three boats will double the Bordelon fleet to six vessels, impressive yet challenging for a small firm.

The boats are being built to a proven design, "But," says **Wes Bordelon**, son of founder and CEO **Terry Bordelon**, "We have gone a bit further in accommodations with such things as carpeting and extra TVs. In the wheelhouse we have a yacht-type curved console and enhanced Furuno navigation and communication packages. We wanted the crews to take pride in the boats as we

Maritime Reporter & Engineering News



## SeaStreak Launches New High-Speed Catamaran

SeaStreak America, Inc., a wholly-owned subsidiary of Sea Containers Limited, added another catamaran ferry to its service in the New York market with the May 3, 2001 launch of the 140-ft. (42.6 m) commuter and leisure vessel M/V SeaStreak New York. The 400-passenger vessel will provide



feel that contented crews work better and safer."

Crew safety will be augmented with an in house safety school covering topics from USGA/OSHA Safety Standards to drug and alcohol awareness. "We feel that a comprehensive safety program is very important and must be an integral part of operations, if you are to succeed in today's market," explains Bordelon.

The new boats will carry a crew of five while providing accommodation for up to 10 guests. Each boat will measure 145 x 36 ft. (44.2 x 11 m) with a maximum draft of 11.5 ft. (3.5 m). Normal operating draft will be eight feet.

The boats will each be powered by a pair of Cummins KTA-38MO diesel engines rated for 750 bhp at 1,600 rpm. They will drive Bollinger 72 x 57-in., four-blade, stainless steel propellers through Twin Disc MG5301 gears with a 4.96:1 reduction. Two pilothouse stations will be equipped with hydraulic steering and a 272-hp Schottel, STT-110 tunnel bowthruster will aid maneuvering and station keeping.

The Cummins engines feature a "package" that meets new IMO emission standards with direct drive liquid mud pumps off of the generator engines eliminating belt systems. The boats' electrical power will be provided by two Cummins 6CTA8.36 diesels driving two Cummins 99 kW generators.

Oil free bilge systems and dirty oil collection tanks will be on each vessel. Each of the new Bordelon boats will be equipped with four liquid mud tanks with a total capacity of 49,332 gallons. Other tankage capacities include 28,675 gallons of fuel, 400 gallons of oil, 250 gallons of hydraulic fluids and 13,776 gallons of potable water. The boat's large 95 x 32-ft. (28.9 x 9.7 m) aft decks will be able to carry up to 390 long tons of cargo. "While some companies in the Gulf of Mexico operate huge fleets of vessels," says **Wes Bordelon**, for whom the first boat will be named, "Those of us with smaller entrepreneurial companies have been able to succeed through niche marketing and flexibility in meeting our client's needs. These new 145-ft. boats have the capacities of the old 160-footers. At under 100 registered tons they are able to maintain a competitive position in a highly competitive market."

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P L A T E ▲ H E A T ▲ E X C H A N G E R S

## U.S. Shipbuilding Report

service between New York City and New Jersey.

SeaStreak New York joins a SeaStreak fleet of two 300-passenger catamarans already providing commuter service between Atlantic Highlands and Highlands, N.J., and Manhattan, and the 149-passenger SeaStreak Brooklyn, which

offers service between Brooklyn and Manhattan.

The state-of-the-art, double-hulled catamaran, built by Gladding-Hearn Shipbuilding in Somerset, Mass., features three decks including wind-protected outdoor space, innovative measures to prevent icing of decks and

ramps, automatic doors, a bar area, and three restrooms. Traveling at a service speed of 38 knots, SeaStreak New York is expected to offer 35-minute passage from New Jersey to points in Manhattan for both business commuting and sight-seeing.

Circle 19 on Reader Service Card

## Lassen (DDG 82) Commissioned In Florida




A pair of Seapite helicopters, the type flown by Lt. Clyde Everett Lassen during his daring rescue of two downed aviators in June of 1968 and the last two in existence, perform a fly over during the commissioning of Lassen (DDG 82) in Tampa Bay, Fla.

The newest guided-missile Aegis destroyer, Lassen (DDG 82) christened on November 6, 1999, was commissioned into the Fleet in Tampa Bay, Fla., on April 21, 2001. The technologically advanced Aegis warship carries the namesake of Commander Clyde Everett Lassen USN (Ret), a native of Fort Myers, Fla. CDR Lassen earned the Congressional Medal of Honor for his courageous night rescue of two downed Phantom F4 aviators while commander of a Search and Rescue helicopter in Vietnam. On June 19, 1968, Lt. Lassen, flying a UH-2 Seapite, embarked to rescue two downed aviators whose plane had been shot down deep in North Vietnam. After several failed attempts to reach the aviators under heavy enemy fire and darkness, Lt. Lassen turned on the helo's landings lights, despite the danger of revealing his position to the enemy. The maneuver worked, as the aviators made their way to the helicopter, which was bullet-riddled and low on fuel. Lt. Lassen evaded further anti-aircraft fire and landed safely onboard a guided-missile destroyer, with only five minutes of fuel left.

Lt. Lassen became the first naval aviator to be awarded the Medal of Honor for bravery in Vietnam. CDR Lassen, who served 21 years, died of cancer in 1994. During the ceremony, Zeke Burns, the downed Phantom jet navigator, delivered a message to the Lassen's captain, Commander Sean E. O'Connor and the crew. "No one kept the faith better than Clyde Lassen, and I believe he keeps it still," said Burns, of Virginia Beach, Va. The ship's Sponsor are Mrs. Linda B. Lassen, wife of the late CDR Lassen, and Barbara O. Pilling, wife of Admiral Donald Pilling USN (Ret).

The USS Lassen is the fourth of the Flight IIA variant of the Burke class destroyer and the second built by Ingalls at Pascagoula, Miss.



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Circle 354 on Reader Service Card

# Future Requirements for Shuttle Tankers in the Gulf

By James R. McCaul, President  
International Maritime Associates, Inc.

Ultra-deepwater plays in the Gulf of Mexico offer vast potential for oil and gas production. There are now more than 1,650 active leases in the Gulf of Mexico in water depths exceeding 5,000 ft. and, with 24 drill rigs capable of drilling at this depth now working in the Gulf, activity on these leases is about to take off. In a recent study, we have identified more than 160 fields in ultra-deepwater that are likely to be explored over the next 5 to 10 years and expect at least a third of these will ultimately be developed.

#### But Transport Remains An Issue

Until now, pipeline has been used to transport oil from fields in the Gulf of Mexico to refineries along the Gulf. There are almost 27,000 miles of pipeline infrastructure on the Gulf seabed and field operators in the Gulf have grown very comfortable with this form of transport. But many of the ultra-deepwater fields are remote from existing infrastructure, requiring installation of new pipelines in water depths exceeding one mile. Much of the topog-

raphy of the seabed beyond the shelf is rugged, presenting spanning issues and pipeline installation difficulties, and there is need for innovative and expensive techniques to assure fluid flow. Cold temperature at the sea bottom at 5,000 ft. or greater can turn viscous oil to solid mass, requiring pipeline heating and/or other aggressive procedures to keep the fluid moving. Hydrostatic pressure at this water depth also produces a requirement for thick wall pipe, which is expensive to fabricate and install. So despite the propensity until now to favor pipeline, operators are being forced to consider shuttle tankers as the transport solution for transporting oil from many of the remote ultra-deepwater fields in the Gulf of Mexico.

#### Pipeline vs. Shuttle Tanker Economics

The decision as to whether pipeline or shuttle tanker will be utilized for transport from ultra-deepwater fields will ultimately be driven by the economics of the two options. Surrounding terrain over the pipeline route, proximity to infrastructure and charges to utilize connecting pipelines will influence pipeline economics. Shuttle tanker economics

will be influenced by the cost to build and operate ships qualified for the domestic trade and the need to have sufficient capacity to ensure offtake capability is available in all weather conditions.

There are substantial differences in the terrain of various sections of the ultra-deepwater Gulf of Mexico. Some portions of the ultra-deepwater Gulf are characterized by relatively smooth, sloping terrain. While pipeline installation will continue to be impacted by issues related to flow assurance in ultra-deepwater, in these areas the issue of spanning and dealing with steep inclines and declines is of less concern. Other portions of the Gulf are in extraordinarily irregular terrain that presents difficulties for pipeline installation. These areas, which have been characterized as looking like the surface of the moon, can be considered "pipeline unfriendly." This is not to say that export pipelines can't be installed, just that the installation will certainly be more difficult, and more expensive, given the terrain over or around which the pipe must be routed.

#### Proximity to infrastructure

To minimize capital cost, the general concept is to construct a pipeline from the new field to a nearby existing pipeline and use the existing pipeline for subsequent movement to shore. The cost of constructing a pipeline in ultra-deepwater increases with distance at roughly \$1.0 to 1.8 million per mile, depending on pipe diameter and seabed conditions. There are several trunk pipelines installed at the edge of ultra-deepwater that could be used as connection points. In the Mississippi Canyon, for example, the Ursa and Mars pipelines could be connection points, as could the Hoover/Diana pipeline in the East Breaks area of the Gulf. Additionally, several new trunk pipelines are being planned for the Central Gulf area



Articulated Tug Barge units, such as this one built at Alabama Shipyard, could possibly be a solution to the GOM's shuttle tanker dilemma.

(Crazy Horse, Na Kika, Mad Dog, Atlantis and Holstein fields) that could be future connection points. In fact, these existing and planned pipelines are designed with the expectation that other fields will be spliced in at a later date. But not all will have available capacity and differences in quality of oil may preclude mixing flows with production from other fields. To the extent there is ability to tie into a nearby pipeline, the economics of using pipeline as the transport solution will be enhanced.

#### Connecting pipeline charges

To calculate the cost of transporting crude from a field in the Gulf of Mexico to a specific point on shore, the connect-

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Chart 1

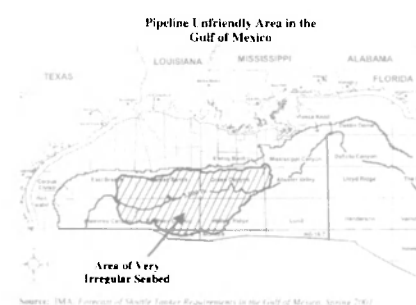
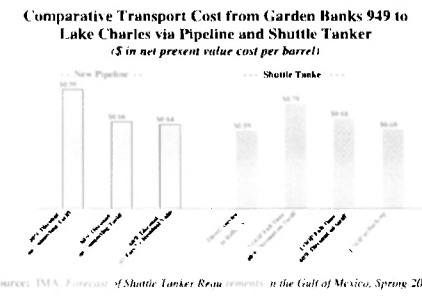
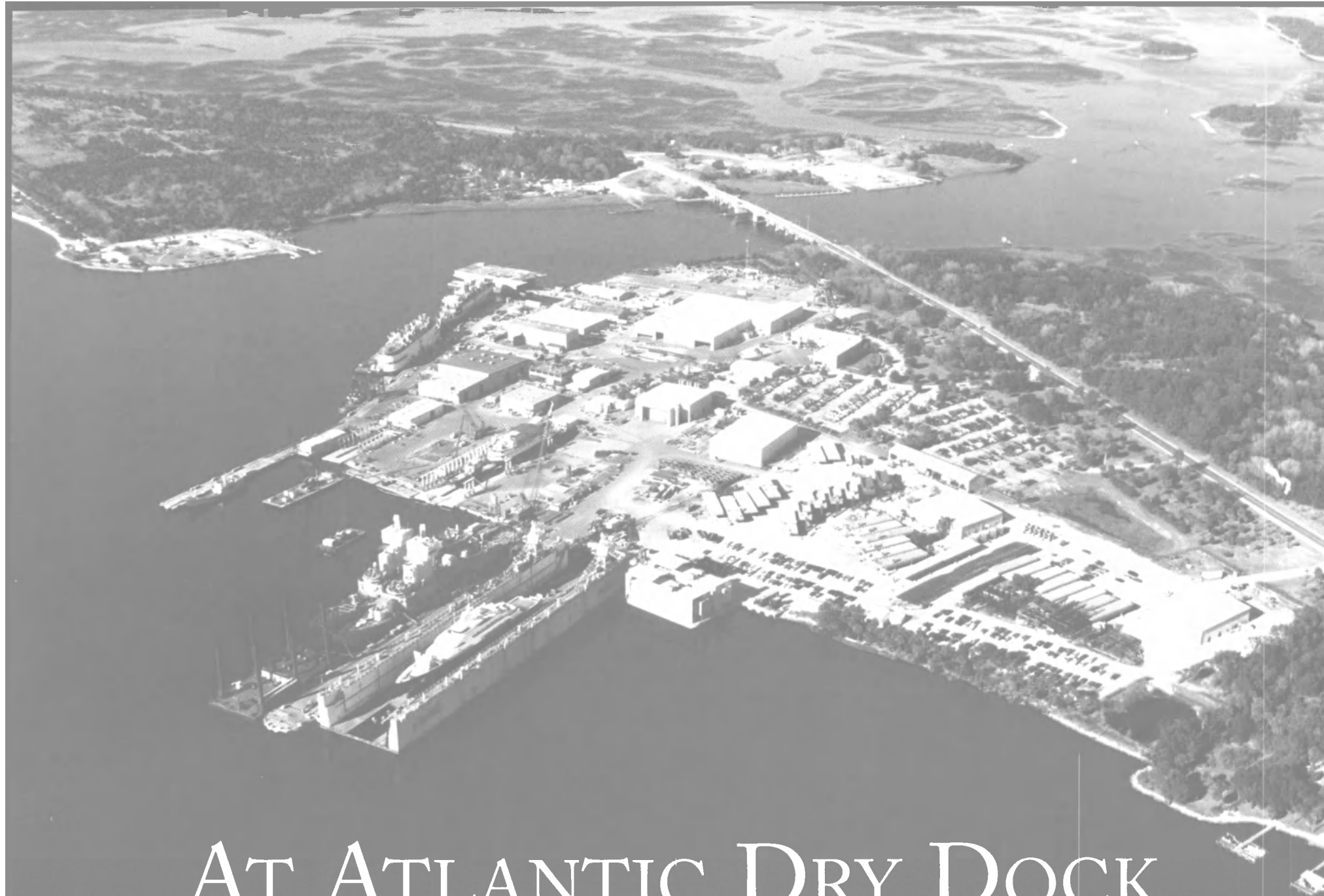


Chart 2





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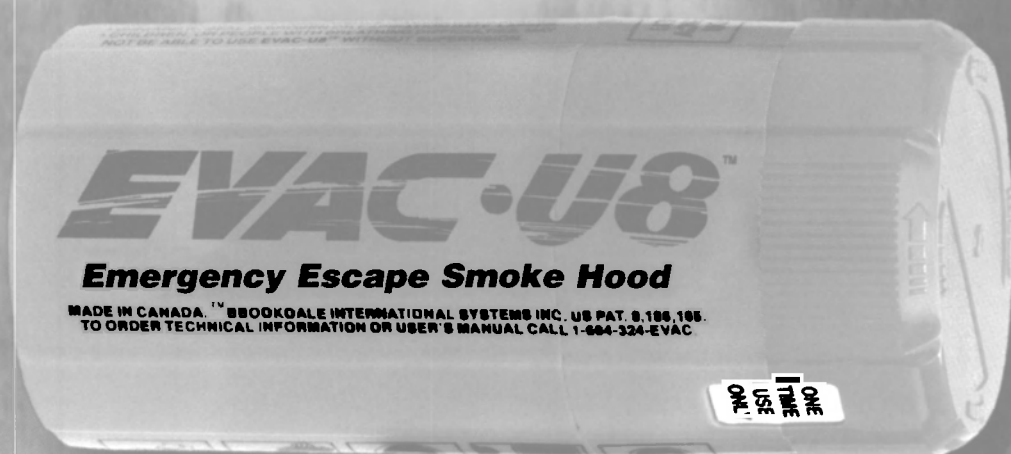
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ing charges of each pipeline to be entered along the route must be added to get an aggregate cost. For example, published charges of the several connecting pipelines that would be entered from the Genesis field to the Citgo Refinery in Lake Charles add to \$1.60 per barrel. But these charges may be negotiated downward, depending on the volume of crude to be transported, timing of the requirement and length of contract commitment. Higher discounts are achievable where a connecting pipeline has lots of excess capacity; lower discounts are possible where the pipeline company needs to incur extra cost to handle the added flow. In the end it comes down to negotiating with a pipeline company for the best available rate.

The outcome of these negotiations will have a major impact on the economics of the pipeline option, as these connecting charges can be a substantial portion of the total transport cost per barrel.

**Conoco Forms Gulf of Mexico Shuttle Tanker Alliance**

Conoco's wholly owned affiliate, Seahorse Shuttling and Technology LLC (Seahorse), has formalized an alliance with the Alabama Shipyard of Mobile, Ala., and Samsung Heavy Industries of Korea to develop a design and construction plan that could have American-built shuttle tankers ready for service in 2004. Seahorse was formed by Conoco to provide crude oil storage and tanker shuttling services for new oil discoveries made by Conoco and other companies in the deepwater Gulf of Mexico.

"Our previous successes with Samsung building the first generation of double-hulled tankers and our pacesetter ultra deepwater drillships are evidence of the companies' technological innovation," said Rick Oshlo, vice president and general manager of Conoco Supply and Trading. "We are pleased to add Alabama Shipbuilding to this long-standing relationship."

Oshlo said Conoco remains confident that the Minerals Management Service (MMS) will approve the shuttling concept in the Gulf of Mexico. Hence, and the company is continuing its program to deploy shuttle tankers to the Gulf as soon as possible.

Conoco and Samsung have completed an extensive conceptual design for a new tanker classification, the Gulf of Mexico Maximum Cargo (GOMAX) shuttle tanker. This double-hulled, dynamically positioned vessel will have a capacity of more than 550,000 barrels of crude oil, and will still comply with the 40-foot draft restrictions of most Gulf of Mexico ports.

Crude oil shuttling has the potential to significantly reduce the cost of crude oil transportation from deepwater Gulf of Mexico discoveries, making possible the economical development of smaller oil discoveries. Shuttle tankers also offer more flexibility for delivering domestic crude oil to various U.S. ports, thus enhancing the economics of marginal fields and further reducing U.S. dependence on foreign crude oil imports.

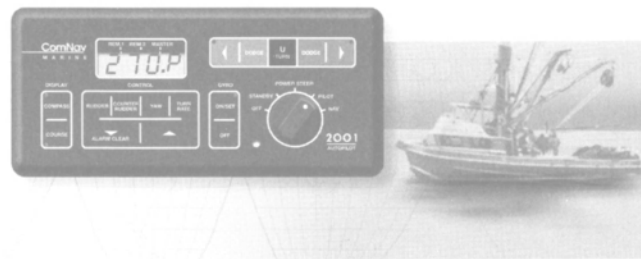
**Cost of shuttle tankers**

Transportation of crude from a floating production facility on the Outer Continental Shelf to a point in the U.S. (refinery terminal, LOOP or any other receiving facility on land or attached to the seabed) is subject to the restrictions

of the 1920 Jones Act. As the production unit is attached to the seabed, it becomes a point on the Outer Continental Shelf and transportation from this point to another point in the U.S. is defined as domestic trade. This means that a shuttle tanker used for transporta-

tion in the Gulf of Mexico must be built in the U.S. and owned and crewed by U.S. citizens. Given the higher costs associated with U.S. construction and operation, the cost to build and operate a shuttle tanker in the Gulf will be higher than in other areas. Construction of an

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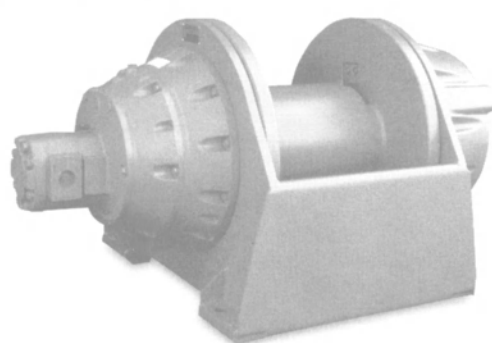
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## U.S. Shipbuilding Report

Aframax size shuttle tanker in the U.S. will probably cost in the range of \$100 to \$120 million. The cost to operate this ship, including voyage related costs but excluding debt amortization, would probably be on the order of \$9 to 10 million annually. An equivalent ship built in Korea for the North Sea would cost in the range of \$45 to 50 million and it would be crewed by seamen of various nationalities. This added cost has a direct impact on the economics of using shuttle tankers in the Gulf of Mexico.

### Offtake capability


Fog is a continuing seasonal problem in the Gulf of Mexico, particularly between February and April. It creates scheduling havoc and can cause supply disruptions. In early March of this year, there were 50 ships at one time waiting for clearance to enter the Houston Ship Channel. Some ships were forced to remain at anchor for up to five days. The likelihood that fog will occasionally impact shuttle tanker delivery must be taken into consideration in determining the capacity needed for field offloading. Extended fog conditions could back-up the receiving ports to the point where the off-shore production facility(ies) must shut down for lack of offtake capability. Preventing this from occurring entails building excess capacity into the shuttle tanker delivery system to ensure sufficient off-take capability is available under the worst possible conditions. So it will be necessary to have more capacity available than needed under ideal conditions, raising the cost of the shuttle tanker option.

### Cost per barrel of shuttle tanker vs. pipeline

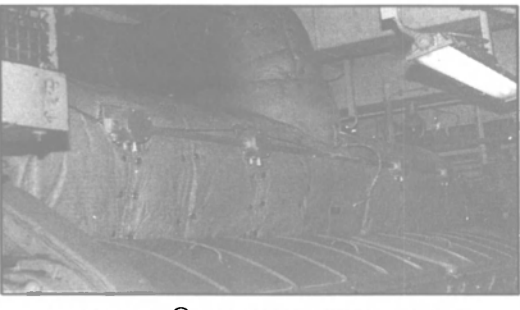
Ultimately, the comparison of the two options has to be reduced down to a cost per barrel transported in net present value. This cost will depend on the specific circumstances of a field. In our study we have calculated the transport cost by shuttle tanker and pipeline from specific fields to the Citgo Refinery in Lake Charles using various scenarios. For example, from a field in the Garden Banks area we found that the cost of shuttle tanker transport would be \$0.59 to \$0.79 per barrel, depending on the scenario chosen for the routing option. From the same field, the cost of the pipeline option ranges from \$0.64 to \$0.90 per barrel, depending on the discounts negotiated on connecting pipeline charges and the likelihood that the new pipeline to connecting infrastructure will have a residual value at the end of the life of the field. These costs are expressed in net present value where future cost flows have been discounted back to the present at an assumed interest rate.

### Shuttle Tanker Study

*In a just completed study, IMA has analyzed the future requirements for shuttle tankers in the Gulf of Mexico. Included in the study is a forecast of the number of shuttle tankers required over the next 10 years, an assessment of the capacity to deliver the ships and an evaluation of financing options. It is an in-depth, totally objective analysis of this important new market. For further information, please visit our website at [www.imastudies.com](http://www.imastudies.com).*



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**New High-Speed Ferries For NY Waterway**

NY Waterway has ordered four new high-speed ferries from Allen Marine of Sitka, Alaska, and anticipates it will have some of the new boats in service this year on new routes, including the East River, according to NY Waterway president Arthur Imperatore, Jr. Known as the Sea Otter class, each of

pilot boats. A few days later Marco had new keel coolers with special, extra-long nozzles to give the coolers more stand-off from the hull and extra tubes for more cooling capacity.

The second vessel is scheduled for trials the end of March, and both boast Lo-Rez soft mount system for twin propulsion engines. The Lo-Rez system uti-

lizes six BR4-TLS steel-spring isolators and a 25-RT flexible coupling for each of the four engines.

Constructed completely of steel, the twin-screw San Francisco has a beam of 30 ft. (9 m) and a depth of 13 ft. (3.8 m). A pair of diesel engines provides a combined 2,200 hp to drive the vessels 64-in. diameter Sound Propeller NiAlBr

props through Twin Disc gear boxes. Other equipment-makers onboard include Furuno, Transas, SEA.

For more information circle the corresponding numbers on the Reader Service Card:

<b>Marco Shipyard</b>	<b>53</b>
<b>Duramax</b>	<b>54</b>
<b>Lo-Rez</b>	<b>55</b>

*the new ferries will carry 97 passengers at speeds of more than 30 knots, approximately 35 mph. The single hull boats feature three water jet engines, as well as a bow-loading feature that (a NY Waterway ferry exclusive) allows safe, efficient passenger loading and unloading.*

The Otters are constructed to carry commuters from East 90th Street to Wall Street's Pier 11 in 15 minutes, or from Hunterspoint, Queens to Pier 11 in 12 minutes. Aside from this new project, NY Waterway is tank-testing the final design for yet another new class high-speed ferry - a larger, faster catamaran.

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## Shipbuilding Prices Firm Up

International shipbuilders enjoyed a healthy year, with the main contributors being tankers and container vessels. Following upon these ordering activities, R.S. Platou saw shipbuilding prices firming up from the bottom level the previous year. Price for the tankers increased on average by 16 percent but the corresponding figure for container vessels was only 6.5 percent. Bulk prices showed a firming almost equal to that of tankers, but ended at an average of 13 percent after the prices for smaller bulkers softened towards the end of the year.

Korean yards were again this year the most aggressive, securing 46 percent of all new orders, equaling 18.5 mill. cgt. Proof of their dominance was that they secured 71 percent of all crude tanker orders and 57 percent of all product tanker orders. That amounted to 23.8 million dwt. Their market share for container vessels and LNG carriers was 53 percent and 50 percent, respectively. In terms of cgt Korea controlled nearly 40 percent of the world's shipbuilding capacity in 2000 with expectations that their share may increase further.

Increases in productivity and the Korean won contributed to the success story. Due to the Asian crisis the won fell from its level of about 900 against the US dollar to 1,800. It has strengthened since then and ended the year at 1,270 to the U.S. dollar.

Japanese yards were able to secure a total of 10.2 million cgt, or about 25 percent of all new orders. R.S.

Platou believes, however, that there is a substantial amount of handysize bulk orders from domestic accounts that are not included in the year end figures. The Japanese have again made their mark as the world's largest builders of this bulk tonnage after taking the 9.7 million dwt, equaling 67 percent of all new orders. Their markets share in crude tankers and container vessels in 2000 were 19 percent and 12 percent, equaling 6.7 million dwt and 1.5 million dwt, respectively.

The Japanese newbuilding capacity continued its trend from last year as we have seen deliveries decline by almost 14 percent in the last two years. Following a long and difficult period, NKK announced early in the year a 10 percent cut in its workforce by the end of 2002. Mitsubishi also announced plans to cut the workforce by 20 percent by 2006. In an attempt to increase operational profits, IHI joined forces with Kawasaki and Mitsui. NKK and ~~Ti~~ *ti* ~~have also been involved~~ in merger talks after last year's announcement by the Japanese government calling for a consolidation in Japan's shipbuilding industry.

The Chinese shipbuilding capacity is growing rapidly, and now accounts for some six percent of the world's total shipbuilding capacity in terms of cgt. China's position as an up-and-coming nation in the shipbuilding industry is evidenced by the order obtained by Dalian New Shipyard to build five VLCCs



for NITC. Other yards have also been discussing new orders for VLCCs. In the year 2000, Chinese yards won approximately six percent of all orders, equaling 2.3 million cgt. Their order intake included some 1.4 million dwt bulk carriers, 0.4 million dwt container vessels and 0.9 million dwt tankers.

The Chinese building capacity is expected to grow considerably, as China Shipping Industry Corp., for example, plans to double its newbuilding capacity by 2005.

Europe also experienced an active 2000. Although attempts were made by Korean shipyards to penetrate the cruise market, all new orders for cruise vessels this year, except two that went to a Japanese builder, were awarded to European yards. Furthermore, they secured 24 percent of all orders for container vessels, with German and Polish yards taking the lead. As a result of increased activity German shipyards reported an increase in employment for the first time in 25 years.

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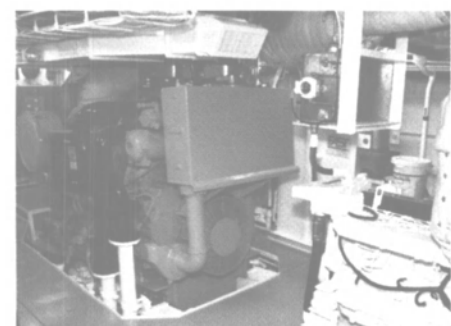
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### MARCO Shipyard Delivers Ahead Of Schedule

A few weeks before scheduled delivery of the first of two new 104 ft. (31.6 m) pilot for the San Francisco Bar Pilots, Marco Shipyard Seattle managers were anticipating a smooth, on-time delivery — but everything changed during the vessel's first sea trial.

"At that late date we realized that the keel coolers that we specified and purchased were not adequate to cool the diesel generators. After we had already purchased the generator sets and the keel coolers, the diesel engines' specifications, including heat rejection, were changed by their manufacturer," says **Bob McMahon**, Marco Shipyard's vice president and general manager.

McMahon contacted Duramax Marine, the manufacturer of the new DuraCooler keel coolers used on the



June, 2001

pilot boats. A few days later Marco had new keel coolers with special, extra-long nozzles to give the coolers more stand-off from the hull and extra tubes for more cooling capacity.

The second vessel is scheduled for trials the end of March, and both boast Lo-Rez soft mount system for twin propulsion engines. The Lo-Rez system uti-

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## Shipbuilding Prices Firm Up

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24 percent of all orders for container vessels, with German and Polish yards taking the lead. As a result of increased activity German shipyards reported an increase in employment for the first time in 25 years. According to the University of Bremen, and to IG Metall, the number of workers in German yards increased by 0.7 percent to 20.7 during 2000. Deliveries from German yards are expected to increase and estimated to reach levels equal to those of the period from 1996 to 1998, i.e. about 1.3 million cgt in 2001.

The European Union made allegations against South Korea of unfair pricing, and at press time it appeared the matter could be headed to the World Trade Organization. They argued that the world shipbuilding market continued to be in a crisis seeing that "supply clearly outstripped demand." As a result, the heavier demand for ships in 1998 and 1999 had no effect on prices. It was further argued that Korean yards had accepted contracts below costs, thus creating a downward pressure on prices while increasing market shares.

#### Activity by Type of Vessel

In 2000 the market experienced the highest ordering activity in tanker tonnage ordering since the first half of the 1970s, namely a total of 36 million dwt.

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The large number of orders for tankers has undoubtedly been one of the major contributors to the rise in prices during the year.

Towards the end of the year VLCC prices were approximately \$75/76 million, an increase of 10 percent over the bottom level in the previous year. Suezmax and Aframax prices increased even further, by 20 percent and 23 percent, ending at \$50.5 million and \$40.5 million, respectively. The orderbook for tankers of above 25,000 dwt stood at 48.8 million dwt by the end of the year. This is a 38 percent increase from the previous year; 59 new Aframax tankers were ordered, 36 Suezmax tankers and 64 VLCCs.

The strong activity in the bulk carrier segment seen at the end of 1999 continued into the early part of 2000. 14.5 million dwt in all were ordered in 2000, a decline from 18.5 million dwt ordered the previous year. As a result, the end of year 2000 orderbook stood at 34.3 million dwt. On average, prices for bulk carriers increased by 13 percent: Panamax and Handymax prices increased by 10 and 14 percent, ending at \$22 million and \$20.5 million respectively.

In year 2000 the ordering of container vessels increased to 12 million dwt from the previous year's seven million dwt. In terms of TEUs the order intake increased by nearly 40 percent to almost 900,000 TEUs, and there is a continued trend towards larger vessels.

Container vessel prices increased only 6.5 percent on average.

On the Cruise market front, 14 new vessels with six options were contracted in year 2000, and all except two with European yards. The new orders represent some 29,000 new berths, which brings the orderbook at the end of the year up to 51 vessels and approximately 101,000 berths.

Interest in LNG tonnage increased significantly in 2000, triggered by a range of new LNG projects and low newbuilding prices. There were reports of contracts as low as \$140 million for 138,000 cbm, which is the lowest level since the late 1980s. As a result, for the first time in decades, owners ordered LNG ships without chartering commitments. Twenty vessels, amounting to 2,756,000 cu. m, were ordered. This brings the orderbook up to 26 firm vessels with 11 options, of which six vessels were without charter commitment. The ordering activity for LPG carriers picked up during year 2000 after a quiet period. Nine VLCC's and two mid-size vessels, equivalent some 800,000 cu. m., were ordered.

**Prospects for 2001**

R.S. Platou believes demand for new ships in 2001 will be more moderate

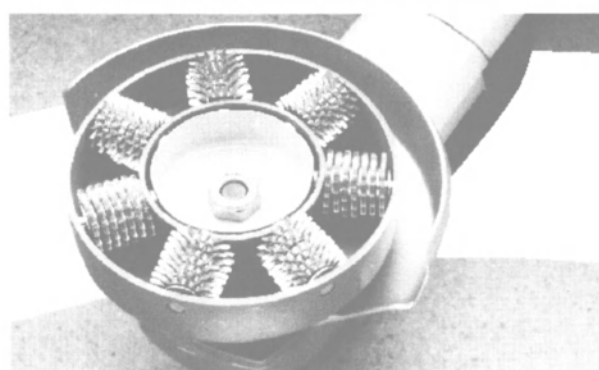
than what was seen the year before, as the dry bulk and container market may be slightly over-contracted. There will be more tonnage delivered than what is needed in these markets over the next year. Ordering of cruise vessels may also have peaked. In 2001, it looks as though the shipbuilding industry will need to rely mainly on the tanker market

and to some extent the LNG market. The recent IMO draft to phase out old tankers will most likely lead to substantial removals from the fleet over the next five years, a strong impetus for newbuilding contracts in the near term. According to R.S. Platou calculations 25-30 million dwt of tankers will be needed each year in the period from

2002 to 2006 in order to match the replacement program.

Source: As excerpted in part from *The Platou Report 2001.*

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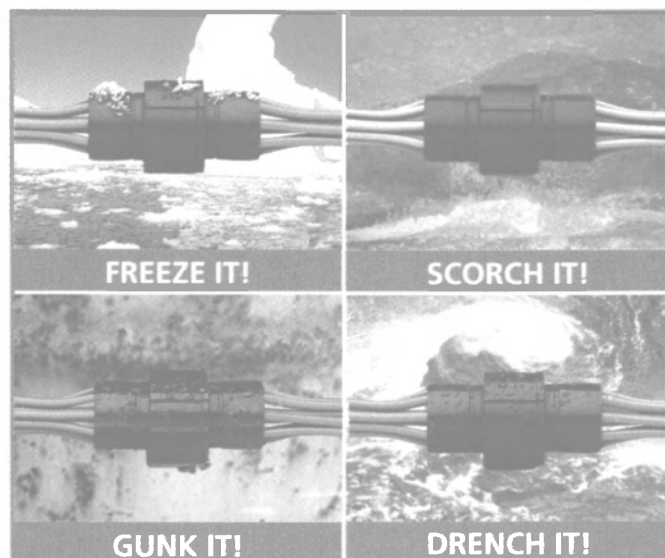


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## Strong Market Continues

In 2000, VLCCs obtained \$53,000 per day, up from less than \$20,000 in 1999. Old VLCCs reached \$33,000 per day compared with only \$11,000 in 1999. The freight market boom also had its effect on medium size crude carriers. After poor market conditions in 1999 with modern Suezmaxes obtaining \$15,000 per day the average in 2000 was \$40,000. Corresponding figures for modern Aframaxes were \$13,000 as an average in 1999, reaching \$37,000 in 2000. Peak rates in the year for both types were recorded in December at \$60,000 per day.

Large clean carriers (LR2) last year obtained \$32,000 per day, which is \$18,000 higher than the 1999 level. Modern MR types rose from \$8,000 per day to \$16,000 per day in year 2000, with more than \$30,000 in December.

### Ship Values

Secondhand values of tankers increased in line with the freight market, but there were large variations according to type and age. Given the booming freight market in the second half of the year both resale and

### DATA & STATISTICS

For the most recent statistics on the world tanker fleet and orderbook, please turn to page 88

### Tanker Prices

Shiptype		Price (\$million)		
		1999	2000	Change
VLCC	300,000 dwt	69	76	10.1%
Suezmax	150,000 dwt	42.5	52	22.4
Aframax	110,000 dwt	33	41	24.2
Handymax	47,000 dwt	26	29	11.5
LNG Carrier	138,000 cu. m.	165	172.5	4.5
LPG Carrier	78,000 cu. m.	56	60	7.1

(Source: Clarkson Research)

secondhand values for most modern tankers exceeded newbuildings prices. With net earnings of more than \$1 million per month this was quite rational.

Post 1990-built crude carriers went up between 15 and 50 percent over the year. The strongest price rise was seen for Aframaxes, the weakest for VLCCs. The main explanation for these differences is the liquidity in the various segments. Another important point is that VLCC newbuilding prices for Suez- and Aframaxes were up to 17 percent. For product carriers built after mid-1980s we recorded price increases from 20 to 30 percent.

For older crude carriers values have risen by as much as between 50 and 80 percent. Older vessels will normally be subject to much larger relative price fluctuations than modern vessels, because current market conditions will be more dominating for the remaining lifetime.

Activities in the secondhand market were significant-

## Frozen Gas Market Heats Up

While seemingly miniscule in terms of deadweight tons ordered and delivered per year as compared to the shipbuilding business as a whole, the production of gas tankers, LNG and LPG, are high-value, high prestige orders that are likely to rise significantly in the coming years. Consistently high oil prices have effectively forced the production and processing of gas, and the current trend is towards increased usage of this valuable commodity. Late last month, the gas and power division of Royal Dutch/Shell ordered two additional liquefied natural gas (LNG) carriers to support its growing global LNG business. Shell Interna-

tional Gas Limited ordered a membrane-type carrier from South Korea's Daewoo Shipbuilding & Marine Engineering and a moss spherical tank carrier from Japan's Mitsubishi Heavy Industries. While a price was not publicly disclosed at the time of the ordering, the market level for a typical LNG carrier is about \$175 million.

The two new vessels have been secured against the background of a growing portfolio of Shell LNG projects around the world which require shipping capacity and will help supply growing demand for LNG. In its annual market report, Norway R.S. Platou reports that in 2000 there was a "huge interest" in LNG tonnage, triggered by a range of new LNG projects and low newbuilding prices. Platou claims that there were reports of contracts as low as \$140 million for 138,000 cu. m. ships, marking the lowest level since the late 1980s. This pricing allowed owners to order vessels sans firm chartering commitments,

resulting in 20 vessels at a cumulative 2,756,000 cu. m. being ordered during the year, bringing the world orderbook to 26 with 11 options. Ordering activity for the LPG segment also picked-up, as nine VLGCs and two mid-size vessels, a cumulative 800,000 cu. m., were ordered. This brought the total number of LPG vessels over 3,000 cu. m. ordered during the year up to 29, and the total orderbook at the end of the year, according to the Platou report, stood at 1.3 million cu. m., or about 11 percent of the existing fleet. **(For new ordering activity, please see charts on page 54).**

### LNG Company To Be Listed

Norwegian shipping magnate **John Fredriksen's** Liquefied Natural Gas (LNG) transport company Golar LNG reported that it raised \$280 million in a private placement and planned to list on the Oslo Stock Exchange, and later this year in New York. The company, which will become the first pure LNG transport company to be listed, said it had issued 56 million shares at \$5 each in the placement and that Fredriksen had taken a 50 percent stake in the firm. The proceeds of the IPO will be used to buy the LNG shipping assets of one of John Fredriksen's existing tanker companies, Osprey Maritime. Four of Fredriksen's LNG tankers are tied into long-term contracts with BG Group, which recently announced it had tied up all spare capacity at CMS Energy's Lake Charles, La., facility, one of only two functioning import terminals serving booming U.S. energy markets.



ly higher in 2000 than in the year before, when transactions were at an extremely low level.

World oil production rose by more than three percent, or by 2.5 mbd. Middle East output was up as much as six to seven percent or 1.3 mbd, contributing strongly to the high growth in tanker tonnage demand.

OPEC's crude oil production surged by five percent, from 26.6 mbd in 1999 to 28 mbd in 2000. Tanker tracking data, however, suggest that seaborne liftings out of the Middle East have expanded more slowly than output. An increase in regional consumption may explain part of the gap, but certainly not all. We believe there has been substantial regional stockbuilding particularly in the second half of the year. In October/November 2000 most OPEC members were at full production capacity reaching an actual production of 29.4 mbd, compared with an estimated total capacity of 31 mbd. Only Saudi Arabia had significant spare capacity.

#### Seaborne Oil Trade

World seaborne trade in crude and refined products based on export figures rose by four percent. Preliminary data suggests that crude transports were up almost six percent, while transports of refined products declined by more than one percent. According to R.S. Platou estimates, there was a moderate increase in transport distances from 1999 to 2000

#### Freight Rates To Fly High In Coming Years

The U.S. will become more dependent on tanker-borne petroleum imports in coming years, coinciding with a ship shortage, that will push freight costs sharply higher, energy and tanker analysts said. "Products imports are playing a bigger swing role in the U.S. than ever before," Paul Horsnell of Oxford Institute of Energy Studies said. "They're becoming a structural feature of the U.S. system." Horsnell told members of the tanker owners' organization Intertanko that each year was now expected to bring a fourth quarter surge in demand for fuel oil imports — a trade usually served by Panamax 50,000 tonners. U.S. demand for gasoline imports would surge each spring. He also forecast dramatic increases in demand for Aframax crude tankers (75,000-120,000 tons), many of which trade to the United States. Last year, Aframax freight rates hit their highest levels in 30 years, doubling or even tripling over the course of the year in most markets. The biggest gain was seen in the Caribbean, where rates nearly quadrupled between January and the year's high point in November of \$2.30 per barrel for up-coast cargoes.

basically as a consequence of the strong growth in Middle East exports.

Based on tanker tracking data, Middle East exports were five percent higher in 2000 than in 1999. Crude exports increased by as much as eight percent, while exports of refined products seemed to have dropped by exports by

more than 15 percent. This sharp decline is partly a result of the temporary shutdown of a large Kuwait refinery after an explosion in June, and partly a consequence of the rapid refinery expansion in Asia.

Exports from the FSU have risen sharply in 2000 due to a combination of

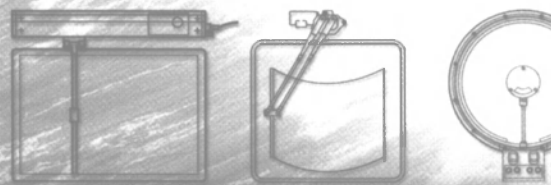
the considerable output hike and a marginal decline in consumption. Other regions experienced only moderate changes over the previous year.

Crude imports to China doubled from 1999 to 2000 from 0.7 mbd to 1.4 mbd and accounted for more than 40 percent of the global inter-area growth in



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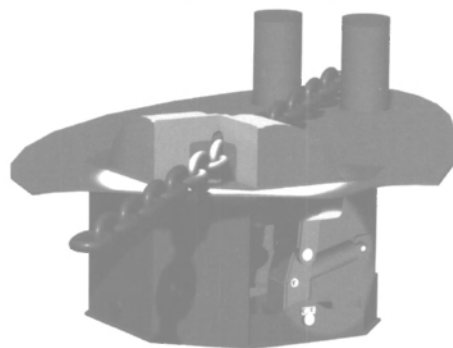
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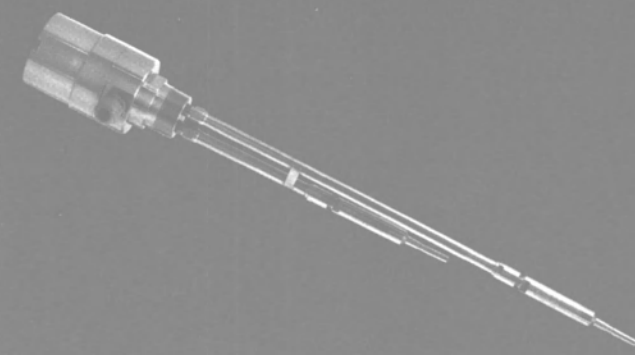
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## The Tanker Market

seaborne crude trade. Imports into other Asia and to the USA constituted most of the remaining growth in seaborne oil trade.

As already mentioned there must have been some other factors in addition to oil volumes and transport distances, contributing to the tanker market upswing. The most important among

them is without a doubt the so-called "Erika Effect": Charterers' reduced acceptance of old tankers after the Erika accident in December 1999. According to our calculations this effect represents a three to four percent reduction in the total transport capacity of the total tanker fleet. The Erika Effect has been the strongest for Suezmaxes and Afra-

maxes.

In addition R.S. Platou has seen an unconventional trading pattern for tankers in 2000 that also led to reduced fleet productivity. This was mainly a consequence of low oil inventories and the persistent backwardization in the oil market. It is estimated that the "Erika Effect" combined with the unconven-

## 2001 World Yearbook

tional trading pattern and other factors, have caused rates for crude carriers to rise by \$10-20,000 per day as an average for the whole year.

### The Fleet

The active tanker fleet increased by 1.6 percent from 1999 to 2000, calculated on an annual average basis. The active VLCC fleet increased by only 0.5 percent, while the rest of the tanker fleet grew 2.5 percent.

Deliveries of new tankers reached 21 million dwt in 2000, unchanged from 1999. There was a rise in removals from 13 million dwt in 1999 to 18 million dwt in 2000. Some 14 million dwt of tankers were sold for scrapping, and 25 units of these were VLCCs.

In R.S. Platou's capacity utilization rate calculations, tanker utilization rate has risen from 82 percent in the fourth quarter of 1999 to 93 percent in the fourth quarter of 2000. Utilization in 2000 was, as an annual average, close to 90 percent up from 84 percent the previous year.

According to the current order book, 15 million dwt of new tankers will be delivered in 2001. That is five million dwt less than in 1999. Scrapping of

### OMI Buys, Sells Vessels

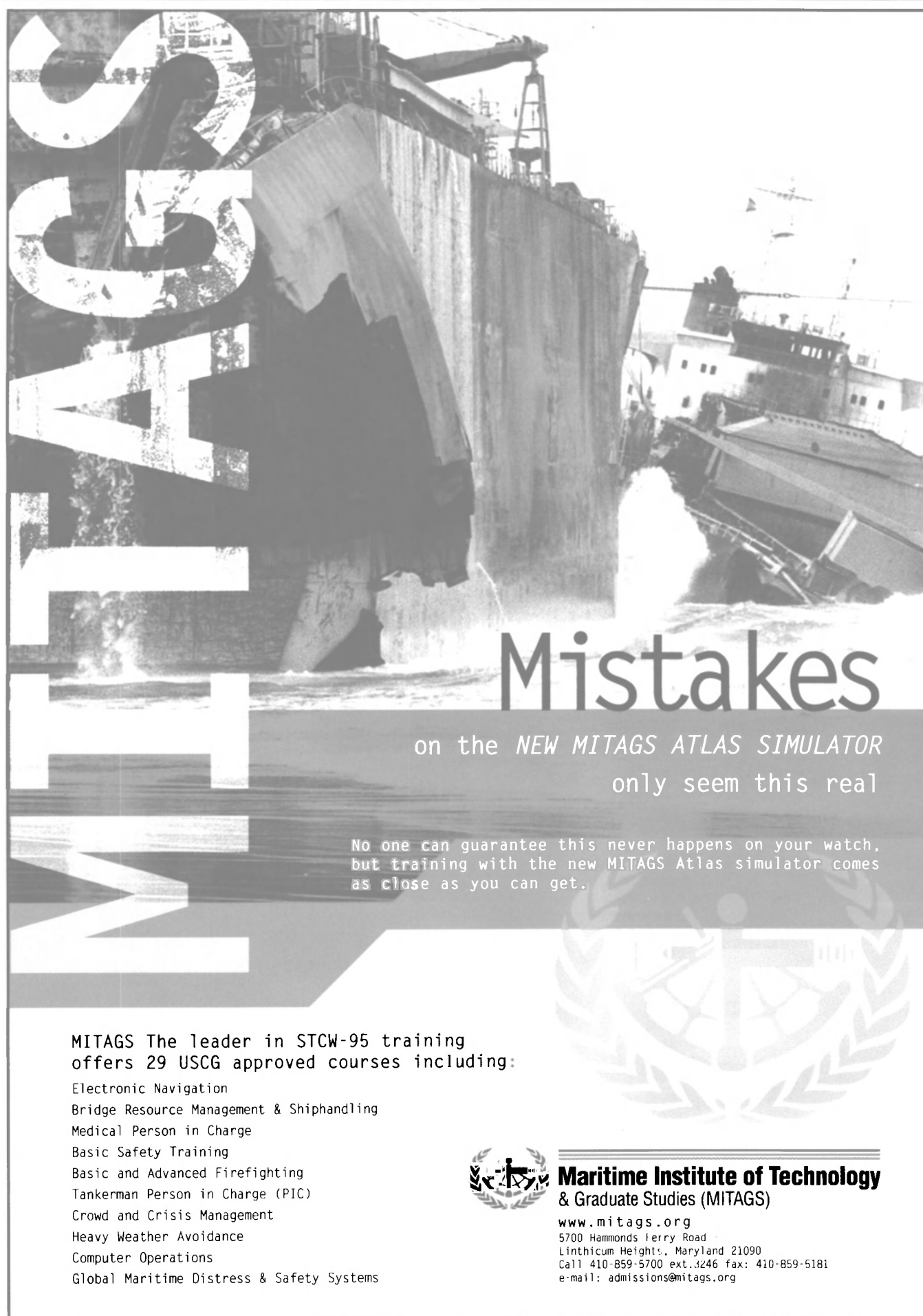
OMI Corp. has agreed recently to acquire four vessels. The company will buy two 37,000 dwt product carriers under construction in South Korea, both of which will be delivered this fall.

OMI purchased for about \$21.7 million each, two 35,000-dwt crude oil tankers built in 1993; deliveries to the company are expected in June. The vessels are on time charter to affiliates of Pertamina, the Indonesian oil company, and have in excess of four years each (plus options) remaining on the time charters.

The company has also decided to exercise an option to contract with Sumitomo Corporation for a newbuilding 47,000 dwt product carrier to be constructed by Onomichi Dockyard for delivery during first quarter 2003.

In a separate transaction, OMI also agreed to sell a 1990-built handysize product carrier for \$14.8-million, a vessel, which the company acquired in March for \$14 million.

Also for sale is the 2000-built Loire, a Suezmax tanker with advanced design capabilities, making it desirable to shuttle operations. The vessel is expected to be delivered to the buyer in the third quarter of 2001 at which time a gain of approximately \$18 million from the sale will be recorded. Frontline Ltd., the company's partner in Alliance Chartering, has agreed to sell a sistership to the same buyer on identical terms.




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## The Tanker Market

### Liquified Petroleum Gas Carriers Ordered During Second Half 2000

Owner/Operator	Shipyards	Yard No.	Capacity (m <sup>3</sup> )	Dwt	Del.
Yuso Steamship Co	Mitsubishi	2174	78,000	48,500	12/2002
Ino Kaum Kaisha Ltd	Kawasaki H.I.	1515	82,200	48,000	3/2003
Nafomar Shipping & Trading Ltd.	Namura		22,500	18,000	6/2002
Nafomar Shipping & Trading Ltd.	Namura		22,500	18,000	6/2002
Stanco Ship Management	Stoczna Gdynia		78,000	49,700	2004
Stanco Ship Management	Stoczna Gdynia		78,000	49,700	2004
Bibby-Harrison Mgmt Services Ltd	Hyundai H.I.	1414	35,000	22,800	11/2002
Consolidated Marine	Hyundai H.I.	1422	82,000	51,100	3/2003
Consolidated Marine	Hyundai H.I.	1423	82,000	52,000	6/2003
Nafomar Shipping & Trading	Namura Zensho		20,000	18,000	12/2002
Bergeesen d.s. ASA	Stoczna Gdynia	8185/3	78,500	58,000	2003
Bergeesen d.s. ASA	Stoczna Gdynia	8185/4	78,500	58,000	2004
Geogas Shipping	Daewoo H.I.		35,000	23,000	11/2002
Geogas Shipping	Daewoo H.I.		35,000	23,000	2003
Gazoocean Armement	Daewoo H.I.	2303	35,000	23,000	11/2002
			<b>842,200</b>		
				<b>15</b>	

Source: SSF

### Liquified Natural Gas Carriers Ordered During Second Half 2000

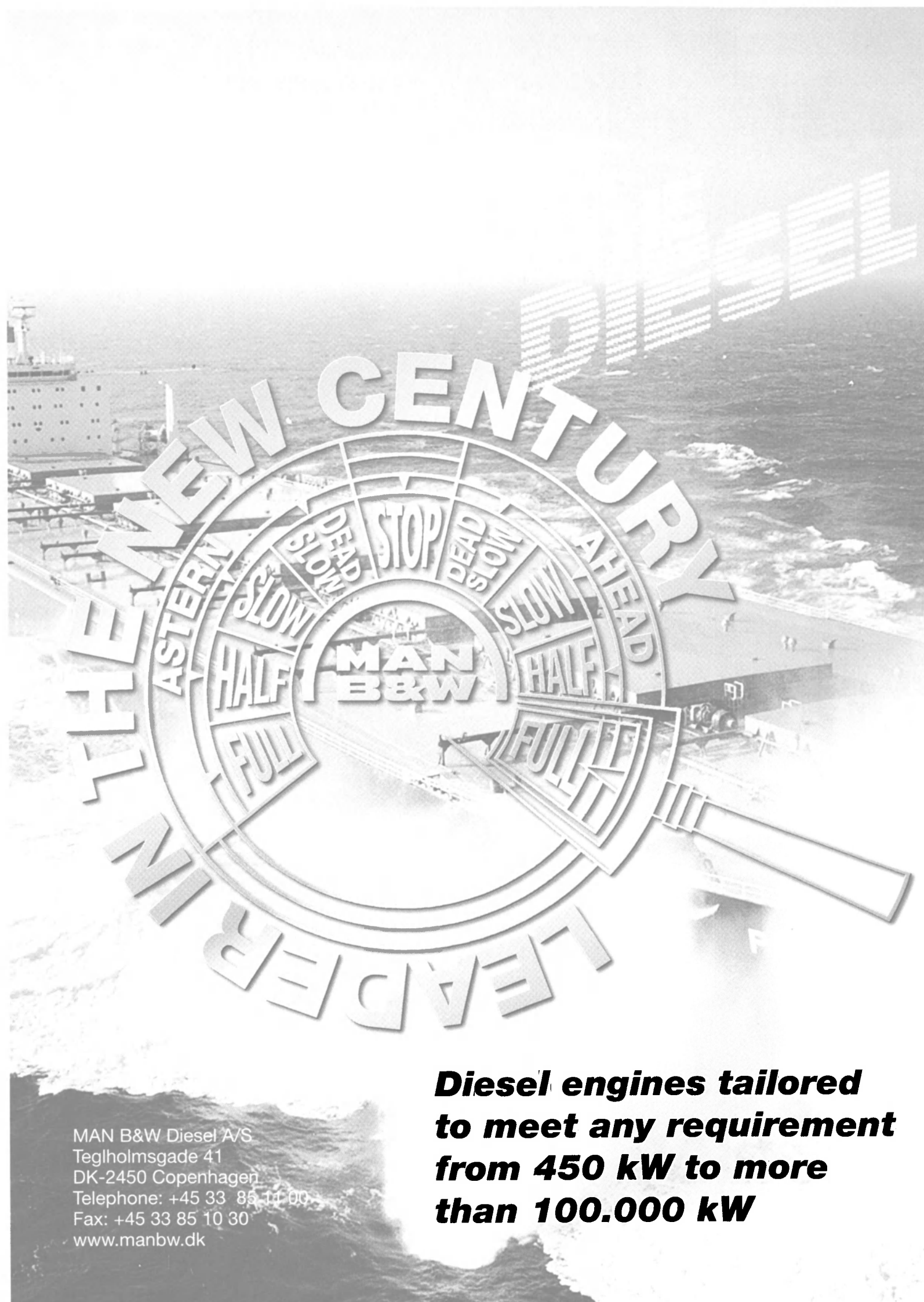
Owner/Operator	Shipyards	Yard No.	Capacity (m <sup>3</sup> )	Del.
Shell International Gas	Mitsubishi H.I.	2172	133,000	9/2002
Shell International Gas	Mitsubishi H.I.	2173	135,000	1/2003
Tokyo LNG Tanker	Kawasaki H.I.		138,000	5/2003
Tokyo LNG Tanker	Kawasaki H.I.		138,000	5/2003
Laf Hough	Samsung H.I.		135,000	6/2003
BP Amoco Shipping	Samsung H.I.	1380	138,000	11/2002
BP Amoco Shipping	Samsung H.I.	1381	138,000	3/2003
Esmar S.A.	Daewoo	2208	138,000	12/2003
Nigerian LNG Ltd	Hyundai H.I.	1429	137,000	2/2003
Bergeesen d.s. ASA	Daewoo	2212	138,000	8/2003
Tokyo Electric Power	Mitsubishi H.I.		135,000	2003
			<b>1,505,000</b>	
				<b>11</b>

Source: SSF

tankers is mainly determined by running and expected freight rates with age distribution as the second most important explanatory factors. The recent IMO draft to phase out old tankers will most likely be sanctioned in April 2001 leading to substantial removals from the fleet in the next five years. The first date at which old tankers will be excluded according to this new regulation, however, seems to be January 1, 2003. We expect tanker scrapping in 2001 to stay at the same level as in the second half of 2000.

Based on these assumptions the active tanker fleet will increase by 1.5 percent from 2000 to 2001 on an average basis, with higher growth for VLCCs and lower growth for medium size and small tankers.

*By Erik M. Anderson, R.S. Platou Economic Research a.s., as excerpted from The Platou Report 2001.*



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## Greasing the Skids

*Record gas prices, OPEC solidarity and a U.S. administration doling out incentives for exploration and production all add up to good news for those companies conducting business in or profiting from the offshore market.*

There is little doubt that the international offshore market, led by the Gulf of Mexico, is poised for a record rebound in the second half of 2001 and beyond. The tandem of high crude prices — spurred by OPEC's seeming solidarity on controlling output — combined with the emphasis on expanding offshore production by the new U.S. administration seemingly provides the proverbial "win-win" for all companies that makes its living finding and recovering resources, or those companies that supply vessels, products and services to the offshore oil business.

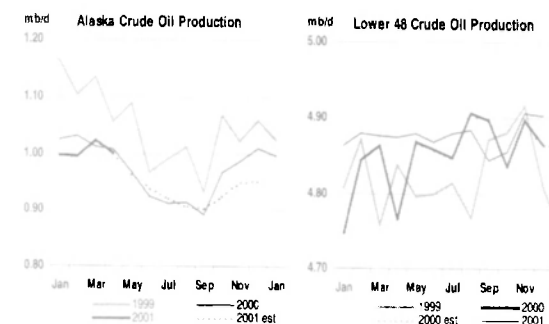
Given the cyclical, sometimes unpredictable nature of the business, though, it is never a sure bet to celebrate prematurely. For instance, if the U.S. economic downturn extends beyond many analysts' predictions, it could significantly reduce demand, thus helping to more quickly drive pricing down. In the latest Oil Market Report dated May 11, 2001 from the International Energy Agency (IEA), the organization notes that first quarter 2001 oil demand appears to have fallen short of expectations by more than a half million barrels of oil per day, yet still grew at 1.1 mb/d. Meanwhile, world

oil production fell by 900 kb/d to 77.1 mb/d in April, with OPEC supply coming in 560 kb/d lower. Extraordinary gasoline prices made the headlines in late Spring, and the strong U.S. gas prices drew unusually high imports. Preliminary weekly statistics for April show that U.S. imports of gasoline blendstocks were 115 kb/d higher than a year earlier, an increase of 57 percent. The main concern in the U.S., besides of course high gasoline prices that are approaching \$2 per gallon and starting to cause public outcry, is the availability of oil to meet peak summer demand, which because of a number of factors (North Sea maintenance, refinery shutdowns for unscheduled maintenance, etc.) is anything but certain.

Regardless, it appears that a strong oil market is here to stay, a situation that bodes well for the marine builders and suppliers, particularly in the Gulf of Mexico region. The recently concluded Offshore Technology Conference (OTC) in Houston was perhaps the most well attended and positive exhibition in years, as there were strong, positive vibes regarding the near term business prospects.

### Dayrates To Hit 3-Year Highs

Global Marine Inc. Chief Executive **Bob Rose** recently said in published reports that he expects dayrates for offshore oil and gas drilling rigs to surpass their highs of three years ago in 2001. Dayrates are currently running at about 74 percent of their 1997/98 highs, Rose said, with the West African and North Sea markets now showing signs of recovery as a longer-established natural gas drilling boom continues in the U.S. Gulf of Mexico.



Global Marine's vice president of Investor Relations **Michael Dawson** welcomed energy proposals unveiled by President **George W. Bush**, saying proposed incentives for offshore oil and gas exploration were "a plus" but were unlikely to have much immediate impact on Global Marine, which he noted was already benefiting from a cyclical upswing in offshore drilling.

Rose said Global Marine is currently limiting the length of new contracts that it signs for its rigs so that it can benefit from the further increases in dayrates that it expects. The average dayrate for the company's rigs was \$71,100 during the first quarter of 2001, up from \$52,000 in the same period of 2000. The fleet utilization rate reached 100 percent last month for the first time since July 1988.

Rose said he expects some drilling rigs to be moved from the U.S. Gulf of Mexico to other markets, such as West Africa, this year, as international dayrates catch up with and overtake domestic rates.

Rose said he also expects rigs to be moved from the Gulf of Mexico to the North Sea, saying that market and West Africa are both improving "tremendously."

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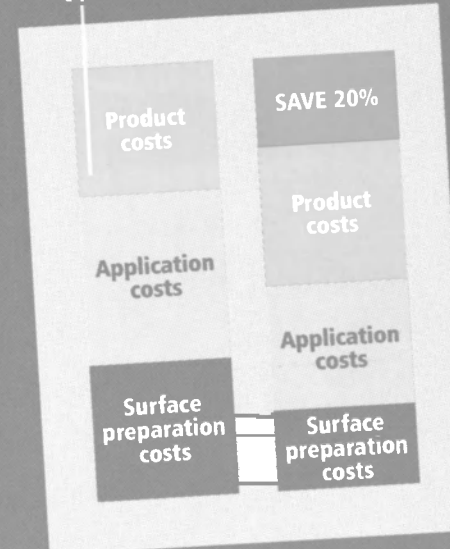


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## State of the P&I Market: As Stocks Drop, Rates Will Rise

By Graham Edmiston,  
chief executive of A Bilbrough & Co,  
Managers of the London P&I Club

The 13 P&I Clubs within the International Group continue to dominate the world market for shipowners' liability insurance despite increasing competi-

tion in recent years from fixed premium facilities. The development of the fixed premium market and, in particular, the rapid growth of the P&I account of the

marine and energy syndicate 329 at Lloyd's led by Jonathan Jones,



served to increase pressure on premium rating in recent years. However, syndicate 329 is now in run-off, its capital providers having withdrawn support, and its P&I account, which was transferred to British Marine, an old-established P&I and hull club for small ships and offshore craft, which recently demutualized, reportedly lost more than 50 percent of its business to Group Clubs at the last renewal on February 20, 2001, marking a substantial rebuff to the fixed premium market and reconfirmation of the Group's dominant position.

Competition between the Group Clubs has become more aggressive in recent years, although in 1998 the Group secured a further 10-year exemption from European law banning trade cartel agreements for its International Group Agreement restricting rate-cutting competition between Clubs. In recent years a majority of Clubs have reported underwriting deficits. Indeed, it was recently reported that the Group Clubs together lost approximately \$387.5 million on their underwriting in the policy year to February 20, 2000, and are likely to report a similar combined deficit for the year recently ended. In the last few years the Clubs have covered their underwriting deficits with investment income and unrealized investment gains on their mutual funds, benefiting from the buoyant U.S. investment markets over the past decade and, for the year ended February 2000, a number of Clubs were able to report continued growth in their funds and their free reserves.

However, the last six months have witnessed dramatic falls in the U.S. stock markets and, with Clubs holding approximately 30 percent of their investment portfolios in equities, a majority of Clubs have suffered significant declines in their investment performances for the year ended February 2001; and this will be reflected in consequent reductions in their funds and free reserves.

Irrespective of disappointing investment performance, Clubs have recognized during the last year the need to increase premium income in order to avoid underwriting deficits and the Boards of nine of the 13 Group Clubs

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decided to announce general increases in premium for the February 2001 renewal of 10 percent, with others going for 7.5 percent. While competition at the recent renewal remained intense, Clubs do seem to have achieved partial success in their efforts to hike premiums, with increases of seven to eight percent being reported. However, with the current downturn in the U.S. economy and, with the likelihood that the remarkable performance of the U.S. equity market between 1990 and 1999 will not be repeated in the next decade, Clubs will need to continue to increase their premium income; and shipowners will have to become re-accustomed to paying annual increases. Moreover, in the more vigorous regulatory environment now faced by the U.K. insurance industry, under the supervision of the Financial Services Authority, Clubs based in the U.K. will be required to maintain healthy solvency margins, in addition to more formalized risk management procedures and internal controls.

In recent years a number of Clubs or their managements have become involved in hull insurance. Two of the Clubs, the Swedish and the North of England have run separate mutual hull Clubs for several years. In 1999 Thomas Miller, manager of the U.K. Club, entered into a joint venture with Swiss Re and Lloyd's managing agent, Chartwell, to set up a hull insurance product named Dex to be underwritten by a new syndicate at Lloyd's, also offering alternative risk transfer products to shipowners. In June 2000, Gard established a new management company, Gard Services AS, jointly with a Nordic insurance group, If..., a company recently formed by the merger of the non-life interests of Scandinavian insurance companies, Skandia, Vesta Marine & Energy, Storebrand & Pohjola, on a 60/40 basis, and all personnel were transferred from the Club to the new company, which now markets different 'product lines', including P&I, marine hull and energy.

Other Club managers have established different links with commercial insurance companies. Charles Taylor, the managers of the Standard Club, which obtained a listing on the London Stock Exchange in August 1996, announced in November 2000 that it was entering into a joint venture with Tokio Marine and Fire, to offer liability cover to Japanese shipowners, with Tokio Marine providing the first \$300,000 of cover and the Standard Club traditional P&I cover for the excess. Moreover, in May 2000, the Britannia Club announced that it was in discussions with AGF MAT (part of the Allianz Group) to explore the possibility of a future alliance, with the Club

manager, Tindall Riley, and AGF MAT forming a new management company. In October 2000 it was reported that the contract for the management of the Club was to be transferred to a new company, Tindall Riley Marine Limited, and Allianz AGF now have a 25 percent share in this company. It has been reported in the press that they will be

buying the balance of the company at 25 percent per year. It has also been reported that the new company intends to develop hull and multi-modal insurance products for its members, on a fixed premium basis, and possibly also a separate small craft P&I facility.

Club managers are now more active in loss prevention than ever before. A

majority undertakes programs of ship inspections and, when considered appropriate, full surveys. Some Clubs undertake management audits of the ships' operators and also provided detailed technical advice and assistance in newsletters, magazines and videos and on their Internet websites.

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and co-operation with shipowners' organizations, national, regional and international, continue to exercise considerable influence in government and inter-governmental circles in the development of new legislation and regulations for the international maritime community.

Indeed, Club managers are presently engaged closely in review of the international oil pollution liability and compensation regime provided by the Civil Liability Convention (CLC) and the International Oil Pollution Compensation (IOPC) Fund Convention, following the

identification of 'shortcomings' in the system by France and the European Commission following the Erika spill of heavy fuel oil on France's Atlantic coast in December 1999 and pressure for Europe to follow the example set by the U.S. with its Oil Pollution Act 1990

(OPA 90). Club managers will play a key role in the current discussions.

The well-established traditions amongst Club managers of professional service to Members remains, but there is now a more commercial approach. Clubs are taking advantage of recent developments in information technology. They use electronic means of communication and most Clubs now have their own Websites, some of which are interactive, but underwriting is still mainly done in the traditional manner, with much of the business still placed by brokers.

The benefits of the International Group, namely pooling of claims and its excess loss reinsurance program, up to \$2 billion, and the collective influence of Club managers as a group, have enabled it to maintain its dominant position in the market. However, the diverse commercial activities of Clubs and their managers, particularly in joint activities with commercial insurance companies, do put increasing strains on the cohesion of the Group.

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### Petrobras Shuts Down 13 Rigs For Leak Check

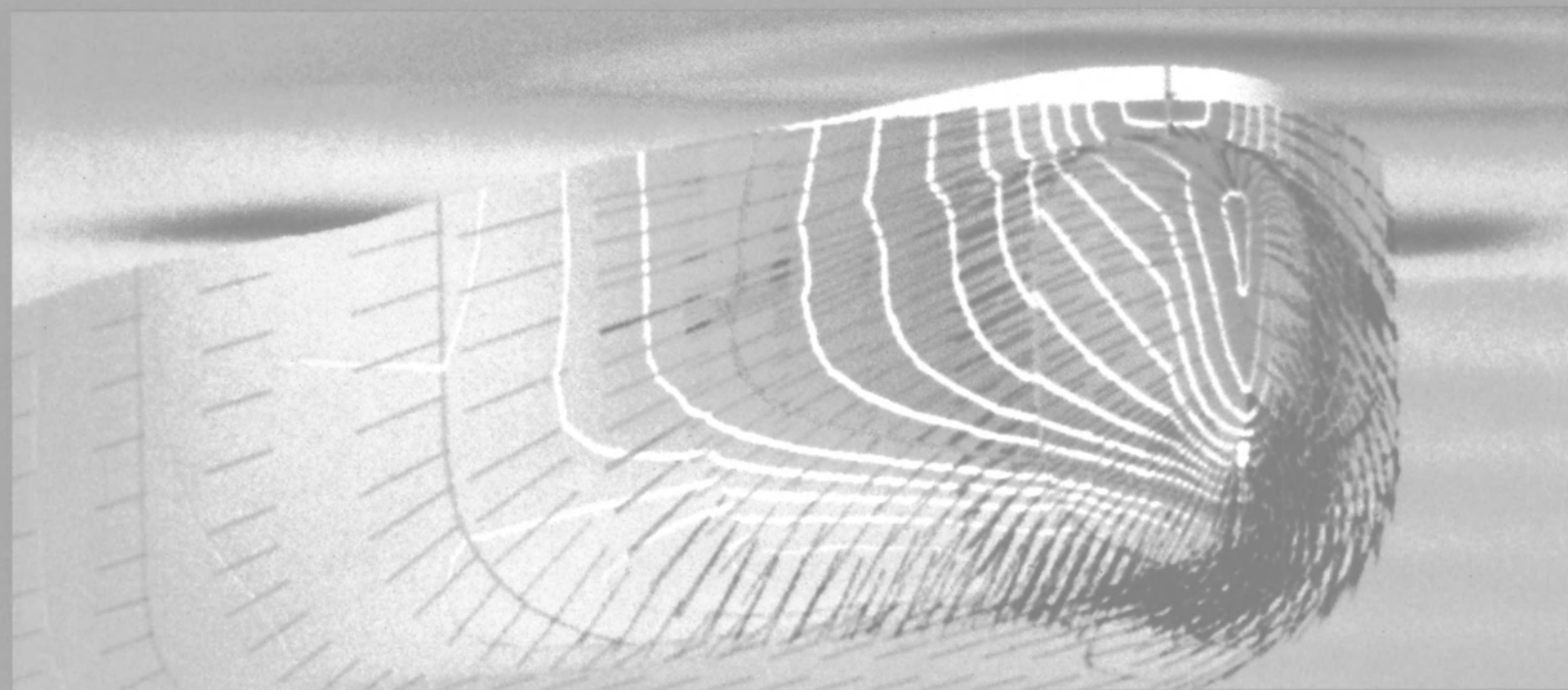
In mid-May, Petrobras halted output at 13 offshore rigs in the Campos basin to check for leaks after an oil slick appeared on the ocean surface in the area. The stoppage results in output losses of 135,000 barrels of oil and 830,000 cu. m. of natural gas per day, or nearly 10 percent of Petrobras' daily output.

Petrobras said the leak off the Rio de Janeiro state coast was relatively small — of around 26,000 gallons of crude. The company said in a statement it was yet unclear where the oil, which formed a thin layer on the ocean's surface, had come from, but was suspecting a leak from one of the offshore platforms or tankers.

### Friede Goldman Halter Tries To Shed Petrodrill Contracts

Friede Goldman Halter filed with the bankruptcy court a motion to reject the two contracts for the construction of the two Amethyst offshore drilling rigs for Petrodrill. The company, in a statement, said that these highly unprofitable contracts caused substantial losses to FGH, and led to the company's recent Chapter 11 filing. FGH has also taken further cost-cutting measures, announcing that all senior management members have taken substantial salary cuts, in some cases as high as 40 percent.





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## Innovators Recognized At Patent Ceremony

Outstanding creativity in science and engineering were recently honored by a U.S. congressman and senior Navy officials. Keynote speaker U.S. Rep.

Roscoe G. Bartlett (MD-6) joined Naval Surface Warfare Center commander Rear Admiral Michael Mathis, in a ceremony recognizing Navy civilian

employees. Since the previous year's ceremony, 56 current and former employees have won 30 patents for inventions associated with Carderock

Division programs. These innovators are individually recognized for significant contributions to the U.S. Navy. At the same time, 19 first-time inventors are being recognized specially by induction into the Carderock Inventors Club, a command honor society celebrating the issuance of the first U.S. patent bearing a Navy civilian inventor's name. In addition, 59 employees will be recognized as a group as inventors of 45 patent applications filed during the same period. Patented technologies include ceramic and composite materials, magnetostrictive materials, impact absorbing materials, ship propulsion systems, ship machinery, ship control surfaces, acoustic apparatus, radar equipment and test equipment and methods. With only 2,000 scientists and engineers, the Carderock Division ranks third in the U.S. Navy for patents. Following are full details on two particularly promising ideas. (For a full listing, please turn to page 93).



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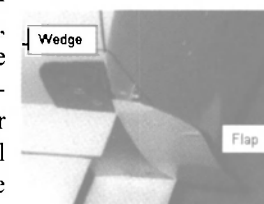
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### Combined Wedge-Flap for Improved Ship Powering

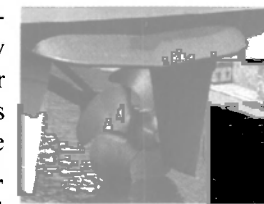
United States Patent No. 6,038,995, Cusanelli, D.S., and G. Karafiath, (March 21, 2000)

A stern flap is an extension of the hull bottom surface which extends aft of the transom. It is a relatively small appendage, built of plate, fitted to the ship's transom. Unlike a stern flap that extends aft of the transom, wedges are located completely under the hull beneath the transom (inlaid into the hull plating). The critical geometry parameters for both wedges and flaps are chord length, span across the transom, and angle. Transom wedges and stern flaps are very similar, and also operate along similar principles, and as thus, were previously viewed as exclusive devices.

A wedge-flap design program was initiated in 1996, when it was rationalized that the combination of a wedge and a



Integrated wedge-flap concept at model scale.



Integrated wedge-flap installed on Curtis Wilbur (DDG 54).

(continued on page 91)

## New Launching Platform For Navy

The Navy has entered a new era of ship construction in Bath, Maine. The introduction of an innovative construction and launching platform brings some of the most modern warship building methods in the world to Bath Iron Works and the Naval Sea Systems Command



(NAVSEA). May 5 marked the first official use of what is known as the Land Level Transfer Facility (LLTF). That day saw the keel laying of the future USS Chafee (DDG 90), an Arleigh Burke-class destroyer, co-sponsored by Mrs. **John Chafee**, widow of the Honorable **John Chafee**, a former Secretary of the Navy and Senator from Rhode Island, along with Mrs. **Diane Blair**, wife of Admiral **Dennis Blair**, Commander-in-Chief, U.S. Pacific Command.

The Land Level Transfer Facility is a construction platform with three side-by-side shipways that allow for amphibious ships and destroyers to be built simultaneously. Outfit support towers alongside the ships are designed to provide the work force all the material and services they need. These towers have tool cribs, slump material stock rooms, office space, restrooms and lunchrooms built in to help improve productivity.

Additionally, a 75,000-sq.-ft. Manufacturing Support Center will house shipyard manufacturing supervision; design; planning; quality assurance office; material control professionals; and personnel from NAVSEA's Supervisor of Shipbuilding, Conversion, and Repair (SUPSHIP) Bath in a true integrated process team environment.

The advantages of the new Land Level Transfer Facility are many. Weighing more than 400 tons each, the first erection units of Chafee are the largest ever produced by Bath Iron Works. These erection units can be much heavier than those placed on traditional sliding ways but will be able to be placed on the LLTF.

Another advantage of the facility is the

capability to install sonar domes before a ship is launched.

Commenting on the benefits of the new facility, Captain **Richard Hepburn**, Supervisor of Shipbuilding, SUPSHIP Bath said, "It was an enormous investment by General Dynamics (owner of Bath Iron Works); but one which looks to pay off with the potential

of considerable production savings on each hull. Bath Iron Works, the U.S. Navy, the employees of Bath Iron Works, the American taxpayers, and the nation's defense, are all winners with this magnificent facility in operation." - (By **Richard Osial**, NAVSEA Logistics, Maintenance and Industrial Operations)

## HTS Propulsion Thrusters Project Gets \$3.1M Boost

American Superconductor Corp. received a third contract for \$3.1 million from the U.S. Navy's Office of Naval Research (ONR) to continue the design of HTS motors and related subsystems. The company expects to

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complete this contract within the next nine months, and anticipates receiving additional contracts from the Navy leading to initial sea trials of an HTS propulsion system by the end of 2003.


The latest contract calls for the design and fabrication of components for pod-contained, HTS propulsion motors. American Superconductor's proprietary

HTS motors are expected to be one-fifth the size and one-third the weight of conventional electric motors of the same power rating. HTS thrusters, because of their smaller size and higher efficiency, are expected to provide significant increases in maneuverability, fuel efficiency, and cargo and passenger space, among other advantages. "Electric drive

systems for commercial and Navy ships is the 'killer app' for HTS motors," said Greg Yurek, American Superconductor's CEO. "The dramatic reductions in size, weight and manufacturing costs created by HTS technology are leading to radically new ship designs, which provide tremendous tactical and operational advantages to the Navy and path-

ways to increased profitability for commercial ships." According to some industry sources, the current annual global market for electric motors and generators utilized for electric propulsion in commercial cruise and cargo ships is approximately \$400 million. The market for ship propulsion motors and generators is expected to grow rapidly to \$2 billion to \$4 billion per year by 2010 because electric drives are becoming the propulsion system of choice for both commercial and Navy ships.

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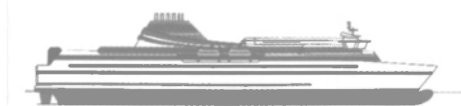
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### Fast Night Ferry Developed

Knud E. Hansen has developed a proposal for a Fast Night Ferry for routes with a high passenger volume, but limited trailer requirements. As the company reports, the design is a reverse of sorts from recent ferry newbuildings for the Baltic Sea and Mediterranean routes, as it focuses more on passengers and less on trailer and cargo transport. The public spaces are fitted with seats for approximately 1,100 passengers, distributed over more than 2,000 sq. m. of public spaces. The ferry design features a slender hull, designed to possess excellent propulsion and sea-keeping characteristics.

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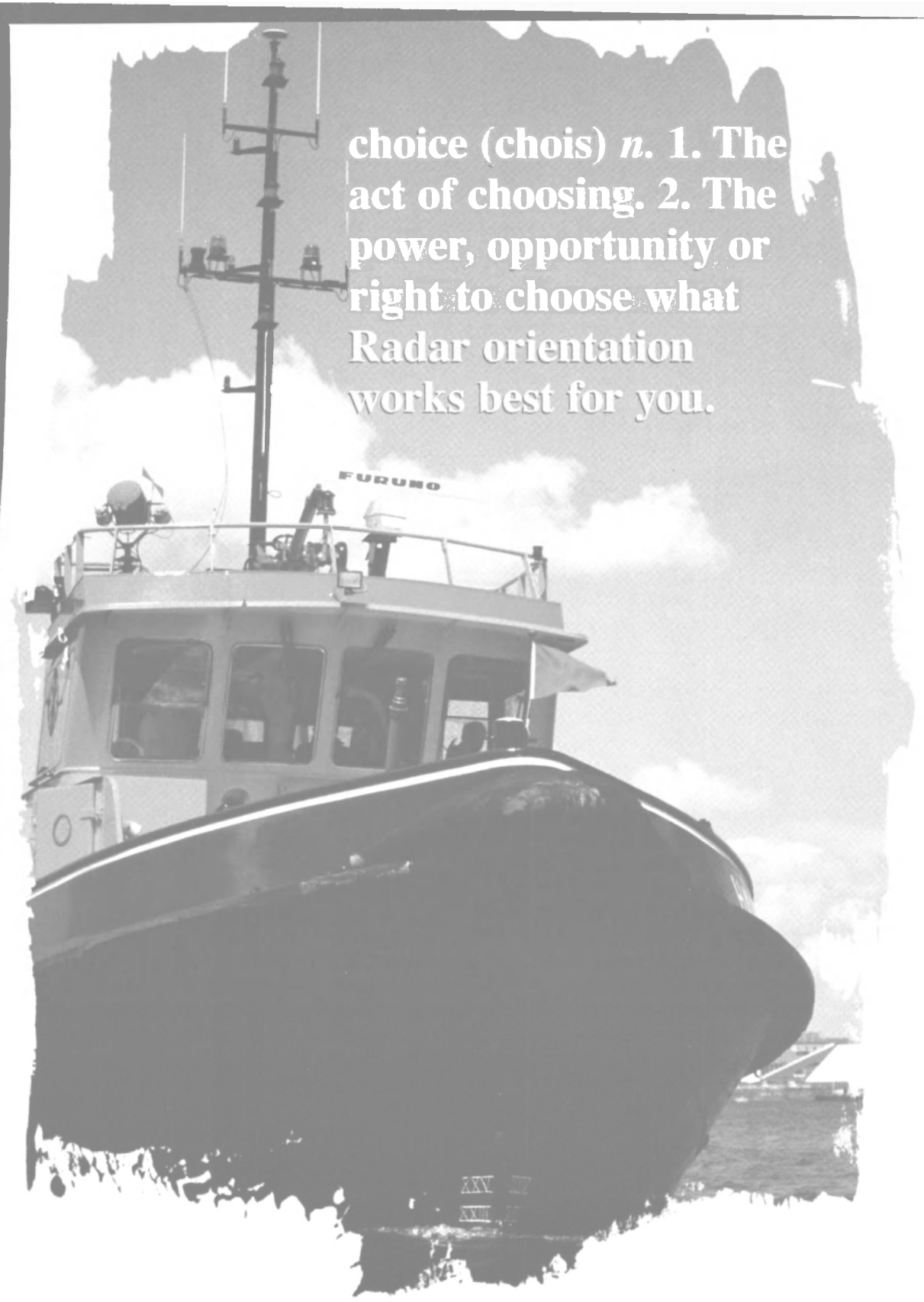


#### Main Particulars - Fast Night Ferry

Length, o.a.	545 ft. (166 m)
Breadth, molded	72 ft. (22 m)
Depth to main deck	26 ft. (8 m)
Draft, design	17 ft. (5.3 m)
Cars/Passengers	220/1,130
Cabins	220
Installed power	36,000 kW
Service speed	28.5 knots

### New Propulsion Developments From STN Atlas

Eight chemical tankers being built by the Polish Szczecinska yard for delivery to Ceres Hellenic Shipping and Odfjell Tankers in 2002-4 are to be equipped with new combined shaft alternator-motors developed by Hamburg-based STN ATLAS Marine Electronics. Designed for use both as a conventional alternator unit and as a motor assembly providing additional redundant propeller or booster drives, the shaft alternator section supplies a nominal rated output of 1,840 kVa with a power factor of 0.8 over a shaft speed range of between 67 and 105 rpm with a corresponding reduced output from 67 rpm to 40 rpm. Motor operation with a propul-



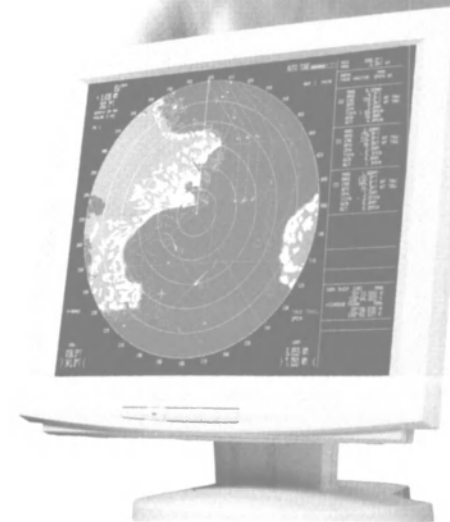
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sive power of 1,500 kW at 67 rpm equates to an average vessel speed of 7-8 knots. The system essentially comprises a shaft alternator-motor assembly mounted directly in the propeller shaft line, and a synchronous compensator for reactive power and short-circuit generation as well as for voltage control in shaft alternator mode only. Other con-

stituents are a synchro-converter together with a monitoring and control system, and harmonic filters for reduction of mains harmonics to acceptable distortion levels of five percent. Development of the new system fully meets ABS R1 redundancy specifications that require multiple propulsion assemblies for freighters and tankers laden with haz-

ardous and inflammable consignments. They are also required to meet the safety requirements of port and water protection authorities. The system's drive function enables maintenance work on a main engine to be carried out while a ship is either loading or unloading at a port without restricting maneuverability.

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### New Patented Vacuumators Launched By Jets

Jets Vacuum A/S launched a new range of the patented Vacuumator. The range covers a wide spectrum of Vacuum Toilet Systems,



from small compact 24 V DC systems, suitable for yachts and work boats up to high capacity systems for cruise and passenger ships.

The heart of the Jets Vacuum Toilet System is the Jets Vacuumator concept, which is designed to offer a unique in-line installation, flexibility and high capacity. The new models give a significant reduction in size and weight, and the single-in, single-out pipe connection allows for a true in-line installation without the need for extra components. All Vacuumators in the new range come with a large transparent inspection cover, which allows for easy monitoring as well as easy access to the non return flap valve. The new high capacity Vacuumator, the Jets 65 MBA, offers desired benefits such as low weight, compact size and easy installation.

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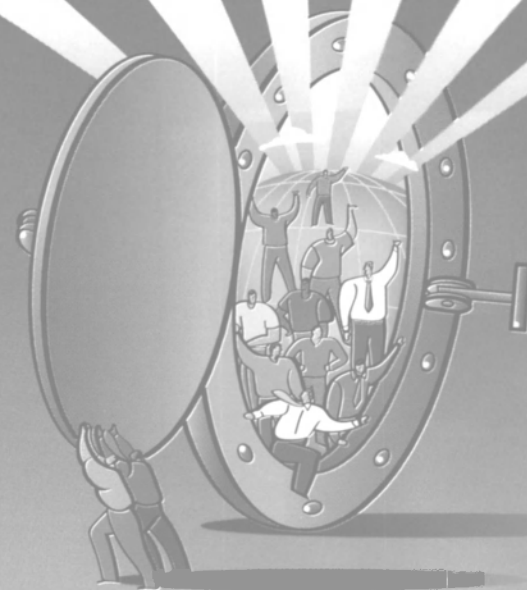
### First Of New Cable Laying Ships Enters Service

Oceanic Princess, the first of two new cable laying vessels purchased for conversion by specialist U.K. shipping group James Fisher and Sons PLC in the second half of last year, has been delivered on long term charter to it-International Telecom, a subsidiary of Advanced Technology Systems, Greensboro, N.C. Delivery to it-International on May 4 follows the successful completion of sea trials for the 5,000-ton former RoRo vessel, converted to its new role at the Victor Lenac shipyard in Rijeka, Croatia. Conversion work on the second ship, the 3,000-ton Oceanic Pearl, is at an advanced stage. This vessel is expected to undergo sea trials later in the summer prior to being chartered to it-International.

Delays to conversion work on the two vessels enabled James Fisher to specify various operational changes. On the Oceanic Princess these include increased accommodation and additional power generation and thruster power, combined with the installation of the charterer's preferred sophisticated cable

(continued on page 92)

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## Marine Technology Report

Superfast Levante served as the testbed for the CLT propeller.

# Tests Prove CLT Prop Characteristics

The CLT propeller recently underwent real-world testing, which proved, according to its designer and manufacturer that the propeller can help to reduce or eliminate hull-induced vibrations and noise levels. Independent studies were conducted aboard Superfast Levante, which demonstrated that: the cavitation level developed on the CLT propeller blades is negligible from the ship's structural integrity point of view; vibration and noise levels are excellent in terms of comfort on board; and the contractual ship speed was much better than predicted.

Superfast Levante is a 7,200 dwt RoRo cargo vessel delivered by Union Naval de Valencia (UNV) to Trasmediterranea, the major Spanish operator of RoRo vessels and ferries. The ship was ordered to operate between Cadiz and the Canary Isles.

Trasmediterranea has already fitted CLT propeller blades on several ships in its fleet. The decision to install CLT blades on Superfast Levante was based on the company's experience with these, and UNV's positive experience with CLT blades fitted on several chemical tankers and products carriers during the past six years.

Superfast Levante's twin propellers have a diameter of 15 ft. (4.5 m) and a blade area ratio of 0.48. Their CLT blades were designed by Sistemar and manufactured by Navalips, and are mounted on CP hubs from John Crane Lips.

The CLT blade design was carried out by direct calculation, using results obtained from model tests conducted at the Danish Maritime Institute (DMI) with stock conventional propellers. It was not necessary to carry out model tests with CLT propellers, as over the past 20 years Sistemar has developed a unique method for calculating their performance based on its own the-

ories. Because of the high propulsion power installed on Superfast Levante (pictured above) (12,600 kW per shaft), the owner was quick to ensure that there would be no excessive propeller cavitation, which could cause unacceptable hull vibrations and erosion of the propeller blades. UNV therefore ordered a complete program of hull vibration measurements from the specialist company TSI.

The procedure — developed by TSI — needed no modifications to the vessel and consisted of measuring vibrations at the bottom of the ship, close to the propeller positions, and in the steering gear compartment. The company then analyzed the vibration levels obtained in these areas, in relation to varying propulsive powers achieved by altering the blade pitch while maintaining constant propeller RPM. The vibration measurements were performed in the ship's ballast condition, in an adverse sea state (Beaufort 5) and with no

(Continued on page 94)

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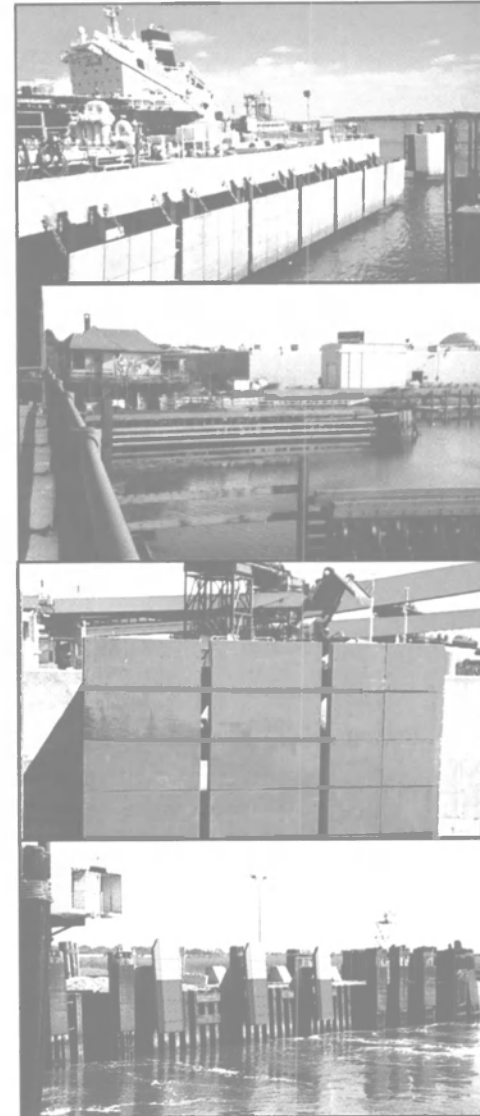
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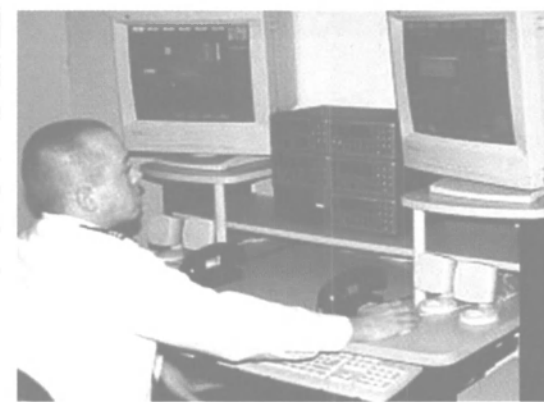
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## Texas Maritime Academy Ship Simulator Attracts All Levels

Marine industry operations will grow and develop with highly trained workers as a result of the expansion and upgrade of the Full Mission Ship Simulator used by the Texas Maritime Academy. The improvements were made possible by a \$250,000 grant to Texas A&M University at Galveston by Houston Endowment Inc., a philanthropy endowed by Mr. and Mrs. Jesse H. Jones.

Mike Kemp, vice president and CEO of the campus, said this funding will significantly assist the university in complying with operational standards and technological requirements established by the International Maritime Organization (IMO) and the U.S. Coast Guard (USCG). The Texas Maritime Academy is one of only six in the U.S. and the only one on the Gulf Coast. The improvements to its maritime program ensures TAMUG cadets will receive first-class, advanced training that is equal to or better than other maritime academies, said Rear Admiral Richard Lukens, superintendent of the Academy. "The Board of Directors approved this grant given the unique nature of the university and the increased need for talented professionals in the maritime industry," said Ann Hamilton, Houston Endowment grant officer. "We are pleased to be a part of shaping the future of young people entering this field of study."

The ship simulator will also be available to maritime professionals for upgrading their navigation skills through a partnership with the Center for Marine Training and Safety (CMTS). The Full Mission Ship Simulator is a highly computerized replica of the control room, or "bridge" of a seagoing vessel.



Cadet **Burton Clark** operates the Global maritime Distress and Safety Simulator System that will train and certify him in GMDSS operations.



The bridge of the full mission ship simulator.

professionals for upgrading their navigation skills through a partnership with the Center for Marine Training and Safety (CMTS). The Full Mission Ship Simulator is a highly computerized replica of the control room, or "bridge" of a seagoing vessel.

(Continued on page 71)

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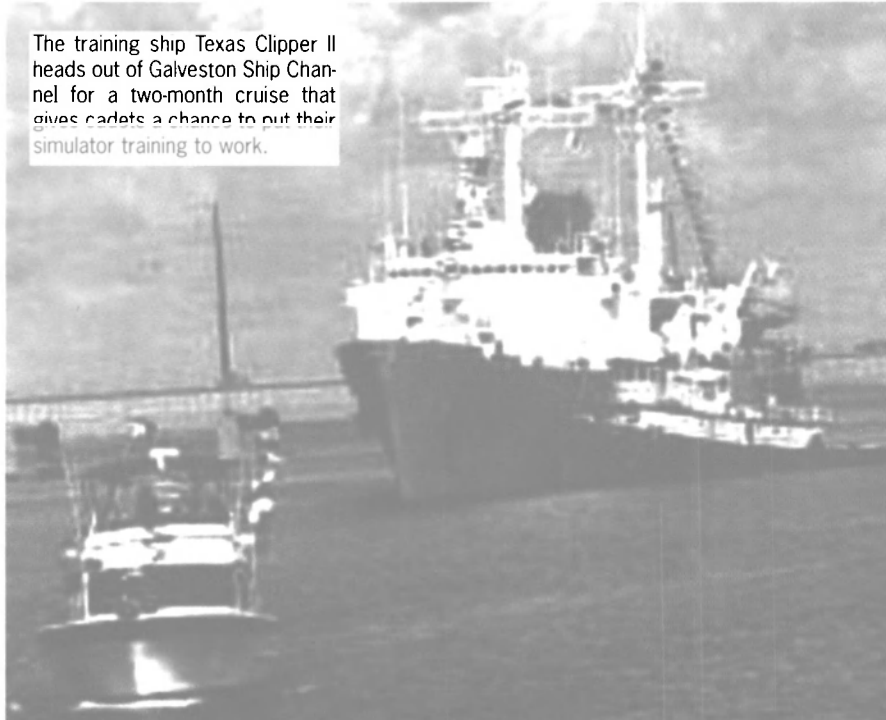


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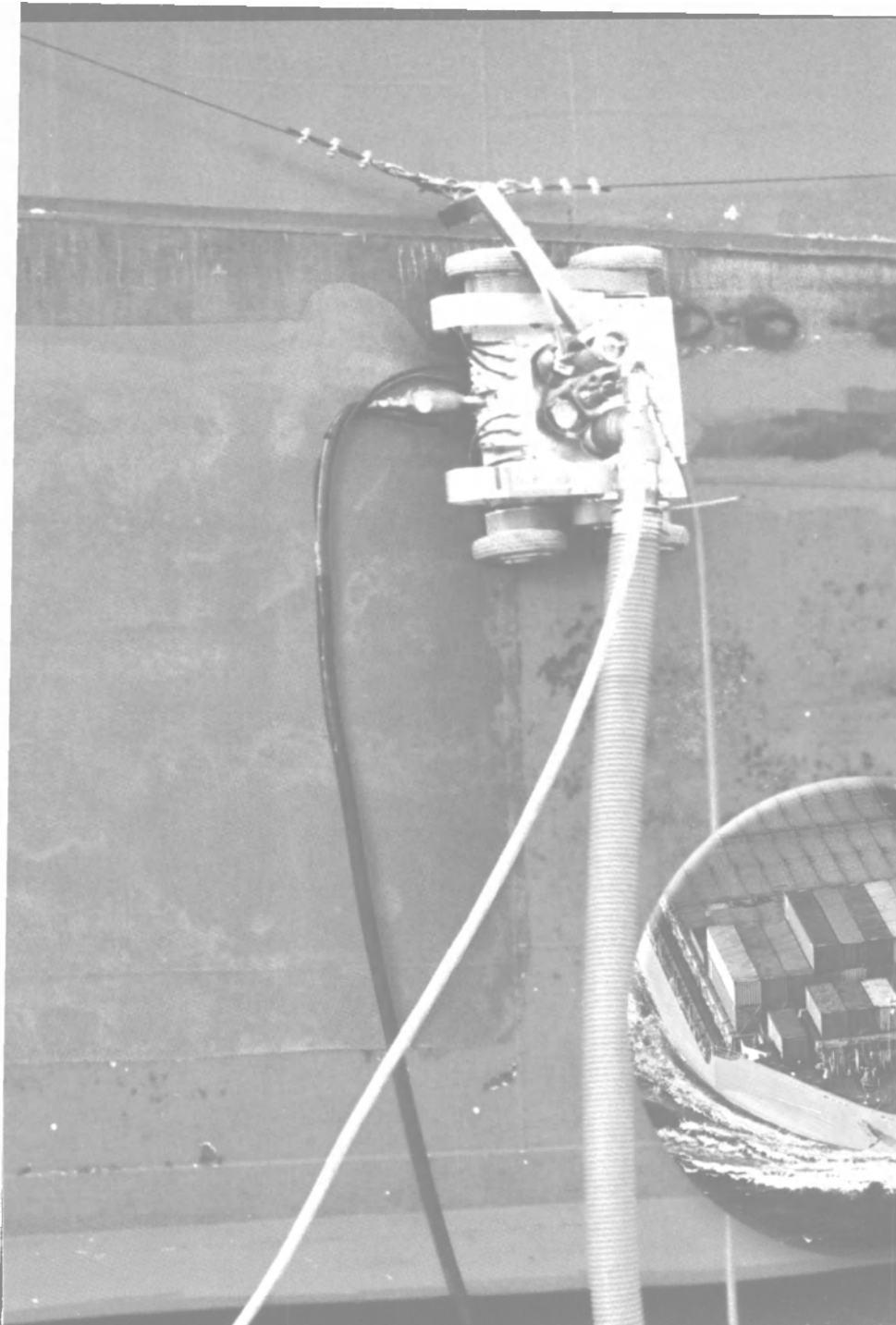
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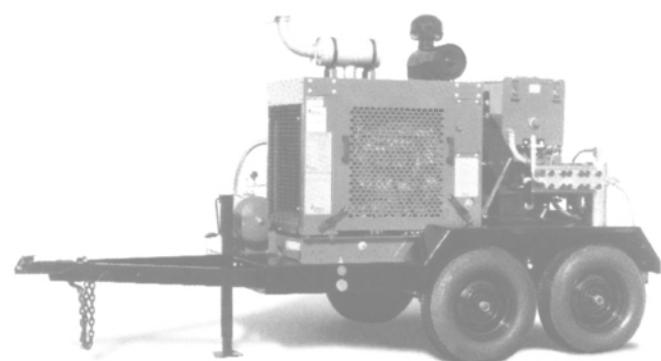


The training ship **Texas Clipper II** heads out of Galveston Ship Channel for a two-month cruise that gives cadets a chance to put their simulator training to work.





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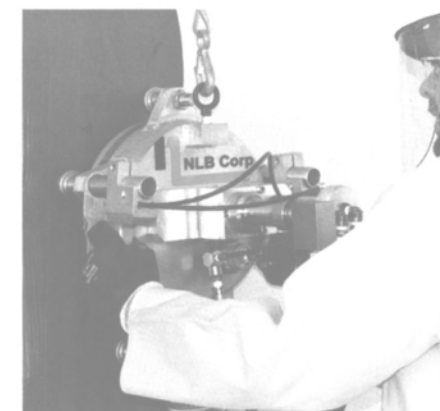
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# World Industry Drives Freight Rates Up

In 2000, freight rates turned out at a significantly higher level than during the previous year. On an average basis, tripartite rates for Capesizes (150,000 dwt) more than doubled to \$17,600/day, while rates for modern Panamaxes increased from \$7,500 to \$11,100/day. For Handymaxes, tripartite rates went up from \$6,900 to \$9,200/day. The freight market showed a steady rise through the first three quarters of the year, but softened somewhat during its final three months. The main cause of the firmer freight market was the strong upturn in world economic growth, and particularly in the U.S. The strong U.S. economy combined with imports of finished goods created strong support for industrial production in and exports from the rest of the world. In addition, more extensive imports of grain also meant heavier demand for tonnage.

## Bulk Carrier Prices

Shiptype		Price (\$million)		
		1999	2000	Change
Capesize	170,000 dwt	35	40	14.3%
Panamax	75,000 dwt	22	22	0
Handymax	51,000 dwt	20	20.5	2.5
Handysize	30,000 dwt	15.5	15	-3.2
<b>Other Ship Types</b>				
Containership	400 teu	8.5	10	17.6%
Containership	1,100 teu	17.5	18	2.9
Containership	3,500 teu	38	41.5	9.2
RoRo	1,200-1,300 lm	21.5	20	-7
RoRo	2,300-2,500 lm	32.5	33	1.5
Tweendecker	15,000 dwt	13	13.8	6.2

Source: Clarkson Research

## Bulk Carrier Ship Values

Despite the firmer freight market and rising newbuilding prices during most of the year, R.S. Platou noted only small changes in second-hand ship values. The main reason could be that market participations were aware at a very early stage of the large number of newbuildings scheduled to enter the market in 2001. This probably made them consider any further upside potential in ship values to be limited. Within the OECD area, industrial production rose by five percent over 1999. The U.S. and Japan increased production by five percent, while Western Europe attained about four percent higher output. In Asia outside Japan, production rose about 11 percent. The world steel production increased by seven percent from 788 to 844 tons — an all time high. All world regions showed increased output and among the most important ones we noted that steel output in Japan rose by 13 percent. Other Asian countries produced 4.6 percent more, and Western Europe escalated its production by five percent. In the Former Soviet Union and North America, steel production went up by 13 and by four percent, respectively.

## Market Prospects

In its previous report, R.S. Platou suggested a higher utilization rate and firmer freight rates during year 2000. That also proved to be the case. The report, as it turned out though, was too conservative on the demand side. R.S. Platou predicted an increase of from three to four percent, while the end result showed five percent in tonnage demand and six percent in volumes. The fact that the tonnage demand was heavier than expected can to a very large extent be explained by world economic growth stronger than expected, particularly in the U.S. That exerted a very positive influence on Asian and European industrial production and exports. Our fleet scenario suggested an increase of about two percent and this came close to being realized.

The latest predictions for world economic growth in 2001 indicate a moderate increase in world steel consumption on a worldwide basis. There are however, indications (such as falling steel prices) that during the last 12 months steel production has exceeded the actual consumption and consequently there has been some stockbuilding. It is therefore possible that a certain quantity of the steel due to be consumed in 2001 has already been produced and transported to the consumer areas. New coal burning power utilities in Asia are scheduled to become operational in the next few years, and most new projects that were postponed during the Asian economic crisis are now reported to be in progress. Asian coal consumption, as a result, should rise, and it would reason that there would be larger seaborne imports. It is expected that the total seaborne trade will show a moderate increase, and about 20 million dwt of new bulk ships are scheduled to become operational during 2001. Based on the estimated slower growth in tonnage demand and the more plentiful supply, R.S. Platou expects removals from the fleet to escalate in 2001. Taking the age profile into consideration, it would seem very likely that scrapping could be most frequent among the smaller ship sizes. Taking in all elements, the estimate is for tonnage supply to increase by four percent in 2001.

By Bjorn Bodding, R.S. Platou Economic Research a.s., as excerpted from The Platou Report 2001.

## Corpus Christi - Sept. 11<sup>th</sup>

The Lift Boat GULF ISLAND V, a 3-legged jack-up, sank off Corpus Christi, Texas. The vessel sank in 100 feet of water on to her port side with half her deckhouse beneath the sea bed.

### Response & Results:

After unsuccessful recovery attempts by others, Titan's salvage team removed the wreck and placed it on shore using the 500-ton sheerlegs Southern Hercules.



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## Training & Education

(Continued from page 68)

It realistically duplicates weather and sea conditions experienced while at sea and provides hands-on training in ship handling and navigation skills.

The Academy's new simulator provides the opportunity to address some economic developments, as both Houston and the State of Texas become a trading powerhouse for the Gulf coast and the country.

Historically, the northeastern U.S. has provided a large percentage of support for maritime shipping, the most economical method for shipping goods.

However, the ports, waterways and roads of the region are saturated and cannot accommodate increased traffic. The southeastern U.S. ports and waterways are the logical place to funnel increased traffic. Texas especially has plenty of landslide access to its ports and is positioned perfectly to handle increased trade from the south with Mexico, Central America and South America as was envisioned with NAFTA.

Another major economic affect the simulator will have is on the oil exploration industry. Industry estimates derived from a study by Mitchell Energy and Development state that \$400 billion will be spent over the next 40 years in deep sea drilling in the Western Gulf. Texas will be a major focal point of investments in oil exploration, transportation and refining.

### Training Capabilities

The simulator's software is capable of modeling a full range of commercial vessels, from harbor tugs to fully loaded crude oil carriers, and can be upgraded to include new ship types and specialty marine vehicles. The upgraded simulator also includes software for two new mission specific simulators — a Global Maritime Distress and Safety System (GMDSS) and an Electronic Chart Display and Information System (ECDIS) that provide state-of-the-art equipment to train and certify cadets in GMDSS operations and to prepare cadets for use of electronic charts in ship navigation. According to Lukens, ECDIS certification is not currently mandated by the IMO/USCG, but will be required in the near future.

TAMUG and CMTS students have the opportunity to become certified before the ECDIS qualification becomes mandatory. The new equipment also offers training opportunities in inland and intra-coastal waterways, including tug and tow and similar brown water operations.

The \$2.2 million Texas Maritime Academy budget includes ship operations, marine terminal operations, simulator operations and faculty and staff

costs. The Houston Endowment grant will be applied toward the total \$846,655 simulator upgrade and relocation project, which also received funding through university budget allocations and gifts by corporations and individuals.

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Cadets operating ship on the bridge simulating offshore conditions. (PHOTO CREDIT: KEVIN BARTRAM, GALVESTON DAILY NEWS)



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## MITAGS Chooses STN Atlas For Major Upgrade

The Maritime Institute of Technology and Graduate Studies (MITAGS), of Linthicum Heights, Md., has awarded STN Atlas a contract to upgrade one of MITAGS' full mission simulation systems. The new system will be installed by STN Atlas at MITAGS in October 2001, and will employ the latest generation of photo-textured on-screen graphics, advanced ship maneuvering capabilities and a complete Raytheon integrated bridge system utilizing Kamewa joystick control systems for steering and ship maneuverability. Through the use of STN Atlas designed removable bridge equipment sections, the MITAGS Raytheon Integrated Bridge System (IBS) is configurable and adaptable to many different types of shiphandling and bridge resource training.

In a newly developed training partnering arrangement in support of this upgrade, MITAGS is working together with the U.S. oil transport firm, Polar Tankers, Inc. to provide a near replica of Polar's recently developed Millennium Class, OPA-90 double hull tankers. MITAGS and Polar are working together to provide training support for the crews and pilots of these new vessels. Up to 10 Millennium Class tankers may be built for trade between Valdez, Alaska and U.S. West Coast ports.

In a departure from traditional ships' bridges and bridge control systems, the new MITAGS bridge will employ integrated joystick steering from Kamewa and backup tiller steering provided by Raytheon-Anchutz. Other notable features of the new MITAGS bridge include the following.

- A central command center displaying five 24-in. flat panel Samsung monitors for ARPA, Electronic Chart Information Display Information System (ECDIS) and conning displays.
- A newly developed Raytheon Automated Navigation Trackkeeping System (ANTS) employing a logic/ship-motion forecast system driven through an adaptive autopilot-ECDIS interface.
- An integrated Det Norske Veritas Watch-1, Raytheon, Nauto-alarm, watch alarm system.
- A fully simulated engine-steering relationship for use in conventional, azipod, variable pitch, ducted nozzle, jet, tractor, and dynamic positioning control systems.
- An STN Atlas NACOS, ECDIS-Conning system for advanced control conning displays.
- Dual operator seating with special attention to ergonomic design for realistic, high-speed craft simulation.

The simulated bridge will be hosted in MITAGS' unique simulation theater,

which is reportedly one of the world's largest. The MITAGS simulation space provides room for two 40 x 80-ft. curved projection screens for the display of large-scale simulation graphics. The

complete training system will be constructed to DNV Class A simulator standards and configured for one-man bridge operations as defined under the DNV Watch-1 certification rules.

Employing 360 degrees of photo-realistic images coupled to high fidelity ship modeling dynamics, and with the latest integrated bridge equipment, the new MITAGS system will be ready to conduct the highest quality port development, shiphandling and bridge resource management training.

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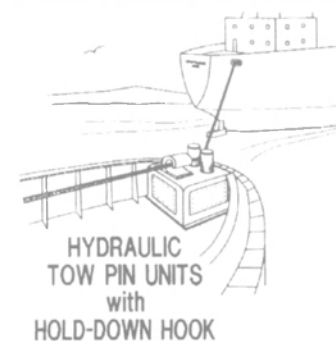
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## Ferliship's New Ship Contracts • 1Q 2001 • by Type

Ferliship is a strategic consultancy highly specialized in market researches guided to the shipping industry. For additional information, please contact Ferliship @: Pza. Sta. M<sup>o</sup> Soledad Torres Acosta, 2. 2<sup>o</sup> C, 28004 Madrid, Spain, Tel. : +34 91 531 01 78 , 689 01 45 66; Fax: +34 91 531 01 78<sup>o</sup> e-mail: ferliship@iies.es (Prices are in U.S. Dollars)

OWNER OPERATOR	COUNTRY SO	SHIPYARD	COUNTRY SB	TYPE	No	TEU	DWT	GT	CAR TRAILER PAX	MCU	DELIV	PRICE M \$
EDISON CHOLEST OFFSHORE	US	NORTH AMERICAN SB	US	AHSV	1	0	0	0	-	0	2001	25
EDISON CHOLEST OFFSHORE	US	NORTH AMERICAN SB	US	AHSV	4	0	0	0	-	0	01	40
TIDEWATER	US	YANTAI RAFFLES SHIPYARD	CHINA	AHTS	5	0	0	0	-	0	01/02	0
MAERSK SUPPLY SERVICE	DENMARK	LANOSTEN SUP & BAABYGGER AS	NORWAY	AHTS	2	0	0	0	-	0	02	0
SOLSTAD SHIPPING	NORWAY	LUSTEN VERFT	NORWAY	AHTS	1	0	0	0	-	0	02	40
EDISON CHOLEST OFFSHORE	US	ECO	US	AHTS	1	0	6500	0	-	0	0	0
VESSEL MANAGEMENT SERVICES	US	HALTER MARINE GULFPORT	US	BARGE	1	0	20000	0	-	0	02	0
ALLIED TRANSPORTATION	US	ALABAMA SHIPYARD	US	BARGE	1	0	16000	0	-	0	02	0
BOUCHARD TRANSPORTATION	US	HALTER MARINE GULFPORT	US	BARGE	1	0	15000	0	-	0	02	0
UNKNOWN	-	NKK CORP	JAPAN	BULK CARRIER	1	0	176000	0	-	0	03	0
JAPANESE INTERESTS	JAPAN	TSUNESHI	JAPAN	BULK CARRIER	2	0	76000	0	-	0	02/03	0
UNKNOWN	JAPAN	TSUNESHI	JAPAN	BULK CARRIER	4	0	60000	0	-	0	02/03	0
SETAF SAGET	FRANCE	NANTONG COSCO XH	CHINA	BULK CARRIER	1	0	47100	0	-	0	02	20
CANADIAN FORREST NAVIGATION	CANADA	WIKU SHIPYARD	CHINA	BULK CARRIER	2	0	27800	318	-	0	02	29
VAN OMMEREN	NETHERLANDS	JANGYANG	CHINA	BULK CARRIER	1	0	51000	0	-	0	2002	18
EGON OLDENDORFF	GERMANY	SAKI	JAPAN	BULK CARRIER	1	0	31350	0	-	0	103	0
MITSUBISHI CORP	JAPAN	HAKODATE DOCK	JAPAN	BULK CARRIER	2	0	48000	0	-	0	02	40
HARA KAIEN	JAPAN	KANDA SHIPBUILDING CO	JAPAN	BULK CARRIER CEMENT CARRIER	1	0	7130	0	-	0	01	0
SINOTRANS	CHINA	NANTONG COSCO XH	CHINA	BULK CARRIER ORE STRENGTHENED	2	0	47000	0	-	0	2002	40
NIPPON STEEL CORP	JAPAN	MITSUI	JAPAN	BULK CARRIER ORE STRENGTHENED	1	0	174550	0	-	0	03	0
ITOHU CORP	JAPAN	NKK CORP	JAPAN	BULK CARRIER ORE STRENGTHENED	1	0	172000	0	-	0	01	0
K LINE	JAPAN	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER ORE STRENGTHENED	1	0	73000	0	-	0	03	23
NIPPON YUSEN KAISA (NYK)	JAPAN	TSUNESHI	JAPAN	BULK CARRIER ORE STRENGTHENED	1	0	170000	0	-	0	03	40.5
GEARBUK	NORWAY	QDANSE	POLAND	BULK CARRIER ORE STRENGTHENED	2	0	48000	0	-	0	03/04	53
ISLAND VIEW SHIPPING	SOUTH AFRICA	KANDA SHIPBUILDING CO	JAPAN	BULK CARRIER ORE STRENGTHENED	2	0	31500	0	-	0	02	0
CDO SHIPPING	JAPAN	SHIN KURUSHIMA	JAPAN	CAR CARRIER	2	0	17500	0	6.500 CARS	0	2003	0
GRIMALDI	ITALY	ULANK	CROATIA	CAR CARRIER	2	0	13800	0	4.300 CARS	0	2003	73
MARINE SERVICES GROUP	GERMANY	SHIN-A SHIPBUILDING	JAPAN	CHEMICAL TANKER	2	0	37000	0	-	0	2.004	49
GERMAN TANKER SHIPPING	GERMANY	LINDENAU	GERMANY	CHEMICAL TANKER	1	0	32250	0	-	0	2003	0
CARL BUTNER	GERMANY	3 MAU	CROATIA	CHEMICAL TANKER	1	0	23400	0	-	0	2002	25
CHANGJIANG SHIPPING	CHINA	LINDENAU	GERMANY	CHEMICAL TANKER	2	0	13300	0	-	0	2.002/2.003	0
NISHIO SHIPPING	JAPAN	FUKUOKA SHIPBUILDING	JAPAN	CHEMICAL TANKER	1	0	11500	0	-	0	103	0
VIX TRADERS	SINGAPORE	HIGAKI ZOSEN	JAPAN	CHEMICAL TANKER	1	0	3000	0	-	0	02	0
REDER AB DONOSTANK	SWEDEN	SHANGHAI EDWARD	CHINA	CHEMICAL TANKER	1	0	19500	0	-	0	02	18
FAIRFIELD MAXWELL	US	USUKI	JAPAN	CHEMICAL TANKER	1	0	19500	0	-	0	01	0
MARRETOL	SPAIN	FACTORAS VULCANO	SPAIN	CHEMICAL TANKER	2	0	18400	0	-	0	02	50
LARIN MARTIME	SWEDEN	TROGR	CROATIA	CHEMICAL TANKER	2	0	47000	0	-	0	04	60
FERROSTAAL	GERMANY	GAJATZ	ROMANIA	CHEMICAL TANKER	4	0	8750	0	-	0	02	0
REINHARD HAMM	GERMANY	PETERS SCHEFFSWERF	NETHERLANDS	CONTAINER	3	705	8000	0	-	0	01/02	48
MAR CONSULT - MARRINVEST	GERMANY	CHENGSHI SHIPYARD	CHINA	CONTAINER	2	800	0	0	-	0	2.002/2.003	26
CONTI REEDER	GERMANY	HANJIN	KOREA	CONTAINER	2	5750	0	0	-	0	2.002/2.003	115
GEBAB	GERMANY	HANJIN	KOREA	CONTAINER	2	5750	0	0	-	0	2.002/2.003	115
HANSEATIC	GERMANY	HANJIN	KOREA	CONTAINER	2	4100	0	0	-	0	2003	90
MITSUI O.S.K. LINES (MOI)	JAPAN	SHIKAWABIMA HARUMA H.I. (JHI)	JAPAN	CONTAINER	4	4500	0	0	-	0	2003	200
UNKNOWN	GERMANY	JINJING	CHINA	CONTAINER	2	1100	0	0	-	0	2.002/2.003	34
COSCO	CHINA	KYOKUYO ZOSEN	JAPAN	CONTAINER	1	400	0	0	-	0	2002	0
MITSUI O.S.K. LINES (MOI)	JAPAN	MITSUBISHI H.I.	JAPAN	CONTAINER	4	4500	0	0	-	0	2003	200
A. P. MOELLER	DENMARK	ODENSE	DENMARK	CONTAINER	1	10000	0	0	-	0	2002	0
ARKAS	TURKEY	FEINE-WERFT	GERMANY	CONTAINER	2	1170	0	0	-	0	2002	36
PETER DOHLE / CSW	GERMANY/CHILE	SIECSEN SHIPYARD	POLAND	CONTAINER	4	3100	0	0	-	0	2.002	148
BOMARES BERTRAM	GERMANY	JIANJIN	CHINA	CONTAINER	2	1900	0	0	-	0	2002	52
BIAND SHIP SERVICE	GERMANY	HAWFI	CHINA	CONTAINER	1	700	0	0	-	0	02	0
APC CAPITAL	GERMANY	FEINE-WERFT	GERMANY	CONTAINER	1	1150	0	0	-	0	02	0
SEASIN INTER/CSL	CANADA/CHINA	SAMSUNG	KOREA	CONTAINER	1	9000	0	0	-	0	04	80
TURKON LINES	TURKEY	SEDEF GEM	TURKEY	CONTAINER	1	1145	0	0	-	0	02	0
TRASATLANTICA ESPANOLA	SPAIN	BARREAS	SPAIN	CONTAINER	2	1100	0	0	-	0	02	34
P&O NEDLLOYD	UK	ESTALEIRO ITAJAI SA	BRAZIL	CONTAINER	2	1700	0	0	-	0	03	50

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OWNER OPERATOR	COUNTRY SO	SHIPYARD	COUNTRY SB	TYPE	No	TEU	DWT	GT	CAR TRAILER PAX	MCU	DELIV	PRICE M \$
HANSA MARE	GERMANY	HANJIN	KOREA	CONTAINER	2	4450	0	0	-	0	02	100
SUISSE ATLANTIQUE	SWITZERLAND	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	CONTAINER	2	2770	0	0	-	0	03	0
BRESE SCHIFFART GMBH	GERMANY	QINGSHAN SHIPYARD	CHINA	CONTAINER	2	512	0	0	-	0	02	21
CLAUS PETER OFFEN	GERMANY	FLENDER WERT	GERMANY	CONTAINER	3	3600	0	0	-	0	02/03	135
PACIFIC INTERNATIONAL LINES (PIL)	SINGAPORE	DAE SUN	KOREA	CONTAINER	4	700	10000	0	-	0	02	40
PETER DOHLE SCHIFFARTS	GERMANY	J.J. SETAS	GERMANY	CONTAINER	4	880	0	0	-	0	02	0
ORIENT OVERSEAS CONTAINER LINE - OOCL	HONG KONG	SAMSUNG	KOREA	CONTAINER	4	7400	0	0	-	0	04	332
EVERGREEN	TAIWAN	EVERGREEN HEAVY INDUSTRIES	JAPAN	CONTAINER	5	1400	0	0	-	0	02/03	0
NKI GROUP	GREECE	JURONG	SINGAPORE	CONTAINER	5	2500	0	0	-	0	02/03	0
SBLUM SHIPPING	GERMANY	SCHIFFSWERT UND MASCHINENFABRIK CSH	GERMANY	CONTAINER	0	840	0	0	-	0	02/03/04	0
MEDITERRANEA SHIPPING CRUISES	UK	CHANTIERS DE L ATLANTIQUE	FRANCE	CRUISE SHIP	1	0	0	60000	1,600 PAX	0	04	280
UNKNOWN	UNKNOWN	LLOYD WERT	GERMANY	CRUISE SHIP	2	0	0	0	2,200 PAX	0	03/04	670
ENVIRONMENTAL & MARINE ENGINEERING	-	IHC HOLLAND	NETHERLANDS	DREDGER SUCTION HOPPER	1	0	20000	0	-	13700	-	54
HAM DREDGING & MAR	NETHERLANDS	VAN DER GIESSEN	NETHERLANDS	DREDGER SUCTION HOPPER	1	0	40340	0	-	0	03	91.5
MAERSK CONTRACTORS	UK	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	DRILLING RIG	1	0	0	0	-	0	02	0
MAERSK CONTRACTORS	UK	KEPPEL FELS	SINGAPORE	DRILLING RIG SEMI-SUBMERSIBLE	1	0	0	0	-	0	2003	147
INOC	-	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	DRILLING UNIT	1	0	4500	0	-	0	03	142
UNKNOWN	UNKNOWN	UMCE STEERCOER	NORWAY	FISHING	2	0	1700	0	-	0	2002	0
BIRKELAND FISK	NORWAY	FTJAR	NORWAY	FISHING	1	0	1000	0	-	0	2001	0
ENDRE DYROY	-	FTJAR	NORWAY	FISHING	1	0	1000	0	-	0	2001	0
GEN DE ELECTRIC HAINA	-	JURONG	SINGAPORE	FLOATING POWER STATION	1	0	0	0	-	0	2001	0
SANTA FE INTER.	US	PP	SINGAPORE	JACK UP RIG	2	0	0	0	-	0	2,003/2,004	250
ALSCC	-	DAEWOO	KOREA	LNG	1	0	73000	0	-	0	04	0
DAEWOO	-	DAEWOO	KOREA	LNG	1	0	69000	0	-	138000	03	150
MITSUBI O.S.K. LINES (MOL)	JAPAN	MITSUBISHI H.I.	JAPAN	LNG	1	0	68200	0	-	0	02	179
SEKISUI KAIEN CO. LTD.	KOREA/JAPAN	SAMSUNG	KOREA	LNG	1	0	0	0	-	138000	03	158
NIIPPON YUSEN KAISA (NYK)	JAPAN	KAWASAKI H.I.	JAPAN	LNG	1	0	75000	0	-	0	2003	0
OSPREY MARITIME	SINGAPORE	HANJIN	KOREA	LNG	1	0	0	0	-	138000	04	162
OSPREY MARITIME	SINGAPORE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	LNG	1	0	0	0	-	138000	03	164
SHINWA KALIN KASHA	JAPAN	KAWASAKI H.I.	JAPAN	LNG	1	0	5000	0	-	0	02	0
BP SHIPPING	UK	SAMSUNG	KOREA	LNG	1	0	75000	0	-	0	03	160
MOL/NYK/LINE/SCI	JAPAN	DAEWOO	KOREA	LNG	2	0	75000	0	-	0	03	370
FUKUMAM KALIN	-	MURAKAMI HIDE	JAPAN	LPG	1	0	6300	0	-	0	01	0
BERGSEN	NORWAY	KAWASAKI H.I.	JAPAN	LPG	1	0	48000	0	-	59200	2003	57
SOLWANG	NORWAY	KAWASAKI H.I.	JAPAN	LPG	1	0	48000	0	-	59200	2003	57
MITSUBI O.S.K. LINES (MOL)	JAPAN	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	LPG	1	0	27000	0	-	35000	2003	41.5
SHINWA KALIN KASHA	JAPAN	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	LPG	1	0	0	0	-	82000	2003	61
ERICA NAVIGATION	PANAMA	KAWASAKI H.I.	JAPAN	LPG	1	0	0	0	-	59200	2003	57
BERGSEN	NORWAY	MITSUBISHI H.I.	JAPAN	LPG	1	0	0	0	-	59200	2003	57
NIIPPON YUSEN KAISA (NYK)	JAPAN	MITSUBISHI H.I.	JAPAN	LPG	1	0	59000	0	-	78000	03	65
OTHELLO SHIPPING	DENMARK	MULTIFELDWERFT	GERMANY	LPG	1	0	0	0	-	3754	02	18
SOLSTAD SHIPPING	NORWAY	ULSTEIN VERFT	NORWAY	MULTI-FUNCTION SERVICE	1	0	0	0	-	0	02	40.1
SEALON SHIPPING	UK	VAN DER GIESSEN	NETHERLANDS	MULTI-FUNCTION SERVICE	1	0	0	0	-	0	2002	0
RICKMERS BERTRAM	GERMANY	JINJING	CHINA	MULTI-PURPOSE	3	0	34500	0	-	0	03/04	0
EUROPEAN INTERESTS	UNKNOWN	VOUHARDING	NETHERLANDS	MULTI-PURPOSE	2	0	990	0	-	0	02	0
INDONESIA INTERESTS	INDONESIA	VOUHARDING	NETHERLANDS	MULTI-PURPOSE	4	540	0	0	-	0	02	0
UNKNOWN	-	VOUHARDING	NETHERLANDS	MULTI-PURPOSE	2	540	0	0	-	0	02	0
NORTH WESTERN SHIPPING	-	SEVENWATA	RUSSIA	MULTI-PURPOSE	1	267	0	0	-	0	2002	6
FUNTER GROENINGEN	NETHERLANDS	FERUS SHIT	NETHERLANDS	MULTI-PURPOSE	1	0	9000	0	-	0	02	0
TOM WOKREN	GERMANY	JIANGDONG CHANGJIANG	CHINA	MULTI-PURPOSE	1	350	0	0	-	0	02	0
BLUE HIGHWAY LINE	JAPAN	IMAGE MARINE	AUSTRALIA	PASS/FERRY	1	0	0	300	-	0	2001	0
DOLPHIN SEA LINES	-	FJELLSTRAND AS	NORWAY	PASS/FERRY	1	0	0	0	-	0	02	4.4
NEW WORLD SHIPPING	NETHERLANDS	MARITENNIK SING	SINGAPORE	PASS/FERRY	2	0	0	422	-	0	01	0
ISLAND FERRIES TEORANTA	-	WAVEMASTER	AUSTRALIA	PASSENGER	1	0	0	318	-	0	01	0
SNCM	FRANCE	VAN DER GIESSEN	NETHERLANDS	PASSENGER / RO-RO	1	0	0	0	550 PAX 300 CAR	0	02	0
NORDEN FRISA	GERMANY	CASSENS	GERMANY	PASSENGER / VEHICLE/FERRY	1	0	0	1100	-	0	02	0
FYKESBAATHANE I SOGN OG FJORDANE	NORWAY	FIKERSTRAND VERFT	NORWAY	PASSENGER / VEHICLE/FERRY	1	0	0	1000	-	0	2002	0
PEMEX	MEXICO	DRAGADOS OFFSHORE	SPAIN	PLATFORM	1	0	0	0	-	0	02	365
TOGA	UK	VAN DER GIESSEN	NETHERLANDS	PLATFORM SUPPLY VESSEL	1	0	0	0	-	0	-	0
OTTO CANDES LLC	US	AUSTAL SHIPS	AUSTRALIA	PLATFORM SUPPLY VESSEL	2	0	37000	0	-	0	2002	0
GREAT EASTERN SHIPPING CO. GESCO	INDIA	AKER BRATTVAAG	NORWAY	PLATFORM SUPPLY VESSEL	2	0	0	0	-	0	2003	0
BORDELON MARINE	-	BOLLINGER	US	PLATFORM SUPPLY VESSEL	3	0	0	443	-	0	2002	0
SURF	FRANCE	KEPPEL HITACHI	SINGAPORE	PLATFORM SUPPLY VESSEL	1	0	0	0	-	0	2002	0
UNKNOWN	ITALY	JIANGDONG SHIPYARD	CHINA	PRODUCTS TANKER	2	0	46000	0	-	0	03	50
MITSUBI O.S.K. LINES (MOL)	JAPAN	MINAMI NIIPPON	JAPAN	PRODUCTS TANKER	2	0	45000	0	-	0	02	0
NOVELLA OTAWA	ITALY	3 MAJ	CROATIA	PRODUCTS TANKER	1	0	35000	0	-	0	02	0
MONTANARI GROUP	ITALY	HYUNDAI MPO	KOREA	PRODUCTS TANKER	2	0	35000	0	-	0	02/03	50
THEANABIS MARITIME INC.	GREECE	HYUNDAI MPO	KOREA	PRODUCTS TANKER	2	0	35000	0	-	0	03	0
NAKATA GUMI	JAPAN	ONOMICHI	JAPAN	PRODUCTS TANKER	1	0	99000	0	-	0	2002	40
ATHENIAN SEA CARRIERS	GREECE	LULANIK	CROATIA	PRODUCTS TANKER	6	0	47000	0	-	0	2003	180
CDO SHIPPING	JAPAN	SHIN KURUSHIMA	JAPAN	PRODUCTS TANKER	1	0	45800	0	-	0	2003	29.5
MITSUBI O.S.K. LINES (MOL)	JAPAN	SHIN KURUSHIMA	JAPAN	PRODUCTS TANKER	1	0	45000	0	-	0	2002	0
TOMASOS BROS	GREECE	HYUNDAI MPO	KOREA	PRODUCTS TANKER	2	0	37000	0	-	0	2003	52
GEZEN LINE	TURKEY	HYUNDAI MPO	KOREA	PRODUCTS TANKER	2	0	35000	0	-	0	2002	50
BYZANTINE	GREECE	3 MAJ	CROATIA	PRODUCTS TANKER	1	0	47000	0	-	0	03	28
ADAMANTOS	GREECE	HYUNDAI MPO	KOREA	PRODUCTS TANKER	1	0	45000	0	-	0	903	29
ANDROMEDA SHIPPING	GERMANY	HYUNDAI MPO	KOREA	PRODUCTS TANKER	1	0	37000	0	-	0	03	0
STENSEN	NORWAY	JAONGNAN	CHINA	PRODUCTS TANKER	1	0	14000	0	-	0	03	23
MIRWA	SWEDEN	KITANPON	JAPAN	PRODUCTS TANKER	1	0	22000	0	-	0	01	0
QATAR SHIPPING CO	QATAR	SHIN A SHIPBUILDING	KOREA	PRODUCTS TANKER	1	0	37000	0	-	0	603	25



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TORM A/S	DENMARK	DAEDONG SHIPBUILDING	KOREA	PRODUCTS TANKER	2	0	45800	0	-	0	03	56
A. P. MOLLER	DENMARK	DALIAN SHIPYARD	CHINA	PRODUCTS TANKER	2	0	35000	0	-	0	03	50
ELESTON	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	PRODUCTS TANKER	2	0	105000	0	-	0	04	0
MORFINI	ITALY	HYUNDAI MPO	KOREA	PRODUCTS TANKER	2	0	35000	0	-	0	03	50
EKA SHIPPING (EUROPEAN NAVIGATION)	GREECE	SPUT	CROATIA	PRODUCTS TANKER	2	0	99000	0	-	0	03	0
ATHENIAN SEA CARRIERS	GREECE	DAEDONG SHIPBUILDING	KOREA	PRODUCTS TANKER	4	0	46000	0	-	0	03	114
PASHA HAWAII TRANSPORT LINES	US	HALTER MARINE INC	US	PURE CAR CARRIER	1	0	0	0	-	0	2003	69
MITSU O.S.K. LINES (MOU)	JAPAN	MINAMI NIPPON	JAPAN	PURE CAR CARRIER	3	0	15000	0	6,000 CAR	0	03/04	0
NAMIBIA GOVT	NAMIBIA	MOEN SUP AS	NORWAY	RESEARCH	1	0	250	0	-	0	02	11
US GOVERNMENT	US	HALTER MOSS POINT	US	RESEARCH	1	0	0	0	-	0	2004	38.3
HARREN & PARTNERS SCHIFFS	GERMANY	DETLEF HEGEMAN	GERMANY	R/R	1	0	7172	0	-	0	03	0
NIPPON YUSEN KASA (NYK)	JAPAN	SHIN KURUSHIMA	JAPAN	R/R	2	912	0	0	-	0	02	0
MEMON TAYO FERRY CO	JAPAN	MTSUBISHI	JAPAN	R/R	1	0	4500	10000	85Pax X 180 TRUCK X 100 CARS	0	2,002/2,003	72
POLAR HOLDING	NORWAY	HAYWARD LERVIK	NORWAY	SEAWIC	1	0	0	4800	-	0	03	0
OSTENIO REDERI	NORWAY	FLEKKEFJORD S/P & MASK	NORWAY	SUPPORT VESSEL	1	0	0	0	-	0	02	36.6
TOKYO TANKER	JAPAN	ISHIKAWAJIMA HARBMA H.I. (IH)	JAPAN	TANKER	1	0	300000	0	-	0	04	0
GALAXY	TAIWAN	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	0	152000	0	-	0	0	0
GALAXY	TAIWAN	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	0	112000	0	-	0	0	0
UNKNOW	ELBORA	TSUNESH	JAPAN	TANKER	4	0	106000	0	-	0	03	0
NORDEN AS	DENMARK	SUNTOCHO	JAPAN	TANKER	1	0	105300	0	-	0	02	0
PRIMORSK SHIPPING CORPORATION	RUSSIA	BRODOSPLIT	CROATIA	TANKER	1	0	105000	0	-	0	03	44
FRONTLINE	NORWAY	HYTACH ZOESEN	JAPAN	TANKER	3	0	300000	0	-	0	2002	222
MITSU O.S.K. LINES / K LINE	JAPAN	NIKK CORP	JAPAN	TANKER	2	0	300000	0	-	0	2,003/2,004	160
UNKNOW	GREECE	DAEWOO	KOREA	TANKER	1	0	159000	0	-	0	2003	52
TSAKOS GROUP	GREECE	BRODOSPLIT	CROATIA	TANKER	1	0	107000	0	-	0	2003	40.5
TSAKOS GROUP	GREECE	IMABARI SHIPBUILDING	JAPAN	TANKER	1	0	107000	0	-	0	2003	40.5
VALLES STEAMSHIP CO	CANADA	IMABARI SHIPBUILDING	JAPAN	TANKER	1	0	106000	0	-	0	2003	0
ASTRO TANKERS	GREECE	DAEWOO	KOREA	TANKER	2	0	105000	0	-	0	2,002/2,003	80
CHEVRON	US	NAMURA ZOSENCHO	JAPAN	TANKER	1	0	105000	0	-	0	2003	0
SEAWORLD MANAGEMENT AND TRADING	GREECE	TSUNESH	JAPAN	TANKER	4	0	0	0	-	0	2,002/2,003	164
POLAR TANKERS	US	AVONDALE SHIPYARD	US	TANKER	1	0	125000	0	-	0	04	205.5
CENTROFIN MANAGEMENT	GREECE	DAEWOO	KOREA	TANKER	1	0	156000	0	-	0	02	52
VELA INTERNATIONAL MARINE LTD	SAUDI ARABIA	DAEWOO	KOREA	TANKER	1	0	106000	0	-	0	03	47.5
K LINE	JAPAN	IMABARI SHIPBUILDING	JAPAN	TANKER	1	0	300000	0	-	0	04	0
K LINE	JAPAN	IMABARI SHIPBUILDING	JAPAN	TANKER	1	0	107000	0	-	0	1002	0
K LINE	JAPAN	KAWASAKI H.I.	JAPAN	TANKER	1	0	300000	0	-	0	04	0
MIF	NORWAY	NAMURA ZOSENCHO	JAPAN	TANKER	1	0	105000	0	-	0	03	0
EUROCEANICA	ITALY	SAMSUNG	KOREA	TANKER	1	0	160000	0	-	0	03	0
PRIMORSK SHIPPING CORPORATION	RUSSIA	3 MAJ	CROATIA	TANKER	2	0	105000	0	-	0	03	87.8
FRAN SHIPPING	BERMUDA	BOHAI SHIPYARD	CHINA	TANKER	2	0	72000	0	-	0	04	68
ANGELOUSSIS	GREECE	DAEWOO	KOREA	TANKER	2	0	105000	0	-	0	02/03	0
SONAR	CHIE	DAEWOO	KOREA	TANKER	2	0	70000	0	-	0	03	67
WAH KWONG SHIPPING	HONG KONG	HYTACH ZOESEN	JAPAN	TANKER	2	0	72000	0	-	0	02	68
FLDPEC	EQUADOR	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	0	65000	0	-	0	03	68
GALAXY	TAIWAN	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	0	152000	0	-	0	03	86
CSS SHIP MANAGEMENT	US	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2	0	152000	0	-	0	03	86
OVERSEAS SHIPHOLDING GROUP	US	SAHIO NEW SHIPYARD	KOREA	TANKER	2	0	112000	0	-	0	1003	0
DYACOMA	GREECE	SAESCO	JAPAN	TANKER	2	0	150000	0	-	0	02	0
SORONATA	PORTUGAL	SUNTOCHO	JAPAN	TANKER	2	0	105000	0	-	0	02	78
COGCO	CHINA	BOHAI SHIPYARD	CHINA	TANKER	3	0	159000	0	-	0	03	144
ALLIED TRANSPORTATION	US	ALABAMA SHIPYARD	US	TUG	1	0	0	0	-	0	02	0
HARREN & PARTNERS SCHIFFS	GERMANY	DETLEF HEGEMAN	GERMANY	VEHICLE CARRIER	2	0	3300	0	-	0	03	0

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## People & Company News

### Superior Diesel and ALGAE-X Sign Distributor Agreement

ALGAE-X International has formed a distribution agreement with Superior Diesel, one of the largest fuel injection service companies in the Mid-Atlantic States servicing commercial and mili-

tary marine fleets as well as major shipyards and railroads. Superior is a service dealer for Cummins, Detroit Diesel, Perkins, ONAN, Volvo, Northern Lights and Luger engines and generator sets. Superior's plans to integrate ALGAE-X Fuel Conditioners into the fuel systems for new engine packages, and to retro fit

ALGAE-X units into existing engine installations for Marine, Power Generation, Transportation, Railroad, Construction, Agriculture, and other applications.

ALGAE-X Technology improves and maintains the quality of diesel fuel, hydraulic oil and other distillate fuels,

preventing tank sludge and clogged filters. ALGAE-X improves combustion of the fuel resulting in lower overall costs of maintenance and operation of diesel engines, while increasing reliability and safety.

### Francis Still Shines Bright After 100 Years

Francis Searchlights Ltd., based at Bolton, U.K., is still going strong subsequent to reaching its centennial this month.

Established in 1901, the company planted its roots as an electrical contractor, however, throughout its 100 years of history, Francis has continued to expand through innovative design of new products and services.

The company is very proud of its world-wide reputation for high quality lighting products with exceptional life in service and their ability to serve and support its many distributors and customers.

The present range encompasses an exceptional Marine lighting portfolio of Searchlights and Floodlights, vehicle lighting for the Defence industry, MOD Navy lighting and further extending though to Architectural and Security lighting products.

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### Costa To Operate Exclusive German Cruise Program Beginning Spring 2002

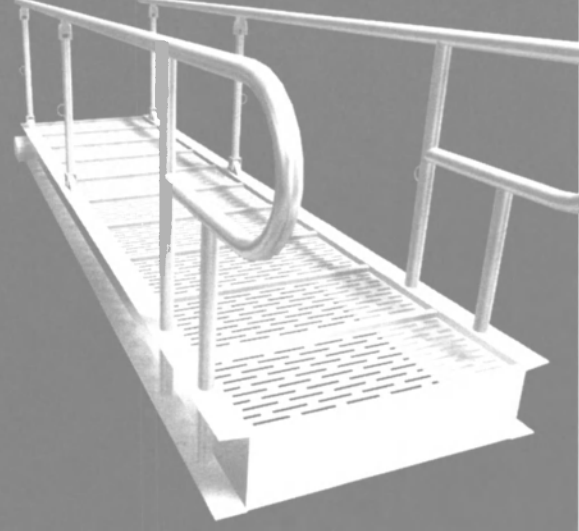
Costa Cruises, a unit of Carnival Corporation will launch a new cruise product aimed exclusively at the German market beginning in spring 2002.

The new product, which will consist of year-round European and Caribbean sailings aboard the 760-passenger Costa Marina, will be specifically tailored to German passengers.

Marketed exclusively for German speaking clientele by Costa's German subsidiary, Frankfurt-based Costa Kreuzfahrten, Costa Marina's new schedule will consist of voyages of seven to 16 days to the Mediterranean, Canary Islands and Black Sea from Venice or Savona in the spring and fall, and from Hamburg and Kiel to the Baltics, Russia, Scandinavia and British Isles in the summer. In the winter, the 24,441-ton vessel will reposition to the Caribbean to offer week-long voyages from the Dominican Republic.

Costa CEO Pier Luigi Foschi cited that the creation of this new cruise product follows several years of highly successful voyages targeted solely at the rapidly expanding German cruise market, which grew by approximately 25 percent last year.

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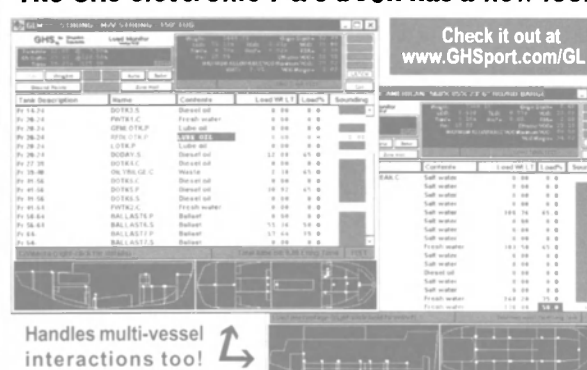
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Maritime Reporter & Engineering News

**River School Holds USCG  
Approved Course**

The River School will offer a Coast Guard approved licensing course for towboat operators in the Huntington, W. Va. area beginning June 11.

The 10-day course, which will be held at the Ashland Plaza Hotel, Ashland, Ky., includes instruction in all knowledge areas required for new towing licenses, and is conducted in a format that allows students to take their licensing exams as part of the academic program. Tuition is \$1,500 and covers all applicable Coast Guard fees.

While mariners do not need Coast Guard pre-approval to attend this course, The River School, however strongly recommends that applicants be familiar with all licensing requirements prior to attending classes.

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## People & Company News

### Waterway Communications System Announces New Personnel And Promotions

Waterway Communications System (WATERCOM) a division of Mobex Communications Inc. announces the following promotions and additions to its



staff: **Brian L. Howell** has joined the company as division controller. Howell, who joins WATERCOM from Anson

Industries, where he served as Corporate Controller/CFO, received his BS in Accounting from Western Kentucky University.

**Ronald M. Summers II**, also formerly of Anson, joins the company as general ledger accountant. He earned his BS in Accounting from Indiana University.

**Sharon K. Carpenter**

has transitioned from marketing services specialist to accounts payable specialist. Carpenter, who is FCC licensed, is



working toward her BS in Management at Indiana University Southeast.

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### Incat Takes Top Honors At Cruise & Ferry

Incat, a leading builder of high-speed ships, went on to win both categories for which it was nominated at this year's Cruise+Ferry Awards in London.

Recognizing initiatives in design work, safety, environment protection, technology, and shipboard services, organizers Lloyd's List Events shortlisted 41 finalists for the 11 awards. The nominees were chosen by a range of judges from the International Maritime Organization, The Royal Institution of Naval Architects and the Maritime Hotel Academy.

Incat was the recipient of the Most Significant Newbuild - Ferry award, which is given to the owner and builder of the vessel voted by the panel of judges to have made the most significant impact on the industry as a whole. This may be due to a combination of factors such as speed, capacity, range and size, design or other factors at the discretion of the judges.

The award crowned Incat's 315-ft. (96-m) Evolution 10 as the most important new fast ferry for the most significant impact on the industry as a whole.

Incat, in conjunction with Maritime Dynamics Inc., then went on to win the award for technical development for the Retractable T-foil, described by one of the judges as "an impressive piece of kit."

Incat also picked up the award for Best Technical Development, which recognizes the supplier/manufacture whose service or product is judged by the Panel to have made the most significant technical contribution to a cruise vessel, ferry or fast ferry.

### MacGregor Appoints New RoRo Ship GM

MacGregor has elected **Lars Brath** as general manager of its RoRo Ship Division and managing director of MacGregor AB, effective May 14.

Brath, who is presently head of the contract management department in the RoRo Ship Division, succeeds **Claes Rudling**, who has been appointed executive vice president of the MacGregor Group AB.

## People & Company News

### MarAd Approves Title XI Financing For Two Projects

The Maritime Administration (MarAd) has issued a Letter Commitment to Great Pacific NW Cruise Line for \$35.4 million for a 24-year term at 87.5 percent of the actual depreciated cost of construction of the 161-passenger vessel, Columbia Queen. The vessel, which entered service in May 2000, currently operates eight-night cruises on the Columbia River as part of Delta Queen Steamboat's fleet.

MarAd also issued a Letter Commitment to Rowan Companies for \$187.2 million or 87 percent of the actual cost, with a 25-year term to aid in financing the construction of the self-elevating mobile offshore drilling unit Gorilla VIII. The proposed delivery date of the vessel is September 2003. The vessel, which will be constructed by LeTourneau, Vicksburg, MS, will be used for drilling and production of oil and gas well in water depths in excess of 400 ft. in the Gulf of Mexico, offshore eastern Canada and the North Sea.

### Portland Remains New England's Largest Tonnage Port

Nearly 40,000 cruise passengers and a dozen major cruise lines will visit Portland this summer, setting new records for the Port and pumping millions of dollars into the local economy.

Conservative estimates place the economic value of the international and domestic cruise passenger business to Portland in the \$40 million range. Not only do passengers spend when on land; the cruise lines themselves purchase everything from galley provisions to laundry services to water while in port. International passengers on the m/s Scotia Prince exceeded 170,000 passengers and 30,000 vehicles.

International trade operations at Maine's busiest container port continue at the International Marine Terminal, thanks to the Scotia Prince's continued relocations to the anchorage during the loading and unloading operations of the Shamrock.

The port anticipates the future growth of the container facility; the segregation of the two industries will nurture market growth.

The 2000 figures just released recently show an increase in petroleum to 189,371,199 port barrels or nearly 28.5 million short tons and bulk cargo up to 758,000 tons over the last year. Overall, the Port handled nearly 30 million tons of cargo, almost three times that of Boston. In 2000 Portland remained New England's largest tonnage seaport.

### McGinnis Appointed V.P. Of Marketing, Delta Queen

American Classic Voyages Co. (AMCV) has appointed **Scott G. McGinnis** vice president of marketing for its Delta Queen product group, which includes Delta Queen Steamboat

Co. and Delta Queen Coastal Voyages.

McGinnis is responsible for all marketing activity on behalf of Delta Queen Steamboat Co.'s four riverboats, and Delta Queen Coastal Voyages' two ships, inaugurating 12 coastal vacation itineraries throughout the Americas this year.

McGinnis joins AMCV after six years with the travel agency consortium Virtuoso, where he most recently served as the managing director for member relations. Previously, he was with Holland America Line-Westours as the vice president of sales and marketing for Windstar Cruises.


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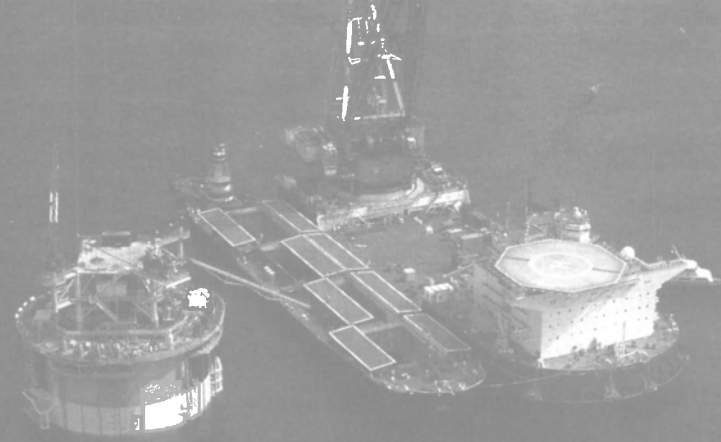
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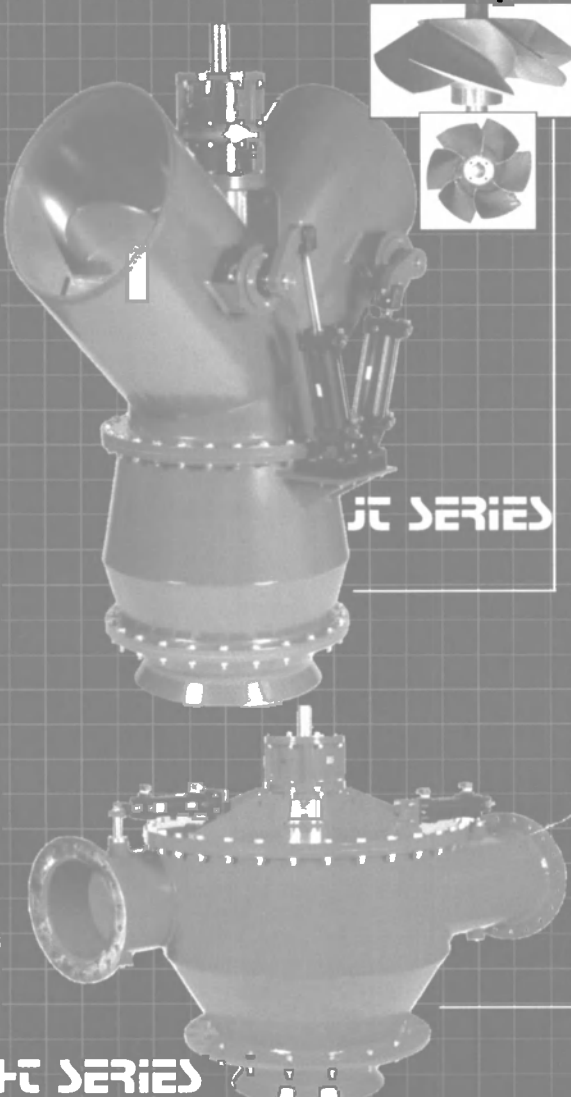
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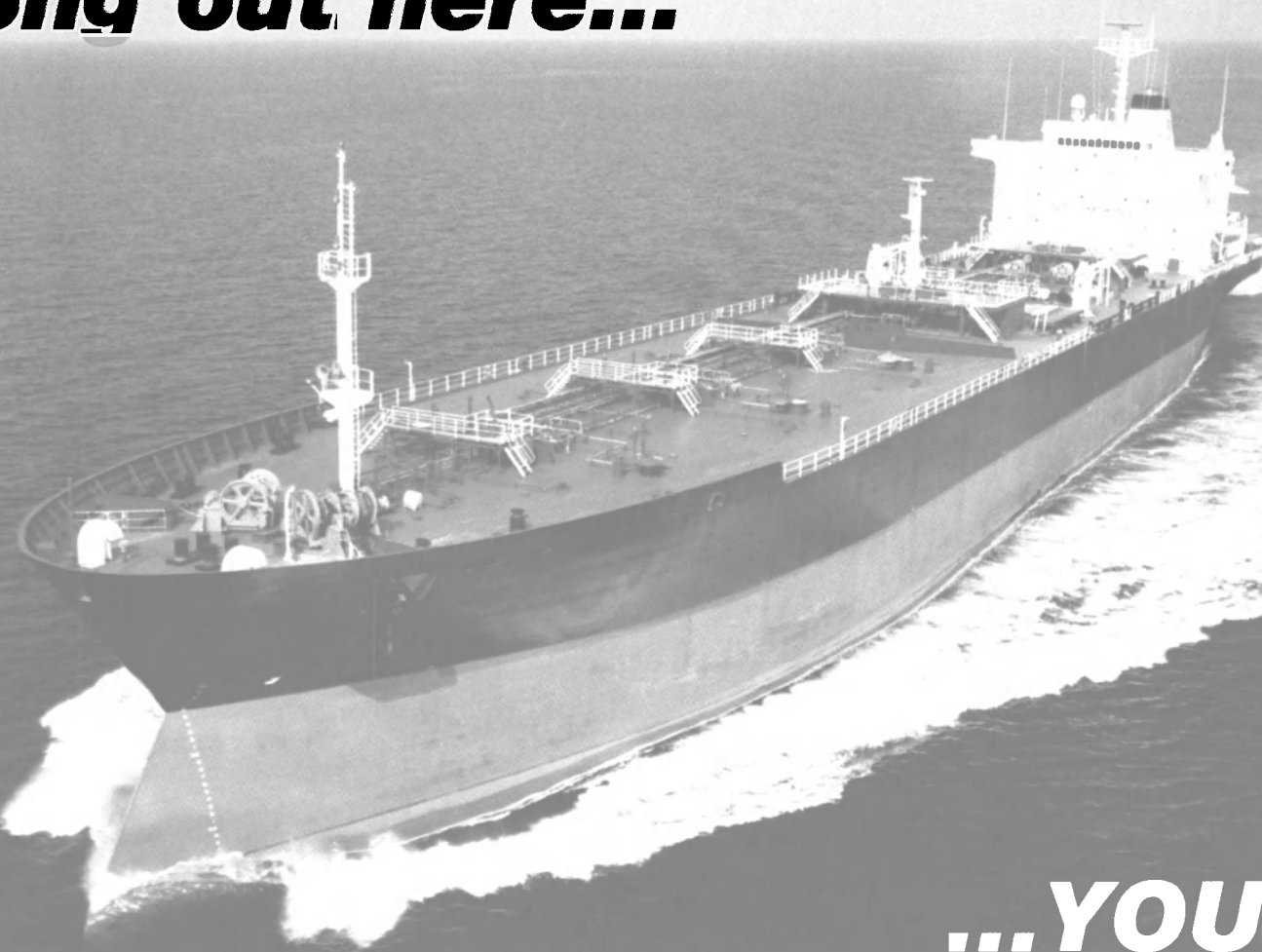


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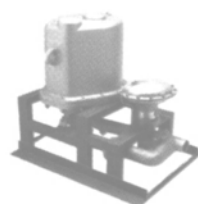
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People

# An Artistic Interpretation

*In the distance, storm clouds drop their torrent upon the sea as the ship breaks through heavy seas. The number on her bow — 85 — disappears and reappears with each crest of the waves. Suddenly above the Arleigh Burke-class guided missile destroyer, as if it had traveled through a time portal, screams a Grumman F6F-5 Hellcat — a World War II fighter. Painted on her fuselage are the words "Minsi III" and 34 Japanese flags. An episode from "The Twilight Zone" perhaps? No, simply the latest pencil drawing by naval architect and artist Peter K. Hsu. — by LCDR Irene Smith, USNR Program Executive Office, Theater Surface Combatants public affairs*

A marine engineer and self-taught artist, Hsu recently presented a copy of his architectural portrait of Pre Commissioning Unit (PCU) McCampbell (DDG 85) to Secretary of the Navy **Richard Danzig**. The secretary was one of two principle speakers at McCampbell's christening at the Bath Iron Works, Bath, Maine, July 2, 2000.

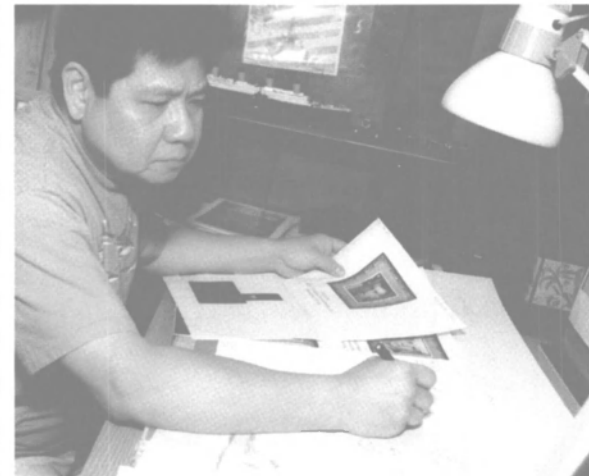
The newest Arleigh Burke-class guided-missile destroyer is named in honor of CAPT David McCampbell — the Navy's highest-ranking ace with 34 confirmed aerial victories and recipient of the Medal of

Honor. McCampbell was awarded the medal after shooting down nine Japanese aircraft while serving as Commander, Air Group 15, USS Essex (CV 9) during the Battle of the Philippine Sea (June 19, 1944) and the Battle of Leyte Gulf (October 24, 1944).

Already a fan of Hsu's art, Secretary Danzig was delighted with the newest drawing. "This is a wonderful tribute to Captain McCampbell and the ship that honors his name." The secretary autographed and inscribed one of Hsu's earlier works — a drawing of PCU Chung Hoon (DDG 93) — and returned it to Hsu. The inscription reads, "with admiration for both your artistic and engineering talent." Another of Hsu's drawings — the christening drawing of the USS Winston S. Churchill (DDG 81) — hangs in the secretary's office.

Combining the discipline of naval engineering with a talent for drawing, Hsu began painting pictures of Aegis ships for the Naval Sea Systems Command (NAVSEA) in 1987. His drawings have become a prominent feature at the christening and commissioning ceremonies for most Aegis cruisers and destroyers.

Captain Fred Parker, NAVSEA's director of destroyer shipbuilding, said, "It's amazing how talented **Peter Hsu** is because he is a world-class naval architect. He and his drawings have become a big part of the Arleigh Burke commissioning program. He puts a lot of heart into his job — not just his drawings, but his engineer-




Artist and naval architect **Peter K. Hsu** works on a drawing in honor of the 17 Sailors killed in the October terrorist attack of USS Cole. (Dick Cole/USN)


ing work as well." Ship art is relatively new to America. In fact, it is relatively scarce according to **James Cheevers**, senior curator at the U.S. Naval Academy Museum. Ship art as an art form was born in the ports of Naples, Malta and Marseilles where wealthy merchants commissioned local artists to paint their merchant and whaling ships on canvas. "There isn't a wealth of naval art compared to merchant and whaling ships," said Cheevers.

The first ship portraits were those that sailors brought back as souvenirs from the China coast. In the 1700's, early American artists earned money by painting portraits and expanded their repertoire to painting pictures of naval battles. When new Navy ships are commissioned, there is no arrangement for ship portraits to be


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One of **Peter Hsu's** latest works in honor of Commander **Clyde Everett Lassen** USN (Ret). The newest guided-missile Aegis destroyer, Lassen (DDG 82) was christened on November 6, 1999, and commissioned into the Fleet in Tampa Bay, Fla., on April 21, 2001. See story on page 40 of this edition.

drawn or painted. Although a ship's sponsor may commission a ship's portrait, they more frequently procure silverware or other decorative items to outfit the ship. However, ship-commissioning portraits are becoming more common these days — especially of the new Arleigh Burke destroyers — primarily as a direct result of Hsu's labors.

"I have learned to appreciate the courage of our naval heroes as a result of my research," said Hsu. "Their sacrifice, devotion and bravery move me to be a better person. I also strive to find a way to express what they have done to give meaning and value to freedom and peace — things we too often take for granted — in my art." Hsu studies the biography of the namesake, his

photograph and then composes a drawing in naval tradition, facing at a right angle to the ship. In drawing a commissioning portrait, Hsu shifts the focus of the drawing to the ship and its crew. "This is achieved by capturing a special event either during its building phase or at sea trials, which captures the spirit and essence of the ship," Hsu explained.

A full-time marine engineer and a technical director for Anteon, Hsu provides engineering support to the Aegis destroyer program.

With more than 35 years of experience in designing naval combatants, Hsu brings the same technical expertise, creativity and imagination that he applies to the engineering drafting table to his sketch pad. Hsu uses models of ships and airplanes built in his spare time to create a scenario for a ship drawing. The first step might involve building a model plane such as the Hellicat in the McCampbell drawing. Using a DDG ship model Hsu will manipulate the two models of the DDG and the model airplane to find a realistic angle to fit the character of the drawing. He then takes a picture of the namesake and positions it in relation to the two models.

Using a number 5 lead pencil, a common tool in drawing architectural plans, Hsu's drawings are to scale and on an azimuth plot where each angle is carefully plotted from a central point. The outcome is that each of Hsu's strokes defines a direction and a geometric projection, a value more often found in blue prints and architectural drawings than naval art.

Remarkably, Hsu never received any formal art training and has only taken one art class on how to mix oil colors. "As a student I used to pay my rent by working


as a waiter on weekends and drawing portraits on a corner in Greenwich Village in New York City," Hsu said. "I drew in high school and found that I made more money working as a waiter, but I had to do both and it worked out. There are a lot of starving artists around that are much better artists than I am. And I am a practical person — that is the engineering side of me — which is why I don't quit my day job."

Hsu painted his first ship when he was four years old. A fourth-generation Chinese-American, Hsu was born in Canton, China after his father became stranded in China at the outbreak of World War II. Hsu was seeing his father off after the war on a troop transit ship bound for the United States when he drew a picture of his first ship. "I always liked to draw things, and I quickly sketched a picture of the troop transport ship that took my father across the Pacific to the United States. I was




Artist **Peter K. Hsu** presents Secretary of the Navy **Richard Danzig** with a print of his drawing of the PCU McCampbell (DDG 85). (PHC Dolores Parlato/USN)


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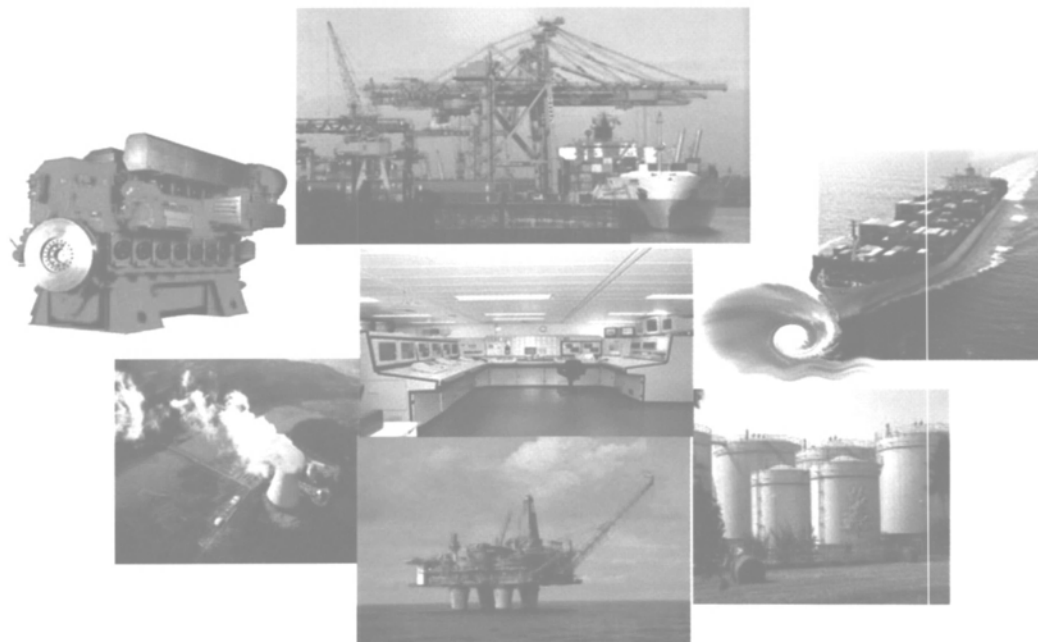
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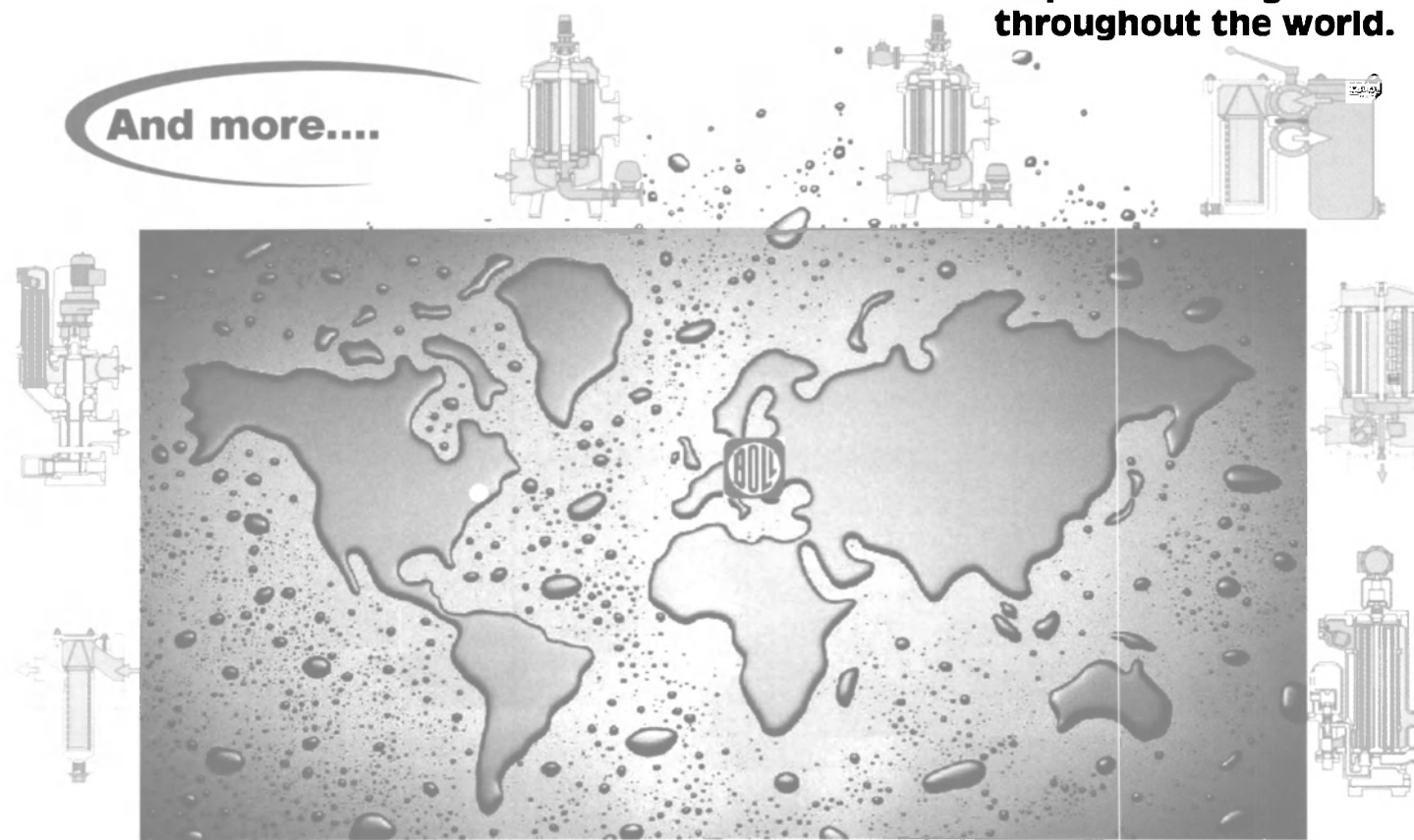


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## People

on the boat deck and saw a lifeboat, and was fascinated by it. I started drawing lifeboats along the ship and the captain walked by and saw what I was doing. He looked at the drawing and liked it, so I gave it to him. The captain of the troop transport ship thought my drawing was so good, he kept it."

"To me, drawing the Arleigh Burke destroyers is a great reward that you cannot put a price on. I am able to give something back to these men who often sacrificed their lives for their country and it is something that I enjoy doing," said Hsu. "It is good for the sailors and it is something that makes a difference for people. In the case of the Oscar Austin christening, the ship's namesake was a 19-year-old Marine who died in Vietnam. "I am glad I can do this and give something back to the family who sacrificed their son for the country."

After the launching of a new Arleigh Burke-class destroyer, Hsu's drawing is presented to the ship's sponsor. At the commissioning the second drawing is given to the ship's crew where it is proudly displayed in the wardroom or crew's mess.

Hsu's drawings frequently touch the emotions of the ship's namesake's family. At the christening of the Donald Cook, Hsu presented a color portrait of Capt. Donald Cook, USMC, to his widow, the ship's sponsor. Present at the same ceremony were two prisoners of war who shared the same confinement cell with the Marine. Cook's wife and the two POWs were emotionally shaken when they saw the painting. "That is exactly how I remember Donald," said one of Cook's fellow prisoners.

Among his varied interests, Hsu is one of the co-founding members of the Marine Forensic Panel of the Society of Naval Architects and Marine Engineers. A naval architect and forensic specialist who spends his professional time working on ship designs and their survivability, Hsu spends his off hours examining ship catastrophes including the sinking of the Titanic, the Lusitania and the Maine. Hsu co-authored a paper, "Titanic and Lusitania — A Final Forensic Analysis," which won the VADM E. L. Chochnane award for best technical paper in 1996. He has investigated the sinking of the USS Maine for the National Geographic Society and presented his findings to the 1997 Naval History Symposium in Annapolis, Md. In 1998, Hsu conducted research and forensic analysis into the photo imagery taken of a Japanese midget submarine attack on the USS West Virginia (BB 48) on December 7, 1941, and the underwater shock explosion phenomena, concussion wave propagation and cavitation effects seen in the attack photo-imagery. He co-authored an article, "Pearl Harbor — Attack From Below," which appeared

in the December 1999 issue of *Naval History*. Hsu and his co-authors assert that two U.S. battleships may well have been damaged during the Pearl Harbor attack by a two-man Japanese midget submarine. The Naval Institute recognized Hsu and his co-authors with its "Author of the Year Award" for the arti-

cle in April 2000.

Hsu is currently working on the commissioning and christening portraits of Churchill (DDG 81), Lassen (DDG 82) and Mason (DDG 87). Also, in remembrance of the 17 Sailors who perished during an October terrorist attack, Hsu is busy drawing the USS Cole (DDG 67).

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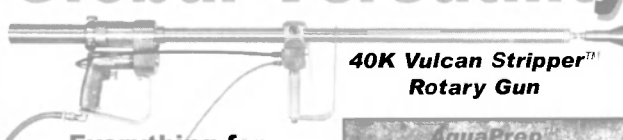
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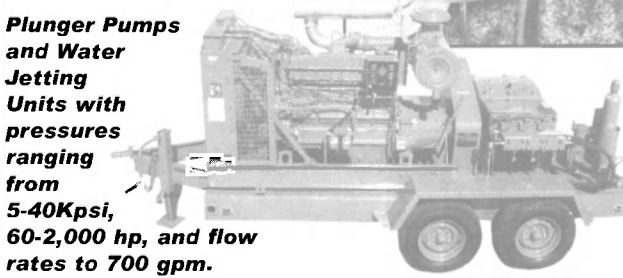
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Presented in chronological order (Source: SSY World Oil Tanker Trends, Volume 1, 2001)

TYPE	DWT (Comments)	DELIVERY	BUYER	YARD	PRICE \$	TYPE	DWT (Comments)	DELIVERY	BUYER	YARD	PRICE \$
CHEMICAL TANK	26,000	9/2001	MARNAV SPA	CANT. ORLANDO	\$46.2m	CHEMICAL TANK	22,500	2001	FURETANK REDERI AB	HYUNDAI MIPO DOCK	
	300,000	2002	BERGESEN	HITACHI	\$67.5m	CHEMICAL TANK	22,500	2002	FURETANK REDERI AB	HYUNDAI MIPO DOCK	
	<i>4 OPTION 2 EX GOLDEX OCEAN BERTHS</i>										
TANK	165,000	12/2000	TURKS	HYUNDAI		TANK	81000	2002	V SHIPS	3 MAJ	\$35
CHEMICAL TANK	18,500	1/2002	REDERIJ GUY SOMERS	QINGSHAN		TANK	113000	2002	LMZ TRANSOIL	BOHAI	\$33m each
TANK	98,000	7/01	LUNDQVIST	DAEWOO		CHEMICAL TANK	25,000	6/2002	MONTANARI	SHINA	\$20m
	<i>DECLARED OPTION</i>										
TANK	40,000	2002	NANJING SHIPPING	DALIAN		CHEMICAL TANK	25,000	3/2002	MONTANARI	SHINA	\$20m
TANK	105,000	7/02	SINCERE NAVIGATION	DAEWOO	\$34m	CHEMICAL TANK	14,000	6/2002	TARNTANK REDERI AB	SHANGHAI EDWARD	\$20.9m
TANK	23,400	2002	CARL BUTTNER	DAEWOO	\$24.5m		<i>ICE STRENGTHENED</i>				
	<i>2/1 VESSELS - PRODUCTS/CHEMICALS/ICE-CLASS - LOI</i>										
TANK	35,000		D'ALELIO	HYUNDAI MIPO	\$24m	TANK	105,000	2002	ARCADIA Shipgmt.	HYUNDAI	
	<i>WAITING FOR 2/2 VESSELS</i>										
CHEMICAL TANK	19,000	3/2001	IINO KAIUN	SHIN KURUSHIMA		TANK	301000	2002	NOL	HYUNDAI	
TANK	35,000		ANDROMEDA	HYUNDAI MIPO	\$23m		<i>2 OPTION 2 UNITS</i>				
	<i>1/1 vs Boston Beam</i>										
TANK	35,000		ARMINTER	HYUNDAI MIPO	\$23m	TANK	165,000	2002	CTGM	SAMSUNG	\$42.5m
	<i>2/2 vs Boston Beam</i>										
TANK	305,000	2001	BERGESEN	HITACHI	\$66.3m		<i>DECLARATION OF OPTION</i>				
TANK	300,000		CHANDRIS	DAEWOO	\$70m	TANK	165,000	2002	DYNACOM	HYUNDAI	\$47.5m
	<i>Switched 2 Pmax BC's to VLCC order</i>										
TANK	35,000		D'ALELIO	HYUNDAI MIPO	\$24m		<i>ONE OPTION ONE UNIT</i>				
	<i>2/2 vs shallow draft non Boston Beam</i>										
TANK	35,000		DUNYA TKY	HYUNDAI MIPO	\$23m	TANK	165,000	2002	EUROCEENCA	SAMSUNG	\$42.5m
	<i>2/2 vs Boston Beam</i>										
TANK	107,000	2002/3	CHARTWORLD	SAMHO	\$33.5m		<i>DECLARATION OF OPTION</i>				
	<i>2 option 2 vessels</i>										
TANK	107,000	2002	OAK STEAMSHIP	SAMHO	\$33.5m		<i>HIGH SPECIFICATION ICECLASSED POSS 2 UNITS</i>				
	<i>2 vessels</i>										
TANK	158,000	2002	THENAMARIS	SAMHO	\$43m		<i>2 UNITS</i>				
	<i>2 option 2 vessels</i>										
TANK	107,000	2002	UNKNOWN	SAMHO	\$33.5m		<i>35,000 2002+ A P MOLLER</i>				
	<i>2 vessels</i>										
TANK	300,000		ANGELICOUSSIS	DAEWOO			<i>NEW ORDER 4/4 UNITS</i>				
	<i>declared option</i>										
TANK	160,000	2002	CERES HELLENIC	HYUNDAI	\$56m		<i>35,000 2002 BOTTLIERI</i>				
	<i>1/1 vessels special design for 40years life</i>										
TANK	158,000		EURO OCEANIA	SAMSUNG			<i>2 OPTIONS DECLARED</i>				
	<i>declared option</i>										
TANK	165,000	2002	KRISTIAN GERHARDT JELSEN	SAMHO	\$34m		<i>35,000 2002 D'AMICO</i>				
	<i>2 vessels</i>										
TANK	107,000	2002	THENAMARIS	SAMHO	\$43.5m		<i>2 OPTIONS DECLARED</i>				
	<i>2 vessels</i>										
TANK	165,000	2002	TSAKOS	SAMHO	\$43.5m		<i>105,000 2002 ELETSON</i>				
	<i>2 vessels</i>										
TANK	110,000	2002	DSD Denmark	DALIAN	\$36.8m		<i>2 UNITS - COATED</i>				
	<i>High Specification</i>										
	<i>300,000 6/00 FRONTLINE</i>										
	<i>BOUGHT FROM GOLDEN OCEAN HULL NO 1638</i>										
	<i>165,000 END 2002 TSAKOS</i>										
	<i>DECLARED OPTION FOR 1 VSL</i>										
	<i>CHEMICAL 22,000 2/2001 JAPANESE OWNER KITANIHON</i>										
	<i>CHEMICAL 15,500 1/2002 FOUQUET-SACOP Maritime VIANA DO CASTELO</i>										
	<i>CHEMICAL 22,000 8/2001 JAPANESE OWNER KITANIHON</i>										
	<i>CHEMICAL 16,925 3/2001 TACHIBANAYA K K FUKUOKA</i>										
	<i>CHEMICAL 16,000 4/2001 HISAFUKU KISEN K K WATANABE</i>										
	<i>CHEMICAL 37,500 1/2003 ODFJELL, J.O. A/S KLEVEN FLORO</i>										
	<i>OPTION FURTHER VESSEL</i>										
	<i>160,000 2002 KRISTIAN GERHARDT JELSEN SAMHO</i>										
	<i>DECLARATION OF 2 OPTIONS</i>										
	<i>47,000 2002 LAURIN MARITIME TROGIR</i>										
	<i>2 OPTION 2</i>										
	<i>285,000 2002 LMZ TRANSOIL SAMSUNG</i>										
	<i>2 OPTION 2 (OPTIONS 2003)</i>										
	<i>105,000 2003+ S.C.1 HYUNDAI \$35.76m</i>										

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Neptune Orient Lines, the world's sixth largest container shipper, plans to spin off and list its oil-transportation unit, American Eagles Tankers (AET), on the New York Stock Exchange. The Singapore-based company said it plans to offer common shares to be listed on the NYSE and Singapore Depository Receipts (SDRs) on the Singapore Exchange to investors internationally as well as in the city-state. The offering is expected to be made in the second or third quarter and AET would use net proceeds of the offer to buy additional tankers for an expansion program. NOL said the listing would unlock value for shareholders and support the growth of the group's three core businesses - logistics, container transportation and oil transportation in tankers. The company plans to make a preferential offering, which is conditional on completion of the international offering, of SDRs to NOL shareholders outside of the United States on June 7, 2001.

TYPE	DWT (Comments)	DELIVERY	BUYER	YARD	PRICE \$
TANK	RE-ARRANGED ORDER 4 VSLS 100,000		ATHENIAN SEACARRIERS	HYUNDAI	
TANK	DECLARED 1 OPT (TOTAL 6) 105,000		DYNACOM	HYUNDAI	
TANK	DECLARED 1 OPT (TOTAL 2) 305,000		NOL	HYUNDAI	
TANK	DECLARED 2 OPTS 105,000		TSAKOS	SAMHO	
TANK	DECLARED 1 OPT (TOTAL 4) 115,000		VALLES	IMBARI	
CHEMICAL	2 OPTION 1 12,400	9/2002	UNKNOWN	NAVAL GIJON	
CHEMICAL	23,400	6/2002	BUTTNER, CARL, GMBH	3 MAJ	\$23.3m
CHEMICAL	23,400	2/2002	BUTTNER, CARL, GMBH	3 MAI	\$23.3m
TANK	ICE STRENGTHENED 300,000	2002	Bergesen	HITACHI	\$70m
TANK	Two vsls option declared 300,000	2002	CHANDRIS	DAEWOO	
TANK	Option one 2003 300,000	2002	EURONAV	DAEWOO	
TANK	Two vsls 45,000	2002	EUROPEAN NAVIGATION	SPLIT	\$28m
TANK	Declared Option 35,000	2002	ITALIAN	SHINA	\$24m
TANK	Diamato Group up to 7 ships 106,000	2002	TOKYO TANKERS	NKK	\$40m +
TANK	105,000		AUGUSTEA SHIPPING	NAMURA	\$38m
TANK	440,000	9/2002	HELLESPOINT/LOEWS	DAEWOO	\$85.90m
TANK	3rd in a series of 4-1 option outstanding 150,000		KYKLADES	NKK	\$47m
TANK	two units 160,000	2002	ARCADIA SHIP Mgmt.	HYUNDAI	\$47.6m
CHEMICAL	2 UNITS 37,000	DH	CHEMTRANS	NAVAL GIJON	
CHEMICAL	FULLY STAINLESS STEEL 37,000	DH	CHEMTRANS	NAVAL GIJON	
CHEMICAL	FULLY STAINLESS STEEL 19,500	5/2001	TOKO UNYU K K	FUKUOKA	
CHEMICAL	12,300	8/2001	DAITOH TRADING CO	FUKUOKA	
TANK	OPTION FURTHER VESSEL 30,000	2/2002	KNUTSEN GROUP	NAVAL GIJON	\$27.28m
TANK	47,000	9-11/2000	OMI	ONOMICHI	\$30m
TANK	PCL said to have re-sold 2 berths 105,000	1-7/2001	UNKNOWN	DAEWOO	\$39.5m
TANK	Oak Steamship are rumored to have re-sold 2 orders 45,000		CHINESE	BOHAI	\$28m
TANK	2 ship deal concluded locally in China 300,000	end 2002	VELA	DAEWOO	\$80m

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June, 2001

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89

## Contracts

### Rolls-Royce to Supply Podded Propulsion For QM2

Rolls-Royce has won two new contracts to supply podded propulsion systems and deck machinery for Queen Mary 2, the new luxury cruise liner to be built for Cunard Line at Alstom

Chantiers de l'Atlantique in France. It has also won contracts to supply podded propulsors to three other cruise ships. The total value of these contracts is approximately \$21.2 million.

Dr. Saul Lanyado, president - Marine for Rolls-Royce, said: "These contracts bring the total value of equipment orders

we have won in Commercial Marine so far this year to more than \$241.1 million. They are also another illustration of the wide range of products we are able to offer to the cruise and ferry industry. We have now won three contracts to supply equipment for Queen Mary 2 and we are very pleased to be playing a

major part in this prestigious project."

Rolls-Royce will supply four Mermaid podded propulsion systems for Queen Mary 2, the largest ocean liner ever built. This will be the first four-pod installation to date and will consist of two fixed and two azimuthing pod units delivering a combined output of more than 85MW. They will provide a speed of nearly 30 knots with low noise and vibration levels and maximum maneuverability. The Mermaid units will be delivered in December 2002.

Rolls-Royce has also won a contract to supply the deck machinery for Queen Mary 2. It will supply eight double drum Rauma Brattvaag mooring winches and two separate windlasses. The winches and windlasses will be electrically driven using frequency converter drive and they will have an auto-tensioning function. The pull of the mooring winches will be 25 tons per drum and the diameter of the anchor chain will be 114 mm. All the equipment will be delivered by September 2002.

These contracts follow the announcement in March that Rolls-Royce will supply Brown Brothers stabilizers for the same vessel.

In addition, Rolls-Royce has won contracts for a further six Mermaid podded propulsion systems to be supplied for three other ships being built by Alstom Chantiers de l'Atlantique in France.

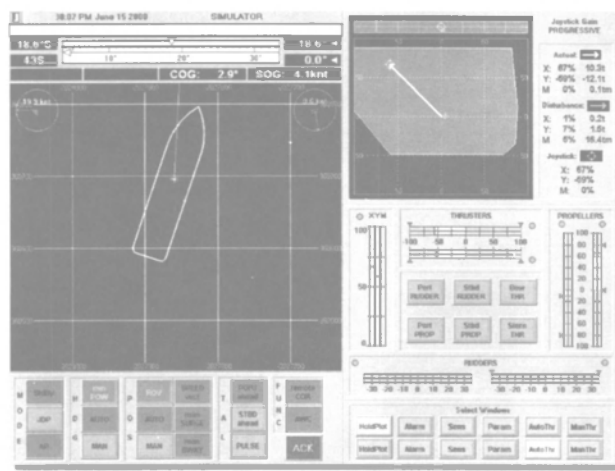
MSC Cruise, Italy's largest privately owned cruise line, is to increase its fleet with two new ships. Each of the 60,000-ton vessels will be equipped with two rotating Mermaid pod propulsion systems rated at 10 MW per unit. The two Mermaid units for the first ship will be delivered in May 2002 and those for the second vessel in mid-2003.

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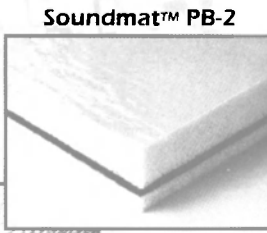
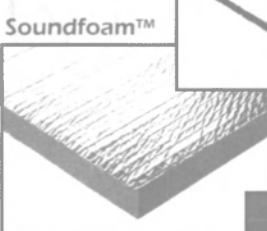
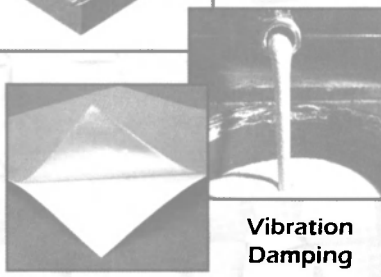
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### Image Marine Wins "Floating Hotel" Contract

Image Marine has been granted a contract to build a 128 ft. (39-m) live-aboard vessel for operation in the Maldives. Due for delivery in mid-2002, the new aluminum catamaran has been designed as a mini "floating hotel" for operation by the Four Seasons Hotel in the Maldives.

The vessel has been designed to accommodate up to 20 passengers, and resembles that of True North, which was built by Image Marine for North Star Charters for operation out of the Kimberleys. With a beam of 39 ft. (12 m) and hull draft of 6 ft. (1.9 m), the vessel's propulsion package comprises 2 MTU 12V 2000 M70 diesel engines, ZF gearboxes and fixed pitch propellers to deliver a cruising speed of approximately 14 knots.

Circle 38 on Reader Service Card

(Continued from page 62)

flap might prove beneficial. This program represented the initial model-scale evaluation of a wedge and flap combination, as shown on page 62. The combination of the two concepts, named the integrated wedge-flap, initiates forward of the transom under the hull (wedge portion) and extends aft of the transom (flap portion). It was shown, through model testing, that a stern flap, installed in addition to a hull's existing wedge, could further reduce the powering requirements. U.S. patent No. 6,038,995 was issued to Cusanelli and Karafiath for this design concept.

The stern flap portion (alone) of the integrated wedge-flap, was retrofitted to the Ramage (DDG 61), in 2000. This ship is an Arleigh Burke (DDG 51) Class, Flight I, destroyer, which was built with an inlaid stern wedge. A photograph of the Ramage installation was not available, however, the equivalent design on a sister ship, the Curtis Wilbur (DDG 54), as shown on page 62.

The stern flap trials on Ramage were recently completed in December 2000. The results indicate that the flap, for all speeds tested, substantially reduced delivered power by 5-15 percent, while top speed was increased by 0.9 knots. Projected net annual fuel savings will be over 4,700 barrels (7.5 percent reduction), with a total fuel cost savings of \$195,000 per ship. Fabrication and installation cost was \$160,000, indicating that the period for return of investment cost will be less than one year.

**Foil Assisted Towing System**

An improvement in delivering cargo could revolutionize littoral warfare and generate cost savings for the Navy. The new concept borrows ideas from trucks and hydrofoils.

Foil Assisted Towing System (FATS) permits the close coupled towing of craft or other payloads using partial hydrofoil support. Conceptionally, the towing method is analogous to a highway tractor-trailer rig, which is supported on the front by the transom of the towing craft. A hydrofoil supports the aft end of the trailer. This concept has the advantages of hydrofoils while avoiding their faults-motion control, stability, propulsion, spray, complexity, etc. The program's goal: building a scale model FATS and successfully demonstrating it in a real, operational environment. Combatant Craft Department (CCD) personnel who worked on the project were: **John Almeter, Jason Marshall and Dennis Bushey** (all of Code 23). Additionally, they have applied for a patent.

A FATS could be used for towing small equipment and cargo. The towed

item is semi-rigidly attached to the towing craft at the stern in manner similar to that of a tractor-trailer rig. The transom of the towing craft supports a small percentage of the weight of the towed craft. When being towed at high speed, a hydrofoil supports the majority of the towed weight. At slower speeds, hydrostatic forces support the towed craft.

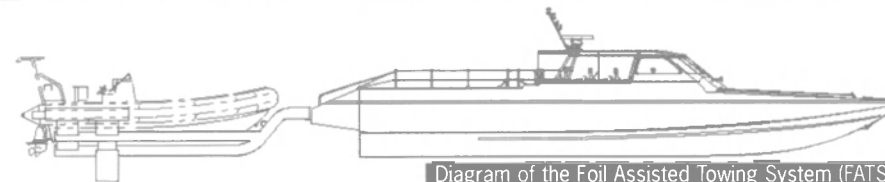
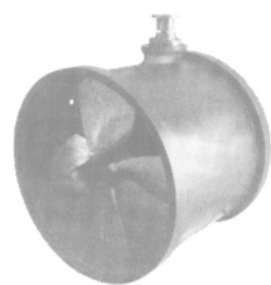


Diagram of the Foil Assisted Towing System (FATS).

Large high-speed craft can use this concept to tow boats, equipment, cargo and fuel bladders. However, using this approach it is questionable whether it would ever be practical to tow thousands of tons of cargo. Specific requirements would determine applicability. Since it can have extremely low resis-

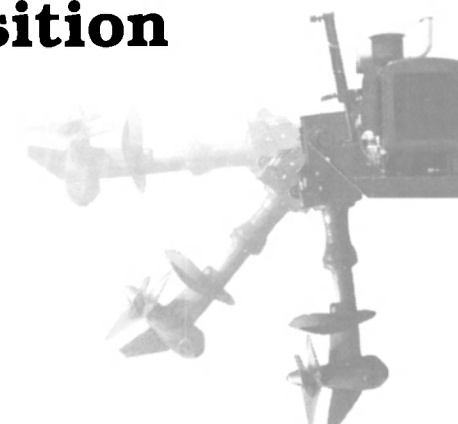
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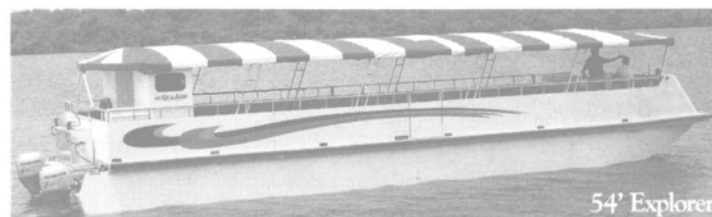
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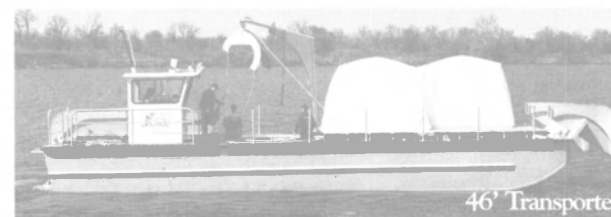
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## Marine Technology Report

tance when on foil, the hydrofoil is an attractive option. The low resistance translates to smaller horsepower requirements and fuel consumption. Various problems have prevented the hydrofoils from being widely used. For example, control and stability are major problems. Propelling a hydrofoil can be extremely difficult. Struts can generate

a large amount of spray, which strike the craft, increasing its drag. In practice, the hydrofoil's simple concept presents a challenge in actual working environments. Problems are often avoided by using a hybrid hydrofoil craft, which is part hydrofoil and part some other type of craft. Examples include Techno-Superliner, Super Shuttle 400 and Foil-

cat 2900. Hybrid Hydrofoils have been in operation in Russia for decades. Their Turya and Matka class of craft - with a 250 ton displacement - is a mix of semi-planing hull and a hydrofoil. The bottom of the craft itself supports the aft end of the craft; a hydrofoil supports the forward end. Providing stability and control, this approach allows a conven-

tional inboard propeller propulsion.

Some could argue that the FATS is a hybrid hydrofoil system. The bottom of the towed craft supports the forward end. A hydrofoil supports the back end. However, FATS is different because hydrofoils have not been towed before by a conventional monohull. This application is unique because previous hybrid hydrofoils were in one craft, not the tractor-trailer rig like arrangement of FATS. The connection to the towed craft provides stability and control. Because of the towing, complex propulsion systems associated with true hydrofoils are avoided.

(Continued from page 66)

monitoring and control system. Similar modifications are being made to the Oceanic Pearl. Cable deployment on the delivered ship is monitored and controlled from a Makai suite of equipment installed on the bridge adjacent to the DP control station. There is a separate cable lay control room overlooking the main cable working deck.

### BV Proposes 12,500-TEU Mega Containership

Bureau Veritas (BV), working with Knud E. Hansen, BV has developed a 12,500-teu containership design, it says will provide economies of scale and harness innovative technical solutions to providing more capacity.

"There are nearly 15 major terminals which could accommodate this size of vessel," says **Matthieu de-Tugny**, product manager dry bulk and containers for BV. "There are several feasible technical solutions to developing such ships, which represent new designs. At capacities over 10,000 teu, conventional designs cannot be maintained. It is a challenge for the whole shipping industry. As a class society, we try to ensure safety by assessing and solving any potential difficulties in advance." BV's mega containerships would have a scantling draft of 47.5 ft. (14.5 m) and molded breadth of 178 ft. (54.2 m), carrying 12,523 teu on a dwt of 152,000 dwt. The engine room and casings are positioned one quarter length from aft with the deckhouse forward of amidships, designed to give higher torsional rigidity, shorter shaftlines and better visibility from the bridge. Steel thickness in the amidships region are higher than those in current use. Hydrodynamics calculations give a power requirement of 94,000 kW at 25 knots, and the design allows for twin 47,000 kW diesels or azipod systems using hybrid power plants.

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Maritime Reporter & Engineering News



## 2001 World Yearbook

The following are details of 56 current and former employees have won 30 patents for inventions associated with Carderock Division programs. See story page 62.

US PATENT NO.  
TITLE  
INVENTOR(s)

6,038,995  
**COMBINED WEDGE-FLAP FOR IMPROVED SHIP POWERING**  
"GABOR KARAFIATH AND DOMINIC S. CUSANELLI"

6,041,728  
**SHAPE MEMORY ACTUATOR SYSTEM**  
"DAVID GOLDSTEIN AND THANG DINH NGUYEN"

6,053,664  
**ELASTOMERIC COMPOSITE BUMPER SYSTEM AND METHOD FOR ABSORBING HIGH ENERGY IMPACT**  
"ROGER M. CRANE, KATHLEEN A. CORONA-BITTICK AND DONALD JAMES DORR"

6,055,924  
**FOIL ASSISTED MARINE TOWING**  
"JASON T. MARSHALL, JOHN M. ALMETER AND DENIS G. BUSHLEY"

6,059,618  
**VENTILATED OUTBOARD MOTOR-MOUNTED PUMPJET ASSEMBLY**  
"JOHN G. PURNELLALAN J. BECNEL"

6,069,101  
**BORON CARBIDE/SILICON CARBIDE CERAMICS**  
"INNA G. TALMY AND JAMES A. ZAYKOSKI"

6,075,753  
**SYSTEM FOR SIMULATION OF UNDERWATER EXPLOSION PRESSURE FIELDS**  
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6,076,480  
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6,080,982  
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EDWARD ISAAC COHEN

6,082,436  
**METHOD OF CENTRIFUGALLY CASTING REINFORCED COMPOSITE ARTICLES**  
"AMARNATH P. DIVECHA, SUBHASH D. KARMARKAR, PHILIP HESSE AND WILLIAM J. BRUCHEY"

6,097,668  
**COMPONENT DEPLOYMENT MEANS FOR ICE PENETRATING ACOUSTICS COMMUNICATION RELAY SYSTEM**  
WAYNE J. HOPKINS

6,101,963  
**RUDDER TAB FOR SUPPRESSION OF TIP VORTEX CAVITATION**  
"YOUNG T. SHEN AND SCOTT GOWING"

6,105,716  
**VENTURI MUFFLER HAVING PLURAL NOZZLES**  
"CLYDE A. MOREHEAD AND JOHN W. HENRY V"

6,116,328  
**FABRICATION OF TILE REINFORCED COMPOSITE ARMOR CASTING**  
"SUBHASH D. KARMARKAR, AMARNATH P. DIVECHA, WILLIAM J. BRUCHEY, GERALD BULMASH, JAMES M. KERR AND WILLIAM A. FERRANDO"

6,127,130  
**MULTIASSAY METHOD FOR DETERMINING THE CONCENTRATIONS OF ANTIGENS AND INTERFERENTS**  
ROBERT A. BRIZZOLARA

6,129,134  
**SYNTHESIS OF METAL MATRIX COMPOSITE**  
"AMARNATH P. DIVECHA"

6,129,135  
**FABRICATION OF METAL-MATRIX COMPOSITIONS**  
"AMARNATH P. DIVECHA, SUBHASH D. KARMARKAR, WILLIAM A. MAY, JAMES M. KERR, WILLIAM A. FERRANDO AND SCOTT M. HOOVER"

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**PROTECTIVE SHROUDING WITH DEBRIS DIVERTING INFLOW VANES FOR PUMP-JET PROPULSION UNIT**  
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6,164,411  
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6,171,159  
**STEERING AND BACKING SYSTEMS FOR WATERJET CRAFT WITH UNDERWATER DISCHARGE**  
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6,172,510  
**SYSTEM FOR DETECTION OF FLAWS BY USE OF MICROWAVE RADIATION**  
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6,174,688  
**MULTIASSAY METHOD FOR DETERMINING THE CONCENTRATIONS OF ANTIGENS AND INTERFERENTS**  
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6,176,943  
**PROCESSING TREATMENT OF AMORPHOUS MAGNETOSTRICTIVE WIRES**  
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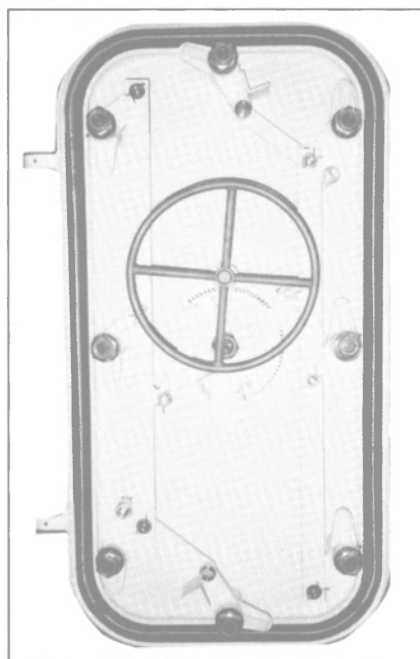
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(Continued from page 67)

shallow water restrictions.

It is known that when a propeller is cavitating, the main frequencies appearing on the spectra of vibrations measured are the second, third and fourth harmonics of the propeller blade pass

frequency. When there is no cavitation, the first harmonic is the major component.

The study showed that the second harmonic of the propeller blade pass frequency appeared only very intermittently, and that its influence on the vibration velocities in different structural points

was much less than the influence corresponding to the first harmonic. Furthermore, the effects of the third and fourth harmonics were even less relevant.

From the vibration measurements carried out on the single-bottom close to the propeller position, the following deductions were made:

- In most of the measurements carried out at 85 percent MCR, the vibration velocities were below five mm/sec;
- When the propulsive power was 100 percent MCR, the vibration velocities were below six mm/sec.

TSI concluded that: "The cavitation level developed on the CLT blades is negligible from the ship structural integrity point of view."

Vibration and noise levels measured in different parts of the superstructure and machinery spaces were also shown to be lower than those required by ISO 6954 rules, and therefore excellent in terms of comfort on board.

As agreed between Trasmediterranea and UNV, the results obtained from the speed trials were corrected and interpreted by the Danish Maritime Institute (DMI). The results show that, for the design condition at 85 percent MCR and with a service margin of 15 percent, the ship's speed is 22.4 knots. The contractual ship speed under these conditions was 22 knots. The results also clearly show that the result obtained was much better than predicted.

The results obtained in ballast condition (according to the analysis carried out by DMI) compared with the DMI predictions on the performance of the ship fitted with conventional and then CLT propeller blades.

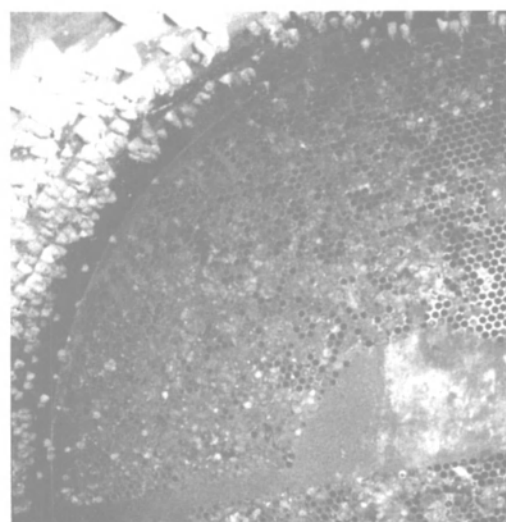
Similar predictions correspond to the design condition.

The CLT propeller has been shown that it can also reduce fuel consumption approximately eight percent, or help to increase speed at the same consumption.

Sistemar is a Spanish company, formed in 1987, which specializes in ship propulsion — mainly in the propeller design field. The installed power on vessels fitted with CLT propellers ranges from 100 hp to 36,000 hp. The most recent reference for the propellers is on a pair of 35,000 dwt products tankers built in South Korea by Hyundai Mipo for the Sopotana/Arminster consortium. Speed trials on the first ship are scheduled to be held in June. The shipyard ordered two 18 ft. (5.45 m)-diameter CLT propellers from Sistemar, propellers which were manufactured and delivered by Navalips, Cadiz.

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# Piracy Hits New Heights

Pirate attacks rose 57 percent in 2000, and were nearly four and a half times higher when compared with 1991 according to a report by the ICC's International Maritime Bureau (IMB). In its annual Piracy and Armed Robbery Against Ships report for 2000, the IMB — a division of the Paris-based International Chamber of Commerce (ICC) — reports a total of 469 attacks on ships either at sea, at anchor or in port.

The violence used in the attacks also rose to new levels, with 72 seafarers killed and 99 injured in 2000, up from three killed and 24 injured the previous year. The number of hostages taken halved to 202 seafarers. Ships were boarded in 307 instances, and a total of eight ships were hijacked.

The figures, compiled by the IMB for January to December 2000, show an alarming rise in piracy and armed robbery in Indonesia, Bangladesh, the Malacca Straits, India, Ecuador and the Red Sea. Indonesia recorded the highest number of attacks, accounting for almost one quarter of the world total with 119 incidents. Eighty-six ships were boarded, two ships were hijacked and attempted attacks were made on another 31 ships. It was also the location where the greatest violence was experienced, with many of the pirates armed with knives. The IMB says there are no signs that the number of attacks will drop unless Indonesia takes serious steps to address the problem.

Amongst other world hotspots, the Malacca Straits witnessed a dramatic rise in attacks, up to 75 from 2 in 1999, despite the efforts of the Royal Malaysian Police to step up patrols in the area to tackle the problem. Its special task force captured two groups of pirates, but there are still known to be several other groups attacking and robbing ships as they transit this busy waterway, where the threat of an ecological catastrophe cannot be ignored.

Third place in the 2000 table goes to Bangladesh, with 55 attacks, up from 25 attacks in 1999. The Bangladeshi authorities have since taken action of their own, which resulted in a drop in attacks during the latter part of the year. Other substantial rises were recorded in India (35, up from 14 in 1999), Ecuador (13, up from two in 1999), and 13 attempted boardings on ships in the southern part of the Red Sea, where previously there had been no pirate activity. One of the few areas to see a downturn in activity was the Singapore Straits (five incidents, down from 14). The annual report also draws attention to IMB's recent initiative to take the fight against piracy onto the Internet with weekly updates of attacks and warnings. The service, which has been well received in the shipping world, is compiled from daily status bulletins broadcast via satellite from the IMB Piracy Reporting Center in Kuala Lumpur. Posting the information on the Internet means shipowners and land-based authorities are able to access the updates as well as ships at sea. The address for the weekly

report is [www.icc-ccs.org](http://www.icc-ccs.org)

## Piracy Attacks Surge On Tankers

Piracy attacks on oil tankers surged to unprecedented levels during the first quarter of 2001, reinforcing fears that the onslaught will sooner or later result in ecological catastrophe. There has been an increase in the number of tankers attacked, **Jayant Abhyankar**, deputy director of piracy investigator the International Maritime Bureau (IMB) said. "Before it was mostly bulk-carriers."

Nearly half of the 56 cargo ships attacked in the first quarter of the year were tankers, compared to 28 percent in last year's first quarter, according to the IMB's latest report.

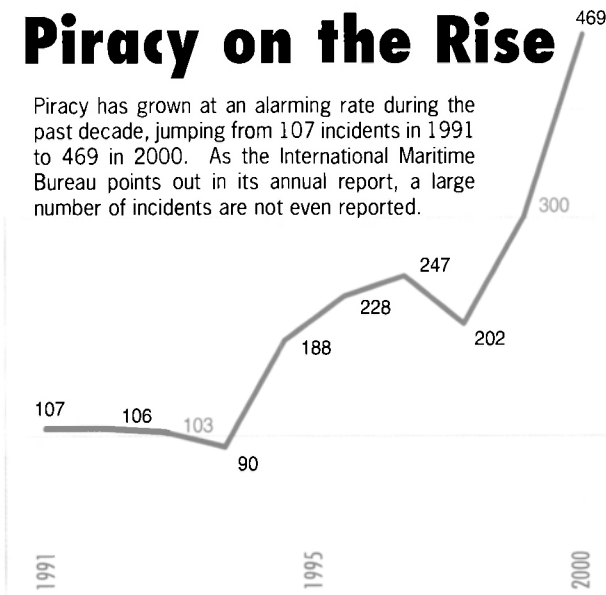
Abhyankar warned that pirate attacks on tankers in Asia's crowded shipping lanes were a growing threat to navigation. The problem was recently illustrated on March 19 by an attack on the 3,000-ton oil tanker *Matsumi Maru* as it steamed through the Malacca Straits.

The pirates took the duty second officer, and other crew members hostage, reads an account of the attack. They then tried to take another officer hostage, but he resisted and managed to grab a knife and torch from one of the pirates.

Tankers were the target of 30 percent of pirate attacks across the whole of last year, and the IMB said it feared that an equal number of attacks go unreported. Petroleum product tankers have proven to be a key target with

## Piracy on the Rise

Piracy has grown at an alarming rate during the past decade, jumping from 107 incidents in 1991 to 469 in 2000. As the International Maritime Bureau points out in its annual report, a large number of incidents are not even reported.



their valuable cargoes of diesel and gasoline, which can easily be sold on the black market.

## Anti-Piracy Life-Jacket Developed

An armored lifejacket, designed to protect sailors in case of pirate attacks was developed last year. The jacket conforms to International Maritime Organization standards for life vests and has integral knife and bullet resistance. Weighing 3.5kg, the Loric Armored Lifevest has body armor encased in a high tensile polymer fabric that combines inherent buoyancy and water resistance with stab and bulletproofing. It is currently being tested by the German customs service in the Baltic and has already been ordered by police in Thailand.

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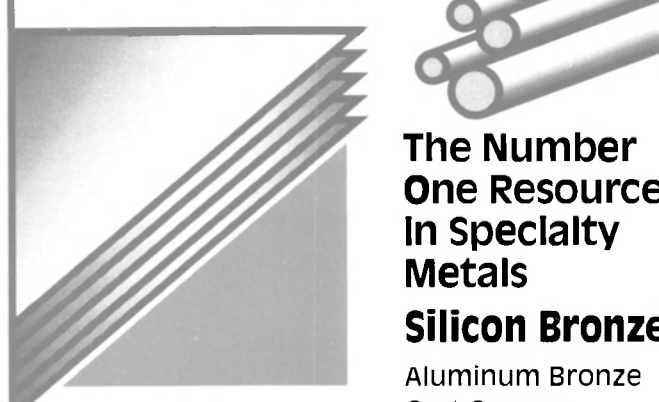
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## New Welding Process Put To The Test

A new welding technology from WeldWare Inc. promises to save ship and boatbuilders time and money. TIGpc gets put to the test on Arleigh Burke Class destroyers being built at Ingalls Shipbuilding this summer.

A new welding technology from WeldWare Inc. of Columbus, Ohio, is scheduled to be put to the test on Arleigh Burke Class destroyers this summer in Pascagoula, Miss. at Ingalls Shipbuild-



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#### ② JMA-9800 Color ARPA Radar

This futuristically designed radar unit features a large 29-inch high-definition color CRT display. It enables quick detection of small targets.

#### ③ JAN-3598 ECDIS Total Navigator

This advanced ECDIS system permits fully automatic navigation. It features a large color LCD and abundant functions unique to JRC, including radar video overlay, grounding prevention, NAVTEX data, route safety check, alarm displays and engine data display. The result is greater safety and economy.

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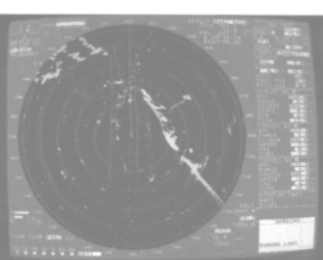
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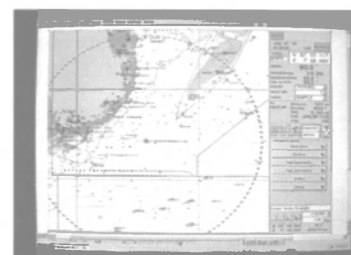
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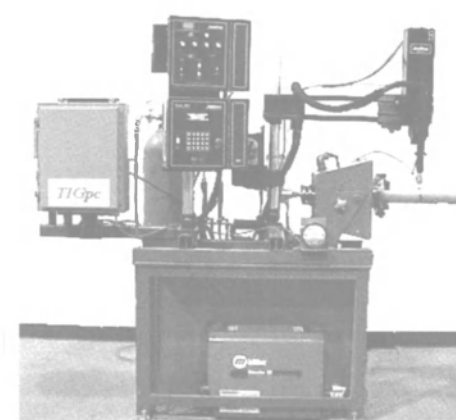
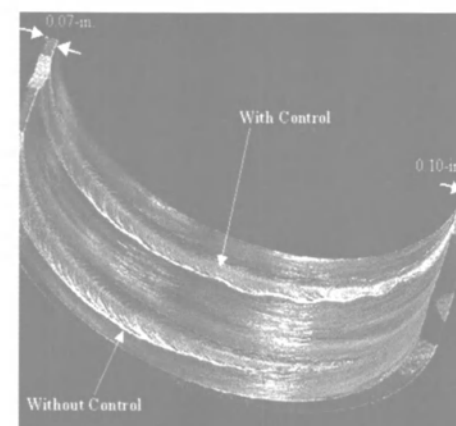


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ing. The new technology, the result of an ONR Small Business Technology Transfer (STTR) Weld Penetration Control research project, is jointly funded by ONR and NSRP.

WeldWare has apparently developed a weld penetration control system, called TIGpc, which automates the manual process of pipe welding and reduces the amount of rework usually associated with pipe welding.

Shipyard trials are set to last three months, during which time savings in decreased labor hours will be calculated. The TIGpc system is expected to reduce shipbuilding costs by allowing wider use of automation for pipe root pass welding.

Chris Conrardy of WeldWare estimates that there will likely be about a 30 to 1 return on investment. "The TIGpc sensor automatically detects the degree of Gs Tungsten Arc (GTA or TIG) root-pass weld penetration and adjusts the welding parameters to make sure the weld penetration is right the first time," Conrardy said.

Edison Welding Institute and Newport News Shipbuilding are also participants in the research project. In the past few years, EDWI, Ohio State University and other research organizations have demonstrated the TIGpc's fundamental technology under laboratory conditions.

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## News

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## News

### Norwegian Line Unable to Remedy Leaky Sprinklers on the Norway

Norwegian Cruise Line canceled the weekly sailing of its ship Norway on May 29 because of leaks in the fire sprinkler system, thwarting Caribbean vacation plans for more than 2,000 passengers stuck in Miami.

The Norway had been scheduled to leave the Port of Miami on May 27 for a seven-day cruise to the western Caribbean.

But the Coast Guard barred it from sailing after a surprise inspection found 106 poorly patched leaks in the pipes that supply water to the sprinkler system. The Coast Guard said the flaws "could severely limit the ship's ability to fight a fire on board."

Crew members had hoped to repair the problems and obtain clearance to sail by May 28; the latest the 40-year-old ship could leave Miami and still complete its voyage.

"Unfortunately this has not happened," NCL said in a statement announcing cancellation of the voyage on Tuesday.

The cruise line, a unit of NCL Holding, which is owned by Star Cruises Group, said the Norway's 2,032 passengers would be offered a full refund for the voyage plus a free seven-day cruise in the future. The cruise line said it would also reimburse passengers for travel costs and provide flights home if needed.

"We're trying to fly them out, the ones that we can get flights," a spokeswoman said. "They're staying on the ship until we can make other arrangements."

NCL said the repairs were 80 percent complete and it was confident they would be done in time for the Norway's next weekly cruise. They could not immediately comment on the financial impact of the canceled voyage.

### Analysts Speculate Possible Carnival / Hapag-Lloyd Deal

Carnival Corp said that its growing cash holdings were spurring market speculation that the world's largest cruise group was on the acquisitions trail.

A spokesman for the Miami-based operator of 45 cruise ships, declined to speak directly to reports that Carnival may be working on a bid for Hapag-Lloyd cruises. "It is our policy not to comment on market rumors," he said.

Hapag-Lloyd, a unit of the world's largest travel group Preussag AG, operates five ships in German-speaking countries. A spokesman for Hapag-Lloyd said on Monday he knew of no bid for the company.

With pricing pressure in its core North American markets, Carnival has been looking to Europe for growth.

Just last month, the cruise line announced the sale of a 25 percent equity stake in British travel group Airtours Plc in a transaction expected to yield gross proceeds of nearly \$500 million.

In addition, the company raised about \$900 million in bond offerings in March and April. Some of that money was to repay bridge loans for the purchase last year of the 50 percent portion of Costa it had not owned.

But analyst Robin Farley of UBS Warburg said in a research note that Carnival had now raised more than \$1 billion without any pressing needs for capital expenditures.

"Obviously, our recent debt offerings and the sale of our Airtours holdings has added substantially to our cash. That is prompting market speculation," the Carnival spokesman said.

### Friede Goldman Halter Announces Contract and Options Worth Up to \$78 M

Halter Marine, Inc., the vessels segment of Friede Goldman Halter, Inc., has been awarded a contract from the U.S. Army Tank and Automotive Command (TACOM) for the detailed design and construction of a Logistic Support Vessel (LSV). The contract includes provisions for spare parts, technical services, and options to build two additional LSVs. The total value of the base contract is \$26.9 million, and could be worth upwards of \$78 million once the options are exercised.

Engineering and construction at the Company's Halter Moss Point shipyard in Escatawpa, MS are scheduled to take about two years to complete. This project is expected to create approximately 75 new jobs at that yard.

The 313-ft. (95.4 m) LSV class vessels will have a beam of 60 ft. (18.2 m) and a molded depth of 19 ft. (5.7 m) They are designed to carry more than 2,000 tons of deck cargo, and will be designed and built to the requirements of the American Bureau of Shipping.

Halter has successfully completed numerous U.S. Army programs such as the Landing Craft Utility (LCU), the Large Tug (LT), and has already built all six of the LSVs currently in the Army's fleet.

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## News

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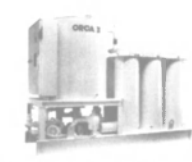

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### Norwegian Line Unable to Remedy Leaky Sprinklers on the Norway

Norwegian Cruise Line canceled the weekly sailing of its ship Norway on May 29 because of leaks in the fire sprinkler system, thwarting Caribbean vacation plans for more than 2,000 passengers stuck in Miami.

The Norway had been scheduled to leave the Port of Miami on May 27 for a seven-day cruise to the western Caribbean.

But the Coast Guard barred it from sailing after a surprise inspection found 106 poorly patched leaks in the pipes that supply water to the sprinkler system. The Coast Guard said the flaws "could severely limit the ship's ability to fight a fire on board."

Crew members had hoped to repair the problems and obtain clearance to sail by May 28; the latest the 40-year-old ship could leave Miami and still complete its voyage.

"Unfortunately this has not happened," NCL said in a statement announcing cancellation of the voyage on Tuesday.

The cruise line, a unit of NCL Holding, which is owned by Star Cruises Group, said the Norway's 2,032 passengers would be offered a full refund for the voyage plus a free seven-day cruise in the future. The cruise line said it would also reimburse passengers for travel costs and provide flights home if needed.

"We're trying to fly them out, the ones that we can get flights," a spokeswoman said. "They're staying on the ship until we can make other arrangements."

NCL said the repairs were 80 percent complete and it was confident they would be done in time for the Norway's next weekly cruise. They could not immediately comment on the financial impact of the canceled voyage.

### Analysts Speculate Possible Carnival / Hapag-Lloyd Deal

Carnival Corp said that its growing cash holdings were spurring market speculation that the world's largest cruise group was on the acquisitions trail.

A spokesman for the Miami-based operator of 45 cruise ships, declined to speak directly to reports that Carnival may be working on a bid for Hapag-Lloyd cruises. "It is our policy not to comment on market rumors," he said.

Hapag-Lloyd, a unit of the world's largest travel group Preussag AG, operates five ships in German-speaking countries. A spokesman for Hapag-Lloyd said on Monday he knew of no bid for the company.

With pricing pressure in its core North American markets, Carnival has been looking to Europe for growth.

Just last month, the cruise line announced the sale of a 25 percent equity stake in British travel group Airtours Plc in a transaction expected to yield gross proceeds of nearly \$500 million.

In addition, the company raised about \$900 million in bond offerings in March and April. Some of that money was to repay bridge loans for the purchase last year of the 50 percent portion of Costa it had not owned.

But analyst Robin Farley of UBS Warburg said in a research note that Carnival had now raised more than \$1 billion without any pressing needs for capital expenditures.

"Obviously, our recent debt offerings and the sale of our Airtours holdings has added substantially to our cash. That is prompting market speculation," the Carnival spokesman said.

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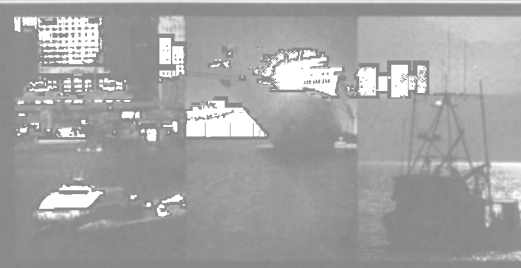
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### Friede Goldman Halter Announces Contract and Options Worth Up to \$78 M

Halter Marine, Inc., the vessels segment of Friede Goldman Halter, Inc., has been awarded a contract from the U.S. Army Tank and Automotive Command (TACOM) for the detailed design and construction of a Logistic Support Vessel (LSV). The contract includes provisions for spare parts, technical services, and options to build two additional LSVs. The total value of the base contract is \$26.9 million, and could be worth upwards of \$78 million once the options are exercised.

Engineering and construction at the Company's Halter Moss Point shipyard in Escatawpa, MS are scheduled to take about two years to complete. This project is expected to create approximately 75 new jobs at that yard.

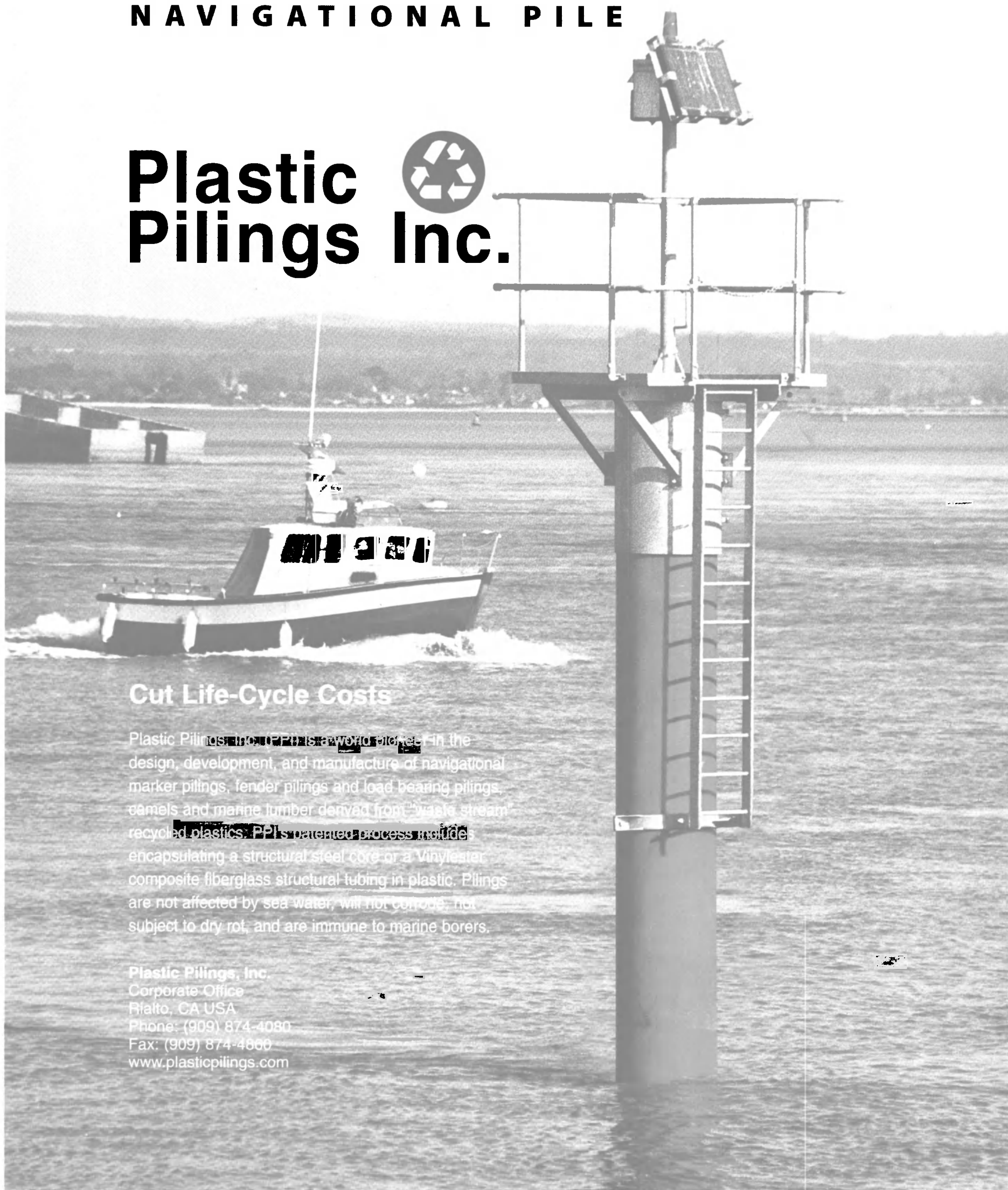
The 313-ft. (95.4 m) LSV class vessels will have a beam of 60 ft. (18.2 m) and a molded depth of 19 ft. (5.7 m) They are designed to carry more than 2,000 tons of deck cargo, and will be designed and built to the requirements of the American Bureau of Shipping.

Halter has successfully completed numerous U.S. Army programs such as the Landing Craft Utility (LCU), the Large Tug (LT), and has already built all six of the LSV's currently in the Army's fleet.



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## Ship's Store



### Leslie Provides Quality Control

For more than 100 years, Leslie Controls, Inc. has been an industry leader in quality fluid control equipment and has been serving the commercial, industrial, process, maritime, power and railway markets. Leslie's Product Digest contains products such as process control, on-off valves, pressure reducing valves, regulators, steam water heaters, actuators and controllers.

**Circle No. 101**



### Superbolt Handles it All

This 22-in. thread, 34-in. O.D. patented Superbolt Mechanical Tensioner creates over 6,000,000 lbs. of bolt tension. This tensioner eliminated the long tedious process of heating the tie-rods to preload them—saving days in installation time. Superbolt is able to handle jobs like this one, and even bigger — producing custom orders in a timely fashion for our customers.

**Circle No. 102**



### Control Your Valves With Spence

Spence Engineering Company, Inc. is an ISO 9001 certified manufacturer of pressure and temperature control valves, steam traps, condensate removal systems, pneumatic control valves and safety and relief valves. Spence Engineering is a division of Cincor International.

**Circle No. 103**



### Newmar Provides the Power

With more than 30 years experience providing Communication Power Solutions, Newmar has what it takes to power your network. Design and manufacture of high quality electronic power products for Communication, Navigation and Industrial Applications.

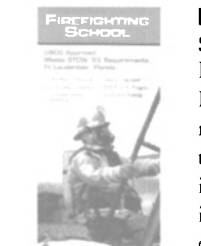
**Circle No. 104**



### PBM's Brochure Highlights Valve Solutions

PBM's new eight-page Valve Solutions brochure highlights ball valve and cavity free valve solutions. Valves are categorized for easy reference by various industries, including chemical and marine. Brochure is available in both printed and digital format, and is featured on PBM's catalog CD and website.

**Circle No. 105**



### Resolve Fire & Hazard Trains to Save Lives

Located in Port Everglades, Fla., Resolve Fire & Hazard Response is one of the nation's leading marine fire and safety training centers. This state-of-the-art facility with its highly skilled and experienced instructors will provide the highest quality education possible.

**Circle No. 106**



### Customize Your Lift Tables With Southworth

With added models and more options, Southworth is the premier choice for lift tables. Southworth manufactures a number of lift tables for specialized applications, including tables with extra long

and extra wide platforms, increased capacity, extended vertical travel and hand pallet truck accessibility.

**Circle No. 107**



### Stay in Touch At Sea With Coastel Communications

Coastel Communications offers its customers one of the most reliable offshore cellular equipment product base in the industry. However, dependable equipment is just the beginning; Coastel continually searches for new ways to better serve its customers — with competitive rates, new technology and ever-expanding coverage.

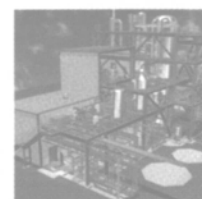
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### Raytheon Meets Marine Industry Demands

Raytheon is the smart choice for mariners worldwide who demand the most from their ship's electronic systems. The company's commitment to the marine industry spans over 75 years of product development and boasts a comprehensive range of products. Raytheon's dedication to developing innovative technologies is evident with the host of world class products featured throughout the Ocean Series catalog.

**Circle No. 109**



### Rebis AutoPlant Provides Integrated Software Tools

Rebis' Plant Design Workgroup (PDW) offers integrated software tools for design and modeling of process, power, industrial, and manufacturing facilities. AutoPLANT PDW provides 3-D piping, structural, and equipment design and modeling; automatic isometrics generation; and 3-D visualization and interference detection.

**Circle No. 110**



### MTN Keeps the Maritime Industry Connected

Maritime Telecommunications Network (MTN), the leader in maritime communications, provides C-Band voice, fax, data, Internet communications, and Inmarsat services to the cruise and offshore industries, and the U.S. Navy throughout the world. MTN also provides ship-to-shore live video and radio broadcast capabilities in C-or Ku-Band.

**Circle No. 111**



### Headhunter's Team Provides Valuable Tech Support

The Headhunter field service team provides superior dockside installations, and valuable technical support to O.E.M. builders using Headhunter equipment. Throughout the world, Headhunter personnel work on-site with leading O.E.M. builders reviewing subtle installation details and exchanging new ideas.

**Circle No. 112**



### Jeamar Offers Comprehensive Winch Line

Jeamar Winches is a premier provider of heavy-duty winching solutions. With facilities in the U.S. and Canada, Jeamar Winches designs and manufactures a wide range of heavy-duty winching products for customers worldwide. Jeamar's major markets are heavy industry, commercial marine and theater industry.

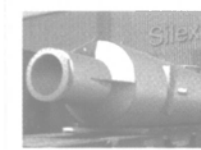
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### It's One Stop Shopping At MarineSoup

MarineSoup, an IndustrialSoup marketplace, is a provider of private Internet marketplace for buying and selling products and services in the Marine industry. MarineSoup is a service company focusing on the communications between suppliers and buyers and does not sell software — we are a full service application service provider.

**Circle No. 114**



### Silex Ventures Into A New Generation

Silex services a broad range of industry sectors throughout the world, including Power Generation, Marine and Gas Compression, and have invested heavily in new technology to assist in the development of the next phase of silencers and acoustical enclosures. Silex has grown based on an emphasis on quality and customer service.

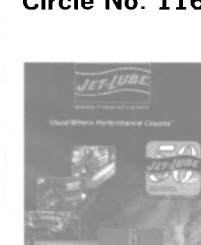
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### Rexroth's Mini-Marex Boasts Microprocessor Technology

The Mini-Marex control system incorporates the latest microprocessor based control technology. It is designed for remote control of propulsion systems of ships such as yachts and pleasure boats, patrol and police boats, workboats, tugs, fishing boats, ferries and special purpose vessels powered by high speed diesel engines and reversing gears.

**Circle No. 116**



### Jet-Lube's Products are Environmentally Sound

Since the late 1980's, Jet-Lube has led the way in the development of environmentally acceptable lubricants, sealants and related specialty products. After years of reformation and testing, Jet Lube now offers industries around the world a complete line of environmentally acceptable products that exceed industry standards and meet Jet-Lube's own performance criteria.

**Circle No. 117**



### Hydraquip Offers Comprehensive Fluid Power Solutions

As a full service company, Hydraquip provides one of the most complete inventories of fluid power equipment and parts. Always ready to respond and deliver on schedule, Hydraquip continues on a daily basis to research and study new techniques and products so that we are prepared to meet all of your needs in fluid power.

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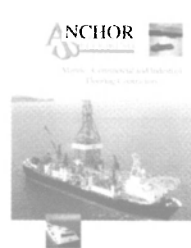


### Guide Your Vessel With Young Instruments

From coastal work boats to remote ocean buoys, Young meteorological instruments are proven performers in demanding marine applications. Young instruments offer these important advantages: Superior sensitivity and performance characteristics; rugged, corrosion-resistant construction; proven reliability in the ocean environment; and simplified mechanical and electrical assembly.

**Circle No. 119**

## Ship's Store



### Anchor Flooring Provides Complete Deck Coverage

Established in 1960 operating initially in the commercial and industrial sectors, Anchor Flooring expanded in 1974 into maritime decking contracts carried out at the Harland and Wolff Shipyard in Belfast, Northern Ireland. Anchor Flooring is one of Northern Ireland's leading installer of all types of marine deck covering systems for newbuilds and refit contracts.

**Circle No. 120**



### Yachtbuilders Look To Cramm For Complete Solutions

Cramm's expertise spans the hydraulic spectrum — from deckcranes, steering systems, bowthrusters and windlasses to sliding davits, gangways and accommodation ladders. In short, Cramm provides complete solutions to all the yachtbuilder's hydraulic requirements.

**Circle No. 121**



### Avoid Accidents With Slip-Not's Grip Plate

SlipNot Safety Flooring is a unique, non-gritted Grip Plate or Grip Grate manufactured by the W.S. Molnar Company, Detroit, Mich. USDA and FDA approved, SlipNot doesn't wear, polish or flake-off.

**Circle No. 122**



### QPS Takes Your Company to the Top

Quality Positioning Services, established in 1986, is a software development and survey consultancy company with worldwide experience. Operating from European and U.S. offices, the company offers its software products for sale.

**Circle No. 123**



### Incat — More than Just A Shipbuilder

*Incat — The Magazine* is produced six times a year by Incat Australia Pty Ltd, builders of some of the world's fastest large vehicle and passenger ferries. Recent Incat deliveries to Europe include four fast 315 ft. (96 m) catamaran ferries operating in Spain and the Royal Australian Navv's HMAS Jervis Bay which carries and troops between Darwin and East Timor.

**Circle No. 124**



### MAN B&W Diesel — Smokeless in Glacial Waters

To support cruise vessels slow-steaming in sensitive glacial waters, MAN B&W diesel developed Invisible Smoke (IS). These engines provide smokeless performance at the lowest load levels. MAN B&W modern IS engines use fuel-water emulsification with only moderate water content to perform with invisible smoke and clean exhaust at any load-with NOx emissions far below the IMO limit.

**Circle No. 125**



### Parker Hose Products Goes Digital

A current version of Parker Hose Products' printed Catalog 4400 is now available on CD-Rom (Catalog 4400-CD/USA-Version 2.0) and on the Division's website at [www.parkerhose.com](http://www.parkerhose.com). Catalog 4400 is a complete guide to Parker hoses, fittings, crimping equipment, hose assembly equipment, adapters and accessories.

**Circle No. 126**



### Fleet Medical Resources

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**Circle No. 127**



### Maritime Iridium Terminal Re-launched By SKANTI

SKANTI will re-launch its Maritime Iridium terminal Scansat-7701 after the signing of an agreement with Iridium Satellite LLC.

The Scansat-7701 is a highly advanced terminal designed for the harsh environment at sea. The three-unit fixed terminal is designed for indoor use with a fixed antenna to be installed outside, giving the user the advantage of being able to stay inside in harsh sea.

**Circle No. 128**

### Renaissance Cruises Appoints Manfred Ursprunger As Chief Executive

Renaissance Cruises announced that its board of directors has appointed **Manfred Ursprunger** as chief executive.

Ursprunger joins Renaissance Cruises from Celebrity Cruises, where he was one of the two key senior executives.

On April 20, 2001, Renaissance Cruises announced that Malvern Maritime, led by Norwegian shipowner Peter Gram, has become the majority shareholder of R Holdings, the parent company of Renaissance Cruises, through a major investment in the Company.

### Schat-Harding Wins Queen Mary 2 Lifesaving Contract

Schat-Harding has won a major contract to supply the lifeboats, davits and fast rescue craft to the Cunard new-building cruise ship *Queen Mary 2*, under construction at France's Chantiers de l'Atlantique shipyard. Schat-Harding will also supply full sets of lifesaving equipment to the two cruise ships that are being built for Mediterranean Shipping Company at Chantiers.

**Circle 7 on Reader Service Card**

### FGH Resumes Work on Car Carrier

Friede Goldman Halter (FGH) has reported that work has resumed on the Pasha Hawaii Transport Lines (PHTL) car carrier being constructed in Halter's Pascaguola, Miss. shipyard. Approximately 300 workers have returned to the project, after FGH suspended work during the beginning of May pending contract

**June, 2001**

negotiations for the interim resumption of work. The negotiations were successfully concluded, and were approved by bankruptcy Judge **Edward Gaines**.

### Oceanering Awards Communication Services Contract to MTN

Maritime Telecommunications Network (MTN) has been granted a three-year contract to provide Oceanering International with a complete C-band communications system, including an antenna with a stabilized platform and termination services, onboard the vessel *Performer*. In addition to voice and fax capabilities, the system will provide data communications.

MTN's antenna system and below deck equipment, known as Digital Ship Earth Station (DSES), will enable *Performer* to transmit and receive information while exploring anywhere in the world. The DSES will be primarily used for high-speed data communications to Oceanering's headquarters in Texas.

### Seaspan International Elects New President

Seaspan International, a member of the Washington Group, has appointed **Brent A. Geen** to the position of president, effective immediately. In conjunction with his appointment, Geen will also serve as director of Seaspan.

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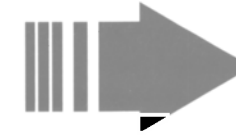
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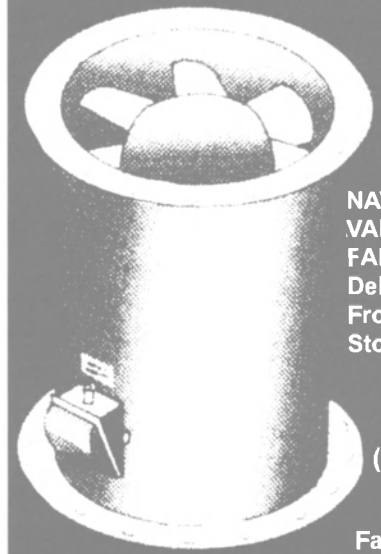
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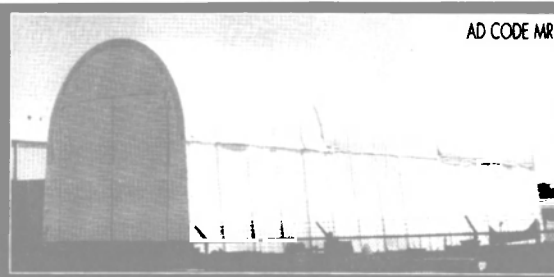


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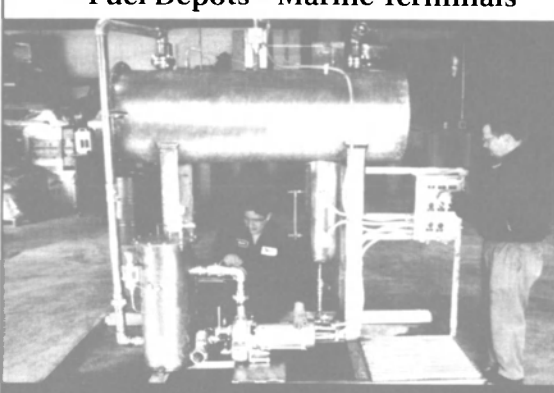
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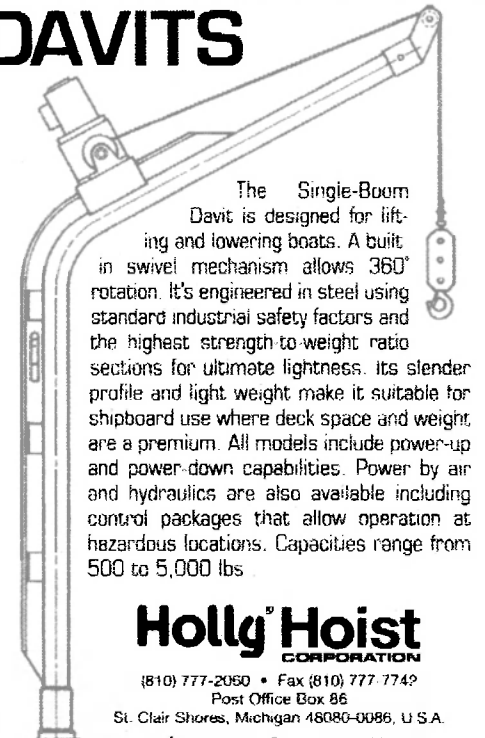
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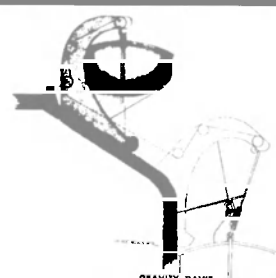
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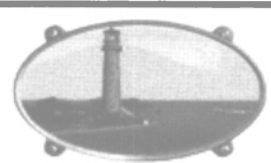
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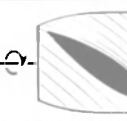
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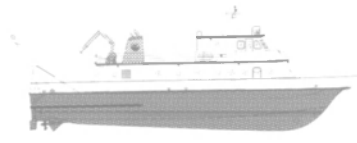
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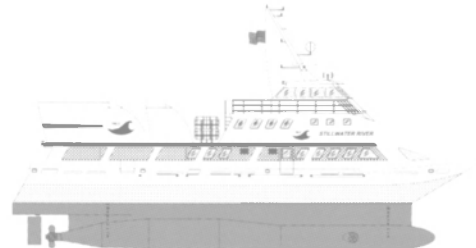
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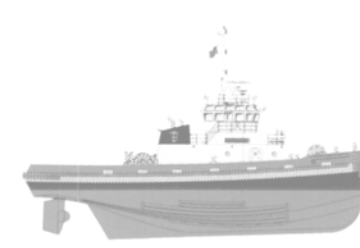
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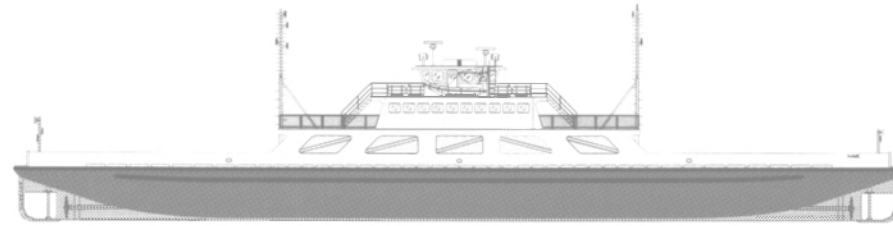
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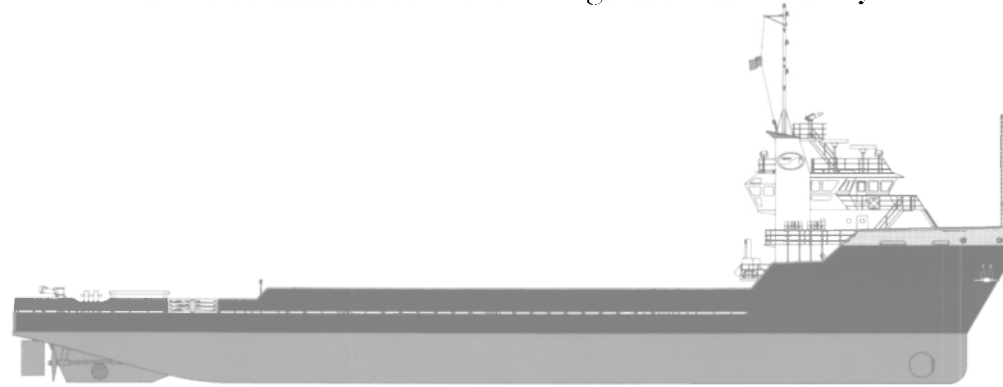
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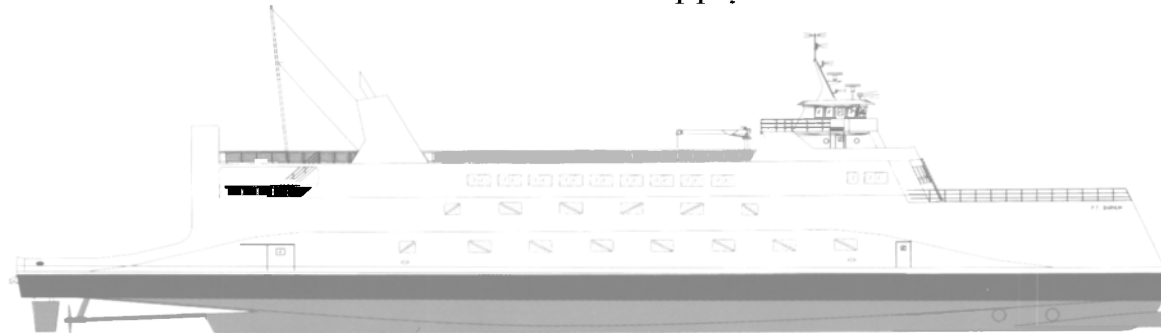
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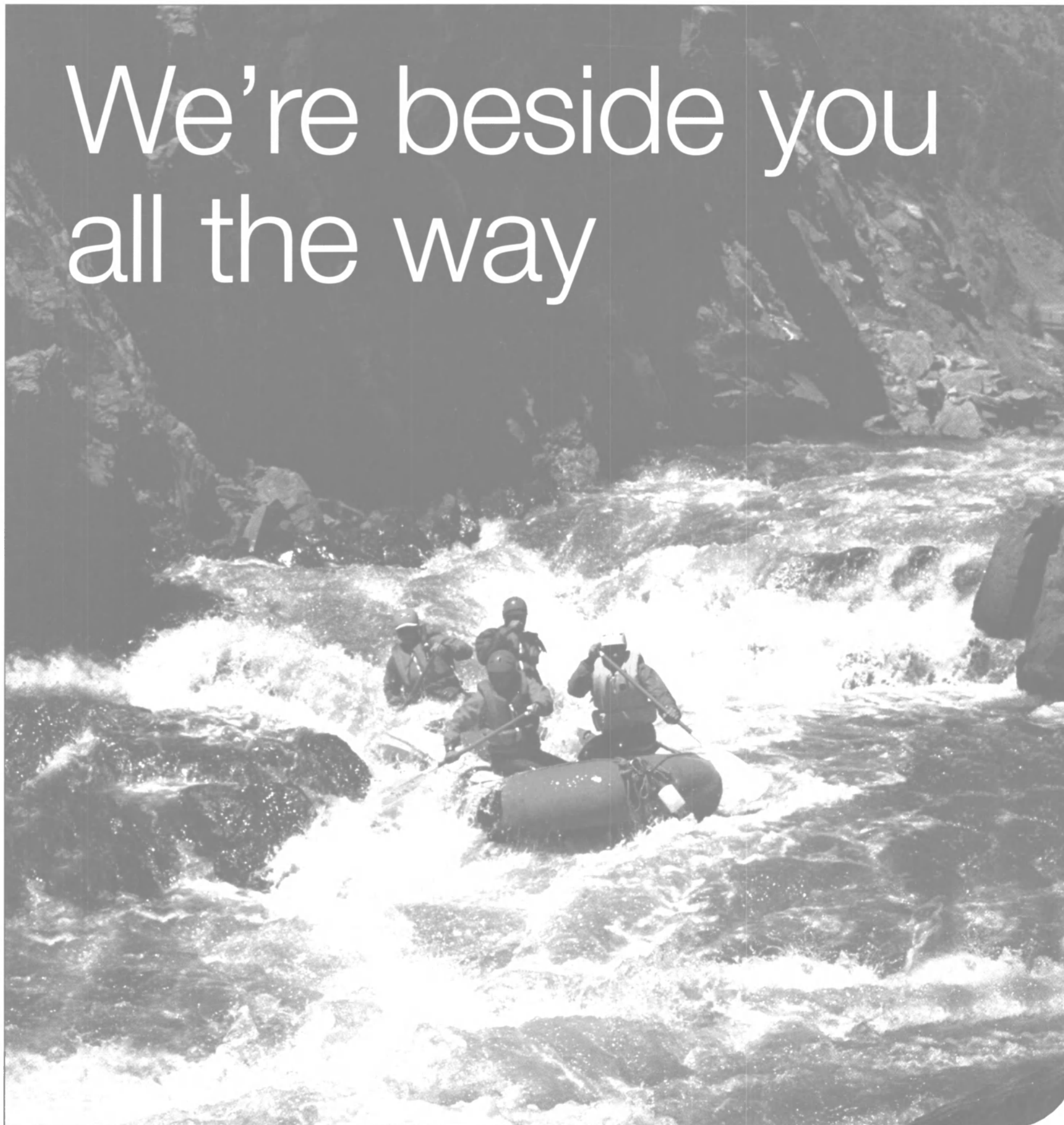
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