

Diving deep to explore the mysterious sinking of *Britannic*

JANUARY 1997 EDITION

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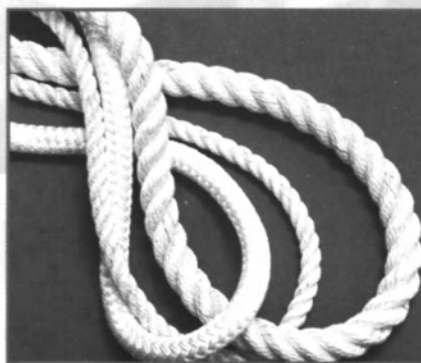


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On The Cover

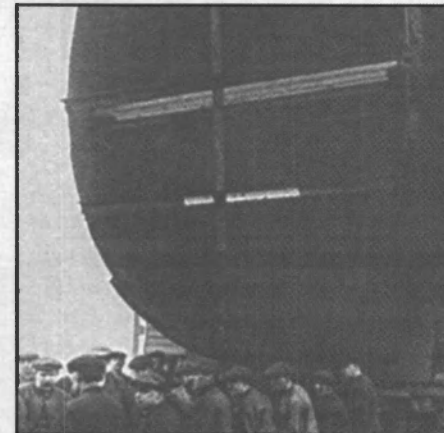
This prototype vessel from Pacific Marine incorporates an advanced, high-speed SWATH ship technology called SLICE. Designed by Lockheed Martin, the 104-ft. (31.7-m) vessel is powered by MTU engines driving Lips propellers through Westech gears. The all-aluminum Subchapter T vessel is capable of speeds of up to 30 knots. The story, in the Ship & Boatbuilding Technology section, starts on page 65.

8 HMHS BRITANNIC

Mysteriously sunken in 1916, *Britannic* is the subject of a high-tech search.

— by Nina D. Miller, assistant editor

Pictured is a during-construction shot of one of *Britannic's* four funnels, which were discovered during the *Britannic* search.



29 GREAT PASSENGER VESSELS

A gallery of passenger vessels built around the world, with an emphasis on the companies that helped design and outfit them.

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KMY grabs \$1 billion contract ... I.B. Ltd. buys cruise ship and plans \$10 million upgrade in May. (This new monthly section in *Maritime Reporter* reviews marine financial news and trends.)

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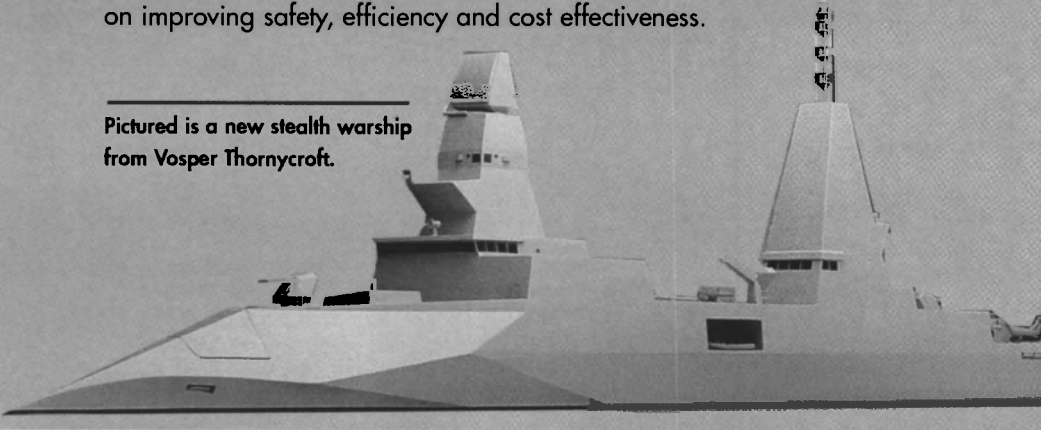
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Vessel and marine equipment innovation continues world round with an emphasis on improving safety, efficiency and cost effectiveness.

Pictured is a new stealth warship from Vosper Thornycroft.



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JO Tankers BV	Norway	Chemical carrier
JO Tankers BV	Norway	Chemical carrier
Saupiquet	France	Tuna purse seiner
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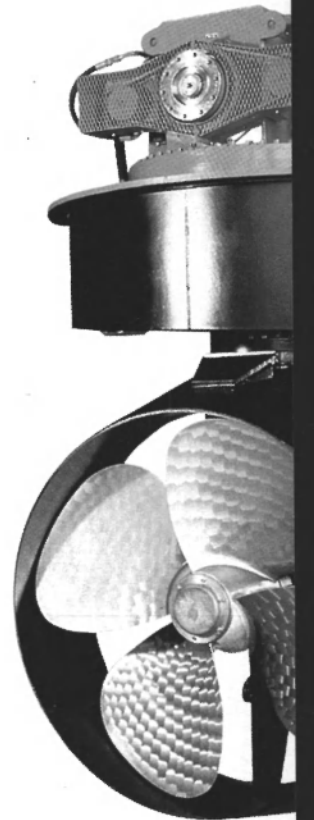
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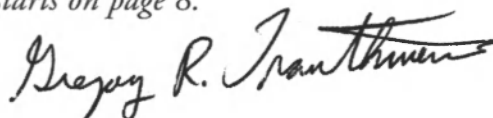
EDITOR'S NOTE

Forging the year's editorial plan up to five months in advance makes the practice, in some regards, an inexact science. However, targeting the January edition for a U.S. maritime review now seems highly insightful, given the number of significant developments late in 1996.

For example, the U.S. Navy has finally awarded the much-anticipated contract to build its next series of warships — LPD-17 — to the Avondale-led team. The awarding of the contract, which was expected last September, is significant given the financial ramifications alone: It has an initial value of \$641 million with a potential for billions more. Further, the procurement, outfitting and lifecycle maintenance plans for these ships are truly unique for a USN ship. A detailed report from Associate Editor Bridget Murphy, starts on page 74.

Offshore business, driven by new capabilities for deepwater drilling, is generating (and will continue to generate) big business in the Gulf of Mexico region. Gauging from the "show buzz" at the recent workboat event in New Orleans, the mood is optimistic, and several companies are positioning themselves to capitalize on the burgeoning market. Service Marine Industries is one such company, evidenced by its introduction of a new SWATH-type deepwater supply vessel dubbed THOR. See this story on page 69.

The business of exploring and recovering lost ships is often debated, heatedly, in regards to the legal and moral rights of explorers to disturb ships and souls lost at sea. A project headed by Woods Hole Oceanographic Institute's Dr. Robert Ballard, reported on by Assistant Editor Nina Miller, is refreshing in that it seeks not to reap physical rewards from below. Dr. Ballard's mission in exploring HMHS Britannic — sistership to the Titanic — is not to disturb the ship, but to develop the world's first virtual undersea museum. The story starts on page 8.



Gregory R. Trauthwein, editorial director

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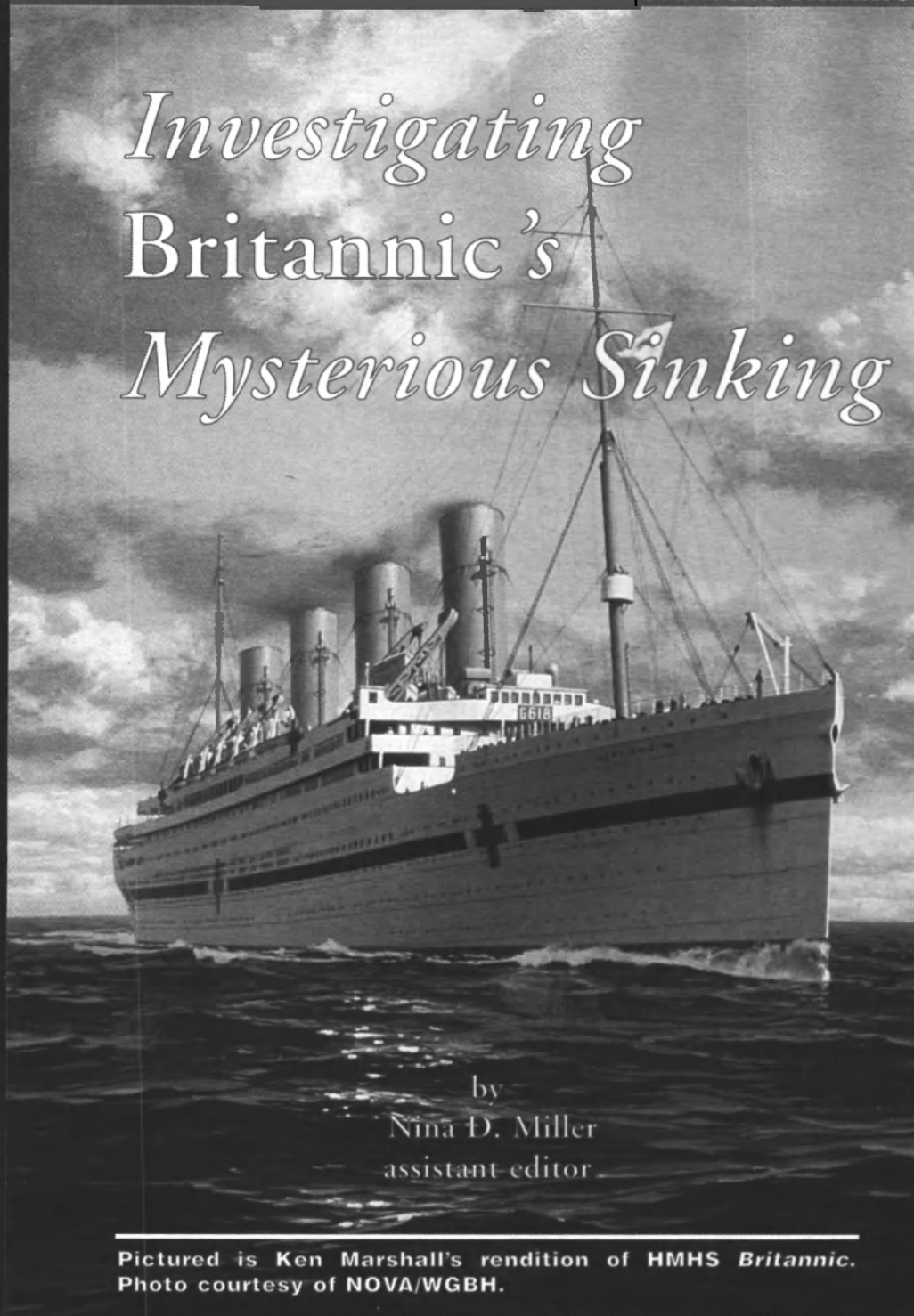
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Investigating Britannic's Mysterious Sinking



by
Nina D. Miller
assistant editor

Pictured is Ken Marshall's rendition of HMHS *Britannic*. Photo courtesy of NOVA/WGBH.

Having experienced the same fate, but not the infamy, of sister-ship RMS *Titanic*, HMHS *Britannic* lies 400 ft. (122 m) below the Aegean Sea, off the island of Kea. The 882-ft. (269-m) vessel sank on November 21, 1916, in a mere 55 min. — approximately

one-third of the time it took *Titanic* to go down. NOVA (a television program produced for PBS by the WGBH Science Unit) joined Oceanographer **Robert Ballard** of the Woods Hole Oceanographic Institute in his exploration of this wreck site, part of his quest to dis-



Dr. **Robert Ballard** — in search of answers regarding the mysterious sinking of *Britannic* — is shown boarding U.S. Navy sub NR-1.

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Built To Last ... Downed In Service

RMS *Britannic* was the third member of the Olympic class (also consisting of RMS *Olympic* and *Titanic*) built at Harland and Wolff's Belfast yard for White Star Line in the early 1900s. The ships were intended to compete with Cunard's *Lusitania* and *Mauretania*, transporting passengers from Southampton, in the U.K., to New York. After the tragedy of *Titanic*, special attention was paid to safety features during construction of *Britannic*. Eight giant gantry davits were to be installed on the boat deck, each capable of lowering up to six, 34-ft. (10.4-m) lifeboats: 12 forward and 24 aft on the promenade; and 12 on the poop deck. The 48 boats under davits could accommodate all 2,572 passengers and 950 crew of the vessel's design capacity. Five of *Britannic's* bulkheads were extended to 40 ft. (12.2 m) above

the waterline. A double hull raised four ft. (1.2 m) above load line and six ft. (1.8 m) around machinery spaces was installed; and the ship's watertight subdivision was increased to standards proposed by inquiries into *Titanic's* misfortune. *Britannic* would reportedly float with up to six compartments flooded.

Like its sisterships, *Britannic* was propelled by two reciprocating engines exhausting into a low pressure turbine. Its triple-expansion reciprocating engines, the largest built at that time, weighed more than 990 tons each, and the turbine engine weighed 500 tons. The 50,000 hp output — 32,000 hp from the reciprocators, 18,000 hp from the turbine — would provide a service speed of 21 knots.

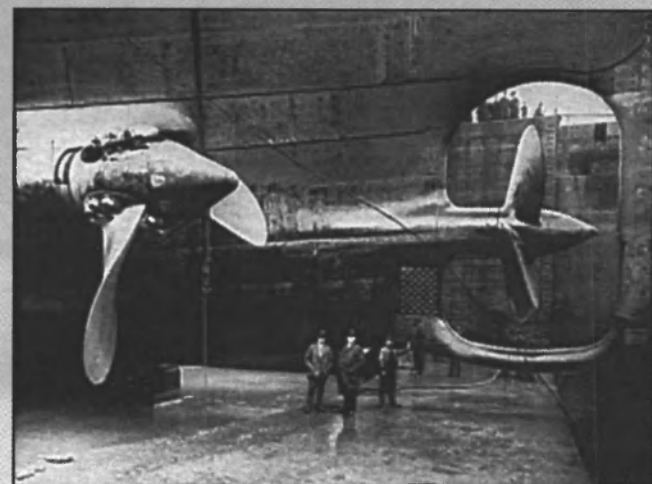
On February 26, 1914, *Britannic* was launched, and was scheduled to begin service to New York by the spring of 1915. However, due to the outbreak of World War I, the vessel was requisitioned by the admiralty and officially refitted as a hospital ship; its interiors con-



Photos courtesy of NOVA/WGBH.

LEFT: Pictured is a during-construction shot of one of *Britannic's* four funnels, which were discovered by Dr. Robert Ballard and his team.

RIGHT: Pictured are *Britannic's* propellers which measure 23.6 ft. (7.2 m) in diameter.



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INVESTIGATING BRITANNIC'S MYSTERIOUS SINKING

verted into wards and operating rooms. On December 12, 1915, the ship arrived in Liverpool, England, and was commissioned HMHS *Britannic*, ready for war service.

Britannic was outfitted with 2,034 berths and 1,035 cots for casualties. The ship's open spaces were filled with 14 lifeboats under

conventional Welin davits with 14 additional collapsibles beneath. Under the command of Capt. **Charles A. Bartlett**, the ship was to hold a medical staff of 52 officers, 101 nurses, 336 orderlies and a crew of 675. On December 23, *Britannic* departed on its maiden voyage to Naples, then Mudros on

the Greek island Lemnos, the first of just five runs the vessel would complete.

On Sunday, November 12, 1916, *Britannic* left Southampton on its sixth voyage, again bound for Naples and Mudros. Onboard were 673 crew and 392 hospital staff. Before it was able to pick up

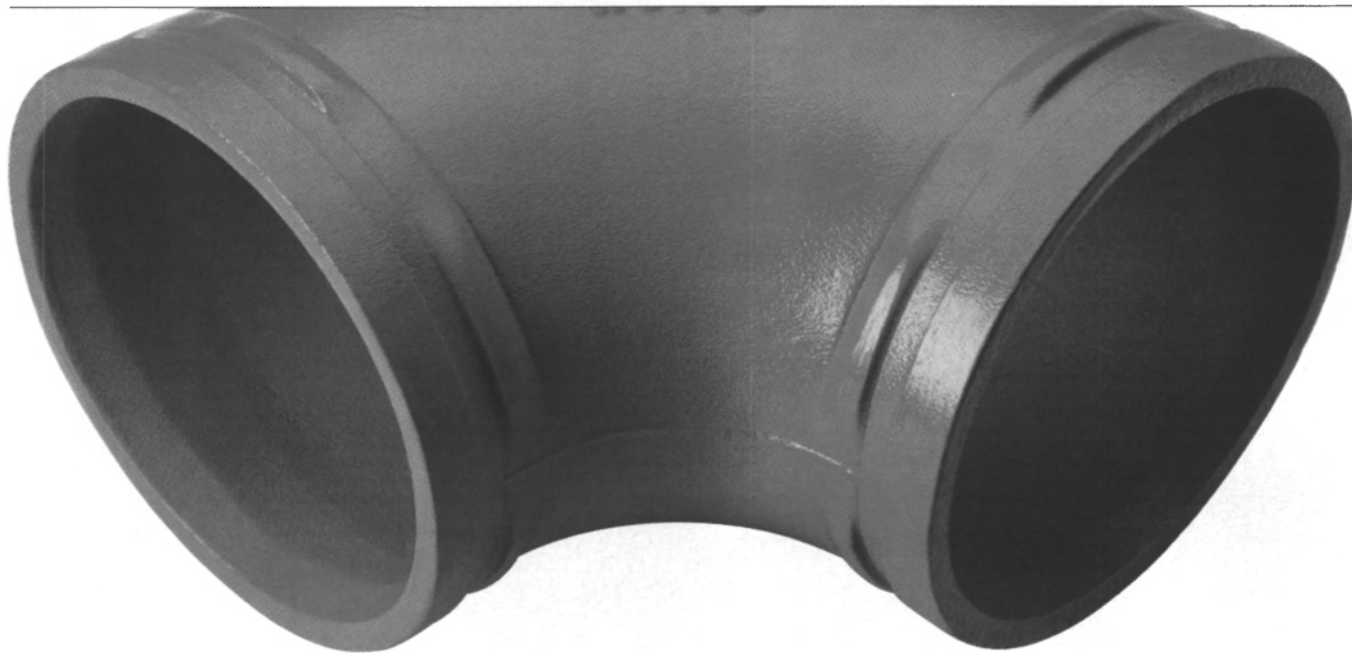
casualties, on the morning of November 21, *Britannic* experienced a huge explosion and began to sink, quickly. The cause of the explosion is as yet undetermined; the majority of survivors believe it was the result of a torpedo hit, while experts concede a mine was the source. Apparently, the explosion occurred at the watertight bulkhead between hold Nos. 2 and 3, also damaging the bulkhead separating hold Nos. 2 and 1, while boiler room Nos. 5 and 6 simultaneously began taking water — roughly the same damage sustained by *Titanic* four and a half years earlier.

Of the 1,035 onboard, only 30 were killed. The casualties occurred when lifeboats were lowered into turning propellers, as Capt. **Bartlett** unsuccessfully attempted to ground the ship on the island of Kea after transmitting an SOS signal. This perhaps explains the eight mile difference between the location of the site as recorded by the British government and the position where French explorer Capt. **Jacques Cousteau** actually discovered the wreck in 1975. Twenty years later, Dr. **Ballard** used Capt. **Cousteau's** findings to discover what he described as "the most perfect ship of its vintage."

400 Ft. Under The Sea

On August 28, 1995, Dr. **Ballard** and his team, along with a NOVA crew, departed from Hania, Crete, to begin their search for *Britannic*. Having discovered the wreck sites of both *Titanic* and *Lusitania* only to find virtually destroyed remains of what were once mighty ships, Dr. **Ballard** was more than thrilled with the condition of *Britannic*. "*Titanic* was broken in half; its stern had imploded. *Britannic's* stern is in beautiful condition," said the scientist. According to Dr. **Ballard**, while *Titanic* took weeks to locate, the search for *Britannic* was successfully completed in a matter of hours. Factors leading to the quick find included the search system which was used; the fact that *Britannic* was located in very shallow water close to land; and the accuracy of the estimated location.

U.S. Navy sub *NR-1*, remotely operated vehicles (ROV) *Voyager* (owned by Peri TriTech) and *Phantom* (owned by University of Connecticut's Avery Point Undersea Research Center), and command boat *SSV Carolyn*



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Carnival And Costa Crociere Sign Letter Of Intent

Carnival Corp. and Airtours plc announced the signing of a letter of intent to buy Italian-based cruise operator Costa Crociere. The cost of the acquisition is expected to be approximately \$300 million cash. Costa currently operates 10 ships on worldwide itineraries.

Hvide Marine Announces Offshore Acquisitions

In addition to the acquisition of five offshore supply boats announced on Nov. 19, Fort Lauderdale, Fla.-based marine support and transportation services company Hvide Marine Inc. announced agreements for the purchase of eight offshore energy support vessels, one AHTS tug and two harbor tugs for a total of \$26.9 million. The company also announced that it has filed a registration statement with the Securities and Exchange Commission for a public offering of six million shares of the company's Class A common stock. Net proceeds from the offering are intended to be used to fund the \$53.6 million aggregate purchase price for the current and previously announced acquisition, to pay down debt of approximately \$20.8 million, and for general corporate purposes.

Lifton Protests Navy Contract

On December 26 Ingalls Shipbuilding filed — with the General Accounting Office — a protest of the Navy's recent award of the LPD 17 contract to Avondale Industries. (For details of the LPD 17 contract, turn to page 74).

Winninghoff Delivers Boat

Winninghoff Boats has delivered the latest version of its drop-front utility boat to the Commonwealth of Massachusetts, Metropolitan District Commission, for equipment transport in a beach landing environment. A 26-ft. (8-m) open boat, with center console and Volvo I/O, the boat is designed to transport maintenance equipment between shore facilities and the various island parks in Boston Harbor. Winninghoff has built its Thacher II workboats in sizes from 23 to 35 ft. (7 to 11 m). While hull characteristics and outfitting features vary with each project, Thacher II has a standard shallow draft, modified Vee hull, blunt upper bow and drop-ramp.

For more information on Winninghoff
Circle 63 on Reader Service Card

Hitachi Zosen Completes VLCC



Pictured is double-hulled VLCC Sovereign Unity.

Hitachi Zosen's Ariake Works has completed construction of its fifth VLCC. The 307,000-dwt *Sovereign Unity* was delivered to Majestic Tankers Corp. The vessel features a double hull structure designed to prevent marine pollution. Inside the double hull structure is an access running from the top deck to the double bottom which is designed to improve ventilation and facilitate inspection work. *Sovereign Unity* is equipped with Hitachi Zosen's super stream duct in front of the propeller, and a large bulbous bow is provided below the water line, further increasing the tanker's propulsion efficiency. The hull is coated with self-polishing, anti-fouling paint for long-term hull-fouling prevention.

For more information on Hitachi Zosen
Circle 10 on Reader Service Card

Sovereign Unity Main Particulars

Length o.a.	1,082 ft. (329.8 m)
Breadth	190 ft. (58 m)
Depth	104.3 ft. (31.8)
DWT	307,000
Main engine	Hitachi Zosen MAN B&W7S80MC diesel
Classification	ABS

MES Delivers FPSO



Pictured is FPSO Whakaaropai.

Mitsui Engineering & Shipbuilding Co., Ltd. (MES), along with its affiliate Modec Inc., has delivered a FPSO (floating production storage and offloading unit) to Shell Todd Oil Services Ltd. of New Zealand.

The vessel, named *Whakaaropai*, was converted from a crude oil tanker and features newly installed, on-deck process facilities and a special mooring system.

After conversion work at a subcontract yard in Singapore, *Whakaaropai* sailed to the Maui B offshore oilfield off North Island, New Zealand and successfully began its production and offloading operations.

For more information on MES
Circle 67 on Reader Service Card

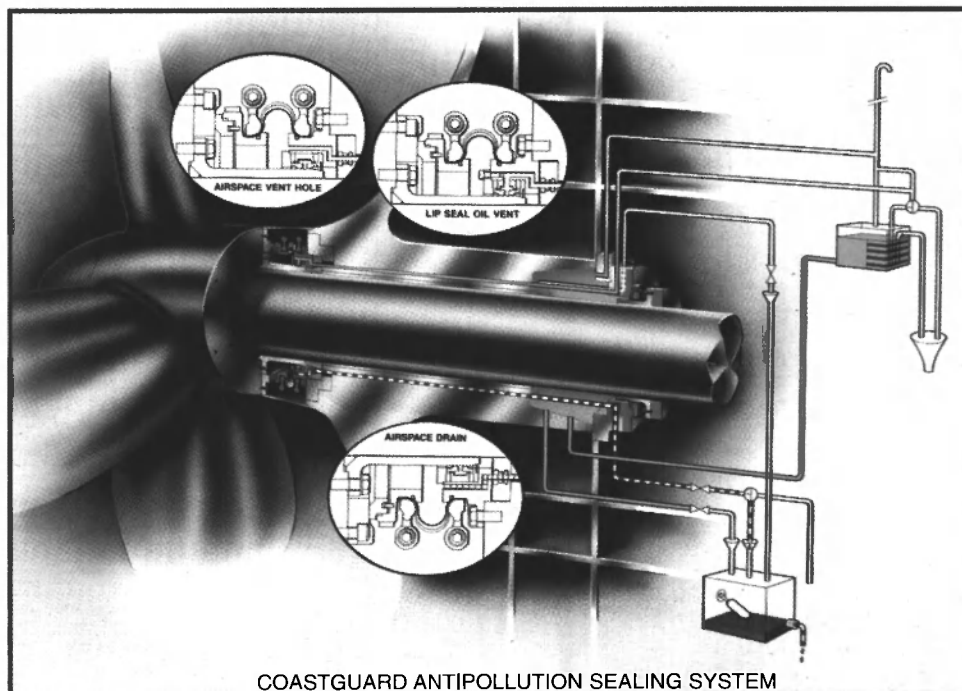
Whakaaropai Main Particulars

Length	833 ft. (254 m)
Breadth	143 ft. (43.5 m)
Depth	23 m
Max. production capacity	43,200 bbl/day
Crude oil storage capacity	660,000 bbl

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INVESTIGATING BRITANNIC'S MYSTERIOUS SINKING

Chouest (owned by Edison Chouest Offshore) all played a part in the search. Dr. **Ballard** and his team used a long distance search sonar system which was able to spot the wreck site (the exact location of which is four miles northwest of Kea) from several miles away.

NR-1 is able to submerge to 3,000

ft. (914.4 m), carries a crew of 11 plus two passengers and remarkably, can stay underwater for one month. The sub uses side scan sonar at 177.5 kHz with a range option of 100 or 400 yds. The vessel also features scanning sonar which looks straight ahead, as well as downward-facing cameras.

"Forward scanning was great for finding the site, and side scan was great for photographic purposes," said Dr. **Ballard**.

Britannic lies on its starboard side in only 400 ft. of water, so shallow that the bow hit bottom before the vessel completely sank, bending it towards the surface. In

addition to a massive hole in its forward bow, below the shelter deck, the ship's hull is completely blown away between hold Nos. 2 and 3. Hull sections of the keel are missing for a distance of about 60 to 70 ft. (18.3 to 21.3 m). The port side hull plates are bent outward indicating a large explosion from within, most likely from ignition of coal dust in the reserve bunker.

In addition to finding the actual wreck site, Dr. **Ballard** attempted to discover the cause of *Britannic's* fatal explosion. In order to do so, he reversed the Debris Field Theory which led him to *Titanic*. Dr. **Ballard** offered the following explanation of this theory: "When a ship sinks, the ship is ruptured and opened up. It acts like a salt shaker, dumping a lot of debris into the water. The current distributes this debris, and as it falls, a fallout pattern is created. The debris that falls to the ocean floor covers a very long distance and leads you to the site. This is a very effective search strategy."

In the case of *Britannic*, since the ship continued to sail as it sank, the search team followed the fallout pattern from the ship, hoping this would lead them to a mine anchor. Unfortunately, *Carolyn Chouest* had to be returned to port before an anchor was found. However, before returning on September 5, the search team did find all four of the ship's 60 ft. (18.2 m) long funnels which, according to Dr. **Ballard**, is very rare, as funnels usually are blown away and never recovered.

From The Ocean Floor To The Information Highway

With all the emphasis placed on safety during its construction, how could *Britannic* have gone down in only one-third the time it took *Titanic*? As Dr. **Ballard** responded, "There are some things we will never know."

One theory is human error. The explosion reportedly occurred during a change in watch shift, leaving open the possibility that watertight doors may not have been shut. In addition, portholes on decks E and F were apparently open, allowing tons of additional water to enter the hull.

Though *Britannic* never realized its intended potential, it has provided Dr. **Ballard** with hope that his vision of creating a virtual

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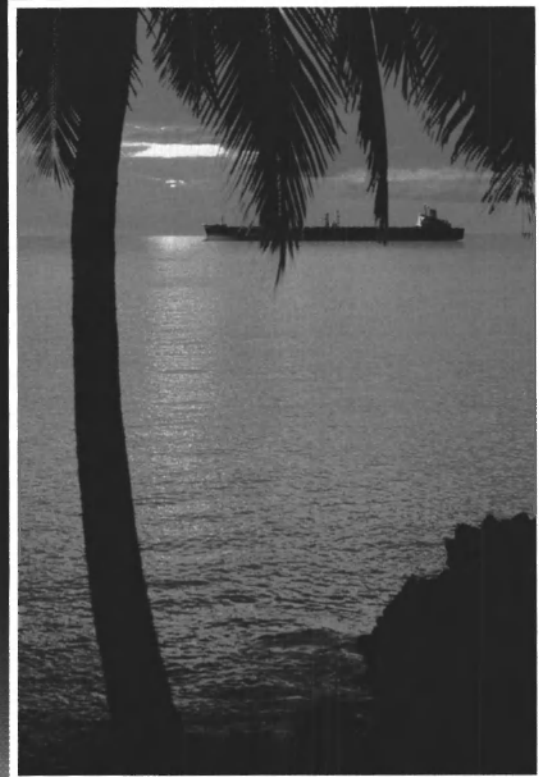
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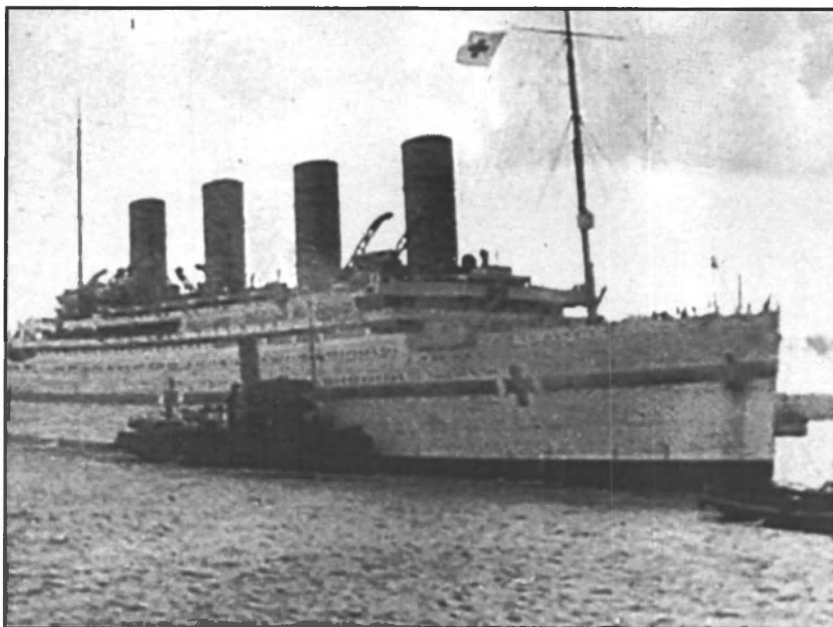
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INVESTIGATING BRITANNIC'S MYSTERIOUS SINKING



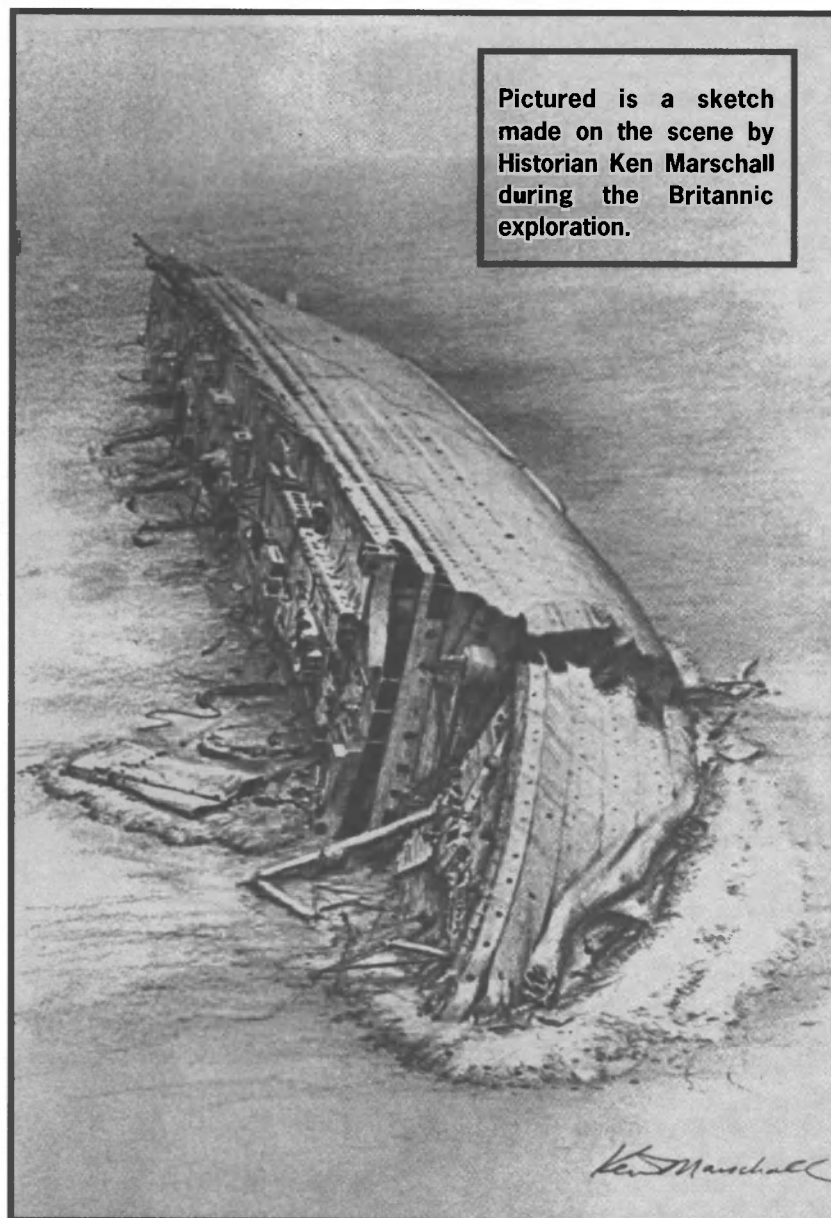
underwater sea museum will one day become reality. This summer, Dr. **Ballard** plans to explore the floor of the Mediterranean Sea, home to ships much older than any he has yet discovered. "This search will be of archeological, as well as historical importance," he commented. Dr. **Ballard's** long range objective is to work in the Black Sea where he expects to find a flawless subject for his underwater museum.

Intended to be the titan of its class, HMHS *Britannic* fell to the bottom of the sea before it completed even one year of service. Like its sistership *Titanic*, *Britannic* never made the transatlantic voyage for which the Olympic class was slated. Although it did not gain fame on the seas, *Britannic* has won the title of the largest liner on the ocean floor today.

"The interest in *Britannic* was to demonstrate that ships are well preserved. There is no reason to recover artifacts. We can turn it into a museum, accessed from the information highway by laying a cable

from shore to ship. The first phase was to survey the ship and get a detailed data base. We'll lay a monorail on the upper promenade and into the boat deck. Right now we're exploring to determine where you would lay the cable. The next phase is to get permission from the ship's owner, British Historian **Simon Mills**, and the Greek and British governments," said Dr. **Ballard**.

The NOVA special on Dr. Ballard's exploration of Britannic, entitled Titanic's Lost Sister, is scheduled to air on January 28 at 8:00 p.m., ET on PBS.



Pictured is a sketch made on the scene by Historian Ken Marshall during the *Britannic* exploration.

HMHS *Britannic* Main Particulars

(as registered in Liverpool on December 8, 1915)

Length o.a.	882 ft.
Length b.p.	852.6 ft.
Gross tonnage	48,158
Displacement	78,950 tons
Beam	94 ft.
Depth (molded)	64.3 ft.
Draft (loaded)	34.7 ft.
No. of decks	9
No. of bulkheads	16
Engines	(2) sets and one turbine
Description of engines ...	inverted direct-acting triple expansion engines and one low-pressure turbine driving center shaft
No. of shafts	3
Speed21 knots

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FBM Wins \$30 Million Contract From Philippine Interest

FBM Aboitiz Marine Inc. has secured an order for four TriCat 50-m catamarans from Philippine high speed ferry operator Universal Aboitiz Inc. Options for six additional vessels were also signed, bringing the total value to \$70 million. The new vessels are due for delivery starting in December 1997, and will replace the existing fleet which will be reassigned to other routes.

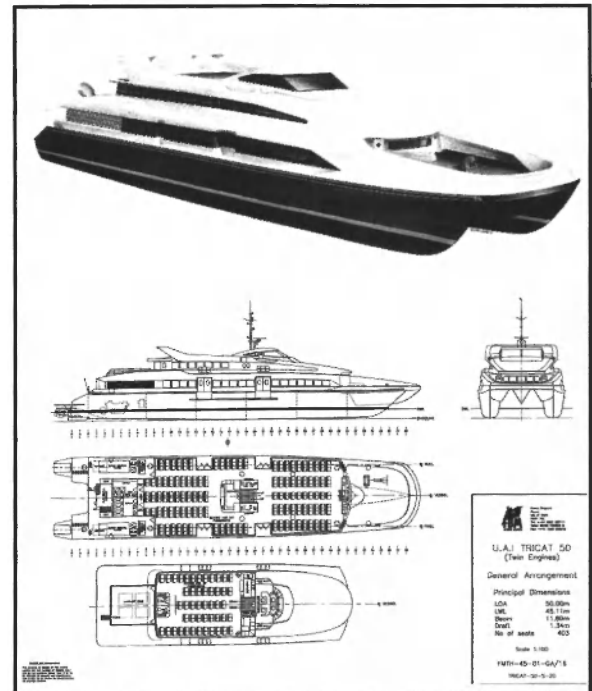
With a passenger capacity of 404 and cruising speed of 36 knots, the TriCat 50 vessels will reportedly be the largest passenger catamarans in Asia. The vessels will be built at the company's new shipyard in Balamban, Cebu, the Philippines.

"When planning for the next generation of lux-

ury high speed craft, we looked at many vessels with a wide range of different specifications, but none could match the TriCat 50 for performance, design and sheer passenger appeal. It is especially fitting that this state-of-the-art luxury vessel was designed for, and is being built in the Philippines," said **Ian Thompson**, general manager of Universal Aboitiz Inc.

The TriCat 50 is designed by FBM Marine Designs, Cowes, and will be built to the latest IMO standards and DNV Class R3. This order follows orders for five TriCats for Hong Kong and two more TransCats for Portugal.

For more information on FBM
Circle 64 on Reader Service Card



Danyard Delivers *Stolt Confidence* To Stolt Parcel

Danyard has recently delivered M/T *Stolt Confidence* to Stolt Parcel Tankers Inc., part of the Stolt-Nielsen SA Group. The ship is to be followed by an additional eight vessels, five of which will be built at Danyard, and three of which will be constructed at Societe Nouvelle des Ateliers et Chantiers du Havre (SNACH). Like its sistership *Stolt Innovation* which was delivered last May, *Stolt*

Confidence incorporates features designed for environmental protection, safety and operational efficiency.

The vessel has 42 integral and four deck cargo tanks, all of which are constructed of solid stainless steel, fitted with a separate pump and pipeline and able to handle hazardous and corrosive cargoes (IMO Type I).

"M/T *Stolt Confidence* and her sisterships are fitted with the most advanced cargo quality control systems found in the industry, and are designed to carry the full range of

high-quality specialty chemicals," said **Samuel Cooperman**, president of Stolt Parcel Tankers Inc. "This is also the first class of chemical tankers to be fitted with medium speed diesel-electric propulsion instead of a conventional slow-speed diesel engine. The ship's four diesel-electric generators provide a higher degree of security than that offered by one single, two-stroke diesel engine, yet have the same propulsive efficiency. Diesel-electric propulsion is also more environmentally friendly. The trend-setting cargo quality

and environmental protection features make the Innovation class parcel tankers the standard upon which the chemical shipping industry's future rules and regulations are likely to be based."

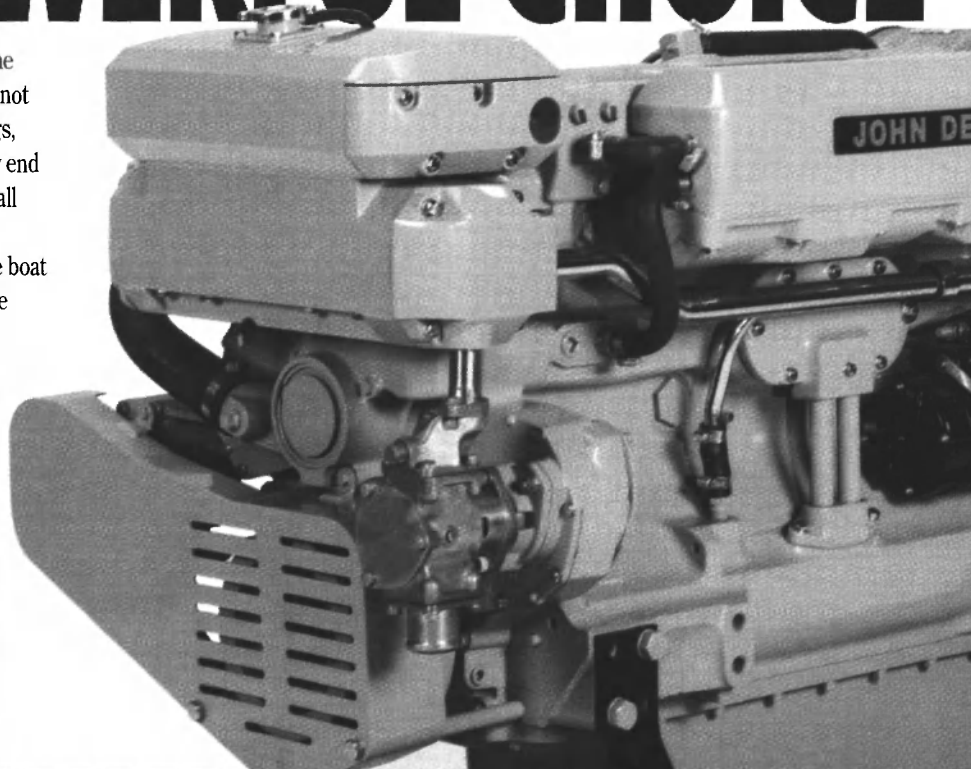
Stolt-Nielsen SA is a worldwide provider of transportation services for bulk liquid chemicals, edible oils, acids and other specialty liquids.

The company also owns 70 percent of subsea service contractor Stolt Comex Seaway SA (SCS).

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Inexa Names Jamestown Metal Exclusive U.S./Canadian Agent

Jamestown Metal Marine Sales, Inc. has been named the exclusive agent in the U.S. and Canada for Inexa Profil AB, a worldwide designer and producer of steel profiles for ship hull construction. Inexa has a complete range of profiles, including bulb flats from 60 to 650 mm which can be supplied to the requirements of classification societies such as LR, ABS and DNV.

In addition, the U.S. Coast Guard has accepted the use of Inexa's jumbo bulb flat in the construction of vessels in accordance with the Jones Act.

Jamestown Metal Marine Sales, Inc. has represented Inexa Panel AS since 1988.

For more information on
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\$83M pipelay system ordered for *Fennica*

Construction vessel to get new pipe laying system

DSND Ocean Tech Ltd. of Aberdeen has placed an \$83-million contract with Norson Power to design, manufacture and install a pipelaying system aboard construction vessel *Fennica*. The innovative design will enable the high speed laying of rigid pipelines measuring up to 12 in. in diameter and flexible pipelines and risers measuring up to 19 in. in diameter in water depths of 6,560 ft. (2000 m).

The system comprises a lightweight stern ramp, to be mounted on the vessel's existing 'A' frame foundations, complete with containerized hydraulic power packs and control cabin. Capable of elevation between 20 and 90 degrees, the ramp incorporates a pipe clamp and straightener as well as Norson's unique triple track tensioner, which is designed to handle a wide range of rigid and flexible pipes without damaging fragile surfaces and coatings.

Safety features include a fail-safe elevating mechanism and main and auxiliary work platforms which remain horizontal whatever the ramp angle. With the Norson system, *Fennica* will be able to store and lay up to 1,000 tons of pipe on the main reel and 250 tons of pipe (or umbilical) on the piggy-back reel.

Angus Lamont, project engineer at DSND commented: "We needed a lightweight system which not only offered a high level of safety but could be quickly installed on a number of 'vessels of opportunity' with minimum modification. Tough requirements; but Norson came up with the best solution."

Norson Power is a long established Scottish company with factories in both Glasgow and Aberdeen. Other current orders include modular pipelaying and specialized winch systems for the offshore oil and gas industries.

Strategic positioning of standby vessels justified

The British government's decision to station a third standby vessel on the Western Approaches (see *MR/EN* December, 1996 European Update) has immediately proved



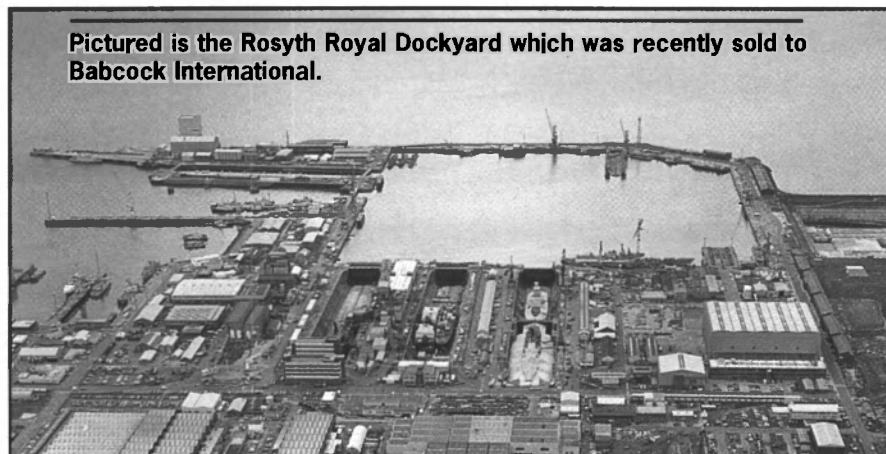
Winning refit contracts for vessels such as NCL's flagship SS Norway has helped A&P's bottom line.

justified with the salvage of a tanker carrying 28,000 tons of urea by emergency towing vessel (ETV) *Far Minara*. Remarkably, this first operation for the powerful anchor handling tug took place only half a mile from where it was moored.

Having just taken on fuel at Falmouth, the Singapore-managed tanker *Chembulk Rotterdam* ran aground threatening to pollute the

Cornish coastline. HM Coastguard immediately gave clearance to Howard Smith Salvage Ltd., operator of the 12,400-hp *Far Minara*, to give assistance. After several hours the tanker was successfully refloated.

Howard Smith also acted as a consultant in the successful recovery of semi-submersible rig *Shelf 4* which broke away from its berth in Portland Harbour during the



Pictured is the Rosyth Royal Dockyard which was recently sold to Babcock International.

severe gales which recently hit the English South Coast.

Profits mount for U.K. ship repairer

A&P, one of the U.K.'s leading ship repair groups, has projected that turnover by the close of the 1996 financial year will double that of 1995. Employment levels at all four of the company's facilities — Wallsend (Tyne & Wear), Chatham, Southampton and Falmouth — are at the highest level reached in more than a decade.

Part of A&P's success is credited to a three-year investment program in which it spent millions of pounds on facilities, apprenticeship schemes, retraining, updating working practices and improving productivity.

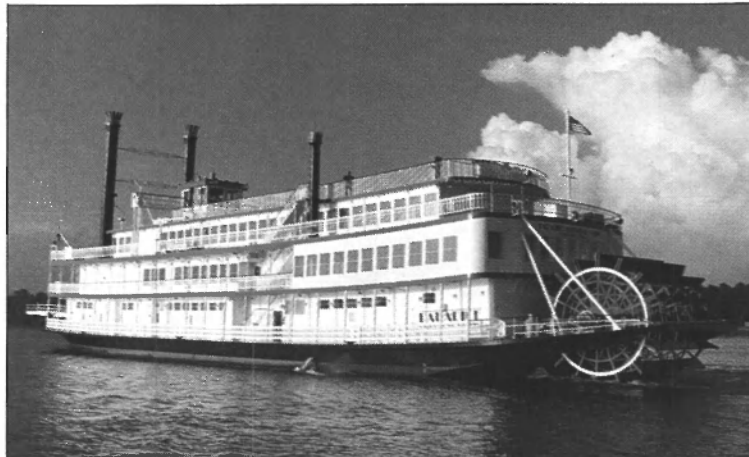
During the past few months, A&P Tyne handled a \$33-million contract for the life extension of FPSO *Maersk Dorset*; Falmouth won a \$14-million deal to refit the U.K. Ministry of Defence (MoD) Royal Fleet Auxiliary (RFA) vessel *Fort Victoria* and completed the annual refit of *Stena Challenger*; and Southampton clinched prestigious cruise liner contracts such as the refit of SS *Norway* and Fred Olsen Lines' vessels *Black Watch* and *Black Prince*. In addition, this month, Cunard flagship *QE2* will arrive for a 19-day, \$20-million revamp.

A&P Chatham, while not enjoying such high profile contracts, has experienced significant growth this year with turnover up 31 percent. The company has completed no fewer than 25 contracts for scheduled dredger repairs, as well as 125 emergency repair contracts for customers in the same industry. The yard also derives around 40 percent of its business from supplying flying squads to tackle afloat or in-port work for customers, primarily Europeans.

Tyne's \$33-million Maersk contract, placed by the AP Moller Group, is a follow-on deal from a successful life extension project the yard performed on sistership *Dagmar Maersk* earlier in the year.



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EUROPEAN UPDATE

The first contract, valued at \$24.7 million, brought more than job security for the yard's workers, leading to the establishment of a major new steel work and fabrication facility.

Measuring 5,000-sq-m and situated in a former part of the Swan Hunter Neptune yard, the factory,

incorporating new burning machines and fabrication areas, handled total production of the 1,000 tons of steel required for the conversion work on *Dagmar*. This included 9.8 ft. (3 m) high module support frames which were installed on the main deck of the vessel in preparation for the top-

sides infrastructure, which was fitted by SLP on Teeside. The overhaul work on the MAN B&W engines was also carried out in-house, as was work associated with Lloyd Register's third special survey of the vessel.

To enable the steelwork modifications, surveying and painting to be

carried out, all tanks were staged — a project which involved over 110 miles of steel support tubing and 65 miles of scaffolding boards. Approximately 2,000 life extension brackets were installed, module support foundations were laid and a moonpool was constructed. A&P also overhauled the accommodation areas in order to prepare the ship for catering larger crews.

Work on *Maersk Dorset*, due for completion early in 1997, secured work for many for another six months. The entire conversion task is being carried out by Tyne based companies; specialist topside work is completing at the AMEC yard on the river and dry-docking and sub-waterline work is being conducted at Tyne Tees' Hebburn yard.

The Falmouth facility — with turnover up 65 percent from \$34.7 million in 1995 to approximately \$58 million this year — carried out significant MoD contracts on vessels *Orangeleaf* and *Fort Victoria*, and also substantially boosted its passenger vessel business.

Ferries have refitted in record numbers at Falmouth this year. Two American LASH-type vessels have recently been refitted at the yard; the owner taking on a rare transatlantic cargo voyage in order to offset the deviation cost.

The definite highlight in the ferry sector was the refit of the 18,523-gt, 514.9-ft. (157-m) RoPax vessel *Stena Challenger*. The contract included standard annual refit work, including hull blasting and painting and engine/systems inspection. Modification of shore link equipment was also required because *Challenger* has been transferred from the Dover-Calais run to the Holyhead-Dublin crossing. A&P fitted a complete new stern ramp and modified the existing bow ramp to enable the vessel to make optimum use of boarding facilities on its new route. The 49.2 x 29.5 x 6.5 ft. (15 x 9 x 2 m), 40-ton ramp was fabricated at A&P Tyne's Neptune yard and transported to Falmouth by sea.

Commenting on A&P Falmouth's successful contract bid against stiff competition from other European yards, Stena Line Ship and Port Management Director **Maurice Storey** said: "Our choice, ultimately, has to be based on price. We are ourselves operating in an extremely competitive market. However, the performance of A&P Tyne on last year's refit certainly did no harm to the company's bid



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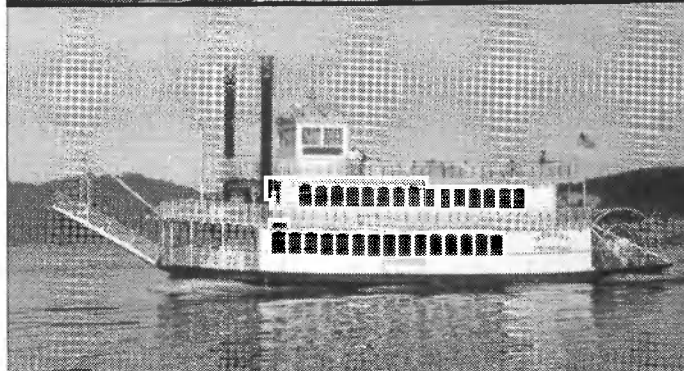
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EUROPEAN UPDATE

this year, and the greatly enhanced, now well proven, steel-work capability within the group was also important on this modification contract. Finally, the geographical location of Falmouth is also ideal, given *Challenger's* route change."

In terms of publicity, however,

A&P Southampton has stolen the headlines this year by completing the refit of SS *Norway* ahead of schedule, and enjoying a record fall season. A particular challenge for the *Norway* contract was, for the first time anywhere in the world, interpretation of 1997 SOLAS regulations with Bureau Veritas clas-

sification. This inevitably added a significant amount of work to the contract, including installation of new bulkheads and approximately 130 fire doors.

Basic work included complete overhaul of *Norway's* steam propulsion plant, propellers and final drive system; blasting and

painting (four coats) of three acres of the sub-waterline steel hull; extensive pipework in the engine room and other areas; and, cosmetically, an extensive refurbishment of the main galley, the addition of eight new shops, a casino extension and a re-siting of the ship's library.

One of the most ambitious goodwill projects currently underway in the world is the construction of Jubilee Sailing Trust's (JST's) wooden sailing barque, which will sail as a sister vessel to the charity's *Lord Nelson*, which offers tall ship sailing trips integrating the able-bodied and physically disabled as one crew. The vessel has been many years in the planning with fundraising frenzies in operation since 1993 to raise the \$13 million needed for the project. Reports indicate that approximately \$3.3 million has still to be secured.

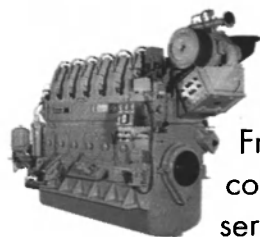
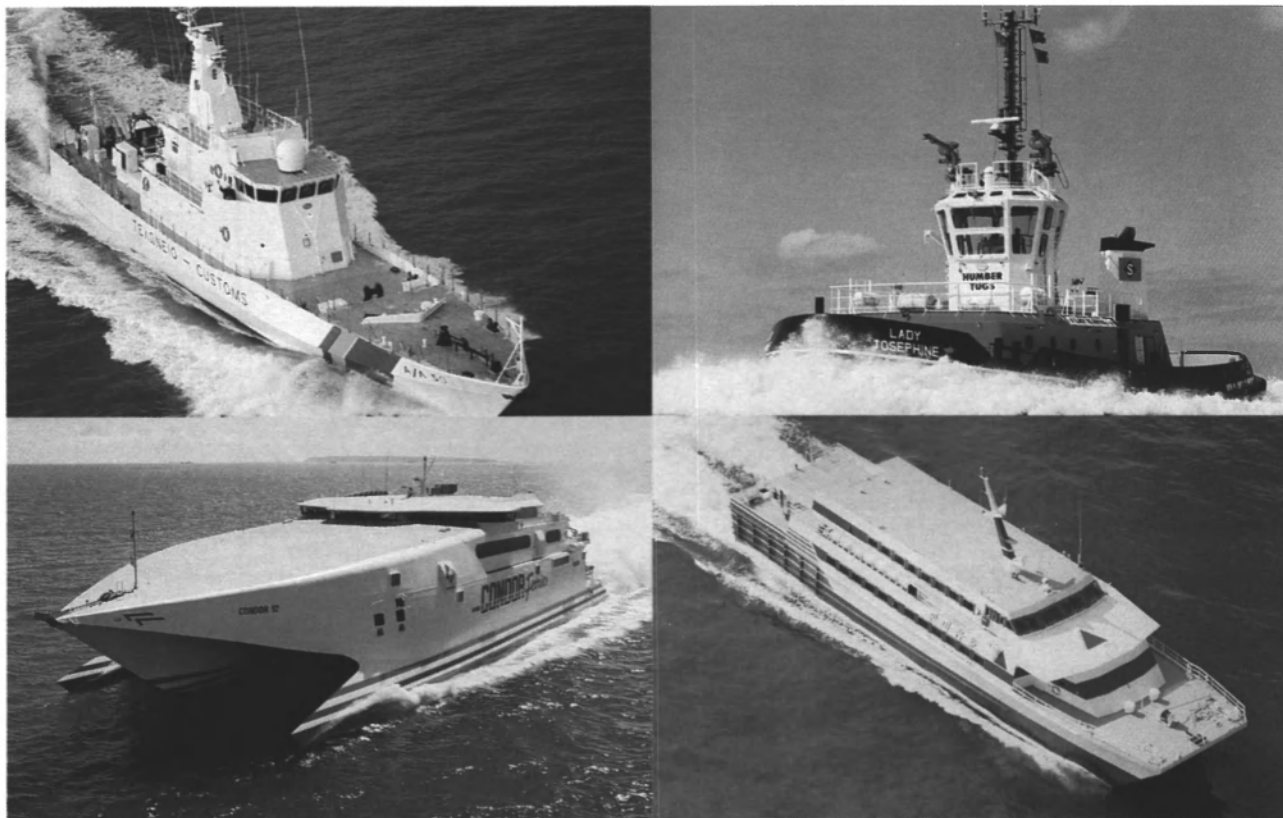
Designer **Tony Castro** worked closely with JST in order to advantageously design the ship based on ten years of operational experience with *Lord Nelson*.

The ship, destined to be the largest wooden ship of its kind in the world, is being built by skilled workers and an unskilled force including disabled people at the Merlin Quay site (now renamed Jubilee Yard) in Southampton. Shipbuilding Director **Howard Mackenzie-Wilson** spoke at the keel laying ceremony about breaking frontiers in design and technology, stating: "Make no mistake, this is not just shipbuilding, this is a second crusade. Together we are going to build the biggest strip plank, wood epoxy structure in the world."

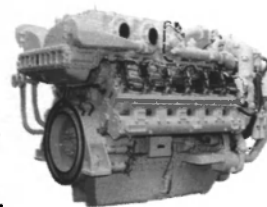
At 213.2 ft. (65 m) with a beam of 32.8 ft. (10 m), the new ship will have capacity for ten permanent crew members, and 20 able-bodied and 20 disabled crew members, including eight berths for wheelchair users. Hull construction utilizes an age-old method with Siberian larch used for strip planking. Epoxy and other glues are used to replace edge nails where possible in order to increase overall vessel strength.

The structural element of the ship is traditional and includes building frames, deck beams, knees and floors that will be assembled into ring frames, thus creating the skeleton onto which the planks will be placed. Due to the strength of the laminated tim-

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ber, however, fewer ring frames will be needed. The keel will not be positioned until the hull, which is being built upside down, is virtually complete.

New owners at Scottish Naval Dockyard

Following protracted negotiations, the MoD has finally sold Rosyth Royal Dockyard (RRD) in Fife, Scotland. The news was announced to the Scottish Grand Committee of the House of Commons on Nov. 25, and not surprisingly, the new owner is Babcock International, the multinational engineering company which has managed the yard commercially since April 1987 with ever-increasing success.

As a crucial part of Babcock's hard-won agreement, the MoD has confirmed the allocation of an extensive program of work stretching over at least the next decade. This will include refits to nuclear submarines, aircraft carriers, destroyers, frigates and smaller military vessels. In addition, the new owners will be able to tender for a substantial volume of defense work as yet unallocated.

The yard's annual turnover is currently in excess of \$330 million, with approximately 3,200 payroll employees. Babcock claims that the acquisition of RRD will not only enhance its ability to be competitive, but will also provide the Group with an opportunity to develop and diversify the facility.

Welcoming the announcement, **Allan Smith**, managing director of Babcock International's Facilities Management Division said: "Since Babcock took over the commercial management of RRD, the Group has considerably increased the yard's productivity. Furthermore our success has enabled us to secure other business in the U.K. and New Zealand, and win competitive tenders around the world. We are delighted to have secured ownership of the facility."

"The Rosyth team, led by **Allan Smith**, has brought these complex and demanding privatization negotiations to a successful conclusion following two and a half years of dedicated effort," added Babcock International Chairman **Dr. John Parker**.

Most observers are of the opinion that privatization of RRD, together with the government's promise of guaranteed work will bring welcome stability to what is undoubt-

edly a superb ship repair and construction facility. Originally established in 1909, it is located on the north shore of the Firth of Forth with natural deepwater access to the North Sea and its shipping lanes. Covering more than 300 acres, the site incorporates a 64-acre, non-tidal basin; four large

drydocks up to 984 ft. (300 m) in length; and a shiplift facility of 1,500 tons. There are five covered bays, one external bay and a total of 1.6 million-sq-ft. (150,000-sq-m) of covered workshops.

Babcock International's other marine interests include operation of the Devonport Naval Dockyard

in Auckland, New Zealand; submarine offsite maintenance support at Clyde Submarine base, Faslane, Scotland; and a defense systems consultancy based in Weymouth, England. The Group employs around 9,000 people in offices spanning 25 countries, and is reportedly engaged in contracts in



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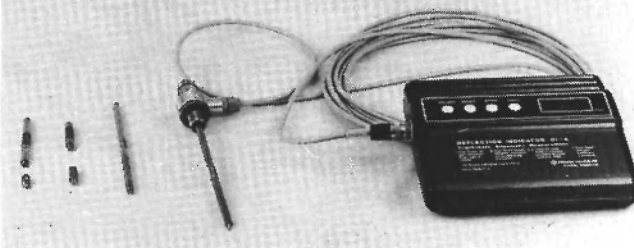
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EUROPEAN UPDATE

60 countries.

Reefer repaired and modernized in Latvia

The Finland-based global services division of MacGregor certainly lived up to its name in a recently completed project involving the repair and upgrading of reefer *Cape Blanc*. The Cyprus-

owned, storm-damaged vessel was towed from Puntas Arenas in Chile to Riga in Latvia where work was carried out using a variety of local and overseas personnel and subcontractors.

Heavy damage had been sustained to shell plating, hull bottom, main deck and superstructure

equipment during a severe storm endured in the Chilean port. A MacGregor team inspected the vessel in Chile, quoting for its repair as well as for modernizing holds to allow transport of palletized freight. The owner, SB Blanc Navigation, placed the order in February, but the tow to the

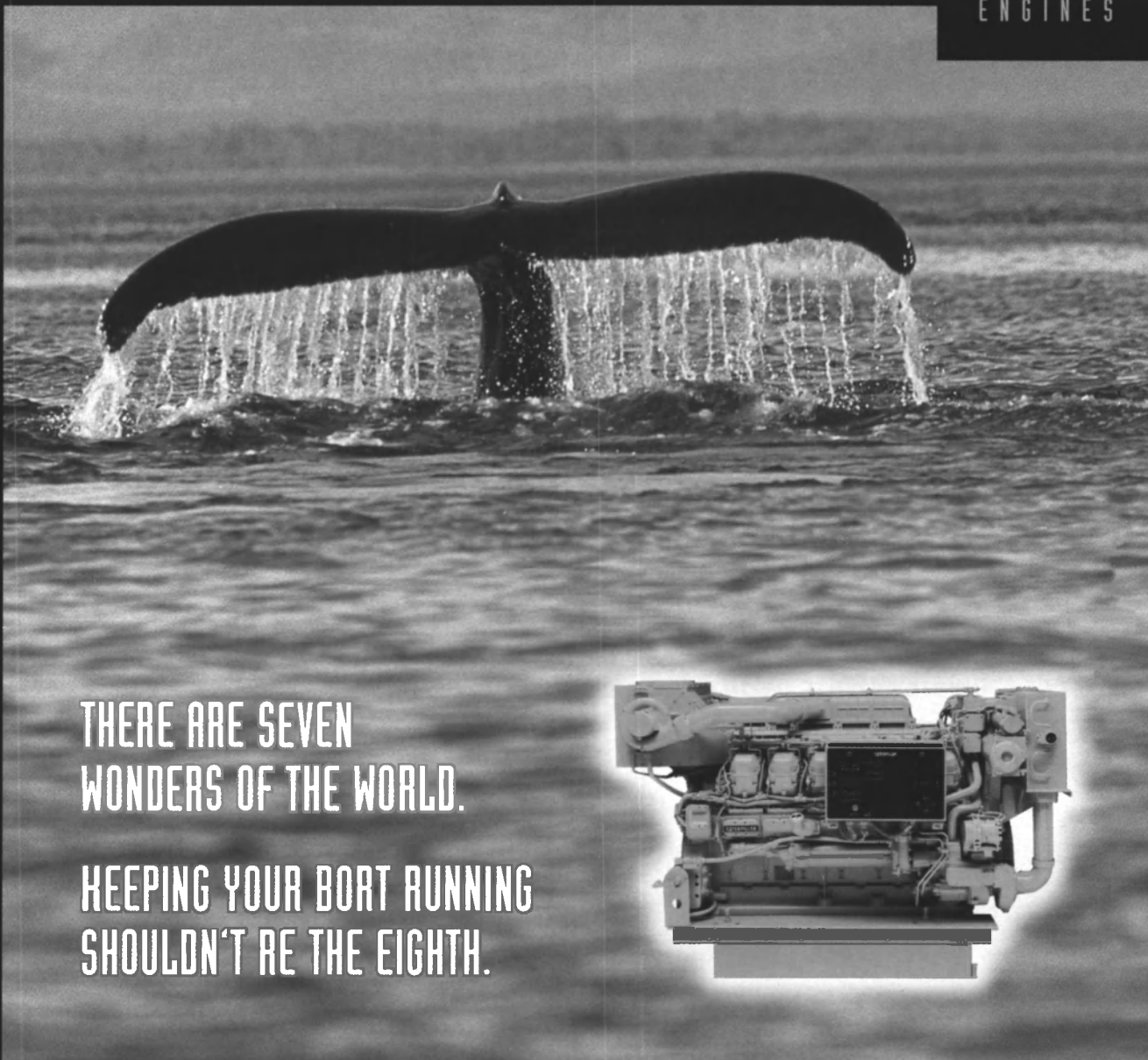
Mangaly yard in Latvia took three months.

The repairs included renewal of 35 percent of the shell plating, but much of the work centered around "pallet-friendly" modifications to the four cargo holds to attain a clear height of at least 7.22 ft. (2.2 m). This was achieved by a combination of measures including reduction of insulation thickness under the weatherdeck, lowering of the lower 'tweendeck and reduction of hatch heights.

The fully repaired and converted *Cape Blanc* is now operated by Columbia Shipmanagement.

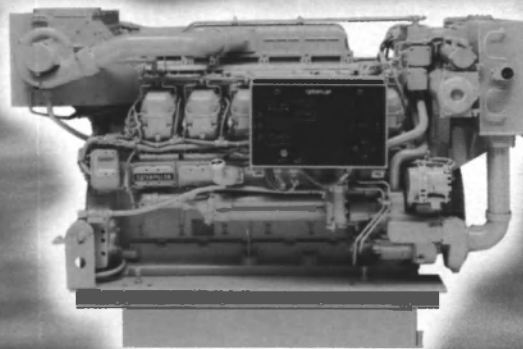
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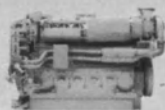
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Leica Certifies GPS Products For European Export

Leica GPS new-generation marine GPS receivers have been certified for export to European countries. According to **Neil Vancans**, president of Leica, the receivers will be marked with CE certification which applies to the new MX 400 DGPS navigator, MX 41R beacon receiver, the MX 9400 high-accuracy DGPS receivers, and the SR 9500 and System 300 survey products.

The certification assures that the products sold in Europe comply with the European Directive 89/336/EEC for electromagnetic compatibility. The directive, which came into effect January 1, 1996, establishes standards to ensure that products do not release spurious electromagnetic interference (EMI) that would affect other products.

For more information on Leica circle 29 on Reader Service Card

Lloyd's Register Awards QA Certificate To KMY

Lloyd's Register (LR) has awarded its Quality Assurance Certificate for Hull Construction (parts 1 and 2) to Kvaerner Masa-Yards' (KMY) Turku New Shipyard, Finland. The certificate was presented to Yard Manager **Robert Stenius** by LR's Managing Director **Chris Wade**.

"This certificate, covering the steel fabrication area, follows the award, in June 1995, of LR's Hull QA (quality accolade) Scheme certificate for the LNG Tank Construction facility at KMY Turku yard."



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ManWijs Starts Towage Services At Qatar LNG Terminal

ManWijs, a cooperation between Wijismuller International Towage B.V. and Mansal Offshore WLL, has begun supplying towage services at the new LNG terminal of Qatargas in Ras Laffan, Qatar.

Two new tugs, *Hawar* and *Al Dhakhira*, were built at Jaya Shipyards and arrived in Qatar on November 15.

On November 18, the tugs successfully carried out their first towage assistance. Two additional tugs, *Helaitan* and *Al Deebe*, are scheduled to be delivered by the middle of this month.

ManWijs was awarded this contract for provision and operation of

four terminal tugs and three mooring launches for the LNG terminal at Ras Laffan, Qatar, in June 1995 by the Qatar General Petroleum Corporation.

The project is the second big contract for Wijismuller, following a terminal towage project awarded by Brunei Shell Petroleum in 1992.

Each tug is fitted with an aft winch and a combined anchor/towing winch on the semi-raised forecastle deck. Each SKL main engine drives a fire fighting pump with a capacity of 1,400-sq.-m./hr. The tugs are also equipped with a self-drenching system, and are fitted out with equipment to combat

oil pollution. The system operates two spray booms from the side of the vessel. Each tug accommodates a crew of 11.

ManWijs also supplies and operates three mooring launches at the new LNG terminal.

These vessels will handle the mooring lines of the LNG carriers, and will also be used for additional services at the terminal.

The launches were built at Delta Shipyards in Sliedrecht, Holland, and were transported from Antwerp to Qatar as deck cargo on a cargo carrier.



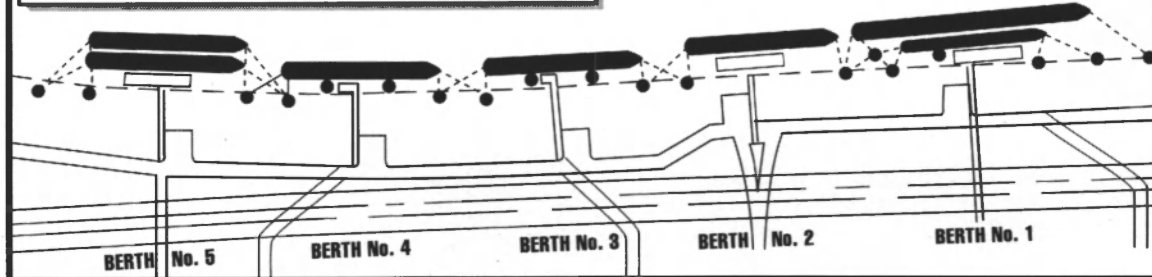
Tug Particulars

Length110 ft. (33.6 m)
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ABS Oil Testing Service Adds Partner, Expands Service

ABS Marine Services, Inc. has formed a new partnership with Oiltest Inc. and Drew Marine to expand its worldwide ABS Oil Testing Service for shipowners.

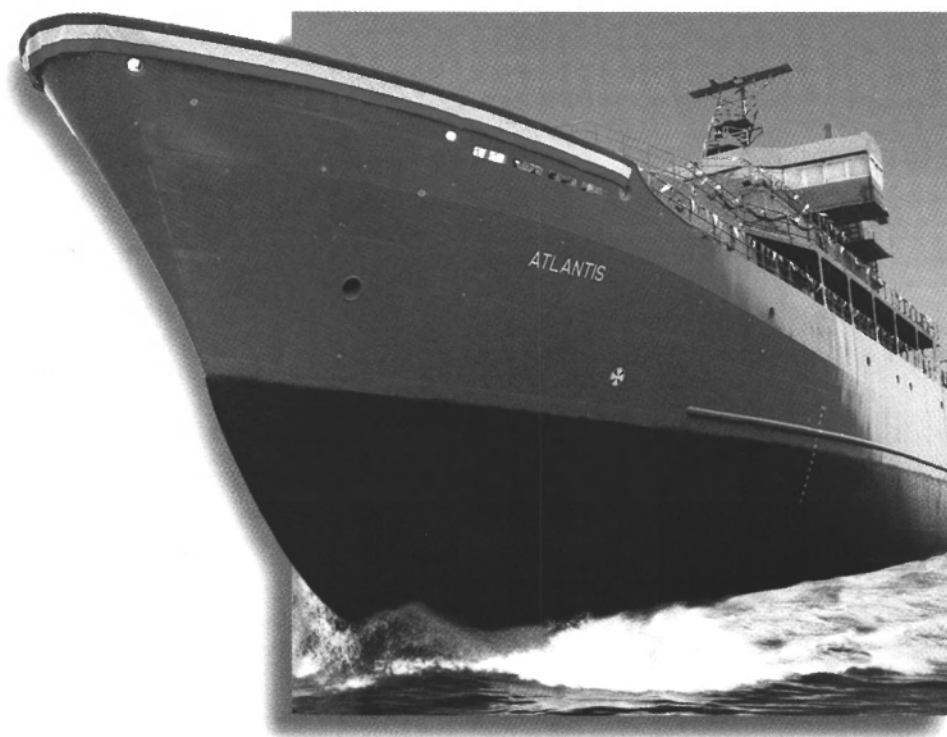
"A continued deterioration in bunker quality has led to an increased need for professional fuel and lube oil analysis," said ABS Oil Testing President, Capt. **Timothy Leitzell**. "Bunker testing is crucial for the identification of possible contaminants and associated problems which can lead to delays and inefficiencies of operation. ABS Oil Testing analysis provides operating engineers with the vital specifics on fuel properties needed to deal with problems such as fuel instability, contamination, poor ignition quality and to establish preferred handling conditions."

Oiltest President **Terry Bond** commented, "The edition of Drew Marine enables ABS Oil Testing to expand its services to virtually every port worldwide. We can now reach a much larger base of vessels and provide much faster service to owners."

Instruction and materials for crew-administered sample collection is supplied to ships as part of the ABS Oil Testing program. Fuel samples are then sent by courier to one of eight strategically located laboratories and results are reported by fax or telex to the ship within 24 hrs. of sample receipt.

In this new partnership, Drew Marine becomes the exclusive agent for global sales of ABS Oil Testing Service.

WE'RE BACK



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We have the same dedicated repair and conversion yards and we still build in steel, aluminum and composites. So, if you need anything but an inland waterways barge, you need to talk to the Halter Marine Group.



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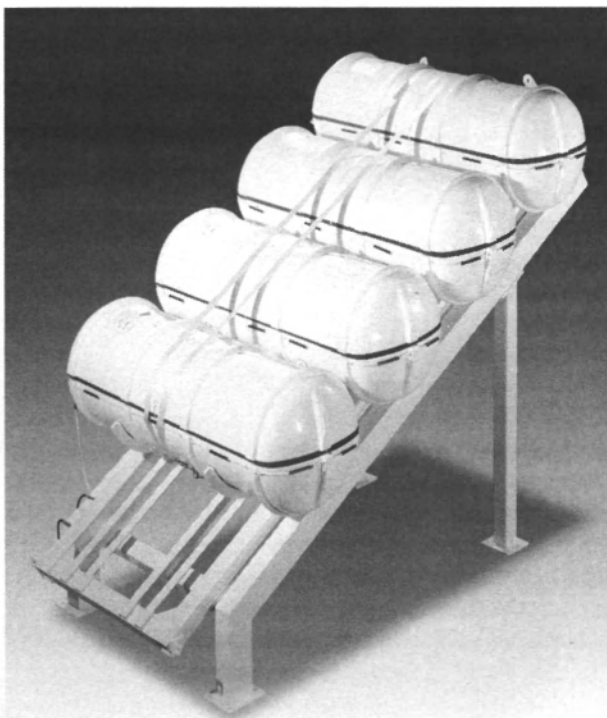
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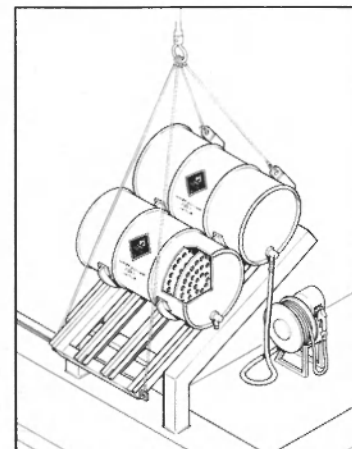
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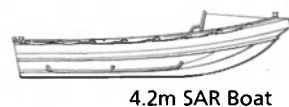
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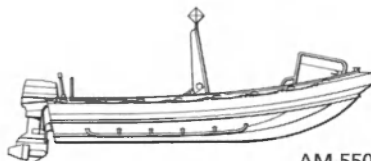
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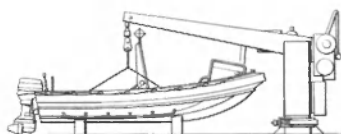


AM-700



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Davits



Rescue Boat Davit

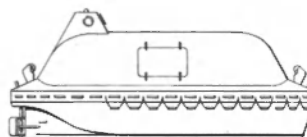


Overhead Gravity Trackway Davit

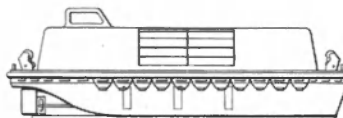


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County Durham,
England, U.K.

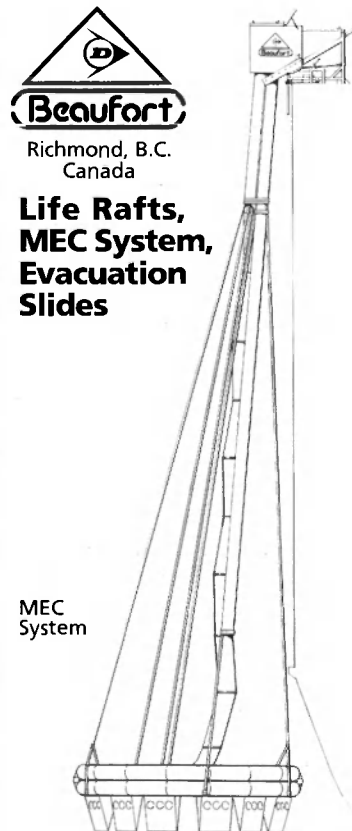
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GREAT PASSENGER VESSELS



GREAT PASSENGER VESSELS OF 1996

Yard	Name	Main Engines	RSC#
Atlantic Marine	Trump Casino	Detroit Diesel	1
Austal Ships	Sinan Pasa	—	86
Freeport Shipbuilding	Cabaret II	Cummins	87
Incat	Holyman Express	—	2
Kvaerner Kleven Ulsteinvik	Nordkapp	Mak	3
SeaArk	Desert Shadow	Detroit Diesel	4
SkipperLiner	Island Girl IX	Caterpillar	5
Washburn & Doughty	Royal Princess	Caterpillar	6

Pictured is Atlantic Marine-built *Trump Casino*, one of several Great Passenger Vessels featured in the ensuing pages. The Trump vessel is powered by 12V149TI engines driving Sound Propeller five-blade wheels through Twin Disc gears.

Yard: Kvaerner Kleven Ulsteinvik
Name: Nordkapp
Owner: Ofotens og Vesteraalens Dampskibsselskab A.S.



The contract for the construction of *Nordkapp* was signed with Kvaerner Kleven Ulsteinvik in April 1994, and the construction of a coastal steamer for Norway's Highway No. 1 was a particularly large challenge. *Nordkapp* was designed by Kvaerner, and the requirements of the shipowner were based on the vessel *Richard With*, which was built in Germany and delivered in 1993.

Arne Johansen A.S. was responsible for all architectural design, including fixtures, fittings, carpets and textiles.

The hull has been designed to provide good maneuvering and stability. Various hull designs were analyzed at VTT in Finland before comprehensive tests were carried out at the Marine Technology Center in Trondheim. Sea trials reportedly confirmed a successful hull design. With four side thrusters, two forward and two aft, and two rudders with flaps, the ship is designed to be maneuvered into the narrowest of docking paths.

(Continued on page 77)

Yard: Incat
Name: Holyman Express



Owner: Holyman Ports Pty. Ltd.

Incat Australia delivered Hull #041, *Holyman Express*, to Holyman Ports Pty. Ltd. for a new 90-minute service between Ramsgate and Ostende, to commence March 1, 1997.

The announcement followed a joint statement issued by Holyman Ltd., the Belgium government and British ferry operator Sally Ferries, in which the three groups revealed that a new fast ferry service would replace the conventional ferries and jet-foils between the U.K. and Belgium. A new company, Holyman Sally, has been formed to operate up to eight sailings a day in each direction. Holyman Sally is two-thirds owned by Holyman and one-third by Silja.

Holyman Express, like its sisterships *Condor 12* and *Stena Lynx II*, is expected to reap financial profits.

The wave-piercing catamaran was developed by Incat in the

(Continued on page 77)

Yard: Atlantic Marine
Name: Trump Casino
Owner: Trump Indiana

Atlantic Marine's delivery of Trump Casino to owner Trump Indiana is significant, as the vessel has been eagerly touted in the trade and consumer press since the Trump name was attached to the casino vessel project.

The Trump Casino is the sixth vessel in the evolution of the Casino Cat design from Rodney E. Lay & Associates. The 288 x 76 x 17.5-ft. (87.8 x 23 x 5.3-m) vessel operates out of Buffington Harbor, Ind., and accommodates 2,300 passengers and 400 crew on three full decks. In total, there is 37,300 sq. ft. of gaming space.

Main propulsion for the vessel is provided by twin Detroit Diesel 12V149TI engines with 1,200 hp each at 1,800 rpm. The engines drive Sound Propeller 74 x 60-in., five-blade wheels through Twin Disc MG540 5.17:1 marine gears. Schottel STT 330T-LK bow and stern thrusters are powered by 530-hp

Detroit Diesel 8V92TA engines through Twin Disc 5111A gears and cardan shafts. All propulsion engines are equipped with the DDEC combustion control system. Electrical power is provided by two Detroit Diesel 16V149TI engines, developing a total of 2,720 kW. A 6V92TA Detroit engine powers the 250-kW emergency generator.

Three Carrier chiller units provide more than 60 tons of air conditioning. Tankage is provided for 16,000 gallons of fresh water, and 20,000 gallons of fuel oil. Trump Casino is U.S. Coast

Guard certified for Great Lakes service, and the vessel is equipped with inflatable liferafts and evacuation slides by MGI International, supplemented by two davit-launched RIB rescue boats. Deck gear includes an anchor windlass and three line-handling capstans, all by New England Trawler.

Trump Casino Main Particulars

Length, o.a.: 288 ft. (87.8 m)
 Breadth, molded: 74 ft. (22.6 m)
 Depth, molded to main deck: ... 17.5 ft. (5.3 m)
 Draft: 10.2 ft. (3.2 m)
 Speed: 10 knots
 Lightweight: 2,862 MT



Displacement: 3,439 MT
 Main engines: Detroit Diesel
 Propeller: Sound Propeller
 Thrusters: SMI Ship Machinery
 Generator engines: Detroit Diesel
 Thruster engines: Detroit Diesel
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 Emergency generator: Detroit Diesel
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GREAT PASSENGER VESSELS of 1996

Yard: Washburn & Doughty
Name: *Royal Princess*
Owner: Dana D. Goodell

Dinner/casino yacht *Royal Princess* was built by Washburn & Doughty for Dana B. Goodell. Powered by a pair of Caterpillar 3412 DIT, 640-hp engines, the 500-passenger vessel features speed and reportedly excellent seakeeping ability for offshore operations. The propulsion package is complete with 4.5:1 Twin Disc reduction gears; a 200-hp American Trac Series bowthruster; Aquatch 17, five-in. diameter shafting; and a four-blade propeller.

The steel-construction vessel measures 162 x 36 x 7 ft. (49.4 x 10.9 x 2.1 m) and features an interior designed by Bauer Interiors of New Orleans.

Passengers are entertained on three decks, while meals are prepared in a spacious below-deck galley.

All enclosed passenger spaces, galley and pilothouse are heated and air conditioned. Air conditioning supplied by a 100-ton chilled water Carrier marine unit which chills passenger lounges, with air evacuated by eight exhaust fans. This reportedly allows for a smoke-free environment.

Washburn & Doughty has started construction on another vessel which is sure to be considered for inclusion in 1998's Great Passenger Vessel review. *Harbor Master* is being built for Tall Ships Barbados.

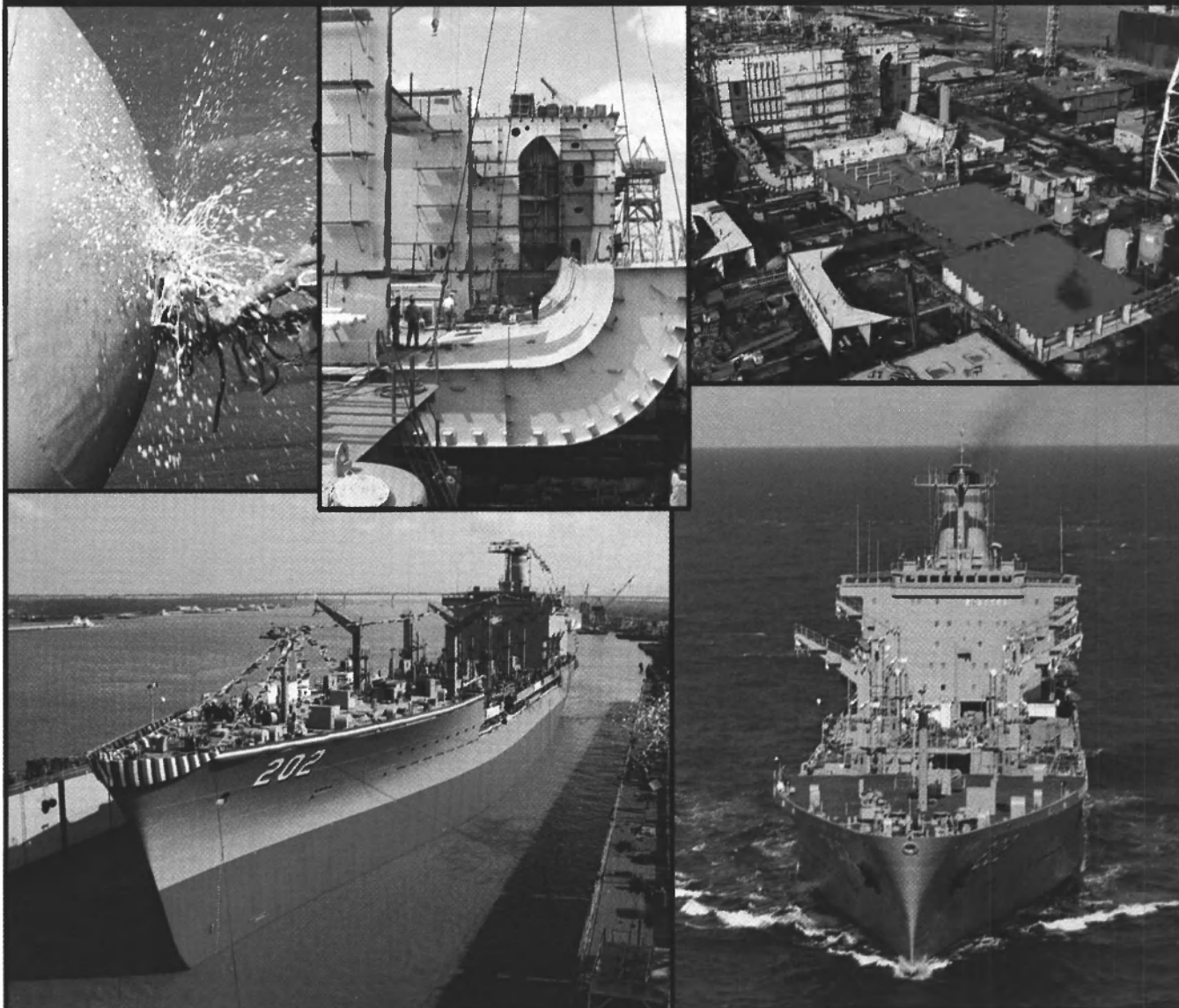
It is a 100-ft. (32.8 m) vessel designed by John W. Gilbert Assoc., featuring a semi-submersible section which, when lowered, will provide 30 people with a spectacular underwater view. The steel vessel will displace 333 long tons, and will be powered by Caterpillar main engines driving a four-blade propeller through a Twin Disc reduction gear.

Potable water:7,000 gal.
 Air conditioning:Carrier
 Windows:Aluminum Frame Thermopane
 Main engines:Caterpillar
 Reduction gear:Twin Disc
 Bowthruster:American Trac Series
 Shafting:Aquatch
 Generators:Caterpillar



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Royal Princess Main Particulars

Length, o.a.:162 ft. (49.4 m)
 Breadth, molded:36 ft. (10.9 m)
 Depth, molded to main deck:10.8 ft. (3.3 m)
 Draft:7 ft. (2.1 m)
 Designer: John Gilbert Assoc. and Washburn & Doughty
 Interior design:Bauer Interiors
 Passenger capacity:500
 Tonnage:Less than 100 gt
 Fuel capacity:6,000 gal.



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GREAT PASSENGER VESSELS of 1996

Yard: SeaArk
Name: *Desert Shadow*
Owner: ARAMARK

M/V *Desert Shadow* is a 85-ft.



(25.9-m) sightseeing yacht built for Wahweap Lodge and Marina, a division of ARAMARK, by SeaArk Marine. The vessel — designed by C. Raymond Hunt Associates — will operate on Lake Powell (in Arizona & Utah), which is a widen-

ing of the Colorado River formed by the Glenn Canyon Dam. ARAMARK operates several excursion vessels on the lake, as well as hundreds of rental houseboats and five marinas.

Desert Shadow has a capacity of 149 passengers plus crew. The aluminum boat is powered to a speed of 25 mph by a pair of Detroit Diesel 12V92TA diesel engines, which produce 815 bhp at 2,100 rpm.

The engines are controlled by DDEC controls, and drive a pair of Hall and Stavert HyTorque propellers through Twin Disc 2.5:1 reduction gears.

The yacht was designed and built with low wake production in mind. It was also built to be transported over the road.

Another special feature is a retractable bow ramp which eases passenger disembarkation at sights along the Colorado River.

Desert Shadow Main Particulars

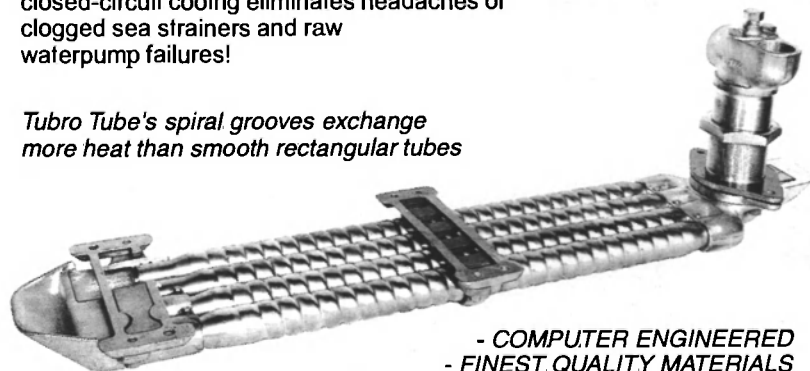
Length:	85 ft. (25.9 m)
Breadth:	19.9 ft. (6 m)
Depth:	9 ft. (2.7 m)
Architect:	C. Raymond Hunt Assoc.
Main engines:	Detroit Diesel
Gears:	Twin Disc
Generator:	Detroit Diesel
Engine mounts:	ACE Resilient
Fuel filters:	Racor
Mufflers:	Vernay
Propellers:	Hall and Stavert
Propeller shafts:	Aquamet
Steering:	Hynautic
Horn:	Kohlenberg
Speed:	25 mph

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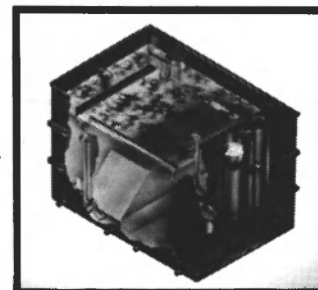
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GREAT PASSENGER VESSELS of 1996

Yard: Freeport Shipbuilding & Marine Repair
Name: *Cabaret II*
Owner: Chesapeake Marine Tours and Charters Inc.

Freeport Shipbuilding recently delivered a custom passenger yacht for the Chesapeake Bay area. The *Cabaret II*, commissioned by Chesapeake Marine tours and Charters Inc. was designed by De Jong & Lebet of Jacksonville, Fla., to host private charters, corporate functions and weddings. The vessel measures 67 x 20 x 4 ft. (20.4 x 6 x 1.2 m).

"Although we've built more than 20 cruising ships of comparable size, we were particularly proud to be chosen to build the *Cabaret II*," said **Jim Murray**, president of Freeport Shipbuilding.

With an upscale interior and yacht-like exterior, the classic passenger vessel is U.S. Coast Guard certified for navigating in Partially Protected Waters, as required for operation on the Chesapeake Bay. According to **Ed Hartman**, *Cabaret II's* owner, the vessel's primary cruising area will be the waterways near Annapolis, Md.

"We will offer scenic cruises along the state-protected Severn River bordering the U.S. Naval Academy, as well as in the Spa and Back Creeks," Mr. **Hartman** said.

Directions In Design of St. Louis were contracted to assist with the interior design. Leather seating and a mahogany bar are high points of the passenger decks.

Power is provided by a pair of Cummins turbo charged diesel engines, and state-of-the-art electronics and navigation systems were installed by Freeport Shipbuilding.

Construction of the aluminum-hulled vessel, from preliminary drawings to final outfit, took only six months.

Cabaret II Main Particulars

Length:	67 ft. (20.4 m)
Width:	20 ft. (6 m)
Draft:	4 ft. (1.2 m)
Main engines:	Cummins
Design:	Dejong & Lebet
Interior design:	Directions In Design

Yard: SkipperLiner
Name: *Island Girl IX*
Owner: Island Girl River Cruises

While M/V. *Island Girl IX* is the ninth vessel produced for Island Girl River Cruises in 11 years, this particular vessel is the first model of SkipperLiner's new 149-passenger MY 1500 EX series. The vessel, designed by SkipperLiner and introduced in June, was reportedly an economical vessel to build (priced under \$1 million) and operate.

Island Girl IX combines a "Wedding at Sea" and "Corporate Charter" atmosphere. The main deck features a head table for wedding parties, a solarium style forecabin enclosure for exclusive dining and full onboard galley facilities. The second-deck Admiral's Cabin features an arrangement of dining tables and chairs and live entertainment facilities. Special attention was paid by SkipperLiner to maximizing dining capacity, increasing galley square footage efficiencies, improving hull configuration and developing a sleeker yacht profile, all while improving accommodations.

The steel vessel is 91 ft. (27.7 m) long overall, with a 20-ft. (6-m) breadth and a 6-ft. (1.8-m) depth. It is powered by a propulsion system consisting of twin Caterpillar 3208 NA diesel engines driving Michigan Wheel three-blade propellers through ZF IRM gears.



Island Girl IX Main Particulars

Length:	91 ft. (27.7 m)
Breadth:	20 ft. (6 m)
Depth:	6 ft. (1.8 m)
Displacement (full load):	81 long tons
Naval architect:	SkipperLiner & Elliott Bay Design Group
Main engines:	Caterpillar
Generator:	Cummins
Propeller:	Michigan Wheel
Gear:	ZF
Engine mounts:	Caterpillar
Propeller shaft coupler:	Vetus
Steering system:	Hynautic
Shifting:	Mathers Micro Commander
Radios:	Standard
Horn:	Kohlenberg
Depth sounder:	Impulse
Radar:	Furuno

Yard Austal Ships
Name *Sinan Pasa*
Owner Istanbul Deniz Otobusleri

Austal Ships of Western Australia delivered two 131-ft. (40-m) high speed passenger catamarans — *Sinan Pasa* and *Piyale Pasa* — to Turkish operator Istanbul Deniz Otobusleri (IDO). The two vessels are part of an overall AUD\$70-million contract, and a remaining two vessels (a pair of 197-ft. [60-m] Auto Express car ferries) are due for delivery in

the middle of this year.

The initial two vessels are named after famous 16th century Turkish admirals, and the pair joins IDO's fleet of 12 vessels. The vessels are scheduled to operate across the Bosphorus and between ports in the Sea of Marmara, completing up to eight round trips per day.

IDO is the only fast passenger catamaran operator in the area, and the vessels' ports of call include Bostanci, Bakirkoy, Yenikapi, Karakoy, Kabatas, Buyukada, Yalova, Kartal,

Ginarcik, Esenko, Avsa and Marmara. The vessels are powered by two diesel engines, which develop 1,980 kW at 1,940 rpm, driving KaMeWa waterjets through Reintjes gearboxes. Principal dimensions are an overall length of 40.1 m, a molded beam of 34 ft. (10.5 m) and a hull draft of 4 ft. (1.2 m).

The wheelhouse of each vessel is equipped and geared for three-person operation.

Electronics include Kelvin Hughes radars with ARPA facility, GMDSS equipment and CCTV. Both vessels have provisions for installation of night vision systems in the future.

Vessel Particulars

Delivery:	December 1996
Length, o.a.:	131-ft. (40.1 m)
Length, waterline:	114.8 ft. (35 m)
Beam, molded:	34 ft. (10.5 m)
Draft:	4 ft. (1.2 m)
Passengers:	450
Crew:	4
Classification:	Bureau Veritas
Fuel capacity:	9,000 liters
Freshwater:	1,500 liters
Full load service speed:	34.5 knots
Main engines:	16V 396 TE74L (1,980 kW at 1,940 rpm)
Gearboxes:	Reintjes VLJ 930
Waterjets:	KaMeWa 71 S11



VT Benefits From MOU With Qatar

A Memorandum of Understanding (MOU) between the U.K. and Qatar was recently signed, covering the provision of a U.K. defense package estimated at \$750 million. This package includes two Vosper Thornycroft (VT) 151-ft. (46-m) patrol boats, as well as equipment from GKN, Shorts and BAe.

CSW Standby Tug Participates In Emergency Exercise

Less than three weeks after arriving on-station at Stornoway, emergency standby tug *Portosalvo*, operated by CorySmitWijsmuller (CSW), a consortium of three towage and salvage companies — Cory Towage of the U.K., Smit Tak and Wijsmuller Salvage of the Netherlands — under the direction of Her Majesty's Coast Guard (HMCG), was engaged in a pre-arranged rescue operation. Named Autumn Leaf, the exercise also featured 32,790-dwt Royal Fleet Auxiliary tanker *Orangeleaf* and BP Oil U.K. Ltd. coastal tanker *BP Springer*. Additional participants in the exercise included Marine Pollution Control Unit (MPCU), the Stornoway-based HMCG helicopter, the fire service, the police force and the Lochinver lifeboat of the Royal National Lifeboat Institution.

In addition to the obvious towing involvement of *Portosalvo* in the exercise, the vessel was called upon to perform a number of additional duties which might be necessary in an actual emergency situation. One role was to act as mothership for the MPCU chemical strike team which operated under the overall control of the MPCU's on-scene commander. *Portosalvo* has a bollard pull of 147 tons and is contracted by the Coastguard Agency to provide emergency towage service for northwest Scotland from October 1996 to March 1997. These six months cover the period when the worst weather is experienced and emergency situation are most likely to occur. The vessel is under management of CorySmitWijsmuller.

In its standby role, *Portosalvo* is under the operational direction of HMCG and is maintained at readiness for immediate reaction to emergency situations.

Singmarine Delivers Supply Training Vessel To Lamnalco

Through its wholly-owned subsidiary Singmarine Dockyard & Engineering Pte Ltd., Singmarine Industries Ltd. has completed and delivered a 1,700-dwt supply training vessel to Lamnalco Ltd. of the United Arab Emirates. The vessel,

dubbed *Lamnalco Kingfisher*, was developed in collaboration with Lamnalco's Technical and Marine divisions to carry a deck cargo of 500 tons, 320 of which can be carried in a section of specially-designed refrigerated containers. The ship achieved a maximum speed of 13.5 knots at sea trials, exceeding the contract specification of 12 knots. The vessel has an

overall length of 211.6 ft. (64.5 m), a 49.2-ft. (15-m) breadth and a draft of 14 ft. (4.27 m).

The vessel will be used to support offshore installations in the Arabian Gulf by transporting supplies including fuel oil, potable water, deck cargo, and chilled and frozen food items. It is also fitted out to provide cadet training for Arab nationals.

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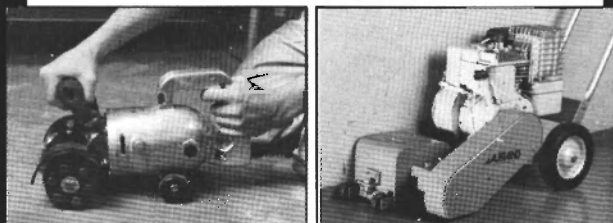
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Lamnalco is equally owned by the Rezayat Group and dredging organization Royal Boskalis Westminster Group. The company operates and manages oil terminal

facilities including single-point mooring buoys, in addition to its fleet of oil support craft, pilotage and ship-to-ship functions. Its operations are widely dispersed,

notably in West Africa and the Arabian Gulf.

Singmarine is constructing two coastal tankers for U.K.-based shipping FT Everald & Sons, and two harbor tugs for Keppel Smit Towage Pte. Ltd.

As part of its upgrading program, Singmarine Dockyard is purchasing cranes, equipment and machinery to increase its yard capacity. The yard has also acquired a floating dock which is capable of accommodating vessels up to 20,000 dwt.

For more information on Singmarine
Circle 31 on Reader Service Card

in Neville Island, Pa.

Since 1968 when Blackburn designed and developed the concept of the low-profile, swiveling 40-ton deck winch and the totally enclosed roller button, the company has added a line of galvanized and bronze inverted vent check valves up to 6 in. in pipe size.

For more information on Blackburn
Circle 32 on Reader Service Card

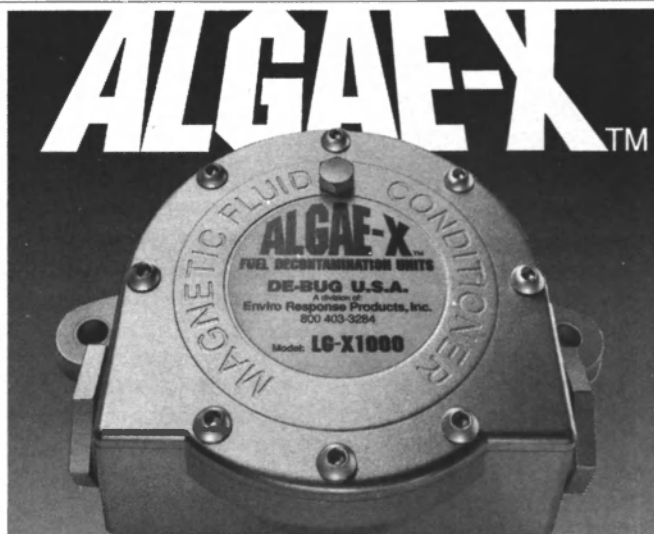
General Thermodynamics Offers Pneumatic Balancer

Available from General Thermodynamics Corp. is the BMEP balancer, a pneumatic damping system which yields the mean value of the pressure existing in the cylinder for the entire cycle. The balancer will reportedly equalize the cylinder load of any multi-cylinder internal combustion engine equipped with individual fuel adjustment. Constructed of stainless steel, the BMEP is designed to fit a standard indicator valve seals.

For more information on General
Thermodynamics Corp.
Circle 33 on Reader Service Card

Blackburn Manufactures Record Number Of Deck Winches

The 10,000th Blackburn Marine was manufactured by Blackburn Marine Inc. at its South Central Texas facility. The Blackburn W-100 Winch No. 10,000 was mounted on U.S. Army Corps of Engineers hopper barge No. 97, built by Basic Marine, Inc. of Escanaba, Mich., and delivered to the U.S. Army Corps of Engineers,



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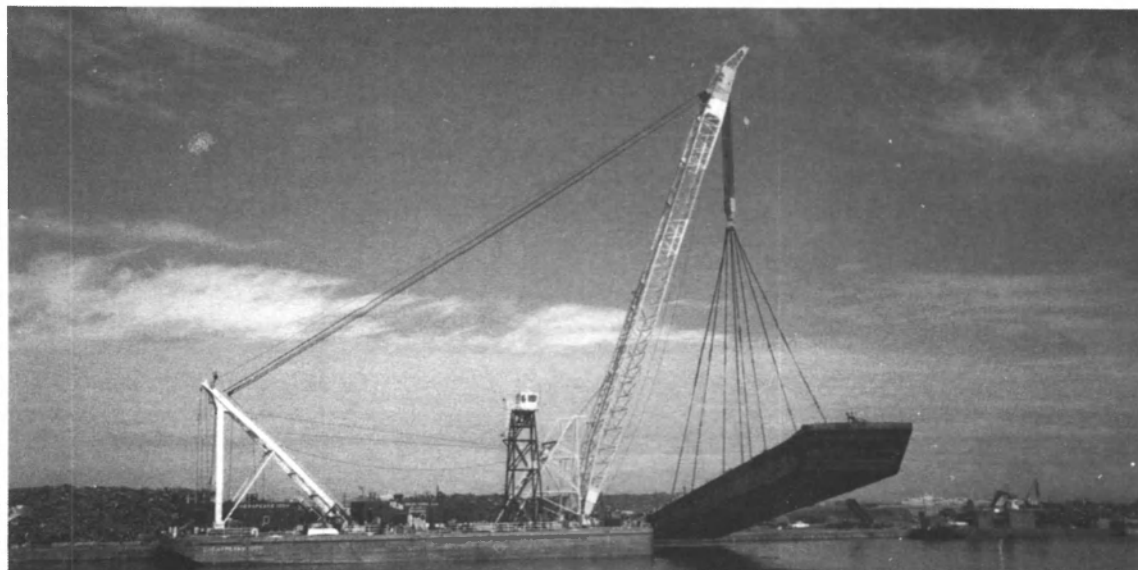
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DeJong & Lebet Coordinates Casino Boat Conversion



The 400-passenger casino boat *Monte Carlo* has recently begun operations from Pompano Beach, Fla. The 130 x 130-ft. (40 x 40-m) vessel is the eighth casino boat conversion for Florida by naval architect DeJong & Lebet, Inc. (D&L). *Monte Carlo* was originally built in 1980 by Blount Marine, and is U.S. Coast Guard certified under Subchapter T. The vessel features a two-deck arrangement with 210 gaming positions. There are two interior bar/lounge areas, as well as a canopy-covered, open-air, third-deck entertainment area. D&L designed special bilge keels, among other design considerations, to help reduce the vessel's motions as it operates on the three-mi. offshore route. The conversion included the addition of a new 175-kW generator set, and upgrading the air conditioning system with approximately 60 tons of A/C. In addition, the entire interior was refinished with new carpets, wall coverings and a metal ceiling by Chicago Metallic, installed by Branton Industries.

Generator and mechanical installations were performed dockside by Rhodes Engineering out of Tampa, Fla. Insulation was completed by Branton Industries, Baton Rouge, La. Air conditioning was provided by Quorum Marine, Stuart, Fla.

For more information on Dejong & Lebet
Circle 65 on Reader Service Card

For more information on Branton Industries
Circle 66 on Reader Service Card

Total Power Output At MHI Breaks 20 M HP Mark

The accumulated total power output of the UE diesel engines developed by Mitsubishi Heavy Industries, Ltd. (MHI) has exceeded 20 million hp. MHI began the design and development of the UE diesel in 1951, and today the engine is reportedly the only large-sized, low-speed diesel made in Japan. This record includes the UE diesel units manufactured by licensed companies.

The engine which marked the 20 million hp achievement, was the 7UEC50LSII marine diesel with a 13,090-hp output. The engine was manufactured at MHI's Kobe Shipyard & Machinery Works and will be delivered to the Imabari Shipbuilding Co., Ltd. for installation in a chip carrier ordered by Kawasaki Kisen Kaisha, Ltd.

In addition, six units of 6UEC50LSII marine diesels with 11,220 hp have been ordered by Flensburger Schiffbau-Gesellschaft of Germany.

For more information on MHI
Circle 34 on Reader Service Card

United Shipping Announces South African Partner

United Shipping Associates, a worldwide network of international freight forwarders and customs brokers, announced the addition of Airwaves cc as the organization's exclusive partner in South Africa. Airwaves offers full import and export services for South Africa and can handle transshipments to neighboring countries in southern Africa.

"South Africa has been one of our top priorities because it is viewed in international trade as a key area for economic development," said United Shipping Associates General Manager **Ron Ferruzza**, who recently met with companies in Johannesburg and Durban.

NCL Equips Norwegian Crown With Malin 3000

Norwegian Cruise Line (NCL) has equipped *Norwegian Crown* with a Malin 3000 portable, precision diesel engine analyzer. The unit is designed to increase the speed, accuracy and reliability of determining the health of the main and generator diesel engines. Information is quickly gathered and downloaded onto a desktop

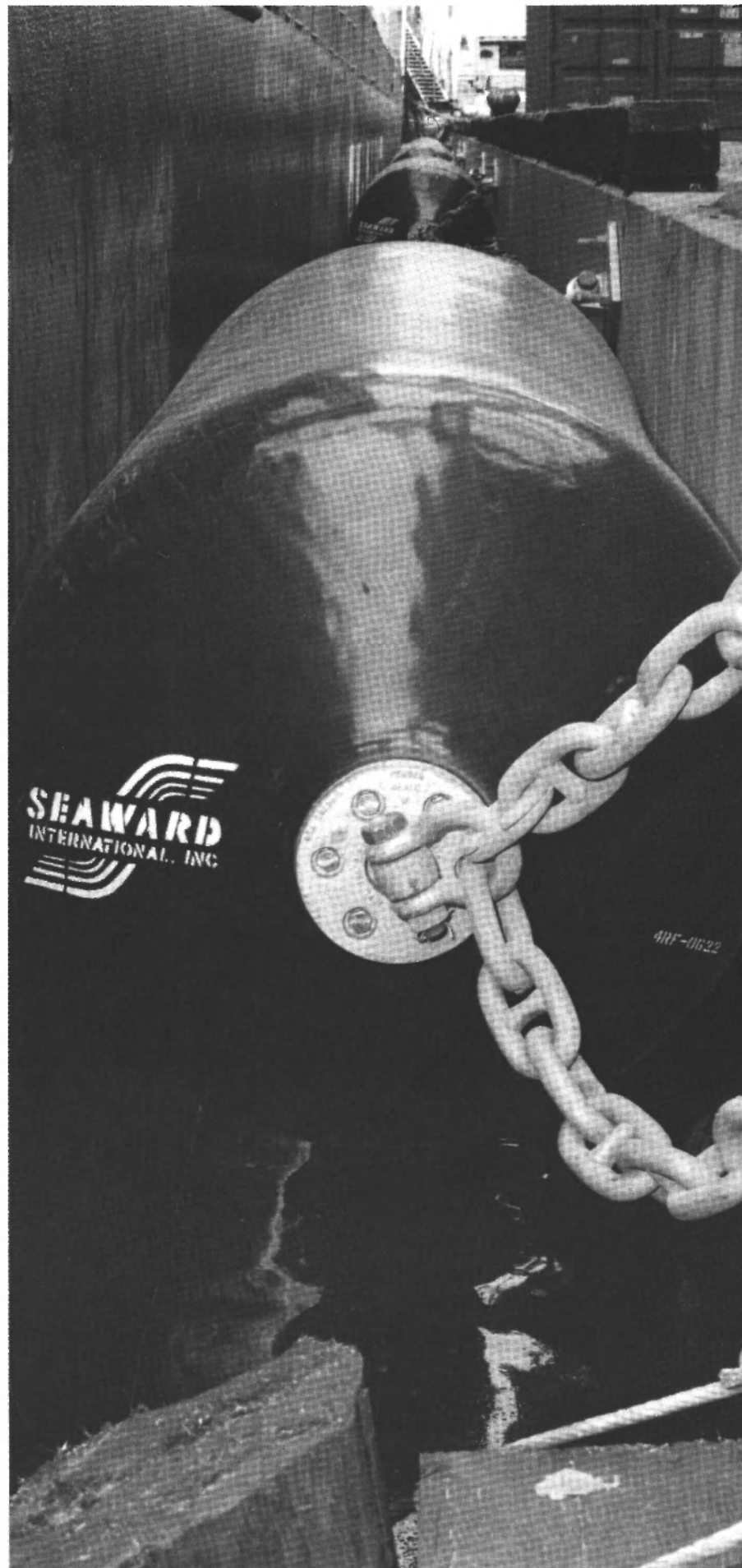
PC. A software program produces the drawcard indicator and derivative, and provides an immediate check on the fuel injection system, power output of each cylinder, fuel injection timing, engine balance and trends over time.

ISF To Test Seafarers' English

As part of its program to improve

personnel standards and encourage implementation of the 1995 amendments to the IMO's STCW Convention, the International Shipping Federation (ISF) will launch an ISF Marlins English Language Test for seafarers. The Marlins Test will be computer based, using CD-ROM technology to allow companies to measure their seafarers' understanding of

both written and spoken English. Questions on the test will be randomly selected from a broad database of language tasks drawn from real-life seafaring situations. The test is being developed in conjunction with shipmanager Acomarit and computer software designer Sanderson CBT. Test trials have reportedly been successful in the Philippines and Eastern Europe.



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Not A Vintage Year In Dry Bulk Markets

The dry bulk shipping industry may well end up by concluding that 1996 was not one of its vintage years. Adversity, however, can be a stimulus to change. While the bulk sector is likely to favor the evolutionary rather than the revolutionary option, Drewry Shipping Consultants' latest report, *Dry Bulk Freight Rates and Chartering: Players, Strategy and Market*, examines some of the fundamental moves that are starting to be set in motion.

The dry bulk charter market in the new millennium looks set to be larger, possibly with a greater short term/spot focus, and with a greater presence of traders and niche market specialists. Furthermore, the role of shipbrokers may be less focused on "purely competitive broking" and more concerned with offering a greater range of client services. Market influence may well stem to an even greater extent from Asia; and it cannot be coincidence that many leading brokers are establishing regional presences in Asia.

The business conducted in the dry bulk market (put by Drewry at more than 1.6 billion tons in 1995) has created a seemingly endless number of participants. Some may have a life related to just one transaction. At the other extreme, there are large scale operators working the market round-the-world and round-the-clock, concluding hundreds of charters per year. None of the market players can ignore the impact of the freight rate cycles on their fortunes though they can take both short and long term chartering decisions to capitalize on situations or protect their interests.

A large proportion of trade relies on the more stable long term contract arrangements, as opposed to being fixed in the short term or "spot" market, which is dictated by near term motivations. Such arrangements tend to dominate the major mineral trades, for example, iron ore, coal and bauxite/alumina.

Consequently, the driving forces behind the market's underlying fundamentals and those shaping near term rate movements can be markedly different (although it cannot be denied that many of these long term arrangements are in practice underpinned by the ability to charter-in tonnage to work individual liftings).

Looking at the long term charter market for the major bulk trades, the established charterers in Europe and Japan continue

to dominate activities. However, these industrial giants have begun to accede some of their market dominance to the newer players, in particular, Taiwan and South Korea in the Far East.

Iron ore imports in South Korea increased from 21 million tons in 1989 to 35 million tons in 1995, while Japanese and EU imports fell during this time. In the steam coal market, South Korean imports increased by a quarter in one year alone from 1994 to 1995.

Some of the newer participants in the charter market, the industries and chartering organizations in South Korea and Taiwan, were fairly active in the short term charter market in 1995, accounting for between one third and one half of their imports in some cases.

As these companies increase their requirements for dry bulk commodities, it may be that the share of spot charters in total seaborne trade increases. At any rate, the practice of putting a certain quantity of purchase requirements out to open tender on a regular basis may be a way of obtaining a balance between supply assurance and reduced costs.

In 1995, Drewry recorded single voyage charters amounting to 176.5 million tons, an increase of 45 percent on figures in 1990.

Grain trades in particular are firmly rooted in the short term charter market, and therefore take on an important role in shaping short term influences.

The most fundamental change to take place in the grain trades has been in the market's traditional seasonal cycles. In previous years, a key expectation of the autumn months was the size of Soviet chartering movements. However, the prospect of imports in the 50 million tons/year range may never return, moreover, imports of 25 to 30 million tons/year seem a remote prospect.

Again the geographical focus is moving toward Asian demand, especially from China, which in the past was a maize importer.

The new Drewry report gives an assessment of the chartering options and strategic chartering choices available to those active in the dry bulk market.

For more information regarding obtaining a copy of the report, contact Gary Poyntz at: (tel) +44 171 538 0191; (fax) +44 171 987 9396.

New Contracts

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

OWNER/OPERATOR	SHIPYARD	TYPE	No	DWT	DELIV
SEACOR MARINE	HALTER MARINE INC.	AHTS	2	2,800	—
SEACOR MARINE	TRINITY MARINE GROUP	AHTS	1	—	—
SURF	HALTER MARINE INC.	AHTS	1	—	1997
ASIA BULKSHIP	KANDA SHIPBUILDING CO.	BULK CARRIER	1	33,000	4/98
COSCO SINGAPORE	SANOYAS CORP.	BULK CARRIER	2	46,500	1998
MILANC TRANSPORT	ASTILLEROS RIO SANTIAGO	BULK CARRIER	2	27,000	9/98
MITSUBI O.S.K. LINES (MOL)	HYUNDAI HEAVY INDUSTRIES (HHI)	BULK CARRIER	1	149,800	1998
NAVIX LINE	NAMURA ZOSENHO	BULK CARRIER	1	170,000	5/99
NYK LINE	SAMSUNG	BULK CARRIER	1	170,000	1998
REEDEREI LAEISEZ	PT PAL	BULK CARRIER	2	45,000	1999
SANKO KISEN	NAIKAI	BULK CARRIER	2	28,000	1997
SHOEI KISEN	IMABARI SHIPBUILDING	BULK CARRIER	1	28,450	1997
STEPHENSON CLARKE	PT PAL	BULK CARRIER	2	15,000	1998
—	VARNA SHIPYARD	BULK CARRIER	1	41,400	4/98
—	IMABARI SHIPBUILDING	BULK CARRIER	2	28,450	1997
SCHIFFAHRTSKONTOR	—	—	—	—	—
TOM WORDEN	ELBEWERFT BOIZEMBURG GmbH	CARGO VESSEL	3	5,700	97/98
MARNAVIFINAVAL	NORDSOVAERFTET AS	CHEMICAL	3	3,500	1998
MARNAVIFINAVAL	AARHUS DOCKYARD LTD	CHEMICAL	2	7,500	1998
UNICOM MGMT SERVICES	SPLIT	CHEMICAL	1	41,000	1999
DJAKARTA LLOYD	PT PAL	CONTAINER	2	23,200	1999
EVERGREEN	MITSUBISHI H.I.	CONTAINER	8	75,000	1999
HANSA TREUHAND	HANJIN H.I.	CONTAINER	1	—	1998
IRAN SHIPPING LINES	ARVANDAN	CONTAINER	2	22,000	1999
MISC	DAEWOO	CONTAINER	2	28,000	1998
NIEDERELBE SCHIFFAHT	DAEWOO	CONTAINER	1	—	1997
RICKMERS	CHINA SHIPB. CORP.	CONTAINER	1	35,500	1998
—	DAEWOO	CONTAINER	1	—	1997
—	VIANA DO CASTELO	CONTAINER	1	—	1998
WORLDER SHIPPING	JURONG	CONTAINER	2	—	1998
YANG MING MARINE CORP.	—	CONTAINER	5	—	—
EGON OLDENDORFF	FLENSBURGER SCHIFFSBAU	CONTAINER	6	20,100	1998
ANTWERP PORT AUTHORITY	IHC HOLLAND NV	DREDGER	1	—	1997
DREDGING CORP.	IHC HOLLAND NV	DREDGER	1	—	—
VAN OORD	IHC HOLLAND NV	DREDGER	1	—	—
WESTMINSTER DREDGING	VEROLME HEUSDEN	DREDGER	1	—	—
DECO-LINE	SIETAS	DRY CARGO	2	13,300	1997
HAI SUN HUP/	—	DRY CARGO/	—	—	—
CLIPPER SHIPPING	HITACHI ZOSEN	CONTAINERSHIP	4	19,150	98/99
—	TILLE SCHEEPSBOUW	FEEDERSHIP	2	3,600	1997
BRITANNY AUTHORITIES	CMN	FERRY	1	—	1998
ALASKA DIVE BOAT	NICHOLS BROTHERS	FERRY/CATAMARAN	1	—	—
IRAN SHIPPING LINES	ARVANDAN	FERRY/CATAMARAN	2	—	—
A LEINEBO	SOLSTRAND	FISHING	1	—	1997
LEIF JOHANSSON	HELLESØY SKIPSBYGGERI AS	FISHING	1	—	8/97
—	ORSKOV STALSK	FISHING	4	800	1998
JOSEPH DOHERTY	METZ/AAL HOEKMAN	FISHING	2	—	7/97
SUNBEAM FISHING CO.	ZAMACONA	FISHING	1	—	—
DUTCH NAVY	DE SCHELDE	FRIGATES	2	—	03/04
J LAURITZEN	HYUNDAI HEAVY INDUSTRIES (HHI)	GAS CARRIER	2	—	1998
IRAN SHIPPING LINES	ARVANDAN	GENERAL CARGO	6	22,000	1999
PAUL HASE	HARLINGEN	GENERAL CARGO	3	2,220	1997
BOMLO BRONNBATSERVICE	AAS MV	LIVE FISH CARRIER	1	300	1997
GRIPFISK TRANSPORT	AAS MV	LIVE FISH CARRIER	1	600	1997
—	YANTAR SHIPYARD	MULTI-PURPOSE	2	12,000	1997
YANTAI MARINE SHIPPING	HUANGHAI	MULTI-PURPOSE	1	—	1997
CLIPPER SHIPPING/	—	—	—	—	—
HAI SUN HUP	HITACHI ZOSEN	MULTI-PURPOSE	2	19,150	1999
HSM MARITIME/	—	—	—	—	—
TRISTON INVESTMENT	HITACHI ZOSEN	MULTI-PURPOSE	2	19,150	1998
SLOMAN NEPTUN	PENDIK SHIPYARD	MULTI-PURPOSE	2	5,500	1998
QATAR GOVERNMENT	VOSPER THORNYCROFT	NAVAL PATROL BOAT	—	—	—
DISTRICT OFFSHORE/	—	—	—	—	—
BRØVIG OFFSHORE	BRATTVAG SKIPSVERT AS	OFFSHORE	2	3,000	1997
REMOY SEA GROUP	KVAERNER KLEVEN LEIRVIK	OFFSHORE	1	—	1997
REDERI AB ENGLISH	STERKODER VERFT AS	PAPER PRODUCTS	—	—	—
RCCL	KVAERNER MASA-YARDS	CARRIER	1	7,500	—
KUMAMOTO FERRY	AUSTAL SHIPS PTY LTD	PASSENGER/CAT	2	130,000	—
WARNOW SCHIFFARTS	KVAERNER FJELLSTRAND	PASSENGER/CAT	1	—	1997
GOLDEN GATE BRIDGE DIS	DAKOTA INDUSTRIES	PASSENGER/VEHICLE	1	—	5/97
SICILIA REGIONALE MARITIMA	DE POLI	PASSENGER/VEHICLE	1	—	1998
BUILDER S ACCOUNT	INCAT AUSTRALIA	PASSENGER/VEHICLE	1	—	2/98
BRØVIG OFFSHORE	BRATTVAG SKIPSVERT AS	PASSENGER/VEHICLE	1	—	1997
—	SOVIKNES VERFT	PLATFORM SUPPLY	2	—	1997
—	—	PLATFORM SUPPLY	1	—	1997
—	IWAGI	REEFER	2	9,800	97/98
BFAR	ASTILLEROS GONDAN	RESEARCH	1	—	1998
COTUNAV	SCHICHAU SEEBECKWERFT	RO-RO	2	—	1997
PETROLEUM GEO-SERVICES	LANGSTEN SLIP & BAABYGGERI AS	SEISMIC SURVEY SHIP	2	—	1998
ASAHIYA TANKER	MURAKAMI HIDE	TANKER	1	6,500	1998
BP SHIPPING	DAEWOO	TANKER	1	125,000	1997
GLAFKI MARITIME	NKK CORP.	TANKER	2	150,000	1998
GOLDEN OCEAN	HITACHI ZOSEN	TANKER	1	300,000	1999
GOLDEN OCEAN	MITSUBISHI H.I.	TANKER	1	309,000	3/99
HYUNDAI MERCHANT MARINE	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	2	280,000	9/98
LUK OIL ARCTIC TANKERS	MEERESTECHNIK WERFT	TANKER	2	15,980	1998
MARTINOS	SAMSUNG	TANKER	2	150,000	1999
OMI CORPORATION	DAEWOO	TANKER	2	150,000	1998
PERTAMINA	PT PAL	TANKER	3	17,500	1999
SEATANKERS MANAGEMENT	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	150,000	1998
THENAMARIS	SAMSUNG	TANKER	2	150,000	1989
UNKNOWN	NKK CORP.	TANKER	3	105,000	1999
EKTANK AB	JANGNAN	TANKER	1	14,000	9/98
NIARCHOS	DAEWOO	TANKER	1	300,000	10/98
COASTAL TANKERS LTD	—	—	—	—	—
—	SZCZECIN SHIPYARD /	—	—	—	—
—	STOCZNIA SZCZECINSKA	TANKER	1	44,500	11/98
HYUNDAI MERCHANT MARINE	HYUNDAI HEAVY INDUSTRIES (HHI)	TANKER	1	30,000	1998
CERES-HELLENIC SHIPPING	SAMSUNG	TANKER	2	—	—
ICB SHIPPING	DAEWOO	TANKER	1	150,000	1998
KEPPEL SMIT TOWAGE	SINGMARINE DOCKYARD	TUG	2	—	1997
BOLUDA GROUP	ZAMACONA	TUG	2	—	—
BUGSIEER REEDEREI	J. G. HITZLER	TUG	2	—	9/87
HAWAIIAN INTERISLAND TOW	MARCO SEATTLE	TUG	1	—	8/97
PANAMA CANAL COMMISSION	HALTER MARINE INC.	TUG	3	—	1997

Vessel & Equipment Contract News

Kvaerner Wins \$1 Billion Contract

Royal Caribbean Cruises Ltd. (RCCL) announced the award of a contract to Kvaerner Masa-Yards in Turku, Finland, for the construction of up to two new cruise ships in a continuation of its fleet expansion program currently underway with its six-ship Vision class series. Each of the two, 130,000-gt vessels will have an occupancy of 3,100 passengers. The contract price for the two ships is approximately \$1 billion. Kvaerner was also responsible for construction of the cruise line's first four ships and two of the Vision class vessels. The new ships were designed under the working name Project Eagle. The Royal Caribbean technical project team responsible for the new design is the same group that developed all of Royal Caribbean's ships, including the three Sovereign class vessels and the six Vision class vessels.

"While the Eagle ships will be large vessels, the story is not about size; it's about options," said **Richard Fain**, the line's chairman and CEO.

"We are very pleased to be continuing our long relationship with Royal Caribbean," said **Martin Saarikangas**, CEO of Kvaerner Masa-Yards. "We have been involved in the design of every ship in the Royal Caribbean fleet, so we feel it is an important step for both the yard and the cruise line to be partners in creating these Eagle class ships."

One ship is scheduled to be delivered in the fall of 1999, with an option for a second ship scheduled for delivery in 2000. The two Eagle class vessels will reportedly increase Royal Caribbean's fleet capacity by approximately 26 percent, resulting in a total capacity of more than 29,900 lower berths after delivery of the remaining Vision class vessels by the spring of 1998.

For more information on Kvaerner Masa-Yards
Circle 39 on Reader Service Card

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Dubai Drydocks Wins Tug Order



Pictured is *Shindagha-5*, a tug recently completed by Dubai Drydocks for its own operations.

Dubai Drydocks recently won an order for construction of a new harbor tug for the Dubai Ports Authority. Delivery is planned for

January, 1997

September 1997 and the order follows the successful completion of a similar tug, *Shindagha-5*, built in 1996 by the yard for inside operation. This order is considered significant because it is the first commercial shipbuilding project for the yard. The new vessel will be a powerful modern design with two azimuth thruster units at the stern. It will be powered by two Wartsila Nohab 6R25 diesels each generating 2,100 bhp, driving two Schottel SRP 1212 CP thruster units, providing more than 50 tons of bollard pull and excellent maneuverability. The original tug design is Italian, based upon the Punta Scutola class built by the Tommasi shipyard in Ancona. The vessel will be built in accordance with the requirements of Lloyd's Register.

For more information on Dubai Drydocks
Circle 40 on Reader Service Card

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Daewoo Wins Dual Tanker Contract

OMI Corp. has signed contracts with Daewoo Corp. and Daewoo Heavy Industries Ltd. for the construction of two Suezmax, 156,000-dwt crude oil tankers in Korea. The vessels are to be delivered in the third and fourth quarters of 1998, and the contract includes an option for two additional ships. The company also announced that it has completed acquisition of the 1991-built, 30,000-dwt product courier *Nordholm*. The vessel, renamed *Shannon*, is the ninth handysize product carrier in the OMI Corp. fleet. OMI's fleet currently totals 36 vessels (including four chartered-in tankers), aggregating approximately three million dwt.

For more information on Daewoo
Circle 41 on Reader Service Card

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Pan-United To Build Two Double Hull Tankers

Pan-United Shipyard Pte. Ltd. has won two contracts worth approximately \$66 million for the construction of two double-hulled tankers for use by Indonesian oil major Pertamina. The contracts were awarded separately by shipowners Asian Eternal Shipping Pte. Ltd. and Labroy Marine Ltd., both of which will charter the vessels to the Indonesian interest.

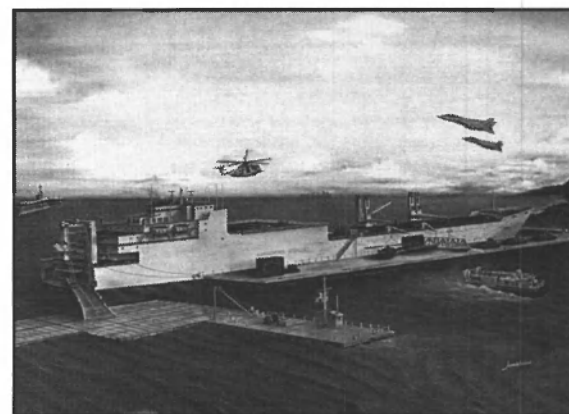
Scheduled to be completed by the first half of 1998, the tankers will be classed by ABS and will be powered to a cruising speed of 13 knots, with cargo capacities of 23,700-cu-m. Provisions for the use of alternative fuels will also be taken. The ships will measure 518.3 x 88.5 x 22.9 ft. (158 x 27 x 7 m), will weigh in at approximately 14,470 gt, and will be powered by MAN B&W 7S35MC engines.

"This is a major milestone for our shipyard. We look forward to more of these contracts, especially with the rising demand for tankers transporting oil and gas in the region," said **Henry Ng**, managing director, Pan-United.

For more information on Pan-United Shipyard
Circle 43 on Reader Service Card

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Navy Increases Avondale/NASSCO Contract Values



Pictured is an artist's rendition of the Strategic Sealift ship NASSCO will build for the U.S. Navy.

Avondale Industries, Inc. announced that the U.S. Navy has exercised an option for the construction of an additional Strategic Sealift ship at a value of \$211.1 million. After consideration of certain additional components and cost escalations, the contract is expected to total more than \$240 million. This represents the fifth ship which Avondale has now been awarded in the Sealift program, a multi-ship initiative intended to support the nation's ability to deploy military materials and equipment quick-

Recent Ship Sales

This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers. For more information, call tel: (212) 997-0966.

Date Reported	Vessel Name	Vessel Type	DWT	Year Built	Price (M)
11/25/96	Baffin Bay	Bulker	19,024	77	\$3.3
12/2/96	Oriental Pearl	Bulker	20,189	76	\$2.5
11/18/96	Green Suma	Bulker	22,172	81	\$5
12/9/96	Federal Matane	Bulker	28,214	84	\$9.5
12/9/96	Lazaros L	Bulker	28,637	77	\$3.5
12/9/96	Ocean Fortress	Bulker	29,125	84	\$8.8
11/18/96	Iro	Bulker	30,819	76	\$3.4
12/2/96	Jag Rani	Bulker	34,135	76	\$3.5
11/18/96	Captain Sarantis	Bulker	53,293	75	\$2.2
12/2/96	Clarisse Venture	Bulker	60,190	82	\$9
11/25/96	Maryli	Bulker	64,725	77	\$5.5
11/18/96	Ios	Bulker	65,298	85	\$12.8
12/2/96	Marquesa	Bulker	71,831	77	\$5.8
12/9/96	Forum Cape	Bulker	112,686	73	\$3.8
12/9/96	Thalassini Avra	Bulker	129,237	81	\$12.3
11/18/96	Catherine Venture	Bulker	132,016	81	\$10.8
12/9/96	Ikan Tongkol	Bulker	138,490	82	\$9.8
11/18/96	Joyful Spirit	Bulker	145,736	81	\$8
12/9/96	Astipalea	Tanker	30,318	70	\$2
11/18/96	Sunshine	Tanker	36,882	85	\$17
12/9/96	Horizon XII	Tanker	39,998	75	\$3.5
12/2/96	Panagia	Tanker	88,066	96	\$30

ly throughout the world. NASSCO was also awarded a \$200-million contract option for the construction of an additional sealift ship, bringing the yard's total to five of this class.

\$

Ulstein Wins Solstad Contract

A contract worth approximately \$23M for a UT 745 supply vessel has been awarded to Ulstein Verft, part of the Norwegian Ulstein Group, by Solstad Shipping. The company's fleet is being expanded

by four new vessels between this March and March 1998, all of which are being built to Ulstein design.

For more information on Ulstein Verft
Circle 50 on Reader Service Card

\$

Buck Kreihs Awarded Contract

Buck Kreihs Co., Inc. of New Orleans has been awarded a \$4.3-million contract for the conversion, upgrade, repair and activation of SS *Beaver State*. The vessel is part of the Ready Reserve Fleet, which is administered by MarAd, which is administered by MarAd for the purpose of supporting strategic sealift in times of national emergencies. The project is expected to be completed in five months.

For more information on Buck Kreihs
Circle 42 on Reader Service Card

\$

DRS Acquires Pacific Technologies

New Jersey-based Diagnostic/Retrieval Systems, Inc. (DRS), a high technology company serving government and commercial markets, announced its acquisition of Pacific Technologies, Inc. through a merger instituted by one its subsidiaries. Pacific Technologies, located in San Diego, provides software and engineering systems support to the U.S. Navy for the testing of shipboard combat systems.

For more information on DRS
Circle 44 on Reader Service Card

\$

I.B. Ltd. Purchases Cruise Ship From Carnival; \$10M Upgrade Planned In May

Dolphin Cruise Line announced on Dec. 6 that S.S. *IslandBreeze* (former *Festivale*) was purchased by I.B. Limited from Carnival Cruise Lines. The purchase transaction was in the form of a seven-year charter agreement. Under the terms of the agreement, I.B. Limited assumes all financial responsibility for the vessel which was previously held by Carnival — with all the marketing, sales and ship operation under the responsibility of Dolphin Cruise Line.

IslandBreeze will continue its current itinerary from Montego Bay to the Panama Canal through its May 18, 1997 sailing. On May 25, the ship will go into drydock to be completely upgraded and refitted for SOLAS requirements, at a total expense in excess of \$10 million, after which the ship will sail from Palma de Majorca for summer European cruises under long-term charter.

\$



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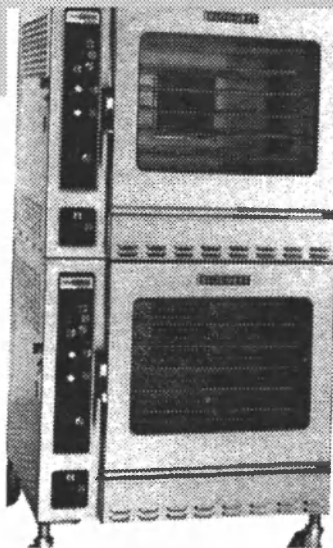
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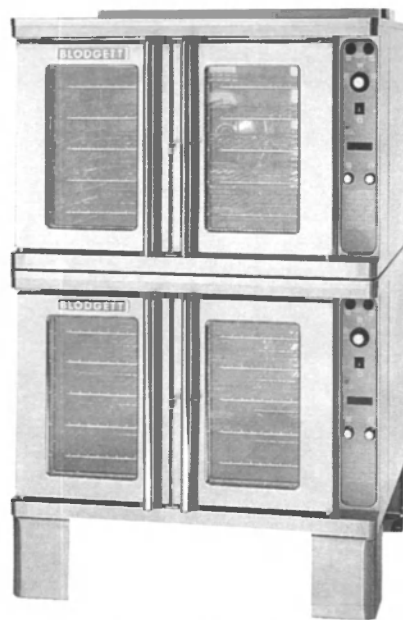
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NNS Becomes Independent, Publicly Traded Company

Newport News Shipbuilding (NNS) became an independent company on Dec. 10 when shareholders of parent company Tenneco approved a proposed spinoff announced in March. Trading of its shares was scheduled to commence on Dec. 12.

"Our 110-year history, a current backlog of orders totaling approximately \$3.5 billion and an aggressive strategy for enhancing the company's ship construction and ship overhaul business will be key strengths as we return to independence after almost 30 years as a Tenneco operating division," said NNS President and CEO **William P. Fricks**.

ASRY Names Production Manager

Chris Potter has been appointed Production manager at ASRY, after having joined the yard in 1992 and served three years as Mechanical & Piping Service head. Before coming to ASRY, Mr. **Potter** served as Ship Repair manager for Sembawang Shipyard, and as an assistant manager with Bahrain Slipway. He also worked for Falmouth Shiprepair in 1981 before moving to Gibraltar Shiprepair in 1984, where he rose to the position of Production manager, and then to the role of General manager.



MMS Announces New Developments

Susan Logan has joined Marine Management Systems, Inc. (MMS) as Business Development manager. She is responsible for generating new business and market share in the North America region.

MMS customer and TOTE Superintendent Engineer/Marine Operations Manager **Rand Lyman grover** has gone on the record saying, "Six months after installing Fleetworks, our inventories are four times more accurate and complete. We've saved at least \$30,000 in inventory over the past six months."

MMS has also recently added Hewlett Packard computer line, including HP Vectra Mariner System to its hardware offering. This system helps to remove the high frequency vibrations found in marine environments and keep computers stable. MMS has also reported that ISIT's system engineering and design was completed in September 1996 and the Application Programs Interfaces (APIs) that will allow vendors to make their products compliant with the ISIT platform are nearing their completion date.

Victaulic Embarks Upon Restructuring

Mechanical pipe manufacturer Victaulic Company of America, based in Easton, Pa., has restructured its sales field organization, resulting in new appointments. Several territory managers were promoted to regional managers, namely: **Edward Eichmann**; **Dennis Love**; **Barry O'Brien**; and **Daniel Sutton**.

The company has also established new sales regions — the West Virginia/Mining region which will be handled by **Brian Dotson**, and the Las Vegas/Arizona/New Mexico region for which **Warren Williams** will be responsible.

In addition, **Michael Segala** will serve as Eastern division manager, **David Sharkey** will take over the Central division and former Central and Fire Protection manager **Thomas McDowell** will concentrate solely on fire protection.

Drew Marine Executives Receive Promotions

Ashland Chemical Company's Drew Marine Division announced three new assignments for its senior management team during a strategic meeting of division employees. **Paul DeVivo** has been named to the newly created position of vice president, Operations. **Daniel P. Kelleher** will succeed Mr. **DeVivo** as regional vice president, North and South America. **Nels J. Hendrickson** has been promoted to vice president, Northern Europe, and will establish his regional headquarters there. He served previously as western regional manager in North and South America.

MIL Davie Renamed

J. Arthur Gélinas, president and CEO of MIL Davie, recently announced that "Davie Industries Inc." is the new official corporate name for The MIL Group and its MIL Davie division. The change in corporate name is part of the overall business plan that has been put in place to increase the company's shipbuilding and industrial capacity on an international basis. Following a privatization process earlier this year, MIL Davie was bought by Dominion Bridge Corporation of Lachine, Quebec. Davie is reportedly the oldest active shipyard in Canada, founded in 1829.

Tanker Agency Names Sub-Agent

Yusuf Bin Ahmed Kanoo, a liner and tanker agency operating in the Arabian Gulf and Red Sea, has appointed Interocean Shipping (India) Pvt. Ltd. as its sub-agent for the Indian subcontinent. Interocean has offices at major ports on the east, south and west coasts of India, and all operations are centralized through its New Delhi headquarters. Kanoo is a member of the Association of International Shipping Agents.

Lykes Names Wachtel To New Post

James R. Wachtel has been promoted to senior vice president of Line Management for Lykes Bros. Steamship Co., Inc.



He is responsible for setting overall goals and providing direction for all marketing, pricing and line management activities for all of Lykes' containerized and project services. Mr. **Wachtel** joined Lykes' shore-based traffic operations group in New Orleans in 1967, and his last position prior to his promotion was senior vice president of the company's Atlantic division.



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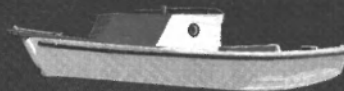
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COMPANY & PEOPLE NEWS

IMC Undergoes Management Changes

International Marine Consultants (IMC), a technical and engineering consulting firm, has undergone a change in corporate management and ownership. The organization's operating

assets have been purchased by **John O'Connor** and **Joseph O'Keefe**. Mr. O'Connor, former vice president, will serve as president. Mr. O'Keefe, former manager of the company's Gulf Coast regional office, will assume the responsibilities of vice president. IMC also recently opened an East

Coast regional office in Richmond, Va.

Ferro Names New Manager

Ferro Corp. — an international producer of performance materials for industrial applications, including coatings, plastics and chemi-

cals — announced the appointment of **Ed Freshman** to the position of Marketing manager. Before assuming this position, he served as Financial Planning director and in the past has also worked for Petrochemicals Co., Inc.



P&I Clubs Accept MSRC's Revised Service Agreement

Marine Spill Response Corp. (MSRC) announced that the International Group of P&I Clubs' Pollution Subcommittee in London has accepted its revised Service Agreement. According to **Patricia Lee**, "MSRC's revised Service Agreement has been greatly simplified and streamlined. This will be an easier document for our customers to use."

The revised document details the company's services and capabilities, including expanded services such as shoreline cleanup, Average Most Probable Discharge standby service, and response to spills of all sizes. MSRC provides oil spill response services on the U.S. East, Gulf and West Coasts, the U.S. Caribbean and the Hawaiian Islands.

Sonsub Appoints New Chief

Giovanni Rosa has been named president and CEO of Sonsub International, Inc. He has held senior level positions with the Saipem Group



for a number of years, and has relocated from Milan to head up Sonsub's worldwide operations in Houston, Texas. Notable among his career accomplishments, in 1970 Mr. Rosa was responsible for supervising the conceptualization, design, engineering and construction of *Castoro Sei*, an advanced deepwater pipelaying vessel which continues to set performance records worldwide.

Trimble Announces Senior Management Changes

Trimble announced that **David Hall**, managing director of OEM products, has been appointed to serve as vice president and general manager of the company's Software and Component Technologies business unit. In addition, Trimble announced the

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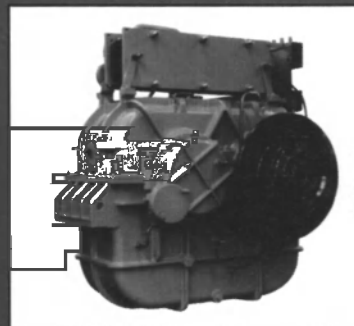


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departure of **Chuck R. Joseph**, former executive vice president and general manager of the business unit, who has left to pursue other career opportunities.

Trimble is involved in the emerging commercial markets for GPS satellite-based navigation, positioning and communications data products. Trimble products are sold worldwide for diverse applications including: land and hydrographic surveying; marine navigation; vehicle tracking and communications; and mobile GPS.

Denison Names Manager

Denison Hydraulics, Inc. has appointed **David W. Stubbs** as worldwide piston marketing manager. He joins the company from Hagglunds, where he worked 12 years in a variety of sales, service quality and technical positions. Before that, Mr. **Stubbs** was employed by Halifax Tool Co. in England, where he was a demonstration and commissioning engineer for eight years.



DOT's Peña Leaves Office

Transportation Secretary **Federico Peña** will leave office after nearly four years in President Clinton's Cabinet. Secretary **Peña** was recently credited with boosting support for the U.S. presidential incumbent in major states.

Oronite Names Senior Product Specialist

Sally Pavlica has been named senior product specialist for the Americas Region Specialties Team of Chevron Chemical's Oronite Additives Division. Before accepting this appointment, she served as product manager for Pennzoil Products Co. Ms. **Pavlica's** 15-year background in the lubricants industry includes marketing and research experience with Ethyl and CITGO.



Cunard Strategy Extends To Hire Of New P.R. Agency

Cunard has selected international public relations agency Hill and Knowlton as part of a strategic plan to reposition itself as a global luxury brand. The company will handle marketing and travel com-
January, 1997

munications for the 156 year-old cruise line whose fleet includes *Queen Elizabeth 2*, *Royal Viking Sun*, *Vistafjord* and *Sea Goddess I and II*.

The companies have signed a 12-month agreement; terms were not disclosed. The account will be

directed by **Carla Stanmyre**, senior managing director, Marketing Communications, in New York, who led the agency's pitch effort.

McDermott CFO Resigns

J. Ray McDermott, S.A.

announced that **Richard R. Foreman**, executive vice president and chief financial officer, has tendered his resignation to pursue other interests. Mr. **Foreman** has agreed to remain available until March to assist management during this transition, as well as to

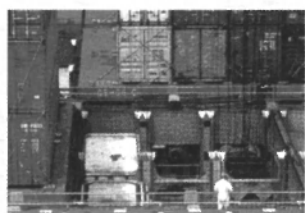


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COMPANY & PEOPLE NEWS

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Kittiwake Makes New Appointments

Kittiwake Developments Ltd., a U.K. company which manufactures and supplies oil test equipment for both fuel and lubricating oils, has made new appointments. **Kathy Arliss**, formerly of Hapstead Volvo, will serve as business coordinator. **Lynne Clark** is the company's new financial controller.

International Absorbents Names Ellis To Top Slot

International Absorbents Inc., a manufacturer and marketer of absorbent products made from waste wood pulp, announced that **Darryl F. Jones** has resigned as president and CEO. Chairman **Gordon Ellis** will assume the duties and responsibilities of company president and CEO.

In addition, **Geoffrey Lawrence** was recently named president and CEO of Absorption Corp., the company's wholly-owned operating subsidiary.

LR Appoints Group Regional Manager

Peter Holland has been appointed group regional manager for Southeast Asia for Lloyd's Register (LR). Mr. **Holland** will replace **Jim Mackay**, who has retired after nearly 30 years with the classification society. Mr. **Holland's** new duties will include overall management of LR group offices in the countries within his region. Previous to this appointment, he served as president director of PT Lloyd's Register Advisory Services Indonesia.

Coastal Towing Announces Personnel Changes

Marlon K. Brown has joined Coastal Towing Co., Houston, Texas, as Safety manager. He was previously assistant director of Safety and Training with G&H Towing of Galveston. **Thomas W. Tooker** has rejoined the company as Training manager. He managed the company's safety and training programs for many years before returning to academia in Tyler, Texas.

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Maritime Reporter/Engineering News

Marine Literature Review



The MSI Hercules™ Marine Load Block
MSI Crane and Equipment Co., Inc. services and maintains marine cranes and equipment. MSI discovered that none of the load blocks they serviced or were available could withstand the harsh marine environment. The MSI Hercules Marine Load Block has been designed and built with nothing else but the marine environment in mind. Designed by Marine Crane Experts for the Marine Crane Industry.
Circle No. 190

The Complete Sheet Vinyl Marine Decking, With Easy Cleaning, No Wax Finish
Lonseal's LONMAT UV is a heavy-duty, sheet vinyl material, available with a new, ultraviolet-cured, high-gloss finish for easy cleaning with a minimum of time and effort—lower maintenance costs! Lightweight and durable, LonMat has proved long wearing in years of service in the heaviest traffic areas.
Circle No. 189



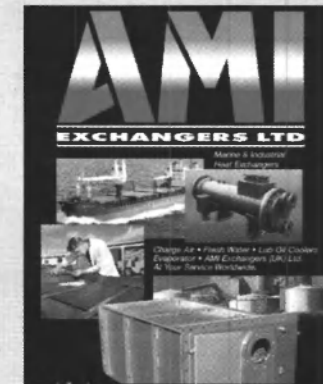
Diesel Fuel Injection Specialists
Fluid Mechanics has been providing parts and service to operators and owners of slow and medium speed engines for over 35 years. Capabilities include fuel injection pump and fuel injector repair, rebuild and component reconditioning. All work is tested according to fuel system and engine manufacturer standards by factory trained technicians. We also offer genuine OEM engine intake and exhaust valves, high pressure fuel pipes, air and hydraulic starters.
Circle No. 187

OilArm®
INVENTIVE SYSTEMS INC. manufactures oil-in-water alarms and monitors. These products are used to detect the amount of hydrocarbons in water before the water is discharged into the environment. Applications include shipboard discharges, coolant water monitoring, water runoff monitoring, food processing and many more requiring oil free water.
Circle No. 188



Desiccant Air Dryer Prevents Compressed Air Freeze-Up
CAMAIR, Inc. has developed a dryer for commercial and naval maritime vessels. After easy installation, the CAMAIR dryer will remove moisture vapor in the compressed air line. This is guaranteed to prevent freeze up of air lines, air controls, air cylinders or any other moisture sensitive, air operated equipment aboard the vessel.
Circle No. 186

AMI Exchangers—All Types of Marine Heat Exchangers
• Charge air cooler specialists—new units, refurbishments and redesign
• Condensers, oil coolers, evaporators, air conditioning coils
• Extensive computer database with detailed drawings and specifications
• Competitive prices with fast, reliable service.
Circle No. 185





Marine Hydraulic Steering Systems

Jastram Engineering designs and manufactures a complete line of marine hydraulic steering systems, including cylinder-actuated gears and Rapson slide-actuated gears. A large range of steering controls ensure that Jastram can offer one-source system responsibility. Visit their new website at www.jastram.ca. **Circle No. 130**



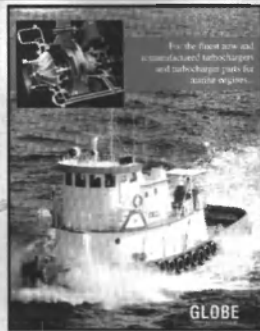
The Ability to See

Navigation is more than a science, it's vision and situational awareness. That's why you need PinPoint. It gives you greater acuity than any other electronic charting system. PinPoint is the best way yet to navigate safely and protect your investment in boating. Trust PinPoint to keep you at the leading edge of navigation technology. **Circle No. 131**



Parker 792: The Ultra High Pressure Performer

When the big pressure is on, specify Parker 792 hose. Six spirals of high-tensile steel wire reinforcement make this the ideal hose for hydrostatic transmissions, power units, injection molding, test stands, mining equipment and more. **Circle No. 132**



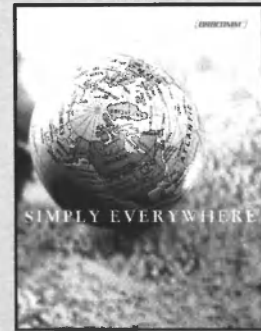
Full Steam Ahead to Quality

No one knows marine turbochargers like Globe. We're the nation's leading manufacturer of new and rebuilt turbochargers and turbocharger parts for workboats. You can depend on Globe for innovative answers and cost-effective solutions—no matter how complex your powerplant requirements. **Circle No. 133**



Your Complete Yard

Calcasieu Shipyard is located 17 miles north of Cameron, La., on the Calcasieu River at Intercoastal Canal. An efficient operation staff, professional engineering services, quality craftsmanship and quick turn-around make Calcasieu Shipyard an industry leader. **Circle No. 134**



Simply Everywhere

Orbcomm offers a breakthrough in wireless, two-way personal messaging and data communication. From controlling remote pumps to sending messages from the open road, Orbcomm's two-way communications system enables you to solve your remote messaging and data communication problems—anywhere in the world. **Circle No. 135**



Marine Seals and Bearings

John Crane Marine is the world's leading manufacturer of high quality marine seals and bearings. John Crane Marine's capability extends from pleasure craft to supertankers and from patrol boats to aircraft carriers. We offer a complete range of products including pump seals, stern shaft, rudder, fin stabilizers, and bulkhead seals. **Circle No. 153**



Marine Tank Level Transmitter

KING-GAGE® LiquiSeal liquid level transmitter for cargo, ballast and service tanks are rugged unit mounts externally with a simple length of pipe extending into the tank. Versions include 4-20mA output, or pneumatic output for explosion hazard service. Proven performance in USN and commercial fleet operations. **Circle No. 152**



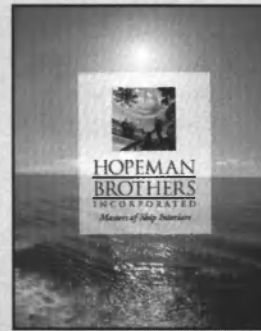
Marine Panels

TODCO marine panels meet tough military specifications. We utilize laminate, fiberglass, aluminum and steel facings, combined with nomex, aluminum, stainless steel and rock wool cores. Working with joiner contractors and/or directly with shipyards, we engineer and manufacture custom interior doors, bulkhead and sanitary partitions, and more.



Keep Diesel Fuel Dry

Luber-Finer's LFF-8000 Series Fuel Filter/Water Separator strips both emulsified and slug water from diesel fuel and dumps it into a built-in sump. It is 97% efficient at removing water, and removes engine damaging particles at the same time. The LFF-8000 is applicable with all Cummins, Mack, Detroit, CAT or IHC engines with OE spin-on fuel filters. **Circle No. 150**



Hopeman Brothers — Masters of Ship Interiors

Today, the industry leader of yesterday is still leading the way in turnkey outfitting of interior accommodations. Our past experience and present capabilities have given Hopeman the keys to making dreams come true by being, on time and within budget.

Circle No. 149



A Most Timely Product

INCINOLET electric incinerating toilet system solves the critical problems of water, waste and pollution of our ground water resources. Water is not used at all in the system, and nothing is drained out. It is easy to install and can be used in any climate. We build quality into every INCINOLET to give you years of dependable service. **Circle No. 148**



Gryfia Ship Repair Yard

The Gryfia Ship Repair Yard, operating since 1952, offers a wide range of repairs and conversion of sea vessels and other water crafts. The yard also repairs diesel engines and turbochargers and refurbishes mechanical parts. Gryfia repairs approximately 200 vessels annually and is renowned for its commitment to the highest quality standards. **Circle No. 196**

Advanced Environmental Systems, Inc.

Advanced Environmental Systems, Inc. is a manufacturer of pumps, vacuum systems, and power tools aimed at providing solutions to a variety of environmental and industrial remediation problems. AES equipment is used in a wide variety of industries around the world. **Circle No. 195**





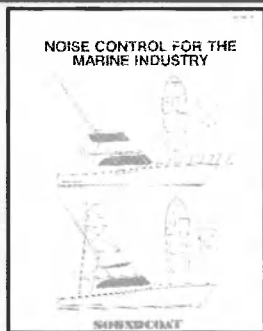
Call the Cellular Pay Phone Experts

As the industry's most versatile supplier of cellular pay telephone services, CELLNET has the equipment and the proven field experience necessary to deliver a solution to fit your exact needs. Whether cellular requirements are simple or complex, CELLNET is your answer! **Circle No. 136**



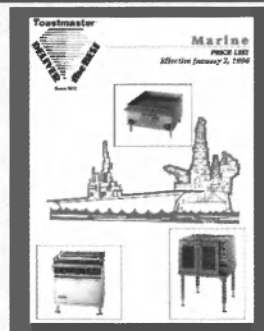
ShipmoPC for Windows

The latest version of this popular seakeeping program features a more friendly Windows interface, and introduces a number of new features including polar plots, off centerline motions prediction, and improved line manipulation and importing and exporting features. Also new: on-line HELP. **Circle No. 137**



High Performance, Lightweight Acoustical Materials

The Soundcoat Co. features DYAD, a viscoelastic compound which dissipates the mechanical energy of vibration, effectively employing constrained layer dampening to thick metal plating. Soundcoat's engineering teams have 35 years' experience in treating OEM noise. **Circle No. 138**



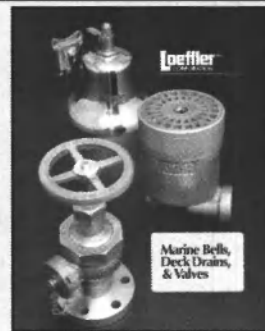
The Toast of the Marine Industry

Toastmaster, the Cooking Experts, has decades of experience in providing high quality cooking equipment to the marine industry. Hatchable ranges, griddles, fryers and convection ovens have all been engineered to meet the demands of marine vessels. Call (800) 323-2210 for additional information. **Circle No. 139**



TIVAR Dock and Fender Facings

TIVAR dock and fender facings reportedly do not absorb water, nor do they leach dangerous chemicals. The products feature low-friction, a wear-resistant surface that is chemical and corrosion-resistant. TIVAR fenders are reported to show little wear after 10 years in operation. UV resistant formulation available. **Circle No. 140**



New Marine Products Catalog Available

Loeffler Corp., a leading manufacturer of ship's bells, deck drains and valves since 1926, now has available an attractive, new, free catalog for these products, which are U.S. Navy and USCG approved. The catalog provides product photos as well as dimensions for all required applications information. **Circle No. 141**



Kiene Diesel Accessories

The four page, four color brochure highlights Keine's products for the large bore, slow and medium speed diesel engines, which include cylinder pressure indicators, indicator valves, indicator valve accessories and fuel injection pump test equipment. Included with this brochure is a reader response card. **Circle No. 147**



Sound Propeller Services

Sound Propeller's uncompromising commitment to quality has helped it become the Northwest's leading manufacturer of marine propulsion equipment, and has resulted in nationwide orders for custom engineered products. You can count on Sound Propeller for propellers and accessories that meet your specific needs. **Circle No. 146**



Alden Electronics—EPIRB Experience

When survival might depend on a piece of equipment, you want the best. The SATFIND-406 SURVIVAL EPIRB continues the reputation of value, durability and reliability that have made Alden's Marinefax and Faxmate weatherchart recorders industry standards. Alden equipment works when you need it. **Circle No. 145**



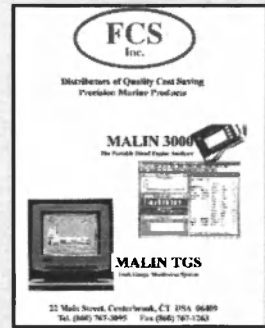
Bird-Johnson/MJP Waterjet Systems

New York Fast Ferry Services' newest commuter ferries are propelled by Bird-Johnson/MJP waterjets with its advanced control systems. Fast ferries to be built for the city of Vallejo, CA, Golden Gate Bridge District, and Washington State Ferry System will also feature similar propulsion packages. **Circle No. 144**



Improved Method for Removing Paint Rust & Adhesives

Aurand's cleaning tools have been solving industry's toughest maintenance problems since 1937. It recently introduced Centri-Clean, a time, money and work-saving tool that literally "peels" almost any accumulation from any hard surface. It is the power of sandblasting in a compact, hand-held tool. **Circle No. 143**



Lower Cost, Increase Reliability, Improve Operations

FCS Supplies the "award winning" Windows-based Malin 3000, portable precision diesel engine analyzer, crank shaft deflection meter, draft indicator and tank gauging system, which set industry standards. Its proven, effective products improve operations, increase reliability and lower costs. **Circle No. 142**



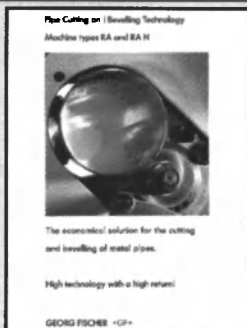
PSI Bearings

PSI Bearings offers a wide range of metallic plain bearings to suit specific applications including steering linkage, lifeboat davits and power plant controls. Benefits to using PSI Bearings include multiple lubrication options, reduced weight, wide temperature range, specific configurations, and the use of a wide variety of materials to resist corrosion. **Circle No. 194**

The Grippers

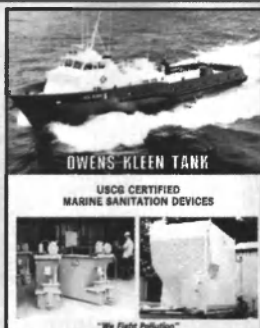
Trident Technologies manufactures "Grippers," an idea first used by the Department of Defense for scaling ferrous surfaces. The Grippers utilize magnet packs, two hand-held and two foot-mounted, which hold about 1,000 pounds per unit. Grippers are used by law enforcement, fire and rescue personnel and have a range of uses in the shipping, maritime and salvage industries. **Circle No. 193**





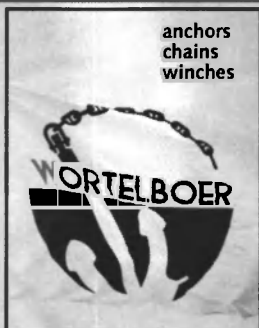
Cut Stainless Steel Tube or Pipe Quickly, Cleanly and Easily

George Fischer's various pipe cutting and beveling machines will produce a square, burr-free cut on 1/4 to 12 inch tube or pipe. The pipe stays stationary and the cutter is rotated around the pipe just once. It takes only 20 seconds or less to cut any schedule of 4 inch pipe. **Circle No. 154**



Marine Wastewater Treatment Systems

The OWENS KLEEN-TANK uses aeration and operates as an extended biological aeration system. It is self-contained and delivered to site ready for operation when site electrical and mechanical connections are in place. The Kleen Tank can be designed for small, hard to fit areas. **Circle No. 155**



Anchors • Chains • Winches

G.J. Wortelboer Jr. B.V. is specialized in the supply marine products, essentially anchors, chain cables, winches and windlasses, with deliveries on a worldwide basis. Substantial stock is kept at its Rotterdam HQ, guaranteeing immediate delivery to virtually any port in the world. **Circle No. 179**



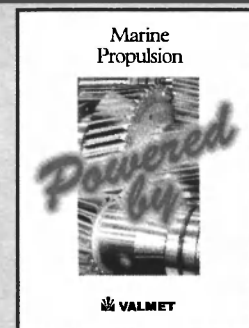
State of the Art Pipe Fabrication Technology

Wallace Coast Machinery supplies shipyards with superior pipe bending machines for years and has completed several pipe shop production modernization projects. We design CNC pipe benders, automatic flange tack and welding machines and pipe marking systems. **Circle No. 157**



BOATRACS, Inc.

BOATRACS, Inc. provides two-way, satellite-based messaging and vessel tracking services for the commercial marine market, including the workboat, towing, oil supply and fishing industries. The company has an international presence in the coastal and inland waterways of North America, Canada and Europe. **Circle No. 158**



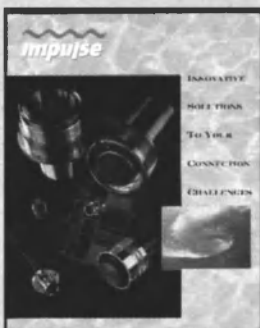
Marine Propulsion

Valmet Power Transmission is one of the world's leading suppliers of gears, couplings and drive systems for shipbuilding and other demanding applications. The propulsion gear drives supplied by Valmet have been engineered and manufactured to maximize availability and operational efficiency for every marine application. **Circle No. 159**



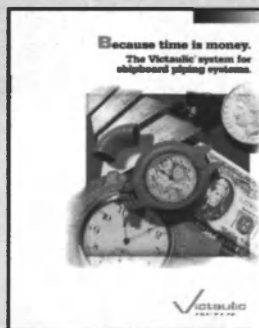
Eliminate Microbial Contamination

ALGAE-X prevents clogged filters and continuously cleans your fuel systems by simply running your engine or circulating pump. Increase the life of engines, injectors and pumps, reduce maintenance and downtime and improve reliability and safety ... all without the use of toxic biocides. **Circle No. 160**



Innovative Solutions to Your Connection Challenges

IMPULSE Enterprise has provided high quality connectors and cables for underwater applications since 1978. Our product family continues to expand by meeting the rigorous demands of diverse industries operating worldwide in all kinds of challenging environments. **Circle No. 161**



The Victaulic System for Shipboard Piping Systems

Victaulic Co. of America has issued a new eight-page brochure on its grooved-end mechanical piping system for the marine industry. The brochure describes how the system works and its advantages over conventional welded, flanged and threaded systems. **Circle No. 162**



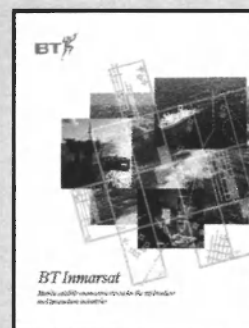
Elefsis Shipyards SA - Shipbuilding, Repairs, Maintenance and Conversions

Methodical investment in new technology, confidence in a dedicated, adaptable and highly qualified work force and a commitment in our own pursuit of excellence, in both design and manufacturing, enable us to undertake and successfully complete projects. **Circle No. 163**



The Information Superhighway

Raytheon, the acclaimed leader for innovative technologies, has defined the concept of systems integration for the marine electronics industry. Raytheon products deliver the promise of superior technology, power and accuracy — and make it usable. Its commitment to making the information superhighway a usable reality is absolute. **Circle No. 164**



BT Inmarsat

BT is the only global communications company dedicated to providing solutions for the financial community in North America. With 40,000 trading positions in 45 countries, BT offers complete networking capability for digital voice switching, turrets, speakers, recording equipment and applications, as well as voice and data integration applications. **Circle No. 165**



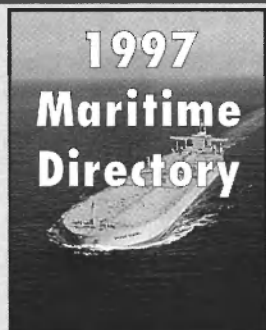
ZhongNan Power Machinery

ZhongNan Power Machinery Co. Ltd. is located in the heart of the Pearl River Delta, close to Hong Kong and Macau. Working predominantly on designing and manufacturing the major components of medium and large diesel engines, ZhongNan is the only manufacturing center in China for these components in the most advanced standard. **Circle No. 192**

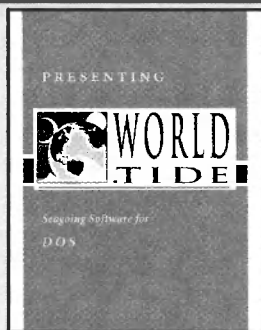
Bicera Valves: Crankcase Explosion Protection For Personnel and Equipment

Bicera Crankcase Pressure Relief Valves provide the best protection available for your engine in the event of a crankcase explosion, with a unique internal flame trap that helps protect equipment and personnel. Bicera Valves meet all major classification society codes and have proven themselves effective and economical around the world for over 35 years. **Circle No. 191**





World Wide Maritime Information Source
Maritime Reporter's 1997 Worldwide Maritime Directory and Equipment Catalog is your complete source for domestic and international shipbuilders and repair yards, vessel owner/operators, and equipment manufacturers and suppliers. This invaluable reference tool is also available on CD-ROM. **Circle No. 178**



The Best Available Tide Prediction Software
 Micronautic's tide and current prediction software for N. America, Tide.1 Rise & Fall and Tide.2 Ebb & Flow, are considered the premier products of their type. Now they introduce World.Tide. It is a Windows-friendly, easy to use, fast and compact software which predicts tides at 6,400 ports worldwide. **Circle No. 167**



CSI for Quality Interiors - Worldwide
 CSI's mobile construction teams have provided and installed quality marine interiors in over seventy vessels throughout the world, since 1984, from cruise ships to casino boats. Specialties include: joiner/bulkhead doors; ceiling systems; paint and wall coverings; tile and carpet; and more. **Circle No. 168**



Gibbs & Cox, Inc.
 Gibbs & Cox, Inc., a leader among naval architects and marine engineers, offers unmatched qualifications and experience. Since 1929, Gibbs & Cox has maintained a leadership position in advanced marine technology and has expanded their capabilities to cover the entire spectrum of systems design and engineering. **Circle No. 196**



Quality Propellers from Kohlenberg Brothers
 Kahlenberg is most widely known for designing extremely rugged, dependable workboat propellers. Kahlenberg's experience in the design and manufacture of propellers is a priceless heritage passed on to its customers in the form of better propellers, correctly designed for superior strength and performance. **Circle No. 170**



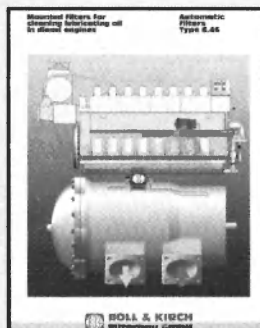
Ultra High-Pressure Waterjets
 Flow Intl. Corp. is a leader in the development and manufacture of ultrahigh-pressure waterjet cutting and cleaning systems, and a leading provider of powered access, factory automation and assembly equipment. Flow provides a broad range of total system solutions to today's factory cleaning applications. **Circle No. 171**



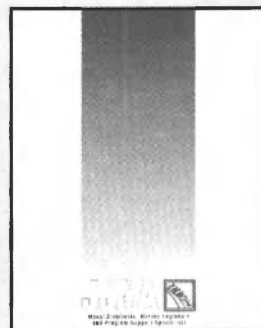
For Improved Vessel Control and Easier Maneuvering
 Harbormaster Thrusters are found in applications all over the world where precision vessel control is necessary. Harbormaster's FP, four-blade, Kaplan-type propeller, together with our efficient mechanical gear system, means low parasitic power losses from input to output — and highest thrust in relation to tunnel diameter. **Circle No. 172**



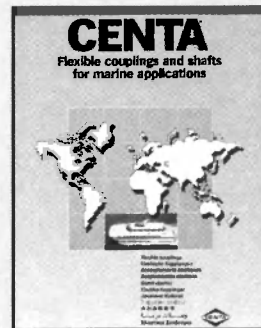
Cost-Effective Hatch/Door Seal Repair and Renovation
 Kibi Corporation employs a cold bonding process using an innovative rubber compound that has been recognized and time-tested in applications worldwide. Save up to half the cost and time of replacement while restoring seals to original shore hardness and specifications. Ideal for bulkers, reefers, Ro/Ro and other vessels. **Circle No. 173**



Filtration Technology
 Boll Filter Company manufactures a wide range of filtration products including universal filters for the filtration of water, lubricating oils, fuels, emulsions, acids and solvents. The product line also includes back flushing filters, filters, filter elements and accessories and strainer cleaning equipment. All Boll products are certified quality to DIN-ISO 9001. **Circle No. 174**



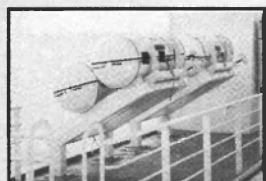
Excellence in Engineering Quality by Design
 John J. McMullen Assoc., Inc. has earned a reputation for excellence in naval architecture and marine engineering by providing quality products and services to the U.S. and international maritime communities. We continue to build through continuous pursuit of quality improvement and, technical innovation. **Circle No. 175**



Flexible Couplings and Shafts for Marine Applications
 CENTA has proven to be the most innovative designer of flexible couplings and shafts for difficult torsional vibration applications covering industrial and marine drives worldwide. Today CENTA is one of the world's leading manufacturers of advanced power transmission products. **Circle No. 176**



Equipped For Performance
 At Todd Pacific Shipyards one stop does it all. When time, money and quality count, you can trust Todd for both excellence and economy. When performance-as-promised is important, you can rely on Todd for thoroughness and follow through. For satisfaction without surprises and a result you can be proud of, talk to Todd. **Circle No. 177**



Complete Life Raft Stowage and Deployment Systems
 The MGI Life Raft System (LRS) features local or remote operations, for one at a time indexed deployment. LRS is fitted to ships in the Alaska Marine Highway and Washington State Ferries fleet, as well as other ferries and tugs in the US and Canada. **Circle No. 166**



Blount Industries and American Canadian Caribbean Line
 Blount Industries has completed nearly 300 vessels, ranging from passenger, vehicle and cargo vessels to cruise ships. Innovative design, thorough engineering, competitive prices and the highest quality manufacturing standards have earned Blount its reputation. **Circle No. 156**

DON'T BE LEFT OUT

OF THE NEXT MARINE LITERATURE REVIEW

The next edition of the Marine Literature Review will appear in the MAY 1997 edition. For information on how your company can be included, contact:

Maritime Reporter & Engineering News
 ATTN: Colleen R. Bennett
 118 E. 25th St., 2nd Fl., New York, NY 10010
 tel: +212-477-6700; fax: +212-254-6271
 e-mail: bennett@marinelink.com

MR/EN's Marine Literature Review

PROPULSION SELECTION GUIDE

MR/EN's Propulsion Selection Guide is an "A to Z" listing of many of the world's top equipment manufacturers. Publisher is not responsible for errors or omissions. Silhouetted in the background is a cross-section of the MAN B&W V28/32A.

A
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 Fax: +358 9 564 2350
 Thomas Hackman

ABB Turbocharger Systems
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 Fax: +41 56 205-5144
 Paul Russak

ABB Turbocharger Co.
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 North Brunswick, N.J. 08902
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 Fax: (908) 932-6378
 Stephen Burak
 Product(s): TC

Alaska Diesel Electric
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 P.O. Box 70543
 Seattle, WA 98107
 Tel: (206) 789-3880
 Fax: (206) 782-5455
 E-Mail: ADE@northern-lights.com
 Kurt Hoehne
 Product(s): DE(ms,hs); GEN

Allen Power Engineering Limited
 Atlas Works, Pershore
 Worcestershire WR10 2BZ
 Tel: +441386 552211
 Fax: +441386 554491
 Roger Bewley
 Product(s): G

American Hydro Jet
 Tel: (305) 978-8996
 Fax: (305) 978-6597
 Bob Filippino

American Bow Thruster
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 Rohnert Park, CA 94928
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 Fax: (707) 586-3159
 Ken Oertel

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 Dave Hackney

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 Fax: (513) 541-3065

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 D-87527 Somthoten
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 Fax: +49 8321 802685
 Rolf Wydicky
 Product(s): G

Bird-Johnson Company
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 Walpole, MA 02081
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 Fax: (508) 668-5638
 Carol Pardon
 Product(s): C

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 Terje Dyrseth

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 Viale Mazzini, 161
 Abbiategrasso, Milano, Italy 20081
 Tel: +39 2 94821
 Fax: +39 2 94960800
 Franco Castoldi/Luigi Narratone
 Product(s): WJ

Caterpillar Inc.
 P.O. Box 610
 Mossville, IL 61552-0610
 Tel: (309) 578-8148
 Fax: (309) 578-6466
 Sally J. Forker

Centa Antriebe Kirschev GmbH
 Postfach 1125
 D-42755 Hann, Germany
 Tel: +49 2129 9120
 Fax: +49 2129 2790
 G. Kirschev
 Product(s): S; (f)CP

The Cincinnati Gear Company
 5657 Wooster Pike
 Cincinnati, Ohio 45227
 Tel: (513) 271-7700
 Fax: (513) 271-0049
 Robert W. Rye

The Cline Co.
 Mill Products Div.
 P.O. Box 3307
 Greenville, S.C. 29602-3307
 Tel: (864) 235-6371
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 701 White Ave.
 Beloit, WI 53511
 Tel: (608) 364-8100
 Fax: (608) 364-8233
 Nancy L. Stierer
 Product(s): DE(ms)

Crane Heatex
 Unit 1 Fairview Industrial Estate,
 Curdworth
 West Midlands, United Kingdom
 Tel: +44 1675 470 042
 Fax: +44 1675 470 490
 E-Mail: 101364.365@compuserve.com
 Andrew Stotham
 Product(s): HE

Cummins Marine
 4500 Leeds Ave., Suite 301
 Charleston, SC 29405-8521
 Tel: (803) 745-1585
 Fax: (803) 745-1549
 E-Mail: wavemaster@cummins.com
 Geoff Conrad
 Product(s): DE(ms,hs); TC

D
Daihatsu Diesel Mfg.
 2-10 Nihonbashi-honcho

2-chome, Chuo-ku
 J-103, Tokyo
 Tel: +81-3 32 79 0827
 Fax: +81-3 32 45 0395

Daytona Marine Engine Corp.
 1815 North U.S. 1
 Ormond Beach, FL 32174
 Tel: (904) 676-1140
 Fax: (904) 676-0164
 George Inhofer
 Product(s): DE(ms,hs); GEN

Deerberg Systems
 Moltkestraße 6 a
 D-26122 Oldenburg
 Tel: +49-4 41 77 60 62
 Fax: +49-4 41 77 73 37
 Jochen Deerberg

Deere Power Systems
 3801 W Ridgeway Ave.
 Waterloo, IA 50701
 Tel: (800) 533-6446
 Fax: (319) 292-5075
 E-Mail: jdpw@deere.com
 Tom Withers
 Product(s): DE(ms)

Del Gavio Marine Hydraulics
 619 Industrial Road
 Carlstadt, NJ 70721
 Tel: (201) 843-4700

Detroit Diesel Corporation
 13400 Outer Drive West
 Detroit, MI 48239-4001
 Tel: (313) 592-5153
 Fax: (313) 592-5058
 Nancy Martin
 Product(s): DE(hs); GF; TC; C; GEN

Deutz MWM
 Carl-Benz-Strasse 5
 D-68167 Mannheim
 Postfach, D-68140 Mannheim
 Tel: +49 621 38 40
 Fax: +49 621 3 84 86 92
 Friedrich Mette

Dieselmotorenwerk Vulkan GmbH
 Werftallee 13
 18119 Rostock Germany
 Tel: +49 381 1232130
 Fax: +49 381 1232132
 G. Bialowons
 Product(s): DE(Is);

F
Falk Corp.
 3001 W. Canal St.
 Milwaukee, Wis. 53208
 Tel: (414) 937-4134
 Fax: (414) 937-4113
 Product(s): G; PP

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 Fax: +39 40 366649
 Guido Assereto

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 Riviera Beach, FL 33404
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 Fax: (516) 844-3220
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 Fax: (906) 863-5634
 Product: KC

G
GEC Alsthom Ruston Diesels
 Vulcan Works, Newton-LE-Willows
 Merseyside, England, WA3 2EP

Tel: +44 1925 225151
 Fax: +44 1925 222055
 Malcolm Siberry
 Product(s): DE(ms); GEN

GEC Alsthom Paxman Diesels
 Paxman Works, Hythe Hill,
 Colchester, Essex,
 CO1 2HW, England
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 Fax: +44 1206 791238
 W. (Bill) Von-Orden

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 1 Neumann Way, 5158
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 Tel: (513) 552-5465
 Fax: (513) 552-5001
 E-Mail: BobBass@ae.ge.com
 Robert Bass
 Product(s): GT

GE Transportation Systems
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 Gene Pigg
 Product(s): CP; CL

Hamilton Jet
 P.O. Box 709
 Christchurch, New Zealand
 Tel: +64 334 84 179
 Fax: +64 334 86 969
 Product(s): C; PP

HarborMaster Marine
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 Al Kaplan
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Hermont Marine, Inc.
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 Canada
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 Fax: (514) 735-0035
 G. Seebacher

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 Fax: +49 351 4 08 58 40

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 Carol Stream, IL 60188
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 Fax: (630) 871-8997
 James Angelos
 Product(s): DE(ms,hs); TC; GEN; ME

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K
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 Tel: (414) 793-4507
 Fax: (414) 793-1346
 Product(s): P; PP; S

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 Metairie, LA 70001
 Tel: (504) 883-8340
 Fax: (504) 883-8344
 E-Mail: 104147.614@compuserve.com
 David C. Hackney
 Product(s): P; WJ; TH

Karl Senner, Inc.
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 Fax: (504) 464-7528
 Product(s): G, P, TH, TC

Kawasaki Heavy Industries, Ltd.
 4-1 Hamamatsu-cho 2 Chome, Minato-ku
 Tokyo, Japan, 105
 Tel: +81 3 3435 2374
 Fax: +81 3 3435 2022
 T. Matsuzaki
 Product(s): DE(Is,ms); P; WJ; TH; TC; G;
 C

KHD Canada
 4420 Garand St.
 St. Laurent, Quebec
 Tel: (514) 335-3150
 Fax: (514) 332-4173
 R. Radtke
 Product(s): DE(ms,hs); GEN

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Propulsion Directory	
Product Key Code	
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Bearings	.B
Clutches	.CL
Controls	.C
Couplings	.CP
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Diesel Engines (low speed)	.DE(Is)
Diesel Engines (medium speed)	.DE(ms)
Diesel Engines (high speed)	.DE(hs)
Electric Azimuthing Drives	.EAD
Electric Propulsion Systems	.EPS
Flexible Couplings	.(f)CP
Fuel Oil	.FO
Gas Turbines	.GT
Gear Drives	.GD
Gears	.G
Gensets	.GEN
Heat Exchangers	.HE
Keyless Shaft Couplings	.(ks)CP
Keel Coolers	.KC
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Klattenberg Marine Agency
17 Grandview Ave.
W. Orange, NJ 07052
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Fax: (201) 325-3681
E-Mail: shipfix@aol.com
Richard Klattenberg
Product(s): DE(l); TC; A; OP

Kobelco Marine Engineering
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Tokyo 103, Japan

Kongsberg Norcontrol
P.O. Box 1024
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Oivind Klausen

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Fax: (715) 386-4219
Jeff Huber

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Fax: (905) 542-7812
Reinold Arand

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Falckensteiner Str. 2
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Günter Kuhl

Kvaerner Masa-Azipod
P.O. Box 132
Fin-00150 Helsinki, Finland
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Fax: +358 9 194 2480
Risto Pakaste
Product(s): TH; EAD

Castoldi Offers New Waterjet

Castoldi introduced its new waterjet model, Turbodriven 490, at the Genova Boat Exhibition. The unit, according to the manufacturer, is the outcome of intensive research and development which began in 1985 and aimed at improving the high efficiency of Castoldi waterjet drives. The new unit is fitted with a single-stage axial flow impeller which can be driven by a diesel engine or a gas turbine developing power up to 1,300 kW.

The unit's impeller, shafts, gear wheels and all the other metal items not in aluminum alloy are made of high grade stainless steel, steel and bronze aluminum alloy. All bearings are oil lubricated and of the rolling type; and all of the hydraulic actuators are inboard mounted.

For technical specifics on the unit from Castoldi

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Lips BV
P.O. Box 6
5150 BB Drunen, The Netherlands
Tel: +31 416 388227
Fax: +31 416 373162
Henk Bouman
Product(s): P; WJ; TH; S; C

Lohmann & Stolterfoht
Postfach 1860
D 58408 Witten, Germany

Tel: +49 2302 877194
Fax: +49 2302 877400
Hans Berger
Product(s): G

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WATERJETS & PROPULSION CONTROLS: New Products from Propulsion Specialist Bird-Johnson Company

Bird-Johnson Company, best known as the leading U.S. designer and manufacturer of naval and commercial ship propellers, now offers waterjets and propulsion control systems that are the most technologically advanced available.

Propulsion Controls

Bird-Johnson's 1994 acquisition of PDI -- known for its expertise in propulsion software design and systems engineering -- enabled the company to expand confidently into the ship propulsion controls market.

Bird-Johnson was responsible for the design, manufacture, test, and delivery of the control systems for a number of vessels, including Great Lakes Shipping's *Presque Isle*, Army Corps of Engineers' *Essayones* dredge, and Empress Cruise Lines' *Royal Empress*.

Most recently, Bird-Johnson Company provided the design, installation, and integration of control systems for the propulsion refit of the *Tustumena*, a ferry operated by the Alaska Marine Highways System. Bird-Johnson outfitted the 32-year old vessel with controls systems that are as sophisticated as those of any passenger ship afloat. The systems include operator consoles and electronics for control and emergency shutdown of propulsion machinery. The controls are integrated with alarm and monitoring systems, including an automatic backup system.

Waterjets for Fast Ferries

Bird-Johnson Company is moving rapidly into the U.S. waterjet market for fast ferries, having obtained the rights to patented technology from Marine Jet Power (MJP) of Sweden.

Two new Washington State ferries and a Golden Gate ferry will be outfitted with Bird-Johnson/MJP waterjets, as well as two multi-hull ferries for the City of Vallejo, Calif., and a catamaran for Phillips Cruise Lines of Anchorage, Alaska. Other commuter ferries outfitted with Bird-Johnson/MJP waterjets are the newest New York Fast Ferries and the Hyannis-Line ferry *Grey Lady*.

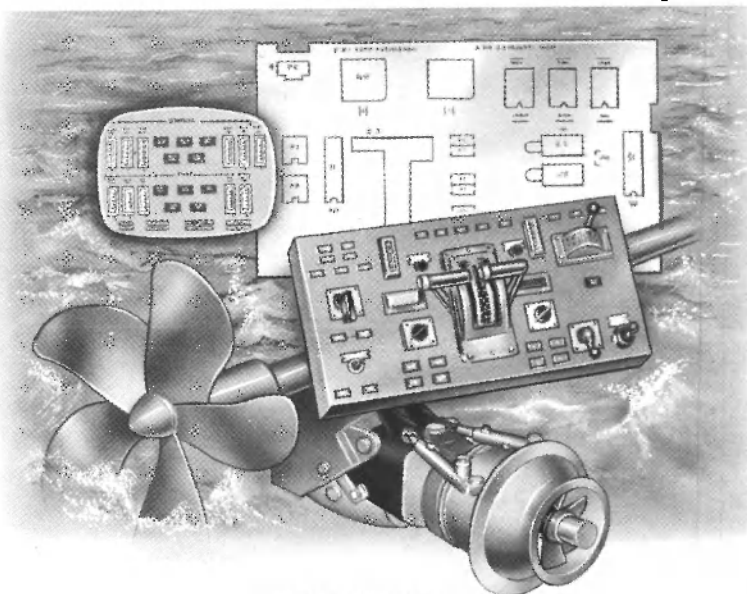
Features of Bird-Johnson/MJP waterjets include advanced, efficient, mixed-flow pump design; non-wearing, anti-friction roller bearings; patented, flexible drive shaft; a removable integral hub unit; and corrosion-free, composite inlet ducting.

Advanced Waterjet Controls

Bird-Johnson recently provided four sets of its latest, second-generation waterjet control systems to a Far East customer and anticipates providing control systems with its waterjets for the U.S. ferries previously mentioned.

Bird-Johnson waterjet controls are based on off-the-shelf PLC modules and feature redundant network communications, self-diagnostics, and repair by replacement. A number of options are available, including a patented vector/positioning joystick for harbor mode, CRT displays, alarm and monitoring systems, and embedded training simulators.

Out Here, When Push Comes To Shove, You Want Bird-Johnson Reliability.



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PDI Division
Annapolis, MD
410-224-2130

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PROPULSION SELECTION GUIDE

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Takamatsu Kapawa Pref., Japan
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Fax: +81 878 21 5510
Tautomu Adachi
Product(s): DE(ls)

Malin CDM
22 Main Street
Centerbrook, Conn. 06409
Tel: (203) 767-3095
Fax: (203) 767-1263

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17 State St., 18th Floor
New York, NY 10004
Tel: (212) 269-0980
Fax: (212) 363-2469
E-Mail: manbw@ix.netcom.com
Les Gingell
Product(s): DE(ls, ms); TC; GEN; ME

Man B&W Diesel
Stadtbachstr 1
86153 Augsburg, Germany
Tel: +49 821 3220
Fax: +49 821 3221655
Werner Haselboeck
Product(s): DE(ls, ms); TC; GEN; ME

Man B&W Diesel A/S
Teglhølmegade 41
DK-2450 Copenhagen SV
Denmark
Tel: +45 33 85 11 00
Fax: +45 33 85 10 30

Product(s): DE(ls, ms); TC; GEN; ME

Man B&W Diesel A/S-Alpha Diesel
Niels Juels Vej 15
DK-9900 Frederikshaun, Denmark
Tel: +45 96 20 44 00
Fax: +45 96 20 40 30
E-Mail: alpha@manbw.dk
T. Klingenberg
Product(s): DE(ls, ms); P; G; S; C; PP

Man B&W Diesel A/S, Høleby
Østervej 2
4913 Høleby, Denmark
Tel: +45 54693386
Fax: +45 54693040
Peter Dan Petersen
Product(s): DE(ms); GEN

Mapeco Products
P.O. Box 382
Locust Valley, NY 11560
Tel: (516) 759-1802
Fax: (516) 759-9405
E-Mail: WK 2000@aol.com
Steven Shepstone
Product(s): (ks)CP

Marine Gears, Inc.
P.O. Box 689
1820 Hwy. 1 North
Greenville, MS 38702-0689
Tel: (601) 332-8716
Fax: (601) 335-4322
Gene Pigg
Product(s): CP; CL

Mathers Controls, Inc.
675 Pease Rd.
Burlington, WA 98233
Tel: (360) 757-6265
Fax: (360) 757-2500
E-Mail: mathers@matsales.com
Dick Tilschner
Product(s): S; C

Märkisches Werk GmbH
Postfach 1355
D-58543 Halver, Germany
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Fax: +49 23 53 91 71 55
Wolfgang Boddecker

Mecklenburger Metallguß GmbH
Teterower Str. 43-51
D-17192 Waren, Germany
Tel: +49 3991 736262
Fax: +49 3991 736210
E-Mail: Urban.mmg@t-online.de
Product(s): P; S

Michigan Wheel Corp.
1501 Buchanan Ave. S.W.
Grand Rapids, Mich.
Tel: (616) 452-6941
Fax: (616) 247-0277
Product(s): TH; P; PP

Mitsubishi Heavy Industries, Ltd.
5-1 Marunouchi 2-chome
Chiyoda-ku, Tokyo, Japan, 100
Tel: +81 3 3212 9080
Fax: +81 3 3212 9779
Yusuru Ichimosa

Product(s): DE(ls, ms); TC; GEN

Motor Service AB
P.O. Box 2115
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Fax: +46 53254451

MTU Friedrichshafen
88040 Friedrichshafen, Germany
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Fax: +49 7541 90 2724
E-Mail: Burkart.Feurer@mtu.mercedes-benz.com
Burkart Feurer
Product(s): DE(hs); GT; GEN; ME

Nakashima Propeller Co.
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Josip Gruzling

New Sulzer Diesel Ltd.
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Peter Baumann

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Fax: +3-5710-47512
Wataru Ato

North American Marine Jet Inc.
P.O. Box 1232
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Tel: (501) 778-6381
Jason T. Hill
Product(s): WJ

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Jean Klink
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Fax: +44 1206 791238
Bill Von-Orden

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Fax: (281) 474-2927
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D-85730 Ismaning,
Germany
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Fax: +49 89 99616 200
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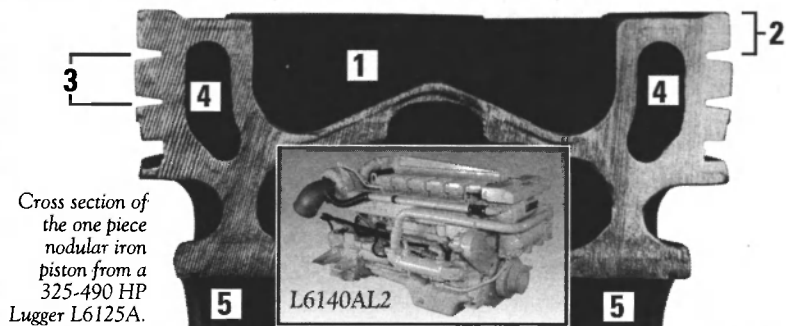
- Equal thermal expansion of piston and liner reduces piston slap noise.
- 3. Keystone shaped compression rings reduce carbon buildup and ring sticking during light load and idle speed operation.
- 4. Oil sprayed into the piston gallery cools the piston crown, allowing higher combustion temperatures for more power output per c.i.d., less exhaust smoke and better fuel economy.
- Tuftride nitrate

surface treatment holds lube oil and prevents scuffing.

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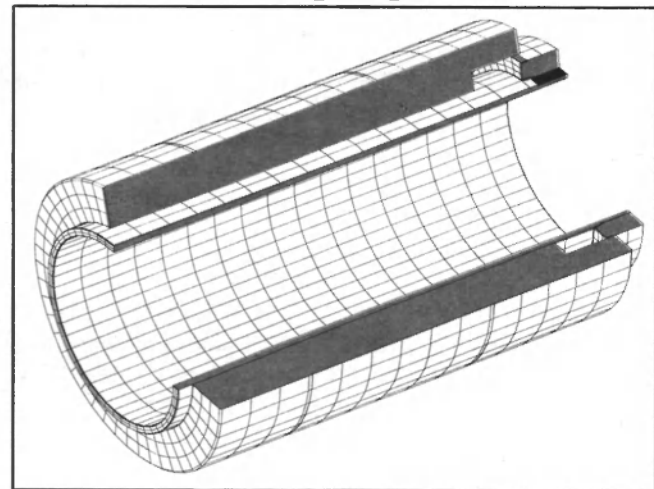
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Cross section of the one piece nodular iron piston from a 325-490 HP Luger L6125A.

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Circle 222 on Reader Service Card

Maritime Reporter/Engineering News

MWH Eyes North America

Markisches Werk GmbH (MHW) provides services to engine builders and shipowners by eliminating inefficient engine combustion thus optimizing propulsion system gas flow management. The company manufactures cylinder head components, and according to North American segment President **Allyn Taylor**, has contact with medium and two-stroke engine manufacturers all over the world.

The company's philosophy is to think in terms of systems, for example, regarding cylinder heads and valve trains as connected systems. Effective performance of the combustion process is then achieved by permanent verification of the systems and by maintenance of these parts throughout the life of engines.

In discussions with *MR/EN*, MHW Executive **Wolfgang Boddecker** stressed that when customers purchase new parts from his company, they also purchase service. In fact, MHW's reconditioning services make up a large portion of the company's contracts. The company conducts rule-based inspections, namely water flow, ultrasonic and wall thickness tests, to determine if parts meet reconditioning standards, and if standards are met, will service existing parts instead of replacing them at greater cost.

After reconditioning, MHW offers a standard guarantee that extends six to 12 months after installation, the same guarantee offered by the majority of engine builders.

"Our reconditioning experience is based upon newbuilding experience of that same item," said Mr. Taylor.

MHW had a strong showing at SMM this year, where attendees were interested in a company that stressed that not just the purchase of new parts, but the logistics of getting parts installed and keeping these units maintained. Mr. Boddecker estimated that based on the company's presence at the Hamburg show, as well as at Posedonia, Norshipping and Sea Japan, 90 new contracts were generated. The company's plans to concentrate on getting contracts from the engine leaders that will result from the many mergers occurring in the propulsion segment. According to Mr. Boddecker, "Today's situation is that there are too many engines offered all over the world. Therefore, they are doing business at a lower level. It must come that these corporations must be built up." He added that consolidation will serve to advance technology, and that MHW will be involved in working with engine manufacturers to maintain the highest possible levels of propulsive efficiency.

For more information on MHW
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Product(s): G; B

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Robert Paraszczyn

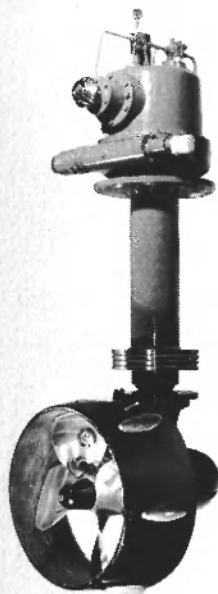
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Otello Sattin
Product(s): P

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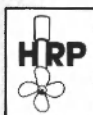
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Tel: +31 118 485600
Fax: +31 118 482813
Ron Joziase
Product(s): G

Schottel-Werft Josef Becker GmbH & Co. KG
Mainzer Strasse 99
D-56322 Spay, Rhein, Germany
Tel: +49 2628 610
Fax: +49 2628 613 00
Peter Hammer
Product(s): P; WJ; TH

S.E.M.T. Pielstick
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93202 Saint-Denis Cedex, France
Tel: +33 148097600
Fax: +33 148097878
M. F. Hylander
Product(s): DE(ms, hs)

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Wl Postfach 105609
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Tel: +49 40 2889 2387
Fax: +49 40 2889 2327
Gert Galieberzuch

Siemens Electric Ltd.
7300 Trans Canada Hwy.
Pointe Claire, Quebec, H9R 4R4 Canada
Tel: (514) 426-6163
Fax: (514) 426-6071
E. P. K. Bourgeau
Product(s): ME, EPS

Simplex-Turmar, Inc.
P.O. Box 675
Tonawanda, NY 14151
Tel: (716) 695-0142
Fax: (716) 695-0144
Brenda Wolak
Product(s): SS; B

Soteco International S.C.L.
Via B. Parodi, 276
16014 Ceranesi, Genoa, Italy
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G. P. Scarsi
Product(s): FO; LOS

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1608 FAirview Ave. East
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Product(s): P; S; SD

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Fax: (504) 348-8970
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Tel: +49 40 8825 2720
Fax: +49 40 8825 4102
R. Swoboda
Product(s): C; GEN; ME; EPS

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Michel Kurzer
Product(s): DE(ls)

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Houston, Texas 77041
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Fax: (713) 937-7962
Product(s): TH; PP

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Hans Franken
Product(s): TC

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12 Petersburg Circle
Port Colborne, Ont. Canada
Tel: (905) 835-6790
Fax: (905) 835-0414
Brenda Wolak

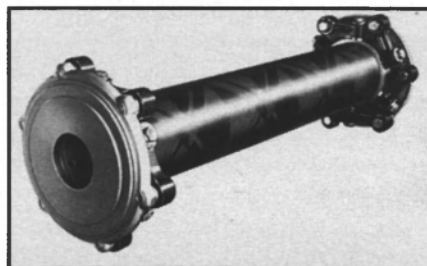
Product(s): TC

Azipod Production Starts For CCL Ships

Carnival Cruise Lines (CCL) chose azipod propulsion for installation on its newbuildings *Elation* and *Paradise*. Steel work for the azipods has been completed, and production of the units for *Elation* has started. Final production and fitting are scheduled for this spring.

For more information
Circle 13 on Reader Service Card

Centa Debuts Innovations



At the SMM '96 exhibition, Centa Power Transmission introduced several new products, including Centax-TT, a torsionally flexible coupling series designed for gensets. Torque range is currently up to 110 kNm, with higher torques planned for the future.

Centa also introduced the Centax-K, a plug-in version of the proven Centax series for flange-mounted ship propulsion in the torque range up to 7.5 kNm.

For more information from Centa
Circle 15 on Reader Service Card

Colt-Pielstick Offers Performance Advantages

The Colt-Pielstick PC2.6B is a development related to the PC2.6 medium-speed engine. While it offers the same general dimensions, its power rating was increased to 814 hp per cylinder. The engine is available in 10, 12, 14, 16, and 18-cylinder Vee versions.

The PC2.6B engine, with a 400-mm bore and 500 to 520 rpm, offers power ratings from 8,140 to 14,652 bhp. Each cylinder, including a water jacket and a bore-cooling type liner, is fitted into the crankcase. The engine has a one-piece forged crankshaft and reportedly can burn heavy fuels of the lowest quality.

For more information
Circle 14 on Reader Service Card

Condition Monitoring Designed To Reduce Downtime

Vibronet by Pruftechnik is reportedly a new concept for lean condition monitoring of rotating machines — with its multiplexed single-cable bus — which is designed to save costs of unexpected machine failure. The system was engineered to reduce hardware and installation costs while providing reliable advanced warning of developing machine problems. The master unit controls switching among up to 36 sensors per multiplexer string, connected by only a single cable. A patented 3-in-1 accelerometer design cuts sensor costs by measuring vibration spectra, bearing condition and pump cavitation with the same transducer.

For more information from Pruftechnik
Circle 16 on Reader Service Card

Blohm + Voss Issues Warning

Blohm + Voss Industrie GmbH issued a warning, cautioning its customers that it is the only manufacturer of the Simplex-Compact sterntube seal, available through official representation worldwide. The company issued the statement after it said it learned that sales and service have been carried out by unauthorized organizations using products which misrepresent the Simplex-Compact registered trademark.

For more information from Blohm + Voss
Circle 89 on Reader Service Card

Konrad Introduces New Sterndrive

Konrad recently introduced its 500 Series sterndrive for diesel or big block gas power. The unit features oversized Timken bearings and a thicker casting which provides strength and impact resistance. The unit handles 630 ft. lb. of torque, and uses 1350 splicer U-Joint and industry standard propellers, allowing for compatibility with a variety of manufacturers.

For technical specifications
Circle 19 on Reader Service Card

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ABB's New TPL Turbocharger Promises Efficiencies

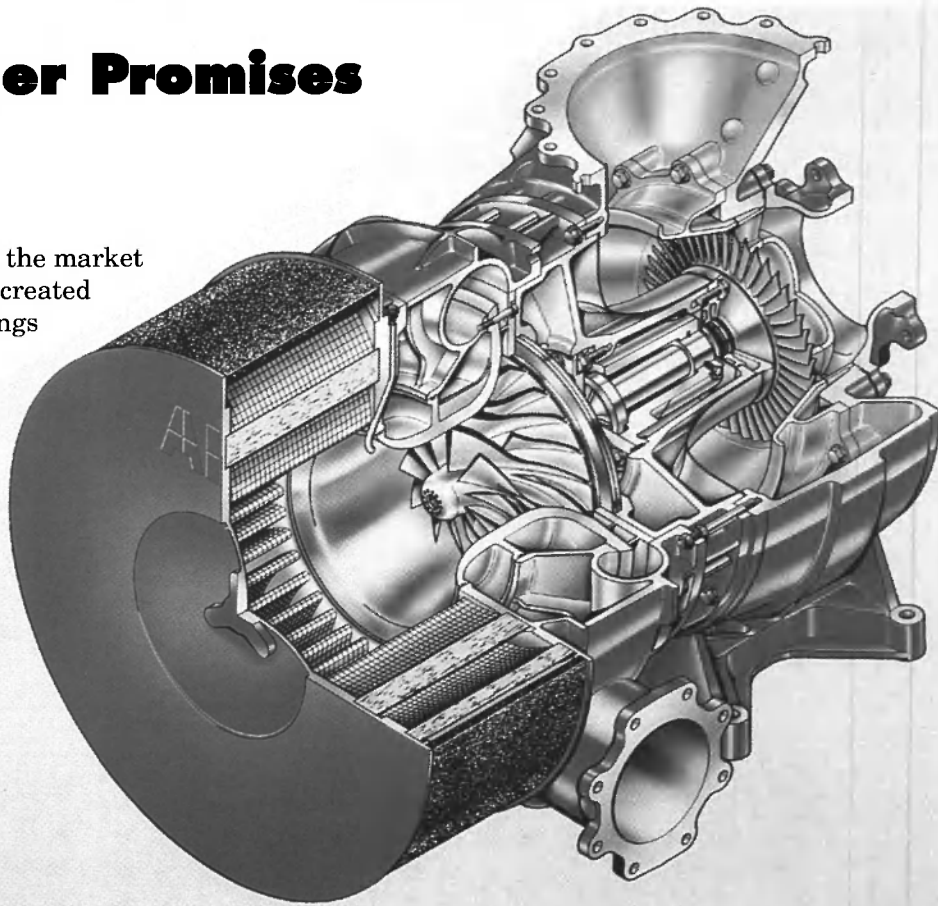
Touted as a "new turbocharger generation" by its creators — to cover the market requirements of the year 2000 — ABB's new TPL turbocharger was created with a simple and robust design, first and foremost, to offer a cost savings throughout the life of the turbocharger.

To this end, there was a 75 percent reduction of different parts, and an 80 percent reduction in total parts as compared to the VTR4 generation. This will reportedly lower life cycle costs, as well as provide for faster overhauls and service.

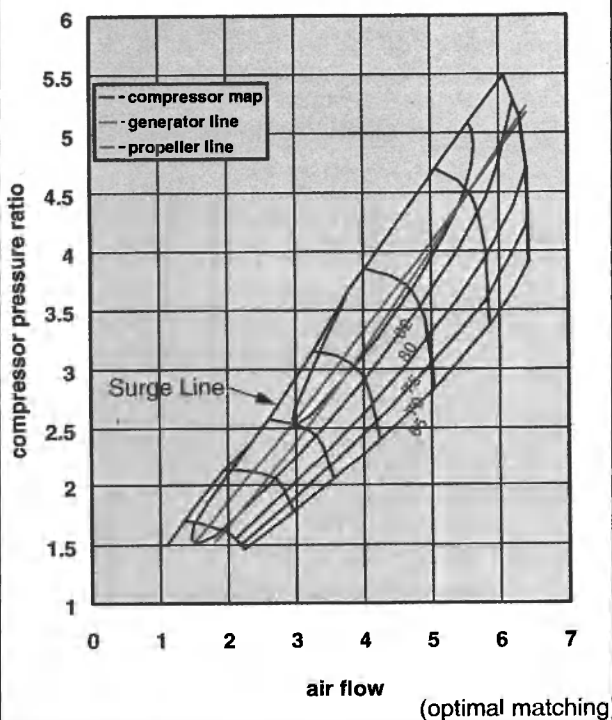
The new unit's radial compressor and axial turbine with internal plain bearings using engine lubrication oil results in a very small space for TC integration, and high application flexibility.

Other features and designed benefits include:

- Round gas outlet flange Easy connection to bellows and lower costs for piping
- Oil inlet and outlet at bottom No freely vibrating pipes
- Stiff construction with high Eigen-frequency and a monoblock silencer Less engine vibration, less stress of TC-engine mounting



TPL65E Compressor Map



Connections for pressure and temperature measuring devices — before and after turbine compressor — and exhaust waste gate connections are standard equipment. Options include: a filter/silencer; service kits for standard overhauls; air suction branches (radial/axial); and one to four axial gas inlets and radial gas inlets. To date, the TPL turbochargers are running test bed trials on five Wartsila engines and two MaK engines.

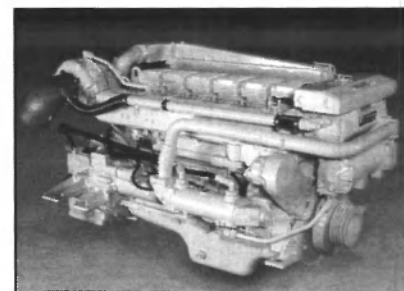
For more information from ABB
Circle 11 on Reader Service Card

Motor Services Appointed Authorized Repairer For New Sulzer Diesel

Motor-Services Hugo Stamp, Inc. (MSHS) was recently appointed an authorized repairer for New Sulzer Diesel and continues to intensify its services for the four-stroke family of Sulzer design engines in the U.S.

For more information on MSHS
Circle 90 on Reader Service Card

New Lugger Has More Power



The new Lugger L6140AL2, based on the successful L6140AL, offers several significant changes which give it more horsepower while reportedly maintaining reliability. The new ratings for the new diesels are: high output, 700 hp at 2,100 rpm; medium duty, 600 hp at 2,100 rpm; and continuous duty, 500 hp at 1,800 rpm. The 700-hp rating is already at work in 32-ft. (97-m) Bristol Bay gill-nets. The engine's cooling system features a new, higher capacity, gear-driven jacket water circulation pump. Keel-cooled models have a new centrifugal pump dedicated to the fresh water after-cooler circuit. On heat exchanger cooled versions, a supplemental heat exchanger has been integrated into the cooling circuit. Other changes include new connecting rod bearings, a unique 12-hole fuel injection nozzles and a new turbocharger.

For more information
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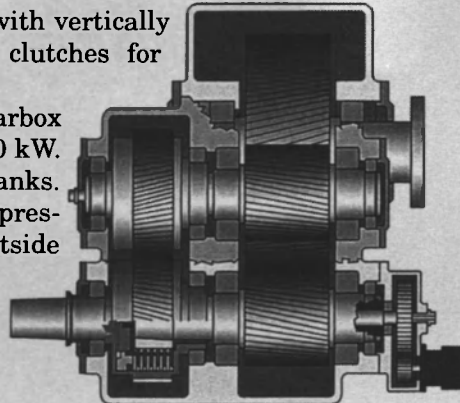
Circle 29 on Reader Service Card

Navilus Reverse Reduction Gears Cover Wide Power Spectrum

The Navilus GRR are reverse reduction helical gear units with vertically offset shafts and integrated, oil-operated, multiple-disk clutches for ahead and astern travel.

Manufactured by Lohmann + Stolterfoht, there are nine gearbox sizes covering a performance range between 1,000 and 7,500 kW. The helical gear teeth have hardened and ground tooth flanks. The multiple-disk clutches are engaged/disengaged by oil pressure. Additionally, the gearboxes are provided with an outside coat of paint and are internally preserved so that they can be stored in dry rooms for up to three months.

For more information from Lohmann + Stolterfoht
Circle 20 on Reader Service Card



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2619 Powers Ave.
Jacksonville, FL 32207
Tel: (904) 739-6648
Fax: (904) 739-7383
Martin W. Mason, III
U
Ulstein Bergen A.S.
P.O. Box 924
5002 Bergen, Norway
Tel: +47 55 199000
Fax: +47 55 199104
Magnus Bernson/Odd M. Horgen
Product(s): DE(ms); GEN

Ultra Hydraulics Ltd.
Anson Business Park
Cheltenham Road East
Gloucester, GL2 9QN, England
Tel: +44 1452 857711
Fax: +44 1452 858222
Sonja Middleton
Product(s): WJ

V
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Fax: +358 41-2968-68
Martti Pasanen

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Fax: (407) 750-6648

Vinod Gulati

V
Victaulic
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Easton, Pa. 18044-0031
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Fax: (804) 436-5150
Ed Monacchio
Product(s): DE(hs); GT; P; WJ; TC; G; S; C

Vulkan
Heerstraße 66
D-44653 Herne, Germany
Tel: +49 23 25 9 22-0
Fax: +49 23 25 7 11 10
W

Walter Machine
84-100 Cambridge Ave.
Jersey City, NJ 07307
Tel: (201) 656-5654
Fax: (201) 656-0318
Don Chatnuck
Product(s): KC; GD

W
Wartsila Diesel Oy
Tarhaajantie 2
P.O. Box 252
FIN-6501 Vaasa, Finland
Tel: +358 6 327-1628
Fax: +358 6 356-7177
Anneli Frantzen

W
Wartsila Diesel, Inc.
201 Defense Highway Ste 100
Annapolis, MD 21401
Tel: (410) 573-2100
Fax: (410) 573-2200
E-Mail: yannes@annapolis.wartsila.infonet.com
Wendy Yannes
Product(s): DE(ms, hs); P; G; GEN

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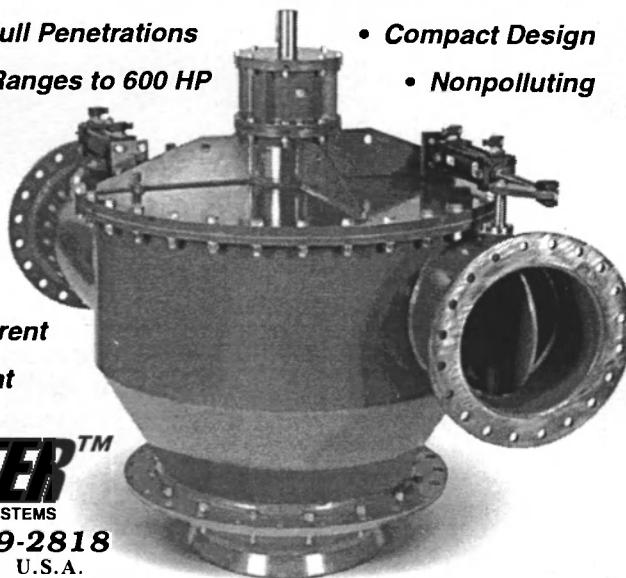
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Cummins Marine Upgrades Propulsion Engine

Cummins Marine announced improvements to the KTA19-M4 propulsion engine for medium continuous duty applications on fishing vessels, crewboats and ferries. A new Holset turbocharger, low-temperature aftercooling and a new gallery-cooled piston are among the major improvements made to the engine. Release of the new engine is scheduled for early 1997. The KTA19-M4 is equipped with Centry electronics.

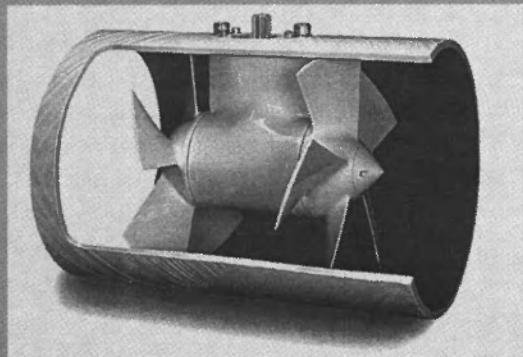
For more information on Cummins Marine
Circle 91 on Reader Service Card

New Nautical Charts Added To Yorktown Integrated Bridge

U.S. Department of Defense (DoD) Digital Nautical Charts (DNC) have been installed on USS *Yorktown* in the Sperry Marine integrated navigation system. This deployment is a significant first for Sperry Marine and the National Imagery and Mapping Agency (NIMA), who have worked together to produce a portfolio of digital nautical charts to support *Yorktown* operations. Sperry, NIMA and the Oceanographer of the Navy have been working for the past six months to complete this milestone for the Navy Smart Ship Program.

For more information on Sperry
Circle 108 on Reader Service Card

American Bow Thruster Introduces New Shipments



TRAC (Twin propeller, Right Angle, Counter-rotating thruster drive) is the newest addition to American Bow Thruster's line of thruster systems. The TRAC is available in seven tunnel diameters, from eight to 28 in. The largest of the series is rated at 200-hp output.

A key feature of TRAC is the flexibility it allows in choosing drive options, as it is able to be driven by hydraulic, AC electric, diesel direct and DC electric drives.

TRAC is available in bronze construction for application in fiberglass steel and wooden boats. Gearbox and propellers are cast in NiBrAl, and propeller shafts are made of Aquamet 22.

For more information on TRAC
Circle 18 on Reader Service Card

Caterpillar Completes Negotiations For MaK Acquisition

Illinois-based Caterpillar Inc. has announced that negotiations with Fried. Krupp AG have been concluded and that ownership of the latter's MaK subsidiary was scheduled to become part of Caterpillar before the end of 1996. Based in Kiel, Germany, MaK is one of the leading producers of medium-speed diesel engines. The agreement has reportedly been approved by all the necessary authorities. Caterpillar Vice President **Donald G. Western** noted, "Caterpillar will provide financial and other resources to help MaK maximize its opportunities through new products, new markets and new technology ... The addition of the MaK engine product family allows Caterpillar to broaden its product offerings ... Adding MaK to the Caterpillar family fits perfectly with our focus on acquisitions in core business segments that have above-average growth potential."

Bird-Johnson Enters Commercial Control Market

Bird-Johnson entered commercial controls business for both propeller and waterjet-propelled vessels in 1996. The most ambitious project to date was outfitting the Alaska Marine Highway's ferry, *Tustumena*, with control and alarm systems. Bird-Johnson also provided the ferry's new FP propellers and was responsible for the complete systems integration of the propulsion plant.

Bird-Johnson designed the control systems to be installed on the bridge and the bridge wings, allowing the ship's master to directly control the entire propulsion system from any of these locations. Also in 1996, Bird-Johnson company developed a second generation of waterjet controls for Marine Jet Power (MJP) waterjets, four sets of which are scheduled for delivery to Far East customers beginning January 1997.

For more information on Bird-Johnson
Circle 93 on Reader Service Card

KaMeWa and Aquamaster Units Drive New OSVs

Strong growth in oil and gas drilling in the Gulf of Mexico has spurred a surge in demand for offshore supply vessels, particularly those that can operate in deep water. Aries Marine Corporation, which has operated exclusively in the Gulf for over 15 years, will expand its fleet in 1997 with the addition of two new generation supply boats featuring fully dynamic positioning systems and 360-degree rotatable thrusters. The offshore supply vessels (OSV) are based on a design by the Halter Marine Group, Inc. and are being built at the group's Halter-Lockport, La., shipyard. The Aries boats will have an overall length of 220 ft., breadth of 44 ft. and depth of 16 ft. Each OSV will be equipped with a pair of stern-mounted Aquamaster S20001 azimuthing thrusters and a KaMeWa controllable-pitch propeller tunnel thruster in the bow.

For more information on KaMeWa
Circle 94 on Reader Service Card

Radio-Holland Introduces Shore-Based Maintenance Agreements

Radio-Holland U.S.A. has introduced a new shore-based maintenance agreement for vessels. The agreement may apply to either all electronic equipment or only the GMDSS communications systems onboard vessels. Some of

the benefits provided by these agreements include: wireless technical service assistance; fast global supply of spares for onboard repairs; labor discounts for repair jobs; periodic reports and recommendations related to maintenance of equipment; compliance with the SOLAS GMDSS shore-based maintenance requirements; and usage of a global integrated service network with more than 45 service centers and 80 subcontractors in 35 countries.

For more information on Radio-Holland U.S.A.

Circle 107 on Reader Service Card

Swedish Co. Introduces New Shaft Arrangement

SSPA Maritime Consulting AB has reported on a new sophisticated shaft arrangement in its company bulletin. The CAP propulsion system, by Swedish company Motala Verkstad, offers superior maneuverability to ships by turning propeller shafts 30 degrees starboard and port, excluding the need for rudders and thus reducing the overall resistance of ships.

The design is reportedly based on model tests performed in SSPA's towing basin, which indicated that the CAP propulsion system with a ducted propeller was superior to a conventional rudder at both ahead and astern conditions at any speed. The system was installed on tugboat *Veitsi* for trials. It was found that the presence of the nozzle around the propeller increased propeller thrust, particularly at low speeds. The efficiency level for highly loaded propellers is also projected to be higher due to the presence of the duct.

Walter Units Provide Trouble-Free Engine Cooling

The Walter Machine Co., Inc., Jersey City, N.J., supplies water keel coolers designed for quick installation and low cost. The compact units are reportedly 25 percent of the size and thousands of pounds lighter than channel-iron coolers, which translates into reduced operating costs. The units have been installed on several z-drive tugs with up to 5,000 hp and casino boats, including Louisiana's first gaming vessel, *Star Casino*, built by Bender Shipyard. Walter coolers have closed-looped systems to eliminate the possibility of clogged sea stainers and raw water pump failures in muddy or ice-laden waters.

All machining is performed in-house by skilled workers using computerized machinery.

Ulstein Z-Drives Chosen For Tug in Hawaii

Ulstein Maritime Ltd. (UML) has been selected to supply its z-drive azimuthing propulsion system for a new tractor tug destined for Hawaiian service. Ulstein will supply two model-1650H hull-mounted z-drive units optimized for service at 1,600 kW at 1,600 rpm input to tug owner Smith Maritime of Honolulu.

Ulstein Marine Ltd. has also engaged in several North American projects which include two 4,000-hp escort tugs for TugZ International of Cleveland and a series of ice-class buoy tenders for the U.S. Coast Guard.

For more information
Circle 95 on Reader Service Card

Malin Debuts Crankshaft Deflection Analyzer

Malin recently introduced the CDM, a computer-based crankshaft deflection analyzer designed to help ships maintain rigid schedules. The CDM reportedly reduces the time required to take crankshaft deflection readings and increases the accuracy of the analyzer, while also providing information in both graphic and alphanumeric form of measurable deflection in both vertical and horizontal axes.

The CDM allows data from engine readings to be stored and displaced on ship's computers to monitor operational safety.

For more information
Circle 96 on Reader Service Card

USN Sponsors Gas Turbine Development

Northrop Grumman Marine Systems' intercooled recuperated (ICR) gas turbine engine is an advanced-cycle gas turbine development program sponsored by the U.S. Navy to provide enhanced propulsion capability for surface combatants. After nearly a decade of analysis, the Navy selected Northrop Grumman to develop the ICR to enhance future operational capability through improved gas turbine fuel efficiency, reliability, and maintenance. The engine was successfully ignited in July 1994, only 30 months into the development program.

For more information
Circle 97 on Reader Service Card

Palmer Johnson Boat Sports Ultrajet Propulsion

Ultrajet 300/3 units have been chosen by Palmer Johnson for its latest aluminium sportfishing boat. The waterjet propelled craft is based on sportfisher Ernie Brierley's design of a custom 30 x 9-ft. welded aluminium boat. The new design is 2 ft. longer and 1 ft. wider, has a center console instead of a forward deckhouse and is powered by a 370-hp Cummins diesel and an Ultrajet 300/3 waterjet. The vessel features a custom designed, five-blade, stainless steel impeller made to optimize the match between boat, engine and operating requirements.

For more information
Circle 98 on Reader Service Card



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Circle 297 on Reader Service Card

Navy Uses Artificial Intelligence For Engine Diagnostics

The Navy has installed MACSEA's artificially intelligent engine diagnostics system, DEXTER, aboard six ships. DEXTER performs on-line monitoring, automatic trend analysis and expert diagnostics of ships' main propulsion and auxiliary diesel engines.

For more information on Dexter
Circle 59 on Reader Service Card

Recorder Tracks Up to 700 Cargo Handling Events

The new Shockwriter 3000 recorder from AMP Inc. monitors and records temperature fluctuations and shocks which can cause hidden damage to sensitive cargo. The compact unit is designed to attach easily to products, cargo containers or vehicles. It tracks handling conditions for 90 days. Up to 700 events can be recorded.

For more information on Shockwriter
Circle 60 on Reader Service Card

Detroit Diesel Appoints New Vice Chairman

Detroit Diesel Corp. has named Timothy D. Leuliette vice chairman. On Nov. 4, Mr. Leuliette was named president, chief operating officer and a director of Penske Corporation. Prior to that, he was president and chief executive officer of ITT Automotive and a senior vice president of ITT Industries, Inc. He has also served as a corporate vice president of Siemens AG and has held various executive and management positions at Allied Signal Corp.

ZF Announces New Management Appointments

Ron Dostal, president and COO of ZF Industries, Inc., is retiring. In addition to his responsibilities as current president of ZF's Lemforder Corp., James C. Orchard will assume the presidency of the parent company and well as the chief executive position. Otto W. Schafhauser will become executive vice president and CFO. Roland Heil will become executive vice president and COO for both companies. The company has recently streamlined its North American operations in order to increase its business opportunities in the area.

Former Voith Marine Manager Passes Away

Rudolf Laucks recently died in Heidenheim after a long illness. Mr. Laucks began his engineering career at Bremer Vulkan, and in 1958 joined Voith Heidenheim as a project engineer. Until his retirement in 1992, he was the long standing manager of the Voith Marine Technology Division.

Power Surge

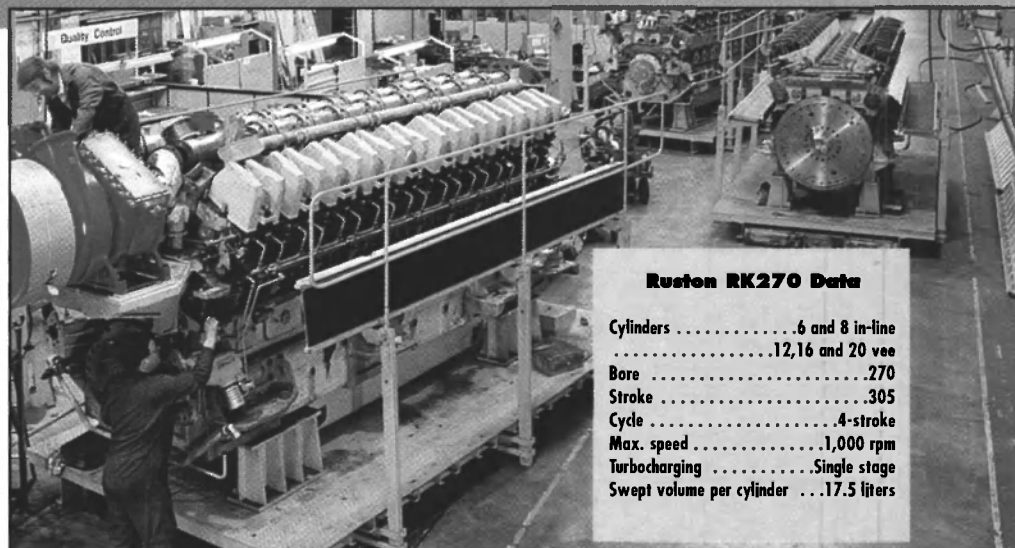
GEC Alsthom Diesels Wins Orders In Growing Markets

GEC Alsthom Diesels, which is comprised of Paxman Diesels and Ruston Diesels, is a recognized leader in the energy and transportation markets and is well positioned to capitalize on expanding power needs in many different segments. Ruston Diesels' medium-speed engines provide main and auxiliary power for commercial and naval vessels, including tugs, ferries, supply boats, fishing vessels, coasters and large high-speed catamarans. Paxman Diesels' high-speed engines are designed to provide compact, lightweight power up to 3,917 kWb, tailored for applications where size and weight are prime considerations.

Powering the fast ferry boom

A significant order for Ruston Diesels recently began fulfillment, as four 20RK270 engines were installed in the first of two, 328-ft.

(100-m) monohulls under construction by Fincantieri for Sea Containers. These 800-passenger, 175-car Super Sea Cats are powered by the Ruston engines, each rated at 6,875 kWb, to a full-load speed of 37 knots. The first vessel is scheduled for delivery in March; the second is due shortly thereafter. A 282-ft. (86-m) catamaran being built by Incat for Holyman is another project featuring Ruston engines. The fast ferry will be powered by 20RK270 units, with a rating of 7,080 kWb at 1,030 rpm each. Ruston engines have enjoyed much success in the large fast ferry field, and the 20RK270 was developed to meet the needs for a more powerful, high power-to-weight ratio medium-speed diesel engine. Including orders in hand, Ruston engines are featured on 21 large fast ferries — primarily of Australian build — which encom-



Ruston RK270 Data

Cylinders6 and 8 in-line
12, 16 and 20 vee
Bore270
Stroke305
Cycle4-stroke
Max. speed1,000 rpm
TurbochargingSingle stage
Swept volume per cylinder17.5 liters

passes a total of 84 engines. The RK270's rigid bedplate design is reportedly key to the success of these applications.

Paxman excels in military, fast ferry applications

Recent GEC Alsthom Paxman Diesels successes include Valenta engines for Type 23 frigates, as well as VP185 power for six new 91.8-ft. (28-m) Taiwanese patrol crafts. Each vessel is powered by two engines to achieve speeds approaching 40 knots. In fast ferries, Paxman has delivered a pair of VP185 engines for a 114.8-ft.

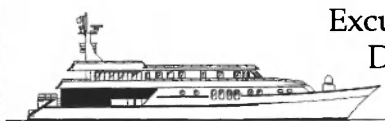
(35-m) Hyundai catamaran, which is designed to carry 280 passengers and 10 crew to a top speed of 45 knots.

Paxman has won orders in the yachting market as well, including an order for a pair of Paxman VP185s for a 147.6-ft. (45-m) yacht dubbed *Perfect Prescription*, under construction by Oceanfast Yachts of Perth, Australia. The engines generate 2,515 kWb each to achieve a cruising speed of 24 knots and a top speed of 27 knots.

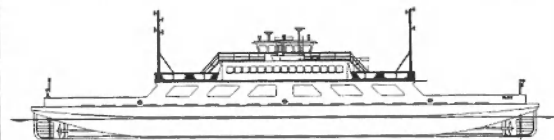
For more information on GEC Alsthom Diesel Engines Circle 12 on Reader Service Card

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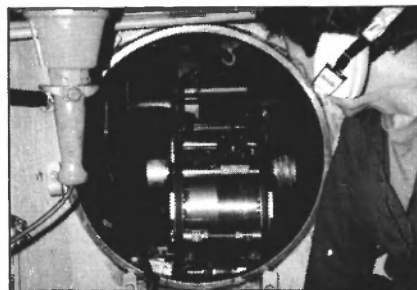
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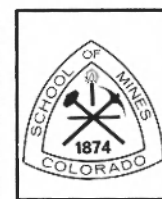
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International Workshop on "Advanced Materials for Marine Construction"

New Orleans, LA, February 5-7, 1997

A three-day workshop will be held in New Orleans, Louisiana, on February 5-7, 1997. The major sponsors of the Workshop are: Minerals Management Service, Colorado School of Mines, American Bureau of Shipping, American Welding Society, major petroleum companies, major structural materials producers and fabricators. An International Steering Committee with representation from the sponsors, research organizations, and universities has been established to organize the event. The Workshop will focus on the application of materials in marine construction, review progress in material development and application, identify current major roadblocks to further development, and prioritize important research and development topics in this area. It is also the goal of this program to provide guidance to, and promote collaboration among, the different industries involved in marine construction. The workshop will also publish a book of proceedings to document the current state-of-the-art and development of materials for marine construction, and identify the problems that hinder the progress of marine construction. The Workshop is expected to draw an attendance of 250 participants from the U.S. and overseas.



For more information about content of the Workshop, contact Prof. David L. Olson at tel/fax 303-273-3955/3795. For information on registration, contact Colorado School of Mines Continuing Education at tel/fax 303-273-3321/3314; e-mail space@mines.edu.

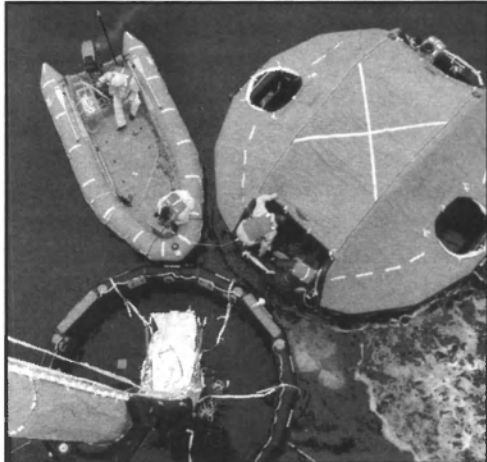
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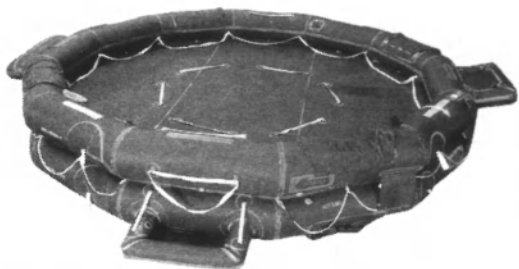
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Circle 242 on Reader Service Card

Volvo Penta Offers New Sterndrive Packages

Volvo Penta of the Americas, Inc. introduced a line of 2.0 liter diesel stern drive packages. The Volvo Penta 22/SX series is comprised of three models which utilize a direct-injected, fresh-water cooled, in-line four cylinder engine coupled to the single propeller SX Diesel sterndrive.

For more information
Circle 100 on Reader Service Card

ZF Adds To Transmission Product Line

ZF Marine has added to its line of marine transmissions a hydraulically operated version of the HBW 125, which has a newly designed clutch for smooth and comfortable engagement and disengagement and is suitable for application in canal boats, small harbor craft and fishing boats requiring frequent clutch operation. Other additions to the ZF Marine line of transmissions include the BW 165

P4, which sports a new power-train for handling 1,000 kW at 2,300 rpm at ratios up to 2:1; and the IRM 280 V-LD with a vee-drive configuration. The IRM 280 vee drive version allows direct flanging to the engine to form a compact power-pack with the propeller shaft passing underneath the engine. The IRM 280's maximum rating for pleasure boat application is 361 kW/2,800 rpm for ratios up to 2 and slightly reduced capacity at ratios 2.5 and 3.

For more information
Circle 103 on Reader Service Card

Schottel Debuts New Propulsion System

The Schottel Twin Propeller (STP) is a newly developed propulsion system based on the 360 degree steerable Rudderpropeller propulsion unit. The STP propulsion system is equipped with two propellers which are mounted on one shaft and rotate in the same direction and fins located between the propellers for recovering swirl energy.

Optimum matching of the propellers and fins reportedly increase efficiency by 20 percent over the single propeller version, while reducing noise and vibration levels significantly.

The Schottel Twin Propeller covers the entire range of 360 degree steerable propulsion systems and can be used for all vessels in the medium-speed range, including passenger ships, ferries, cargo ships and supply vessels.

For more information
Circle 105 on Reader Service Card

Crane Heatex Provides New Air Cooler

Crane Heatex has recently developed the Finbloc air cooler matrix. The coolers are tailor made to suit engine requirements and with all thermal and mechanical needs taken into account. The support system is designed to provide protection and extend the air cooler's life span.

For more information on
Crane Heatex
Circle 104 on Reader Service Card

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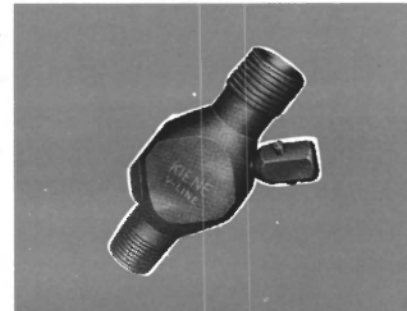
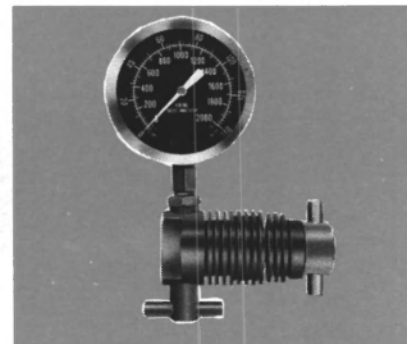
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Circle 232 on Reader Service Card

ON THE COVER

Pacific Marine Launches Experimental SLICE Ship

Pacific Marine launched the prototype of what it dubs the "ship of the future." The vessel incorporates an advanced, high-speed SWATH ship technology called SLICE.

The 104-ft. (31.7-m), 30-knot SLICE prototype vessel was designed by Lockheed Martin Corp. and built in Hawaii by Pacific Marine, under a cooperative agreement with the U.S. Navy's Office of Naval Research.

Design work on the SLICE began at Lockheed in 1993, with vessel construction commencing in late 1994. Honolulu Shipyard, a subsidiary of Pacific Marine, assembled the SLICE vessel at its Pier 41 facility.

Pacific Marine boasts considerable experience with the SWATH technology, as it helped pioneer the commercialization of the technology in the U.S. Its subsidiary, Navatek Ships, designed and built two SWATH vessels, the 140-ft. (42.7-m), 18-knot, 430-passenger cruise boat *Navatek I*, and the 82-ft. (25-m), 21-knot, 149-passenger *Navatek II*. Both vessels are operated by Pacific Marine subsidiary Royal Hawaiian Cruises, and have been in service in Hawaii since 1990 and 1993, respectively.

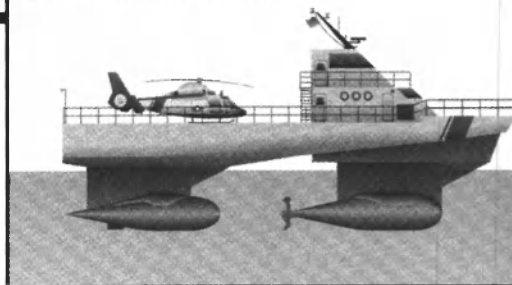
According to Pacific Marine President **Steven Loui**, SLICE tech-

(Continued on page 68)

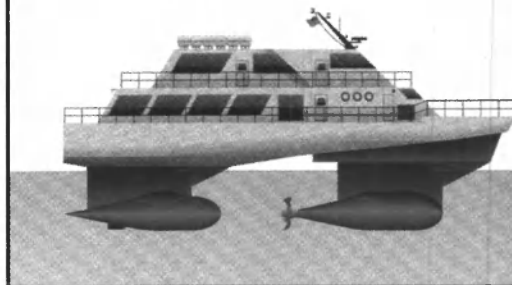
SLICE Prototype Particulars

Designer/Prime Contractor:	Lockheed Martin
Builder:	Pacific Marine and Supply Co.
Length:	104 ft. (31.7 m)
Beam:	55 ft. (16.7 m)
Draft:	14 ft. (4.3 m)
Speed:	30 knots
Main engines:	MTU 16V 396 TB94
Propellers:	Lips CP
Gears:	Westech, 6.0:1 reduction
Generators:	Caterpillar 3306 DITA
Displacement:	180 lt
GRT:	Subchapter T
Payload (max.):	50 lt
Payload, length:	57 ft. (17.4 m)
Payload, width:	43 ft. (13.1 m)
Materials:	Aluminum
Horsepower:	6,850 (total)
Seakeeping:	Stable & unrestricted
	to Sea State 5
Range:	400 nm at 30 knots
Auto Motion and System control:	Navatek
	TASC integrated ballast and fin control system

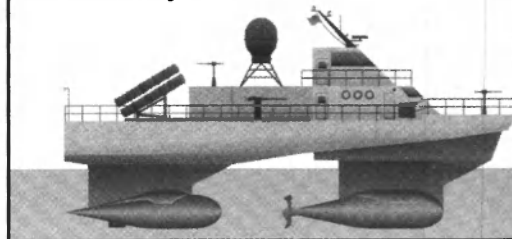
Government:



Commercial:



Military:



VT Unveils Stealth Warship Design

Vosper Thornycroft (VT) is attempting to take warship design into a new era with the launch of its Sea Wraith Stealth Corvette. The shipbuilder reports that, following experiments to assess the radio frequency and infrared aspects of VT's ideas, the Sea Wraith has proven its ability to increase resistance to identification and engagement by an enemy.

The challenge addressed by VT's Future Projects Group was initially to develop a new form of vessel for patrol and low intensity operations, anti-submarine operations, naval gunfire support and command and control duties.

VT claims that the Sea Wraith contains features which far exceed the stealth capability that exists in current warships. To minimize radar reflections, the emphasis has been put on shaped topsides, and key areas of the ship will be manufactured of composite materials with conducting surfaces. The new design also features:

- A radical hull design with a wave-piercing bow;
- A complex superstructure shape designed to generate radar disturbance to the control system of an engaging missile;
- The ability to impede classification by hostile forces by selectively varying the radar cross-section;
- An Unmanned Air Vehicle to classify

contacts, spot and assess kill effectiveness for long-range weapons over both land and sea; and

- A new method of blending infrared and visual radiations/reflections with background elements by use of a self-generated water mist.

The Sea Wraith, which measures 377 x 51 ft. (115 x 15.5 m), is designed to be driven by diesel electric propulsion driving a pair of CP propellers, to generate a speed in excess of 28 knots. Synthetic aperture radars will effectively classify vessels by recognizing their radar. VT maintains that appendages on superstructures can destroy the efforts to lower radar cross section and leave warships vulnerable to detection. An apparent low cross section item such as a ship aerial can produce a radar cross section far greater in size. Sea Wraith addresses this problem by containing all antenna normally on a mast within a radar reflective enclosure.

The mast, housing navigation lights, communications antenna and other sensors, can be raised or lowered to change the ship's radar signature and confuse an enemy.

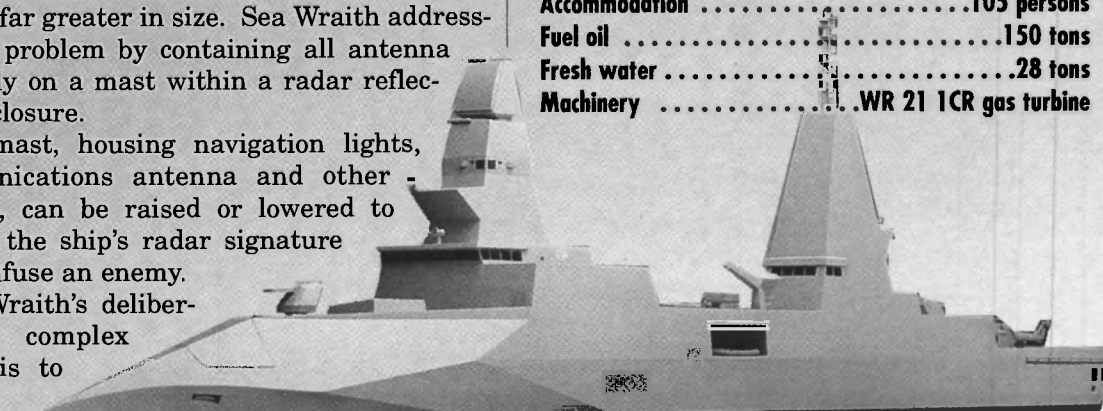
Sea Wraith's deliberately complex shape is to maxi-

mize the radar glint experienced by an engaging radar guided missile. Missile simulation tests have shown that the inclusion of the two masts asymmetrically positioned can confuse an incoming missile.

For more information on Vosper Thornycroft
Circle 57 on Reader Service Card

Principal Particulars

Length, o.a.	115 m
Length, b.p.	110 m
Beam, max.	15.5 m
Draft, amidship	4.5 m
Speed	28 knots
Range	2,500 nm @ 15 knots
Accommodation	105 persons
Fuel oil	150 tons
Fresh water	28 tons
Machinery	WR 21 1CR gas turbine

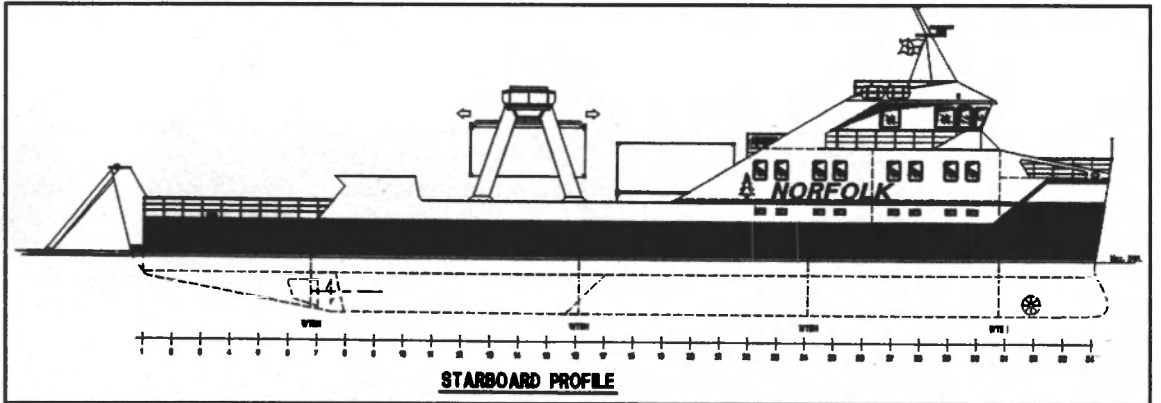


SLV Design Serves Multiple Purposes

ASDMAR has carved a niche into the small ship market, opening significant opportunities for builders and operators of passenger, utility, container and RoRo vessels.

In 1984, ASDMAR (formerly A.S.D. Marine) commenced work on designing a next-generation, multi-functional vessel. Specifically, the company sought to deliver a design which offered:

- Good head sea capability;
- Ability to beach and de-beach with ease;
- Good visibility from the wheelhouse;
- Accommodation clear of the machinery space;
- Finer hull shape with a higher sustainable speed;
- Cargo deck spray protection;
- Less free surface in the tanks;
- Access to bottom plating when beached;



- Elimination of the "suction" effect of flat bottom craft; and
- Total protection of the stern gear.

ASDMAR's solution was a Stern Landing Vessel (SLV), which incorporates a shallow Vee

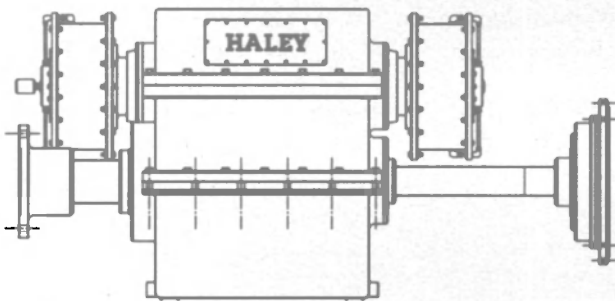
hull with two side pods. Together with off-center shafts and a beaching/protection/aft skeg arrangement, the design was fine-tuned and has evolved to a commercially viable landing craft design.

(Continued on next page)

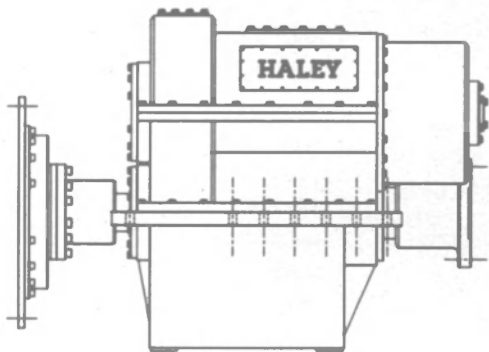
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OR-26

SLV Design Serves Multiple Purposes

Hit the ground running

When working across a current to a landing, the SLV can be beached in two ways:

- 1] Anchoring upstream of the ramp and simultaneously paying out the cable while steering the vessel into the ramp; and
- 2] Fitting of a bow thrust, and approaching the ramp and landing the ramp in a similar manner to a conventional landing craft, but using the bowthrustrer to keep the head up into the current or wind.

With the propellers positioned at the outside extremities of the vessel, the steering is reportedly easy to perform from both ahead and astern. The steering is enhanced by using Shilling rudders, or, alternatively, azimuth drives. Skegs protect the stern gear from beach landings, even on an approach angle.

The SLV designs also allows very wide ramps to be used. The 35-m version has a standard clear entry width of 7 m, and the 50-m version can have a stern access width up to 10 m. This allows easy access of bulldozers, with blades on, heavy mining trucks and oversized cargoes.

Deepwater has been on charter several times to New Caledonia and the crew reported a lack of cargo slamming or jarring on ocean voyages executed at average speed of eight knots. The ship has also been chartered to carry 270-ton transformers, on the 96-wheel heavy load trailers of Brambles/TNT.

Deepwater was built at Brisbane-based South Pacific Marine Constructions. Its hull was assembled in only nine weeks utilizing computer cut steel. ASDMAR provided all of the tapes for computer cutting for this project and offer the vessels in kit form.

For more information on ADSMAR
Circle 38 on Reader Service Card

Some Standard SLV Designs Available

Size	Speed	Cargo Capacity
20 m	9 knots	38 tons on deck or 45 tons fuel below deck
50 m	11 knots	1,100 tons (sheltered waters) 950 tons (coastal) — 48 TEU (similar u/deck tank capacity)
70 m	12 knots	1,550 tons coastal — 130 TEU
80 m	13 knots	3,000 tons coastal — 160 TEU

Visible Monitoring From Afar

Externally-mounted SureSite indicators are available from GEMS Sensors Division in a range of materials, sizes and connection types to monitor a limitless combi-

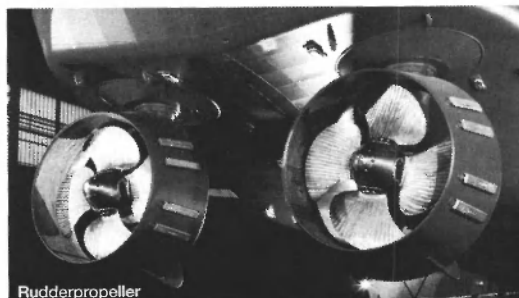
nation of tank configurations and fluids. SureSite is designed to provide highly visible continuous liquid level monitoring. Bi-colored, magnetically interlocked flags flip over as liquid rises, and are reportedly visible for more than 100 ft.

For more information
Circle 58 on Reader Service Card

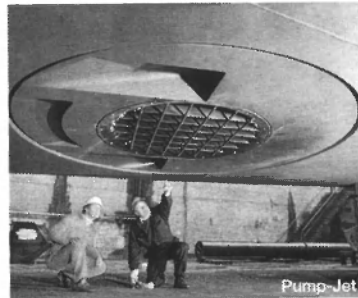
CAS Debuts Viscometers

Cambridge Applied Systems (CAS) announced the availability and national stocking numbers for the TCV200 and TCV214 shipboard viscometers. They provide automated shipboard measurement of 9250 and 2104 lubricants.

Producing Thrust



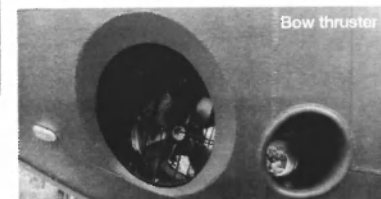
Rudderpropeller



Pump-Jet



Navigator



Bow thruster

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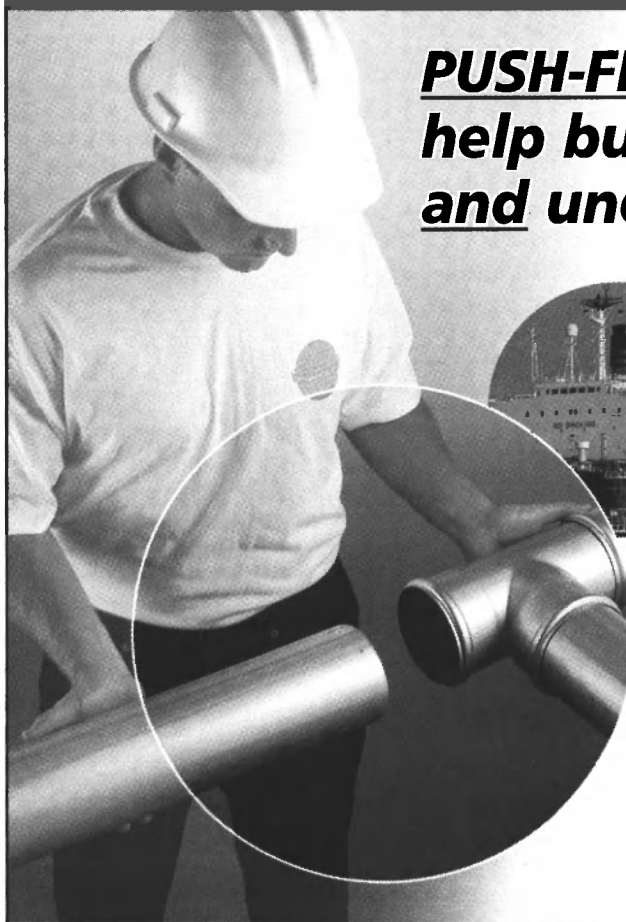
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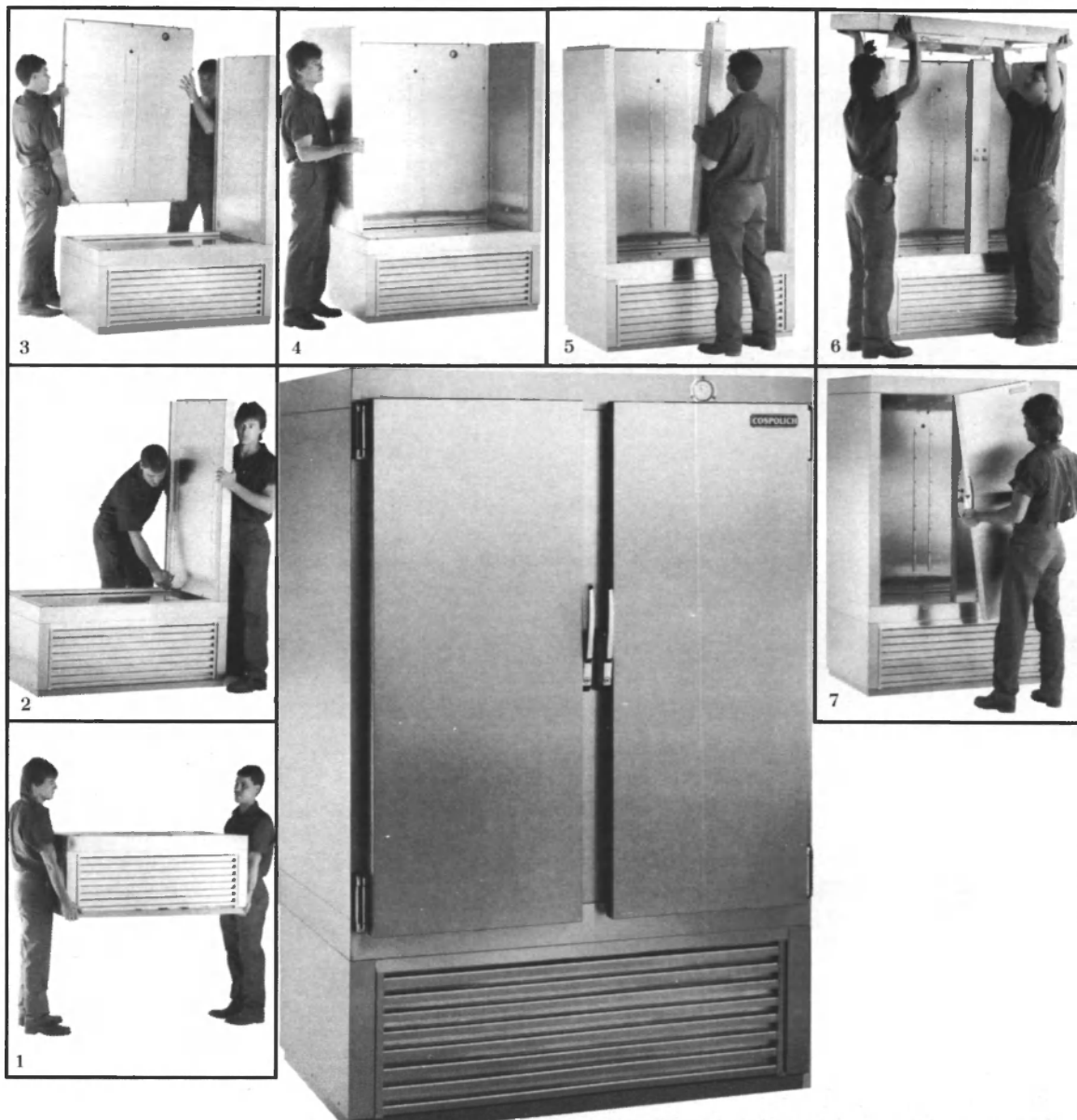
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Circle 241 on Reader Service Card

(Continued from page 65)

nology provides an exceptionally stable ride and the capability to go faster with the same horsepower.

While under development under the aegis of a Navy program, the developers contend this is the epitome of dual use technology, as there are numerous defense and commercial applications.

Pacific Marine has negotiated exclusive commercial rights to Lockheed's SLICE technology, with Lockheed retaining the government/military market.

For more information on the companies involved in the SLICE project, circle the appropriate number on the Reader Service Card in this issue.

Caterpillar	51
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Pacific Marine	55
Westech	56

The viscometers are distinguished by a single moving part, a highly polished steel piston. A pair of electromagnetic coils drive the piston up and down inside a measurement chamber filled with test fluid. Magnetic force on the piston is resisted by viscous flow of the fluid around the piston.

For more information on CAS
Circle 61 on Reader Service Card

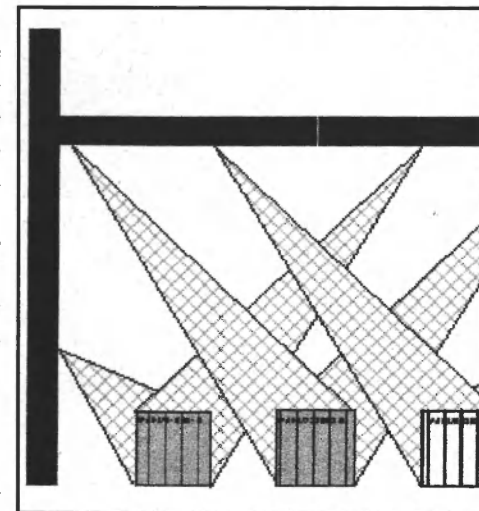
IMC Offers Digital Camera Monitoring



IMC Engineering offers a digital camera monitoring system designed for use with container gantry cranes. The system is designed to improve the reliability of damage control as well as the safety under the container gantry cranes.

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When the crane operation is finished, the recorded images are transferred to the digital claims department, or the container coordination center, where the damage control and repair coordination tasks can be performed.

For more information on IMC
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Industry Vital Signs Looking Good

A variety of factors came together in 1996 to infuse the U.S. shipbuilding industry — particularly for the Gulf Coast portion — with vitality such as it had not experienced for two decades. Included among significant developments:

- Growing inland waterways traffic finally overcame the residue of 1970 barge over-building, creating a bonanza of orders for hopper barges
- Environmental regulations created a mini-boom in double-hulled product tanker and barge construction.
- A full-fledged boom in offshore activity in the Gulf of Mexico led to orders for the biggest, most powerful offshore service vessels (OSVs) ever to ply the marine oil patch, and triggered a basic retooling of the traditional OSV by one shipbuilder.
- A resurgent MarAd fueled the

shipbuilding frenzy with more than \$2 billion in loan guarantees over the last several years.

- An alliance headed by Avondale contracted to design, build and service the first of 12 ships in the U.S. Navy's next generation of amphibious warships.

Signs of the times included: initiation of public trading in the shares of the country's largest private shipbuilder, Newport News Shipbuilding; plans to reopen a decade-dormant East Coast shipyard with MarAd-backed, state-of-the-art technology; and a pervasive worker shortage confronting Gulf Coast shipbuilders.

Gulf Coast

The most impressive regional showing among the nation's shipbuilders was on the Gulf Coast. Three-fourths of the \$2 billion in new vessel construction covered by pending applications for MarAd Title XI loan guarantees is ear-

marked for Gulf Coast yards. The region fared even better in the last fiscal year's Title XI-approved work list, garnering 80 percent of \$1.4 billion. But MarAd's list does not tell the whole story. For example, 17 deepwater OSVs ordered by Galiano, La., operator Edison Chouest could represent \$200 to \$300 million, though neither Chouest or its shipbuilding subsidiary will confirm the cost. Work on the vessels has been parceled out among half a dozen yards where the hulls will be built and shipped back to Chouest for completion and outfitting.

Record high demand for offshore drilling rigs sparked the reopening of the LeTourneau yard in Vicksburg, Miss., by new owner Rowan Companies. Rowan commissioned the building of first one, then two more large, North Sea-type jackups at a total cost of \$550 million.

Further south, Gulf Island Fabrication at Houma, La. — made up of two fabrication yards

which shut down following the mid-1980s oil price bust — added a third yard. The yard filled up with work such as Texaco's deepwater compliant tower platform Petronius, and Shell offshore production platform Enchilada.

At a water depth of 650 ft. (198 m), and a cost of \$240 million, Enchilada is not technically a deepwater project, but nonetheless still the offspring of the 3-D seismic technology which unlocked the 1,000+ ft. reaches of the Gulf of Mexico, and drove the revival which has revitalized the domestic offshore industry.

Halter Marine Group of Gulfport, Miss. — spun off from Trinity Industries in an IPO late last year — operates 10 Gulf Coast shipyards. The company added more than 1,000 workers last year to deal with a varied backlog of approximately \$400 million in projects which included hopper, deck, crane and tank barges, and tractor and integrated ocean tugs.

And, despite such impressive

NEW DESIGN

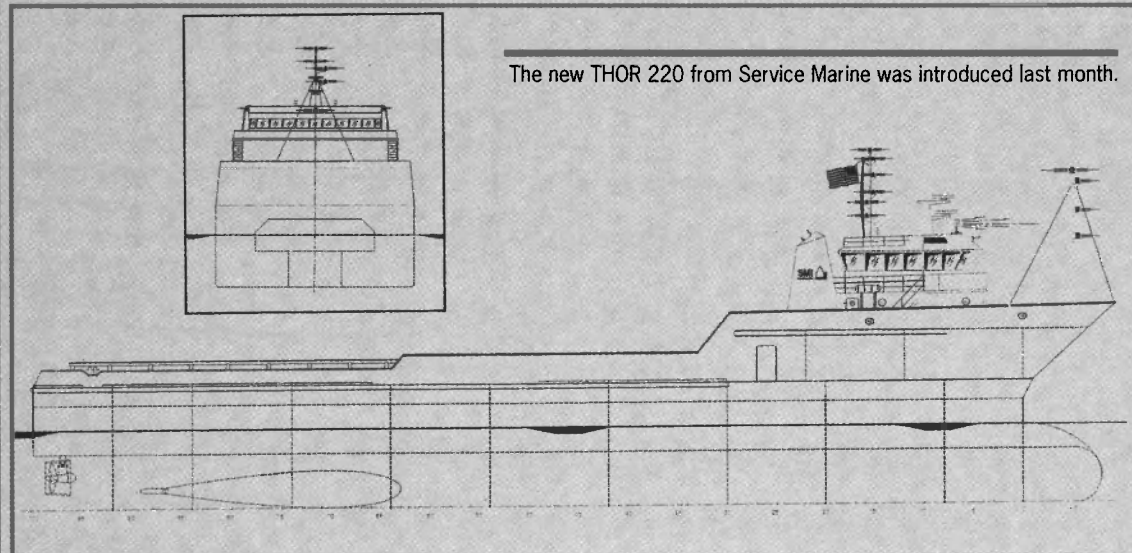
SMI Introduces New Deepwater Supply Vessel Designs

Service Marine Industries (SMI) introduced a new deepwater supply vessel design which it promises will deliver unparalleled functionality and stability. Tagged THOR (for Twin Hull Ocean Runner), the design is based on SWATH technology.

The new series, which SMI designed to be safer and faster while having a higher load capacity and greater fuel efficiency, is said to operate effectively in Sea State 5, conditions that would keep many conventional vessels in port.

THOR — available in 160, 200 and 220-ft. (48.7, 61 and 67-m) versions — is designed to operate as not only a cargo and supply vessel, but also as a crew transport vehicle.

For more information on the THOR Class
Circle 22 on Reader Service Card



The new THOR 220 from Service Marine was introduced last month.

THOR 160	THOR 200	THOR 220
Length, o.a. 163 ft. (49.7 m)	Length, o.a. 198 ft. (60.4 m)	Length, o.a. 220 ft. (67 m)
Beam 54 ft. (16.5 m)	Length, waterline 180 ft. (54.9 m)	Length, waterline 200 ft. (61 m)
Depth 22 ft. (6.7 m)	Beam 58 ft. (17.7 m)	Length, b.p. 164 ft. (50 m)
Draft, full load 13 ft. (4 m)	Depth 23 ft. (7 m)	Beam 60 ft. (18.3 m)
Deck cargo area 116 x 46 ft. (35.3 x 14 m)	Draft, full load 15 ft. (4.6 m)	Depth 25 ft. (7.6 m)
Deck cargo 500 tons	Deck cargo area 130 x 48 ft. (39.6 x 14.6 m)	Draft, full load 16 ft. (4.9 m)
Drill water/ballast 90,000 gallons	Deck cargo 700 tons	Deck cargo area 147 x 50 ft. (44.8 x 15.2 m)
Potable water 24,000 gallons	Drill water/ballast 201,000 gallons	Deck cargo 800 tons
Fuel oil 44,000 gallons	Potable water 65,000 gallons	Drill water/ballast 228,600 g
Lube oil 1,000 gallons	Fuel oil 59,600 gallons	Fuel oil 88,800 gallons
Liquid mud 1,600 barrels	Lube oil 2,000 gallons	Fuel oil 77,200 gallons
Bulk mud 4,000 cu. ft.	Liquid mud 3,000 barrels	Lube oil 2,000 gallons
Berthing 28	Bulk mud 6,400 cu. ft.	Liquid mud 4,000 barrels
	Berthing 26	Bulk mud 8,000 cu. ft.
		Berthing 26

numbers, the real push to begin rebuilding the 1,400-vessel OSV fleet has scarcely begun. Tidewater Inc. has ordered an \$8-million R&D offshore workboat from Halter which it will operate for at least one year before considering a wholesale fleet rebuilding program, according to CEO William C. O'Malley.

Service Marine Industries (SMI) hopes to accelerate that process industry-wide with the introduction of its line of THOR class OSVs. (See story, previous page.) Marketing Manager Peter Husta estimated the vessel cost would be approximately 10 percent higher than for comparable, conventional OSVs.

There will be at least one new shipyard in the running for offshore work, as Bluntstown Shipyard expects to be running within six months. The 40-acre yard on the Apalachicola River, formerly owned by Rysko Shipbuilding, has been shut down for a decade.

The Gulf's two major shipyards

— Avondale and Ingalls Shipbuilding — have differing agendas. Ingalls Communications Director James McIngvale said his company "is and will continue to be a naval shipbuilder. The company will enter other markets only in circumstances that fit with our military shipbuilding schedules." The yard's current schedule includes three LHD amphibious assault ships and six Aegis class destroyers among a backlog of \$3.1 billion. Avondale is committed to cutting its dependence on military work in half. In October, the yard christened its first double-hulled tanker for AHL. The product carrier is one of four Avondale is building under a \$143.8-million contract. (See story, page 36, December 1996 edition.) In November, Avondale was awarded its fifth vessel of the Navy's Strategic Sealift construction program, at a price of \$240 million. In late December, the yard, along with Bath Iron Works, Hughes Aircraft and Intergraph Corp., captured the contract for the Navy's first LPD-17 ship, with an option for two more. (See story, page 74.)

The labor shortage on the Gulf Coast has become epidemic.

There was a great exodus of skilled shipbuilders from southern Louisiana and adjacent states fol-

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Crowley Brings New-Design Tugs To U.S.

Crowley Marine Services (CMS) accepted delivery of *Protector*, the first of two twin cycloidal, diesel-powered tractor tugs being built by Nichols Brothers. The new tractor tugs are being outfitted for ship handling, tanker escort services and docking assists. The tug features a unique underwater hull design, particularly the skeg. The company chose Voith Schneider cycloidal propulsion. For the hull and skeg, Crowley began with a design developed by Voith Schneider and Neptun AS. Crowley's tugs differ from the Neptun design in that CMS' can switch quickly from escort mode to shipdocking mode. The tugs are 120 ft. (36.5 m) long with molded beams of 41 ft. (12.5 m). Each are powered by two Caterpillar 3606 diesel engines, propulsion through Voith Schneider cycloidal units.

For more information, circle the appropriate number on the Reader Service Card

Crowley Marine Services23
Nichols Bros. Boat Builders24
Voith Schneider25
Caterpillar27

lowing the oil bust of the mid-1980s. Many of those individuals found other employment in the area, drifted away or retired. Many others simply soured on the industry. Most shipyard executives see technical vocation school programs as their best hope for filling the worker-power gap, but admit that it is a slow process.

It has been argued that the Gulf Coast wage levels are too low to attract skilled workers from other shipbuilding, however, the \$11 to \$14 hourly rates currently being

paid to skilled hands compares favorably with, the reported \$13 to \$14 per hour level reportedly being paid elsewhere, such as by NASSCO in San Diego.

West Coast

National Steel & Shipbuilding Co. (NASSCO) has spent about \$26 million over the past several years, mainly to modernize its steel-handling capability. "We teamed up with Japanese shipbuilders to improve our accuracy control and ultimately reduce the man-hours

required for this critical function," said **Fred Hallett**, senior vice president and CFO.

NASSCO shares with Avondale the Navy's Strategic Sealift new-building program. The company has recently been awarded its fifth vessel with an option for one more of the \$200 million-plus transports. The 950-ft. (290-m) ships, designed for the deployment of military cargoes, have self-sustained RoRo and LoLo capability for vehicle and container offloading to a pier or in-stream. With nearly

400,000-sq.-ft. of deck cargo space, a design speed of 24 knots and a range of 13,800 miles, the vessels will reportedly be able to deliver materials to support military operations anywhere in the world in either propositioning or surge mode.

According to Mr. **Hallett**, NASSCO expects to have some commercial work such as product tankers within the next three years.

East Coast

Newport News Shipbuilding

Canadian Pacific Makes Offer For Lykes

Canadian Pacific Ltd. (CP) reportedly signed a letter of intent to acquire the services of Lykes Lines, the U.S. container shipping operations of Lykes Bros Steamship Co. Inc. CP reportedly intends to keep the U.S.-flagged ships under U.S. flag and U.S. control and to offer the Lykes services based in Tampa, Fla. as a self-sustained operating unit of the CP Ships Group, which also includes Canada Maritime and Cast.

Alaskan Shipyard To Be Completed

Negotiation of a long-term operating agreement is the last step before a recently adopted development plan is implemented for the completion of Ketchikan Shipyard. The Alaska Industrial Development and Export Authority will negotiate separate agreements with the operators of Alaska Ship and Dry Dock, and the community of Ketchikan to operate the shipyard and assist in completing the improvements.

Phase 1 of the development plan is focused on providing additional repair capabilities for vessels up to 1,000 long tons. Construction of a 1,000-long-ton Syncrolift employing Emmert rubber tired transfer dollies will allow vessels up to 1,000-long-tons to be transferred to upland repair berths. With the addition of the 1,000-long-ton Syncrolift, the yard will also achieve launching capability for new vessel and barge construction. Other improvements include a 600-ft. (183 m) service float, a boat shed for enclosed marine repair and construction activities and a pier crane.

A closed loop wash water treatment system is planned to provide an environmentally clean hull wash facility for surface preparation of vessels.

Phase 2 focuses on improvements to create a state-of-the-art marine manufacturing facility. A number of buildings are planned for enclosing production processes such as steel fabrication, surface preparation and painting, pipe assembly, hydraulic work and electrical systems repair. Existing facilities at the Ketchikan yard include a 10,000-long-ton floating drydock, an 800-ft. (244 m) deepwater pier face and a machine ship capable of turning 50-ft. (15.2 m) long shafts. The state of Alaska also announced that more than one million dollars worth of overhaul work on Alaska Marine Highway System (AMHS) ferries will be done at Ketchikan.

For more information on Ketchikan Shipyard

Circle 28 on Reader Service Card

January, 1997

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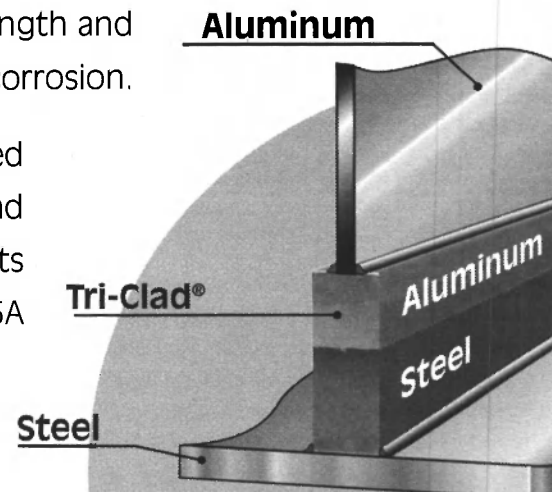
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Circle 23: on Reader Service Card

(NNS) became an independent company in mid-December when parent company Tenneco spun off the 110-year-old Virginia shipbuilder and its shares began trading on

the New York Stock Exchange. "A current backlog totaling approximately \$3.5 billion and an aggressive strategy for enhancing the company's ship construction

and ship overhaul business will be key strengths as we return to independence," said President and CEO **William P. Fricks**.

The nation's sole builder of air-

craft carriers for 35 years, NNS is working on nuclear-powered carriers *Harry S. Truman* and *Ronald Reagan*. The company's work schedule also includes two Navy attack submarines and nine 46,500-ton commercial product tankers.

Product tankers are also on the minds of executives of Massachusetts Heavy Industries, Inc. The company got the nod from MarAd in November for a \$55 million Title XI loan guarantee to modernize and reopen the former General Dynamics Four Rivers yard at Quincy, Mass. A Title XI application from Intermare Navigation SA, a U.K. company, is pending for six 46,000-dwt product tankers to be built at the refurbished yard at a cost of approximately \$249 million.

A spokesperson for Massachusetts Heavy Industries said the yard, which has been closed for 10 years, will be completely retrofitted with advanced computer and robotics technology.

A second East Coast shipyard modernization project, a \$142-million overhaul of a 65-acre portion of the Sun Ship Yard in Chest, Pa., is reportedly on hold, as MarAd has not acted on a Title XI application.

Another Title XI-approved project currently in limbo is the construction of a six-barge floating electric power generating complex at a cost of \$460 million. Wak Orient Power & Light Ltd. of Pakistan got approval from MarAd last June for the massive project but has reportedly not moved forward. The company expects to build the six barges and coordinate assembly of the generating components for prime contractor Raytheon.

Overall, the scorecard for U.S. shipbuilding is encouraging, given that three years ago Maritime Administrator Vadm. Adm. **Albert J. Herberger** (USN Ret.) said it was "unconscionable that the country has allowed the building and operation of merchant vessels to go offshore," and that the U.S. "has not been active in building ships for export in 37 years." Companies such as NNS and Alabama Shipyard and Halter Marine are busy remedying this problem, while yards such as NASSCO, Avondale and the new Massachusetts Heavy Industries are joining the hunt.

Bollinger Algiers

Bollinger's deep water facility on the Mississippi River.

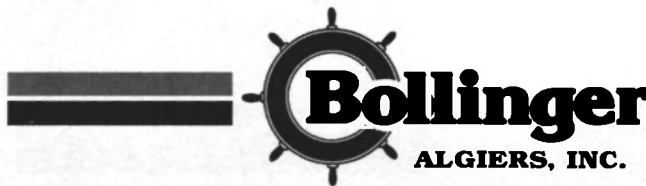


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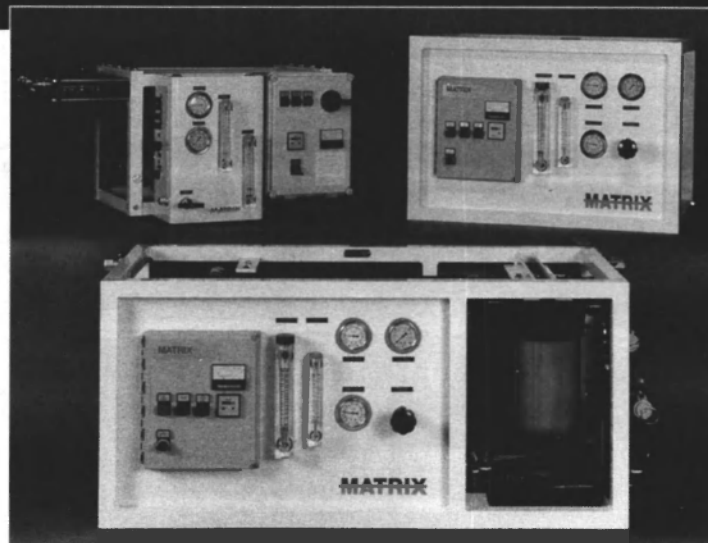


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USS *Milius* Joins Navy Fleet

USS *Milius* (DDG 69), the ninth U.S. Navy DDG 51 class Aegis guided missile destroyer to be built at Ingalls Shipbuilding division of Litton Industries, was commissioned on November 23. The new ship will be assigned to the U.S. Pacific Fleet, and homeported in San Diego, Calif.

Milius is named in honor of Navy pilot Capt. **Paul L. Milius** who was posthumously awarded the Navy Cross for heroism during an armed reconnaissance mission over Laos.

This is the 28th Aegis ship built at Ingalls, and as pointed out by Ingalls President **Jerry St. Pé**: "All 28 have been delivered to the Navy ahead of schedule. Ingalls' continuing improvement in the building process has resulted ... in hundreds of millions of dollars in savings to the taxpayers of America."

DDG 69 is the 19th destroyer in the DDG 51 Class. Six additional Aegis destroyers are under contract to Ingalls. Aegis ships are designed to provide primary protection for the Navy's battle forces. Aegis destroyers are 505 ft. (154 m) long with 66-ft. (20.1 m) beams. Four gas turbine engines power the 8,600-ton ships to speeds in excess of 30 knots.

For more information on Ingalls Shipbuilding
Circle 68 on Reader Service Card



Despite much-publicized cutbacks, naval business continues to be a cornerstone of shipyards such as Ingalls. The success of building its ninth advanced Aegis destroyer proves this yard's world-class capabilities.

ABOVE: Crew members are shown boarding *Milius* as the ship was commissioned.

RIGHT: Pictured is USS *Milius*, the ninth U.S. Navy DDG 51 Class Aegis guided missile destroyer to be built by Ingalls Shipbuilding.

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Avondale Alliance Claims Victory In LPD-17 Bid War

by Bridget Murphy, associate editor

On Dec. 17, an Avondale-led coalition was awarded a contract worth \$641 million to design, construct and support the U.S. Navy's initial LPD-17 ship, with an option covering two additional ships which could potentially bring the deal value to \$1.5 billion.

Selected to represent the commercial sector on an industry-Navy team, the Avondale Alliance -- also consisting of Bath Iron Works, Hughes Aircraft and Intergraph Corp. -- beat out the impressive consortium of Ingalls Shipbuilding, Newport News Shipbuilding, National Steel and Shipbuilding Co. and Lockheed Martin for this monumental contract, which will supply the Navy with its next generation of amphibious warships.

Avondale will reportedly build the first two ships while the third will be constructed by General Dynamics subsidiary Bath Iron Works (BIW), located in Maine. Hughes Aircraft will

be responsible for integrating the ships' electronic and weapons systems into the construction process.

The significance of the LPD-17 contract goes beyond the construction of next-generation warships. This contract is unique because it has been inherently designed to give the industry team the capability to provide real-time, continuous process streamlining. The Avondale Alliance will utilize the flexibility of the commercial sector to lead the development and procurement of advanced ships systems which will be integrated in ship production, in response to the emerging technological requirements of the Navy.

In contrast to the majority of U.S. naval shipbuilding programs, the operational core of the project will be established not in Washington, D.C., but on location at the prime contractor's facilities in Louisiana.

By giving the Avondale Alliance a stake in the project that extends over the service life of the vessels until at least 2040, the U.S. government will be able to reap the benefits of a long-term contractual relationship, which according to U.S. Navy LPD-17 Program Manager Capt. **Maurice Gauthier**, includes the assimilation of the commercial sector's expert knowledge combined with a reduction in government infrastructure, which in the past has acted as a logistical stumbling block in the Navy's quest to build the most technically capable, fully integrated warships.

"The LPD-17 program is the lifeblood of the industrial base. As the only new naval surface ship construction program for the remainder of the century, it provides industry with the opportunity to advance to 21st Century shipbuilding," stated Capt. **Gauthier** in a editorial recently published in *MR/EN* supplement *Marine Technology International*.

On the day following the contract award, American Shipbuilding Association President **Tom Bowler** had some comments for *MR/EN*. "If you look at what the LPD-17 is doing, it's taking a step in two directions," said Mr.

Bowler, a retired Navy captain and head of the association that represents the interests of the yards on both sides of the LPD-17 bid war.

"One thing LPD-17 is doing is having the equipment side and the shipbuilders team. The idea is to get the government out of the interface between the two. The other thing it has tried to do is to get shipyards to work together," said Mr. **Bowler**.

He agreed that the contract is groundbreaking because it deviates from traditional Navy shipbuilding programs in which builders and suppliers of weapons, sensors and other digital systems have been awarded separate contracts without provisions for coordinated systems integration, as will be mandated by the Integrated Product and Process Development (IPPD) team under LPD-17. "What the LPD-17 has tried to do is to allow the process to have more flexibility without blind adherence to military specifications," stated Mr. **Bowler**.

In a statement released to the press, **Albert L. Bossier, Jr.**, chairman and CEO of Avondale Industries, Inc., laid out the Alliance's plans for implementing the work order: "Work on the initial LPD-17 is to begin immediately, and delivery of the first ship is expected in 2002. This schedule fits well with the existing backlog which includes the Strategic Sealift contract for six ships," said the yard executive.

He continued: "The Navy has indicated an intent to acquire as many as 12 vessels under the LPD-17 program. If all of the 12 ships are awarded to the Avondale Alliance, this would mean the potential of a shipbuilding program which is anticipated to exceed \$6 billion for the Alliance, a high utilization of our shipyard resources for about ten years and the employment of approximately 4,000 Avondale employees at peak production for this program."

Mr. **Bossier** also indicated that if the Navy placed the full LPD-17 contract with the Alliance, Avondale would build eight ships and BIW would build four.

Ingalls President **Jerry St. Pe'** offered the following comments following the contract announcement: "While we are disappointed by the outcome of the LPD-17 award, Ingalls remains confident about our company's future and the prospects to remain one of the country's most successful designers and builders of naval vessels. Without LPD-17, we will be looking more aggressively at all other programs that may be available to us."

With a backlog that includes eight Aegis destroyers and three LHD amphibious assault ships, Ingalls will intensely lobby to build the Navy's planned 19 destroyers and a new class of Arsenal ships. The yard will also pursue international navy contracts for a corvette class of vessels, such as those built for the Israeli Navy.

LPD-17 Specifications

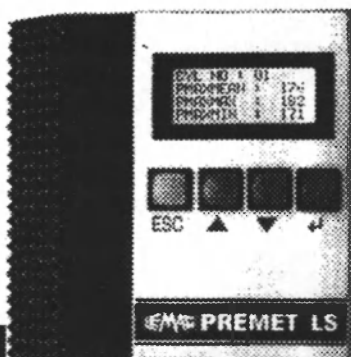
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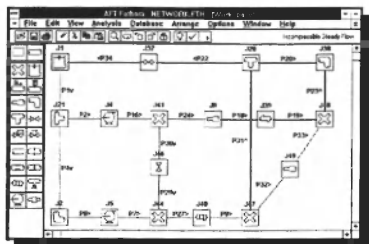
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Maritime Materials Update

Mars TLP Features Phenolic Grating

A year ago, Morrison Molded Fiber Glass Co. (MMFG), Bristol,

Va., took phenolic grating from development to commercial production when more than 75,000-sq-ft. of the material was produced for the main decks of the Shell Mars tension leg platform (TLP).

MARS is an enormous floating oil

and gas production platform with a 245 x 245-ft. (74.6 x 74.6-m) perimeter, with 214-ft. (65.2-m) high decks. The TLP is owned by Shell Oil and British Petroleum, and is located in a deepwater area of the Gulf of Mexico off Louisiana. The unit was fabricated in modules at J. Ray McDermott Shipyard in

Amelia, La., and installed in the spring of 1996 in Mississippi Canyon Block 807. The phenolic grating offers weight savings, as well as corrosion resistance, both advantageous in an offshore environment. The material is reportedly 80 percent lighter than steel, fire resistant and offers low smoke

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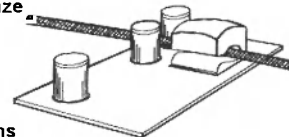
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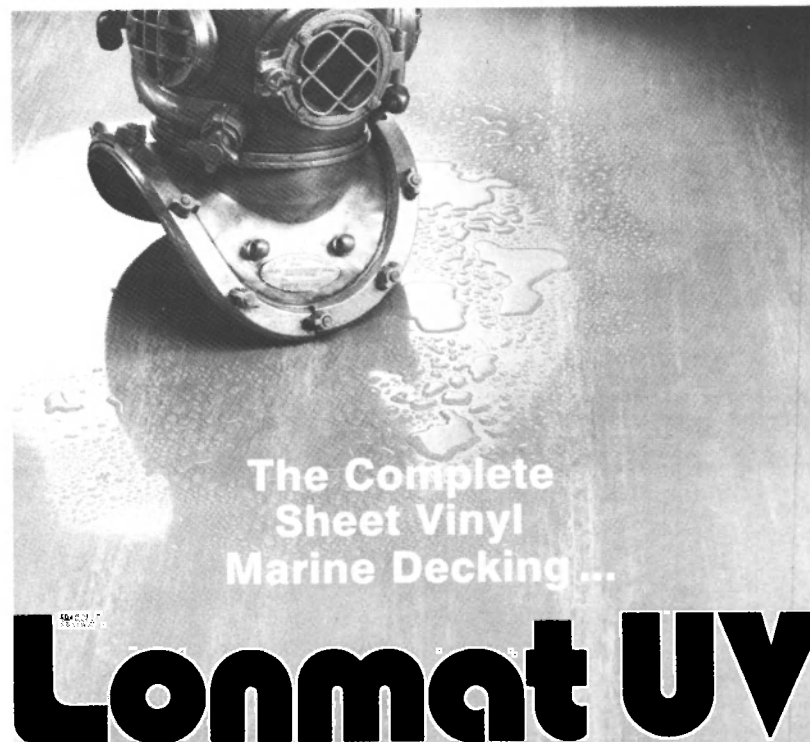


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Maritime Materials Update

and toxic fume emissions. The TLP's production manifold was one of the first components using phenolic grating to be completed. This is one of the relatively small pieces that fits inside the complete platform for receiving oil from the undersea well and the initial phas-

es of separating it for production.

For more information
Circle 76 on Reader Service Card

Publication Addresses Use Of CAD In Composite Technology

A publication addressing the

availability of computer aided design (CAD) in composite material technology is available from Computational Mechanics, Inc. The book reportedly contains the proceedings of the Fifth International Conference on Computer Aided Design in Composite Material Technology (CADCOMP 96) which was held in Italy in July 1996.

The conference brought together

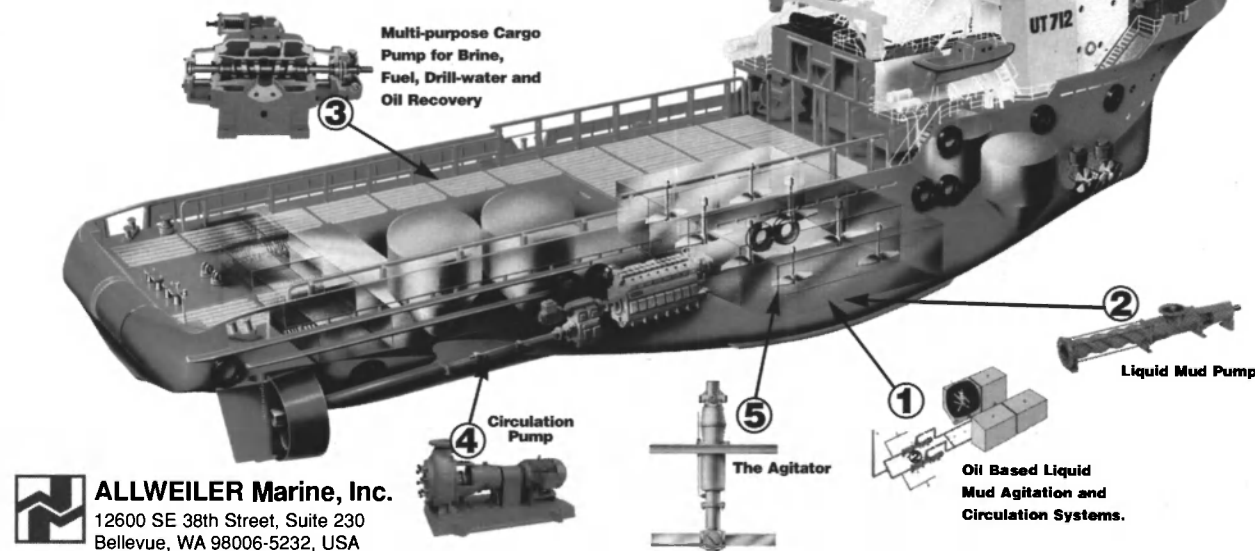
engineers and scientists from all parts of the world for discussions concerning: stress and failure analysis; combined numerical and experimental techniques; material characterization; laminate analysis; structural analysis and stability; design and optimization; process simulation; damage mechanics and limit criteria.

For more information on the publication
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Jotun Valspar Offers Total Corrosion Protection Concept

Jotun Valspar has announced that its through it "Total Corrosion Protection Concept," it has become the only company able to provide marine and offshore protective coatings and cathodic protection from one single source. The concept relies on the idea that life cycle cost should be the primary factor in selecting a protection system. Maintenance painting offshore is an expensive operation, therefore long term corrosion protection is paramount from the earliest design stage.

For more information on Jotun Valspar
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GREAT PASSENGER VESSELS of 1996

Kvaerner Kleven's Nordkapp

(Continued from page 30)

To ensure maximum passenger comfort, the engine components are mounted using flexible supports to prevent noise from filtering into the ship. The KaMeWa propellers were designed to minimize pressure waves against the hull in standard operation. Special vibration analyses of the main structure were carried out at VTT. To establish vibration levels, calculation models were used with 44,000 degrees of freedom to analyze the interaction between hull, propellers and surrounding sea.

Nordkapp was already under construction when the Estonia tragedy happened in the fall of 1994. Consequently, an investigation was carried out to determine what effects water on the Nordkapp's car deck would have on stability. The analysis showed that the car deck (which is on the ship's second deck) would have to be divided in two by a transverse bulkhead to meet the prospective requirements relating to water on the car deck. Further measures were needed to satisfy IMO A265, including: dividing the car deck into three watertight cells; and increasing the height of all the watertight bulkheads from the second to the third deck.

Bridge instrumentation was designed in accordance with DNV's Watch 1- OC class. The bridge itself is classified as Naut C. The ship is controlled manually only in the narrowest of shipping lanes

and when approaching the quay. All courses along the Norwegian coast have been input into the ship's computer system, and the vessel follows the selected route precisely, even under the worst weather conditions. Nordkapp's electronic array includes: two sep-

arate satellite systems; a ships control center including the Atlas NACOS Navigation and Command System; and Atlas planning stations, consisting of a digitizer Chart Table in A1 format, digitized charts and a planning and consulting station.

Incat's Holyman Express

(Continued from page 30)

early 1980s. The design is characterized by long, slender waterborne hulls, each subdivided by seven watertight compartments. As each hull encounters a wave, it tends to pierce through, rather

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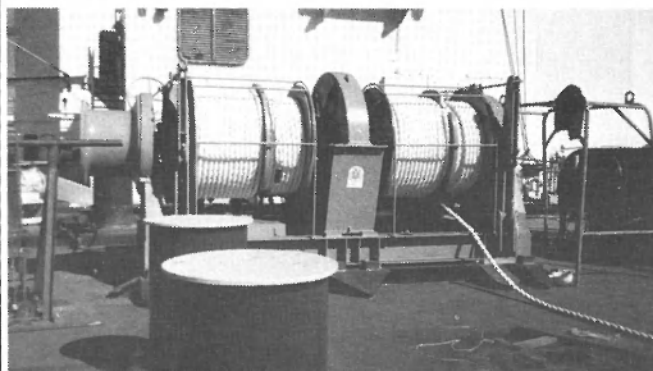
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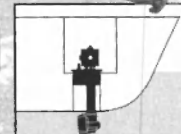
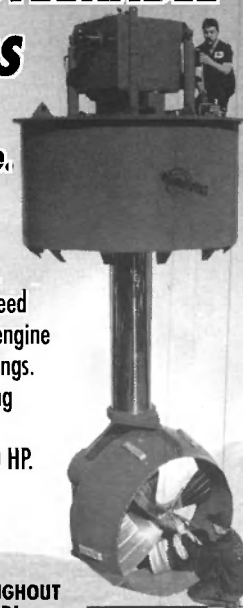
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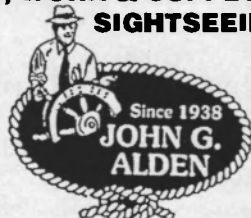
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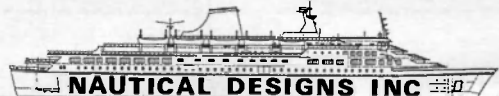
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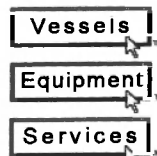
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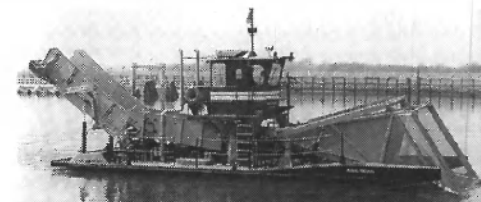
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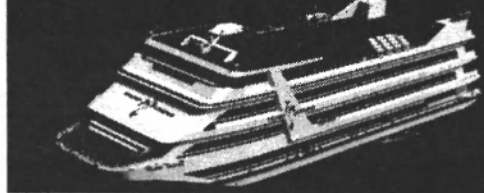
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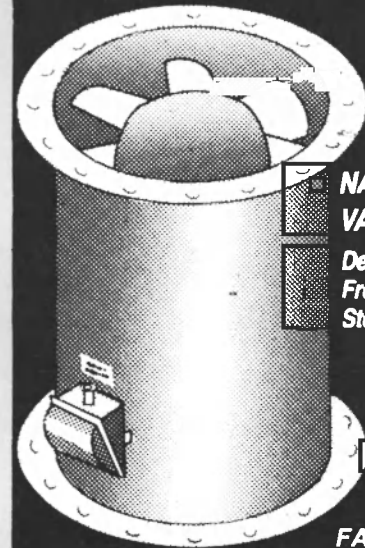
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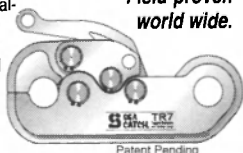
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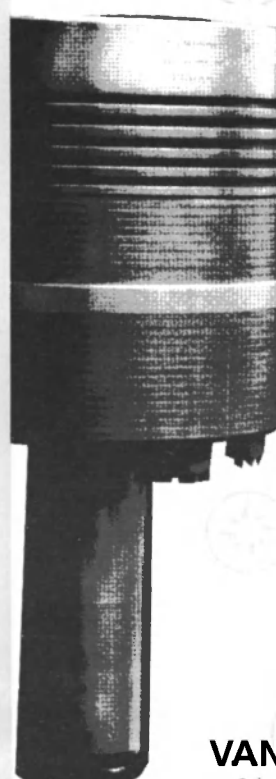
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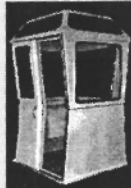
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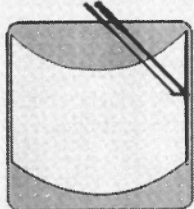


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HOUGH MARINE, Seattle, WA, 25 years as supplier to the commercial marine industry was recently acquired by Hamilton Jet of New Zealand. As the present owner/manager retires we seek a General Manager to assume full profit responsibility and provide strategic management for this established enterprise which employs 16 people. The successful applicant must have a proven record managing a company or profit center of similar (or bigger) size preferably within the marine industry. Excellent communication skills are vital because this person must have the ability to relate equally to staff, suppliers, key customers and an offshore parent. A compensation and benefits package will be negotiated to attract a candidate of the caliber described.

Send resume and salary history to:

Hamilton Hough Marine
1111 N.W. Ballard Way
Seattle, WA 98107
Attn: "General Manager" - Confidential



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Qualifications: Engineering degree with 2 - 5 years marine experience and computer literate. Individual should possess good communication and interpersonal skills, be a team player, a self starter and willing to travel.

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Qualified applicants should submit their resume by either mail, fax or e-mail to the Vice President, Sales and Marketing at NTC, 224 Fifth Ave., NY, NY 10001 - Fax 212-779-0157 or e-mail to NY!MAIN!RER@ntcgate.attmail.com



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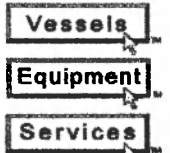
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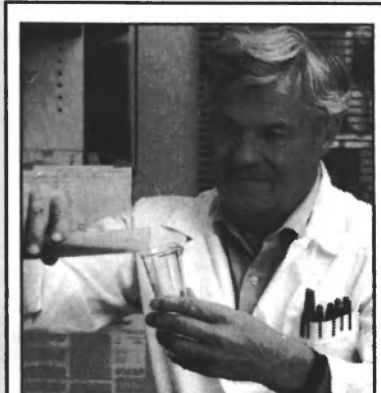
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Breadth, Main Deck:	63'-0"
Draft, Full Load:	5'-9"
Air Draft:	16'-6"
Gross Tonnage:	Less than 100 GT
Passengers:	600 passengers
Crew:	70 Crew

Propulsion Machinery: Supplied by two Caterpillar 3412 DIT "B" 540 B.H.P. at 1800 RPM diesel engines, air starting, keel cooled. The bow thruster is driven by a CAT 3116 DITA, 300 BHP @ 2800 RPM. Main engines are mounted utilizing LoRez coupling and mounting system.
Main Generators: One CAT 3412 rated @ 500 EKW @ 1800 RPM. One CAT 3408 rated @ 350 EKW @ 1800 RPM.

Air Conditioning: Two Carrier, 100 ton liquid chillers with CU/NI shell and tubes.

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