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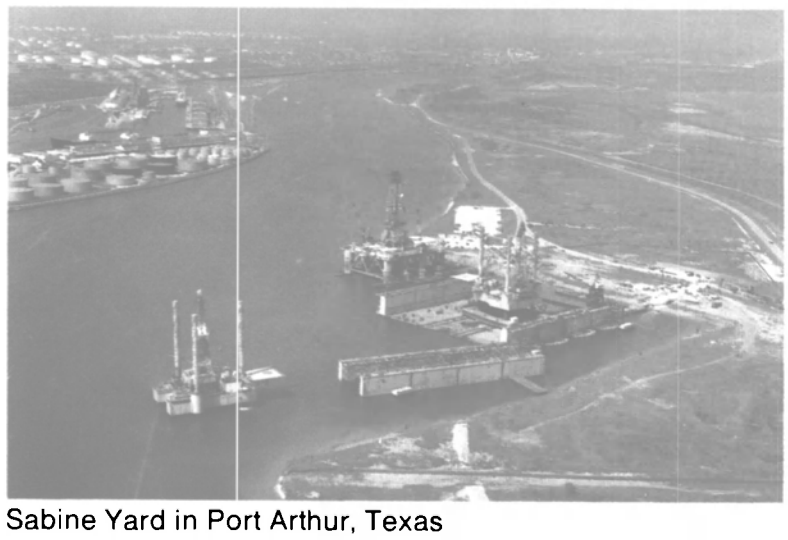
Beaumont Yard in Beaumont, Texas



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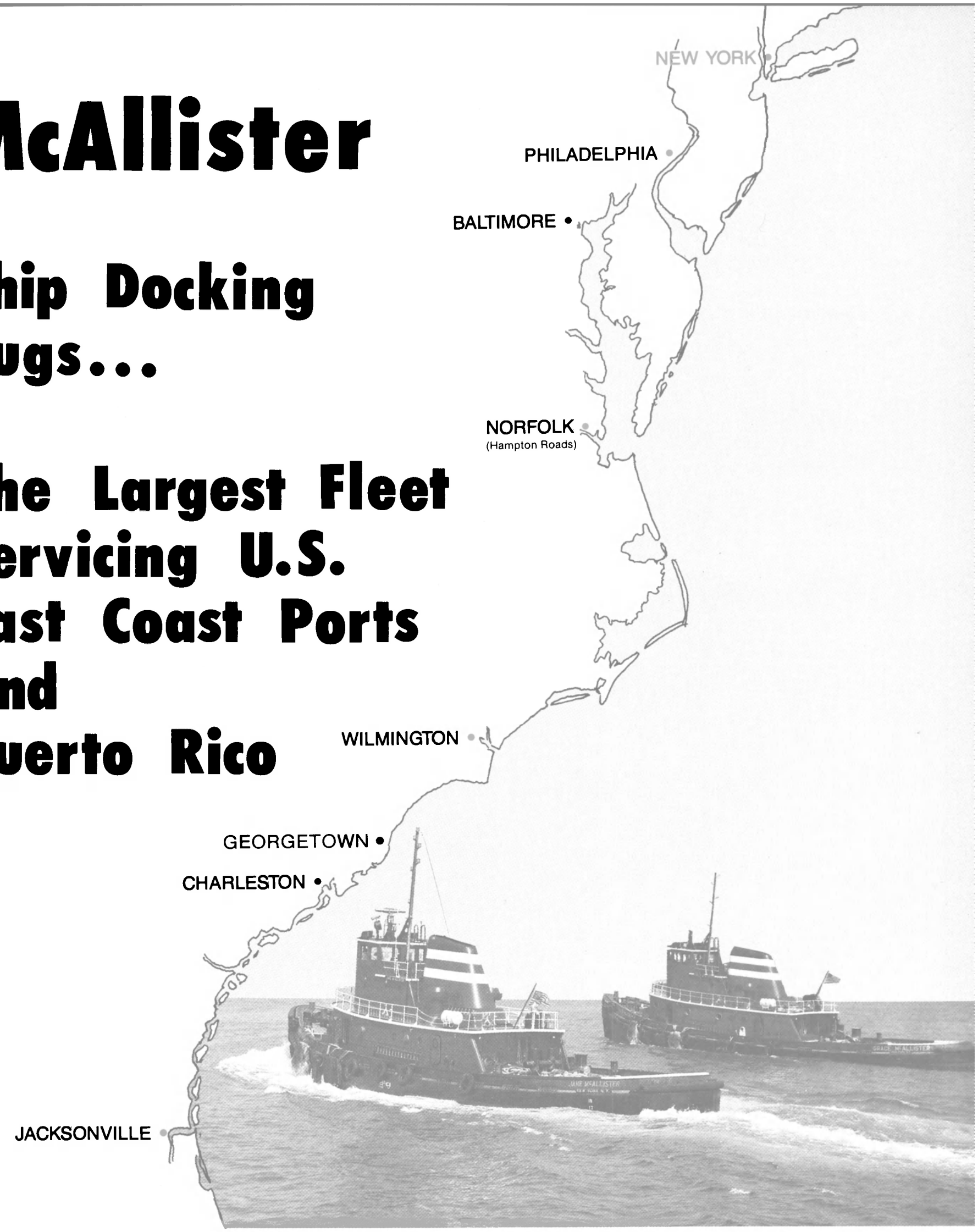

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ON THE COVER

Blount Marine To Build Another New York-Class Harbor Cruise Vessel

Cruise International (CI) of Norfolk, Va., operator of the "Spirit" line fleet of seven harbor cruise ships, has announced plans to build five New York-class vessels in the next two years. Two will be built in 1988, and three in 1989.

A contract for the first of the two has been awarded to Blount Marine of Warren, R.I., builder of the other Spirit vessels. CI plans to homeport this vessel in Los Angeles. The contract for the second vessel to be built this year is expected to be awarded soon. A special committee is evaluating port cities for assignment of Spirit vessels.

The Spirit of New York has recently completed its inaugural season carrying about 180,000 passengers. It was named an outstanding passenger vessel of 1987 by Maritime Reporter and Engineering News (January 1988 issue, page 23), and is regarded by maritime experts as one of the finest vessels of this type in operation. According to **Richard O'Leary,** president of CI, all future vessels will be of this design.

Presently nearing completion at Blount Shipyard in Warren is the seventh ship in the Spirit line, the 192-foot Spirit of Chicago, a 600-passenger sister ship to the Spirit of New York, which is scheduled to begin service in Chicago's Lake Michigan this month.

For free literature giving complete details on the facilities and capabilities of Blount Marine,

Circle 41 on Reader Service Card

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FINISH NUTS	*	*	*	*	*	*	*	*	*
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Circle 343 on Reader Service Card

Kone Fels Secures $3.6-Million Contract For Two Gantry Cranes

Kone Fels Cranes Pte Ltd, a subsidiary of Far East Levingston Shipbuilding Limited (FELS), has secured a $3.6-million contract to design and manufacture two rubber-tired gantry cranes for the Burma Ports Corporation.

The cranes will be built under license from Ferranti Container Handling Ltd of the U.K. and will be used for transferring containers between vessels alongside and trailers at the quay.

Besides the Burmese order, Kone Fels has delivered similar cranes to the Port of Trinidad and Tobago and also the Port of Singapore Authority.

For more information and free literature,

Circle 17 on Reader Service Card

Circle 266 on Reader Service Card

Circle 184 on Reader Service Card

PROPULSION UPDATE

Krupp Mak Manufactures Medium-Speed Diesel Engines For Naval Ship Applications

—Free Literature Available—

A medium-speed diesel engine designed for heavy fuel operation and low fuel oil consumption is an ideal basis for engines with the load profile for naval operations.

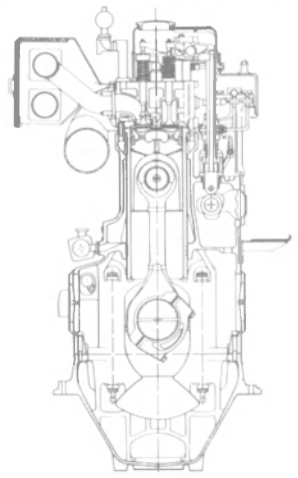
Such medium-speed engines should be designed for: continuous operation; dependability; excellent economy; heavy fuel operation; and minimum service requirement. Additionally, these engines should be compact, with a simple design and uncomplicated systems.

In turn, engines with these characteristics would be well-suited for: high shock loads; extended low load; high operational safety of both the engine and its systems; preventive maintenance; shock load safety; and low emissions.

Diesel engine manufacturer Krupp Mak, which has more than 100 years' experience in naval equipment, offers a number of medium-speed, four-stroke heavy fuel engines in the output range from 740 to 9,900 kw (1,000-13,500 hp) under the trade name Mak.

For example, Krupp Mak offers the heavy-fuel engines M453C and the M332, both of which boost low fuel consumption. The company reports that both engines feature good ratio of maximum to mean piston pressures, but a moderate, and therefore operational safe values. Additionally, the moderate engine load permits a very favorable compression ratio. The engines run very clean at low loads, partially as the result of high injection energy.

Both engines feature clean and simple construction. Through fine tuning and the use of high-grade spheroidal graphite iron casting, both engines feature excellent rigidity and thus low vibration.



Cross-section of M 453 C
In-line engine

The relatively long piston strokes are essential for Mak engines. They permit quiet running of the engine with high mechanical efficiency. The cylinder air exchange is more effective as with a short stroke engine. The engines are built for a low thermal load, in order to be suitable for heavy fuel oil operation. This will provide the highest operational safety at frequently changing loads, which are usual in naval operation. A bonus of the Mak engines' designs is an extremely clean exhaust. The marriage of nitrided cylinder liners and the all-around chromium plating of the piston rings and associated ring grooves result in extremely low wear, and consequently, excellent lube oil consumption.

Since the engines are designed for rough operation, an unusually long overall service life is expected for naval operation. Piston rings should be changed after 20,000 hours, valves overhauled at 10,000 hours and pistons and cylinder liners should have a service life approximately equal to the life cycle of the engine itself.

For free literature on the Krupp Mak M332 and M453C diesel engines,

Circle 10 on Reader Service Card

Engine Specifications

Type	M332	M453C
Bore (mm)	240	320
Stroke (mm)	330	420
Output range (kw)	1000-1500	1800-5300
Output (kw/cyl.)	167-200	330
Speed (rpm)	720-900	600
BMEP (bar)	18.6-17.9	19.7
Cylinders	6-8	6,8,9,12,16

U.S. Coast Guard Awards $3-Million Contract To Gianotti & Associates

Gianotti & Associates of Texas, Inc., Annapolis, Md., a naval architecture and marine engineering firm, has been awarded a three-year, $3-million tasking order contract to provide engineering support to the U.S. Coast Guard Research and Development Center, Groton, Conn. The contract award includes tasking in the areas of hydrodynamic analysis and simulation, structural analysis, design synthesis, reliability analysis, full scale ship/structure testing and model ship/structure testing. The U.S. Coast Guard Academy, New London, Conn., is the contracting activity (DTCG39-88-D-80638).

Product tanker Torm Margrethe will be powered by a single five-cylinder L70MCE MAN B&W diesel engine.

Burmeister & Wain Christens Eighth Product Tanker In Series

The 750-foot M/T Torm Margrethe was recently christened at ceremonies at Burmeister & Wain Skibsvaerft A/S in Copenhagen.

The single-screw tanker is the eighth in a series of Panamax product tankers, type CPT54E. She was contracted for by K/S Margretheholm, a partnership of Danish tax investors, and will be operated by the Danish shipping company Torm.

The vessel, which has a beam of 106 feet and draft of 38 feet, is equipped with one five-cylinder, two-stroke MAN B&W L70MCE diesel engine, which develops 10,900 bhp at 84 rpm MCR or 9,800 bhp at 81 rpm CSR. The engine runs a four-bladed propeller with a diameter of 7.2 m or 23.6 feet. She has an average speed of 15.1 knots at a loaded design draft/ballasted condition of 90 percent.

In her engine room, the Torm Margrethe has four auxiliary engines—two six-cylinder MAN B&W T23LH-4E diesel engines each direct coupled to a 600-kw generator and two eight-cylinder MAN B&W L28/32 diesel engines each coupled to a hydraulic pump of 1,680 kw. One is also coupled to a 1,200-kw generator.

The bridge is equipped with the most up-to-date navigation instruments such as a direction finder, radar, satellite communication system, satellite navigator, autopilot and gyrocompass. The bridge also is equipped with remote control equipment for the propulsion machinery to allow for unmanned engine room operation.

The vessel has been designed with 12 cargo tanks (six on the port and six on the starboard side). She will be capable of carrying up to 12 different oil products and chemicals at one time. She will be classed and registered as +1A1 "tanker for oil and caustic soda, COW, EO, INERT," and in accordance with the "Tanker Safety and Pollution Prevention 1978." She also will be equipped with a gas generator to pump neutral, non-explosive gas (inert gas) in the tanks to avoid the risk of explosion during loading and unloading.

For free literature on the shipbuilding facilities of Burmeister & Wain,

Circle 75 on Reader Service Card

TORM MARGRETHE
Equipment List

Main engine	MAN B&W Diesel
Auxiliary engines	MAN B&W Holeby
Boilers	Aalborg Marine
Generators	ABB Kraft
Electric motors	AEG Dansk Akts.
Radars	Krupp Atlas
Radio station	Dansk Radio
Gyro/autopilot	Aage Hempel Int'l
Remote sounding	Austronica
Bridge maneuvering system & alarm system	Søren T. Lyngsø
Cargo oil pumps	Frank Mohn
Cooling water pumps	Desmi
Purifiers	Alfa Laval Zeta
Steering gear	Porsgrunn
Windlass & mooring	Pusnes
Fire equipment	Ginge-Kerr
Fire equipment	Walter Kidde
Hose-handling cranes	MTT
Lifeboats	Fassmer
Pipelines	Ludvigsen & Hermansen
Painting of cargo tanks	Mühlhann
Painting of ballast tanks	Ole Dufour
Paints, cargo tanks	J. C. Hempel
Other paints	International Farvefabrik

Comsat Maritime Services Moves To New Address In Washington, D.C.

Comsat Corporation Maritime Services recently announced that they have moved their offices from Clarksburg, Md., to Washington, D.C., and can now be reached at the following address: Comsat Maritime Services Sales and Marketing Office, 950 L'Enfant Plaza, S.W., Washington, D.C. 20024, phone (202) 863-6567 or 1-800-424-9152, Telex 197800, Fax (202) 488-3814/3819.

Sofec Concludes Management Buyout From Vickers PLC

Sofec, Inc., headquartered in Houston, Texas, has recently concluded a management buyout from Vickers PLC. A group of six managers headed by Sofec president **Bill Kiely** completed the buyout with financial support from PacifiCorp Credit, Inc., of Portland, Ore.

Sofec is an engineering and construction company that designs, fabricates and installs specialized marine facilities for military and offshore oil operations. They currently have a large order backlog with several major projects underway for the U.S. Navy in addition to supply of a Turret Mooring System to Yemen Exploration and Production Company that will permanently moor one of the world's largest storage vessels offshore the Yemen Arab republic.

The company was formed in 1972 and acquired by Vickers in 1983.

For further information and free literature,

Circle 45 on Reader Service Card

Sea-Land Buys Last Three USL Ships; Outbid For Five Others

Sea-Land Service Inc. recently purchased the last three remaining United States Lines Lancer Class containerships at a San Francisco auction for $22.8 million. Two weeks earlier, Sea-Land had been outbid by the Puerto Rico Management Shipping Authority (PRMSA) at a New York auction for five Lancer Class vessels.

In San Francisco, Sea-Land outbid **Malcolm P. McClean,** the former chairman of the bankrupt USL, and Eastern Overseas, a New York shipbroker, that bid on just one of the ships.

The three vessels bought by Sea-Land, the American Lark, American Legion and the American Liberty, each have a capacity of 1,300 TEUs.

At the New York auction, PRMSA bought five USL Lancer Class ships for $44,125,000. Sea-Land bid $44 million for the five ships.

RO/RO 88

9th International Conference & Exhibition on Roll-On/Roll-Off Marine Transport

Gothenburg, Sweden, June 7-9

RO/RO 88, the 9th International Conference and Exhibition on through transport utilizing roll-on/roll-off (RO/RO) methods, will be held at the Svenska Massan in Gothenburg, Sweden, from June 7-9, 1988.

The central theme of the conference will be the future of the RO/RO business. Leading spokesmen from the various sectors of through transport, such as shipping, ports, carriers and regulators, will discuss a number of important issues and ideas affecting the industry during the three-day, nine-session event.

For example, **Leo Collar,** president of Crowley Maritime Corporation, San Francisco, Calif., will present "A New Dimension—Strategic RO/RO Operations in Both Hemispheres," during the conference's first session, "Markets and Trading."

During Session 3 on Wednesday, June 8, Mr. **Zanetti,** president of both the Port of Trieste and the Association of Italian Ports, will discuss "The Role of the Italian Ports in Expanding RO/RO Operations in the Mediterranean."

During Session 4, which runs parallel with Session 3, Mr. **Paro,** vice president of Diesel Technology Oy Wartsila AB, Vasa, Finland, will present "Cost-Effective and Reliable Machinery Concepts for RO/RO Vessels."

The nine sessions that will be presented during the conference are: "Marketing and Trading"; "In Four Years the European Trade Barriers Come Down"; Port Futures—Emerging and Expanding"; "Stevedoring and Lashing"; "Ship Design and Efficiency"; "Volume RO/RO—Car Trades and Forest Products"; "RO/RO Terminal Developments"; "Rail Traffic"; "Ship Survivability"; and "Forklift Trucks and Terminal Tractors."

A well-established feature of the RO/RO event is its large exhibition, which will provide attendees and exhibitors an excellent opportunity to meet face-to-face and explore business ventures. About 100 exhibitors will be on hand representing a number of sectors from RO/RO handling, shipping lines, ports, marine machinery and equipment.

The City of Gothenburg and its port will be the hosts for the RO/RO 88 social events. On Wednesday evening, June 8, a special gala reception and dinner will be hosted by the Port of Gothenburg aboard one of the Stena Line super ferries sailing between Sweden and Denmark.

On Thursday, June 9, there will be an opportunity for delegates to join a guided tour of the Port of Gothenburg's facilities. A post-conference tour on June 10 will visit a Volvo production line at one of the Group's most modern factories.

For additional information on registration and attendance, contact: The Secretariat, 2 Station Road, Rickmansworth, Hertfordshire, U.K. WD3 1QP; telephone: Rickmanworth (0923) 776363; fax: (0923) 777206; and telex: 924312.

RORO 88 PROGRAM & TOURS

Tuesday, June 7

09.00 Conference Registration Opens

09.00 RORO Exhibition Opens

12.00 PGS Warm Welcome Reception

14.00 RORO Conference Opens

Session 1: Markets and Trading

"Global Liner Traffic—A Current and Future Analysis of Routes, Commodities and Cargo Flows," **M. Sclar,** vice president, Temple, Barker & Sloane Inc.

"Changes on the Atlantic—RORO Provides the Cutting Edge," **G. Hasse,** president, Atlantic Container Line.

"A National Carrier Looks to the Future," Dr. **Saad A. Al-Ghamdi,** chief executive, National Shipping Company of Saudi Arabia.

"A New Dimension—Strategic RORO Operations in Both Hemispheres," **L. Collar,** president, Crowley Maritime Corporation.

"Brazilian Through Transport—The Way Ahead for Shipping and Ports," **R. Klien,** owner, Transroll Navegacao SA.

"Can the West European Shipowner Avoid Flagging Out to Remain Competitive?" **P. Smith,** manager-shipping policy, Swedish Shipowners Association.

Session 2: In Four Years the European Trade Barriers Come Down

"EEC Shipping Policy and Future Priorities," **N. Turns,** principal administrator, EEC Council Secretariat.

"The Next 5-10 Years of Through Transport—Who Will Succeed?" **P. Rosendal,** managing director, International Transport Advisers.

Gothenburg's Svenska Massan, conference and exhibition center, and the Sara Gothia Hotel will be headquarters for RO/RO 88.

"Use Not Ownership for Intermodal Efficiency," **J. Cleary,** chairman, TIP Europe plc.

"The Through-Transporters View—Post-1993," **G.P. Cave-Wood,** chairman, Cave Wood Transport Ltd.

18.30 Welcome Reception from the City of Gothenburg in the City Hall (Borsen) Gustav Adolfs Torg

Wednesday, June 8

09.00 Session 3, Part 1: Port Futures—Emerging and Expanding (parallel with Session 4)

"Today's Reality Versus Yesterday's Dream—At Changes in Third World Ports," **G. de Monie,** director, Antwerp Port Engineering & Consulting (APEC).

"The Role of the Italian Ports in Expanding RORO Operations in the Mediterranean," **M. Zanetti,** president, Port of Trieste and president, Association of Italian Ports.

Session 3 Part II: Stevedoring & Lashing (parallel with Session 4)

"Stevedoring for High Volume Ferry Traffic—Rolling/Containers/Rail," **B. von Gerber,** operations manager, Port of Stockholm.

"New Cargo Handling Methods—Ro-Lux and More," **L. Arminen,** development manager, Steveco, Kotka and Hamina.

"Safe Packing and Securement of Cargo in Freight Containers and Vehicles," A new film introduced by: **R. Bacon,** technical coordinator, Videotel Marine International Ltd.

"The Lashing Problem Continues Because the Weak Links Are Still There," Capt. **H. Stradt,** marine surveyor, Allcargo Hafendienstleistungen GmbH.

"IMO Code of Safe Practice for Stowing and Securing Cargo," **S. Felding,** International Maritime Organization (IMO).
Panellist: Capt. **H. Wasser,** mänager, Gerd Buss Afrika Terminal (Handling RORO Services of POL to Australia and the Mediterranean and Hoegh to West Africa).

09.00 Session 4: Ship Design and Efficiency (parallel with Session 3)

"New Catamaran RORO Design for Norwegian Coastal Service—A Breakthrough in Hull Design," **J. E. Wahl,** director, IKO Logistikk AS.

RORO Conversions: Economic Ways to Increase Capacity and Improve Profitability—Featuring Case Study of Tor Line's Conversion of the Oden Vessels," **O. Fastesson,** managing director, Tor Line AB and **J. Christensen,** managing director, FKAB.

"Flexibility in Ship Tailoring and Management Provides Many RORO Solutions—A Presentation on the Multipurpose Use of the Searunner Class," Speaker to be announced, Stena AB.

"Cost-Effective and Reliable Machinery Concepts for RORO Vessels," **D. Paro,** vice president, Diesel Technology Oy Wärtsilä AB.

Lunch for Registered Conference Delegates

NB: During the afternoon of Wednesday, June 8, there will be an opportunity for interested delegates to join a conducted tour of the Gothenburg Port facilities.

14.30 Session 5: Volume RORO—Car Trades and Forest Products (parallel with Session 6)

"Preparing for the Future—New Ships and New Opportunities," **O. Larsen,** managing director, HUAL Hoegh-Ugland Autoliners A/S.

"Forest Products: Economic Comparison Between STORO and RORO Handling—Bulk Return Cargoes—Future Developments," **T. Grandell,** technical manager, Transfennica Corporation.

"Changes in the Car Carrier Market," **H. Munthe,** vice president-marketing, Wallenius Lines.

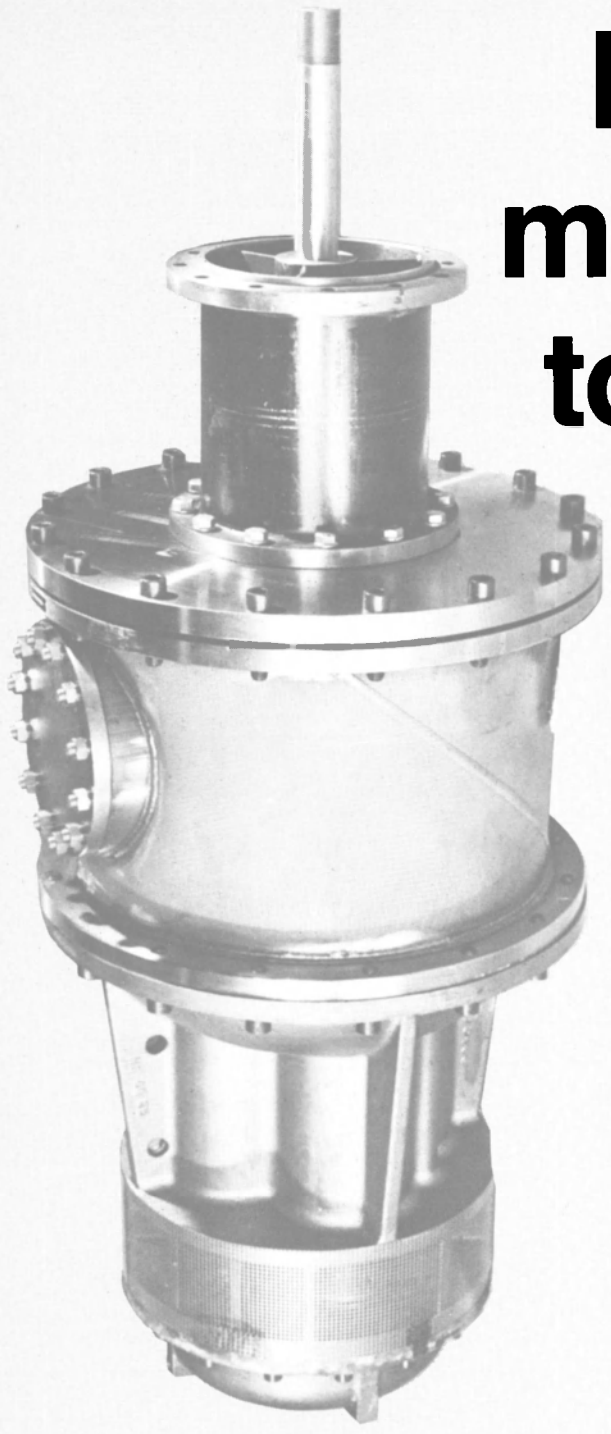
"Auto Industry Uses Floating Motorway—Inland and Shortsea RORO from Factory-to-Distributor," Speaker to be announced, E.H. Harms & Co.

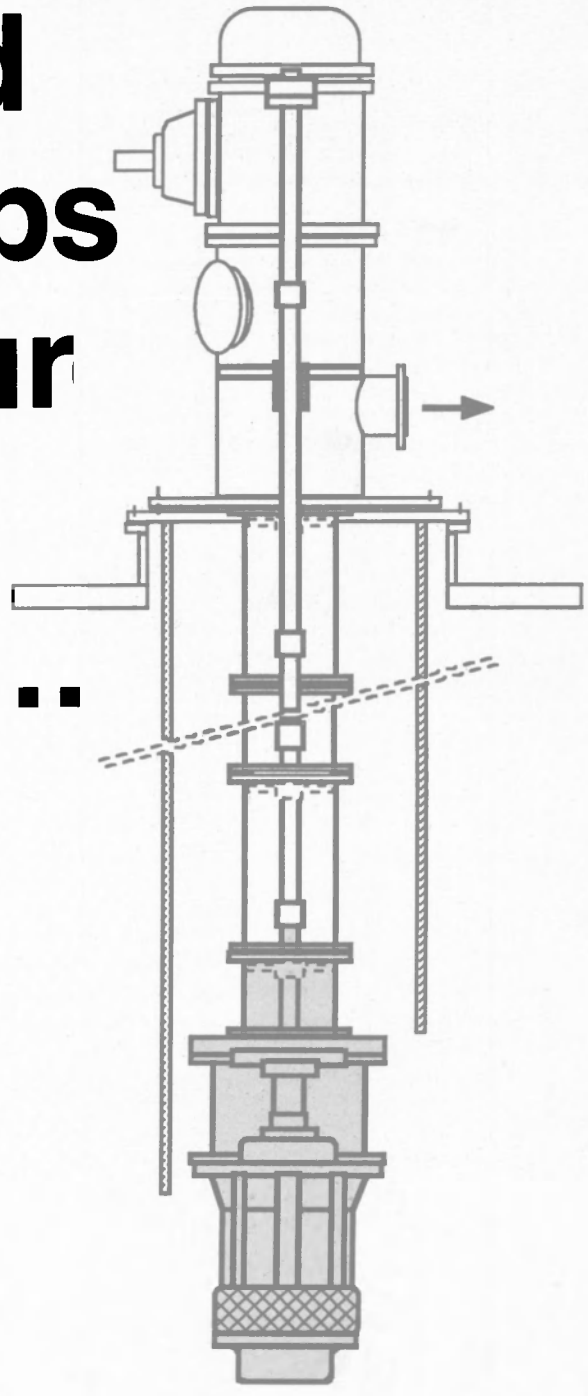
14.30 Session 6: RORO Terminal Developments (parallel with Session 5)

"A Cost-Conscious Solution for Ramp Access While Berthed Conventionally," Capt. **H. Schmiedeberg,** operations manager, Gerd Buss.

(continued)

Engineered marine pumps to solve your special problems...





The Leistritz five-rotor, single-flow screw pump on the left was specially designed to unload asphalt and #6 fuel oil from an ocean-going barge.

The pump is one of two we designed and built for an East Coast barge operator. These pumps, each with a capacity of approximately 5000 BPH, are the largest of their type ever installed aboard a U.S. vessel.

The diesel-driven pumps operate at 145 PSIG, at a viscosity of 3000 SSU and temperatures to 340° F.

The entire pump assembly, including the column assembly and discharge head, is shown in the skematic at right.

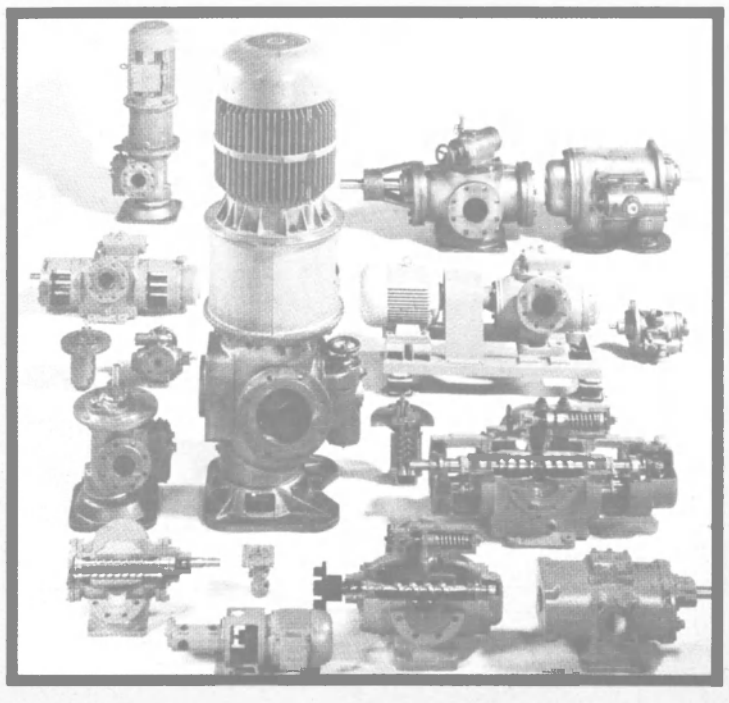
plus a full line of standard units.

While engineering and manufacturing marine pumps to solve all kinds of fluid-handling problems has been a Leistritz specialty for more than 60 years—we make a full line of *standard* pumps, too.

The line includes two, three and five-screw pumps for lube-oil service, fuel-oil service, hydraulics, sludge handling, cargo loading and unloading. And these pumps serve both shipboard and offshore applications worldwide.

So whether you have a special pumping problem to be solved, or an application that a standard pump can handle, you can count on Leistritz for a pump design that will—without compromise—meet your exact pumping requirements. And at the same time, you'll get the quality, reliability and efficiency that Leistritz is known for.

To find out more about Leistritz pumps and services for the marine industry, call Sven Olson at 201-934-8262, or write Leistritz Corporation, 165 Chestnut Street, Allendale, New Jersey 07401.



Leistritz

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(continued)

"Experiences from the World's First Openwater Linkspan—17 Ships/Day—No Stevedoring—RORO/Ferry Traffic," **J. Rose,** managing director, Marine Development, Dunblane, Scotland.

"A RORO Future for Old Quays and Port Facilities—in Western and Third World Situations," **N. Nixon,** managing partner, Nigel Nixon Knapton & Partners.

"The Development of Shoreside RORO Structures," **A. Masters,** associate, Posford Duvivier.

16.30 Session 7: Rail Traffic

"Operating the World's Largest Railships Between Germany and Finland—Is Big the Best for Long Distance Routes?" **R. Heinecke,** managing director, Railship GmbH & Co.

"Marketing Opportunities for Through Rail Transport—Reduced Inventory—Hazardous Cargoes—But How Competitive After 1992," Speaker to be announced, Deutsche Bundesbahn.

Wednesday Evening Reception and dinner hosted by the Port of Gothenburg aboard one of the Stena Line super ferries sailing between Sweden and Denmark.

Thursday, June 9

09.30 Session 8: Ship Survivability (parallel with Session 9)

"Survival Capability Class: Increased Safety But Does It Destroy the RORO Concept?" **S. Rusas,** principal surveyor, Det norske Veritas.

"Risk Management for RORO Cargo Ships," **J. Spouge,** consultant, Technica Ltd.

"RORO Ship Survivability: Comments on Damage Stabilty Modelling," **D. Boltwood,** senior surveyor for damage stability, International Conventions Department, Lloyd's Register of Shipping.

"The New SOLAS Amendments—Agreed and Possible," **S. Felding,** International Maritime Organization (IMO).

"Practical Solutions to Improved Survivability of RoRo Ferries," **D. Byrne,** technical manager, MacGregor-Navire (UK) Ltd.

"Putting a Lifebelt Around the Ship," **E. Vossnack,** consultant, Hook of Holland.

Session 9: Forklift Trucks and Terminal Tractors (parallel with Session 8)

Panel Workshop Discussion

B. Bender, president, Ottawa Truck Corporation.

P. H. Lindberg, vice president, Sisu Terminal Systems.

H. Bendel, director, Lansing Bagnall AG.

(Panellist to be announced), Kalmar LMV.

R. Cheek, vice president-marketing, Valmet Materials Handling Ltd.

(Panellist to be announced), PGS SpA.

12:45 Close of RORO Conference

13.00 Lunch for Registered Conference Delegates

NB: during the afternoon of Thursday, June 9, there will be an opportunity for interested delegates to join a conducted tour of the Gothenburg Port facilites.

Friday, June 10 (morning)

Post-conference visit to Volvo production line to see the latest range of cars being constructed.

Post-conference visit to Swedish Maritime Research Centre SSPA, Gothenburg.

Friday, June 10

Gothenburg/RORO Golf Tournament 18-hole competition followed by lunch. Entry details will be enclosed with delegate receipts.

Wednesday, June 8/Thursday, June 9

The Port of Gothenburg by Motor Launch—Optional tour for interested delegates on Wednesday and Thursday.

14.30 Depart by coach from Svenska Mässan.

14.50 Board launch to see: Floating parts of Gothenburg Maritime Museum; Fruit and Coffee Terminals; Railferry Terminal; Volvo Car Terminal; Gothenburg's Golden Gate Bridge; Oil and chemical harbours; Skandia/Alvsborg harbours; ACL/RoSA/Bore/Tor/DFDS; and Stena Ferry Terminals.

16.30 Disembark launch.

16.50 Coach arrives at Svenska Mässan.

Friday, June 10

Visit to the Swedish Maritime Research Centre, SSPA, Gothenburg

09.30 Depart by coach from Svenska Mässan.

09.40 Study tour of facilities of the Centre including: large ship model basin; cavitation tunnel; maritime dynamics laboratory; ship maneuvering simulator; and ballast simulator.

The resources of the Centre are also of interest to Port and Canal Authorities, as it provides studies for fairways, ports and port approaches. Experience in naval and offshore projects will also be shown to interested delegates if requested.

11.45 Coach arrives at Svenska Mässan.

Friday, June 10

Robotic Car Production—A Visit to Volvo

10.00 Depart by coach from Svenska Mässan.

10.25 Arrive Volve Factory: Audio visual presentation Volvo Corp.; Board the "Blue Train"; Pressing Plant; Body Shop; Robot Factory; and Final Assembly, 240 and 740 Car Series.

12.30 Coach arrives at Svenska Mässan.

RO/RO 88 Exhibitors

Ancra Marine
Associazione Porti Italiani
Auramo
Begner
Bloxwich Engineering
Bonnier Int. Transport System
Bore Line
British Marine Equip. Assoc.
Brax Shipping
BT Svenska
BT Terminal Equipment
Buffers
Capacity of Texas
Cargo Equipment
Cargo Safe SOE
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Container Management
Danyard
DIFT Port Management
Elastogran
Fairplay Publications
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Fosroc
George Blair
Gerd Buss
Good Success
Gorthon Lines
Goteborgs Truckservice
Intering
Intermodal Oy
International Freighting Weekly
Jeppson Band
Journal de la Marine Marchande
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Ottawa Truck Corporation
Oy Sisu Auto
PGS
Planmarine
Port Development International
Port of Bristol
Port of Cherbourg
Port of Gothenborg

Port of Hanko
Port of Helsingborg
Port of Rotterdam
Port of Sodertalje
Port of Stockholm
Port of Turku
Port Ramsgate
PZ Shipping
Rautaruukki Oy
Reliance Mercury
Scandinavian Cargo Sea
Scandinavian Shipping Gazette
Seaport Terminals Rotterdam
Seasafe Transport
Stena
Svenska Lock-Tainer
SveTruck
Terberg Benschop
Thos. Storey (Engineers)
TH Transport & Hantering
Tor Line
Trailmaster Trailers
Transatlantic
Transport Nytt
Transport Teknik
Transtema
Valmet Transportation Equipment
Viking Line Cargo
Volvo Penta
Wallenius Lines
Wallhamn Terminal
Wiking Leasing
Zeebrugge Port Authority

Moran Towing Appoints Larson As Controller

Robert E. Larson

Thomas E. Moran, CEO and chairman of the board of Moran Towing Corp., Inc., recently announced the appointment of **Robert E. Larson** as controller of the company. Mr. **Larson** will report to **Lee R. Christensen,** vice president of finance, and will be based at the headquarters office in Greenwich, Conn.

Mr. **Larson** comes to Moran with an executive background in financial management covering 18 years. Before joining Moran, he was associated with the Hartford Insurance Group, Continental Can Company and Price Waterhouse. He received his undergraduate degree from Hofstra University, holds an MBA from New York University and is a certified public accountant.

ITW Philadelphia Resins Offers Color Brochure On Grouting Systems

ITW Philadelphia Resins of Montgomeryville, Pa., has published a six-page full-color brochure on Chockfast Grouting Systems for machinery installation and foundation repair.

Permanent alignment of gas-engine compressors, electric generators, diesel engines, pumps, fans and other rotating and reciprocating equipment is assured with high-performance chocking, grouting and foundation repair systems. These fully engineered, conveniently pourable, epoxy resin systems are used to support and permanently align all classes of industrial and marine equipment from the largest prime movers to the smallest acid pumps.

ITW Philadelphia Resins' new full-color brochure contains detailed illustrations; a list of features, advantages and benefits, including precise contact with as-cast bedplates (costly machining is not required); and basic information in a question-and-answer format.

For a free copy of Chockfast Grouting Systems from ITW Philadelphia Resins,

Circle 21 on Reader Service Card

Gould Sells Ocean Systems Unit

Gould Inc. has sold its Cleveland-based Ocean Systems Division to Westinghouse for a reported $100 million. At present, the division produces undersea weapon systems for the U.S. Navy.

Mizell Named Vice President-Sales At Trinity Marine Group

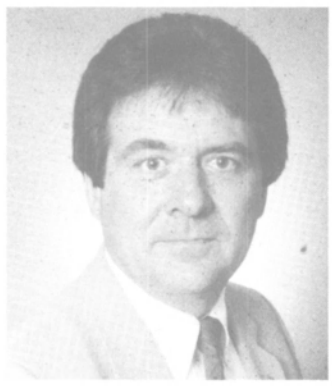
According to a recent announcement by **John Dane III,** president of Trinity Marine Group of New Orleans, **Sidney J. Mizell** has joined the group as vice president-sales.

In making the announcement, Mr. **Dane** said that Mr. **Mizell** will be responsible for domestic sales and marketing for the four shipbuilding and repair companies of the Trinity Marine Group, which is owned by Trinity Industries, Inc. The four shipbuilding companies are: Halter Marine, Inc.; Moss Point Marine, Inc.; Equitable Shipyards, Inc.; and Gretna Machine and Iron Works, Inc.

Mr. **Mizell,** who joined Halter Marine Services, Inc., in 1972, served as its vice president, sales from 1978 to 1979. He resigned to co-found Champion Shipyards in Pass Christian, Miss., where he became vice-president and general manager.

For the past two years, he has served as a management consultant to Moss Point Marine, Inc., on the construction of four U.S. Army, 272-foot Logistic Support Vessels (LSV) in a $40.7-million contract.

Mr. **Mizell,** who holds a B.S. in Science from Southeastern Louisiana University, was also associated with Litton Ship Systems in Pascagoula, Miss., and the Boeing Company in New Orleans.



Sidney J. Mizell

The group's six shipyards are: Halter Marine's facilities at Moss Point, Miss., and Lockport, La.; Moss Point Marine, Inc., in Escatawpa, Miss.; Equitable Shipyards, Inc., in New Orleans and Madisonville, La.; and Gretna Machine and Iron Works, Inc., in Harvey, La.

For free literature on the Trinity Marine Group's shipyards and their services,

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Versatile Pacific Wins Contract To Drydock Sea-Land Containerships

Versatile Pacific Shipyards, Inc., of Canada has been awarded a contract by Sea-Land Service, Inc., to perform container guide modifications and drydock two former United States Lines' containerships, the American Washington and American Illinois.

The two recently purchased ships, which have been renamed the Sea-Land Performance and Sea-Land Quality, respectively, are 950 feet long with beams of 106 feet.

The Victoria Division of Versatile Pacific is performing the work on the two ships utilizing a graving dock at Esquimalt.

For free literature on the shipbuilding and ship-repairing facilities and capabilities offered by Versatile Pacific,

Circle 27 on Reader Service Card

Aeroquip Offers AQP® Hose Bulletin

Thirteen different hose styles constructed of Aeroquip Corporation's patented AQP elastomer are the subject of Aeroquip Bulletin 5978A.

AQP hose styles offer a superior operating temperature range of up to +300°F with straight petroleum base oils.

AQP hose is compatible with virtually every type of hydraulic fluid, lubricating oil and fuel at both high and low temperature extremes. AQP hose resists oxidation, the effects of ozone and other industrial contaminants.

Complete information about the Aeroquip family of AQP hose, including data on Aeroquip reusable, crimp and Socketless™ fittings can be found in Bulletin 5978A. For a free copy,

Circle 44 on Reader Service Card

Authors shown during the Port Engineers' Fort Schuyler Forum are (L to R): **Paul Byrne,** Electrocatalytic,; **William F. O'Brien Jr.,** P.E.; and **Albert R. Nolan,** Drew Ameroid Marine. Others presenting papers at the forum included **Hector G. Ballester,** Ameron Fiberglass Pipe Group, and **Garrick E. Louis,** adjunct professor of chemistry, SUNY Maritime College.

Society Of Marine Port Engineers Holds 36th Annual Forum—Five Technical Papers Featured

The Society of Marine Port Engineers, New York, N.Y., recently held its 36th annual Fort Schuyler Forum at the SUNY Maritime College campus in the Throgs Neck section of the Bronx in New York City.

The theme of the forum was "Corrosion Materials and Material Protection," and five technical papers were presented as follows: "Principles of Corrosion," by **Garrick E. Louis,** adjunct assistant professor of chemistry, SUNY Maritime College; "Corrosion Resistant Metals for Marine Applications," by **R. W. Ross,** Nickel Development Institute; "The Five Year Drydock and Electrochemical Control," by **Paul Byrne,** Electrocatalytic, Inc.; "Soft Coating Ballast Tank Corrosion Protection," by **William F. O'Brien Jr.,** P.E., and **Albert R. Noland,** Drew Ameroid Marine Division of Ashland Chemical Co.; and "Fiberglass Piping Systems for Marine Applications," by **Hector G. Ballester,** Ameron Fiberglass Pipe Group.

Marine Ladders Of 'Surlyn' HP Cut Costs, Offer High Performance

For many years hardwood ladders were used to board pilots onto the ships they would steer into port. But the expense and availability problems of these woods have forced manufacturers to find a replacement.

Du Pont's "Surlyn" HP ionomer resin was the simple solution for A.L. Don, a manufacturer of marine ladders in Matawan, N.J. Today, the company produces Coast Guard-approved pilot and debarkation ladders using steps of the resin molded by Rodgard Corporation of Buffalo, N.Y. The president of A.L. Don said: "The ladders have been a tremendous success. In 1986, we sold 647 to the U.S. Navy, with more on order, and they're becoming increasingly popular with merchant ships, as well."

The ladders range from 10 to 110 feet long. According to Du Pont, "Surlyn" HP offers broad temperature, weather and chemical resistance, as well as excellent stiffness properties, and are a cost-effective replacement for hardwood ladders.

For more information and free literature on marine ladders of "Surlyn" HP,

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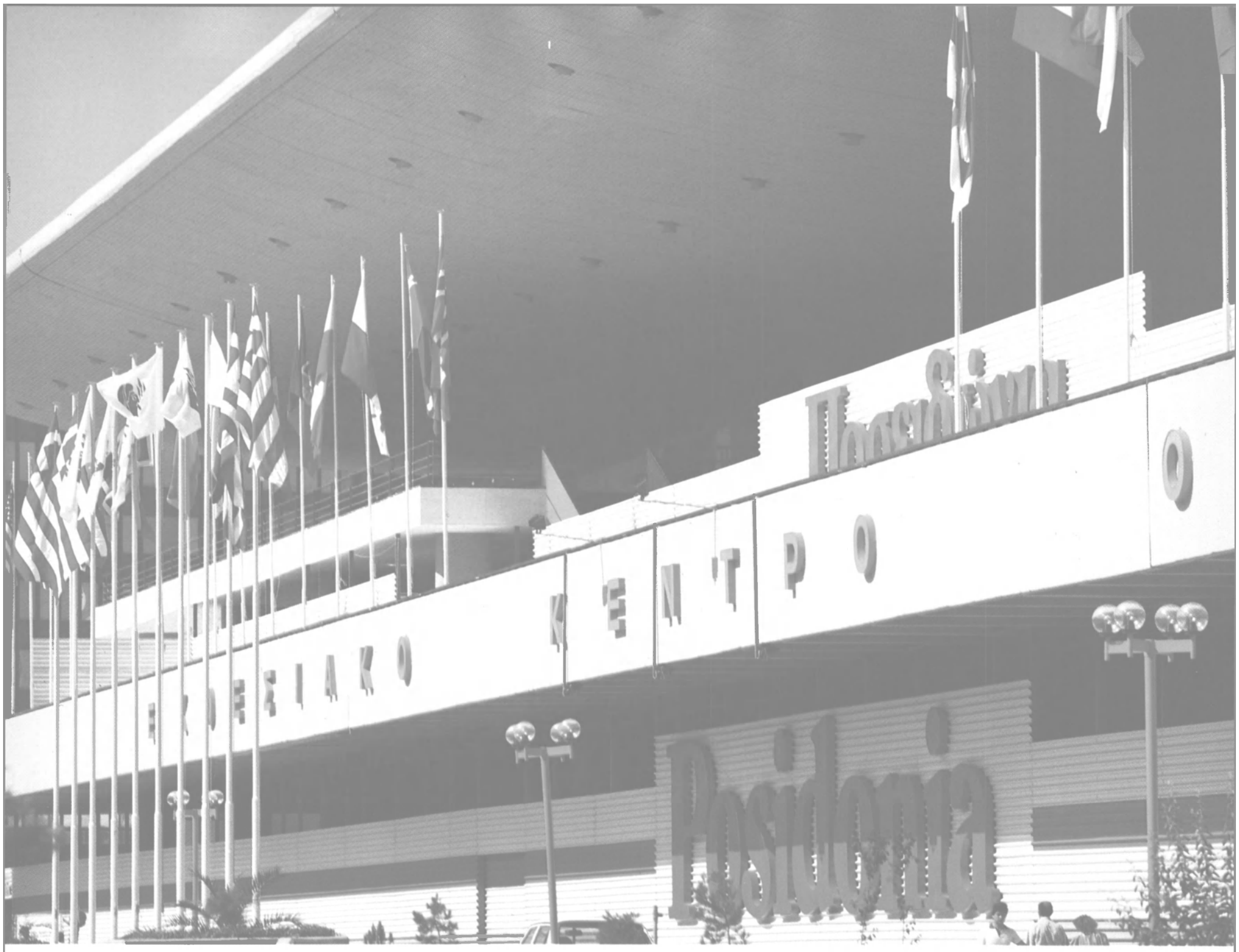

Piraeus 6-11 June 1988

Posidonia

The International Shipping Exhibition

Posidonia 88, the biennial international shipping exhibition, will be held at the Piraeus Exhibition Center in Piraeus, Greece, from June 6-11, 1988.

The week-long Posidonia exhibition, which includes the Posidonia Forum, draws marine industry leaders from around the world. Typically, exhibitors have included shipping companies, port authorities, shipbuilders and ship repairers,ship products and services, engine manufacturers, cargo-handling equipment manufacturers, engine room machinery makers, shipping agents, maritime consultants, navigation and communications equipment manufacturers, marine paint suppliers, ship classification societies, towing and salvage equipment suppliers, etc. This year, more than 650 companies from 45 countries will be exhibiting. This eclipses the Posidonia 86 total of 620 exhibitors from 49 nations.

Launched in 1964, the Posidonia exhibition was first held in the Zappeion Palace in Athens. Posidonia 88, the 11th of its kind, is being held in the newly refurbished Posidonia Exhibition Center. This year's exhibition marks the 7th time it has been held at the Exhibition Center.

Posidonia 88 is being sponsored by the Hellenic Chamber of Shipping, the Union of Greek Shipowners, the London-based Greek Shipping Cooperation Committee, the Union of Mediterranean Cargo Vessels' Shipowners, the Shipowners' Union of International Lines, and the Association of Greek Passenger Ships.

Evangelos Giannopoulos, the Minister of Mercantile Marine in Greece, will open the Posidonia Forum, along with **Stathis Gourdomichalis,** president, the Union of Greek Shipowners (UGS). Mr. **Gourdomichalis** will chair a discussion on issues affecting the future of international shipping. The Athens Intercontinental Hotel will be the site of the Forum on June 9. The event is open to Posidonia ex-

hibitors and leaders from the shipping industry who have been invited by the exhibition organizers.

Other keynote speakers at the Posidonia Forum, which is an integral part of the Posidonia Exhibition, are **George Anastassopoulos,** chairman of the Transport Committee of the European Parliament, **Basil Papachristidis,** INTERTANKO chairman, and **Andrew G. Spyrou,** the former technical director of the Onassis Group.

Posidonia 88, like its predecessors, will once again be an important event, with few equals on the shipping calendar. It is one of the few times when so many shipowners and marine product and service suppliers are in one location.

The Greek-flag fleet accounts for one-third of the total cargo-carrying capacity of the European Community, and for over 10 percent of all dry bulk tonnage worldwide. If Greek-operated vessels under other flags are added in, then Greeks directly or indirectly control an estimated 44 million gross tons, or substantially over 10 percent of the total world merchant tonnage of all types. Therefore, without exaggeration, Greek shipping could be described as a billion dollar market. Every two years, Posidonia offers an excellent opportunity to tap this huge market.

For more information on Posidonia 88, contact: Posidonia Exhibitions Ltd., 4-6 Efplias Street, GR-185 37 Piraeus, Greece; telephone: (01) 4517859, 4517868; and telex: 241937 EXPO GR. Their representative in the United Kingdom is Seatrade, Fairfax House, Colchester C01 1RJ; telephone: (0206) 45121; and telex: 98517 DISOP G.

POSIDONIA 88
Exhibitors

ABN-Bank
ABS
AMVER
Ancona, Chamer of Commerce of
Aerospatiale
Aircargo International
Alexandra Towing
Alfa Laval
Allaire
American Bureau of Shipping
American Hellenic Chamber of Commerce
Angelos (Hellas) Marine Services
B Anagnostopoulos
Anschutz
Astilleros Espanoles
Auxitrol
BIMCO
Bartels & Luders
Belzona Marine Engineering
Blohm & Voss
N Bogdanos
D A Borbilas
Boship Management
Boston Fuel Transportation
Bremer Vulkan
Bureau Veritas
British Marine Equipment Council
CCF
Camrex Coatings
Candia
Caravel
Centromor
Chantiers de l'Atlantique
Chios Maritime
Chugoku Marine Paints
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Comsat
Consortium, Port of Genoa
Consortium, Port of Naples
Cukurova
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Deeberg-Systeme
Denis Ganassoulis
Despina Maritime
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Deutsche Schiffsbeleihungs-Bank
Diesel Power Holland
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A Dombros
Doxiadis Bros Graphotechniki
Drew Ameroid International
Duvalco
Eko Abee
Elo-matic
Elenava
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Environmental Protection
Envirovac
Esgard
Eureka Chemicals
Fairey Marinteknik (UK)
Far East Levingston
Fekete & Co
Fina Hellas
Fincantieri
Fisher Marine Communications
The Gambia
Germanischer Lloyd
German Shipbuilding and
Ocean Industries Assoc.
German Machinery and
Plant Manufacturers Assoc.
Gorizia, Chamber of Commerce of
Gulf Air
Harris Pye Marine
Hellenic Coastal Lines
Hellenic Mutual War Risks Assoc.
Hellenic Industrial Development Bank

(continued)

Shipyards

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Fax: (34-56) 27 83 62
25 68 28
Telex: 76021 ASTIL E
76153 AVEN E

Sevilla
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Fax: (34-54) 45 76 59
Telex: 72345 ASTIL E

Bilbao
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Fax: (34-4) 496 49 76
Telex: 31519 AERS E

Santander
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Fax: (34-42) 54 00 26
Telex: 35810 ASSA E

ASTANO Ferrol
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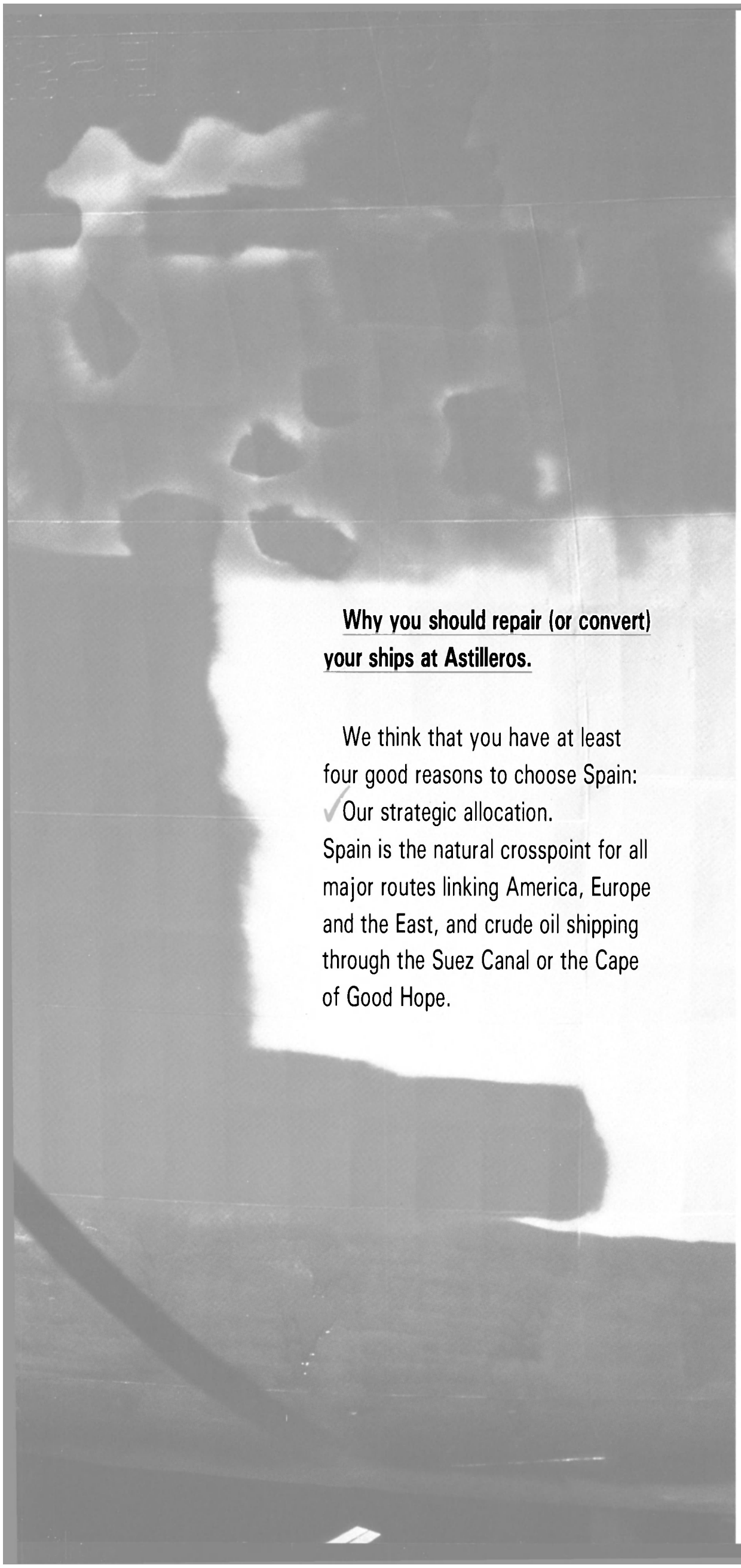
Fax: (34-81) 34 09 54
(34-81) 34 32 52
Telex: 85507 ASTAN E
82381 ASTAN E

ASTICAN
Canary Islands
Telf.: (34-28) 27 32 66
Fax: (34028) 26 48 07
Telex: 95147 ASVAS E
96502 YARD E

The Shipbuilders of Spain



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Posidonia Ποσειδώνια
The International Shipping Exhibition
Piraeus, 6 – 11 June 1988

Posidonia 88

(continued)

Hellenic Marine Environment Protection Assoc. (HELMEPA)
Hellenic Offshore Racing Club
Hellenic Shipyards
Hitachi Zosen
Hitachi Zosen Singapore
Port of Houston
Hyundai Heavy Industries
IMCO Hellas
Inham-Refrigeration
Inmarsat
Inter American Life Insurance
Institute of Marine Engineers
Intelmar Electronics
Intertanko
Intertrade Industries
Ippocampos-Hoursoglou
Ishikawajima-Harima Heavy Industries
Italian Institute for Foreign Trade
Jadranbrod
Japan Ship Exporters' Association
Journal de la Marine Marchande
Jurong Shipyard
Kawasaki Heavy Industries
Keppel Shipyard
Kelvin Hughes
BV Kon Mij De Schelde
Koraboimpex
Krupp Atlas Elektronik
Latina, Chamber of Commerce
Liberian Services (GR)
Lincoln Diesels
Link Maritime Enterprises
Linkleters
Lisnave
Lloyd's Register of Shipping
Lloyd Werft Bremerhaven
Loucas G Matsas
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Rome, Chamber of Commerce of
Royal BAnk of Scotland
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Sakiotis/Sael Marine Electronics
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The Salvage Association
Sasebo Heavy Industries
Schiffscommerz
Schichau Unterweser
Selmar Electronics
Sembawang
Shell Company (Hellas)
Sigma Paints Hellas
Simpson Spenoe & Young
SpecTec Consult
St John Ambulance
Stretex
Sudoimport
Sumitomo Heavy Industries
Sun Light Agency
Sulzer Brothers
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Technical Comm.
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Van Der Host (Singapore)
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Vecom
Vesta
Watercraft Hellas
Waterman
Wijsmuller Salvage
Wilton-Fijenoord
Witherby
The Wolfson Unit
Yeow Kong Electrical
YVC Bolnes
Zihni Group of Companies

ELECTRONICS UPDATE

Sperry Marine GPS Core Module And 501TR/GPS Navigator Offer Reliable, Accurate Performance

—Free Literature Available—

Sperry Marine Inc., Charlottesville, Va., is now shipping its GPS Core Module and the 501 TR/GPS Navigator to a growing number of commercial shipowners worldwide, according to Sperry project manager **Bruce Angus.**

The GPS Core Module is a single-channel, sequenced, C/A code receiver which has been designed specifically for the professional marine user. Simplicity of hardware, reliability and availability of parts and unit ruggedness have been the design criteria for the GPS Core Module—all without compromising high performance accuracy.

Mr. **Angus** described the GPS Core Module receiver as automatically integrating all current and future operational satellites so that current buyers enjoy the early advantage of GPS with the assurance that the receiver will be performing optimally up to and after the full deployment of GPS satellites. Additionally, Sperry Marine offers a free satellite advisory software diskette to assist in predicting the interim GPS coverage on a given time and date.

The new GPS equipment features two RS232 ports which provide Lat, Long and Time updates every two to three seconds with a positional accuracy of 30 meters 2dRMS. The data format is flexible to configure and complies with SC104 format (the data message for differential corrections). Other formats such as NMEA0183 are available and, in addition, the unit has very low power consumption.

The Sperry Marine 501TR/GPS Navigator aids mariners wishing to specify the accuracy and continuity of GPS fixes. The 501TR/GPS uses an integrated transit receiver which fills the coverage gaps that will exist up to the time when all GPS satellites are deployed.

According to Mr. **Angus,** no other system available offers this combined transit/GPS capability with a common, complete single page navigation display. The operator is able to quickly become familiar with the screen location of essential navigation data and always knows whether the data is based on transit or GPS fixes.

Mr. **Angus** indicated that owners of existing Sperry Marine transit receivers will be able to easily upgrade their systems during a short onboard service call to full transit/GPS receivers. These owners would then receive the full advantage of GPS technology at a minimum cost.

For free literature detailing Sperry Marine's GPS Core Module and 501TR/GPS Navigator,

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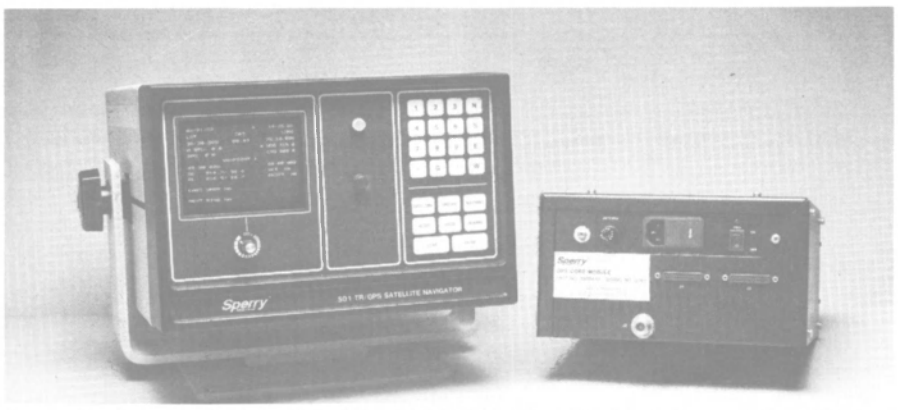


Sperry Marine recently introduced the 501TR/GPS Satellite Navigator and the GPS Core Module to the marine market.

Increase Shown In 1987 For Shipbuilding Orders

Lloyd's Maritime Information Services Ltd. recently reported in Lloyd's Register of Shipping's annual report that world shipbuilding orders in 1987 rose to an estimated 13.5 million gross metric tons from 12.7 million metric tons in 1986, reversing a three-year decline in the shipbuilding industry.

Tanker orders rose substantially to an estimated 6.1 million metric tons, about one-third higher than 1986, and new construction contracts for general cargo/container vessels increased for the third consecutive year to an estimated 3.4 million metric tons from just over 3 million in 1986, it was reported.

Portable Gun Offers New Literature On Drilling Extremely Accurate Holes

Portable Gun Drilling Systems, an engineering development company in Auburn, Wash., is offering free literature on a new application of an old method that the company has developed for drilling extremely accurate holes—a truly portable system.

Holes can be bored to a tolerance of ±.0005″ on the diameter, to .0015″ on parallelism and ovality. The system meets U.S. Navy requirements for drilling fitted bolt holes, as on LSDs 41, 42 and 43, and has been used by a large aerospace corporation on a cargo bay fabrication project.

Finished holes require no reaming, honing, or surface polishing. Since there is no mess—debris and drilling fluid mist are extracted by vacuum—the system can be used in an enclosed area.

One operator can utilize two-three systems as required.

For additional information and free literature from Portable Gun Drilling Systems,

Circle 22 on Reader Service Card

Norman D. Albertsen Named Manager, NCEL Technology Base Programs

The Naval Civil Engineering Laboratory (NCEL) of Port Hueneme, Calif., recently named **Norman D. Albertsen** manager of technology base programs. He succeeds **Joseph G. Berke,** who was transferred to the U.S. Bureau of Standards in Washington, D.C.

Mr. **Albertson** is responsible for NCEL's 30 exploratory development programs valued at $6 million, and 20 basic research projects worth $2 million. He is also in charge of internal independent research/independent exploratory development programs.

A registered professional engineer in California, Mr. **Albertsen** is a member of the American Society of Civil Engineers, Sigma Xi honorary society, and Tau Beta Pi national engineering honorary society.

Bethlehem Steel Consolidation At Sparrows Point Strengthens Competitive Position

Wider Range Of Services Offered

David H. Klinges

The new Baltimore Marine Division of Bethlehem Steel Corporation "will make us more competitive and will enable us to respond to the needs of the reduced marketplace more effectively," declared **David H. Klinges,** president, marine construction. He said the consolidation also strengthens the Sparrows Point, Md., yard's opportunity to participate in the offshore oil rig construction business.

In January, Bethlehem announced that it would divest its shipyards in Beaumont and Port Arthur, Texas, and the Republic of Singapore and consolidate its marine construction business at the Sparrows Point shipyard.

The decision to sell the three yards was necessitated by poor market conditions and the resulting lack of adequate profitability for the work that was obtained.

The new division will market and produce offshore drilling platforms, ships and other types of marine products and provide a full range of vessel repair and modification services.

Acquired by Bethlehem in 1916, the Sparrows Point yard has the capability to build and repair a wide range of vessels and fabricate a variety of structural components and industrial products.

The yard recently began leasing a floating drydock which allows it to handle deeper draft vessels, such as cruise ships, ore carriers, containerships, naval combatants, auxiliaries and amphibious vessels. The drydock, with a lifting capacity of 44,000 tons, "is a valuable supplement to our 1,200-foot-long graving dock and increases our competitive position in the marketplace," Mr. **Klinges** noted.

Because of the drydock's capabilities, the yard has been successful in attracting repair business. "In fact, Mr. **Klinges** said, "we've been fully booked with drydock work since that facility went into operation."

Current major work at the yard consists of a $130-million contract to build two oceanographic ships for the U.S. Navy and a contract in excess of $30 million to build 15 steel sections for the Interstate 664 tunnel crossing at the Hampton Roads area or Virginia. The first steel section was towed recently to the construction site. The last tunnel section is scheduled to be delivered early next year.

Workers are putting the finishing touches on the oceanographic ship, USNS Maury, which will be delivered to the Navy late summer. Her sister ship, the USNS Tanner, is scheduled for delivery next February.

Bethlehem is continuing to bid aggressively for new work for the Sparrows Point yard which currently has a workforce of approximately 1,800.

Turning to the state of the industry, Mr. **Klinges** said that the problems now facing the nation's shipbuilding industry are primarily due to ineffective Federal maritime policies and foreign shipyard subsidization practices.

He continued: "Today, over 90 percent of American shipyards are supported by Navy work. Without commercial work, naval construction cannot support the industry."

On the bright side, however, Mr. **Klinges** said that he was pleased with the findings of the report presented to President **Reagan** by the Commission on Merchant Marine and Defense, which was created in recognition of the threat posed by the inadequacy of the nation's merchant marine fleet and its shipyard mobilization base.

"The report's conclusion—that governmental programs to deal with the 'deteriorating condition' of the maritime industry must be accorded high priority—is consistent with the position the industry has taken over the last several years, in Congressional and other forums, in citing the deep distress which all segments of the industry are experiencing," he said.

The commission appointed by the President also recognizes any current program must incorporate a committment to build ships for American owners in American shipyards to be manned by American seamen to support commercial and military requirements alike in the event of an emergency.

Bethlehem Steel's Baltimore Marine Division At A Glance

Founded:	1891 by Maryland Steel Company. Acquired by Bethlehem in 1916.
Location:	200 acres on the east side of the Patapsco River at Chesapeake Bay.
Facilities:	Has one of the largest building basins in the U.S. at 1,200 x 200 feet—can accommodate vessels up to 300,000 dwt. New floating drydock has 44,000-ton lifting capacity. Support facilities include a production line panel shop, with automatic welding equipment, outfitting berths, building ways, and support shops.
Employment:	1,800
Products & Services:	Specializes in design, engineering, construction, repair and servicing of all types of naval and commercial vessels as well as rigs for the offshore oil industry. Manufactures a wide range of products for non-marine industries.

"American shipbuilders," he continued, "stand ready, willing and able to participate in any rational program which would meet the necessary security objectives of this nation. Programs which would ensure increased participation in American trade, transporting imported automobiles in American vessels and constructing handy-size tankers and cruise ships vital to American needs as military auxiliaries could well be a major start in redressing our current inadequacies."

For free literature on the shipbuilding, ship repairing, conversion and rig construction facilities offered by Bethlehem Steel-Sparrows Point,

Circle 15 on Reader Service Card

At left: Some of the 15 steel tunnel tube sections under construction at Bethlehem Steel's Baltimore Marine Division. The 300-foot-long sections will be used to build the Interstate 664 tunnel crossing in the Hampton Roads section of Virginia. **At right:** The USNS Maury (T-AGS-39), the first of two oceanographic survey ships being constructed at Bethlehem Steel-Sparrows Point. She is scheduled for delivery in July.

Mario Named General Manager, Comsat Maritime Services

Comsat Corporation has named **Ronald J. Mario** vice president and general manager of its Maritime Services business, succeeding **George Tellmann,** who retired after serving Comsat for nearly 20 years in key management positions relating to the company's roles in both the Inmarsat and Intelsat businesses.

In his new capacity, Mr. **Mario** will be responsible for all of the operating and administrative functions for Comsat Maritime Services and oversee the overall direction of the business, which provides mobile satellite communications to several markets, including passenger ships, commercial shipping vessels, and offshore oil facilities.

Comsat Corporation is a leading supplier of telecommunications services. As the U.S. member of Intelsat and Inmarsat, it links the U.S. by satellite with more than 160 other nations and nearly 6,500 ships at sea and offshore facilities.

Chao To Be Appointed Chairman Of Federal Maritime Commission

Elaine L. Chao

Elaine L. Chao, Deputy Maritime Administrator, will be appointed as Chairman of the Federal Maritime Commission, President **Reagan** recently said. After the Senate confirms the appointment he will also designate her to be the presiding officer.

Ms. **Chao** will fill the unexpired term of the late **Edward V. Hickey Jr.,** who died suddenly in mid-January. That term ends June 30, 1991.

Alaskan Mine Acquires, Converts Two Barges For Floating Docks

Green's Creek Mining Company, operator of one of the most significant new underground mines to be developed in Southeast Alaska in many years, has acquired two deck barges that are being used as floating docks on Southeast Alaska's Admiralty Island, the site of the lead/zinc/silver/gold mine going into production next fall.

Acquired by Green's Creek, a subsidiary of BP Minerals America, owned by British Petroleum Company, was Zidell's 135-foot AB-36, a flat deck barge being converted into a combination floating pedestrian dock and breakwater, and the 140-foot Miss Rene, now being used as a floating dock in Hawk Inlet on the opposite side of Admiralty Island. The Miss Rene is part of a barge unloading system for transporting equipment and supplies to the mine.

Norwegian-Built Training Simulator Installed At French Maritime College

The maritime college of Nantes, France, recently installed a training simulator that will be used for the training of future engineers for the merchant marine. More than 150 guests, mainly from the French shipping and marine training environment indicated a solid interest in the Norwegian-built simulator.

Developed and manufactured by Norcontrol Simulation a.s of Horten, Norway, the simulator can be programmed to simulate anything happening to the machinery at sea, and it comes with light and sound effects for maximum realism.

Consisting of three parts, the simulator is adapted to the French requirements for officers controlling both the bridge and engine room from one place.

With experience from 40 similar installations, Norcontrol Simulation is a market leader internationally. Several similar projects are now developing, further strengthening the company's position.

For further information and free literature from Norcontrol Simulation,

Circle 25 on Reader Service Card

Hartley Appointed Chief Executive At BP Shipping

According to a recent announcement by BP Shipping, **Nick Hartley** has been appointed the chief executive of the company succeeding **M.R. Pattinson.** Mr. **Pattinson** retired from his position after 32 years of service in the BP Group.

Mr. **Hartley** has over 32 years' experience in the marine industry. Prior to his present appointment, he was manager of the corporate and services group of BP Shipping.

Shipbuilders Council Elects Board Members

At the Shipbuilders Council of America board meeting held recently in Washington, D.C., **James R. Mellor,** executive vice president, Marine, Land Systems & International, General Dynamics Corporation, St. Louis, Mo., was elected chairman of the board of directors of the council. Mr. **Mellor** succeeds **Hans K. Schaefer,** president, Todd Shipyards Corporation, Seattle, Wash.

James Harvie, General Ship Corporation, East Boston, Mass., was elected vice chairman.

Both will serve a one-year term.

In addition to Mr. **Mellor** and Mr. **Harvie,** others elected to the executive committee were: **Albert L. Bossier Jr.,** Avondale Industries, Inc., **Edward J. Campbell,** Newport News Shipbuilding; **Arthur E. Engel,** Southwest Marine, Inc.; **William E. Haggett,** Bath Iron Works Corporation; **Walter Herr,** Colt Industries, Inc.; **David H. Klinges,** Bethlehem Steel Corporation Marine Construction Group; **John L. Roper III,** Norfolk Shipbuilding and Drydock Corporation; **Gerald J. St. Pe,** Ingalls Shipbuilding, Inc.; **Hans K. Schaefer,** Todd Shipyards Corporation; and **Richard H. Vortmann,** National Steel and Shipbuilding Company.

Elected officers for the coming year are **John J. Stocker,** president; **W. Patrick Morris,** vice president and general counsel; **Silas O. Nunn,** vice president, programs; and **Beverly C. Kendall,** secretary-treasurer.

Hitachi Zosen To Sell Kyushu Shipbuilding Plant

Industry sources recently disclosed that Hitachi Zosen Corp. plans to sell its major shipbuilding plant on the southern Japanese island of Kyushu for about 40 billion yen (128 yen equal US$1).

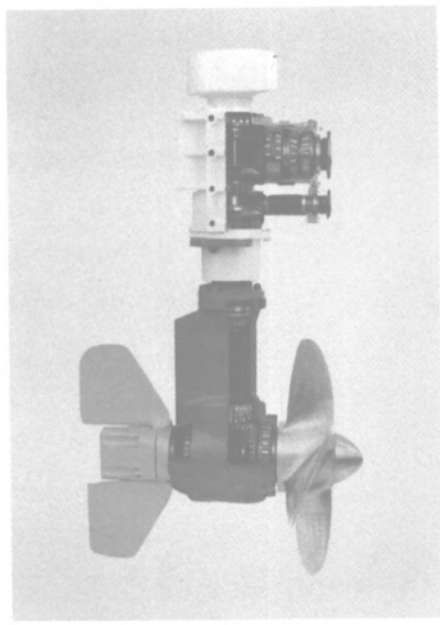
It was also reported that Hitachi Zosen will operate the dockyard on a lease-back basis from the affiliate. The plant has an annual shipbuilding capacity of 250,000 gross tons.

PROPULSION UPDATE

Schottel Offers Free Color Brochure On Its 'Rudderpropeller,' And Units For Shallow-Draft Propulsion

Schottel, a leader in propulsion technology, has published a 20-page, full-color brochure on the propulsion units marketed by the company.

The Schottel Rudderpropeller, the heart of the system, is a combined propulsion and steering unit. The engine power is transmitted through bevel gear sets to the propeller. In addition, the propeller can be rotated through 360 degrees to provide steering, so that full thrust is available in any direction. This system has been used worldwide for more than 35 years, providing maximum maneuverability with full power for ahead and astern. The units currently available range from 15 kw to 5,000 kw (20 hp to 7,000 hp).



The Schottel Rudderpropeller, "The heart of the system," is a combined propulsion and steering unit.

Schottel Rudderpropellers are in service for main propulsion, propulsion assistance and dynamic positioning in all fields of shipping.

A joint venture of Schottel and Lips United B.V. was founded in 1981 for the marketing of large thrusters for oceangoing vessels. This company, in The Hague, is named Schottel-Lips B.V. Schottel-Lips thrusters are constructed of standard components, such as upper and lower gearbox, stem section and steering gear, to suit a customer's specific requirements.

The heart of the system—the Rudderpropeller—may be fitted steerable or non-steerable, retractable or nonretractable, for vertical or horizontal drive and with fixed or controllable pitch propellers.

To meet the increasing demand of shallow-draft propulsion units for navigation on rivers and canals, normally not navigable, special jet propulsion units have been developed. The units are capable of operating at low drafts with full thrust and optimum efficiency.

The following jet propulsion systems are available: Schottel Cone-Jets, developed as a main drive or as a bow maneuvering aid for extremely shallow-draft vessels; Schottel Pump-Jets, in which the propeller is replaced by a specially designed pump wheel with optimized efficiency; and Schottel Bow-Jets which work with a horizontal propeller sucking water from below.

The Schottel Rudderpropeller is detailed in a free 20-page color brochure. The publication contains more than two dozen photographs of the system and other Schottel products. For your copy,

Circle 11 on Reader Service Card

JJH Inc. Expands CADAM To Portsmouth Location

JJH Inc., a leading naval engineering organization with facilities located in Crystal City, Va., Portsmouth, Va., Cherry Hill, N.J., Bath, Maine, Panama City, Fla., and Long Beach, Calif., recently announced the expansion of their CADAM capability to their Portsmouth facility.

JJH Inc. has installed and is using the CADAM® graphics system supported by a Perkin & Elmer 3210 computer with eight megabyte memory, magnetic tape drive, high-speed printer, electrostatic plotter, and system console. The graphic workstations utilized by JJH Inc. personnel allows for the continued development of an existing data base stored on 80 and 300 megabyte disc drives. The CADAM system is equipped with telecommunications which provide continuous electronic access to detail drawings and material lists during design development.

The CADAM system employed by JJH Inc. at Portsmouth is one of the most cost-effective tools available in support of service to the marine industry and provides such benefits as increased design productivity, shorter design lead time, improved engineering change control, standardization of design and the support of shorter production schedules.

For more information and free literature on JJH Inc.,

Circle 20 on Reader Service Card

NAVAL TECHNOLOGY & SHIPBUILDING

a special supplement to

MARITIME REPORTER AND ENGINEERING NEWS

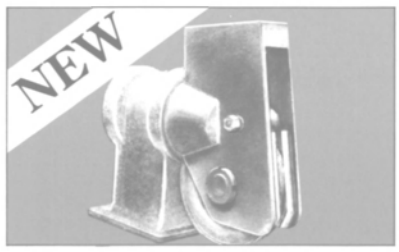
May 1988

Smith Berger Marine offers Seaworthy choices.

Naval Class Fairleads

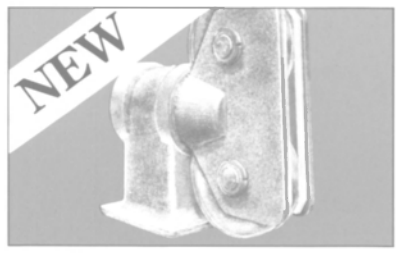
Berger Fairleads have set the standards for quality and reliability for over 50 years.

Berger Naval Class Fairleads are built to the exacting standards of the U.S. Navy and are designed for rugged offshore service.



Mariner Class Balanced Head

Designed and built to the same standards of quality and reliability as the Naval Class but new techniques of fabrication and manufacturing have been applied to provide a cost effective answer to civilian marine industry requirements.



Mariner Class – Double Sheave

Berger quality in twin sheave fairleads for use in applications where the wire rope must be held in the center of the barrel or where directly in-line pulls are expected. All Berger Fairleads use tapered roller bearings throughout.

Customized Towing Equipment

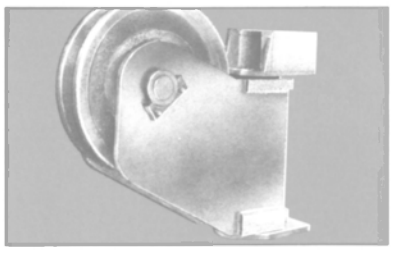
Stern Rollers, Pop up pins, tow pins and other equipment for new construction or retrofit can be custom designed for your vessel. Rugged, simple designs assure long life, low maintenance, and ease of operation.

Guide Sheaves

A full line of vertical and horizontal guide sheaves for wire ropes up to 5 inch diameter is available with optional bronze or anti-friction bearings. Special wide throat sheaves for Pusher tug lines can be provided.

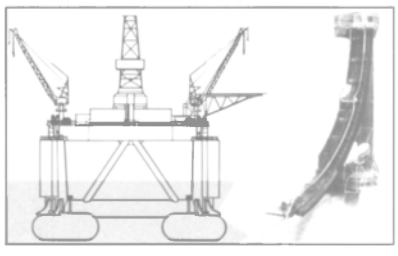
Roller Fairleads

Berger Roller Fairleads are available in two, three or four roller versions for all rope sizes. Hardened steel rollers with bronze bearings are mounted on stainless steel shafts. Button head fairleads are also available.



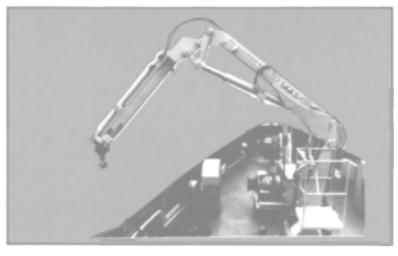
Underwater Fairleads

As a leader in underwater fairlead technology, Berger offers custom engineering to meet your requirements. Hinged sheave or trunnion type fairleads for all sizes of chain or wire rope are offered with underwater bronze or sealed anti-friction bearings.



Static Mooring Fairleads

Smith Berger is the exclusive supplier of the new static mooring fairleads with Monoloy rope or chain grooves designed to provide improved fatigue life of mooring lines on production platforms at an economical price.



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Future Business Opportunities In Navy Ship Procurement, Ship Maintenance And Navy Technology Development

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

International Maritime Associates, Inc. (IMA) prepares detailed business reports covering the U.S. Navy market. They deal with future business opportunities available to shipyards, manufacturers, engineering firms and other marine suppliers. This article is based on information contained in recent reports.

Overview

The U.S. Navy is the major generator of work for shipyards and marine equipment manufacturers in this country. Total spending on new ship procurement has averaged $10.8 billion per year over the past 10 years. This includes spending for ships systems and weapons, as well as the ship. Spending on ship maintenance and modernization has averaged $4.7 billion per year this period. Spending on new naval technology development has averaged $7.6 billion. Details are shown in Exhibit 1.

Ship Procurement

As of early March, 90 naval ships were on order in 17 shipyards. Major players include Newport News (aircraft carriers and attack submarines), General Dynamics-Electric Boat (Trident and attack submarines), Ingalls (Aegis combatants and LHDs), Bath Iron Works (Aegis combatants) and Avondale (fleet oilers and LSDs). These and other shipyards currently building naval ships are shown in Exhibit 2.

The Navy plans to spend more than $25 billion on ship construction over the next two years. This year's budget is $16.2 billion—a major portion of which is represented by funding for two new aircraft carriers, three attack submarines, one Trident submarine and five Aegis cruisers. The FY 1989 budget request is $9.1 billion. Details for ship construction planned over the next five years are shown in Exhibit 3.

Continuing coverage of this area is provided in IMA's quarterly busi-

(continued)

Exhibit 1—Trend in Navy Spending (billions of $)

Fiscal Year	Ship Procurement	Ship Maintenance and Modernization	Navy Technology Development
1980	$6.5	$3.0	$4.6
1981	7.6	3.7	5.0
1982	8.6	4.4	5.8
1983	16.0	5.0	6.1
1984	11.5	5.0	7.6
1985	11.0	5.9	9.2
1986	9.6	5.2	9.6
1987	11.7	5.6	9.4
1988	14.9	4.7	9.5
1989	10.2	4.8	9.2

Source: Department of the Navy

Exhibit 2

PRIVATE SHIPYARDS WITH NAVY CONSTRUCTION PROGRAMS (1 March 1988)

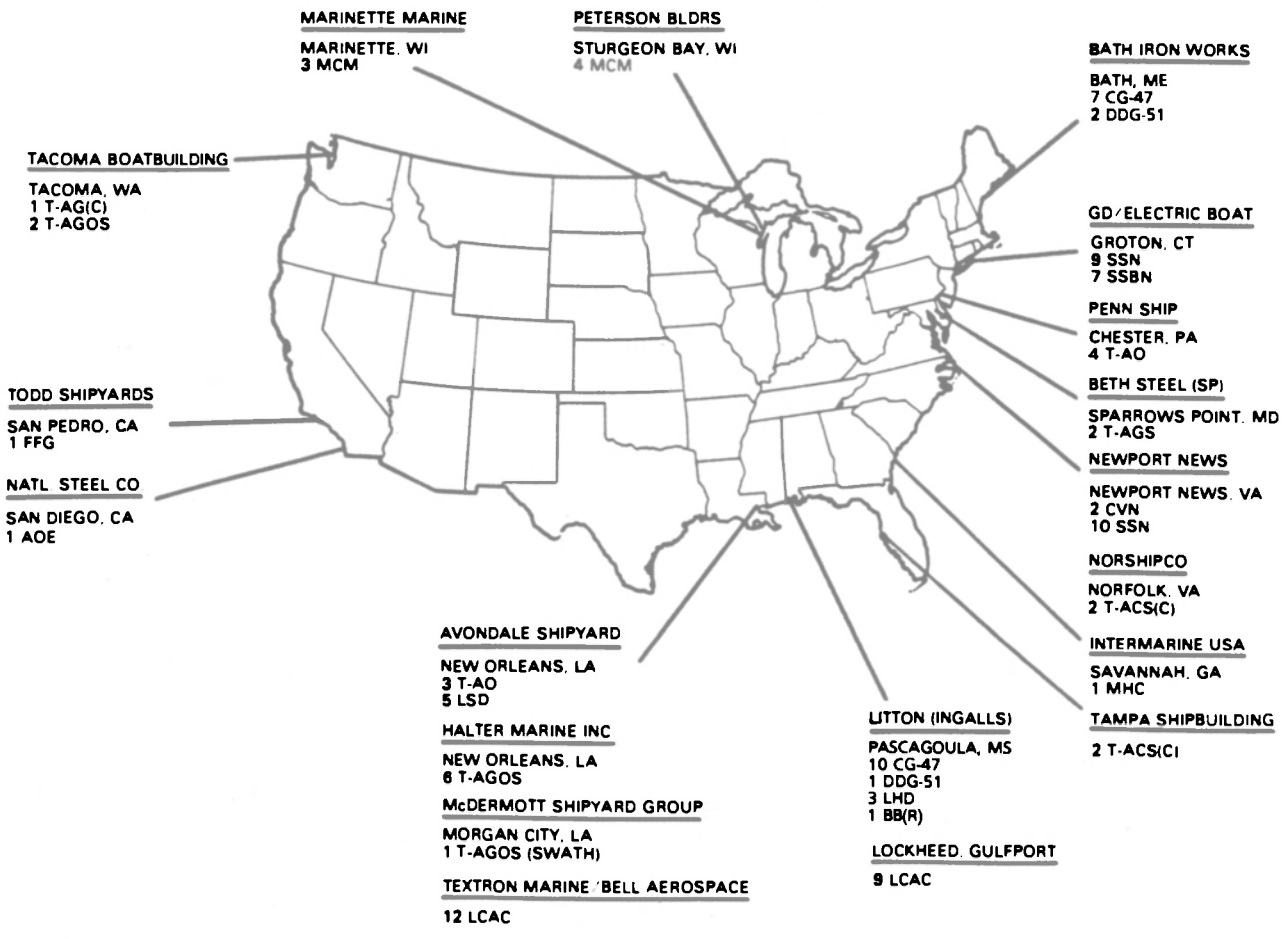

Exhibit 3—Navy Ship Construction Over Next Five Years

FY 1988/92 SHIPBUILDING PROGRAM

	FY 1988	FY 1989	Subject to Further Review* FY 1990	FY 1991	FY 1992
New Construction					
Trident	1	1	1	1	1
SSN-688	3	2	2	2	1
SSN-21	—	1	—	2	2
CVN	2	—	1	—	—
CG-47	5	—	1	—	—
DDG-51	—	3	3	5	6
LHD-1	1	1	—	1	—
LSD-41 CV	1	—	1	1	2
MCM-1	—	—	—	—	—
MHC-51	—	2	3	3	4
PXM	—	—	1	—	4
AOE-6	—	1	—	2	—
AE-36	—	—	—	1	1
ARS	—	—	1	—	—
TAO-187	2	2	2	1	—
TAGOS	—	3	3	2	—
AGOR/TAGS	—	1	2	4	—
	15	17	21	25	21
Conversions					
CV SLEP	1	—	—	1	—
AO (Jumbo)	1	2	1	—	—
TACS	2	—	—	—	—
	4	2	1	1	0

Note: Navy did not submit a new five-year shipbuilding plan as part of this year's budget proposal. The FY 1990-1992 portion of this table is identical to that of last year's five-year plan—and is subject to futher review.

Source: Department of the Navy

(continued)

ness report *U.S. Navy Ship and Equipment Procurement.*

Ship Maintenance

During FY 1987, 45 commercial shipyards received contracts for Navy ship repair and maintenance. Ship repair work was also performed in the eight naval shipyards and three Navy-owned ship repair facilities. Details for ship repair contracts in progress in commercial yards as early March 1988 are shown in Exhibit 4.

Spending for ship maintenance and modernization is projected to exceed $9.4 billion over the next two years. This year the Navy plans to spend $4.7 billion to perform 27 overhauls and 151 short term availabilities (SRA's/PMA's). In FY 1989 projected spending is $4.8 billion—to perform 23 overhauls and 158 short term availabilities. Budget details are shown in Exhibit 5.

Continuing coverage of this area is provided in IMA's quarterly business report *U.S. Navy Ship Maintenance and Modernization.*

New Naval Technology —$9.5-Million Annual Market For Marine Suppliers

Hundreds of companies are involved in Navy-sponsored research and development. Many companies have used the Navy R&D program to establish early position for major future procurements. Current work encompasses virtually the entire spectrum of new technology—from

(continued)

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The largest shiplift platform in the world – 655 ft. long by 106 ft. wide at Todd Pacific Snipyards Corporation, Los Angeles Division.

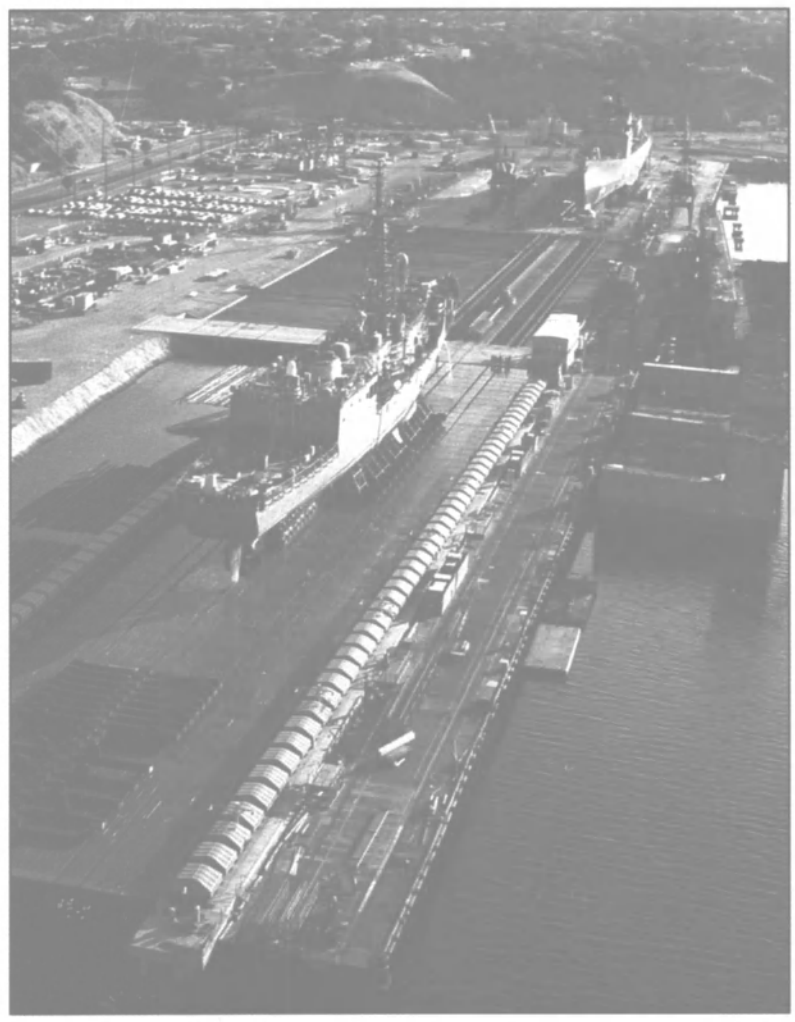
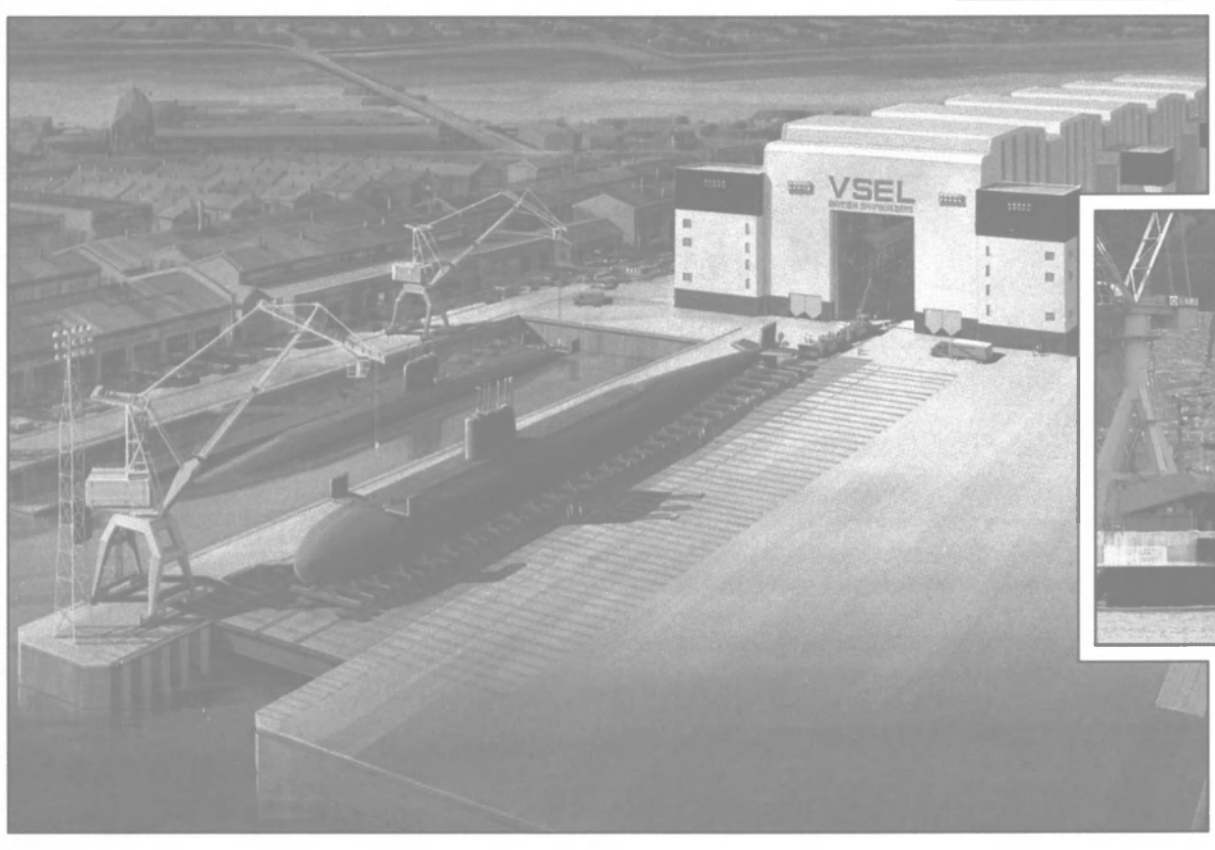


Photo by Joseph Ernest



The highest capacity per metre shiplift in the world – 200 tons per metre for launching concrete caissons at Yunotsu, Japan.

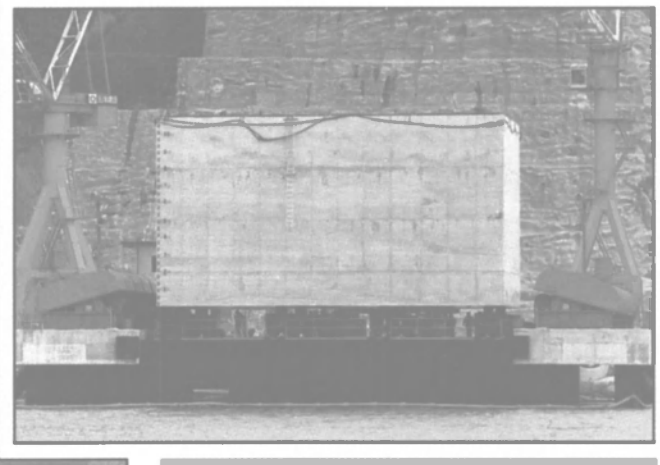


Photo by Penta-Ocean Construction Co., Ltd.

The greatest lifting capacity shiplift in the world – 24,000 tons for nuclear submarines at Barrow-in-Furness, England.

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Exhibit 4

PRIVATE SHIPYARDS WITH NAVY OVERHAUL AND REPAIR PROGRAMS (1 March 1988)

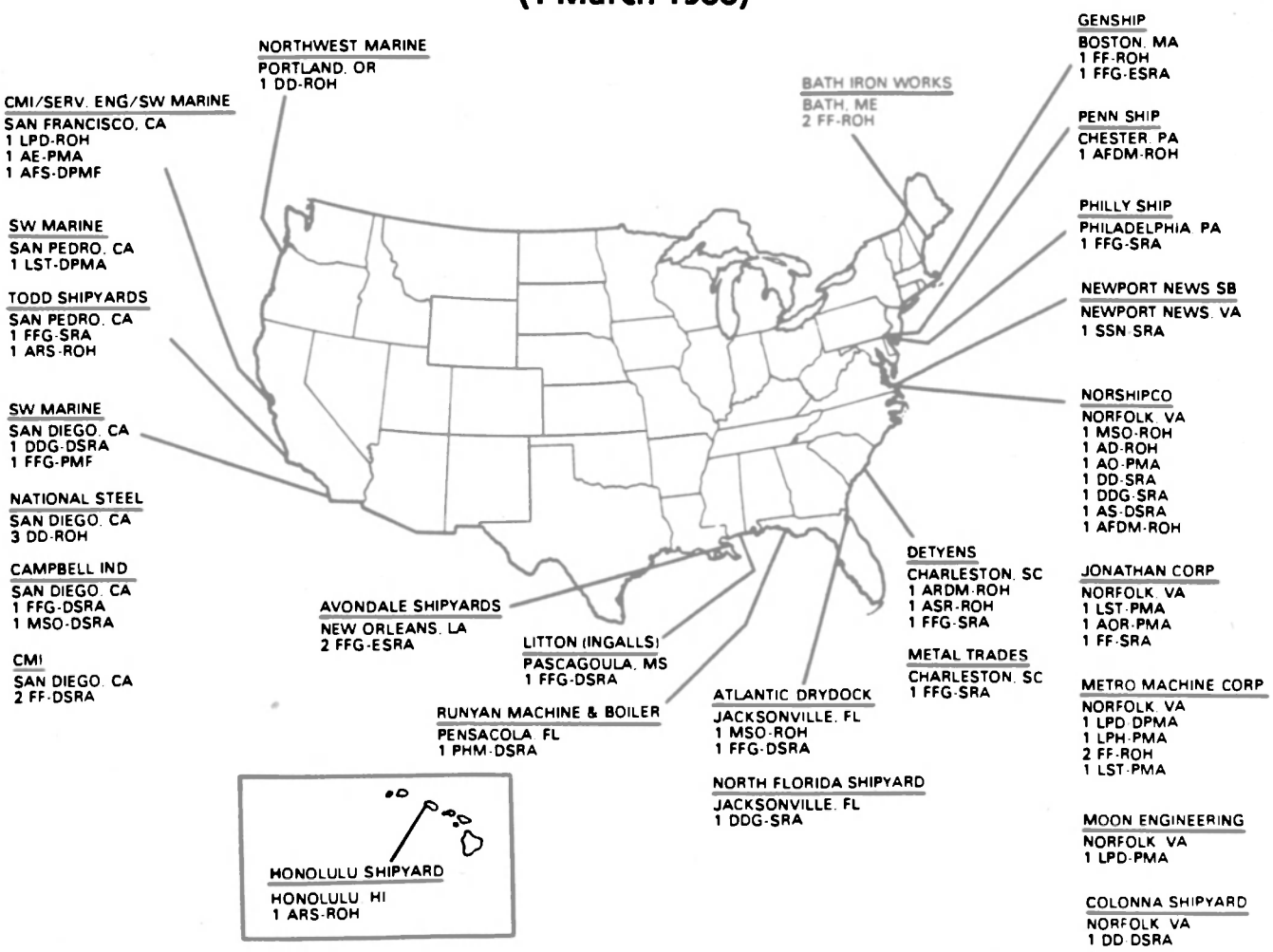

Exhibit 5—Ship Maintenance & Modernization (in millions of dollars)

	FY 1987	FY 1988	FY 1989
Ship Overhauls	1,859.4	1,271.8	734.1
RA/TA	1,506.4	1,485.9	2,060.5
Modernization	1,342.5	1,026.1	1,077.0
IMA	368.4	325.2	321.1
Tech Support	145.6	137.5	139.7
Outfitting	289.9	315.4	360.5
Berthing and Messing	49.0	32.0	39.9
Inactivations	25.7	66.7	110.6
TOTAL: Ship Maint & Mod	5,586.9	4,660.6	4,843.4
Number of Overhauls (Units)	39	27	23

Source: Department of the Navy

Exhibit 6—Highlights of Navy New Technology Program

- A major high-level effort has been initiated to develop revolutionary surface ship designs
- Engineering development of the SSN 21 will require expenditures of more than $400 million over the next two years
- More than $800 million is to be spent over the next five years on advanced attack submarine concepts—a major new initiative to be managed by DARPA
- Design and development of nuclear propulsion technology will continue to exceed $700 million annually
- D-5 ballistic missile development expenditures will exceed $1.6 billion over the next two years as the program transitions to the production stage
- Tomahawk cruise missile development expenditures will exceed $130 billion over the next two years
- Sea Lance ASW standoff weapon development expenditures will exceed $150 million in FY 1988-89—a figure lower than originally planned due to budget constraints
- Funding for development of the MK 50 advanced lightweight torpedo (ALWT) has been substantially increased in the new FY 1989 budget—with two-year funding of development expenditures now projected to exceed $275 million
- Project definition contracts will be awarded this summer to begin a 30-month design and engineering phase for the new generation mine
- Expenditures over the next two years for Aegis engineering and development will exceed $350 million
- More than $118 million is earmarked in FY 1988-89 for surface ship ASW system development and engineering
- Development and engineering of submarine sonar systems will exceed $275 million over the next two years
- Full-scale engineering has begun on the $7.3 billion program to develop and deliver 28 AN/BSY(2) submarine combat systems
- Expenditures to develop the Fixed Distributed System (FDS)—a key component of future offboard ASW surveillance—will total $170 million in FY 1988-89
- More than $97 million over the next two years will be spent on developing advanced submarine communications systems
- Almost $87 million will be available in FY 1988-89 for developing new manufacturing technology

Source: International Maritime Associates, Inc.

(continued)

advanced composites and supercomputers to new propeller designs and electric drive propulsion systems.

In FY 1988 spending for Navy technology development will exceed $9.5 billion. Next year the technology development budget is projected to be $9.2 billion.

Shown in Exhibit 6 are some of the major technology development programs planned in FY 1988 and 1989. These and more than 200 other technology development programs are detailed in IMA's new report *The New Naval Technology Program—A Detailed Guide to $9.5 Billion in New Annual Sales for Manufacturers, Engineering Firms and Suppliers.* ■

Newport News Awarded $724.4 Million To Begin Two Carriers

Newport News Shipbuilding & Dry Dock Co., Newport News, Va., has received a U.S. Navy contract worth $724.4 million to begin the construction of two aircraft carriers, CVN-74 and -75. The two flattops would be the Navy's seventh and eighth Nimitz Class aircraft carriers.

At present, Newport News Shipbuilding is constructing two carriers, the USS George Washington (CVN-73) and the USS Abraham Lincoln (CVN-72). The Lincoln was recently launched and christened at ceremonies at the yard. The 1,092-foot-long Lincoln is scheduled to be commissioned in 1989.

ASMAR Launches New Transport Vessel For Chilean Navy

The Chilean shipbuilder and repairer ASMAR recently launched the new 2,767-metric-ton transport vessel it is building for the Chilean Navy. Construction was at ASMAR's Talcahuano yard, and delivery is scheduled for July 1988.

The vessel, which will have an average speed of 15 knots, a crew complement of 80 and a passenger capacity of 250, is equipped with a helicopter landing deck and has a container handling capacity of 42 TEUs. As yet unnamed, it will be powered by two diesel engines MAK 8M453B of 3,600 hp each at 600 rpm, allowing a maximum speed of 18 knots. Electric power will be provided by two 400-kw generators, and one 500-kw and one 75-kw generator.

The vessel will have an approximate overall length of 338 feet, breadth of 56 feet and draft of 18 feet. The American Bureau of Shipping has been appointed for inspection and certification of the vessel.

For free literature on ASMAR's facilities and capabilities,

Circle 76 on Reader Service Card

MAJOR NAVY CONTRACTS

The following special section features the latest U.S. Navy contract awards for shipbuilding, ship repair, ship conversion, shipboard electronics, communications and weapons. This special section covers contracts awarded between January 29 and March 22, 1988. For contract awards prior to these dates, see the Naval Technology & Shipbuilding Supplement in the March issue of MR/EN.

January 29

Ingalls Shipbuilding Incorporated, Pascagoula, Miss., was awarded a **$215,982,000** modification to a previously awarded cost-plus-award-fee contract for class standard equipment for CG's 69, 70, 71, 72 and 73. Work is expected to be completed in January 1994. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-87-C-2165).

Continental Maritime of San Diego, Calif., was awarded a **$4,926,630** firm-fixed-price contract for Selected Restricted Availability for USS Ranger (CV-61). Work is expected to be completed June 24, 1988. The Supervisor of Shipbuilding, Conversion and Repair, San Diego, Calif., is the contracting activity (N00024-85-H-8212).

Lockheed Shipbuilding Company, Gulfport Marine Division, Gulfport, Miss., was awarded a **$31,759,154** modification to a previously awarded fixed-price contract for long lead time material for the Landing Craft Air Cushion (LCAC) program. Work is expected to be completed in 1990. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-87-C-2089).

Phillyship, Philadelphia, Pa., is being awarded a **$3,805,219** firm-fixed-price contract for Selected Restricted Availability for USS Estocin (FFG-15). The Supervisor of Shipbuilding, Conversion and Repair, Brooklyn, N.Y., is the contracting activity (N00024-85-H-8202).

GTE Government Systems Corporation, Needham Heights, Mass., was awarded a **$17,834,000** letter contract with a not-to-exceed amount of **$61,835,050** to be converted to a fixed-price contract for 139 Extremely Low Frequency (ELF) receivers along with various spares, parts, data and support services for installation in submarines. Work is expected to be completed in April 1991. The Space and Naval Warfare Systems Command, Washington, D.C. is the contracting activity (N00039-88-C-0157).

February 1

Raytheon Company, Electromagnetic Systems Division, Goleta, Calif., was awarded a **$41,867,000** fixed-price letter contract for AN/SLQ-32(V) countermeasures systems for CG-47 and LHD-1 class ships. Work is expected to be completed in April 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-87-C-5013).

February 2

AT&T Technologies, Greensboro, N.C., was awarded a **$23,574,739** modification to a previously awarded cost-plus-award-fee contract for oceanographic research. Work will be performed in Whippany, N.J. (96 percent), and Greensboro, N.C. (4 percent), and is expected to be completed September 30, 1988. The Space and Naval Warfare Systems Command, Washington, D.C., is the contracting activity (N00039-86-C-0492).

Honeywell Incorporated, Horsham, Pa., was awarded a **$3,293,908** firm-fixed-price contract for the manufacture of 146 reserve battery assemblies for use on standard buoy bodies. Work is expected to be completed January 25, 1990. The Naval Weapons Support Center, Crane, indiana, is the contracting activity (N00164-88-C-0071).

Honeywell Federal Systems Incorporated, McLean, Va., was issued a **$3,716,246** delivery order under a basic ordering agreement for repair services for 57 line items for the Ship Non-tactical Automatic Data Processing (SNAP I) program. Work will be performed in Lawrence, Ma., and is expected to be completed December 3, 1988. The Navy Ships Parts Control Center, Mechanicsburg, Pa., is the contracting activity (N00104-87-G-A022).

Westinghouse Electric Corporation, Plant Apparatus Division, Wilkins Township, Pa., was awarded a **$506,176,000** cost-plus-fixed-fee contract for naval nuclear propulsion components to be used in the CVN-68 class aircraft carrier. Work is expected to be completed in September 1997. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-4007).

General Electric Company, Machinery Apparatus Operation, Schenectady, N.Y., was awarded a **$204,573,000** cost-plus-fixed-fee contract for naval nuclear propulsion components to be used in the CVN-68 class aircraft carrier. Work is expected to be completed in September 1997. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-4008).

February 3

Comprehensive Technologies Int'l Incorporated, Fairfax, Va., was awarded a $5,038,393 cost-plus-fixed-fee level of ef-

(continued)

U.S. NAVY

CURRENT NAVY & COAST GUARD VESSELS UNDER CONTRACT AT U.S. YARDS

(As of March 1988)

SHIPYARD / Navy Designation	NAME	APPROX. CONTRACT $	EST. DELIVERY
Avondale Shipyards			
T-AO-193	Walter S. Diehl	116,000,000	8/88
T-AO-195	Leroy Grumman	101,000,000	5/89
T-AO-197	unnamed	100,633,789	2/90
LSD-44	Gunston Hall	166,000,000	8/88
LSD-45	Comstock	153,400,000	2/89
LSD-46	Tortuga	153,400,000	4/89
LSD-47	unnamed	150,000,000	11/89
LSD-48	unnamed	150,000,000	5/90
Bath Iron Works			
CG-58	Philippine Sea	252,800,000	1/89
CG-60	Normandy	191,800,000	9/89
CG-61	Monterrey	191,800,000	12/89
CG-63	Cowpens	193,300,000	4/90
CG-64	Gettysburg	193,300,000	11/90
CG-67	unnamed	236,041,276	4/92
CG-70	unnamed	226,123,977	6/93
DDG-51	Arleigh Burke	321,000,000	7/90
DDG-53	John Paul Jones	189,900,000	7/92
DDG-51 Class	—	22,600,000[1]	5/92
Bethlehem-Sparrows Point			
T-AGS-39	Maury	66,000,000	4/88
T-AGS-40	Tanner	66,000,000	8/88
Bollinger Shipyard			
WPB (16)	unnamed	99,306,516	2/90
General Dynamics-Electric Boat			
SSN-751	San Juan	280,100,000	6/88
SSN-752	Pasadena	280,100,000	10/88
SSN-754	Topeka	324,500,000	2/89
SSN-755	Miami	324,500,000	6/89
SSN-757	Alexandria	283,000,000	10/89
SSN-760	unnamed	258,166,750	2/90
SSN-761	unnamed	258,166,750	6/90
SSN-762	unnamed	258,166,750	10/90
SSN-763	unnamed	258,166,750	2/91
SSN-21 Class	—	28,900,000[3]	—
SSBN-734	Tennessee	523,700,000	12/88
SSBN-735	Pennsylvania	531,600,000	8/89
SSBN-736	unnamed	500,870,000	4/90
SSBN-737	unnamed	616,400,000	12/90
SSBN-738	unnamed	674,100,000	12/91
SSBN-739	unnamed	615,000,000	12/92
SSBN-734 Class	—	48,400,000[3]	12/88
SSBN-740	unnamed	644,000,000	7/94
Halter Marine			
T-AGOS-13	Adventurous	14,250,000	3/88
T-AGOS-14	Worthy	14,250,000	7/88
T-AGOS-15	Titan	13,844,067	3/89
T-AGOS-16	Capable	14,031,914	7/89
T-AGOS-17	unnamed	14,031,914	11/89
T-AGOS-18	unnamed	14,031,914	3/90
Ingalls Shipbuilding			
CG-57	Lake Champlain		8/88
CG-59	Princeton	325,500,000	10/88
CG-62	Chancellorsville	238,600,000	6/89
CG-65	Chosin	242,600,000	11/90
CG-66	Hue City	193,980,662	10/91
CG-68	Anzio	163,980,664	4/92
CG-69, 71, 72 & 73	unnamed	769,142,667	1/94
CG-47 Class	—	215,982,000[6]	1/94
CG-47 Class	—	44,128,775[5]	—
DDG-52	John Barry	162,149,000	9/91
LHD-1	Wasp	1,365,700,000	3/89
LHD-2	Essex	402,494,000	4/92
LHD-3	Kearsage	378,685,000[4]	1/93
Intermarine USA			
MHC-51	unnamed	20,926,936	4/91
Lockheed-Gulfport			
LCAC (2)	unnamed	24,800,000	88
LCAC (7)	unnamed	115,586,281	—
LCAC	—	31,759,154[6]	90

SHIPYARD / Navy Designation	NAME	APPROX. CONTRACT $	EST. DELIVERY
Lockheed-Seattle			
LCAC (7)	unnamed	115,586,251	6/91
LCU (Army-7)	unnamed	26,000,000	—
Lockheed-Savannah			
LCU	Kenesaw Mountain	—	3/88
LCU	Macon	—	5/88
LCUs (Army-12)	unnamed	—	7/88-11/89
Marinette Marine			
MCM-2	Defender	46,000,000	8/88
MCM-4	Champion	42,000,000	12/88
MCM-7	Patriot	51,848,816	10/89
McDermott Inc.			
SWATH T-AGOS-19	unnamed	25,424,347	10/89
YTT 8 & 9	unnamed	21,700,000	—
Moss Point Marine			
LSV	Gen. E.B. Somerville	30,598,019[2]	2/88
LSV	Lt. Gen. W. Bunker		3/88
NASSCO			
AOE-6	Supply	290,097,944	4/91
Newport News Shipbuilding			
CVN-72	Abraham Lincoln	1,550,000,000	12/89
CVN-73	George Washington	1,550,000,000	12/91
SSN-688 Class	—	22,000,000[1]	10/88
SSN-723	Oklahoma City	225,100,000	5/88
SSN-750	Newport News	278,000,000	8/88
SSN-753	Albany	319,000,000	7/89
SSN-756	Scranton	259,833,000	9/89
SSN-758	Asheville	259,833,333	1/90
SSN-759	unnamed	259,833,333	6/90
SSN-760	unnamed	55,000,000[6]	—
SSN-764	unnamed	257,118,500	2/91
SSN-765	unnamed	257,118,500	5/91
SSN-766	unnamed	257,118,500	8/91
SSN-767	unnamed	257,118,500	11/91
SSN-21 Class	—	325,000,000[7]	2/94
SSN-21 Class	—	23,390,510[8]	4/88
SSN-21 Class	—	28,900,003[3]	—
CVN-74	unnamed	724,400,000	—
CVN-75	unnamed		
Pennsylvania Shipbuilding			
T-AO-191	Benjamin Isherwood	111,000,000	10/88
T-AO-192	Henry Eckford	111,000,000	5/89
T-AO-194	John Ericsson	97,500,000	2/90
T-AO-196	unnamed	95,025,000	11/90
Peterson Builders			
MCM-3	Sentry	57,900,000	7/88
MCM-5	Guardian	57,900,000	6/89
MCM-6	Devastator	48,287,461	8/89
MCM-8	Scout	48,287,461	6/90
Robert E. Derecktor Shipyard			
WMEC-910	Thetis	30,160,000	5/88
WMEC-911	Forward	30,160,000	9/88
WMEC-912	Legare	30,160,000	1/89
WMEC-913	Mohawk	30,160,000	5/89
TB (Army-2)	unnamed	16,500,000	89
Tacoma Boatbuilding			
T-AGOS-11	Audacious	18,590,001	6/89
T-AGOS-12	Bold		10/89
Textron Marine			
LCAC-13-24 (12)	unnamed	187,000,000	89/-6/91
Todd Pacific-San Pedro			
FFG-61	Ingraham	96,100,000	11/88

Footnotes: 1. Lead yard services contract; 2. CW3 H.C. Clinger delivered 12/87 under contract; 3. Design contract; 4. Contains $26 million for advance procurement of material for LHD-4; 5. Yard planning services; 6. Long lead procurement; 7. Detail design contract; 8. Contract services.

KEY TO NAVY DESIGNATIONS

AOE	Fast Combat Support Ship	LCM	Landing Craft, Mechanized	MHC	Mine Hunter, Coastal	T-AGS	Surveying Ship*
CG	Guided Missile Cruiser	LCU	Landing Craft, Utility	MSH	Mine Hunter	T-AO	Oiler*
CVN	Aircraft Carrier, Nuclear	LHD	Amphibious Transport Dock	SSBN	Ballistic Missile Sub, Nuclear	TB	Tugboat
DDG	Guided Missile Destroyer	LSD	Dock Landing Ship	SSN	Submarine, Nuclear	WMEC	Medium Endurance Cutter†
FFG	Guided Missile Frigate	LSV	Logistic Support Vehicle	SWCM	Special Warfare Craft, Medium	WPB	Patrol Boat†
LCAC	Landing Craft, Air Cushion	MCM	Mine Countermeasures Ship	T-AGOS	Ocean Surveillance Ship*	YTT	Warping Tug

*Assigned to Military Sealift Command
†Coast Guard

Major Navy Contracts

(continued)

fort contract for various technical and management services for the Strategic Submarines Program (Trident). Work is expected to be completed September 30, 1992. This contract combines purchases for the U.S. Navy (99 percent) and the United Kingdom (1 percent) under the Foreign Military Sales program. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-6050).

Atlantic Dry Dock Corporation, Ft. George Island, Fla., was awarded a **$7,466,000** firm-fixed-price contract for Drydocking Selected Restricted Availability (DSRA) for USS Underwood (FFG-36). Work is expected to be completed August 18, 1988. The Supervisor of Shipbuilding, Conversion and Repair, Jacksonville, Fla., is the contracting activity (N00024-85-H-8111).

General Dynamics Corporation, Electric Boat Division, Groton, Conn., was awarded a **$179,300,379** modification to a previously awarded cost-plus-fixed-fee contract for engineering services and prototype hardware for the Submarine Improved Performance Machinery program. Work will be performed in Groton, Conn. (24 percent); Fitchburg, Mass. (38 percent); and Sunnyvale, Calif. 38 percent, and is expected to be completed September 30, 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-83-C-4181).

February 4

Southwest Marine Incorporated, San Diego, Calif., was awarded a **$9,148,194** firm-fixed-price contract for the Regular Overhaul of USS Stein (FF-1065). Work is expected to be completed October 28, 1988. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-H-8221).

Rexroth Corporation, Bethlehem, Pa., was awarded a **$5,559,550** firm-fixed-price contract to furnish four MK-7 Mod 3 arresting gear engines, one arresting gear engine without cooler and associated technical data as required for the CV-65 overhaul. The contract also includes various line items of arresting gear hardware for the CV-64 overhaul. Included are cylinder ram assemblies, accumulator assemblies, control and retracting valves, airflasks, elbow assemblies, saddle assemblies, crosshead bodies, fixed-sheave bodies and associated technical data. The contract also carries option quantities of arresting gear engines and pendant cams which will not be exercised at this time. Work will be performed in Rexroth Hydraudyne, Boxtel, the Netherlands, and is expected to be completed in July 1990. The Naval Regional Contracting Center, Philadelphia, Pa., is the contracting activity (N00140-88-C-RB23).

February 5

Raytheon Company, Sudbury, Mass., was issued a **$9,855,479** modification to a previously awarded cost-plus-fixed-fee contract for engineering services for the Fleet Ballistic Missile Program. Work is expected to be completed September 30, 1988. The Strategic Systems Program Office, Washington, D.C.,is the contracting activity (N00030-88-C-0006).

Raytheon Company, Sudbury, Mass., was issued a **$57,442,700** modification to a previously awarded cost-plus-incentive-fee contract for guidance system components for the Trident Missile Program. Work is expected to be completed October 31, 1989. The Strategic Systems Program Office, Washington, D.C., is the contracting activity (N00030-87-C-0074).

Unisys Corporation, Great Neck, N.Y., was awarded a **$10,581,401** modification to a previously awarded firm-fixed-price contract for six Aegis MK 82 Mod 0 gun and guided missile directors and six MK 200 Mod 0 director controls and ancillary equipment for CG-68, CG-71 and CG-72. Work is expected to be completed July 31, 1990. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-87-C-5172).

February 8

Hughes Aircraft Company, El Segundo, Calif., was awarded a **$9,919,000** cost-plus-fixed-fee contract for engineering services for the Trident Missile Program. Work is expected to be completed September 30, 1988. The Strategic Systems Program Office, Washington, D.C., is the contracting activity (N00030-88-C-0007).

Lockheed Missiles and Space Company Incorporated, Sunnyvale, Calif., was issued a **$35,000,000** modification to a previously awarded letter contract for reentry body hardware and support equipment for the Trident Missile Program. Work is expected to be completed in October 1990. The Strategic Systems Program Office, Washington, D.C., is the contracting activity (N00030-88-C-0088).

C. Construction Company Incorporated, Tyler, Texas, was awarded a **$5,395,000** firm-fixed-price contract for the construction of 12 strategic weapons magazines at the Naval Submarine Base, Kings Bay, Ga. Work is expected to be completed in February 1989. The Naval Facilities Engineering Command, Southern Division, Charleston, S.C., is the contracting activity (N68248-85-C-5026).

Science Applications International Corporation, San Diego, Calif., was awarded a **$7,132,190** firm-fixed-price contract for the environmental monitoring of dredge/disposal activities at Naval Station Puget Sound, Everett, Wash. Work is expected to be completed in July 1991. The Naval Facilities Engineering Command, Western Division, San Bruno, California, is the contract-

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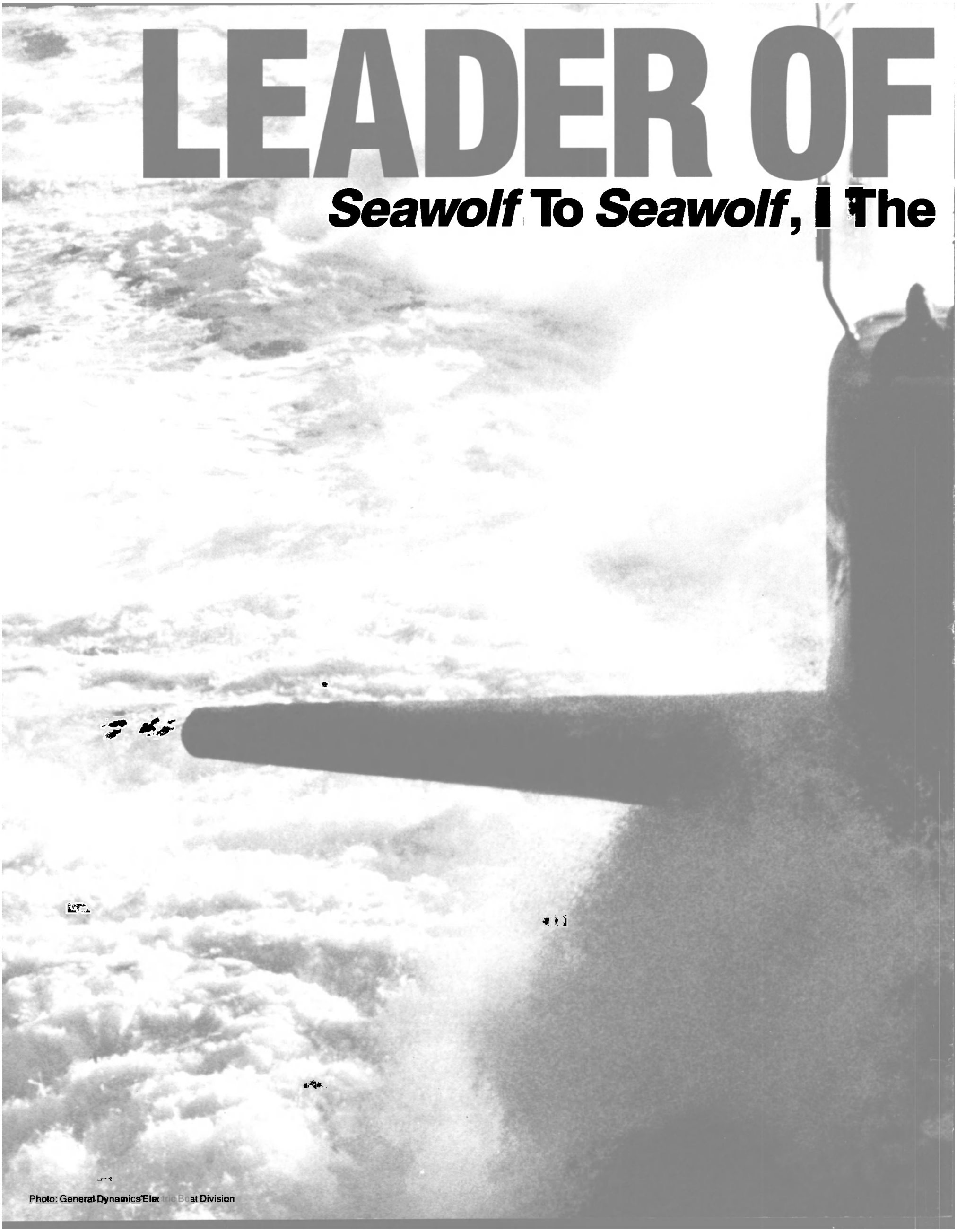

Photo: General Dynamics Electric Boat Division

THE PACK.

Proud Tradition Continues

Experience under the sea. Submarine propulsion and ships service turbine generator experience. GE has more of it than anyone. It's why our Company is eminently qualified to design, manufacture and test these critical systems for the SSN 21 *Seawolf*. In 1957, seatrials of the original *Seawolf* heralded the first of many GE contributions to the nuclear submarine field. Since then, the Company has continued to pioneer advanced systems aboard every class of submarine including the latest 688's.

SSN 688—A Technical Benchmark

The entire Class relies on GE systems for both propulsion and ships service electrical demands. Their reliability is extraordinary. In fact, since the commissioning of the *Los Angeles* in 1976, these systems endured the equivalent of hundreds of years of service without a single ship coming off line for an at-sea failure. Why? For a number of good reasons. First, GE engineers extrapolate the best ideas from existing technology and proven hardware during design and manufacture, while paying particular attention to key Navy criteria: reliability, noise, size, weight, performance, maintainability and accessibility. Then they exhaustively test each system under shipboard conditions before shipment.

On-Time Delivery And Service

GE demonstrated construction efficiency, too, by delivering these 688 propulsion and SSTG systems to shipyards ahead of schedule. After installation, GE provides life cycle support through service facilities in every major Navy port in the U.S., and in major ports worldwide. Of course, factory experts are on-call 24 hours a day, too. Through this service team, continued evolutionary advances are made available to upgrade the existing fleet. Such upgrades aboard 688's permit them to remain at sea years longer between overhauls.

Into The 21st Century

The heritage Edison began with the first shipboard power generation system continues today at GE Naval & Drive Turbine Systems. Here, we apply the resources of our $40 billion Company to develop the most advanced propulsion and ships service systems. Experience allows us to do this. It's the critical difference GE engineers build upon to advance the Navy mission with the SSN 21 *Seawolf*.

General Electric Company
166 Boulder Drive,
Fitchburg, MA 01420.

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GE NAVAL & DRIVE TURBINE SYSTEMS

U.S. NAVY

CURRENT NAVY, COAST GUARD & MARAD OVERHAUL, REPAIR & CONVERSION CONTRACTS AT U.S. SHIPYARDS
(As of March 1988)

SHIPYARD	SHIP	TYPE OF WORK	$VALUE	COMP
Alabama Dry Dock	USS Lexington (AVT-16)	PM	10,131,466	8/90
Amertech Industries	Empire State (MarAd)	REP & OH	417,528	4/88
Atlantic Dry Dock	USS Aubrey Fitch (FFG-34)	DSRA	6,950,000	3/88
	USS Underwood (LSD-36)	DSRA	7,466,000	8/88
Avondale Shipyards	USS Boone (FFG-28)	SRA	9,998,452	7/88
	USS John J. Hall (FFG-32)	DSRA	11,170,581	9/88
	USS Radford (DD-968)	ROH	20,700,000	5/89
Bath Iron Works	4 USCG cutters	ROH	117,452,000	89
	USS Brumby (FF-1044)	ROH	14,501,392	4/88
	USS Koelsch (FF-1049)	OH	12,000,000	8/88
Bethlehem Steel—Beaumont	Chesapeake (NDRF)	DD	499,500	3/88
Bethlehem Steel—Sparrows Point	USNS Neosho (T-AO-143)	DD & OH	4,489,339	5/88
Braswell Shipyards	USS Antigo (YTB-792)	SRA	1,047,448	4/88
	USNS Neosho (T-AO-143)	DD & OH	7,366,392	8/88
Charleston Naval Shipyard	USS Andrew Jackson (SSBN-619)	OH	112,058,684	3/90
	USS Woodrow Wilson (SSBN-624)	OH	120,928,007	3/89
Colonna's Shipyards	USS Richard E. Byrd (DDG-23)	DSRA	4,280,000	7/88
Continental Maritime	USS Ranger (CV-61)	SRA	4,926,630	6/88
	USS Mars (AFS-1)	DPMA	10,073,284	5/88
	USS Barbey (FF-1088)	DSRA	3,677,605	4/88
	USS Cook (FF-1083)	DSRA	3,324,711	4/88
DMI Shipyard	MSB-1	ROH	41,057,000	—
General Ship Corporation	USS Trippe (FF-1075)	ROH	8,801,078	5/88
	USS Stephen W. Graves (FFG-29)	EDSRA	10,969,490	6/88
Houston Ship Repair	Texas Clipper (MarAd)	REP	933,248	3/88
	Chesapeake (NDRF)	REP	299,985	4/88
	Mount Washington (NDRF)	REP	549,000	5/88
Industrial Welding & Machine	State of Maine (MarAd)	REP	517,200	5/88
Ingalls Shipbuilding	USS Stark (FFG-31)	REP	28,700,000	8/88
	USS Wisconsin (BB-64)	MOD	221,768,170	10/88
	USS Richmond K. Turner (CG-20)	ROH	28,780,830	8/88
Jonathan Shipyard	USS Saginaw	PM	9,900,000	6/90
Long Beach Naval Yard	LPH Class Ships	PM	8,096,132	10/90
McDermott Inc.	IX-513 Barge	MODIF	7,422,802	4/88
Metro Machine	Atlantic Fleet LPDs	PM	5,334,400	8/91
	USS Bowen (FF-1079)	OH	6,900,000	—
Mid-Coast Marine	USCG buoy tenders, Ironwood & Sweet Briar	DD	670,000	5/88
Moon Engineering	USS Conynham (DDG-17)	REP	1,484,444	—
NASSCO	4 LSTs	PM	3,500,000	90
	3 LSTs	MAINT	5,858,543	—
	USS Hewitt (DD-966)	ROH	26,619,695	4/88
	USS Elliott (DD-967)	ROH	27,779,349	9/88
Newport News Shipbuilding	USS Pittsburgh (SSN-720)	SRA	7,055,300	7/88
	USS Enterprise (CVN-65)	OH	34,277,751	9/88
	USS George Bancroft (SSBN-643)	OH	19,400,000	3/88
	USS Newport News (SSN-750)	PSA	3,400,000	1/89
	Surface Ship Support Barge	REP	48,095,123	7/89
	USS Oklahoma City (SSN-723)	PSA	3,367,692	—
	USS Key West (SSN-722)	PSA	38,000,000	12/88
	USS George C. Marshall (SSBN-654)	REF	11,172,200	10/88
	USS Lewis & Clark (SSBN-644)	REF	10,751,500	7/88
Norfolk Naval Yard	USS Baton Rouge (SSN-689)	SRA	5,462,494	10/88
	USS Vulcan (AR-5)	DSRA	4,800,000	5/88
Norfolk Shipbuilding	USS Fulton (AS-11)	DSRA	3,413,022	3/88
	AO-178, 179 & 186	PM	38,900,000	—
	USS Lawrence (DDG-4)	REP	4,966,666	—
	USS Puget Sound (AD-36)	ROH	12,210,546	5/88
	USS Resolute (AFDM-10)	ROH	9,200,000	6/88
	Mormacsea & Mormacsaga (RRF)	UPG	7,973,482	—
Northwest Marine Iron Works	USS Anchorage (LSD-36)	ROH	15,300,000	11/88
	USS Paul Foster (DD-964)	ROH	26,423,466	5/88
	USNS Mercy (T-AH-19)	PSA	4,600,000	4/88
Pennsylvania Shipbuilding	USS Patterson (FF-1061)	PM	5-10 mil/yr	—
Philadelphia Navy Yard	USS Independence (CV-62)	SLEP	240,000,000	—
Phillyship	USS Estocin (FFG-15)	SRA	3,805,219	4/88
Portsmouth Naval Yard	USS Kamehameha (SSBN-642)	ROH	112,100,000	11/88
	USS Albuquerque (SSN-706) & USS Philadelphia (SSN-690)	SRA	11,416,336	11/88
Puget Sound Naval Yard	USS Nimitz (CVN-68)	REP & OH	—	89
	USS Alexander Hamilton (SSBN-617)	ROH	110,713,798	11/88
Robert E. Derecktor	USS Connole (FFG-12)	ROH	2,500,000	—
Service Engineering	USNS Spica (T-AFS-9)	OH	10,700,000	—
	AE-29, -32-34	PM	4,154,000	89
Southwest Marine	USS Dubuque (LPD-8)	OH	10,000,000	—
	USS Wichita (AOR-1) & USS Kansas (AOR-3)	REP	41,600,000	—
	USS Pluck (MSO-464)	SRA	1,041,000	—
	LST-1185, -1186 & 1191	OH	35,000,000	87-89
	USS Okinawa (LPH-3)	ROH	16,114,285	7/88
	USS Ramsey (FFG-2)	MAINT	3,000,000	4/88
	USS Durham (LKA-114)	DD	7,611,149	7/88
	USS Anchorage (LSD-36)	ROH	15,048,870	11/88
	USS Stein (FF-1065)	ROH	9,148,194	10/88
Tacoma Boatbuilding	USNS Hayes (T-AG)	CONV	33,878,232	11/89
Tampa Shipyards	T-ACS-7 & 8	CONV	43,158,333	10/88
Todd-Seattle	USS Camden (AOE-2)	REP	12,643,642	7/88
	8 WHECs	OH	234,903,000	2/91
USCG-Curtis Bay	14 buoy tenders	SLEP	8,500,000	—
	16 WMECs	MAINT	—	—

Legend: CONV-Conversion; DEACT-Deactivation; DSRA-Docking Selected Restricted Availabilty; EDSRA-Extended Docking Selected Restricted Availability; MAINT-Maintenance; MODIF-Modification; MMA-Major Maintenance Availability; OH-Overhaul; PM-PHased Maintenance; PMA-Phased Maintenance Availability; PSA-Post-Shakedown Availability; REF-refit; REP-Repair; ROH-Regular Overhaul; SER-Service; SLEP-Service Life Extension Program; SRA-Selected Restricted Availability; UPG-Upgrade.

Major Navy Contracts

(continued)

ing activity (N62474-88-C-3278).

General Electric Company, Pittsfield, Mass., was issued a **$3,541,872** modification to a previously awarded cost-plus-incentive-fee contract for guidance system components for the Trident Missile Program. Work is expected to be completed in December 1989. The Strategic Systems Program Office, Washington, D.C., is the contracting activity (N00030-87-C-0059).

February 9

Tracor Applied Sciences Incorporated, Rockville, Md., was awarded a **$9,261,406** cost-plus-fixed-fee contract for engineering and technical support for various SSN/SSBN submarine maintenance programs. Work is expected to be completed September 30, 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-2205).

Raytheon Company, Equipment Division, Wayland, Mass., was awarded a **$16,958,180** firm-fixed-price contract for Aegis MK 99 fire control systems and T-1348/SPG radar transmitters for CG-69, CG-70, CG-72 and CG-73. Work will be performed in Wayland, Mass. (25 percent), and Waltham, Mass. (75 percent), and is expected to be completed January 1, 1993. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-5100).

General Electric Company, Syracuse, N.Y., was awarded a **$6,807,662** modification to a previously awarded fixed-price-incentive contract for sustaining engineering for the AN/BSY-2 submarine combat system. Work is expected to be completed in March 1988. The Naval Sea Systems Command, Washington, D.C. is the contracting activity (N00024-88-C-6150).

February 10

Honeywell Incorporated, Clearwater, Fla., was awarded a **$42,139,899** fixed-price-incentive contract for guidance system components for the Trident Missile Program. Work is expected to be completed March 30, 1990. The Strategic Systems Program Office, Washington, D.C., is the contracting activity (N00030-88-C-0017).

Westinghouse Electric Corporation, Baltimore Md., was awarded a **$5,016,606** modification to a previously awarded firm-fixed-price contract to exercise an option for 21 modification kits for the AN/TPS-63 radar. These kits will provide for extended range and improved velocity response. Work is expected to be completed in May 1989. The Space and Naval Warfare Systems Command, Washington, D.C., is the contracting activity (N00039-87-C-0381).

TRW Federal Systems Group, Fairfax, Va., was awarded a **$5,049,641** modification to a previously awarded fixed-price-incentive contract for Anti-Submarine Warfare Operations Center (ASWOC) Command, Control and Communications (C3) Upgrade Engineering Development Model (EDM) #1 for shipboard use. Work is expected to be completed September 30, 1988. The Space and Naval Warfare Systems Command, Washington, D.C., is the contracting activity (N00039-87-C-0018).

IBM Corporation, Federal Systems Division, Manassas, Va., was awarded a **$14,151,701** firm-fixed-price contract for high volume modules for AN/UYS-1 Advanced Signal Processors. Work will be performed in Manassas, Va. (40 percent), and Owego, N.Y. (60 percent), and is expected to be completed in February 1990. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-5217).

February 12

Southwest Marine, San Pedro Division, Terminal Island, Calif., was awarded a **$15,048,870** firm-fixed-price contract for the Regular Overhaul (ROH) of USS Anchorage (LSD-36). Work will be performed in Long Beach, Calif., and is expected to be completed November 3, 1988. The Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va., is the contracting activity (N00024-85-H-8222).

February 17

Todd Pacific Shipyards Corporation, Seattle, Wash., was awarded a **$12,643,642** modification to a previously awarded cost-plus-award-fee contract for repairs for USS Camden (AOE-2). Work is expected to be completed July 11, 1988. The Supervisor of Shipbuilding, Conversion and Repair, Seattle, Wash., is the contracting activity (N00024-85-C-8518).

February 23

C.C.C. Georgia Incorporated, Brunswick, Ga., was awarded a requirements contract to carry U.S. military-sponsored cargo between the U.S. East Coast and the U.S. Naval Station, Guantanamo Bay, Cuba. The estimated value of the contract is **$8,734,083.** The Military Sealift Command, Washington, D.C., is the contracting authority (N00033-88-D-8504).

February 25

Bath Iron Works, Bath, Maine, was awarded a **$226,123,977** fixed-price-incentive contract for the construction of one CG-47 class ship. Work is expected to be completed in June 1993. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-2178).

Ingalls Shipbuilding Incorporated, Pascagoula, Miss., was awarded a **$769,142,667** fixed-price-incentive contract for the construction of four CG-47 class ships. Work is expected to be completed in January 1994. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-2034).

Norden Systems Incorporated, Norwalk, Conn., was awarded a **$3,700,000** firm-fixed-price contract for three audio generators plus related hardware and data for the Trident Sonar Operation Trainer. Work is expected to be completed in December 1991. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-6134).

February 29

Braswell Shipyards Incorporated, Charleston, S.C., was awarded a **$7,366,392** firm-fixed-price contract to perform Part I of the drydock, voyage repairs and overhaul of USNS Neosho (T-A0-143), a Military Sealift Command fleet oiler. The Military Sealift Command, Washington, D.C., is the contracting authority (N00033-87-R-3046).

Bethlehem Steel Corporation, Sparrows Point, Md., was awarded a **$4,489,339** firm-fixed-price contract to perform Part II of the drydock, voyage repairs and overhaul of USNS Neosho (T-AO-143), a Military Sealift Command fleet oiler. The Military Sealift Command, Washington, D.C., is the contracting authority (N00033-87-R-3046).

March 1

Superior Gunite Company, Lakeview Terrace, Calif., was awarded a **$3,535,000** firm-fixed-price contract for repairs to the walls of drydock number 4 at the Norfolk Naval Shipyard, Portsmouth, Va. Work is expected to be completed in September 1989. The Naval Facilities Engineering Command, Atlantic Division, Norfolk, Va., is the contracting activity (N62470-85-C-5459).

General Dynamics Corporation, Electric Boat Division, Groton, Conn., was awarded a **$5,134,000** cost-plus-fixed-fee contract for engineering services for the United Kingdom's Trident SSBN program. Work is expected to be completed September 30, 1993. This contract is in support of a Foreign Military Sale to the United Kingdom. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-88-C-2165).

March 4

Southwest Marine Incorporated, San Diego, Calif., was awarded a **$7,611,149** firm-fixed-price contract for drydocking phased maintenance availability for USS Durham (LKA-114). Work is expected to be completed July 1, 1988. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-H-8221).

March 9

Simplex Wire and Cable Co., Portsmouth, N.H., has received a **$3.8-million** contract for oceanographic service. Work is expected to be completed by Dec. 31, 1988. The Space and Naval Systems Command, Washington, D.C., is the contracting activity (N00039-88-C-0116).

March 11

Tracor Applied Sciences Inc., Austin, Texas, has received a **$32.9-million** contract to provide technical and engineering services

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Major Navy Contracts

(continued)

to support the design, development, test and integration of the platform to platform, exterior communication system for the DDG-51 class guided missile destroyer. Work is expected to be completed by Feb. 28, 1993. The contract was awarded by the Naval Air Station, Patuxent River, Md., (N00421-88-C-0210).

March 14

E-Systems Inc., St. Petersburg, Fla., has received a **$7.3-million** contract for the upgrade and refurbishment of antennas for the Terrier and Tartar programs. Work is expected to be completed by Dec. 31, 1992. The contract was awarded by the Naval Sea Systems Command, Washington, D.C., (N00024-88-C-5618).

General Electric Co., Knolls Atomic Power Laboratory, Schenectady, N.Y., received a **$10.6-million** contract for naval nuclear propulsion research and development. Work is expected to be completed by Sept. 30, 1988. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-79-C-4027).

March 15

Honeywell Inc., Underseas Systems Division, Hopkins, Minn., has received a **$9.5-million** contract for technology transfer for the MK-50 torpedo program. Work is expected to be completed in July 1989. The contract was awarded by the Naval Sea Systems Command, Washington, D.C., (N00024-83-C-6254).

March 16

Honeywell, Inc., Marine Systems Division, Everett, Wash., has received a **$5.8-million** contract for high volume modules for AN/UYS-1 advanced signal processors. Work is expected to be completed in February 1990. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-88-C-5236).

Westinghouse Electric Corp., Bettis Atomic Power Laboratory, West Mifflin Borough, Pa., has received a **$10.7-million** contract for naval nuclear propulsion research and development. Work is expected to be completed in September 1988. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-79-C-4026).

March 17

Westinghouse Electric Corp., Plant Apparatus Division, Wilkins Township, Pa., has received a **$15.9-million** contract for naval nuclear propulsion components. Work is expected to be completed by Sept. 30, 1993. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-88-C-4030).

March 18

Applied Research Laboratories, Austin, Texas, has received a **$3.5-million** contract for research, development and engineering to provide mission oriented solutions to naval warfare problems in acoutics, electromagnetics and other related essential capabilities. Work is expected to be completed by Dec. 6, 1990. The contract was awarded by the Space and Naval Warfare Systems Command, Washington, D.C. (N00039-88-C-0043).

March 21

Tracor Applied Sciences Inc., Austin, Texas, has received a **$95.2-million** contract for support services for the AN/SQQ-89 sonar. Work is expected to be completed in April 1993. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-88-C-6004).

March 22

Newport News Shipbuilding and Dry Dock Co., Newport News, Va., has received a **$22-million** contract for lead yard services for the SSN-688 class submarine program. Work is expected to be completed by Oct. 31, 1988. The contract was awarded by the Naval Sea Systems Command, Washington, D.C. (N00024-87-C-2014).

Newport News Receives $22-Million Contract

The Newport News Shipbuilding and Dry Dock Co., Newport News, Va., recently received a $22-million contract from the Naval Sea Systems Command for lead yard services for the Los Angeles Class (SSN-688) attack submarine program. Work under the contract (N00024-87-C-2014) is expected to be completed October 31, 1988.

$116-Million Contract To Tacoma Boat To Retrofit Four Egyptian Subs

Tacoma Boatbuilding Co. (TBC) recently announced that they signed a contract with the Armament Authority of the Arab Republic of Egypt in connection with the retrofit of four submarines for the Egyptian Navy. Pursuant to this contract, which is valued at approximately $116,000,000 and calls for work over a period of approximately five years, TBC will upgrade certain electronic sectors and combatant capabilities of the Romeo Class submarines. The actual installation of the new equipment on the submarines will take place in Egypt at Egyptian Naval facilities.

The Romeo Class submarines were delivered to Egypt several years ago as a part of multi-ship procurement agreement between the Arab Republic of Egypt and the Peoples Republic of China.

Work will commence pursuant to this contract after several preconditions are achieved including receipt of final export license approval, approval by the Defense Securities Assistance Agency of certain funding, the posting of financing guarantees by TBC, and the initiations of payments by the Arab Republic of Egypt.

TBC anticipates that the contract will become operative during the third quarter of 1988.

This is the third significant military contract received by TBC in the last 13 months. As a result of this award, TBC's backlog has been increased to $161,000,000.

The company designs, constructs and repairs medium-sized vessels for the U.S. Government, domestic and foreign commercial customers and foreign governments.

For more information and free literature on Tacoma Boatbuilding,

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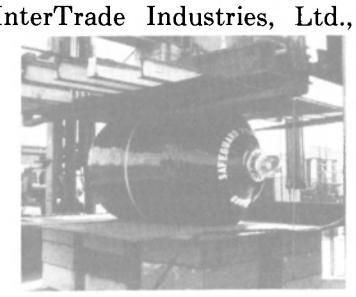
Tracor Receives $38.1-Million Contract From NAVSEA

Tracor Applied Sciences, Inc., a subsidiary of Tracor, Inc., has received a contract from the Naval Sea Systems Command to provide engineering and technical support for the U.S. Navy Strategic and Attack Submarine Fleet. The contract includes three option years with a total value of $38,129,000.

According to **William C. Moyer,** group vice president for Tracor Applied Sciences, under the contract the company will provide the engineering disciplines and technology necessary for the development and implementation of dedicated maintenance and modernization programs to support the submarine Extended Operating Cycle (EOC) concept. The submarine EOC program extends the interval between submarine overhauls to achieve a higher, stabilized level of deployed submarines and maintains the fleet in a high state of readiness.

InterTrade's 'Safeguard' Netless Marine Fenders Meet Navy Specifications

InterTrade Industries, Ltd., of Huntington Beach, Calif., recently submitted their 6-foot-diameter Safeguard™ marine fenders to First Article Testing under a U.S. Navy contract. The "torture test" was meant as verification of compliance with the Navy's newly developed Netless Marine Fender Specifications.



Uncompressed 6-foot-diameter 'Safeguard' netless marine fender before being compressed down to 22 inches during performance of test to verify compliance with Navy's new netless fender specifications.

In addition to the proof load test of 70 percent compression, the test unit was subjected to 60 percent energy absorbtion and reaction force testing as well as end fitting pull-through testing at 90,000-pound loadings.

InterTrade is now under contract to deliver 30 such 6-foot-diameter by 12-foot-long Safeguard netless fenders.

For additional information and free literature on InterTrade's netless marine fenders,

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Bethlehem Steel Yard Receives $4.4-Million For Navy Oiler Work

The Sparrows Point Shipyard of Bethlehem Steel Corporation has received a $4,489,339 contract from the U.S. Navy to perform the dry-docking, voyage repairs and overhaul of the fleet oiler USNS Neosho (T-AO-143).

SNAME SPRING MEETING/ STAR SYMPOSIUM 'MARINE & OFFSHORE SYSTEMS'

Pittsburgh, Pa.—June 8-10

1988 Ship Technology And Research Symposium To Be Held In Conjunction With 3rd International Marine Systems Design Conference

The Society of Naval Architects and Marine Engineers (SNAME) will hold its 1988 Spring Meeting/ Ship Technology and Research (STAR) Symposium at the Pittsburgh Hilton & Towers Gateway Center, Pittsburgh, Pa., from June 8 to 10. The meeting and symposium will be held in conjunction with the 3rd International Marine Systems Design Conference (IMSDC). The event, sponsored by the Great Lakes/Great Rivers Section of SNAME, will bring together more than 300 members of the international community from at least 11 nations.

The focus of the 1988 STAR Symposium will be new technologies and analysis capabilities which are emerging within the marine research community. A special feature of the program will be a series of papers presented by the SNAME Technical & Research Program's Ships' Machinery Committee on a variety of new technologies. Some of the papers featured by the committee include: "Fundamentals of Optical Fiber Communications"; "Glass Reinforced Plastic Material for Machinery Applications Aboard Ship"; and "The Intercooled Regenerative Gas Turbine."

The aim of the IMSDC, which meets only once every three years, is to promote marine design as a professional discipline and science. The first meeting of the IMSDC, held in 1982, was hosted by the Royal Institution of Naval Architects in London, England. The second meeting, held in 1985, was sponsored by Skibsteknisk Selskab (The Danish Society for Naval Architecture and Marine Engineering) in Lyngby, Denmark. The emphasis of the 3rd IMSDC will be both the theoretical aspects of the marine design process and recent new design applications for ships and offshore projects.

In addition, a full and diverse social program has been planned. Beginning Wednesday, June 8, with an Early Bird Reception, and running through the close of the meetings, are activities such as the Three Rivers Arts Festival, offering a selection of arts, crafts, food, drink and entertainment; tours of the city's cultural sights and attractions; the President's Reception on Thursday, June 9; and a three-hour river cruise on the Allegeny, Monogahela and Ohio Rivers on June 10.

The Society of Naval Architects and Marine Engineers, founded in 1893, has a membership of almost 12,000 composed of a variety of shipbuilding and maritime-related professionals.

For more information on registration and attendance, contact: The Society of Naval Architects and Marine Engineers, 601 Pavonia Avenue, Jersey City, N.J. 07306; telephone: (201) 798-4800.

TECHNICAL SESSIONS

Thursday, June 9
Ballroom 3

9 a.m.—"The Subcavitating/Supercavitating Hybrid Propeller" (SNAME), by **William S. Vorus** and **Robert F. Kress.**

A hybrid propeller concept is presented in which the blades incorporate the technologies of both subcavitating and supercavitating propellers.

10 a.m.—"An Advanced Method for Design of Optimal Ducted Propellers Behind Bodies of Revolution" (SNAME), by **Michael Schmiechen** and **Lian-Dizhou.**

An advanced method is proposed which requires no explicit assumptions about effective wake fraction and thrust deduction at any stage. It is not restricted further to moderate propeller loading, small hub/diameter ratio, or ideal fluid behavior.

11 a.m.—"Optimal Hull Forms for Fishing Vessels" (SNAME), by **O. Goran** and **Sander M. Calisal.**

Optimal hull forms for fishing vessels with minimum total resistance are found using mathematical programming.

1:30 p.m.—"A Knowledge-Based System Architecture for Control of Underwater Vehicles" (SNAME), by **Svein Kristiansen.**

Autonomous Underwater Vehicles (AUVs) have received increasing interest in recent years as a tool for some demanding marine tasks. A control architecture for an AUV based upon a number of technologies from artificial intelligence is described.

2:30 p.m.—"Roll Reduction by Rudder Control" (SNAME), by **Claes G. Kallstrom, Peter Wessel,** and **Sven Sjolander.**

3:30 p.m.—"An Integrated Rig Management System for a Semisubmersible Floating Production Vessel" (SNAME), by **Mark L. Neudorfer** and **John E. Sirutis.**

An integrated management system installed on a floating production vessel operating in the North Sea is described.

4:30 p.m.—"Computer-Aided Navigation System (CANSY-II)" (SNAME), by **Masaharu Yamamoto, Akira Shiraki, Osamu Yamamoto, Yuji Hirakawa, Kenji Yamguchi** and **Akira Nishiguchi.**

Efforts to develop software techniques for ship's operation have succeeded in producing a Computer-Aided Navigation System (CANSY) in cooperation with sympathetic shipowners.

Thursday, June 9
Ballroom 4

9 a.m.—"Methods of Incorporating Design for Production Considerations into Concept Design Investigations" (IMSDC), by **H.S. Hong, John B. Caldwell,** and **William Hills.**

A new method is presented for incorporating production considerations into concept design of ships and their structures.

10 a.m.—"Achieving Customer and Market Orientation in Marine Transportation Systems Design" (IMSDC), by **Hu Ying.**

Aspects of customer and market orientation in design are discussed. The focus is directed to the possibility of the application of marketing principles in the shipping industry, aiming at improving marine transportation system design.

11 a.m.—"Incorporating a Seakeeping Capability in a Computer-Aided Preliminary Design Systems" (IMSDC), by **Grant E. Hearn, William Hills** and **Paul A. Colton.**

The task of integrating seakeeping analysis into the conceptual design stage of the design process, so as to facilitate a high degree of designer interaction, is discussed. The particular analysis tools used with this process are described. Examples of application are included in connection with the design of a RO/RO vessel, and in the context of sensitivity analysis.

1:30 p.m.—"Hull Form Design—Only a Matter of the Computer?" (IMSDC), by **Hans Langenberg.**

Contrary to the prevailing thinking, a hull form cannot be developed during the short time allowed for the preparation of a tender. This statement is supported by examples taken from 20 years' experience. A newly developed hull form for fast, single-screw vessels is presented. This form can reduce the propulsive power by up to 25 percent compared with ordinary multi-screw vessels.

2:30 p.m.—"The Components of the Propulsive Efficiency of Ships in Relation to the Design Procedure" (IMSDC), by **SV AA Harvald** and **Jan M. Hee.**

The designer has to match the characteristic power curves for the ship and the propeller. To accomplish this, the propeller efficiency, relative rotative efficiency, and hull efficiency must be estimated. The designer must also know the manner in which these efficiencies have been estimated and their accuracy in order to incorporate the right corrections and safety factors. A long series of experiments have been carried out to provide the understanding and data needed to estimate components of the propulsive efficiency of ships in the early design stage.

3:30 p.m.—"Design Conception of Hull Form and CAE/CAD" (IMSDC), by **Masahiko Mori.**

A current method of designing hull forms for high value-added ships is presented.

4:30 p.m.—"Direct Curve and Surface Manipulation for Hull Form Design" (IMDSC), by **Klaus-Peter Beier.**

A new technique for the manipulation of the shape of curves and surfaces using interactive graphics is presented. The mathematical background for the direct manipulation of plane and space curves will be described.

OPEN TECHNICAL DISCUSSIONS

Thursday, June 9
8 p.m.
Chartiers Room

"Improving Models for Conceptual Design Studies," **Michael G. Parsons,** moderator.

An opportunity to informally continue technical discussions of the topics of the Thursday morning IMSDC Technical Sessions. Also, perhaps a preview of some of the topics included in the Friday, June 10, IMSDC Technical Sessions. A cash bar will be available.

Rivers Room
"Design Issues in Hull Form Design," **John W. Boylston,** moderator.

An opportunity to informally continue technical discussions of some of the topics of the Thursday afternoon IMSDC Technical Sessions.

Brigade Room
"Design Issues in Powering and Propulsors," **William S. Vorus,** moderator.

An opportunity to informally continue technical discussions of some of the topics of the Thursday morning STAR Technical Sessions and the Thursday afternoon IMSDC Technical Sessions.

Friday, June 10
Ballroom 3

8:45 a.m.—"New Technologies Affecting Marine Machinery" (SNAME), **Thomas P. Mackey,** chairman-Ship's Machinery Committee (SNAME), moderator.

This mini-symposium has been organized by the SNAME Ship's Machinery Committee to focus on recent and current research and development which are affecting marine machinery. The following short talks will be presented in the three-hour session:

"Fundamentals of Optical Fiber Communications," by **Dan L. Phelen** and **Robert M. Morais.**

"Glass Reinforced Plastic Material for Machinery Applications Aboard Ship," by **George F. Wilhelmi.**

"High-Efficiency Electric Motors," by **Harry Blakely.**

"Diagnostic Vibration Monitoring," by **John S. Mitchell.**

"Internal Coatings for Machinery," by **Matthew F. Winkler.**

"The Intercooled Regenerative Gas Turbine," by **Tim Doyle.**

2 p.m.—"Evaluation of Impact Loads Associated with Flare Slamming" (SNAME), by **Armin W. Troesch** and **Chang-Gu Kang.**

The hydrodynamics of flare impact are modeled by assuming that a pressure release surface exists on the mean water surface. While this simplified boundary value problem ignores some important impact features, it has the significant advantage of being computationally simple. With this theoretical model, it is possible to include three-dimensional effects that are ignored in previous two-dimensional theories. Results of experimental drop tests of bow-shaped bodies are compared with both the two-dimensional and three-dimensional theoretical calculations.

3 p.m.—"Surface Effect Ship Loads: Lessons Learned and their Implications for Other Advanced Marine Vehicles" (SNAME), by **Paul Kaplan** and **A. Malahoff.**

As a consequence of high speed, air cushion support, and large flat surfaces, advanced technology methods were applied to determine Surface Effect Ship structural loads.

4 p.m.—"Advanced Ship Structural Design and Maintenance" (SNAME), by **Peter E. Koehler** and **S. Valsgard.**

This paper describes a method for advanced ship structural design, and proposes the use of reanalysis of ship structures as part of ship hull condition monitoring and maintenance.

Friday, June 10
Kings Garden, North

8:45 a.m.—"Intelligent Computer Aid in Marine Design and Ocean Engineering" (IMSDC), by **Bernt A. Bremdal** and **Steffen Zeuthen.**

Development of knowledge-based expert systems (KBES) has become a major research activity within the field of computer aided engineering. Two of the most challenging application areas are design and planning. SEAMAID and LIFT are two prototypes that specifically address KBES development for marine engineering use.

9:45 a.m.—"Ship Synthesis Model Morphology" (IMSDC), by **Dale E. Calkins.**

The development of the methodologies and architecture of ship system synthesis models used in design will be described. The architecture of existing marine and aeronautical synthesis models will be reviewed to develop a "generic" synthesis model.

10:45 a.m.—"Experience in Teaching Marine Design on an Assignment Basis" (IMSDC), by **Lars E. Mathisen** and **Stian Erichsen.**

(continued)

SNAME Spring Meeting

(continued)

Teaching design on an assignment basis has proved to be very motivating for students and teachers. The paper presents a review of instructions to students, the grading system, and an account of time spent on the course by teachers, instructors, and students.

2 p.m.—"Operational Aspects in Ship Design: The Case of the Roll-On/Roll-Off Vessel" (IMSDC), by **Per O. Brett, Stein Gaarder, Geir Thorseng** and **Truls Vaa.**

The classic basic design spiral does not include any sector or loop that raises the issues of operational aspects in the human behavior sense. The paper discusses why the basic design spiral and process have to be improved in principle and what new design strategies may look like.

3 p.m.—"Productive Experience of 3D CAD/CAM Techniques Applied to Ship Design and Construction" (IMSDC), by **Colin J. Beames** and **William F. Beck.**

Three-dimensional CAD/CAM techniques developed by two British shipyards for the multi-disciplined design and detailing activities through the production process will be discussed.

4 p.m.—"A New Concept for 'Neat Fit' Ship Propulsion" (IMSDC), by **Constantin M. Gallin, E. Terorde** and **G. Versock.**

Megator Completes Navy Pump Contracts Totaling $1.3 Million

Megator Corporation, of Pittsburgh, Pa., recently completed U.S. Navy contracts valued at $1.3 million. Megator Corporation is the manufacturer of the Megator "Sliding-Shoe Pump." This positive displacement pump had been selected by NAVSEA to undergo extensive NAVSSES testing as a replacement candidate for existing oily waste transfer pumps aboard U.S. Navy aircraft carriers and escort ships.

A prerequisite 250-hour land-based endurance test, performed at NAVSSES, revealed the Megator Sliding-Shoe Pump to be a durable and reliable pump requiring little maintenance or attention. Pump design allows for loss of prime and dry running for extended periods with no damage and instant repriming. Any maintenance required is simplified by easy disassembly and accessibility of the few moving parts. The pump is cabable of handling most materials while providing consistent self-priming and constant flow against discharge heads ranging to 110 pounds per square inch.

The excellent performance of the Megator Sliding-Shoe Pump while undergoing endurance testing resulted in sea trials with the same results.

The Megator Sliding-Shoe Pump is an off-the-shelf pump meeting Grade A shock for fleet requirements. This feature has saved considerable cost to the Navy in both unit price and parts replacement.

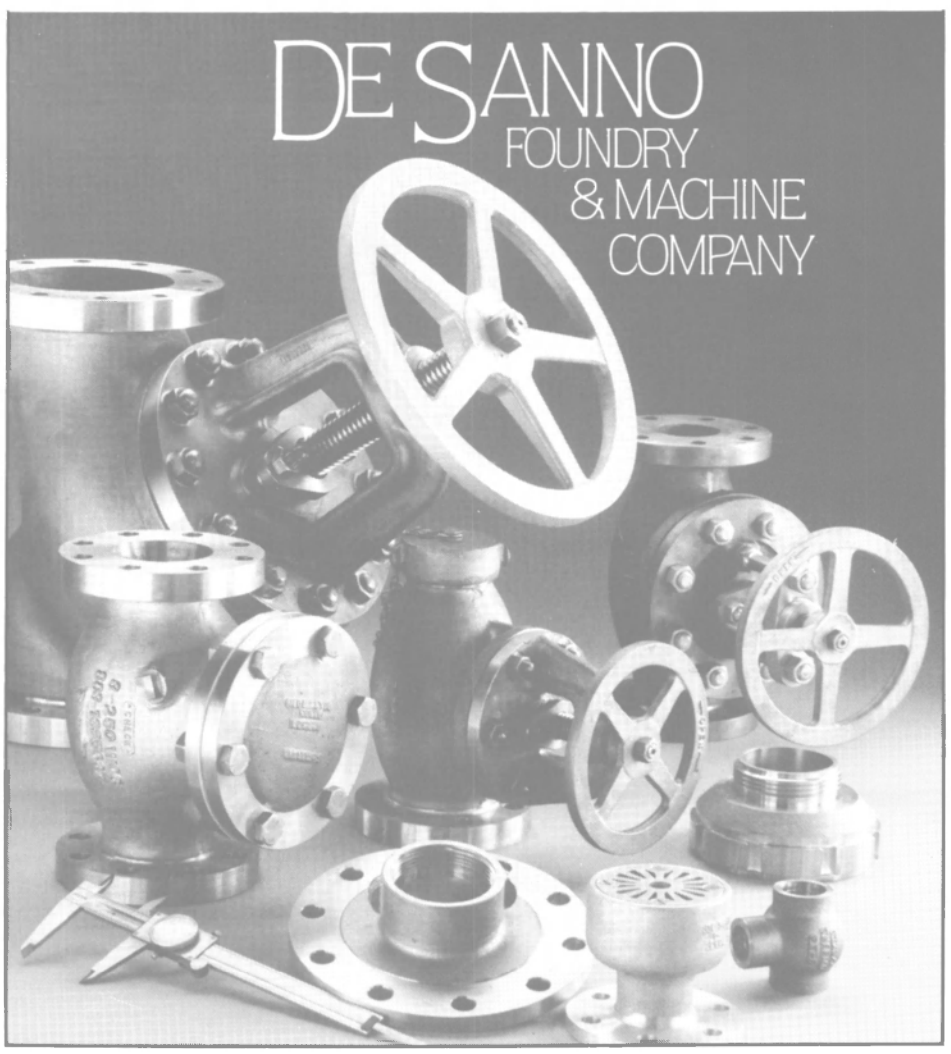
For more information and free literature on the Sliding-Shoe Pump from Megator,

Circle 24 on Reader Service Card

Navy Awards $31.8-Million Contract To Lockheed Shipbuilding

Lockheed Shipbuilding Company, Gulfport Marine Division, Gulfport, Miss., has been awarded a $31,759,154 modification to a previously awarded fixed-price U.S. Navy contract for the long lead time material for the Landing Craft Air Cushion (LCAC) program. The work is expected to be completed in 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-87-C-2089).

NAVAL TECHNOLOGY AND SHIPBUILDING magazine is a supplement appearing in six (February, March, May, July, September, December) of the twelve issues of MARITIME REPORTER and Engineering News magazine, 118 E 25th Street, New York, NY 10010. (212) 477-6700. Fax: (212) 254-6271. Telex: 424768 MARINTI.



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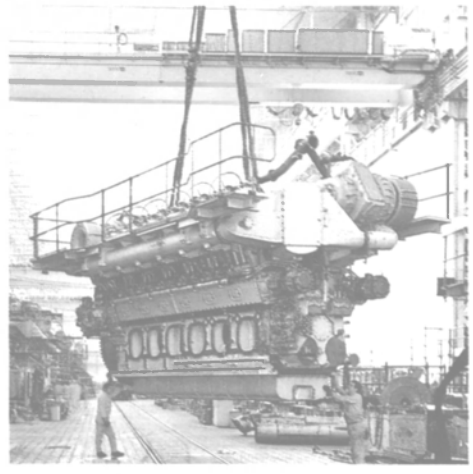

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McDermott Names Howson To Succeed Cunningham As Chief Operating Officer

Robert E. Howson

James E. Cunningham, chairman of the board and chief executive officer of McDermott International, Inc., recently announced that the board of directors has formally designated **Robert E. Howson,** president and chief operating officer of McDermott, as his successor. Mr. **Cunningham** will reach retirement age this year, and will continue to serve the company as a member of its board of directors after retirement.

Mr. **Howson** will be officially elected chairman of the board and chief executive officer at the meeting of the board of directors to be held following the annual meeting of shareholders on August 9, 1988.

Mr. **Howson** assumed his present responsibilities during 1987. He has served on McDermott's board of directors since March 1981 and has been president and chief operating officer of the McDermott Marine Construction unit since that time. He was named president and chief operating officer of the Babcock & Wilcox unit in 1986 and chief operating officer of the McDermott International trading unit in mid-1987.

Mr. **Cunningham** has served as chairman of the board and chief executive officer of McDermott International since 1979.

Environmental Test Facilities Completed By Hi-Test Laboratories

Hi-Test Laboratories, Inc., recently announced the completion of its expanded Noise, Shock and Vibration (NS&V) environmental test facilities featuring a newly installed MIL-STD-167 vibration table that will accommodate test articles weighing up to 35,000 pounds. The test bed, one of the largest facilities in operation, is 16 feet by 16 feet and employs the largest in data acquisition capabilities.

Hi-Test is capable of performing lightweight, medium weight and heavyweight (MIL-S-901) shock tests at its Arvonia, Va., plant and with these expanded facilities will also provide MIL-STD-167 Type I and Type II vibration, structure-borne noise, as well as a wide array of other test measurement and data analysis capabilities.

For additional information and free brochures from Hi-Test Laboratories,

Circle 26 on Reader Service Card

Wartsila Constructing Two Passenger Vessels For Oy Silja Line Ab

One of the two partners in Silja Line, Effoa-Suomen Hoyrylaiva Oy, has placed an order for a large passenger ship intended for service on the Helsinki-Stockholm route. The vessel is expected to be delivered in the spring of 1990. At the same time the other partner, Johnson Line Ab, ordered a sister ship to be delivered in the spring of 1991.

Both vessels will be built at Wartsila Marine Industries Inc.'s Turku Shipyard.

The new vessels will replace the MS Finlandia and the MS Silvia Regina now operating on the Helsinki route.

The Silja Line's new vessels will have the following approximate dimensions: length 656 feet; breadth 103 feet; and draft 22 feet. They will have a maximum passenger capacity of 2,500, and will have space for 450/60 private cars/trucks.

For free literature giving full details on Wartsila Marine's facilities and capabilities,

Circle 16 on Reader Service Card

ELECTRONICS UPDATE

New York Exhibition Showcases First Production Color ARPA From Racal Marine

—Free Color Brochures Offered—

Racal Marine recently showcased and demonstrated its new Racal 2690 BT, reportedly the world's first production type-approved color ARPA providing a 16-inch PPI equivalent scan on a 26-inch diagonal TV-type display, and a number of other advanced marine navigation products at a three-day exhibition at the Whitehall Club in Manhattan.

Well suited for deep-sea vessels, the 2690BT series ARPA and TM/AC display are easy to operate with large, individual function control buttons. The basic radar controls on the upper panel follow the standard Racal-Decca layout used in thousands of Master series 20-inch color radars already in use at sea.

The clear advantages of this system are its exceptionally bright color presentation of radar video, synthetic graphics and tote information on a 26-inch DSC display. The 26-inch DSC Racal Decca marine display has been specially designed to meet the requirement for a presentation that can be interpreted quickly and surely under all conditions.

Switchable color coding minimizes eyestrain by day or night and allows the display to be viewed conveniently under a variety of lighting conditions.

This easy-to-operate ARPA has a 20 track capacity with manual or automatic target acquisition. The unit's ARPA controls are located on the lower panel, arranged according to function in a logical layout.

In addition to their standard suites of eight video maps, the Racal-Decca 2690BT Series ARPAs can be supplied with an NMEA 0183 proprietary interface to a navigation system such as the Racal-Decca MNS 2000 or Decca Navigator Mark 53. This interface enables the operator to show on the ARPA range scales (1½ to 24 nm) a graphic presentation of the voyage plan.

The same interface also enables the ARPA to receive from the associated navigation system a defined position in latitude and longitude, preset to correspond to the reference point around which one or more of the video maps in the ARPA memory has been constructed. The ARPA can calculate the range and bearing of this point from the ship's position and thus provide automatic alignment of a video map.

The Racal 2690BT Series features a full range of 3 cm and 10 cm marine radars designed to comply with international type approval standards for the largest vessels. Other features of the series include: AC display with anti-collison markers, parallel indexing, true motion guard zones and semiautomatic electronic feature; an advanced clutter control called "Clearscan" to clear sea and rain clutter from the display; and a console design which offers the option of three preset viewing angles—11 degrees, 23 degrees and 35 degrees.

Other Racal products on display at the New York City exhibition included: Racal-Decca 20-inch color rasterscan radar; Racal-Decca LSR 4000 Nav Status and Voyage Management Display System; Racal-Decca Marine Navigation System MNS2000; MK53 Decca Navigator; Racal-Decca ISIS 250C Machinery Control and Surveillance System and ISIS 250 Microprocessor-Based Integrated Ship Instrumentation System; and Racal-Decca Deep-Sea Color Radars.

The LSR 4000 (Live Situation Report) display comprises a high definition color monitor with associated processor. This unique system provides a dynamic summary of all data relevant both to general navigation and immediate conning of a vessel. It also displays on demand the full voyage plan which is automatically updated.

The Racal-Decca MNS 2000 is a multi-sensor marine navigation management system, designed to a module concept. The system can derive position fixing data for vessel navigation purposes practically anywhere in the world through its multi-sensor radio navaid receiver unit. It is able to interface to compatible ARPAs, autopilots, plotters and vessel management systems.

The MK53 Decca Navigator is a four-channel integrating narrowband receiver incorporating both Normal and Lane identification pattern positioning with full worldwide chain coverage. It has been designed to operate in conjunction with both electromechanical and color video plotters. The MK53 also incorporates a navigational computer which can interface with other bridge equipment such as radar, automatic chart table and autopilot.

Racal-Decca's 2690BT Series ARPA and TM/AC display are easy to operate with large, individual function control buttons.

The Racal 970/990 Series of gyro-stabilized radars is designed for use aboard vessels up to 1,600 tons. The compact 14-inch diagonal screen has 10 range scales from ¼ nm to 96 nm.

The Integrated Ship Instrumentation System (ISIS) 250C Series offers monitoring and control of main and auxiliary machinery, cargo and ballast from one or more locations. It fully meets the requirements of the major international classification societies for unattended machinery spaces.

The ISIS 250 microprocessor-based Integrated Ship Instrumentation System consists of a series of standard units and modules that may be configured together to accommodate a wide range of alarm and monitoring specifications—from simple alarm detection on small vessels to the most demanding requirements of the largest marine, naval and offshore installations.

For a free package of color brochures detailing the new 2690BT color ARPA and other Racal marine navigation products showcased at the exhibition,

Circle 74 on Reader Service Card

Adrian R.P. Day, president, Racal Marine Inc. (at left) and **Brian W. Craig,** managing director-international operations, Racal Marine Group Limited, examine the new Racal-Decca 2690BT color ARPA at a recent exhibition in New York City.

SNAME To Hold 1990 Annual Meeting In San Francisco

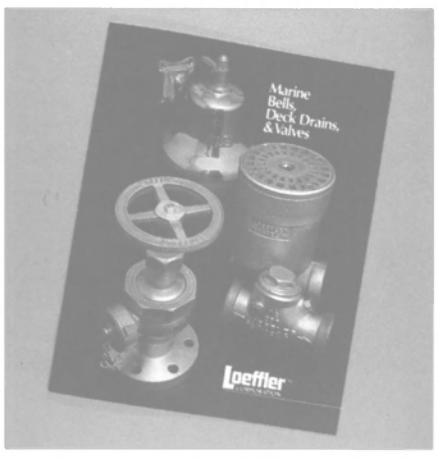
Edward J. Campbell, president of the Society of Naval Architects and Marine Engineers (SNAME), has announced the society will hold its 98th Annual Meeting in San Francisco, Calif. in 1990. This marks the first time that the meeting would be held outside of New York City.

The 98th Annual Meeting will be held at the Hyatt Regency San Francisco in the Embarcadero Center, along with the Ninth International Maritime Exposition, from October 31 to November 3, 1990.

The departure from tradition was based, in part, on a survey of the society's membership. Many of the respondents expressed the opinion that the Annual Meeting should occasionally be located somewhere other than New York City. San Francisco was the most popular choice for those that responded.

For more information on attendance or exhibiting, contact: The Society of Naval Architects and Marine Engineers, 601 Pavonia Avenue, Jersey City, N.J. 07306; telephone: (201) 798-4800.

Loeffler Offers New Free 12-Page Color Catalog On Valves, Drains, Hardware



Loeffler's new free 12-page color catalog, "Marine Bells, Deck Drains, & Valves."

Loeffler Corporation, a leading manufacturer of ship's bells, deck drains, valves and other marine hardware since 1926, recently issued an attractive new 12-page catalog for these products.

The catalog, which is free, is complete with photographs of the products, as well as dimensions for all required application information for cast bronze bells, trip gongs, cylindrical gongs, and deck drains. Similar information is provided for scupper, angle stop, globe stop, Y-stop, stop check, swing check, angle hose and globe hose valves.

In addition to the standard Loeffler marine products, the catalog contains useful information regarding standard hose thread sizes, pipe thread sizes, and standard bronze flange sizes for both commercial and U.S. Navy fittings.

For more information and a free copy of the new 12-page color catalog from Loeffler,

Circle 64 on Reader Service Card

Kvaerner (UK) Ltd. Wins Contracts In Portugal And Singapore

Kvaerner Ships Equipment's U.K. subsidiary, South Shields-based Kvaerner (UK) Ltd., recently won orders for the design of hatch covers and transportable grain bulkheads for a series of mini bulk carriers building in Portugal and two multipurpose cargo ships to be jumboized in Singapore.

Kvaerner's Portugese order is for the supply of hydraulic folding crocodile weather deck covers for a series of 4,000-dwt mini bulk carriers contracted by Lisbon's Portline for domestic shipyard Estaleiros Navais de Viana do Castelo.

The Singapore contract is for the design of the weather deck and 'tweendeck hydraulic hatch covers for the new midbody sections for a 18,230-dwt multipurpose cargoship, the Maria Oldendorff, at Jurong Shipyard, and the conversion of a second vessel which will take place during 1990, when the vessel is delivered from East Germany.

For free literature giving full details on Kvaerner (UK) Ltd.,

Circle 19 on Reader Service Card

First USCG Cutter Of New Class Commissioned At Bollinger Machine Shop

Richard N. Bollinger, Vice Adm. **Donald C. Thompson,** and **Donald G. Bollinger** gather at the Fleet Dedication held at the Coast Guard Base in New Orleans.

The first boat of the "B" Class of Coast Guard 110-foot cutters was recently commissioned in ceremonies at the Coast Guard Base in New Orleans, La. WPB 1317, Attu, is the 17th of the Island Class cutters, but the first of a second contract to produce 21 boats.

This contract is funded and administered by the U.S. Navy, but the boats are operated for service by the U.S. Coast Guard. A commissioning pennant was reserved for each vessel of the class as part of a fleet dedication.

The ceremony and reception was hosted by Rear Adm. **Peter J. Rots,** USCG Commander, Eighth Coast Guard District. The 21 commissioning pennants were reserved by the Honorable **Robert Livingston,** member of the House of Representatives from Louisiana, and Vice Adm. **Donald C. Thompson,** Commander, Coast Guard Atlantic Area. Remarks were given by **Dick Bollinger,** president of Bollinger Machine Shop & Shipyard, Inc.; Admiral **Rots;** and Capt. **Joseph F. King,** U.S. Navy.

The 37 vessels of the Island class are used for drug interdiction, war mission, and search and rescue.

For free literature giving full information on the facilities and capabilities of Bollinger Machine Shop & Shipyard,

Circle 60 on Reader Service Card

Jered Brown Appoints Schoenlein And Freye To Management Positions

Kenneth O. Schoenlein **Deborah S. Freye**

Jered Brown Brothers, Inc. has appointed **Kenneth O. Schoenlein** as director of sales, and **Deborah S. Freye** as contracts manager.

Mr. **Schoenlein** rejoins Jered Brown Brothers after 10 years with Unidynamics in St. Louis, Mo. He is a member of The Society of Naval Architects and Marine Engineers (SNAME).

Ms. **Freye** joins Jered Brown Brothers after seven years with Tidewater Consultants in Virginia Beach, Fla. She is a member of the National Contracts Management Association.

Jered Brown Brothers, a Troy, Mich., engineering and manufacturing company, specializes in shipboard equipment for the U.S. Navy, including aircraft, cargo, and weapons elevators; ship steering systems; submarine bow planes; anchor windlasses; and specialized handling systems.

For more information and free literature on Jered Brown Brothers,

Circle 58 on Reader Service Card

Puerto Rico Marine Names Cabarle And Wainwright VPs

Gerald P. Toomey, president of Puerto Rico Marine Management, Inc. (PRMMI), agents for Navieras de Puerto Rico, recently announced two new high-level corporate appointments.

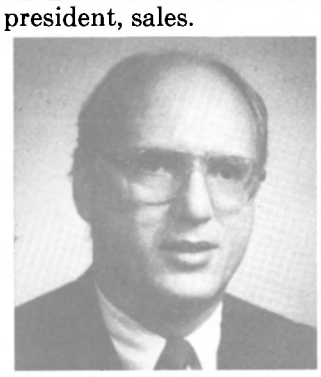
Kenneth W. Cabarle was named vice president/planning, and **Norman E. Wainwright** was appointed vice president/information systems.

Mr. **Cabarle,** previously vice president and chief financial officer of U.S. Lines, returns to PRMMI. Between 1974-78 he served as PRMMI's vice president/finance.

Mr. **Wainwright,** the new vice president/information systems, joins PRMMI with over 22 years of experience in the computer/information-processing fields.

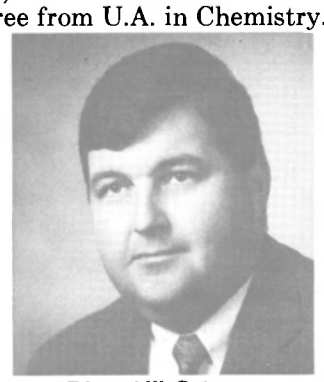
Parker Towing Announces Administrative Changes

Tim Parker Sr., chairman of the board, and **Tim Parker Jr.,** president of Parker Towing Company, have announced the promotion of **Charles A. Haun** to senior vice president, operations, and the addition of **Edward W. Peterson** as vice president, sales.



Charles A. Haun

Mr. **Haun** has been with Parker Towing since January 1975 and most recently served as vice president, operations. A 1972 graduate of the University of Alabama School of Law, Mr. **Haun** also holds a B.S. degree from U.A. in Chemistry.



Edward W. Peterson

Mr. **Peterson** recently joined Parker Towing as vice president, sales, after three years as president and managing partner of Merchants River Transportation in New Orleans.

Mr. **Peterson** replaces **George Wakefield,** who left Parker Towing to pursue other career options in California.

Parker Towing Company is a barge and tow company headquartered in Tuscaloosa, Alabama on the Black Warrior River. The company serves the waterways and ports of Alabama, Georgia, Florida, Mississippi, Louisiana, Texas and the East Gulf. With the completion of the Tenn-Tom Parker Towing has expanded service to the Tennessee and Ohio Rivers. This year Parker Towing is celebrating its 50th Anniversary. Company founder, **Tim Parker Sr.,** is still active with the company.

For more information and free literature on Parker Towing,

Circle 73 on Reader Service Card

Dykem Offers Stox Rust Inhibitor —Literature Available

The Dykem Company, St. Louis, Mo., manufactures and markets a superior rust inhibitor, Stox, which prevents rust on all machinery and equipment, production machined parts, tools and dies, castings, molds, stored parts, metal stock parts and salvage parts.

According to Dykem, which was established in 1920, Stox can be applied to metal machined or fabricated parts to keep products and equipment rust free. Stox, which can be used indoors and outdoors, also protects and insulates electrical parts, assemblies and cables. Stox is available in 16-fluid-ounce spray cans, gallon containers or five-gallon drums.

For free literature on Stox,

Circle 28 on Reader Service Card

Wynstruments Offers New Literature On Low-Cost Marine Window Wipers

Wynstruments Ltd., through its North American Agent, Marketec, Inc., is offering free literature, now available on a brand-new product: low-cost, high-quality, feature-packed window wipers specially designed for leisure and in-shore vessels.

Selling under the brand name "Sea Crystal," the wiper is described as a Pendulum/Pantograph marine window wiper. One particular feature of note is the choice of wiping arc which can be adjusted at the time of fitting to any one of seven different angles from 45° to 110°. Arms are available in lengths to 450 mm (18 inches) and blades to a maximum of 400 mm (16 inches).

The literature details complete specifications, including speed, wiping arc, mounting position, sizes, drive shaft, motor and power supply, weight, etc. Photos and diagrams support the information and describe the wiper's features.

For free literature or for additional information,

Circle 32 on Reader Service Card

New Computerized System Controls Fuel Viscosity —Literature Offered

The temperature and viscosity of fuels and other liquids can be monitored and controlled with a maximum of efficiency by a newly developed computer system which requires only a minimum of technical maintenance. Visco Pilot, manufactured and marketed by MAR TEC Marine of Hamburg, offers essentially attendance-free operation. Readjustments of operating parameters or exchanges of principal elements of the system can be accomplished easily by untrained personnel in only a few minutes, according to **Peter P. Lombard,** president of American United Marine Corp., the exclusive North American sales agent for MAR TEC.

The system's viscosity sensor contains a vibrating metal reed which operates on the principle of magnetic striction. The damping effect of the liquid as it flows past the sensor is amplified and converted to viscosity values, which are digitally displayed on the monitor, continuously. Liquid temperature, measured at the same point, is also displayed, and the computer calculates the standard viscosity at a chosen reference temperature and displays this as well. The monitor also sends a signal to the pre-heater to raise or lower the temperature as required to keep the actual viscosity within the chosen limits.

Preset values can be changed at any time by the operator, and when the microprocessor is turned off it automatically reverts to the values originally set.

If the viscosity values move outside of the preset range, or if the temperature exceeds the maximum setting, flashing alarms appear on the monitor. Measurable ranges for temperature and viscosity are 0-200 deg. C and 2-999 centistokes.

Speed, accuracy, and simplicity are the major advantages of the Visco Pilot system. Unaffected by impurities in the liquid or changes in flow rate or pressure, the sensor is easy to clean and to check for accuracy.

This system contains no air pilot tubes and no complicated moving parts except for the motor of the regulating valve. Both the sensor and the amplifier can be replaced, if necessary, by untrained personnel.

For further information on the MAR TEC Marine Visco Pilot,

Circle 63 on Reader Service Card

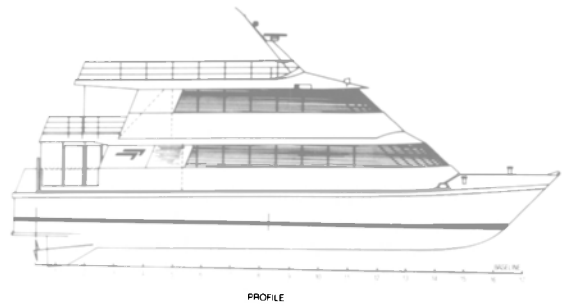
ContiCarriers & Terminals Acquires Dakota Barge

Dakota Barge Service, Inc., of St. Paul, Minn., has been acquired by ContiCarriers & Terminals, Inc., a major river transportation firm based in Chicago.

Dakota Barge operates six harbor boats in the St. Paul harbor in providing local towage, fleeting and switching services, fuel delivery and barge repairs. Dakota also owns a number of barges used to carry coal and an 80-ton drydock. It leases a 300-ton marine way from St. Paul Terminals.

ContiCarriers & Terminals is a subsidiary of Continental Grain Company.

New Gladding-Hearn-Built High-Speed Catamaran To Begin Boston/Martha's Vineyard Run



Profile of the 82-foot, 300-passenger, high-speed ferry Vineyard Spray which is under construction at Gladding-Hearn Shipbuilding in Somerset, Mass., for Bay State Cruises of Boston.

The Vineyard Spray, a new 82-foot, 300-passenger, high-speed ferry built by Gladding-Hearn Shipbuilding, the Duclos Corp. of Somerset, Mass., is scheduled to be commissioned this summer by Bay State Cruises and put into service running daily round trips from Boston to Vineyard Haven in Martha's Vineyard.

The triple-deck aluminum vessel, which travels at 31 knots fully loaded, is powered by 1,740-hp diesel engines. To help dampen vibration from the engines, 80 rubber shock absorbers are mounted between the hulls and passenger cabins.

The Australian-designed International Catamaran (INCAT) will have two enclosed lounges with upholstered seats, pay phones, and a bicycle rack on the upper deck. The entire trip will take about three hours.

The Vineyard Spray is reported to be one of the two fastest catamarans in North America. Gladding-Hearn president **George Duclos** said a similar boat runs a 75-mile trip between San Diego and the Catalina Islands on the West Coast at about 28 knots. Other INCATs are in use in Marin County, Vallejo and San Francisco, Calif., Alaska, Hong Kong and the English Channel.

For more information and free literature on the capabilities and facilities of Gladding-Hearn Shipbuilding,

Circle 50 on Reader Service Card

250-Ton-Capacity Mobile Boat Hoist Available From Marine Travelift

Marine Travelift's 250-ton-capacity open-end mobile boat hoist is an economical and convenient method for large boat handling.

The Model 250AMO offers 90° pivot steering with outside turning radius only 65 feet.; two-speed hoist, two-speed drive, and automatic load equalizing for synchronized and safer boat hauling.

Features of the 250AMO include hydraulic hoisting, travel, steering and sling spacing controls. The forward top beam provides improved clearance for radar or bow rigging and allows for equal balancing of loads. The unit is one-man operated and requires only a minimum haulout ground crew. All controls are within easy reach in the canopied operator's compartment.

For complete details on the Marine Travelift 250AMO or their complete line of mobile boat hoists, with capacities from 15 to 500 tons,

For free literature on Marine Travelift hoists,

Circle 69 on Reader Service Card

Multi-Pak Division Of ICI Offers Free Literature On Trash-Handling Equipment

Multi-Pak Division of ICI (Intercontinental Chemicals, Inc.) is offering free literature on their Multi-Pak Trash Compactor, which the company describes as the latest state-of-the-art in trash-handling equipment.

The Multi-Pak trash compactor system provides a means to reduce man-hours of handling time, and improve the sanitary conditions at the generation point.

With emphasis on safety, speed, and a high ratio of compaction, trash is packaged as follows: (1) One key activates unit for service. (2) Trash is loaded through the chute. (3) Door is closed (machine will not operate until door is fully closed). (4) The START button is engaged. (5) The compaction cycle is completed in some 20 seconds and unit is ready for the next load. A STOP button serves as an emergency stop and the FULL indicator light with accompanying buzzer terminates all activity until bag or cardboard box is removed through the unloading door and key is again used to reactivate the unit. A Trashlift (optional) permits easy movement of the compacted trash to the storage area with little effort required from the personnel responsible for these duties.

For additional information and free literature on the Multi-Pak Trash Compactor from Multi-Pak Division of ICI,

Circle 53 on Reader Service Card

CLASSIFIED AND EMPLOYMENT ADVERTISING

HOW TO PLACE CLASSIFIED ADVERTISING: Mail clearly written or typed copy to: MARITIME REPORTER, 118 East 25th Street, New York, NY 10010. Include any photos, drawings or logos if required. Specify size of ad and number of insertions . . . Classified Advertising — Per Issue Rate: Classified advertising is sold at a rate of $70 per column inch . . . MARITIME REPORTER'S classified section carries more advertising and sells more products than any other publication in the marine industry. Closing date for classified advertising is 20 days prior to the date of the issue. For further details contact John C, O'Malley at (212) 477-6700. Send all advertising material to MARITIME REPORTER And Engineering News, 118 East 25th Street, New York, NY 10010.

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THE MARITIME PERSONNEL AGENCY
Industrial, Corporate and Private Clientele
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P.O. Box 141033 Staten Island, N.Y. 10314 U.S.A.

PORT ENGINEER—HULL

Crowley Towing and Transportation, a Crowley Maritime Corporation company, seeks candidates for Port Engineer-Hull vacancy in Jacksonville, Florida. Primary responsibility for M&R of vessels and equipment assigned to Atlantic Division.

Preferred candidates will have a minimum of two years supervisory experience in marine engineering operations with demonstrated mechanical aptitude and analytical skills. A marine engineering degree is highly desirable.

Crowley Maritime offers a competitive salary and benefit package in a rapidly expanding business environment. Interested parties may respond in confidence to:

CROWLEY MARITIME CORPORATION
P.O. Box 2110
Jacksonville, FL 32203
Attn: Kaye Byrnes

An Equal Opportunity/AA Employer

MARITIME POSITIONS

Large Midwest tug company, leader in its field, is expanding staff and seeks qualified applicants following positions:

DIRECTOR, FLEET OPERATIONS/ MARINE SUPERINTENDENT
Experienced USCG licensed tug captain to manage fleet and direct tug/barge operation on all U.S. Great Lakes. Strong administration and supervision skills essential.

SALES MANAGER
Energetic individual to service existing customer base and to develop new markets. Marine background preferred. Duties include phone contact, some travel Great Lakes area, rate quoting and correspondence.

PORT ENGINEER—MARINE MANAGER
Technically competent USCG licensed port engineer and port manager to supervise local tug operations/diesel engine repair and maintenance in major midwest city. Administrative and supervisory skills required.

Excellent opportunity to work with aggressive management team. Ideal for Maritime College/Academy graduates. Salary/Benefits package commensurate with experience. Immediate openings. Send resume/salary history in confidence to:

Box 501, Maritime Reporter, 118 E. 25th St., New York, NY 10010

Globe III
PERSONNEL CONSULTANTS
Serving the marine industry since 1973
CONTRACT, PROJECT, PERMANENT EMPLOYMENT
P.O. BOX 996 HUMBLE, TX 77347 (713) 526-3748

Senior Naval Architect Senior Marine Engineer

POSITIONS AVAILABLE

10+ years experience, with emphasis on design of small-to-medium size fishing and commercial vessels. We are looking for thoroughly-qualified engineers who have a flair for design, as well as the usual engineering fundamentals.

MARCO is a leading company in the design and construction of fishing and processing vessels for the Pacific Northwest fisheries, as well as international projects, particularly in South America. The company is highly engineering-motivated, with experienced naval architects and CAD/CAM design and lofting capabilities.

High-quality company — not too big. Great place to work and live.

MARCO SEATTLE
2300 West Commodore Way • Seattle, WA 98199 USA
Phone (206) 285-3200 • FAX (206) 283-4731
Telex 160587 MARCO UT

REPS WANTED

Independent reps wanted. Industrial pipe, valves and fittings, standard and non-standard in all alloys. Should have strong contacts in chemical, petrochemical, pulp & paper, marine and power plants (any or all). Many territories open. Send replies to:

BOX 502
MARITIME REPORTER & ENGINEERING NEWS
118 East 25th Street
New York, NY 10010

NAVAL ARCHITECT/MARINE ENGINEER WANTED ON CONTRACT BASIS TO ASSIST A U.S. SHIP OWNING COMPANY IN THE PREPARATION OF BID SPECIFICATIONS FOR THE SHIPYARD CONVERSION OF ONE, POSSIBLY TWO GENERAL CARGO VESSELS. THE SUCCESSFUL CANDIDATE WILL BE REQUIRED TO PARTICIPATE IN THE DEVELOPMENT OF A SPECIFICATION FOR THE SHIPYARD WORK AND ASSIST IN THE SUPERVISION OF THE CONVERSION OF THE VESSEL(S) IN THE SHIPYARD.

PRELIMINARY TECHNICAL DATA PERTAINING TO THE VESSEL(S) AND THE CONVERSIONS IS NOW AVAILABLE. DATA REQUIRED TO COMPLETE THE PREPARATION OF THE BID SPECIFICATION BY JUNE 1988 WILL BE AVAILABLE. IT IS ANTICIPATED THAT THE CONVERSION WILL TAKE PLACE IMMEDIATELY THEREAFTER.

PLEASE RESPOND TO THE BOX BELOW STATING QUALIFICATIONS AND EXPERIENCE.

Box #503, Maritime Reporter
118 E. 25th Street
New York, NY 10010

FOR SALE

3,600 BHP 5,000 IHP OCEAN TUG
6,000 BHP ANCHORHANDLING/SUPPLY/TUG
6,120 BHP ANCHORHANDLING/SUPPLY/TUG

CONTACT: MS ADA CHAN 718-388-8883

REQUEST FOR PROPOSAL

The New York City Fire Department (NYCFD) is seeking proposals from qualified Consultants interested in assisting the New York City Fire Department with a study in order to purchase a Multi-Purpose Harbor Service Craft (MPHSC).

This project is a follow up to a MPHSC Requirement Study conducted by the City of Tacoma, Washington's Fire Department and the U.S. Maritime Administration (MARAD). The study documents the protection service needs of major U.S. harbors (including New York City Harbor). It recommends the general specifications for a MPHSC. Study elements will include: an assessment of New York City Marine firefighting apparatus needs, harbor conditions, piers, drydocking and repair facilities, examination of Tacoma's MPHSC preliminary specifications, review of the MARAD study, determination of MPHSC design in accordance with New York City Fire Department needs, development of specifications for a MPHSC and pier construction, and establishment of related contracts. The study is not to exceed one year.

For a copy of the RFP or for additional information contact: Ron Blendermann, Bureau of Fiscal Services, Room 625, New York City Fire Department, 250 Livingston Street, Brooklyn, New York 11201-5884 (718) 403-1695

TRIP SURVEYOR & MARINE ENGINEER—Survey marine vessels and watercraft such as ships, boats and tankers to ascertain condition of hull, machinery and equipment and determine repairs required for vessel to meet insurance requirements. Includes examination of hulls while drydocked, readings on tail shaft and tail shaft bearings, inspection of propellers, rudders and valves and operating machinery and testing of cargo gear. Prepare a report on surveys conducted and recommended actions and repairs.

Also design and oversee installation and repair of marine power plants, propelling systems, heating and ventilating systems and other mechanical and electrical equipment in ships and marine facilities. Prepare drawings and specifications, perform calculations to determine appropriate equipment and systems; oversee and evaluate operation of equipment during acceptance testing and shake-down cruises.

REQUIREMENTS: Bachelor's degree in Engineering with major field of study in Marine Engineering or equivalent training and experience. Six years experience in ma-

Conrad Industries, Inc.
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FOR SALE

NEW WATERTIGHT DOORS

6 Dog

6-Dog right and left hand hinged doors with frames.

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Call the Barge People.

Multi-Pak Division Of ICI Offers Free Literature On Trash-Handling Equipment

Multi-Pak Division of ICI (Intercontinental Chemicals, Inc.) is offering free literature on their Multi-Pak Trash Compactor, which the company describes as the latest state-of-the-art in trash-handling equipment.

The Multi-Pak trash compactor system provides a means to reduce man-hours of handling time, and improve the sanitary conditions at the generation point.

With emphasis on safety, speed, and a high ratio of compaction, trash is packaged as follows: (1) One key activates unit for service. (2) Trash is loaded through the chute. (3) Door is closed (machine will not operate until door is fully closed). (4) The START button is engaged. (5) The compaction cycle is completed in some 20 seconds and unit is ready for the next load. A STOP button serves as an emergency stop and the FULL indicator light with accompanying buzzer terminates all activity until bag or cardboard box is removed through the unloading door and key is again used to reactivate the unit. A Trashlift (optional) permits easy movement of the compacted trash to the storage area with little effort required from the personnel responsible for these duties.

For additional information and free literature on the Multi-Pak Trash Compactor from Multi-Pak Division of ICI,

Circle 53 on Reader Service Card

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REQUIREMENTS: Bachelor's degree in Engineering with major field of study in Marine Engineering or equivalent training and experience. Six years experience in marine engineering/marine surveying.

Salary: $48,000.00 per year Full time position

Direct resumes and references to: Job Order No. 2120388 Employment Division, 875 Union Street, N.E., Room 208, Salem, Oregon 97311

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P.O. BOX 996 HUMBLE, TX 77347 (713) 526-3748

Senior Naval Architect Senior Marine Engineer

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Phone (206) 285-3200 • FAX (206) 283-4731
Telex 160587 MARCO UT

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3,600 BHP 5,000 IHP OCEAN TUG
6,000 BHP ANCHORHANDLING/SUPPLY/TUG
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The non-refundable cost is Thirty-five dollars ($35.00) per copy. Only cash or certified check payable to the New York City Fire Department will be acceptable.

Proposer's Conference will be held Wednesday, May 25, 1988 10 a.m.

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The following waterfront premises are available for term lease.

PIERS:

Pier	Berth	Linear Feet	Portal Cranes
C	2	650	Yes
	3	720	Yes
D	4	550	Yes
	5	575	Yes
G	11	600	No
	12	250	No
	13	650	No
	14	600	No
J	15	800	Yes
	16	600	Yes
	17	600	Yes

DRYDOCKS

Graving Dock No. 2—465′ L x 72′ W x 29′ D
Graving Dock No. 3—765′ L x 114′ W x 42′ D

BUILDINGS

Building No. 292—(231,000 sq. ft., Four story, between Piers G & J)
Ground Floor—shops—57,750 sq. ft.
Second Floor—offices/shops—57,750 sq. ft.
Third Floor—offices/shops—57,750 sq. ft.
Fourth Floor—offices/shops—57,750 sq. ft.

Building No. 293—(104,000 sq. ft.)
702′ long x 148′ wide x 60′ high
w/ 6000 sq. ft. adjoining offices

Building No. 294
Ground Floor Section A—802′ L x 93′ W x 80′ H (75,000 0)
with 10,000 sq. ft. adjoining offices (10,000 0)
Ground Floor Section B—766′ L x 75′ W x 60′ H (66,000 0)

Lofts—(served by 4 ton freight elevators)
Lower loft—274′ L x 93′ W x 14′ H (25,500 sq. ft.)
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And miscellaneous other small buildings and berthing areas.

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Office—8,560 sq. ft.
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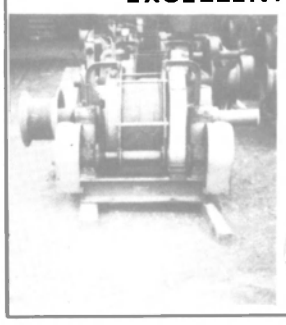

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Built By
CLYDE IRON WORKS
7½ x10" Steam Engine - 6,000 Lbs
Line Pull
@ 230 FPM - Bronze Bushings
Drum Capacity
800' of ¾" Wire 450' 1" Wire
Overall Dimensions: 7' Wide x 5' Deep
15" Gypsies - 13 ea. Available

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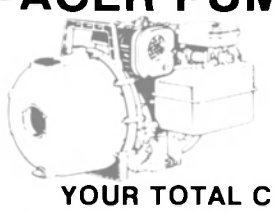
Model P-52



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2" Inlet and Outlet
160 Gallon Per Minute
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One Year Warranty
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SHOP EQUIPMENT & SUPPLIES

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JACKSONVILLE, FLA. 32210

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FOR SALE

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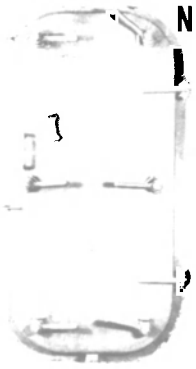

6 Dog

6-Dog right and left hand hinged doors with frames. ¼" panel and 5/16" frame meet ABS Specs.

SIZES
26"x48" 26"x66"
26"x60" 30"x60"

EACH DOOR
IMMEDIATE DELIVERY

ALSO QUICK ACTING
6-Dog wheel operated doors
5/16" frame-¼" door panel.
26x60 R.H. & L.H. 26x48 R.H.
30x60 R.H. 30x54 L.H.

NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14" x 10" CLEAR OPENING
With extended legs for welding to deck. 14" Wide on base—length 28"—height 27¼". IMMEDIATE DELIVERY FROM STOCK.

CAPSTANS

With Explosion-Proof motors & controls

Suitable for oil barge, shipboard, terminal, etc use. Four available: (2) 7½ HP 220/440/3/60—7500 lbs @ 45 FPM—(2) 5 HP 220/440/3/60—6000 lbs @ 45 FPM. All units totally enclosed, explosion-proof. Barrel of capstan 8" diameter—15" high.

MEGATOR PUMPS

Belt driven. With screwed fittings. For potable water service
L-150—5HP—440/3/60—27 GPM —45 lbs. 2" x 2".
H-125—2HP—440/3/60—13 GPM —75 lbs—1½" x 1½"

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200 HENDERSON ST—JERSEY CITY, NJ 07302
PHONE: (201) 433-0870

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Our experience and knowledge in serving a wide variety of industries enables us to provide the right size and type of barge and tow to make your marine operations profitable.

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- Experience in arranging and managing marine packages
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- **CLEATS • BOLLARDS**
- **FAIRLEADS • HATCHES**

PANAMA CHOCKS
10" x 14"
Meet Panama regulations. For large ocean-going vessels. 7" Radius.
ALSO 6¼" x 12" CHOCKS

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FAX: (301) 727-5250 • WAREHOUSE: (301) 752-1077—Al Berman (Warehouse Mgr)

Bird-Johnson Named Exclusive U.S. Service Representative For Blohm + Voss Simplex Line

Bird-Johnson Company of Walpole, Mass., has been appointed the exclusive, authorized U.S. service representative for the complete line of marine mechanical engineering products manufactured by Blohm + Voss AG of Hamburg, Federal Republic of Germany. Under the new agreement, Bird-Johnson's service representatives will install, survey and repair Simplex-Complex® seals, fin stabilizers and VSM steering gear; Simplex® rudderstock seals; mechanical seals; sterntube bushings; and Turbulo oily water separator systems, as well as numerous other ship's hull components.

Bird-Johnson service representatives are located in major ports throughout the USA, including Boston, Mass., Norfolk, Va., Jacksonville, Fla., New Orleans, La., Houston, Texas, San Diego, Calif., Los Angeles, Calif., Seattle, Wash., Sturgeon Bay, Wis., and Detroit, Mich. Bird-Johnson representatives are being qualified in the installation and servicing of B + V products at the Hamburg manufacturing facility.

The Mechanical Engineering Division of Blohm + Voss AG is an internationally recognized leader in the manufacture of marine mechanical engineering components. Bird-Johnson Company is one of the leading manufacturers of controllable pitch and fixed pitch propellers for commercial and naval applications, with facilities in Walpole, Mass., Pascagoula, Miss., and Seattle, Wash.

For more information and free literature,

Circle 59 on Reader Service Card

Alan Bernstein Elected President Of NAPVO At Annual Convention

Alan Bernstein (left), newly elected president of the National Association of Passenger Vessel Owners (NAPVO), is seen here with **Jim Cross** (center), outgoing NAPVO president, and Rear Adm. **Clyde T. Lusk Jr.**, U.S. Coast Guard Chief of Staff. Admiral **Lusk** provided the keynote address at NAPVO's winter convention.

Alan Bernstein, general manager of BB Riverboats, operating in greater Cincinnati, has been elected president of the National Association of Passenger Vessel Owners. Mr. **Bernstein** succeeded **James L. Cross,** owner and operator of Island Queen Excursions, Inc., Riviera Beach, Fla., at NAPVO's national convention in Washington, D.C.

Other newly elected officers include **F. Coe Sherrard,** vice president/harbor operations for Cruise International, Norfolk, Va., as NAPVO's vice president; **Dana E. Walker,** president of Port of Cascade Locks, as secretary-treasurer; and **Beverly Barry Meyer,** executive vice president for Circle Line in New York City, was elected to the group's board of directors.

NAPVO is an independent trade association for the owner/operators of dinner cruises, sightseeing/excursion boats, car ferries, paddle wheelers and windjammers across the country.

SSPA Maritime Consulting Offers Brochure On Roll Reduction By Rudder Control

SSPA Maritime Consulting AB of Goteborg, Sweden, has published a four-page color brochure on Roll-Nix, a microcomputer-based system for roll reduction by rudder control. The complete system is controlled by a computer unit with a built-in solid-state rate sensor for independent measurement of the roll motion.

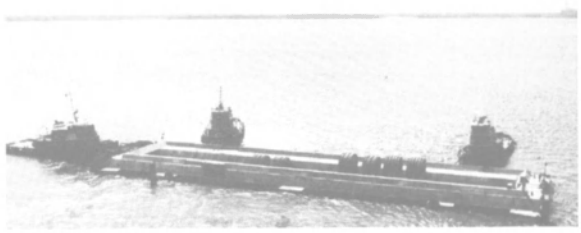
The publication points up the Roll-Nix features: low price; compact; easy to maintain; simplicity; and proven (roll motions reduced by at least 50 percent on existing installations without influencing the coursekeeping behavior and speed).

Included are comparative measurements of vessels with Roll-Nix and without, showing that it is possible to damp the roll motion by at least 50 percent; and a schematic diagram of the Roll-Nix system.

SSPA is an international high-technology maritime company engaged mainly in theoretical work, scale-model testing, interactive computer simulation and development and manufacture of user-friendly analysis and control systems in the following business fields: naval, naval systems, shipping, offshore, engineering and fluid mechanics.

For more information and a free copy of the brochure titled "Roll-Nix—The Easy Way to Reduce Roll,"

Circle 54 on Reader Service Card



FIRST OF 15 FROM BETHLEHEM STEEL—Tugboats tow the first of 15 steel sections from Bethlehem Steel Corporation's Baltimore Marine Division headquartered in Sparrows Point, Md., to the Interstate 664 tunnel crossing at the Hampton Roads area of Virginia. Each of the 15 sections is 300 feet long, 90 feet wide and 42 feet deep. While en route to the construction site, the steel sections will draw 34 feet of water. Constructed at the yard, the tunnel sections utilized steel plate from the adjacent Sparrows Point plant of Bethlehem. The mile-long Hampton Roads tunnel will link the Newport News and Hampton areas with Norfolk. The mile-long submerged section of the 4.3-mile crossing will allow unobstructed passage of ships between the Chesapeake Bay and the Hampton Roads/James River areas. Completion of the crossing is scheduled for 1990. The remaining 14 tunnel sections will be transported to the construction site over a 12-month period.

For free literature giving full details on the facilities and capabilities of Bethlehem Steel Corporation,

Circle 68 on Reader Service Card

BPR 21 Dome Loaded Back Pressure Regulator Introduced By Circle Seal Controls

Circle Seal Controls recently announced the introduction of their BPR 21 Series Dome Loaded Back Pressure Regulator. This new addition is designed for precision high flow of corrosive and noncorrosive fluids with a pressure range of 25 to 6,000 psig.

The regulator limits system pressure by venting the surplus flow, maintaining back pressure processes, and functioning as an extremely accurate safety and bypass valve for equipment protection. A minimum number of moving parts increases reliability, and all BPR 21 units are 100 percent functionally tested for performance and leakage prior to shipment.

For more information and free literature on the BPR 21 Series Dome Loaded Back Pressure Regulator from Circle Seal Controls,

Circle 48 on Reader Service Card

Deutsch Now Offers New Line Of Environmentally Sealed Miniature In-Line Connectors

Deutsch, Industrial Products Division, now offers a new line of environmentally sealed miniature in-line connectors. Designated the DT Series, these connectors are ideally suited to industrial and commercial applications where positive mating and environmental protection are of primary importance.

Typical applications include marine, automotive, trucking, public transportation, recreational vehicles, construction equipment, robotics, control systems, machinery, commercial aviation, broadcast video and telecommunications equipment, medical, scientific and process instrumentation, office and business equipment, plus numerous other electrical and electronic applications.

The DT Series features a lightweight, high-impact thermoplastic shell design that provides an environmental barrier to grease, dirt, dust, moisture, and corrosion. The connector can operate with either AC or DC and maintains a current rating capacity of 15 amps maximum.

For additional information and free literature on the new line of environmentally sealed miniature in-line connectors from Deutsch,

Circle 49 on Reader Service Card

Waugh Wins Contract To Supply Complete Joiner System For Cruise Ship

The Waugh Co. of Jacksonville, Fla., has earned the contract to design and supply the complete joiner system, consisting of the Rockwool TNF System and the Waugh Acra-Mold one-piece acrylic bathroom module, to the M/S Aquanaut Holiday for Dive and Sail Holidays/Aquanaut Watersports, Inc.

The M/V Aquanaut Holiday, which is approximately 200 feet long, constitutes one of the larger luxury diving cruise ships in the Western Hemisphere. The vessel's luxury accommodations, including a restaurant, casino and discotheque, provide guests with comfort and service after a full day of underwater exploration, swimming, windsurfing and island safaris throughout the British Virgin Islands and vicinity.

For more information and free literature,

Circle 80 on Reader Service Card

Alfa-Laval Offers New 8-Page Brochure On Full Customer Services

Alfa-Laval, Inc., of Fort Lee, N.J., a world supplier of centrifuges, plate heat exchangers, and watermakers to the chemical, food, mining, marine, power, biotech and numerous other industries, now has available a new eight-page full-color brochure.

Titled "Alfa-Laval Service," the publication outlines the network of resources available to customers after purchasing Alfa-Laval equipment. Spare parts, field service and repairs are discussed.

The brochure points out that 92 percent of Alfa-Laval replacement parts can be supplied off-the-shelf and shipped within 24 hours; most certified Alfa-Laval service engineers have engineering degrees and years of on-the-job experience, plus they go through six months of rigorous in-house and field training before they go to work for any customer; and when on-site repairs just aren't feasible, the customer's Alfa-Laval equipment can be shipped to one of the company's repair centers where factory-trained repair specialists, using the most advanced tools, repair and rebuild it to original standards.

A listing of Alfa-Laval regional service centers follow.

For further information and a free copy of "Alfa-Laval Service,"

Circle 65 on Reader Service Card

Merger Creates Sonsub —New Houston-Based Offshore Service Company

The creation of Sonsub, Inc., was recently announced as a result of the merger of subsea contractor Sonsub Services, Inc., and engineering company Diverless Systems, Inc.

The new Houston-based offshore service firm will provide advanced remotely operated work systems (AROWS), remotely operated vehicle systems (ROVS) and specialized engineering services to the offshore oil and gas industry.

For more information and free literature,

Circle 40 on Reader Service Card

FOR MORE INFORMATION
ON
EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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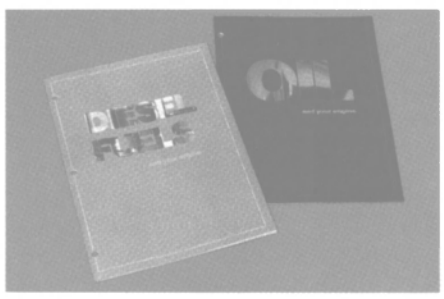
Caterpillar Publishes 40-Page Color Booklet On Diesel Fuels/Engines



"Diesel Fuels And Your Engine" and "Oil And Your Engine," both bookets to help achieve optimum engine service life and performance, are available from Caterpillar dealers at a nominal charge.

Today, diesel fuel is the largest single operating expense over the life of the engine—amounting to as much as 70 percent or more.

To get the most out of your investment, it is important to understand the properties of fuel and their impact on your diesel engine.

Caterpillar Inc. recently published a 40-page, color booklet, "Diesel Fuels And Your Engine," which describes the harmful effects various fuels can have on an engine and how to deal with them.

Diesel engines can run on a wide range of fuels—crude oil, blended, or residual distillate for example. But they run best on distillate fuels, cause less downtime, last longer, and are often more cost effective. But when fuel costs rise, the tendency is to turn to lower quality fuel. Usually at the expense of the engine.

The 40-page, four-color booklet provides facts on fuel selection and treatment. It offers basic, easy-to-understand explanations of the properties of fuel, how they can affect an engine, and what steps can be taken to eliminate or minimize the problem.

The booklet discusses fuel corrosives, such as hydrogen sulphide, which is present in some crude and residual fuels. When water vapor from internal combustion mixes with the hydrogen sulphide, it forms highly corrosive sulfuric acid which can destroy valve guides, piston rings, and cylinder liners. The booklet tells what steps to take to help prevent corrosive damage.

Covered too, are such topics as fuel stability, starting characteristics, combustion chamber deposits, and various methods of fuel storage and treatment. It also lists fuel test kits, suppliers of fuel treatment plants, and various fuel-related publications.

"Diesel Fuels And Your Engine" is the second in the series of booklets to help customers achieve optimum engine service life and performance. Its co-publication, "Oil And Your Engine" (Form No. SEBD0640), deals with the functions and properties of lubricating oils. More than 150,000 copies have been sold.

Copies of both booklets are available from your Caterpillar dealer at a nominal charge. Ask for service publication Form No. SEBDO717 for the fuel book or Form No. SEBDO640 for the oil book. Contact either the Service Training Department or the Dealer Promotion Department at your local Caterpillar dealer.

International requests should be directed to **W. J. Gardner,** Caterpillar Engine Division, P.O. Box 610, Mossville, Ill. 61552-0610.

Ulstein Offers Free Color Brochure On High Lift Rudder

Ulstein Trading Ltd. A/S of Norway is offering a free color brochure on its high lift rudder, a result of intensive research and several years' experience in ship construction and manufacture of ships' equipment, which provides improved maneuverability and fuel economy.

According to the brochure, the Ulstein High Lift Rudder, with a bulbous leading edge, active flap and vane elements, offers superior steering ability in both towing and trawling conditions and excellent performance at high-speed ship operation.

The publication details the results of tests performed at the Norwegian Marine Research Institute which support Ulstein's claim that the company's high lift rudder's shape has less resistance as compared with other high lift rudders. Graphs showing test results are provided.

The brochure provides details on the principal specifications, technical aspects and construction of the high lift rudder. For your free copy of the Ulstein brochure,

Circle 29 on Reader Service Card

Schiess-Defries Supplies LIFT-DOCK For Australia

A consortium of the Australian companies of ASI and Eglo have sent an order to Schiess-Defries GmbH, an affiliated company of the Lentjes-Group, FRG/Dusseldorf, for the supply of a ship lift of the LIFT-DOCK™ design with a total lifting capacity of 9,500 metric tons.

The facility is to serve for the docking of commercial and naval vessels at Perth, Western Australia.

For free literature giving full details on Schiess-Defries,

Circle 33 on Reader Service Card

Kobelt's 2-Station Control System Is Simple In Design, Durable In Construction

Kobelt, manufacturer of high quality marine controls for 25 years, has recently introduced an innovative new two-station, single engine control system for clutch and engine throttle functions. Known as the 2090 Series, it was designed to provide the ultimate in simplicity, durability and performance, particularly in saltwater environments.

With the 2090 Series, the control handles at both stations move together. As a result of this configuration, operation of the boat is greatly simplified. Clutch position and speed are indicated on both control heads. At the second station the clutch is then reengaged and the engine accelerated. As a result, forward speed is not maintained and undue stress is placed on the control system. Kobelt's system provides smooth, continuous operation.

Kobelt's single-engine system consists of only two control heads and four cables. Installation is simple and maintenance is uncomplicated. Other systems are built with seven cables and five components. Often they are constructed using corrosive materials.

All Kobelt components are made from die-cast bronze with stainless steel hardware. Bearings and pins are oversized for longer life. Kobelt products feature a five-year warranty and are supported by sales and service organizations around the world.

For more information and free literature on Kobelt's new single-engine control system,

Circle 48 on Reader Service Card

MarAd Awards $417,528 Contract To Amertech

The Maritime Administration (MarAd) has awarded a $417,528 contract to Amertech Industries, Inc., Brooklyn, N.Y., for repairs to the training ship Empire State. The ship is used by the State University of New York's Maritime College at Fort Schuyler.

Port Of Portland Dedicates $46-Million Terminal 2 Rehabilitation Project

The Port of Portland recently dedicated its $46-million Terminal 2 rehabilitation project as Oregon's State Treasurer **Tony Meeker** declared the project was "good news for every Oregonian."

The rehabilitation project has transformed Terminal 2 into a modern general and breakbulk cargo terminal. The multipurpose facility provides the Port of Portland with the flexibility to handle most types of vessels: containers, roll-on/roll-off, pass/pass, and breakbulk ships and barges.

The new construction is complete except for the one warehouse and an 85-ton-lift-capacity crane that will arrive in the fall of 1988 from South Korea, where it is being constructed by Hyundai Heavy Industries.

There were several contractors on the project, including Riedel International of Portland, and General Construction, Seattle, that worked in a joint venture on the berths, demolition, and dredging; Clearwater Construction, Portland, which handled the 18 acres of storage yard; Lorentz Brunn, Portland, administration building and entry gate; Grady Harper and Carlson, Portland, large warehouse and maintenance shed; Colamette Construction, Portland, small warehouse; and Pacific Crest Construction, Portland, dock office.

For further information and free literature on the Port of Portland,

Circle 42 on Reader Service Card

BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. **If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.**

ACCOMMODATION SYSTEMS—MODULAR UNITS
The Waugh Company, 5111-6 Baymeadows Road, Suite 394, Jacksonville FL 32217
AIR COMPRESSORS
Marketec, Inc., 27 Bowers Lane, Chatham NJ 07928
AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Adrick Marine Corp., 320 Cantor Ave., Linden NJ 07036
Bailey Refrigeration Co., Inc, 2323 Randolph Avenue, Avenel, NJ 07001
ANODES—Cathodic Protection
Electrocatalytic Inc., 2 Milltown Ct., Union NJ 07083
Kaiser Chemicals, 7311 E. 41st St., Tulsa OK 74147
BALLAST
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031
Mineral Research & Recovery Inc., 4565 S. Palo Verde, Ste 203, Tucson AZ 85714
BARGES—Leasing
McDonough Marine Service, P.O. Box 1825, Parkersburg WV 26101
BASKET STRAINERS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
BEARINGS—Rubber, Metallic, Non-Metallic
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
BOILERS
Combustion Engineering, Inc., Windsor, CT 06095
Marketec, Inc., 27 Bowers Lane, Chatham NJ 07928
BOILER CLEANING
Asea Stal, 50 Chestnut Ridge Rd., Montvail N.J. 07645
Infrasonik AB (an ASEA Stal Co.). S-612 20 Finspong, SWEDEN
BROKERS
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153
Bergeron & Associates, P.O. Box 726, Chalmette LA 70044
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Jack Faulkner Inc., 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960
BUMPERS (Crane)
M.E.K. Equipment, P. O. Box 2357, Newport News VA 23602
CARGO ACCESS EQUIPMENT
Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E. Chestnut Ave., Santa Ana CA 92701
CARGO HANDLING SYSTEM
Saab Tank Control, 201 W. Passaic St., Rochelle Park NJ 07662
CASTINGS/FORGINGS
NKS Industria Pesada, Grupo Industrial, Reforma 404, 14th floor, Mexico D.F. 06600 MEXICO
CHAIN
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
CHOCKING COMPOUND
Philadelphia Resins Corp., 20 Commerce St., Montgomeryville, PA 18936
COMPUTERIZED INFORMATION SYSTEMS
TIMSCO, P. O. Box 91360, Mobile AL 36691
COMPUTERS—Training
Logical Operations, 240 East Avenue, Rochester, NY 14604
CONDENSERS/SEPARATORS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Wright Austin Co., 3245 Wight St., Detroit MI 48207
CONTROL SYSTEMS—Monitoring
ASEA, Inc., 4 New King St., White Plains, NY 10604
Eldec Corporation, 16700 13th Ave. West, P.O. Box 100 Lynnwood, WA 98036
Imo-Delaval, Inc., Gems Sensors Division, One Cowles Rd., Plainville CT 06062
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway
WABCO, 1953 Mercer Rd., Lexington KY 40511
S.S. White Industrial Products, 151 Old New Brunswick Rd., Piscataway, NJ 08854
CRANES—HOISTS—DERRICKS—WHIRLEYS
ASEA-Hagglund, Inc., 50 Chestnut Ridge Rd., Montvale NJ 07645
The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101
Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood NJ 07607 telex: 132610 DELMARINE
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E Chestnut Ave., Santa Ana CA 92701
J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany
Manitex, Inc., 2203 Timberlock Place, Suite 130, The Woodlands, TX 77380
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883
DECK MACHINERY—Cargo Handling Equipment
Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013
Gearmatic—see 'Braden Carco Gearmatic' above.
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, WA 98134
McElroy Machine & Mfg. Co., Inc., P.O. Box 4455, Biloxi MS 39535
Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E Chestnut Ave., Santa Ana CA 92701
DIESEL ACCESSORIES—CYLINDER LINERS
Acurex Corporation, Autodata Division, 555 Clyde Ave., P.O. Box 7042, Mountain View, CA 94039
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Diesel America Inc., 5217 River Rd., New Orleans LA 70123
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison IL 60101
DIESEL ENGINE—Spare Parts & Repair
Bergen Diesel A/S, P.O. Box 924, N-5001 Bergen NORWAY
Bergen Diesel Inc., 2701 Delaware Ave., Kenner LA 70062
Chrome Locomotives, P.O. Box 197, Silvis IL 61282
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Co., Inc., Mail Code 40642, Box 3005 Columbus, IN 47202-3005
Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, Federal Republic of Germany
Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166
DIVING & SALVAGE
Muldoon Marine Services, P.O. Box 3221, Terminal Island, CA 90731
Parker Diving Service Inc., Berth 69, Los Angeles Harbor, P.O. Box 5272, San Pedro CA 90733
ELECTRICAL EQUIPMENT
Eldec Corporation, 16700 13th Ave West, P.O. Box 100, Lynwood WA 98036
SPD Technologies, 13500 Roosevelt Blvd, Philadelphia PA 19116
Ward Leonard Electric, 31 South St., Mt. Vernon, NY 10550
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, OR 97201
ELECTRONIC INFORMATION SYSTEMS
Inventory Locator Service Inc., 3820 Premier Ave., Memphis TN 38118
ELECTRONIC SYSTEMS
Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217 TX: 125327
ENGINE TEST EQUIPMENT
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360
EQUIPMENT—Marine
Atlas Copco Rental, 70 Demarest Dr., Wayne, NJ 07470
Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, NY 10550
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
EVAPORATORS
Atlas-Danmark Desalination Systems A/S, Stamholmen 93, 2650 Hvidovre (Copenhagen), Denmark
Equipment Engineering, 666 Baker St., #265, Costa Mesa CA 92626
MECO (Mechanical Equipment), 861 Carondelet St., New Orleans LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Serck GmbH, Tilsiter Str 90, D-2000 Hamburg 70, WEST GERMANY
FANS—VENTILATORS—BLOWERS
Carling Turbine Blower Company, 10 Nebraska St., P.O. Box 88, Worcester MA 01613
Jon M. Liss Associates, Inc., 411 Borel Ave., P. O. Box 5554, San Mateo, CA 94402
Robinson Industries, P.O. Box 100, Zelienople, PA 16063
FASTENERS
Action Threaded Products Inc., 6955 S. Harlem, Bedford Park, IL 60638
Band-It Division, Houdaille Industries Inc., P.O. Box 16307, Denver CO 80216
Lee Brass Company, P. O. Box 1229, Anniston AL 36202
Mapeco Products, Inc., 725 Glen Cove Ave., P.O. Box 6, Glen Head NY 11545
Non-Ferrous Bolt & Mfg Co., 4085 Nevso Dr., Suite C, Las Vegas NV 89103
FENDERING SYSTEMS/BUOYS—Dock & Vessel
Intertrade Ltd., Marine Products Div., 15301 Transistor Lane, Huntington Beach CA 92649
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Kohlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
Schuyler Manufacturing, 16901 Woodinville-Redmond Rd, Woodinville WA 98072
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook VA 22624
FILTERS
Marketec, Inc., 27 Bowers Lane, Chatham NJ 07928
Parker Filter Division, 16810 Fulton County Rd., #2, Metamora, OH 43540
FUEL ADDITIVE
Drew Ameroid Marine, One Drew Chemical Plaza, Boonton NJ 07005
U.S. Borax, Industrial Chemicals, 3075 Wilshire Blvd., Los Angeles CA 90010
FURNITURE
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
GALLEY EQUIPMENT
Gaylord Industries, P.O. Box 558, Wilsonville OR 97070
GANGWAYS, LADDERS
American Mason Safety Tread Company, 153 Essex St., Haverhill MA 01830
Rampmaster Inc., 9825 Osceola Blvd., Vero Beach, FL 32960
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691
HATCH & DECK COVERS—Chain Pipe
American Mason Safety Tread Company, 153 Essex St., Haverhill MA 01830
HEAT EXCHANGERS
Alfa Laval Inc., 2115 Linwood Ave., Fort Lee NJ 07024
ITT Standard Heat Transfer Technology, Buffalo, NY 14240
MECO (Mechanical Equipment), 861 Carondelet St., New Orleans LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130
Serck GmbH, Tilsiter Str 90, D-2000 Hamburg 70, WEST GERMANY
HORNS/WHISTLES
Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241
HYDRAULICS
Aeroquip Corporation, 300 South East Ave., Jackson, MI 49203
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030
Del Gavio Marine Hydraulics Inc., 207 W Central Ave., Maywood NJ 07607; telex: 132610 DELMARINE
Parker Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Titeflex Corporation, P.O. Box 54, Springfield, MA 01109
INSULATION—Cloth, Fiberglass
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
The Claremont Company, 174 State Street, P. O. Box 952, Meriden CT 06450
Duracote Corp., 350 North Diamond St., Ravenna, Ohio 44266
Soundcoat, One Burt Drive, Deer Park NY 11729
JOINER—Watertight Doors—Paneling—Ceiling Systems
Astech, 3030 S. Red Hill Ave., Santa Ana, CA 92711
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