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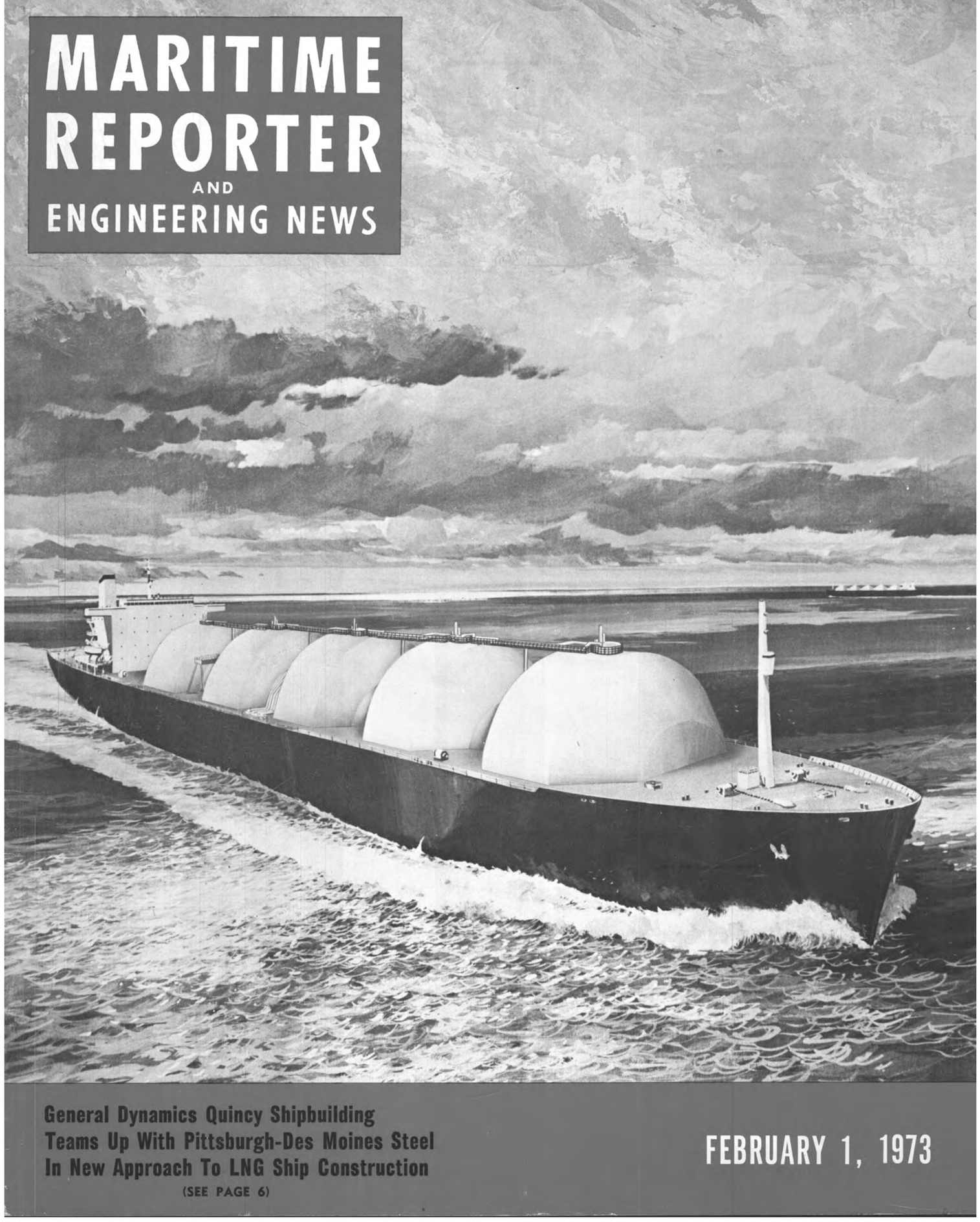


**General Dynamics Quincy Shipbuilding Teams Up With Pittsburgh-Des Moines Steel In New Approach To LNG Ship Construction**

(SEE PAGE 6)

FEBRUARY 1, 1973

# Captain Cook's tour of the Great Barrier Reef.

Among British explorers, Captain James Cook is one of the most famous and one of the greatest.

He made three voyages to the South Pacific region and mapped the area with scientific accuracy and remarkable precision.

One of the truly extraordinary navigators, Cook rarely found himself in trouble with his ship. But he once had a very close call.


In May, 1770 he was exploring Australia's east coast, charting the passage between the Australian mainland and the Great Barrier Reef.

He reached what he thought was the southern entrance to the passage one day about dusk. Then, deciding to wait for daylight, he headed back to deeper water. What he didn't know was that he was already inside the passage. A few minutes before eleven that night his ship, the "Endeavour," struck a coral shoal.

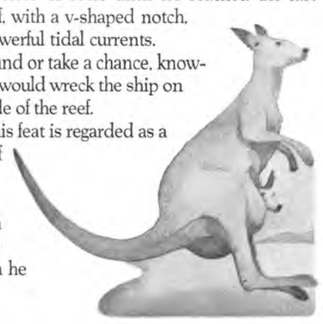
It took thirty-six hours to get the "Endeavour" off the reef and beached, and another six weeks before the ship was made seaworthy again.

But Cook refused to turn back and his mastery of navigation saved the day. Guiding the ship from the masthead, he continued through the series of reefs until he reached the last barrier; a gigantic reef, with a v-shaped notch, through which ran powerful tidal currents.

He could turn around or take a chance, knowing that a single error would wreck the ship on the rocks on either side of the reef.

He made it, and this feat is regarded as a spectacular triumph of navigation.

Cook, who had discovered Hawaii in 1777, was killed there by the islanders when he returned in 1779.



*This advertisement, prepared by Gulf Oil, a leading supplier of quality marine fuels and lubricants, is one of a series paying tribute to the great explorers of the sea. It is published in the interest of the shipping industry and those associated with it.*

Gulf

GULF OIL TRADING COMPANY
NEW YORK, N.Y. U.S.A.

## Order To Aker Group For Largest Tanker Ever Built In Norway

According to reports from Norway, a 352,000-deadweight-ton tanker has been ordered from the Aker Group, the largest vessel so far contracted for in that country. The ship, ordered by Biorn Biornstad & Co. of Oslo, is scheduled for delivery by the beginning of 1977.

## British Petroleum To Award $47 Million For Drilling Platforms

British Petroleum, in a recent report from London, said it will award contracts totaling $47 million to two companies, Brown and Root-Wimpey Highlands Fabricators Ltd., a U.S.-British company, and Laing Pipelines Offshore, a Franco-British company, for the fabrication of the main steel structures for the third and fourth drilling and production platforms to be installed on its Forty's Field, 110 miles east northeast of Aberdeen, Scotland.

The companies concerned are already building the structures for the first two platforms at Nigg Bay in Scotland, and Graythorp on the Tees near Middlesbrough. They are scheduled for delivery in August.

## Japan's 11-Million Gross Tonnage For '72 Sets New Record

Japanese shipyards launched more than 11-million gross tons of new vessels in the year 1972, breaking the 1971 record of 10.8-million gross tons.

Most big shipyards in Japan are now solidly booked through 1975, and a few are holding orders for newbuildings up until the end of 1976. Expectations are that this year will be an even more profitable period than 1972.

The Japanese yards are experiencing a shortage of labor. Young men are showing reluctance to launch themselves on careers in the industry, and this is causing wages to increase year by year. Automation is helping the yards meet this situation to some extent, but there is a limitation to such progress.

Officials of the Japan Ship Exporters Association report that the industry is now seeking new markets among the developing nations of the world, predominantly those in Latin America, Eastern Europe, the Middle and Near East, North Africa, and Southeast Asia.

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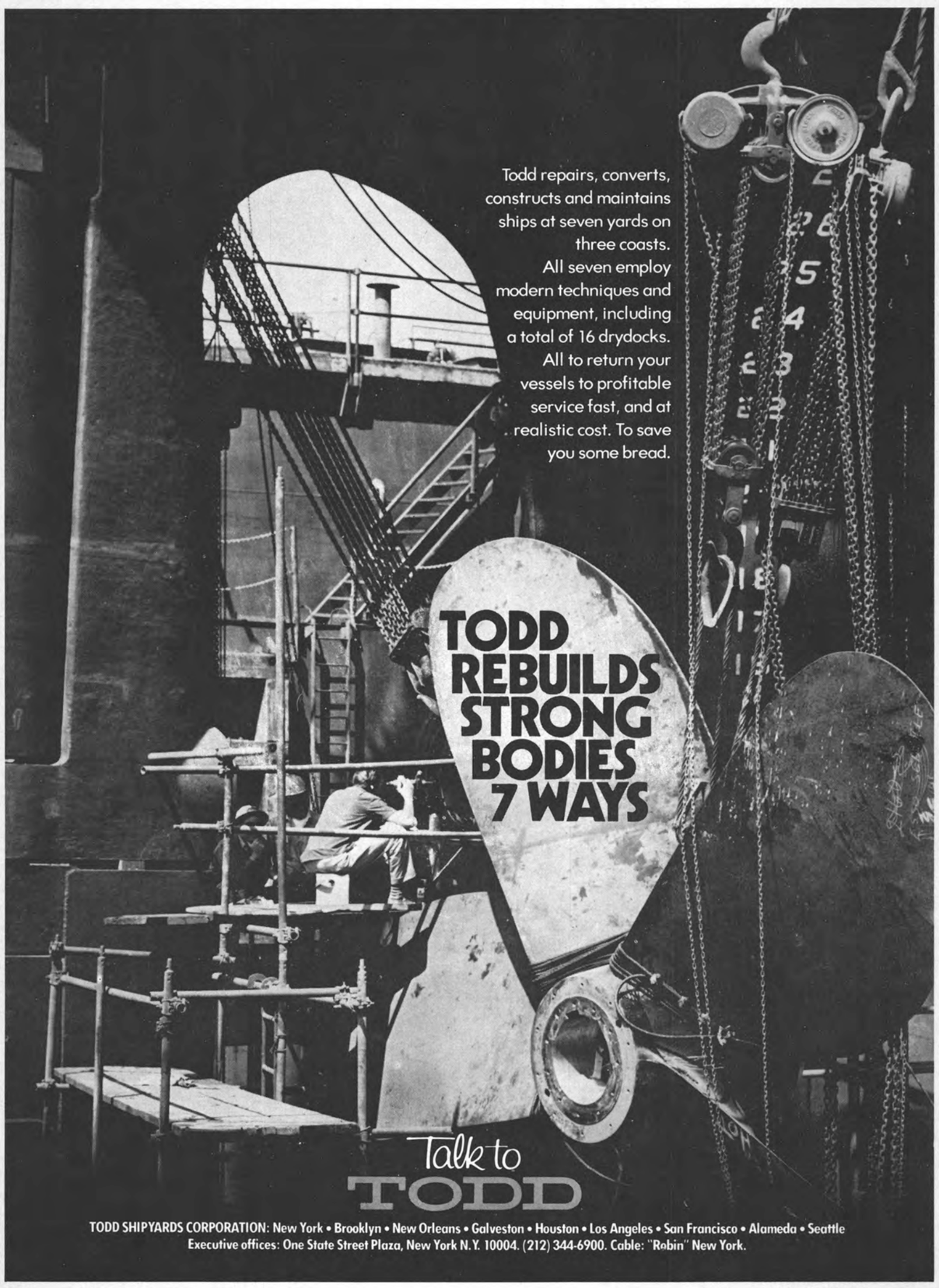
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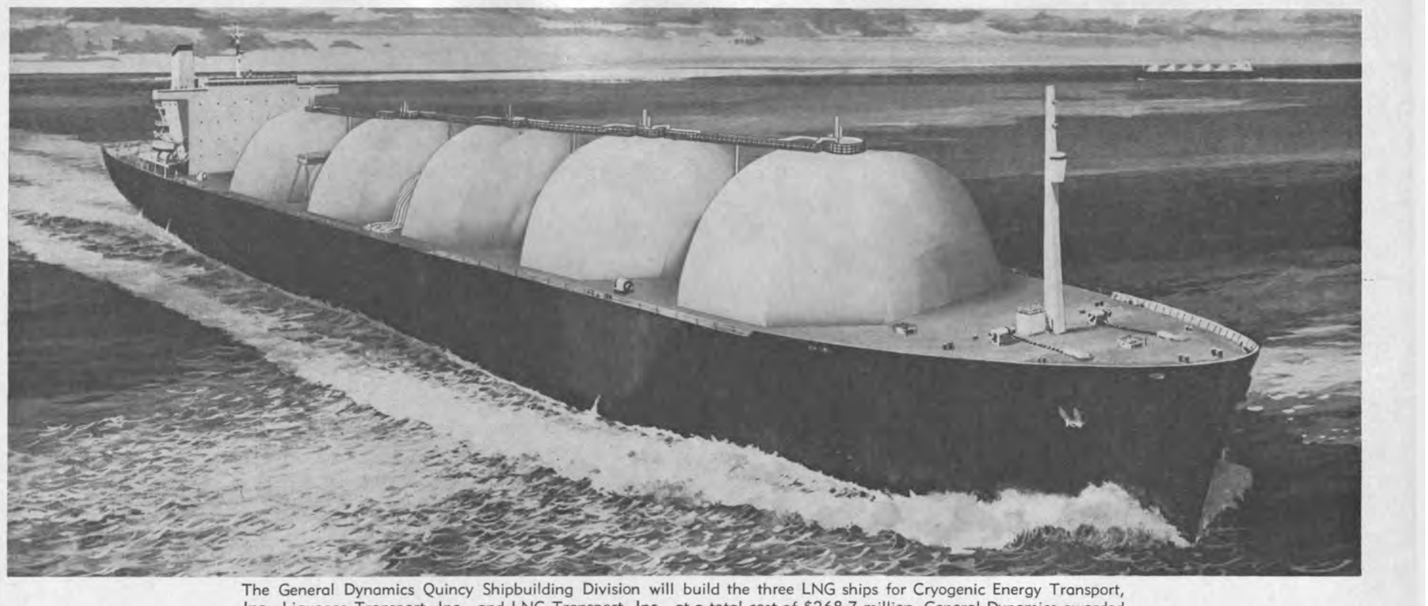


The General Dynamics Quincy Shipbuilding Division will build the three LNG ships for Cryogenic Energy Transport, Inc., Liquegas Transport, Inc., and LNG Transport, Inc., at a total cost of $268.7 million. General Dynamics awarded a $40-million contract to Pittsburgh-Des Moines Steel for the construction of the 15 tanks for the three LNG ships.

# LNG Ships—A New Construction Approach

## U.S. Shipyard And Cryogenic Tank Builder Team Up To Offer An Improved Method Of LNG Ship Construction

**Fred E. Hamren Jr.***

At present, the largest LNG carrier in service has a capacity of 75,000 cubic meters of liquefied natural gas. Ships of 125,000 cubic meters are under construction, with larger sizes on the drawing boards. Construction methods for these ships, whether they use the membrane or free-standing container design, generally utilize a standard shipbuilding approach, i.e., the ship's hull and LNG containers are both built and integrated at the same shipyard.

The Quincy Shipbuilding Division of General Dynamics Corporation, one of the largest U.S. shipyards, will construct its newly ordered 125,000-cubic-meter LNG ships utilizing LNG tanks prebuilt at a remote site by an experienced cryogenic tank manufacturing company. Its prime subcontractor in this plan is Pittsburgh-Des Moines Steel Company, a leading builder of land-based LNG storage tanks.

This order for 15 large storage tanks for three 125,000-cubic-meter LNG ships constitutes not only the first major order for the large capacity LNG ships from U.S. shipyards, but also the first use of a traditional tank fabricator to construct the required cryogenic tanks of this type away from the shipyard for later insertion in the hull. PDM was picked by General Dynamics for this role as ship tank builder, based on PDM's acknowledged position as one of the leading fabricators in the USA, and as a result of their proposal which was chosen by General Dynamics from among other U.S. fabricators after a long period of competition. PDM received a contract for $40 million for the 15 tanks for the three LNG ships.

PDM is a large, independent, engineering and construction organization with more than 80 years' experience in designing and building major metal structures. Utilizing 15 plants nationwide and licensees throughout the world, PDM has engineered, fabricated and erected specialized metal structures, including the world's largest supersonic wind tunnel, environment simulation systems for outer space, habitats for the ocean depths, nuclear containment vessels, and storage facilities for most commercially storable gases and liquids.

PDM has been a leader in the field of liquefied natural gas storage and process facilities from the beginning. This leadership has allowed them, over the years, to become intimately familiar with all facets of this field, from construction of some of the largest LNG

(Continued on next page)

***Fred E. Hamren Jr.** is manager of sales, Systems Group, Pittsburgh-Des Moines Steel Company, Neville Island, Pittsburgh, Pa. 15225.

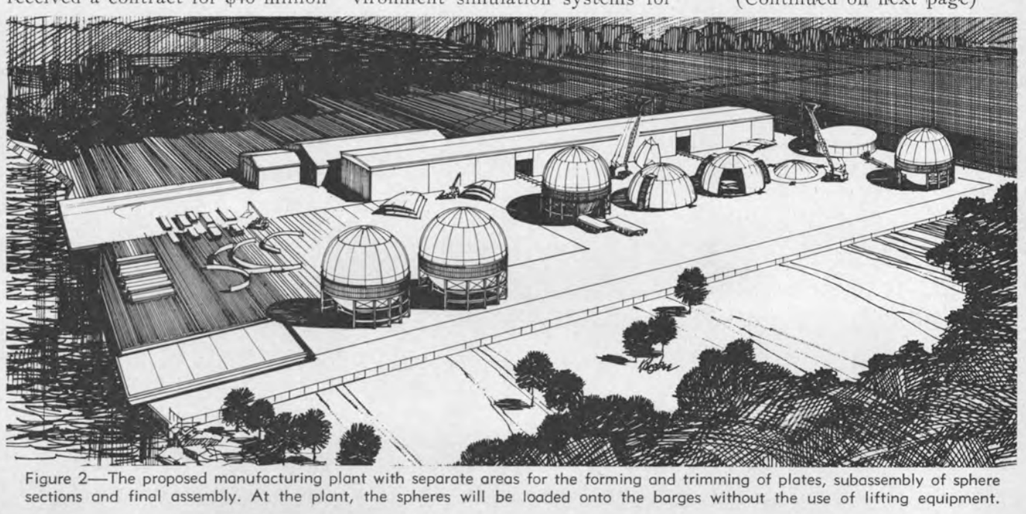


Figure 2—The proposed manufacturing plant with separate areas for the forming and trimming of plates, subassembly of sphere sections and final assembly. At the plant, the spheres will be loaded onto the barges without the use of lifting equipment.

tanks in existence, to design and installation of the regasification components of LNG systems.

The theory of constructing major components of ships at remote locations is not new, but it has particular application to LNG carriers and especially to the new mammoth capacity ships which utilize free-standing tanks as LNG containers. As noted by **William Thomas** and **Alfred Schwendtner** in their recent comprehensive study, "LNG Carriers: The Current State of the Art" (see MARITIME REPORTER/Engineering News issue of January 1, 1972), the LNG tanks represent probably the most disruptive process to a shipyard's normal building schedule. Remote construction of these special containers for installation at the shipyard or at another site offers many advantages.

The plan chosen by Quincy Shipbuilding Division of General Dynamics and PDM is based on constructing complete free-standing tanks at a manufacturing facility having clear access to water transportation and then barging the tanks to General Dynamics' shipyard at Quincy, Mass. The manufactured tanks will be spheres based on the Moss-Rosenberg technique as designed by GD with assistance from Det norske Veritas. The material used in the spheres, described in Figure 1, will be 5083-0 aluminum.

Subassembly will be done in an enclosed shop, with final assembly outside as shown in Figure 2.

When ready for shipment to Quincy, the spheres will be loaded on barges as shown in Figure 2. These spheres will be unloaded from the barges and placed into the ship's hull with a unique 850-ton-lift overhead crane specially designed to handle the spheres. This crane is one of the largest presently planned to be available in a U.S. shipyard. The use of this crane will simplify the loading operation and expedites completion of the ship. A view of the total LNG ship configuration with a cutaway of the LNG tanks as installed is shown in Figure 3.

Among the advantages of the Quincy Shipbuilding Division of General Dynamics-PDM program for constructing LNG ships using spheres manufactured at a remote site are:

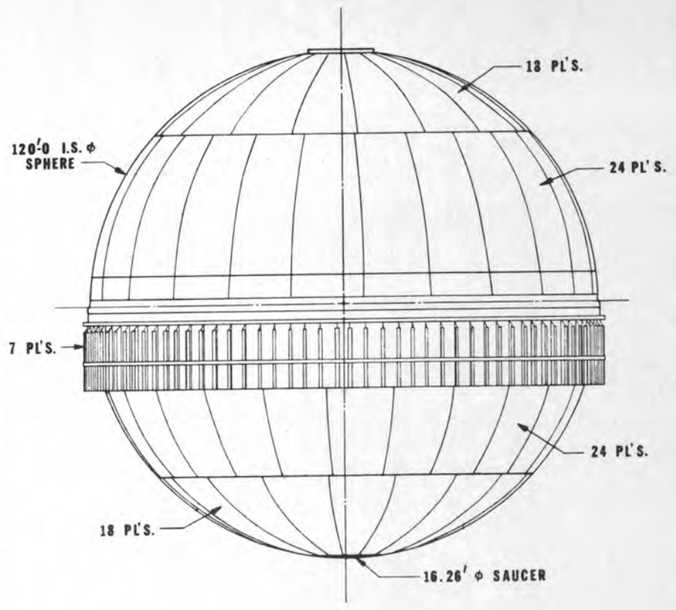
The ship's hull structure is built by shipbuilders and the LNG containers are built by qualified experienced cryogenic tank builders. Special techniques are required to build very large free-standing tanks. These techniques are available without special training by PDM, whose normal business is building tanks and other large structures.

A special manufacturing facility can be custom-built to maximize the efficiency of construction of the required spheres. An artist's drawing of the proposed manufacturing plant is shown in Figure 2. The plant has separate areas for the forming and trimming of plates, subassembly of sphere sections and final assembly. It should be noted that the production system makes use of parallel assembly bays to eliminate bottleneck operations. Raw material is delivered to the plant by rail and barge, and the finished product is shipped to Quincy by barge as shown in Figure 4. The spheres are loaded on the barges without the use of lifting equipment.

An important benefit gained from using a remote manufacturing facility for the LNG containers is that a separate quality control program can be maintained in the shipyard and in the tank shop. This is an improvement over trying to mix quality control unique to the two types of work. It is also an advantage to be able to create a manufacturing environment which is tailored to the product by designing equipment that is used for only one basic material. Such a plant affords the quality of control of the working environment that is necessary for insuring high-grade aluminum welding.

A very important consideration which favors a remote LNG container manufacturing site involves the manpower required to build the tanks. The skills required and the job classifications necessary to build cryogenic tanks are not the same as those required to build ship hulls. The ability to train workmen to manufacture containers which are constructed of materials different from ship steel provides the advantage of having men picked for and judged in accordance with a specialty. It is important, of course, to choose a tank manufacturing site near a good source of efficient labor.

The Quincy Shipbuilding Division of General Dynamics Corporation-PDM plan is designed to improve the quality of LNG ship construction and to add reliability to the ship delivery schedule. The final product, the LNG ship, will truly represent the best efforts of proven experts in each of the major areas of construction—the ship hull, and the LNG container.




**25,000 M³ LNG SPHERE**

Figure 1—The tanks manufactured by Pittsburgh-Des Moines Steel will be spheres based on the Moss-Rosenberg technique. The material used will be 5083-0 aluminum.

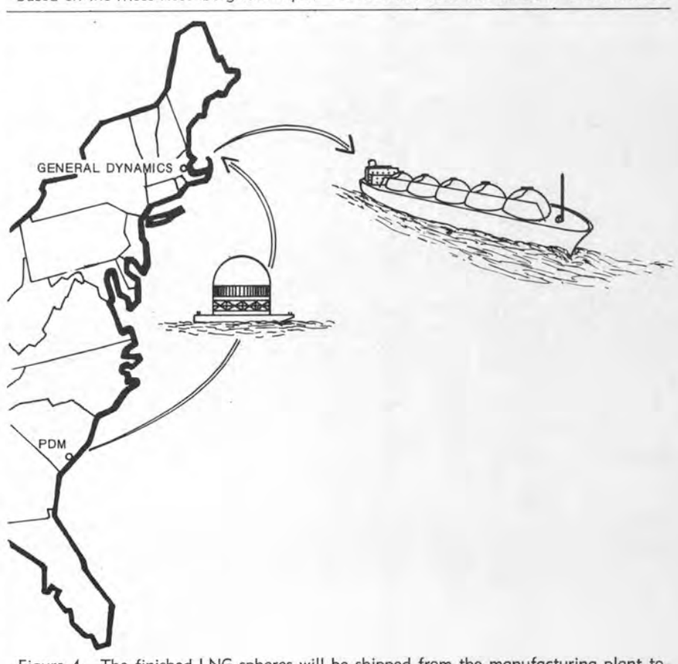



Figure 4—The finished LNG spheres will be shipped from the manufacturing plant to Quincy by barge. At the yard, the spheres will be unloaded and placed into the ship's hull using a unique 850-ton-lift crane especially designed to handle the spheres.

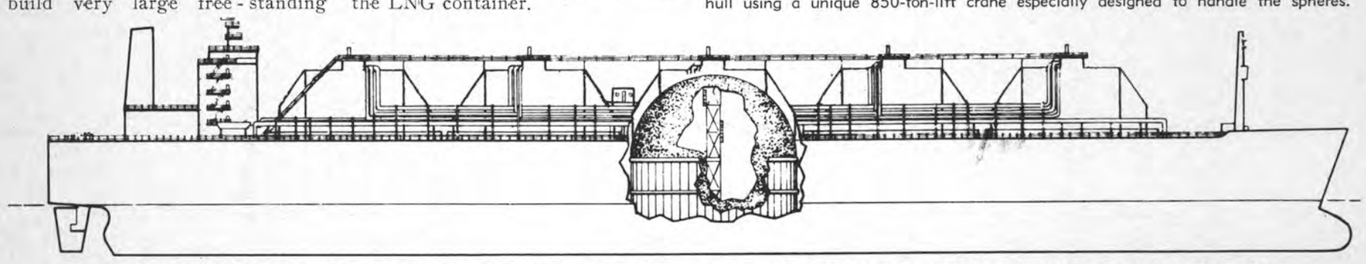


Figure 3—The 125,000-cubic-meter LNG ships have been designed by General Dynamics for the maximum standardization of the production process and flow. Unique methods have been developed for manufacturing the aluminum spheres, and a mechanized process line will produce the major portion of the hull structure. Development of specialized manufacturing facilities and improvements which will involve substantial capital investment have commenced.

## Pacific Alaska Seeks Construction Subsidy For Five LNG Tankers

Pacific Alaska LNG Co., a subsidiary of Pacific Lighting Corp., Los Angeles, Calif., has filed an application for construction subsidy for five 125,000-cubic-meter liquefied natural gas (LNG) carriers.

The vessels are said to be intended as part of a fleet of 7 to 12 such vessels for bringing in fuel to the southern California area from Indonesia. Southern California Gas Co., another Pacific Lighting subsidiary, is to distribute the LNG.

The application filed with the Maritime Subsidy Board omitted any reference to the projected cost of the five ships or what shipyard might build them.

Also, there has been no application for permission to import Indonesian LNG fuel with the Federal Power Commission.

The application brought to 31 the number of LNG carriers for which subsidy is sought. Subsidy has been approved by MSB for six LNG carriers—three for El Paso Natural Gas and three for Eascogas. The Pacific Alaska application is the second largest pending. Sealift Tankers wants to build seven with subsidy, and Zapata five.



## Shell Oil Appoints J.T. Moffatt Manager Int'l Marine Sales

J.T. Moffatt

A streamlining of Shell Oil Company's international marine sales function under the direction of **J.T. Moffatt,** New York, N.Y., became effective January 1, 1973.

The appointment of Mr. **Moffatt,** formerly area manager of transportation sales, New York, as manager of international marine sales was announced by **L.M. Clark,** manager of transportation sales, Houston.

Mr. **Moffatt** will be responsible for coordinating Shell Oil Company's contracts in deep draft marine sales.

"The organizational restructuring was undertaken to enable Shell to have one single unit devoted exclusively to the coordination of international deep draft sales and contract negotiations which previously have been handled individually by each of Shell's five transportation sales offices," Mr. **Clark** said. "We believe unifying our international sales operations through one location in the New York area, where the vast majority of marine accounts are headquartered, will improve and expedite our service to the international marine industry."

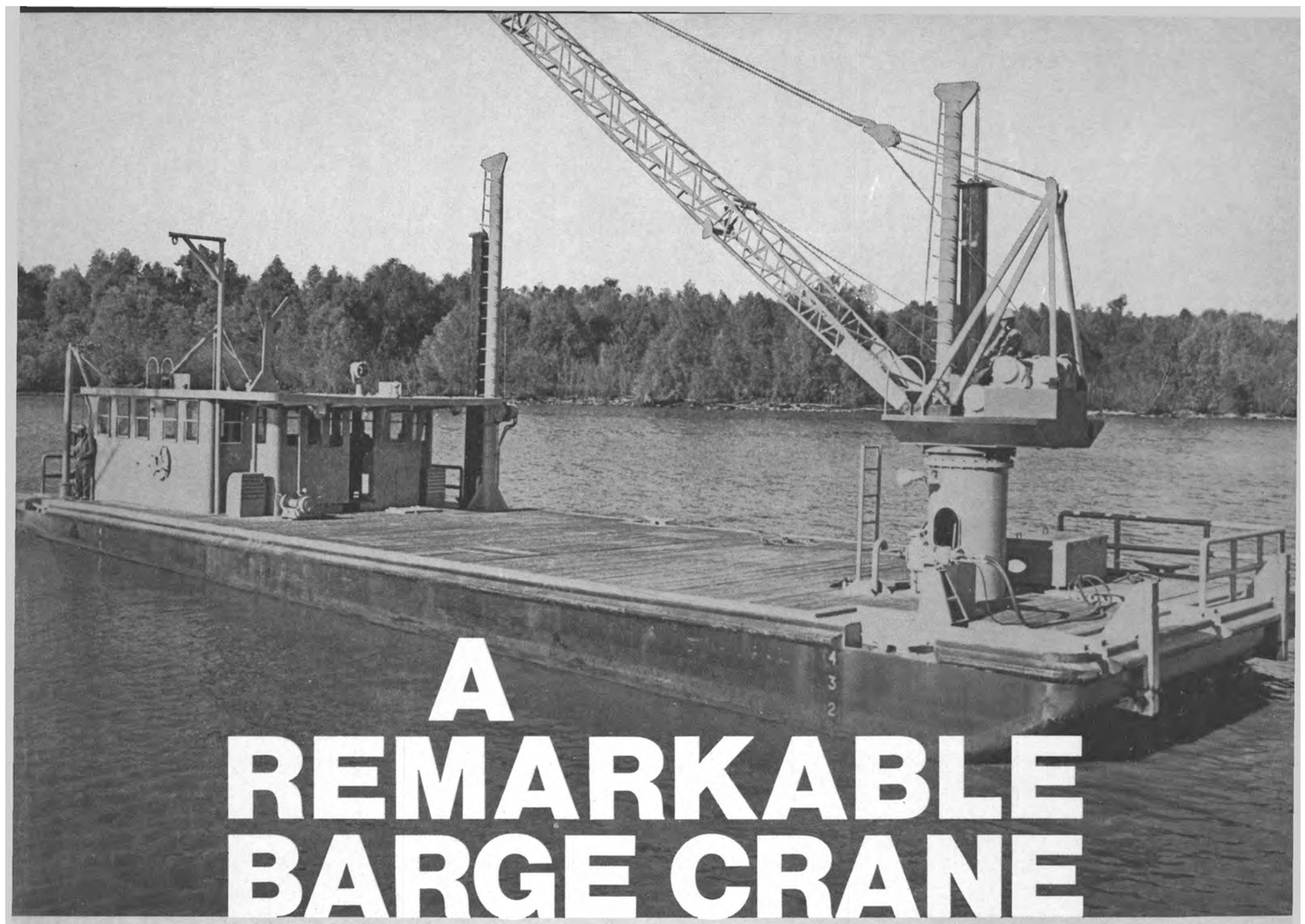
Mr. **Moffatt** and his present sales and administrative staff will remain in New York, but responsibility for the marine-harbor service and railroad sales activities, formerly handled there, have been transferred to Shell's Baltimore Sales Area Office.

Mr. **Moffatt,** a graduate of the New York State Maritime College, served in the U.S. Navy and U.S. maritime service. He holds a chief engineer's license and is a commander (ret.) in the U.S. Naval Reserve. He is a co-founder of the National Council of Maritime College Alumni Association.

## Triple 'A' Machine Gets APL Contract To Modify Three C-6s

The American President Lines has awarded a contract to Triple "A" Machine Shop Inc., San Francisco, Calif., for the modification of three C-6 containerships — the President Van Buren, President Grant, and President Taft. The $2,325,615 contract will have a Government subsidy amounting to 40.3 percent—a total of $938,115.

The vessels are being modified in order to better handle 40-foot containers.



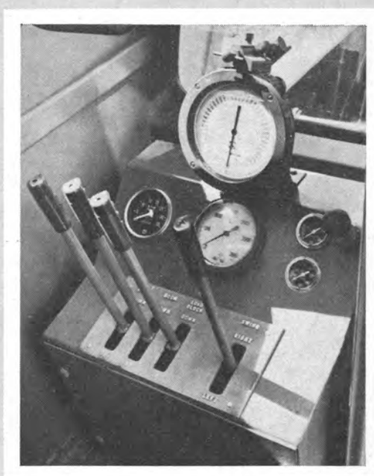
# A REMARKABLE BARGE CRANE

***Cranes built to lift... and last!***

Houston Systems, a company with decades of on-the-water equipment experience, has designed a complete line of fully hydraulic cranes suitable for operation on barges. All meet ABS specifications.

Engineered for cargo movement and equipment handling, the Houston Systems cranes are for sale in four Roto-crane models. Ratings range from five to fifty tons. Two jib crane models featuring compactness are also available in five and ten ton capacity.

Features include maintenance-free components for humid environments, full 360° rotation and superb operator visibility. Precision remote control systems are available. An extensive parts inventory for all models is maintained by Houston Systems for immediate air freight delivery.



Over two dozen optional equipment items including four power choices, fastline winches and boom accessories enable Houston Systems engineers to provide cranes customized to meet unusual operator requirements.

Your company can depend on Houston Systems cranes to provide dependable, trouble-free service and few repairs. Your operators will become enthusiastic advocates of Houston Systems unique control system—two hands control everything—no foot pedals are used. It's called operational simplicity.

Your people should have a lot of other kind words for it!

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HOUSTON SYSTEMS HSMC MANUFACTURING CO.

**Houston Systems Manufacturing Co.**
6022 Cullen Blvd. Houston, Texas 77021
P.O. Box 14551 Phone: (713) 747-3600

# Sun Oil Company's Annual Tanker Report

## The World Tanker Fleet Increased By 14.2 Percent During 1971 With 25 Percent Registered In Liberia. The Report Predicts A Minimum Annual Increase Requirement For Tankers Of 20,000,000 DWT.

During 1971 the world tanker fleet increased at a faster rate than in each of the previous ten years. At the end of 1971, the tankship fleet consisted of 4,183 vessels totaling 191,748,000 dwt, up 181 vessels and 23,808,000 dwt over the previous year. In 1961, this same fleet consisted of 3,250 vessels with a total deadweight tonnage of 68,859,000.

These statistics and others of equal significance to the energy producing and using nations throughout the world were presented in the 15th annual world tanker study prepared by the Sun Oil Company. These comprehensive studies of trends in the usage of tankers and the size of tankers is prepared annually by the Scientific Resources and Development Planning group of Sun Oil Company and is compiled under the direction of **James S. Cross,** director of Economics and Industry Affairs.

Taking into account scrapping and other ships withdrawn from active service, there were actually 218 tankers delivered into the world fleet. Table No. 1 reflects the net increase in the number of vessels and the tonnage.

Liberia continued to be the leading flag of registry in 1971, a position which was first attained in 1957. With year-end registrations of 850 vessels, the Liberian-flag fleet totaled 47,928,200 dwt, Table No. 2. The United Kingdom remained in second place during 1971 with 442 tankers. Norway held third position with 391 tankers. Japan and the United States remained in fourth and fifth positions respectively. Actually, the United States showed a decrease in the number of ships, 350 in 1970 and 347 in 1971, but an increase total deadweight, up from 8,911,000 dwt in 1970 to 9,218,200 dwt in 1971.

Once again Liberia provided the greatest additions to deadweight tonnage during 1971 with a net increase of 6,578,400 dwt or 15.9 percent above the previous year, Table No. 3. Japan added 4,101,000 dwt to its tankship fleet in 1971. The United Kingdom and Norway had net additions of more than 2 million dwt each. In combination, these four flags of registry provided a net addition of 16.0 million dwt or two-thirds of the deadweight tonnage added to the world fleet during 1971.

The 13.8 percent increase in total world carrying capacity during 1971 compares favorably with the 14.7 percent gain in the previous year and an 11.2 percent annual average growth for the ten-year period ending in 1971.

### The Average Tanker

The average deadweight tonnage of ocean-going tankships of 2,000 gross tons or more was 45,800 dwt at the end of 1971, and the average speed remained at 15.8 knots, Table No. 5.

The average deadweight tonnage per vessel increased 3,800 dwt or nine percent during 1970. Over the past decade, the average deadweight tonnage of the world fleet rose 23,700 dwt or 107 percent. The average speed, which has advanced slowly but progressively during the earlier years of the decade, remained at 15.8 knots for the fourth year.

Japanese-flag tankers averaged the world's largest in 1971 at 79,800 dwt. This was 8,600 dwt or 12.1 percent greater than a year earlier, and more than three times the size of the average Japanese-flag tanker at the end of 1961, Table No. 6. The second largest average vessels, at 69,300 dwt, were under the West German flag, while the third largest were registered in Panama at 62,100 dwt.

The average speed of the world tanker fleet remained unchanged in 1971 at 15.8 knots, Table No. 7. The United States-flag increased average speed 0.1 knot compared with the previous year. Nominal declines in average speed were noted in French, Panamanian, Swedish and West German flags, while the remaining seven principal flags remained unchanged. Over the ten years ending with 1971, the average speed of the world fleet increased 0.6 knot, ranging from a slight decline for Liberia to a 2.0-knot gain for the U.S.S.R.

(Continued on page 12)

**Table No. 1—World Tankship Fleet at the End of 1971**

| Dec. 31 | Number of Vessels | Deadweight Tonnage |
|---|---|---|
| 1961 | 3,250 | 68,859,000 |
| 1962 | 3,259 | 71,996,000 |
| 1963 | 3,279 | 76,179,000 |
| 1964 | 3,359 | 85,126,000 |
| 1965 | 3,436 | 93,172,000 |
| 1966 | 3,524 | 102,909,000 |
| 1967 | 3,613 | 112,366,000 |
| 1968 | 3,775 | 128,128,000 |
| 1969 | 3,893 | 146,029,000 |
| 1970 | 4,002 | 167,940,000 |
| 1971 | 4,183 | 191,748,000 |

**Table No. 2—Flag of World Tankship Fleet**

| 1971 Rank | Flag | Number of Vessels | Deadweight Tonnage |
|---|---|---|---|
| 1 | Liberia | 850 | 47,928,200 |
| 2 | United Kingdom | 442 | 25,111,800 |
| 3 | Norway | 391 | 23,088,900 |
| 4 | Japan | 286 | 22,821,800 |
| 5 | United States | 347 | 9,218,200 |
| 6 | Greece | 229 | 8,912,400 |
| 7 | France | 125 | 7,767,000 |
| 8 | Panama | 175 | 5,862,900 |
| 9 | Italy | 149 | 5,647,500 |
| 10 | U.S.S.R. | 353 | 5,200,100 |
| 11 | Sweden | 76 | 4,425,800 |
| 12 | West Germany | 52 | 3,601,900 |
| | All Others | 708 | 22,161,900 |
| | Total World | 4,183 | 191,748,400 |

**Table No. 3—Changes in Deadweight Tonnage December 31, 1971 From December 31, 1970**

| Flag | Deadweight Tonnage | Percent |
|---|---|---|
| Liberia | + 6,578,400 | +15.9 |
| United Kingdom | + 2,834,800 | +12.7 |
| Norway | + 2,525,300 | +12.3 |
| Japan | + 4,101,000 | +21.9 |
| United States | + 307,200 | + 3.4 |
| Greece | + 1,319,200 | +17.4 |
| France | + 1,765,400 | +29.4 |
| Panama | — 277,700 | — 4.5 |
| Italy | + 548,700 | +10.8 |
| U.S.S.R. | + 124,300 | + 2.4 |
| Sweden | + 579,000 | +15.0 |
| West Germany | + 542,200 | +17.7 |
| All Others | + 2,860,400 | +14.8 |
| Total World | +23,808,200 | +14.2 |

**Table No. 5—Average Deadweight Tonnage and Speed**

| Year | Average Deadweight Tonnage | Average Speed (Knots) |
|---|---|---|
| 1961 | 21,200 | 15.2 |
| 1962 | 22,100 | 15.3 |
| 1963 | 23,200 | 15.4 |
| 1964 | 25,300 | 15.6 |
| 1965 | 27,100 | 15.7 |
| 1966 | 29,200 | 15.7 |
| 1967 | 31,100 | 15.7 |
| 1968 | 33,900 | 15.8 |
| 1969 | 37,500 | 15.8 |
| 1970 | 42,000 | 15.8 |
| 1971 | 45,800 | 15.8 |

**Table. No. 4—Carrying Capacity by Major Flags of Registry**

| Flag of Registry | 1971 Percent of World | 1970 Percent of World | 1961 Percent of World | Percent Change 1971/1970 | Annual Average Increase 1971/1961 |
|---|---|---|---|---|---|
| Liberia | 25.0 | 24.7 | 17.1 | +15.6 | +15.5 |
| United Kingdom | 13.0 | 13.4 | 14.5 | +10.9 | +10.0 |
| Norway | 12.1 | 12.3 | 14.3 | +12.3 | + 9.4 |
| Japan | 11.9 | 11.1 | 4.1 | +21.9 | +23.7 |
| United States | 5.0 | 5.5 | 13.7 | + 3.9 | + 0.4 |
| Greece | 4.6 | 4.4 | 3.6 | +17.6 | +13.7 |
| France | 4.1 | 3.6 | 4.7 | +28.6 | + 9.6 |
| Panama | 3.1 | 3.7 | 5.1 | — 5.3 | + 5.7 |
| Italy | 3.0 | 3.1 | 4.2 | +10.4 | + 7.5 |
| U.S.S.R. | 2.6 | 2.9 | 1.9 | + 2.6 | +14.8 |
| Sweden | 2.3 | 2.3 | 3.6 | +14.7 | + 6.4 |
| West Germany | 1.9 | 1.8 | 1.7 | +17.0 | +12.7 |
| All Others | 11.4 | 11.2 | 11.5 | +15.1 | +11.1 |
| Total World | 100.0 | 100.0 | 100.0 | +13.8 | +11.2 |

## Sun Oil Tanker Report—

(Continued from page 10)

The average age of the world tanker fleet remained constant at seven years and three months at the end of 1971, Table No. 8. During the past ten years, the average age has ranged narrowly between a high of seven years and nine months in 1963 and 1967 and a low of seven years and three months at the end of 1970 and 1971.

The youngest fleet among the major flags at the end of 1971 was the Japanese with an average age of four years and four months—two months older than a year earlier. The second youngest was the Norwegian flag at five years and one month—also two months older than in 1970. The oldest fleet among the major flags was registered in the United States. At 16 years and five months, the age of the U.S.-flag fleet remained unchanged during 1971.

A distribution of carrying capacity by year of construction for major flags of registry indicates that 65 percent of the Japanese-flag fleet was built during the five-year period of 1967-1971, and all except 6.5 percent was constructed in the past ten years. For the United States flag, the opposite situation applied, with 16.9 percent of the carrying capacity constructed in the past five years and 75 percent prior to 1962.

### Construction

There were 773 tankers of 2,000 gross tons or more under construction or on order in world shipyards at the end of 1971. These totaled 100,250,000 dwt and averaged 129,700 dwt per vessel, Table No. 9. One year earlier there were 649 vessels totaling 75,447,000 dwt on order averaging 116,300 dwt per vessel.

Of the total deadweight tonnage under construction or on order at the end of 1971, more was intended for registry in Liberia than under any other flag, Table No. 10.

At 23,010,000 dwt, Liberia's share represented 23 percent of worldwide tonnage under construction and was equal to 48 percent of the existing Liberian-flag fleet at the end of 1971. The flag intended to receive the second largest amount of new tonnage was Japan with 13.7 percent of the world total. Norway followed in third position with 12 percent. Thus, almost half of the total tonnage under construction was intended to be registered under these three flags.

Among the 14 principal intended flags of registry, the flag scheduled to receive the most new tonnage relative to the size of its existing fleet was Denmark, with orders amounting to 82.8 percent of actual tonnage registered at year-end. Vessels intended for Spanish registry represented 68.2 percent of the existing fleet. For the entire world, deadweight tonnage under construction or on order amounted to 52.3 percent of the total current tonnage.

Within the flags intended to receive the most tonnage under construction, Liberia was scheduled to receive the largest vessels, averaging 201,800 dwt each. Vessels intended for registry in Japan averaged 191,400 dwt, while anticipated deliveries for Danish registry averaged 187,100 dwt. The smallest tankers, averaging 18,500 dwt, were scheduled to be registered in the U.S.S.R.

Of the total tonnage under construction worldwide, some 44 million dwt were being built in Japan, Table No. 11. This was 19,800,000 dwt or 81.7 percent more tonnage than was under construction in Japan one year earlier. Second among the countries of construction in 1971 was France, with 7,056,000 dwt in its yards, up from 6,644,000 dwt one year earlier. Sweden maintained third place among countries of construction with 6,947,000 dwt being built, compared with 7,894,000 dwt in the previous year. Spain had 6,885,000 dwt under construction or on order, up from 5,582,000 dwt a year earlier.

### Specialty Vessels

Throughout the years, the annual Analysis of World Tank Ship Fleet has attempted to maintain historical perspective by displaying summary tabulations covering a period of ten years or more. In earlier editions, this presented no particular difficulty since most of the new deliveries were conventional tankers. More recently, however, substantial numbers of combined carriers, liquid gas carriers and specialty vessels have entered the world fleet and have been included in the various totals and averages developed in the analysis.

Since it is impractical to reconstitute earlier data by arbitrarily including or excluding certain vessel types, it has been decided to continue the present format, but to list a summary of specialty vessels included in the fleet, Table No. 12.

### A Projection

The minimum tankship capacity required for net waterborne inter-regional movements of liquid petroleum increasd frome 106.7 million dwt in 1970 to 124.2 million dwt in 1971, or 16.4 percent. By 1975 this required capacity is expected to become 205 million dwt, representing an annual average rate of growth in requirements from 1971 to 1975 of 13.3 percent. From 1975 to 1980 the average growth rate is expected to be about 8 percent per year, with minimum requirements reaching 302 million dwt by 1980. From 1971 through 1980, minimum inter-regional requirements are expected to grow by about 20 million dwt per year at a fairly even pace. A reference vessel of 250,000 dwt, with a speed of 15.5 knots, was used as a base for these estimates.

**Table No. 6—Average Deadweight Tonnage**

| Flag | 1971 | 1970 | 1961 |
|---|---|---|---|
| Liberia | 56,400 | 52,100 | 31,200 |
| United Kingdom | 56,800 | 51,400 | 19,800 |
| Norway | 59,100 | 55,100 | 20,200 |
| Japan | 79,800 | 71,200 | 24,000 |
| United States | 26,600 | 25,500 | 19,400 |
| Greece | 38,900 | 36,900 | 25,100 |
| Panama | 62,100 | 48,800 | 24,300 |
| France | 33,500 | 35,100 | 23,200 |
| Italy | 37,900 | 35,700 | 22,300 |
| U.S.S.R. | 14,700 | 14,900 | 12,600 |
| Sweden | 58,200 | 46,300 | 21,200 |
| West Germany | 69,300 | 62,400 | 24,700 |
| Total World | 45,800 | 42,000 | 21,200 |

**Table No. 7—Average Speed in Knots**

| Flag | 1971 | 1970 | 1961 |
|---|---|---|---|
| Liberia | 15.9 | 15.9 | 16.0 |
| United Kingdom | 15.7 | 15.7 | 14.7 |
| Norway | 15.9 | 15.9 | 14.7 |
| Japan | 15.8 | 15.8 | 15.4 |
| United States | 16.3 | 16.2 | 15.8 |
| Greece | 15.5 | 15.5 | 15.5 |
| Frances | 16.0 | 16.1 | 15.4 |
| Panama | 15.9 | 16.0 | 15.5 |
| Italy | 16.1 | 16.1 | 15.4 |
| U.S.S.R. | 15.4 | 15.4 | 13.4 |
| Sweden | 16.0 | 16.1 | 15.6 |
| West Germany | 15.9 | 16.0 | 15.9 |
| Total World | 15.8 | 15.8 | 15.2 |

**Table No. 8—Average Age by Major Flags of Registry**

| Flag | Dec. 31, 1971 Years | Dec. 31, 1971 Months | Dec. 31,1970 Years | Dec. 31,1970 Months |
|---|---|---|---|---|
| Liberia | 7 | 7 | 7 | 8 |
| United Kingdom | 5 | 9 | 5 | 9 |
| Norway | 5 | 1 | 4 | 11 |
| Japan | 4 | 4 | 4 | 2 |
| United States | 16 | 5 | 16 | 5 |
| Greece | 8 | 10 | 8 | 7 |
| France | 5 | 9 | 6 | 8 |
| Panama | 12 | 9 | 11 | 5 |
| Italy | 8 | 4 | 8 | 4 |
| U.S.S.R. | 8 | 0 | 7 | 3 |
| Sweden | 4 | 11 | 5 | 6 |
| Netherlands | 8 | 6 | 8 | 1 |
| Total World | 7 | 3 | 7 | 3 |

**Table No. 9—Tankships Under Construction or On Order (Not Including Combined Carriers)**

| Dec. 31 | Number of Vessels | Deadweight Tonnage Total | Deadweight Tonnage Average Per Vessel |
|---|---|---|---|
| 1961 | 352 | 15,737,000 | 44,700 |
| 1962 | 324 | 14,040,000 | 43,300 |
| 1963 | 387 | 19,211,000 | 49,600 |
| 1964 | 332 | 17,683,000 | 53,300 |
| 1965 | 403 | 20,591,000 | 51,100 |
| 1966 | 441 | 27,385,000 | 62,100 |
| 1967 | 469 | 41,444,000 | 88,400 |
| 1968 | 514 | 53,729,000 | 104,500 |
| 1969 | 570 | 59,328,000 | 104,100 |
| 1970 | 649 | 75,447,000 | 116,300 |
| 1971 | 773 | 100,250,000 | 129,700 |

**Table No. 10—Tankers Under Construction or On Order December 31, 1971 by Country of Registry**

| Intended Flag | Number of Vessels | Deadweight Tonnage Total | Deadweight Tonnage Average per Vessel | Deadweight Tonnage Percent of Existing Fleet |
|---|---|---|---|---|
| Liberia | 114 | 23,010,000 | 201,800 | 48.0 |
| Japan | 72 | 13,777,000 | 191,400 | 60.4 |
| Norway | 77 | 11,982,000 | 155,600 | 51.9 |
| United Kingdom | 83 | 8,926,000 | 107,500 | 35.5 |
| France | 31 | 5,911,000 | 190,700 | 76.1 |
| Italy | 34 | 3,075,000 | 90,400 | 54.4 |
| Denmark | 13 | 2,433,000 | 187,100 | 82.8 |
| Spain | 18 | 1,913,000 | 106,300 | 68.2 |
| Greece | 23 | 1,764,000 | 76,700 | 19.8 |
| Panama | 9 | 1,633,000 | 181,500 | 27.8 |
| West Germany | 30 | 1,563,000 | 52,100 | 43.4 |
| Sweden | 23 | 1,559,000 | 67,800 | 35.2 |
| United States | 13 | 1,365,000 | 105,000 | 14.8 |
| U.S.S.R. | 65 | 1,200,000 | 18,500 | 23.1 |
| All Others | 168 | 20,139,000 | 119,900 | 122.6 |
| Total World | 773 | 100,250,000 | 129,700 | 52.3 |

**Table No. 11—Deadweight Tonnage Under Construction or On Order By Country of Construction**

| Country of Construction | Dec. 31 1971 | Dec. 31 1970 | Dec. 31 1961 |
|---|---|---|---|
| Japan | 44,054,000 | 24,248,000 | 3,249,000 |
| France | 7,056,000 | 6,644,000 | 1,300,000 |
| Sweden | 6,947,000 | 7,894,000 | 2,333,000 |
| Spain | 6,885,000 | 5,582,000 | 370,000 |
| Norway | 5,711,000 | 4,818,000 | 995,000 |
| Denmark | 5,257,000 | 6,177,000 | 819,000 |
| West Germany | 4,218,000 | 4,244,000 | 1,675,000 |
| Netherlands | 3,880,000 | 3,880,000 | 741,000 |
| United Kingdom | 3,675,000 | 3,044,000 | 2,123,000 |
| Italy | 3,339,000 | 2,963,000 | 503,000 |
| United States | 1,365,000 | 1,873,000 | 449,000 |
| U.S.S.R. | 1,279,000 | 1,431,000 | 766,000 |
| All Others | 6,584,000 | 2,649,000 | 414,000 |
| Total World | 100,250,000 | 75,447,000 | 15,737,000 |

**Table No. 12—Specialty Vessels Included in World Tankship Fleet Analysis—December 31, 1971**

| Specialty | Number of Vessels | Deadweight Tonnage |
|---|---|---|
| Ore/Oil | 137 | 9,401,400 |
| Bulk/Oil | 98 | 8,647,000 |
| L.P.G. Carriers | 76 | 1,024,900 |
| L.P.G. Combined Carriers[1] | 35 | 526,000 |
| Methane (L.N.G.) | 13 | 284,500 |
| Solvents, Lubes & Specialties | 83 | 1,484,300 |
| Chemical | 65 | 1,012,600 |
| Asphalt & Bitumen | 22 | 292,000 |
| Sulfur | 11 | 237,300 |
| Whale Factory | 11 | 231,800 |
| Wine | 10 | 60,800 |
| Molten Phosphorous | 3 | 31,200 |
| Total Specialties | 564 | 23,233,800 |

[1] Includes LPJ/Chemical, LPJ/Oil and LPJ/Ammonia combined carriers.

# Hongkong United Dockyards


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## Todd Shipyards Corporation Receives Letter Of Intent From Maritime Fruit To Build Three 380,000-Ton Tankers

Maritime Fruit Carriers Company Limited has announced that it has signed a letter of intent for its wholly owned subsidiary, General Maritime Corporation, with Todd Shipyards Corporation for the construction by Todd of three 380,000-deadweight-ton very large crude carriers (VLCCs) with an option for three additional such vessels. The ships, known as supertankers, would be owned by a qualified U.S. citizen company which will be designated by General Maritime at a later date.

The three supertankers would be built by Todd at a newly planned extension of its present shipyard on Pelican Island in Galveston, Texas. It is estimated each vessel would cost approximately $95 million, giving the total transaction a value of approximately $285 million. According to Maritime Fruit, the transaction would be financed through a 41 percent construction differential subsidy, with the balance coming through a lease transaction.

Delivery of the first vessel would be in mid-1977, with the second and third at six-month intervals thereafter.

The letter of intent is subject to a number of conditions, among which are approval by the Maritime Subsidy Board, and the receipt by an appropriate U.S. subsidiary of MFC of a firm commitment from the Federal Maritime Administration of a grant for the construction differential subsidy. Several other companies have applied for this subsidy, and the approval of one or another of these applications may preclude the granting of this one.

Consummation of the agreement would mark the second major order of tanker tonnage from a U.S. shipyard for the Maritime Group. On June 30, 1972, it was announced that General Maritime would time-charter three 265,000-deadweight-ton supertankers to be built by Bethlehem Steel Corp. These are scheduled for delivery in 1975 and 1976. It is intended that Maritime Fruit Carriers will concentrate for its future VLCC activities in General Maritime Corporation.

Maritime Fruit Carriers Company Limited is a multinational organization, specializing in refrigerated shipping and oil transportation.

## Global Terminal Appoints Pegnam

**R.T. Norton,** president of Global Terminal & Container Services, Inc., Port Jersey, N.J., has announced the appointment of **Robert C. Pegnam** as vice president, engineering.

A former Army officer and graduate of Providence College, Mr. **Pegnam** has spent the past 10 years on the West Coast in various engineering management positions. Most recently, he was field engineering manager for Star Iron & Steel Company, Tacoma, Wash.

## Hughes Named Finnish Consul In Baltimore

Capt. Frank J. Hughes

Capt. **Frank J. Hughes,** president of the Curtis Bay Towing Company, has been named Finnish Consul in Baltimore, Md., succeeding Capt. **H.C. Jefferson,** who held the post for 20 years.

A native of Boston and a graduate of the Massachusetts Maritime Academy, Captain **Hughes** began his maritime career at the age of 16. He served as a deck officer on American-flag ships until 1944, when he joined the Moran Towing and Transportation Co. and engaged in deepsea towing and salvage operations.

In 1958, Captain **Hughes** came to Baltimore as vice president of the Curtis Bay Towing Company, whose "Blue Diamond Fleet" of 31 tugs is the largest in the ports of Philadelphia, Baltimore and Hampton Roads. He was named president of Curtis Bay in 1966, succeeding Captain **Jefferson,** who became chairman of the board and served in that capacity until 1972.

Although retired, Captain **Jefferson** continued to serve as Finnish Consul until late last year, when the Finnish Government appointed Captain **Hughes** to succeed him.

The new Consul is a former president of The Propeller Club of the United States, Port of Baltimore, and a member of the board of directors of the Chamber of Commerce of Metropolitan Baltimore. He has participated in four trade missions to Europe and the Far East to stimulate international trade and has served as a board member of Maryland Cruises, a civic group formed to promote cruising out of the Port of Baltimore.

## Hull Syndicate Increases Capacity For LNG Carriers

The American Hull Insurance Syndicate has increased its underwriting capacity nearly threefold, to $40 million on any one vessel, in a significant move intended to provide ample insurance support to the planned expansion of shipping and shipbuilding in the United States.

As announced by **Allen E. Schumacher,** chairman of the 50-company marine underwriting organization in New York, this increase from its previous limit of $15 million per vessel (established only three years ago) has been achieved in less than a year of active planning, in recognition of the need for added hull insurance capacity in the coming era of specialized high-valued vessels. He referred expressly to the programs envisioned by the Maritime Administration and individual owners and operators for the construction of mammoth tankers and liquefied natural gas carriers, which may cost upward of $100 million to build, both in this country and abroad.

With the attainment of this increase, Mr. **Schumacher** said, shipowners need no longer be concerned about the collective capability of the traditional worldwide insurance markets to cover exposures foreseen during the next several years. "When additional capacity is required," he emphasized, "it will be available."



## Missile Hydrofoil To Be Powered By G.E. Gas Turbine

The United States-NATO missile-carrying hydrofoil PHM will use General Electric LM2500 gas turbine engines for foilborne propulsion, the Boeing Aerospace Company recently announced.

The advanced hydrofoil gunboat, now being developed by Boeing under contract with the U.S. Navy, will be powered by a single GE marine turbine and will be capable of speeds in excess of 40 knots. The vessel will be able to operate in 12-foot seas.

The PHM is patterned after the Tucumcari, the Navy's 60-ton hydrofoil gunboat. The PHM, however, will be several times larger.

## Turecamo Adds Powerful Tug To Fleet


The twin-screw 105-ft. Mary Turecamo was built by Matton Shipyard, Cohoes, N.Y.

The latest addition to the Turecamo Coastal and Harbor Towing Corporation's fleet of tugs and barges, the 3,000-bhp tug Mary Turecamo, was recently placed in service.

Designed by **Merritt Demarest** of Red Bank, N.J., and built by Matton Shipyard Company, Inc., a Turecamo subsidiary, the new tug has an overall length of 105 feet 7½ inches, a 28-foot 11-¾-inch beam, and a draft at the skeg of 12 feet 8 inches.

The twin-screw 3,000-hp tug is powered by GM 12-645-E2 diesels, rated at 1,500 hp at 900 rpm, equipped with Lufkin 3.75:1 reduction gears driving a pair of 96-inch by 86-inch stainless steel propellers manufactured by Coolidge Propellers, Seattle, Wash.

Completely automated by Hose-McCann, the Mary Turecamo features a high pilothouse for good eye level and safe navigation when pushing the new superbarges.

All Turecamo "Work Horses" are known for the excellent interior treatment, and this completely air-conditioned tug is no exception. In the crew's quarters, Formica with stainless steel trim is used for bulkhead panels and built-in bunks. All interior woodwork is hand-rubbed Afro-mahogany, and galley panels and equipment are built of stainless steel.

**Jack Paro,** general manager of Matton Shipyard, said that the new tug increases the Turecamo fleet to 13 powerful tugs employed in general towing on the Great Lakes, the Hudson and Erie Canals, offshore along the East Coast, in the Caribbean, and docking and undocking ships in New York Harbor.

Principal suppliers to the Mary Turecamo are as follows: main propulsion—General Motors; reduction gears—Lufkin; pilothouse controls—Mathers Controls; telephones—Hose McCann; dual range depth indicator—Ross Lab, Inc.; SSB transceiver—R.F. Communications; automatic direction finder—Benmar Division (Computer Equipment Corp.); pilothouse control panel—Hose-McCann; radar—Sperry MK-8; sanitation system—Monogram Industries; air-conditioning—Dunham Bush; stern capstan—New England Trawler Equipment; galley range—G.E.; inflatable life raft—Switlik Parachute Co., and stainless steel propellers—Coolidge.

## John R. Millard Joins Raytheon Marine Co. As Marketing Manager

John R. Millard

**John R. Millard** has joined Raytheon Marine Company, Manchester, N.H., as marketing manager. He will direct all marketing and sales activities in connection with the company's line of marine radars, radiotelephones, Fathometer depth sounders, radio direction finders, loran receivers, loud hailers, and other marine electronic products for navigation, communications, and safety.

A marine industry veteran, Mr. **Millard** is a graduate of the State University of New York Maritime College. From 1940 to 1950, he sailed in merchant marine billets as third, second, and chief officer, and as master.

From 1951 to 1955, he was sales manager with Oluf Mikkelson Co., an Evinrude Motors distributor in New York. He then joined OMC's Evinrude Division in sales executive posts and in 1960 was named marketing director for OMC boats. From 1967 to 1970, he was product manager for Johnson outboard motors, stern drive boats, and snowmobiles. Subsequently, he was vice president-marketing for Boatel Co., a houseboat manufacturer, and president of Saltair Miami, Inc., a marina and retail boating center.

Mr. **Millard** is also a graduate of Pace College, from which he received a bachelor of arts degree in 1954.

## St. Louis Ship Promotes Krueger To Vice Pres.-Controller

H.E. Krueger

**H.E. Krueger** has been promoted to vice president-controller of the St. Louis Ship Division of Pott Industries Inc., according to an announcement made by **Edward Renshaw,** president.

Mr. **Krueger,** who was formerly controller, is well-known in the marine industry as a former president of the Port of St. Louis Propeller Club and as a former national vice president of The Propeller Club. He is a graduate of St. Louis University and is a member and formerly on the board of directors of the National Association of Accountants.

## Lykes SEABEE Barge Ships Container Cargo Direct St. Louis-Europe

The Port of St. Louis recently took another step forward in becoming a major inland seaport as Lykes Bros. Steamship Co., Inc. sent one of its SEABEE barges to St. Louis, Mo., to load containers and breakbulk cargo for North Europe and the United Kingdom.

The movement, according to the Chamber of Commerce, marked the first time that containerized cargo was shipped directly to Antwerp and London via the all-water route from St. Louis on a single carrier bill of lading.

The containers were stowed with chemical products manufactured by the Monsanto Chemical Company, and they were loaded aboard the highly sophisticated Lykes SEABEE barge at the St. Louis Terminal Company port facility. This also marked the first time that a SEABEE barge had taken on cargo as far up the Mississippi River System as St. Louis.

SEABEE barges are a vital part of the new Lykes SEABEE System operating between U.S. Gulf terminals at Galveston, Texas, and New Orleans, La., and SEABEE terminals in Northern Europe and the United Kingdom. Each of Lykes's new $33-million intermodal SEABEE transports can load as many as 38 SEABEE barges.

The SEABEE System links the vast Mississippi River waterways system in the United States with the Rhine River and its tributaries in Europe, thus making it possible for barges to be loaded deep in the interior of both the United States and Europe for shipment across the Atlantic aboard a SEABEE transport.

Shippers in increasing numbers are moving their cargoes via Lykes SEABEE because the system offers speed, efficiency and safety to a greater degree than has ever heretofore been possible.

Lykes recently opened a full service office in St. Louis and exporters and importers in the greater St. Louis area interested in the Lykes SEABEE System may obtain full details from **Tim Parker,** manager of the Lykes office.



## Shlemmer To Head Two Divisions For Western Gear Corp.

J. David Shlemmer

The appointment of **J. David Shlemmer** as manager of industrial power transmission equipment and related commercial systems for two divisions of Western Gear Corporation has been announced by **Saleem Naber,** group vice president.

A mechanical engineer, Mr. **Shlemmer** will manage the Industrial Products Division, Belmont, Calif., and the Southwestern Division, Houston, Texas. Both operations are involved in the manufacture and marketing of industrial gear drives.

Mr. **Naber** said the appointment of Mr. **Shlemmer,** a Western Gear employee since 1953, is planned to combine the design and development activities of the two divisions, and to consolidate their marketing capabilities under a single grouping. He added: "We expect to broaden the penetration of the divisions in their industrial and marine markets, thus gaining greater strength and a wider base for both operations."

Manufacturing operations will continue to be based at the Belmont and Houston plants, but engineering under **Robert Malcolm,** and marketing under **Ray Pickel** will be centralized in Lynwood, Calif. **Del Dishno** will continue to direct activities in Belmont, while **Fred Lamoureaux** will continue to manage the Houston plant.

## Morgan City Yard Increasing Facilities For Offshore Vessels

Service Machine & Shipbuilding Corp. of Morgan City, La., has announced plans to expand its boat and barge construction facilities to include the construction of offshore supply vessels for foreign marine transportation companies, especially those operating in the North Sea.

**Julian E. Fernandez,** chairman of the board, stated that plans are to install 95 percent of the construction and outfitting facilities under cover on the company's 33-acre site located on the Intracoastal Canal near the new Bayou-Boeuf/Bayou-Chene ship channel and which has been funded by the United States Government. Mr. **Fernandez** said that this will allow for greater construction efficiency and faster delivery because of the elimination of work stoppages caused by inclement weather, which greatly hampers U.S. Gulf Coast shipyards.

Service Machine is reportedly seeking investors to participate in the expansion program.

## Twin City Barge Elects L.G. Schickling VP And Gen'l Mgr. Of Division

**Lester G. (Whitey) Schickling** has been elected vice president and general manager of the American Division of Twin City Barge & Towing Company, St. Paul, Minn., **John W. Lambert,** president of the firm, has announced.

The division was formed last June, when Twin City Barge entered into a long-term contract with American Oil Company, Chicago, Ill., for the operation of hot asphalt tows on the Upper Mississippi, Illinois, Ohio and Tennessee Rivers.

A former barge line pilot and captain, Mr. **Schickling** has been with Twin City Barge for the past 18 years. He is a native of Hastings, Minn., and presently resides in Prescott, Wis.

Twin City Barge has served the Twin Cities area since 1937, and Chicago since 1961. The company provides harbor towing, petroleum barging and barge fleeting services in both of these cities. Twin City Shipyard, Inc., is a wholly owned subsidiary which manufactures barges and other types of marine equipment for both Twin City Barge and external sale.

## Saguenay Shipping Moves Toronto Office

Saguenay Shipping Ltd. announced that they moved their Toronto office to a new location on January 1, 1973. The new address is at Richmond-Adelaide Centre, 101 Richmond Street, West, Toronto. The firm's telephone and P.O. Box numbers remain unchanged.

## Teleflex Appoints Jacquemin To Head Marine/Industrial Div.

**L.K. Black,** president of Teleflex Incorporated, Church Road, North Wales, Pa., has announced the appointment of **Claude Jacquemin** to acting general manager of the company's Marine/Industrial Division, Mechanical Systems Group, in Limerick, Pa. He succeeds **D.L. White,** who was recently named vice president of the corporation and general manager of the Automotive Division, which is headquartered in Troy, Mich., with manufacturing facilities in Van Wert, Ohio.

A graduate of the Lycee Rollin and of L'Ecole des Cadres Superieurs in Paris, France, Mr. **Jacquemin** joined Teleflex in 1952 and has held various positions in the company, the most recent being materiel manager for Mechanical Systems. He was formerly affiliated with Tiss Metal Co., Department Teleflex, Paris, as sales engineer, and Etablissements Quitte, Paris, as production manager.

The Mechanical Systems Group of the Marine/Industrial Division designs and manufactures mechanical steering systems and engine control systems and cables for the marine industry, and engine control systems for industrial and leisure markets.

## Lykes And Mechling Enter Agreement For River Barge Operation

In a further effort to provide fast, safe and dependable service to shippers served by the vast Mississippi River System, Lykes Bros. Steamship Co., Inc., has entered into an agency agreement with A.L. Mechling Barge Lines, Inc., **Stewart A. LeBlanc Jr.,** vice president of Lykes SEABEE Division, has announced.

The pact calls for Mechling to coordinate all of Lykes SEABEE barge fleet activities along the Mississippi, Arkansas, Ohio, Tennessee, Cumberland, Illinois, and Missouri Rivers; to handle customs details, and to arrange for towage and prompt dispatch of SEABEE barges.

Under terms of the agreement, Mechling will use some of its own towing vessels along with the towing services of other major common carriers to assure, at all times, the best interests of SEABEE barges involved. Mechling will not handle any cargo solicitation, Mr. **LeBlanc** said, with members of the Lykes organization totally responsible for this phase of the SEABEE System.

"Lykes Lines through its intermodal SEABEE System is vitally involved in this whole new era of transportation on the Mississippi River System," said **F.A. Mechling,** executive vice president of the barge line. "Lykes, with SEABEE and its unique barges, is providing a service not heretofore available to the inland shipper engaged in international trade.

"Today, the manufacturer or other exporter can load his products into the SEABEE barge right at his riverside plant site and not have to worry about such things as rehandling prior to arrival at its overseas destination. The reverse holds true for importers."

Mr. **Mechling** said his firm has noted growing interest among inland shippers in the intermodal concept exemplified by the Lykes SEABEE System. At one recent industrial conference in Illinois, said to be the nation's leading exporting state, Mr. **Mechling** said a great deal of conversation was centered upon the SEABEE barge-type intermodal carrier in foreign commerce.

"Many of these people—manufacturers and shippers—have not involved themselves with the tremendous export market before, because they felt it was just too much trouble," Mr. **Mechling** related.

"But now, even the various port directors are interested in the Lykes concept and are promoting it," he added. "It's the newest thing—the thing of the future."

The Mechling firm was chosen by the Government to move its mammoth Saturn rocket boosters from Huntsville, Ala., to the John F. Kennedy Space Center launching site at Cape Kennedy, Fla. One such booster recently rocketed the Apollo 17 astronauts to the moon.



## Four Large Tankers Ordered From Hitachi

Hitachi Zosen has announced that it has received orders for four tankers, ranging from 227,700 to 400,000 in deadweight tonnage. Hitachi, one of the top Japanese shipbuilding companies, said terms of the contracts called for the shipowners to pay in yen.

The firm said orders for two oil carriers, both 400,000 dwt, came from Esso Tankers Inc. A third 279,000-dwt tanker came from the San Financing Trading S.A. of the Andreadis Group of Greece. A fourth 227,700-dwt tanker came from the Iranian National Co.

All the vessels will be completed between 1975 and 1976.

## R.G. Cobleigh Assoc. Formed In New York

The formation of the firm of R.G. Cobleigh Associates Inc. and its location in Suite 1228, 17 Battery Place, New York, N.Y. 10004, has been announced by its president, **Ronald G. Cobleigh.**

The firm will specialize in providing a broad range of financial services to the maritime industry.

## Calderon Elected C.C.T. President

Hector M. Calderon

**Hector M. Calderon** has been elected president of Coordinated Caribbean Transport, Inc., a trailership subsidiary of United States Freight Company, it was announced by **R. Russell Moir,** chairman and president of the diversified domestic and international transportation holding company. The Miami-based C.C.T. operates a regular roll-on/roll-off service between Florida, Central America and Panama.

Mr. **Calderon** joined the company in 1961 as assistant manager for Central America, was appointed vice president and general manager in 1968 and executive vice president and general manager in 1970. The company operates the Mar Caribe and Caribbean Progress, roll-on/roll-off vessels capable of transporting loaded highway trailers and automobiles on weekly schedules between Miami and major ports in Central America and Panama.

A native of San Antonio, Texas, Mr. **Calderon** is a member of the Sertoma International Club, The Propeller Club of Miami and the Southeast Port Employers Association.

## $95-Million LNG Vessel Becomes 1st AAMS Risk

Marine Office-Appleton and Cox Corp. (MOAC) has announced that the All American Marine Slip (AAMS) has written its first risk, a $2-million line for builders' risk on the Benjamin Franklin, a $95-million LNG vessel.

The Slip is one of 54 participants providing insurance protection for the French-built vessel.

The All American Marine Slip is a new marine underwriting syndicate managed by MOAC and designed to provide additional capacity for high-value exposures.

Syndicate members include American Bankers Insurance Co., Bituminous Casualty Corp., Buffalo Insurance Co., Consolidated Mutual Insurance Co., The Continental Insurance Co., General Insurance Co. of Trieste & Venice, Safeco Insurance Co. of America, Sentry Insurance, and Unigard Mutual Insurance Co.

"We believe it is particularly appropriate that the first risk written under the All American Marine Slip is being built in France and is named after America's first ambassador to France," said a syndicate spokesman in announcing the first risk.

## Tarabochia Marine Purchased By Walker & Cunningham

**Joseph J. Tarabochia** has announced the purchase of Tarabochia Marine Hydraulics Co., Inc., Hoboken, N.J., by **Robert S. Walker** and **Robert F. Cunningham.** Mr. **Tarabochia** will remain with the company as special consultant and sales engineer. The company is engaged in the service and repair of marine and industrial electro-hydraulic machinery, special design projects, and ship surveying.

Mr. **Walker** succeeds Mr. **Tarabochia** as president. A graduate of Maine Maritime Academy, Mr. **Walker** has over 20 years of experience in the marine field, with technical management assignments in shipbuilding, ship repair, deck machinery and portable dredge manufacturing.

Mr. **Cunningham,** vice president, is a graduate of the University of Pittsburgh and Northeastern University, and holds a professional engineer's license in New York and Maryland. He brings to the company 15 years of experience in the marine field. Mr. **Cunningham** has held senior positions in ship design of U.S. Navy and commercial vessels, and fleet maintenance and repair.

## Interstate Oil Transport Names Andrew Gibson President— Adrian Hooper Board Chairman

**Andrew E. Gibson,** former Assistant Secretary of Commerce, has been appointed president of Interstate Oil Transport Company, Philadelphia, Pa., it was announced.

**Adrian S. Hooper,** former president, will continue as chief executive operating officer of Interstate and will move to the newly created position of chairman of the board.

The Interstate Group of Companies are among the largest independent energy transporters in the United States, serving ports from Maine to Florida, the Gulf Coast, the Caribbean and Puerto Rico.

In making the announcement, Mr. **Hooper** pointed out that Mr. **Gibson** will be responsible for the expansion of the Interstate offshore operations of both large and small vessels, while directing the growth of the corporation's barging and coastwise transportation of petroleum products.

Mr. **Gibson** is the former Assistant Secretary of Commerce for Domestic and International Business, where he played an active role in the United States/Soviet maritime trade negotiations. He came to this post after serving as Maritime Administrator and then as Assistant Secretary of Commerce for Maritime Affairs, a position created when President **Nixon** signed into law the Merchant Marine Act of 1970. This legislation—of which Mr. **Gibson** is regarded as the chief architect—provides for a long-range program to rebuild the American merchant marine, and overhauls and streamlines the Maritime Assistant Programs.

Before joining the Maritime Administration, Mr. **Gibson** was affiliated for many years with Grace Line, Inc., advancing from assistant to the treasurer, to become senior vice president of operations in 1965. Immediately prior to his affiliation with Grace Line, he served for two years (1951-53) as a lieutenant in the U.S. Navy.

Andrew E. Gibson

Adrian S. Hooper

He graduated from the Massachusetts Maritime Academy in 1942, and three years later at the age of 22 became the youngest merchant ship captain in recent maritime history by receiving command of a United States Lines freighter. He later attended Brown University and received a B.A. degree in 1951, graduating cum laude. A master's degree in business administration was granted by New York University in 1959.

"The appointment of Mr. **Gibson** at this time is significant," Mr. **Hooper** stated. "There has been a dramatic growth in our corporate business in the past five years, to the point where in 1971 alone we delivered more than 20-million tons of bulk cargo. Mr. **Gibson's** expertise will assist us in our continued development and expansion into new directions."

Interstate will soon become the operator of three VLCCs of 265,000-dwt planned for completion in 1975. The corporation will manage the international operation of these and other vessels engaged in the transportation of liquefied natural gas, liquefied petroleum gas, crude oil and petroleum products. Interstate holds several patents for integrated seagoing tug-barge operations and a significant patent on FLOSTOP, a Floating Stable Offshore Terminal Platform, a structure capable of storing oil and becoming an artificial port in deep water.

**PACECO LICENSING AGREEMENT: C.D. Ramsden** (left), chairman of the Board of Paceco International Limited, London, and **Edouard Hanser,** President Directeur General de la Societe Financiere et Industrielle for Ateliers et Chantiers de Bretagne (ACB) of Nantes, France, are shown signing a license agreement giving ACB the exclusive right to build and market Paceco container handling cranes in France and many countries of Northern and Central Africa. ACB is one of 11 licensees building and marketing Paceco cranes. There are more than 200 of these container cranes operating under the registered trade names of Portainer and Transtainer in major ports throughout the world. The large Portainers are valued in excess of $1,000,000 each. The first order for ACB in France is a MACH (Modular Automated Container Handling) Portainer, which the firm is currently building for the Port of Marseilles. It will be equipped with a high-speed power package, a patented trolley feature for controlling container sway, and provisions for future automation. The new Marseilles crane will be in operation next summer. Paceco International Limited is a subsidiary of Paceco, a division of Fruehauf Corporation, U.S.A.

## Savannah Machine & Shipyard Elects Mingledorff Chairman —Sherman Appointed President

Ralston E. Mingledorff

Robert F. Sherman

**Castle W. Jordan,** president of A.O. Industries, Inc., has announced the election of **Ralston E. Mingledorff** as chairman of the board of Savannah Machine and Shipyard Co.

Mr. **Jordan** also announced the appointment of **Robert F. Sherman** as president and chief executive officer of Savannah Machine.

Mr. **Mingledorff** joined the company, founded by his father **W.L. Mingledorff Sr.,** following school at the Citadel and Auburn in 1938, and has served as president since 1957. He is a director of the Liberty National Bank, the Shipbuilders Council of America, and is an advisory director of the Central of Georgia Railway.

In 1969, he and his family sold both the shipyard and the foundry now known as the Ductile Iron Company of America, to A.O. Industries, Inc., a diversified holding company based in Coral Gables, Fla.

Mr. **Sherman,** a graduate of the University of Washington and Massachusetts Institute of Technology, joined the company in March of last year as executive vice president. He is also vice president-operations of A.O. Industries, Inc.

In making the announcement, Mr. **Jordan** said: "I am extremely pleased that while **Ralston Mingledorff** indicated a desire to reduce his operating responsibilities more than a year ago, he has agreed to work with us both during this transition period and on a continuing basis. He has led the company successfully for many years, and his experienced counsel will continue to be of great value to all of us associated with the shipyard."

## Key Houston Awarded Contract For New Hull Cleaning System Using Steel Shot For Blasting

Key Houston, Inc., Houston-based manufacturer of abrasive blasting and vacuum recovery equipment has been awarded a contract for the development of a new system for preparing ship hulls for painting. Key will act as a subcontractor to General Dynamics' Fore River Shipyard which holds a contract from the Maritime Administration for development of a nonpolluting hull cleaning method.

The new system that will be put in use was developed by **James A. Giese,** president of Key Engineering. It uses steel shot which is blasted against the hull surface through a hose on a traveling boom. The vacuum recovery unit picks up the used shot and all material removed from the hull, including corrosion, marine growth, and old paint. The mixture is routed through a separator, where the shot is sent to a holding tank for reuse and the waste material is disposed of without polluting the air or water.

Key Houston, formerly Key Engineering, was formed by **Jim Giese Sr.** in 1967. The elder Mr. **Giese** was joined in 1969 by his son, **Jim Giese Jr.,** who now heads sales for the company.

"We've come a long way in the last couple of years," said **Jim Giese Jr.,** while explaining their extensive line of blasting equipment. "We can supply nearly any abrasives blasting and vacuum recovery equipment necessary," he said.

Key has now expanded sales worldwide with the opening of an office in London to serve the Common Market countries, as well as granting a license to Mitsubushi Heavy Industries of Japan for the manufacture and sale of its patented equipment in the Far East.

Key units are now being used by 50 of the 60 American shipyards involved in abrasive blasting, and are used in Canada, Europe, Australia, Japan, Hong Kong, and the Middle East. Key Houston, Inc., is located at 1231 Shadowdale, Houston, Texas 77043.

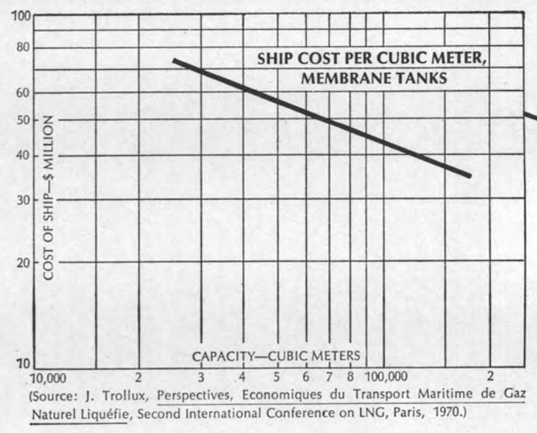
## World-Wide Shipping Group Orders Eight Huge Tankers

**Y.K. Pao,** head of the World-Wide Shipping Group, has announced that he has just placed orders with four major Japanese shipyards to build eight mammoth turbine tankers in the 250,000 to 270,000-dead-weight-ton range. Contracts for these giant vessels, with an aggregate of 2.026-million deadweight tons and worth a total of $270 million, have already been concluded in Japan, with delivery scheduled for 1974-75.

This massive order follows the one Mr. **Pao** announced in November 1972 for six similar class tankers and one combination ore-oil carrier totaling about 1.5-million deadweight tons, and with this latest block of orders the Group's total tonnage will well exceed the 13-million-ton mark.

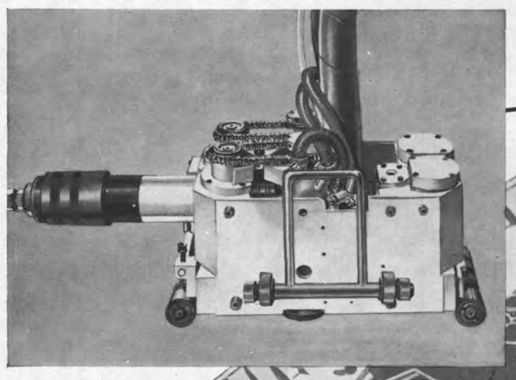
# Why 9 of the world's largest LNG tankers will have innards of Invar alloy.

**1. Economy of scale** Membrane tanks of Invar* 36% nickel-iron alloy maximize cargo space, help lower transportation cost per unit, according to Gaz Transport. Invar's flat membrane construction easily welds into trapezoidal tanks. Compared to other shapes, trapezoids fit more easily into a rectangular hull; they squeeze into the tightest ends of a ship. The space economy of Invar's flat membrane construction becomes even more attractive as LNG shippers turn to larger vessels—755,000 bbl. or 120,000 m³. Increased cargo space, low construction costs, and automatic welding are among many of the reasons to choose Invar for future LNG tankers.



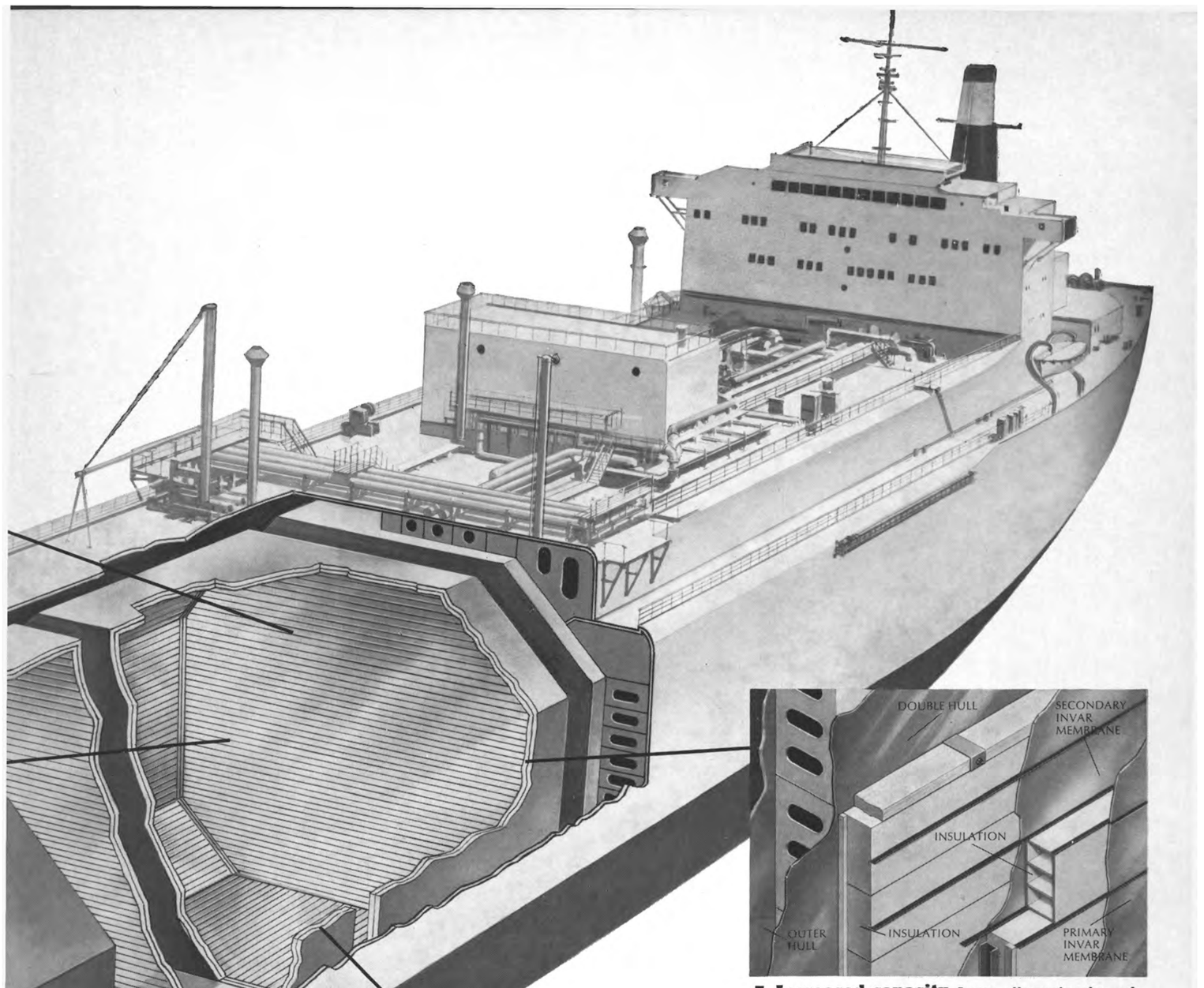
(Source: J. Trollux, Perspectives, Economiques du Transport Maritime de Gaz Naturel Liquéfie, Second International Conference on LNG, Paris, 1970.)

**2. Because Invar's membrane is flat, 90% of all welding can be done automatically,** with a portable, lightweight electrical-resistance welding machine.





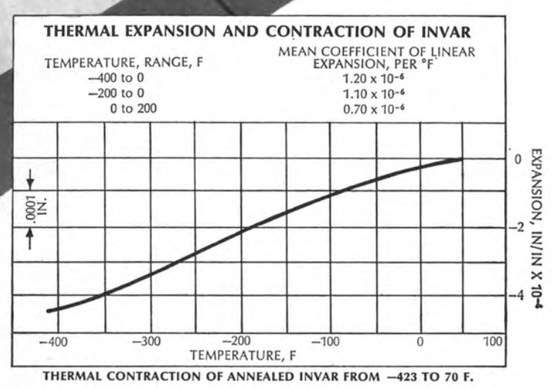
*Registered Trademark of Société Creusot-Loire (IMPHY)




**3. Increased capacity** Invar allows for the only membrane design that eliminates corrugation. Its extremely low coefficient of expansion (one tenth that of aluminum) limits thermal stress. Lower stress permits a flat design, without the complication of corrugated panels. A tanker using flat membrane construction has a primary membrane of .020-inch-thick Invar, a primary insulation layer of plywood boxes filled with perlite, a secondary membrane of Invar, a second layer of boxes with perlite, an inner hull, and an outer hull.

**THERMAL EXPANSION AND CONTRACTION OF INVAR**

| TEMPERATURE, RANGE, F | MEAN COEFFICIENT OF LINEAR EXPANSION, PER °F |
|---|---|
| —400 to 0 | $1.20 \times 10^{-6}$ |
| —200 to 0 | $1.10 \times 10^{-6}$ |
| 0 to 200 | $0.70 \times 10^{-6}$ |




THERMAL CONTRACTION OF ANNEALED INVAR FROM —423 TO 70 F.

**4. Its uniformly low coefficient of expansion (.000008 in./in.)** makes Invar the ideal choice for mammoth tankers. Invar meets all API and ASME codes for cryogenic service.

For more data on Invar, the alloy of future LNG tankers, write to Dept. MR-273, The International Nickel Company, Inc., One New York Plaza, New York, N.Y. 10004.

INCO

THE INTERNATIONAL NICKEL COMPANY, INC.

In Canada, The International Nickel Company of Canada, Limited, P.O. Box 44, Toronto-Dominion Centre, Toronto 111, Ontario. In England, International Nickel Limited, Thames House, Millbank, London SWIP 4QF, England.

KNOWN 'ROUND THE WORLD

# THE BOSTON METALS CO.

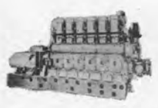
313 E. BALTIMORE ST. • BALTIMORE, MD. 21202

Main Office: (301) 539-1900 Marine Dept.: (301) 355-5050

## DIESEL GENERATOR SETS

**250 KW DIESEL GENERATOR SET**

1



ENGINE: Enterprise 12 x 15 DSG-6—6 cyl.—450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120/240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear.

**EMERGENCY GENERATOR SUPERIOR 75KW 120/240 VOLT D.C. DIESEL GENERATOR SET**

2

With switchgear. ENGINE: Radiator cooled Superior GBD-8—6 cylinder—1200 RPM GENERATOR: Electric Machinery Co.—120/240 volts DC—316 amps—1200 RPM—stab. shunt.

3

**UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET**

GENERATOR: Delco 10 KW—120 VDC—83.3 amps—1200 RPM. ENGINE: Superior diesel—2 cyl.—4½x5¾—15 HP—heat exchanger cooled.

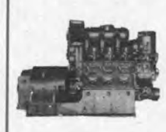
4

**500 KW—120/240 VOLT DC DIESEL GENERATOR SET**

GENERATOR: Allis Chalmers—Compound wound. Has Class "A" insulation. Output 500 KW—120/240 volts DC—2080 amperes—720 RPM—drip-proof—self-cooling. Ambient 50°C—temperature rise 40°C. ENGINE: Model GM 8-278—2-cycle—Vee type—8½"x10½"—air starting—720 RPM. Complete with switchgear. Condition very good. Still aboard naval vessel.

## TURBO GENERATOR SETS

5



**300 KW DIESEL GENERATOR SET**

ENGINE: G.M. 6-278—6-cylinder—2 cycle—8¾"x10½"—750 RPM—with oil and water Ross Shell and Tube Heat Exchangers, instrument panel, pyrometer, etc. Vibro Isolators. GENERATOR: G.E. 300 KW—120/240 volts DC—1250 amps—shunt wound—continuous overload rating 375 KW—2 hours—55° Weight of unit approximately 26,000 pounds. Complete with shock mounts. Unit 13' 2" long, 64" wide, 8' high.

6

**UNUSED 300 KW—240 VOLT DC WESTINGHOUSE LOW-PRESSURE TURBO-GENERATOR SET**

GENERATOR: 300 KW—240 VDC—1250 amps—1200 RPM. GEAR: 5286/1200—frame 6x15—serial 10A-2612-4. TURBINE: Frame C-325—225 PSI—397° TT—5286 RPM—Serial 10-A-2611-4. Wt. 16,700 lbs. —complete in original fatcory crate.

7



**WESTINGHOUSE 440/3/60 200 KW UNIT**

GENERATOR: Westinghouse 200 KW—250 KVA—450/3/60—1200 RPM—80% PF—with 40 KW—120 VDC on same shaft. GEAR: 9989/1200 RPM—double helical. TURBINE: Westinghouse—540 PSI—superheat 322°F. Test 930 PSI 800°TT. Also operates 615 PSI—850°TT.

8

**6 EQUAL-TO-NEW LATE TYPE 500 KW SHIPS SERVICE TURBO GENERATORS**

1962—DeLaval. Very little use. Completely preserved with rotors and diaphragms crated separately. TURBINE: DeLaval—585 PSI—840°TT—6-stage—6391 RPM—class CD—Also suitable 440 lbs.—740°TT—25" vac. GEAR: 6391/1200 RPM. GENERATOR: Allis-Chalmers—450/3/60. Totally enclosed, with static exciter and voltage regulator system. Weight 17,665 lbs. Complete with latest dead front switch gear. Also available are the condensers, circulating and condenser pumps. All very up-to-date, compact construction. Turbines will easily handle 600 KW if up-grading is desired.

9

**UNUSED 300 KW—120/240 VOLT DC G.E. TURBO-GENERATOR SET**

GENERATOR: 300 KW—120/240 VDC—1250 amps—1200 RPM. REDUCTION GEAR: 8.344:1—10012/1200 RPM—type S-182. TURBINE: DOR418N—449 H.P.—10012 RPM—working pressure 180/220 PSIG.

10

**1250 KW G.E. 10-STAGE TURBO GENERATOR SET**

TURBINE: 525—615 PSI—850°TT—7938 RPM—10-stage—type FSN. GEAR: Single helix—7938/1200. GENERATOR: 1250 KW—450/3/60/3600—.80 PF—type ATB with surface air cooler. Overload 25%—2 hours—1563 KW.

11

**AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT**

TURBINE: 440 PSI—740°TT—28½" vacuum—type S4—5-stage—6097 RPM—serial 7547 & 7548. GEAR: 6097/1200. GENERATOR: 300 KW—120/240 volts DC—1250 amps—compound wound—973643—999759. Armature flange 8½"; B.C. 7"—12 holes. ALSO NEW ARMATURES IN STOCK & 300 KW SHUNT ARMATURES.

12

**VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET**

440# — 740°F — 5930 RPM — 2A-9794-15-16-17 — coupling non-recessed on steam end of pinion—5¾". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B. 208.4.

13

**UNUSED CROCKER-WHEELER 500 KW GENERATOR ENDS ONLY 120/240 VOLTS D.C.—1200 R.P.M.**

**FORMERLY USED WITH WORTHINGTON-MOORE TURBINES & GEARS**

Upgraded by U.S. Navy—rewound in glass. Generator Frame and Armature—Marine 500 KW type 3-1200—dripproof enclosure—base mount. Modified from Crocker-Wheeler generator frame 152HD—240/120 volts DC—2083/521 amps—1200 RPM. Ambient temperature 50°C. APPLICATION: For C-4-SA1;C-4-SA-3;T-AP-134 vessels, using Worthington-Moore Turbine—Form S-6 and generator Form 14 x 10.

## TURBINES & ROTORS

### MAIN PROPULSION

14

**19 STAGE WESTINGHOUSE H.P. ROTOR FOR AP2 VICTORY**

Reconditioned—balanced—with ABS. Serial 4A-2079—type B—19 stage reaction blades. Excellent—just out of shop. 13" Flange diameter with 14 bolts.

15

**SPECIAL !**

**1 WESTINGHOUSE COMPLETE T-2 MAIN TURBINE**

**PROFILE (UNSHROUDED)**

**6600 HP—435 PSI—750°F 28" VAC.—3720 RPM**

Instruction Book 6893—Serial #2A-9361-21. The turbine rotor blades, stationary blading, diaphragms and nozzles are all in unusually good condition.

**IMMEDIATE DELIVERY—WITH ABS**

16

**8500 H.P. G.E. TURBINE**

G.E. Instruction book GEI16263—from ex-Navy Victory. L.P.—8-stage—3509 RPM—77943 H.P.—8-stage—6159 RPM—77942.

**WILL INTERCHANGE WITH INGALLS C3 HULL—442 CLASS AND SUN-BUILT C4 VESSELS**

17

**NEW L.P. BLADE RINGS for large 8500 H.P. Victory**

Joshua Hendy Westinghouse

18

**NEW 8500 H.P. G.E. TURBINES**

**Large Victory or Ingalls C3**

L.P.—8-stage—3509 RPM—#72271
H.P.—8-stage—6159 RPM—#72272

**ALSO AVAILABLE**

**U.S.M.C. RECONDITIONED SET H.P. & L.P.**

L.P.—8-stage—#77987—3509 RPM
H.P.—8-stage—#77994—6159 RPM
Interchange Ingalls C3

19

**T2-SE-A1 MAIN PROPULSION ROTOR — G.E.**

Large Schenectady — serial 77418—reconditioned Bethlehem Steel 1970—all stages magnafluxed.

20

**2 COMPLETE G.E. TURBINES**

#61818 and #61834—large Lynn—all stages magnafluxed.

**WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE**

21

**8500 H.P. G.E. — C-3 OR VICTORY**

H.P.—8-stage—6159 RPM—serial 62043
L.P.—8-stage—3509 RPM—serial 62042
G.E.I. 16263

22

**6000 H.P. G.E. — NORTH CAROLINA C-2**

H.P.—8-stage—serial 78040
L.P.—7-stage—serial 78043
G.E.I. 16262

**23** VICTORY SHIP AP2 H.P. & L.P. TURBINES
NEW — UNUSED — 6000 HP SETS
G.E.—H.P. & L.P.—with throttle valve
Westinghouse—L.P.—with throttle valve
Allis-Chalmers—H.P. & L.P.—with throttle valve

## AUX. GEN. ROTORS AND ARMATURES

**24** 250 KW & 300 KW ALLIS-CHALMERS ROTORS

Typical serial No. 3067—will Interchange with most 250 KW & 300 KW Allis-Chalmers as Installed on Victory's and Moore C2-C3 vessels.

**25** 300 KW 5965 RPM JOSHUA HENDY

| | |
|---|---|
| Turbine—3H-69 | Gear—52269 |
| Turbine—3H-52 | Gear—52252 |
| Turbine—3H-62 | Gear—52262 |

## AUX TURBINE ROTORS AND ARMATURES

**26** UNUSED—4 UNITS AVAILABLE
T2 AUX. T2 TURBO GEN. ROTORS

DORV — 325M — 5645 RPM—for 525 KW G.E.

**27** ARMATURE
Allis-Chalmers 300 KW armature — 120/240 volts DC—type MCW-213 (#138511-13819J generators).

**28**

G.E. 8500 H.P. REDUCTION GEAR FOR LARGE AP3 VICTORY & C3
MD-48A—8500 HP—6159/3509/763/85 RPM.

**29** ALSO 6000 H.P. VICTORY AP2 REDUCTION GEAR
Westinghouse 4A-1640.

## PUMPS

**30**

WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP
1400 GPM @ 110 PSI—suction lift 11.5 ft.—steam back pressure 15 lbs. 14" Suction—10" Discharge—2½" Steam—4" Exhaust. Overall width 6'8"—Overall height 9'1½"—depth 3'9½"—wt. approx. 10,000 lbs.

**31**

NEW BLACKMER FUEL OIL TRANSFER PUMP
Rotary—50 GPM—50 lbs.—2"—5 HP—440/3/60—with starter & spares.

**32**

UNUSED BLACKMER VERTICAL ROTARY PUMP
4"—100 GPM—100 PSI—15 HP — 440/3/60 — gear head.

UNUSED AURORA PUMP

**33** 300 GPM—37' head—5 HP—120 volts DC Centrifugal Pump. Bronze—size 5x4—flanged. MOTOR: Reliance—super T.D.C. Electric Motor—5 HP—120 VDC—36.8 amps—1750 RPM—Frame L216A—with control by Cutler-Hammer. Excellent condition. Latest USN surplus.

**34** NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP

Allis-Chalmers 6x5 pump, type SKH—1200 GPM—125 PSI—3500 RPM. Coppos turbine type TF-22-2½ — 3500 RPM. 273#—50° superheat.

## NAVAL VESSEL SECTION FOR FLETCHER CLASS DESTROYERS

**35**



UNUSED DELAVAL 24.5 H.P. LUBE OIL PUMP
Turbine-driven main lubricating oil pumps — vertical rotary with horizontal worm geared turbine drive. 575# Steam pressure—5000 RPM—15# back pressure. GEAR: 5000/1035 RPM. PUMP: 550 GPM at 50 PSI—suction lift 10.0". Suitable for Fletcher Class Destroyer.

**36**



UNUSED SIZE 4 BUFFALO FEED PUMPS
Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5" x 4"—built for USN DD destroyers.

**37**



UNUSED STEERING GEAR FOR ALL TYPES OF DIESEL & STEAM DESTROYER ESCORTS
Mfg by Hyde Windlass Co. Two 10 HP 440/3/60 1750 RPM gear motors driving 1500 PSI hydraulic pumps. TORQUE: 1,005,000 lbs.—7½" diameter plungers—two power units with hand gear attachments—replenishing tank—6-way valve—differential control, etc.

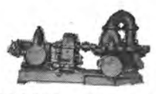
## ENGINE ROOM COMPONENTS

SUITABLE FOR BETHLEHEM SPARROWS POINT HULLS SERIES 4400/4500

**38** COMPLETE TURBINE OR ROTORS ONLY
For Sparrows Point Hull 4518 — 29,000 GTDW—13,600 HP @ 109 RPM; 15,000 HP @ 112 RPM—585 lb. 840°TT—28½" vacuum **H.P. TURBINE**—4688 RPM—Mfg Bethlehem—1630-H-9—**L.P. TURBINE** 2625 RPM—Mfg Bethlehem—#1630-L-9.

**39** WESTINGHOUSE 400 K.W. SHIPS SERVICE GENERATORS
400 KW (500 KVA)—80% PF—1200 RPM—450/3/60. TURBINE: 535 lbs—840°TT—28½" vacuum—9018 RPM—serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA—400 KW—450 volts—641 amps—80%PF—3 phase 60 cycle—1200 RPM—GR 40°—excitation amps 41—excitation voltage 120. Instruction book 5442. Switchgear available.

**40**



2 TURBINE DRIVEN CARGO PUMPS
**WESTINGHOUSE C-25 TURBINE**—Ingersoll-Rand 10GT pumps—500 HP—single-stage impulse turbine—455 lbs—590°TT—4 PSI exhaust pressure—frame C-25—Westinghouse 4540 RPM. Rotation CC when viewed from governor end. GEAR: 4540/1750 RPM: 4500 GPM at 125 PSI head—type 10 GTM—bronze 2-stage—14" suction—12" discharge.

**41** COFFIN CG-4A FEED PUMPS
Max. 325 GPM—1760' head or 750 lbs. Steam inlet 575 lbs.—540°TT—exhaust 20 lbs.—speed 760 RPM.

**42** FIRE & BUTTERWORTH PUMPS
Warren Pump—450 gallons Per Minute—449 ft—71 HP—type 3-TL-2. TURBINE: 71 HP—545 PSI—540°TT—15 lbs G exhaust—3500 RPM.

**43** SHARPLESS LUBE OIL PURIFIERS
350 GPM—75 ft discharge head—20 ft suction lift—type AE 15 V. 1½ HP—440/3/60—3450 RPM—40°C temperature rise.

**44** ANCHOR WINDLASS
Hyde 2-11/16" — 12x14 — 100 PSI — steam — 54,100 lbs.

**45** INQUIRE FOR ALL OTHER ITEMS
Forced draft blowers, reduction gear parts, bilge and ballast pumps, main circulators, general service pumps, F.O. transfer pumps, lube oil service, standby feed pumps, condensate pumps, aux. circulating pumps, feed water heaters, wash water pumps, etc.

**46**



ALLIS-CHALMERS WINCH CONTROL PANEL
50 HP—230 VDC. Consists of motor control, magnetic breakers and resistor bank.

## MISCELLANEOUS

**47**

3-TON CLYDE DOUBLE DRUM WINCH
3-ton double drum winch—10 HP—115 VDC—declutchable drums—with controls.

**48**

UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER
20" Ex. inlet—⅝" Cu-Ni tubes—with or without air ejector.

**49**

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES
2¾" Chain and two 10640 lb anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47½". Base 9'5" wide x 11' long. Weight 36,000 lbs.

**50**

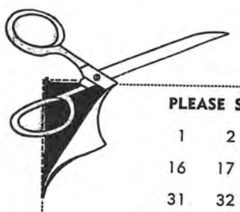
NEW—UNUSED LINK BELT WINDLASS
1⅝" and 7000 lb. anchors. 56" Centers—50 HP—230 VDC—spares.

**51**

IDEAL WINDLASS—UNUSED
1-5/16" Chain—36" Centers—15 HP—115 VDC—1750 RPM—6000 lb. line pull.

**52**

DOUBLE INPUT—SINGLE OUTPUT DIESEL REDUCTION GEARS
Farrell-Birmingham — 3200 SHP. Reduction gear: 1.81:1—handles two 1600 HP diesels @ 720 RPM. With hydraulic couplings & Fawick clutch. Port and starboard. Gear output 400 RPM. Suitable for Dredge Pumps.



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## New Marketing Firm For Ocean Industries

The organization of Alexander Marine Associates, Inc., a marine marketing company formed by experienced industry executives, has been completed to develop markets for the sale of products from multi-industry sources to the shipbuilding, shipping, and offshore petroleum industries. The new marketing firm operates from its headquarters city, New Orleans, La., and in division offices in Houston, Texas, Los Angeles, Calif., Boston, Mass., and New York, N.Y., major business centers for the industries it will serve worldwide.

The primary objective of Alexander Marine Associates is to market products on a nationwide basis to the marine industry. This will include (1) the examination of products presently being used or under development in aerospace, transportation, communications, heavy machinery, and other fields of industry and manufacturing; (2) the preparation of marketing studies and analyses to determine the applicability of those products for marine utilization, and (3) to determine whether there is a market for them in the marine/ocean industries If markets exist to which these products can be sold, or if products exist for which new markets can be created, Alexander Marine Associates' purpose is to develop sales for its clients to those interests.

Alexander Marine Associates was eight years in formation, and is a spin-off of the marketing branch of Alexander Industries, a major sales company serving international marine interests. Alexander Industries will continue to serve the marine industry of the Gulf Coast as a marine sales and distribution firm.

In announcing the beginning of operations for the new company, its president, **William B. Alexander,** who is also chief executive officer of Alexander Industries, said: "We have been preparing, with increasing anticipation, for certain changes in the marine/ocean industries that would permit the introduction of a market analysis and sales organization to assist in an accelerated development of this country's ocean commerce."

Alexander Marine Associates will operate from offices in the major shipbuilding areas of the United States: New Orleans, New York, Boston, and Los Angeles. **Christopher J. Bolger** and **Lou S. Esposito** are responsible for the East Coast in New York and Boston, respectively; **William H. Russ,** New Orleans, is in charge of the Gulf Coast operation, and **Robert E. Apple** will be in charge of the West Coast activities from Los Angeles.



## MarAd Lifts Curbs On Building Ships For Foreign Owners

Prospective foreign buyers of U.S.-built ships no longer need obtain special permission to contract for their construction or eventual export.

The Maritime Administration decided to lift this World War II restriction, and published tentative regulations last July. It modified the regulations slightly since, to retain the restrictions as they apply to Cuba, North Vietnam, North Korea, and Rhodesia, as well as to the Communist Bloc countries.

The possibility of building ships in the United States for foreign account—especially for the liquefied natural gas (LNG) carriers for which a technological edge is said to exist in this country—was the principal motivation behind the change.

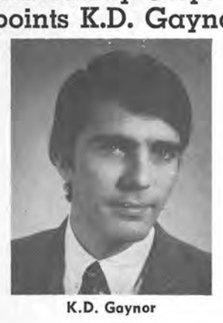
## Ingram Plans To Build 6 Tugs And 48 Barges

Ingram Corp., Nashville, Tenn., has applied for construction loan and mortgage insurance for six tugs and 48 tank barges for use on the Mississippi and Illinois Rivers.

The Maritime Administration said the tugs, four of which were to be of 6,150 horsepower and the other two of 4,100 horsepower, were expected to cost some $12.5 million. The barges, of 18,000-barrel capacity each, were estimated to cost $25.9 million.

The name of the builder was not disclosed.

## Alken-Murray Corp. Appoints K.D. Gaynor



K.D. Gaynor

Alken-Murray Corporation has announced the appointment of **K.D. Gaynor** as regional marine sales representative for the Pacific West Coast north of Portland, Ore.

Mr. **Gaynor,** formerly executive vice president of Alden International Marine, Inc. of New York, will operate the newly established headquarters from Vancouver, British Columbia, within the marine consultancy services of Norvis International Services Ltd.

## Casey And Kerr Named Luckenbach Directors

Luckenbach Steamship Co., New York, N.Y., has announced the election of two new directors of the corporation. Named were **James W. Casey,** treasurer of Luckenbach, and **David C. Kerr,** a managing partner in the law firm of MacFarlane-Ferguson-Allison & Kelly of Tampa, Fla.

## Westgate Terminals Tuna Boat Management Names Top Executives

The appointments of **Arthur J. Yeend** as president and **Richard Hodgkins** as executive vice president of Westgate Terminals, Inc., have been announced by **Edwin F. Lewis,** president of Westgate-California Foods, Inc.

Prior to being named president of the San Diego-based tuna boat management firm, Mr. **Yeend** was general manager of San Diego Marine Construction Co., where his career spanned 14 years. During that time, he left the company from 1961 to 1964 to establish a successful shipyard at the Port of Ensenada for the General Astilleros Rodriguez family.

A native of Sydney, Australia, he served his apprenticeship in general marine machine work with a number of companies. In 1935, he began constructing fishing boats for Nunes Brothers of Sausilito, and spent a year aboard a tuna boat to learn the purse seine method of fishing.

He has also been port superintendent for Mare Island Ferry Co., and Young Brothers Towing Co., and spent five years with National Steel & Shipbuilding Co., leaving as shipyard manager to join San Diego Marine in 1955.

Mr. **Yeend** is a member of The Society of Naval Architects and Marine Engineers, The Propeller Club, the Navy League of the United States, and the San Diego Yacht Club.

Prior to being promoted to executive vice president, Mr. **Hodgkins** spent two years as administrative assistant to the president of Westgate Terminals, Inc.

He joined Westgate-California Corp. in 1968 as owner's representative, overseeing construction of the Westgate Executive and Westgate Plaza Hotels in San Diego, and Westgate Caribe, the corporation's new tuna cannery in Ponce, Puerto Rico.

A native of Boston, Mass., Mr. **Hodgkins** attended San Diego College for Men prior to serving three years as a submarine radio operator with the U.S. Navy. He spent two years as an inspector with Convair in San Diego, and in 1952 began operating his own tuna boat.

In 1960, he joined National Marine Terminal and went to sea as a crew member aboard a converted purse seiner. After seven years of tuna fishing, he moved to the South Pacific, spending a year operating tugboats prior to returing to San Diego.

A wholly owned subsidiary of Westgate-California Corp., Westgate Terminals manages a fleet of 13 tuna boats, including two new ultramodern purse seiners, the Maria Elena and Carol Virginia.

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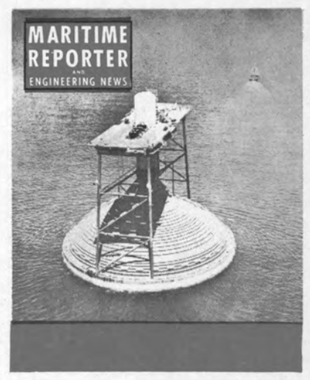
# Engineering News

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## Lockheed Shipbuilding Elects Arch M. Folden Chairman; Martin L. Ingwersen President

Arch M. Folden

Martin L. Ingwersen

**Arch M. Folden,** a veteran of more than 30 years in Lockheed management, has been elected chairman of the board of Lockheed Shipbuilding and Construction Company. Executive vice president **Martin L. Ingwersen** has been named to succeed him as president.

The changes were effective January 1, 1973, when **James G. McCurdy** retired from the board chairmanship after 26 years of affiliation with LSCC and the predecessor company, Puget Sound Bridge and Dry Dock Company, which Lockheed purchased in 1959. Mr. **McCurdy** has taken over active management of the Puget Sound Dredging Company of Seattle.

Messrs. **Folden's** and **Ingwersen's** advancements come at a time when many business analysts are predicting that shipbuilding could become the growth industry of the decade as President **Nixon's** maritime subsidy program gathers pace, the U.S. Navy replaces ships built during or just after World War II, and the need for added energy sources opens new commercial sales opportunities for such innovations as the liquid natural gas (LNG) type of carrier.

LSCC intends to seek a prominent part in all of these new opportunities. Having completed deliveries on a series of Navy ship contracts, LSCC will reach major milestones during 1973 on three projects having significant follow-on business potential. The bulk carrier Sugar Islander will be delivered this summer, and both the Coast Guard icebreaker Polar Star and a 418-foot Alaskan ferry now under construction, scheduled for 1974 delivery, will be launched this year.

Prior to joining the shipyard company as president in 1964, Mr. **Folden** was vice president for Calac's worldwide F-104 Starfighter program. He joined Lockheed as a mechanic in 1941, and worked in every supervisory level through director of operations before his Starfighter assignment. He was a superintendent of North Dakota highway construction and maintenance before he began his Lockheed career.

Mr. **Ingwersen** joined the shipbuilding company in 1968 after a 27-year career in the marine industry, which included positions as president of Maryland Shipbuilding and Drydock Company in 1967-68, a 1958-67 tour at Ingalls Shipbuilding Corporation during which he became vice president-operations, and 1948-58 employment with American Shipbuilding Company, where he also rose to vice president-operations. He saw World War II service as an officer in the U.S. Navy. He is a graduate of the University of Notre Dame, with a B.S.M.E. degree.

## Independent Petroleum Supply Names MacFarland President DuSesoi Executive Vice Pres.

**Chandler Ide,** president of Natomas Com-Company, has announced managerial appointments for the company's primary marketing subsidiary, Independent Petroleum Supply Company. **Duane F. MacFarland** has been elected president, and **Edmond J. DuSesoi** has been elected executive vice president, effective January 1, 1973. Each is also a director of IPS, located in New York.

Mr. **MacFarland** has been responsible for Natomas's activities in eastern Canada and the Caribbean, and had been a resident in the West Indies where he was managing director of a wholly owned refining-marketing company located on the Island of Antigua.

Mr. **DuSesoi** has been the IPS vice president and manager responsible for the firm's development and administration.

IPS concerns itself with various petroleum activities as principal and on a brokerage basis. Particular attention is devoted to products marketing, bunker marketing, terminaling, crude oil trading, and related tanker movements. The firm's main office is located in New York City. Other offices are maintained in London, Tokyo, and San Francisco.

## Maritime Fruit In Market For Additional Supertankers

Maritime Fruit Carriers, Ltd., which recently signed a letter of intent with Todd Shipyards Corporation for the construction of three to six 380,000-ton tankers in the United States, is also negotiating with a British company for the construction of six more supertankers.

**Jacob Sutton,** in charge of finance in the Maritime Group of Companies, said there were advanced negotiations with Harland and Wolff shipyards for six 333,000-ton tankers to be built in Belfast. He said the negotiations through a British subsidiary were on behalf of the General Maritime Corporation, the same subsidiary involved in the United States transaction.

## Aerospace-Ordnance-Marine Division Of Sperry Vickers Names Crucet And Hatfield

Raymond A. Crucet

John T. Hatfield

**Raymond A. Crucet** and **John T. Hatfield** have been named district sales managers for Sperry Vickers Aerospace-Ordnance-Marine Division.

Mr. **Crucet** will have responsibility for the division's Midwest district and will be headquartered at the company's Administrative and Engineering Center in Troy, Mich. Mr. **Hatfield** will have responsibility for the division's Southeast district and will have offices in Atlanta, Ga.

Mr. **Crucet,** a nine-year Sperry Vickers employee, has previously served as an application engineer in the Detroit sales office as an advertising and market research supervisor, and as a sales coordinator in the company's Washington, D.C., district sales office.

Mr. **Hatfield** joined Sperry Vickers in 1965, and served in several key research and service positions. In 1967, he was appointed service representative at Atlanta and in 1970, joined the division's sales staff as an application engineer, also at Atlanta.

## Pott Industries Subsidiary Forms Jointly-Owned Tug/Barge Firm Headquartered On Arabian Gulf

Pott Industries Inc. has announced that one of its wholly owned subsidiaries and another company had formed a jointly owned Panamanian company to provide tug, supply boat and barge service to the offshore petroleum industry in the Arabian Gulf area. The new company, Gulf International Marine Corp., will be headquartered on the Arabian Gulf at Dubai, United Arab Emirates.

Pott Industries said that the initial complement of marine equipment of Gulf International will consist of 10 vessels, all of which are expected to be in operation in the Arabian Gulf by the end of the second quarter of this year. Pott also said that an official of its subsidiary, Gulf Mississippi Marine Corporation, is expected to depart shortly for Dubai to assume managerial duties in the newly formed company.

Pott Industries said that the new company would permit it to participate further in providing service to the expanding offshore petroleum industry. At the present time, Pott affords such service through Gulf Mississippi Marine Corporation, which is headquartered at New Orleans and operates worldwide, but primarily in the Gulf of Mexico.

## British Shipbuilders Group Appoints J.G. Orr Director

**John G. Orr** has been named director of the Shipbuilders and Repairers National Association, London, England. He succeeds **Norman A. Sloan,** Q.C., who was director of S.R.N.A. from 1968, and previously director of the former Shipbuilding Employers' Federation.

Mr. **Sloan** takes up his new appointment as a director of the Swan Hunter Group in Newcastle-upon-Tyne.

## Applied Oceanography Division Acquires Rhode Island Boatyard

Holgate's Boat Shop of Snug Harbor, R.I., has been acquired by the Applied Oceanography Division of U.S. Yacht Charters, Inc. of Westwood, N.J. It is anticipated that the division will move its headquarters to Snug Harbor and will, in addition to its oceanographic business, continue the yard's operations as its Boat Yard Group.

Holgate's Boat Shop, which has distinguished itself for over a decade in providing the finest in outfitting, repair and maintenance services has, during the past year, embarked on an unusually successful new building program of small steel vessels. Most notable of these has been a 54-foot lobsterman.

Plans for the yard are to maintain the high standards of workmanship and to expand the line of newbuildings to include a variety of small workboats. The yard is now uniquely capable in the conversion, refit and maintenance of research vessels and specialized oceanographic platforms and buoys, as its association with the Applied Oceanographic Division complements its capabilities, with over 20 years of experience and know-how in this new field.

**Walter C. Beckmann** noted that in cooperation with the division's Leasing Group, the yard will be able to make new workboats and fishing vessels available with 100 percent financing on a lease basis to qualified operators. The terms and conditions of such leases, with option to purchase, can be arranged to accommodate individual requirements.

## IHS Publishes ASTM Standards On Microfiche Cards

Information Handling Services is preparing to publish American Society for Testing and Materials (ASTM) Standards on microfiche cards, it was announced by **Edward M. Lee,** president of IHS. ASTM Standards are among the most widely used and respected nongovernmental standardization documents in the United States and Europe.

IHS, the world's largest commercial micropublisher, has offered ASTMs for nearly a year on roll microfilm—the microfiche (microfilm card) version is being added to make these valuable documents available in all standard microfilm formats.

The ASTM documents have been organized and grouped into nine sections, each of which covers a specific subject area. Documents are indexed by number and subject for rapid access. Subscriptions include microfiche copies of all ASTM Standards in each part, a card storage file, printed indexes and bimonthly updates which include all new and revised documents. IHS is also beginning the development of other commercial standards packages in roll microfilm and microfiche, and a roll film package of distributor catalogs.

For more information and prices, contact Information and Handling Services, Denver Technological Center, P.O. Box 1154, Englewood, Colo. 80110.

## Andrew J. Corbett Jr. Named To Represent Palmetto Shipping Co.

**Andrew J. Corbett Jr.**

Palmetto Shipping Co., established as stevedores and steamship agents in Charleston, S.C., for 25 years, has expanded its operations with the opening of offices in North Carolina, and has also been appointed a New York representative.

**James P. Lamb,** president of the company, said that Palmetto is opening offices in the North Carolina ports of Wilmington and Morehead City, providing steamship agency and stevedoring services. These will be operated by a subsidiary, Palmetto Shipping Co. of North Carolina. In November, the parent firm opened an office in Charlotte, N.C., to broaden its coverage of the South Atlantic area.

Mr. **Lamb** also announced that **Andrew J. Corbett Jr.** has been named New York representative of Palmetto. For several years Mr. **Corbett** has been engaged in transportation and international trade activities in New York. He is a member of the New York Traffic Club, and The Propeller Club.

## Pauli & Griffin Introduces Extra Large Sandblasting Machine

Pauli & Griffin Company has introduced a sandblasting machine with an abrasive capacity of 16,000 pounds, which is ideal for high-production-sandblasting operations. Bags and pot tender are not necessary with the new HOW-160 machine — allowing the work area to remain cleaner and the crew to be more efficiently utilized.

The HOW-160, which can be operated by one man, is a large-capacity dual - outlet single - chamber machine with a high degree of mobility. Economical operation is achieved by blasting low-cost bulk abrasive through multiple nozzles, and the large piping and high-volume moisture separators also help achieve efficiency. As with most P&G sandblast machines, the HOW-160 Series features the patented P&G exclusive Feathertouch® remote-control system for maximum safety that satisfies all codes.

Further information can be obtained from Pauli & Griffin Company, 285 Lawrence Avenue, South San Francisco, Calif. 94080.

## Matzer & Associates Offers New Brochure

A new brochure has been published by Rudolph F. Matzer & Associates, Inc., naval architects, marine engineers and marine surveyors. The brochure illustrates the services available, and projects under way or completed by the Jacksonville, Fla., firm.

Copies may be obtained upon request on company letterhead by addressing the Matzer firm at 13891 Atlantic Boulevard, Jacksonville, Fla. 32225.

## Lloyd's Register Amendments To Rules

The Technical Committee of Lloyd's Register of Shipping has approved a number of additions and amendments to the Rules for the Construction and Classification of Steel Ships, subject to confirmation by the General Committee.

The Rules for Control Engineering Equipment have been revised in the light of the Society's considerable experience with such equipment on machinery installations of ships classed with Lloyd's Register. A more definitive statement of requirements over the whole range of control engineering equipment has been produced and the sections dealing with unattended machinery spaces, alarms and automatic controls for propulsion and other essential machinery and for controllable pitch propellers, have been expanded.

The Rules for Steel Trawlers, Stern Trawlers and Fishing Vessels have been completely revised. This is because of the increasing size of these ships, the trend toward dual purpose vessels and the appearance of new ship arrangements resulting from the development of stern trawling systems. The main change is the elimination of differences in the scantlings between fishing vessels and trawlers except for local increases in way of certain specialized equipment. Apart from single bottom floors with large spans, the proposals do not in general involve any significant increases in scantlings.

With the inclusion of fishing vessels in the Rules it has been necessary to introduce minimum scantlings for deck beams, superstructure and deckhouses and machinery spaces and, for convenience, these are included in the main body of the Rules for ships of less than 90 meters.

With respect to structural arrangements, one amendment applies to product carriers over 90 meters (approximately 295 feet) in length, having side tanks without struts (crossties). It has now been decided that the section modulus of bottom transverses in such cases will be specially considered and generally, a direct calculation will be required. This brings the Rules into line with current practice at the Society's Plan Approval Offices, which for some time have been requiring increased scantlings for such bottom transverses.

Amendments have been introduced to bring the formula for moduli of web frames in oil fuel bunkers adjacent to machinery spaces in line with that for cargo tanks. This is because the original formula for moduli of web frames envisaged 'tween deck heights of 2.5-3.0 meters, and shipbuilders now use spans of up to 11 meters.

For the first time in the Rules, account is taken of bulbous bows in the positioning of collision bulkheads, and a table is given for calculating the distance of the collision bulkhead from the stem, both for ships with bulbous bows and for those without. Height requirements for watertight bulkheads are given, together with requirements for watertight recesses and openings in bulkheads.

In view of the very high pressures sometimes used for air testing rudders as an equivalent to or an addition to the existing water test specified in the Rules, guidance is given on recommended test air pressures. Amendments have been made to the requirements for the fitting of pintles for bush clearances, and for the fitting of liners. This is because rudder defects have been noted, in some cases due to the increase in pintle scantlings.

Several minor amendments have been made to the Rules based on unified requirements agreed within the various working parties of the International Association of Classification Societies.

## Bethlehem Beaumont Yard Anticipates Increase In Offshore Rig Construction

A view of the southwest corner of Bethlehem Steel's Beaumont, Texas, shipyard. On the left is the Neches River launching ways. On the ways are the two pontoons for the Zephyr I, a semisubmersible oil drilling platform being constructed for the Storm Drilling Company. The large cylinder-shaped objects to the right, each 32 feet in diameter, will be joined into columns to link the submersible pontoons with the main deck. The smaller adjacent pipes will be used as struts to brace the columns. In the background is the Brakes Bayou on which the yard has additional launching ways. On the right is the yard's recently completed panel shop.

"Our volume of business in 1972," said **J.O. Crooke,** general manager of Bethlehem Steel's shipyard in Beaumont, Texas, "has proved that our pioneer work in design and production of mobile oil drilling rigs and our capital investment were sound long-range business decisions.

"Experts round-the-world forecast energy shortages for the latter part of this decade. The underwater oil search is covering more and more of the earth's seas, and in 10 years 80 percent of the world's oil is expected to come from beneath the ocean.

"Beaumont-built rigs are now drilling off both coasts of South America, in the Mediterranean, off Africa, near Indonesian waters, and in the Gulf of Mexico. Several of our semisubmersible rigs will soon drill in the North Sea.

"Especially important to our yard," Mr. **Crooke** said, "is the anticipated Louisiana and Texas offshore lease sales. Because of our experience, we expect to have a good share of the re-emerging market. Most of our present construction is in rigs scheduled for foreign service."

tance of various governmental agencies. The rewards of this program are twofold: it provides the yard with much-needed skilled help, and it gives jobs and training to people who might otherwise be unemployed or under employed.

Among the major projects the yard completed in 1972, were the repair of the collision-damaged dredge McFarland, and the general repairs to the refrigerated cargo vessel Atlantide, the tanker USNS Yukon, and the tanker S/S Chancellorsville. Major conversions were completed on the drill ship Cyclone, the cargo vessel Coastal Spartan, and the S/S Marine Chemical Transporter.

The important yard improvements during the past year were beginning work on the 550-foot-long pier, the removal of two steam-driven gantry cranes, the addition of three electric 45-ton-capacity gantry cranes, and the addition of a 500-ton-capacity derrick barge.

## New Chartering Firm Opens In New York

The formation of the company of

## Matzer & Associates Offers New Brochure

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The Technical Committee of Lloyd's Register of Shipping has approved a number of additions and amendments to the Rules for the Construction and Classification of Steel Ships, subject to confirmation by the General Committee.

The Rules for Control Engineering Equipment have been revised in the light of the Society's considerable experience with such equipment on machinery installations of ships classed with Lloyd's Register. A more definitive statement of requirements over the whole range of control engineering equipment has been produced and the sections dealing with unattended machinery spaces, alarms and automatic controls for propulsion and other essential machinery and for controllable pitch propellers, have been expanded.

The Rules for Steel Trawlers, Stern Trawlers and Fishing Vessels have been completely revised. This is because of the increasing size of these ships, the trend toward dual purpose vessels and the appearance of new ship arrangements resulting from the development of stern trawling systems. The main change is the elimination of differences in the scantlings between fishing vessels and trawlers except for local increases in way of certain specialized equipment. Apart from single bottom floors with large spans, the proposals do not in general involve any significant increases in scantlings.

With the inclusion of fishing vessels in the Rules it has been necessary to introduce minimum scantlings for deck beams, superstructure and deckhouses and machinery spaces and, for convenience, these are included in the main body of the Rules for ships of less than 90 meters.

With respect to structural arrangements, one amendment applies to product carriers over 90 meters (approximately 295 feet) in length, having side tanks without struts (crossties). It has now been decided that the section modulus of bottom transverses in such cases will be specially considered and generally, a direct calculation will be required. This brings the Rules into line with current practice at the Society's Plan Approval Offices, which for some time have been requiring increased scantlings for such bottom transverses.

Amendments have been introduced to bring the formula for moduli of web frames in oil fuel bunkers adjacent to machinery spaces in line with that for cargo tanks. This is because the original formula for moduli of web frames envisaged 'tween deck heights of 2.5-3.0 meters, and shipbuilders now use spans of up to 11 meters.

For the first time in the Rules, account is taken of bulbous bows in the positioning of collision bulkheads, and a table is given for calculating the distance of the collision bulkhead from the stem, both for ships with bulbous bows and for those without. Height requirements for watertight bulkheads are given, together with requirements for watertight recesses and openings in bulkheads.

In view of the very high pressures sometimes used for air testing rudders as an equivalent to or an addition to the existing water test specified in the Rules, guidance is given on recommended test air pressures. Amendments have been made to the requirements for the fitting of pintles for bush clearances, and for the fitting of liners. This is because rudder defects have been noted, in some cases due to the increase in pintle scantlings.

Several minor amendments have been made to the Rules based on unified requirements agreed within the various working parties of the International Association of Classification Societies.

## Bethlehem Beaumont Yard Anticipates Increase In Offshore Rig Construction

A view of the southwest corner of Bethlehem Steel's Beaumont, Texas, shipyard. On the left is the Neches River launching ways. On the ways are the two pontoons for the Zephyr I, a semisubmersible oil drilling platform being constructed for the Storm Drilling Company. The large cylinder-shaped objects to the right, each 32 feet in diameter, will be joined into columns to link the submersible pontoons with the main deck. The smaller adjacent pipes will be used as struts to brace the columns. In the background is the Brakes Bayou on which the yard has additional launching ways. On the right is the yard's recently completed panel shop.

"Our volume of business in 1972," said **J.O. Crooke,** general manager of Bethlehem Steel's shipyard in Beaumont, Texas, "has proved that our pioneer work in design and production of mobile oil drilling rigs and our capital investment were sound long-range business decisions.

"Experts round-the-world forecast energy shortages for the latter part of this decade. The underwater oil search is covering more and more of the earth's seas, and in 10 years 80 percent of the world's oil is expected to come from beneath the ocean.

"Beaumont-built rigs are now drilling off both coasts of South America, in the Mediterranean, off Africa, near Indonesian waters, and in the Gulf of Mexico. Several of our semisubmersible rigs will soon drill in the North Sea.

"Especially important to our yard," Mr. **Crooke** said, "is the anticipated Louisiana and Texas offshore lease sales. Because of our experience, we expect to have a good share of the re-emerging market. Most of our present construction is in rigs scheduled for foreign service."

The yard now has on order or under construction five semisubmersibles and one jackup rig. "The average semisubmersible," he said, "is about twice as costly and almost twice as large as the usual jackup rig. This is partly responsible for the yard's increased business volume."

Mr. **Crooke** said the Beaumont yard's employment averaged about 1,800 persons during 1972. In 1947, by comparison, it averaged about 950 people.

A problem which the yard will continue to face in 1973 is an area shortage of workers in the ship construction trades. A stepped-up program of employee training is progressing well with the assistance of various governmental agencies. The rewards of this program are twofold: it provides the yard with much-needed skilled help, and it gives jobs and training to people who might otherwise be unemployed or under employed.

Among the major projects the yard completed in 1972, were the repair of the collision-damaged dredge McFarland, and the general repairs to the refrigerated cargo vessel Atlantide, the tanker USNS Yukon, and the tanker S/S Chancellorsville. Major conversions were completed on the drill ship Cyclone, the cargo vessel Coastal Spartan, and the S/S Marine Chemical Transporter.

The important yard improvements during the past year were beginning work on the 550-foot-long pier, the removal of two steam-driven gantry cranes, the addition of three electric 45-ton-capacity gantry cranes, and the addition of a 500-ton-capacity derrick barge.

## New Chartering Firm Opens In New York

The formation of the company of Troyman Chartering, Inc., specializing in ship chartering and brokering, and the opening of their office in Suite 1904 at 19 Rector Street, New York, N.Y., has been announced by **Michael A. van Gelder,** the firm's president. Mr. **van Gelder** is aided by **James McDonagh.**

## Two Appointments At Nedlloyd, Inc.

Nedlloyd, Inc., New York, N.Y., has announced the election of **Frank Gennaro** as treasurer, and **John S. Leotta** as assistant vice president. Both officers assumed their duties effective January 1, 1973.

## Pacific Northwest Section Of Sname Honors H.C. Hanson

Harold C. Hanson

**Harold C. Hanson,** the Pacific Northwest's grand old man of naval architecture, was honored in Olympia, Wash., at a meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers.

Mr. **Hanson** presented slides of his recent boatbuilding experience in New Zealand. The slide presentation was supplemented with a spirited account of Mr. **Hanson's** "Life in Naval Architecture."

An interesting review of life in Puget Sound's past years was given by Mr. **Hanson,** utilizing a mural that adorns one wall of the dining room in the Hotel Olympian (which, incidentally, is owned by Mr. **Hanson**). His knowledge of ships and boats depicted in this mural added much to his audience's knowledge of "home" waters.

The lengthening of the ferry Malaspina was discussed in an oral presentation by **William Wild** of Willamette Iron and Steel Company. The addition of 58 feet to the 352-foot-long vessel increased passenger-carrying capacity from 450 to 750 and also increased significantly the automobile-carrying capacity of the ferry.

A scale model of the Malaspina, together with slides and a movie, were used by Mr. **Wild** in making his presentation.

## Midland Insurance Personnel Changes

Midland Insurance Company has announced the following resignations from the Midland board of directors: **Robert F. Matthews,** vice president; **Joseph G. Tapfar,** vice president, and **Cornelius J. Duffy,** secretary.

Concurrently, Mr. **Tapfar** was elected president of All Risk Management Services, Inc., and P.A.T. Claims, Inc., both wholly owned subsidiaries of Midland, and lolocated in New York. Mr. **Duffy** was elected vice president, personnel, for Bush Universal, Inc., New York, the parent company of Midland.

The board also announced the following executive appointments: **Karl E. Djerf** was elected secretary, **William J. Brustman** was appointed assistant secretary and counsel, and **George Dunn** was named assistant secretary.

## A.L. Mechling Barge Appoints Arch Sneed Heavy Lift Manager

A.L. Mechling Barge Lines, Inc., Joliet, Ill., has announced the appointment of **Arch Sneed** as manager of heavy lift operations. He will direct sales for Mechling's entire heavy duty barge fleet, which presently includes the deck barge Paul Bunyan, and covered barges Big Babe and Blue Ox, plus four seagoing hopper barges. The fleet has made numerous heavy lift moves of such items as fractionating towers, nuclear reactors, cranes, and other heavy construction equipment and assemblies.

Mr. **Sneed** will have headquarters in Mechling's Houston, Texas, office. A native of Memphis, Tenn., he joined the operations department of the Houston office of John I. Hay Company in 1949. Hay was acquired by Mechling in 1963, and Mr. **Sneed** became manager, southwest operations, with Mechling. In that capacity, he supervised operations in the southwest area, worked on design and construction of new equipment, and provided technical assistance to the sales department.

Mr. **Sneed** is a member of the Transportation Club of Houston, the Houston Port Safety and Advisory Council, and is vice president and a director of Limel, Inc.

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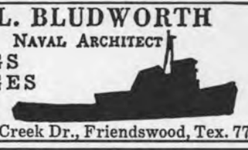
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## Grandi Motori Trieste Receives $34 Million To Supply Diesels For Argentinian Merchant Ships

Grandi Motori Trieste, the joint company created by Fiat and the state-controlled holding company, IRI, for the construction of large marine diesels and other power plants, has won a $34-million order from Argentina for 23 diesel engines.

The engines will be installed in Argentine merchant vessels which will be constructed under the Government plan to expand the state-owned merchant fleet.

Grandi Motori is a relatively new venture completed in 1970 and sited close to the Italcantieri shipbuilding yards of the IRI group in an area of high unemployment. It is one of three joint ventures in which Fiat cooperates with publicly controlled groups.

**$35.3-MILLION CONTRACT:** Shown above at the recent signing in Washington, D.C., of a contract valued at $35.3 million are left to right: **W.F. Mussenden,** vice president, Bath Iron Works; **Robert J. Blackwell,** Assistant Secretary of Commerce for Maritime Affairs, and **Joseph W. Dickover,** vice president, States Steamship Lines. (See MARITIME REPORTER/Engineering News issue of January 15, 1973.) The contract covers the construction of one of the largest roll-on/roll-off ships to be built in a U.S. shipyard. The 18,000-dwt vessel will be used by States Steamship, along with three others ordered from Bath last June, in its U.S. Pacific/Far East service.

## Trinity Industries Buys Equitable Equipment Co., New Orleans Shipbuilder

**W. Ray Wallace,** president of Trinity Industries, Inc., and **C.M. Keeney,** president of Equitable Equipment Company, Inc., have announced in a joint statement the acquisition by Trinity of the New Orleans, La., builder of ocean barges, LASH and SEABEE barges, tugboats, crewboats and other marine equipment.

Mr. **Keeney** stated: "The acquisition by Trinity would provide Equitable with additional support for continued growth and expansion." Such growth is anticipated to increase the total employment of Equitable's two shipbuilding facilities—New Orleans and Madisonville, La.

Mr. **Wallace** stated that Trinity intends to continue the present product lines of Equitable and to add new product lines where feasible. He also stated that Trinity will continue operations under the Equitable name and no personnel changes of the Equitable organization are contemplated.

Trinity Industries, Inc., a Dallas, Texas, based steel fabricator, specializing in pressure and non-pressure containers for liquefied gases and other liquids, building and highway structures and other metal products also announced on December 27, 1972, the acquisition of Mosher Steel Company of Houston, Texas. Trinity sales for the last fiscal year, which ended March 31, 1972, were $69 million. Mosher Steel sales for the last fiscal year, which ended December 31, 1971, were $48.5 million.

Equitable had record sales for the year ended June 30, 1972, of $15.8 million, and sales for the present fiscal year will exceed $25 million. Equitable has a backlog of approximately $50 million and is presently producing at a rate in excess of $2 million per month.

Equitable is a recognized pioneer in the marine and offshore oil industries. In 1947, the company built the world's first offshore drilling tender, the vessel that brought in Louisiana's first tideland oil discovery. Later, Equitable designed and built the first self-propelled drilling ships for worldwide offshore drilling operations.

When the LASH and SEABEE ship-barge carrying systems were developed, Equitable built the first barges for these concepts.

Equitable was founded in New Orleans in 1921 by Capt. **Neville Levy** and was acquired by **Cecil M. Keeney** in 1970. Equitable presently is the second largest shipbuilder in the state of Louisiana, with its two shipyards located on the Industrial Canal, New Orleans, and at Madisonville presently employing approximately 1,600 people.

Approximately 600 are employed at Equitable's Madisonville shipyard, which makes Equitable the largest employer in St. Tammany Parish.

Mr. **Wallace** stated that the acquisition of Equitable Equipment Company, Inc., involved the purchase of 100 percent of the stock. Other terms of the purchase were not disclosed.





**A TOKEN OF APPRECIATION:** Shown receiving a gift as a "Token of Appreciation for a Job Well Done" at The Rudder Club's year-end party, is Capt. **E. Mathes** of General Motors, and commodore of the maritime organization. The affair, which was a huge success, was held in the Grand Ballroom of the Hotel St. George, Brooklyn, N.Y., and attended by more than 1,000 guests. Shown from left to right: **Clifford M. Palmer,** vice president of Lee & Palmer, and commodore-elect; **Andrew W. D'Alessandro,** import sales manager of American Export Lines, and general chairman; Captain **Mathes,** and **Thomas J. Giardino,** traffic manager of Marchessini Steamship Lines, and dais chairman of the affair.

## USCG Commends Crew Of McAllister Tug For Rescue

Master of the tug Teresa McAllister, Capt. **Frank Hansen,** is presented a letter from Rear Adm. **B.F. Engel,** USCG, Commander, Third Coast Guard District, by Capt. **Stephen Veranko,** in charge of the USCG Marine Inspection Office, Philadelphia, Pa. Teresa McAllister crew members are, left to right: **N. Merckx,** mate; **J. Popa,** deckhand; **J. Callahan,** chief engineer, and **G. Espinosa,** cook. **S. Gibbs,** oiler, the sixth member of the crew, is not in the picture.

"Superior performance of duty and outstanding seamanship during rescue operations," is the commendation recently received by the crew of McAllister Brothers' tug Teresa McAllister from Rear Adm. **B.F. Engel,** U.S. Coast Guard, Commander, Third Coast Guard District.

Capt. **Frank Hansen,** master of the Teresa McAllister, and his crew, **N. Merckx,** mate, **J. Callahan,** chief engineer, **J. Popa,** deckhand, **S. Gibbs,** oiler, and **G. Espinosa,** cook, were involved in the search and rescue mission on Delaware Bay that saved the lives of a crew of four on a 35-foot yawl which had been run down at night by a freighter.

The Teresa McAllister was proceeding off Bulkhead Bar to Delaware City early one foggy, rainy morning a few months ago when she received a radio message from an outbound freighter to search the area for a sailboat the ship might have struck.

As Captain **Hansen** remembers it: "At 0500, we arrived alongside the 35-foot yawl Lotus II, under sail, but drifting. The owner, Dr. **J.H. Linehan Jr.,** and Dr. **Richard Matthews** were on board, but two men, USN Capt. (ret.) **J.H. Linehan Sr.** and **David Berry,** were injured and overboard in life jackets."

The tug rescued the two men in the water and maneuvered alongside the yacht to further assist in rescue operations.

"The injured were warped on board the tug by means of stiff ladders and made comfortable in bunks with blankets and hot coffee," Captain **Hansen** recalls.

After the yawl had been safely anchored off the North Jetty of the Chesapeake and Delaware Canal, Captain **Hansen** radioed ahead for an ambulance for the injured and brought the party into Delaware City at 5:45 in the morning.

"It is with pride and satisfaction that I wish to commend my crew," Captain **Hansen** states, "for the efficient and unselfish manner in which they handled this delicate situation (injured and confused men, nighttime, limited visibility). A job well done!"

To which the Coast Guard adds: "The efficient and timely manner in which you and your crew responded, and the outstanding seamanship displayed during adverse weather conditions, is highly commendable."

## Pott Industries Acquires Houma Shipyard Engaged In Offshore Construction

Pott Industries Inc. has announced that it has recently acquired all of the stock of Quality Equipment, Inc., in exchange for 30,000 shares of Pott common stock. Quality Equipment operates a shipyard near Houma, La., which is principally engaged in the new construction of tugs and supply boats for the offshore petroleum industry. Quality also provides maintenance personnel for the offshore petroleum industry in the Gulf of Mexico. Quality will continue under the management of **M.G. Harding,** president and chief executive officer.

For its fiscal year ending July 31, 1972, Quality had revenues of $2,867,000 and a net profit of $16,000. Pott Industries said that Quality's revenues and net income were expected to increase substantially.

Pott Industries has its headquarters at St. Louis, Mo. The company is engaged in inland shipbuilding and repair, inland barge operations, marine equipment leasing, and metal fabrication and distribution. Through its subsidiary, Gulf Mississippi Marine Corporation, headquartered at New Orleans, La., Pott also provides tug, supply boat and barge service to the offshore petroleum industry on a worldwide basis, but primarily in the Gulf of Mexico. Pott recently announced that it had formed a jointly owned company to provide such service in the Arabian Gulf area.

For the first nine months of 1972, Pott had sales and revenues of $80,296,000 and net income of $4,988,000, as compared to $60,797,000 and $3,796,000, respectively, for the first three quarters of 1971. This resulted in primary earnings of $2.65 per share for the first nine months of 1972, as compared to $2.04 for the same period in 1971.

## Royal Netherlands Steamship Announces Four Appointments

Royal Netherlands Steamship Co. (Antilles) N.V. has made the following appointments, according to an announcement by **Jan. F. Hooyberg**, managing director.

**Martin L. de Ruiter,** who had been serving as assistant general manager, was named general manager for the United States, Canada and Mexico. **Howard W. Buttner** was named director of sales. Two assistant general managers were named. **Albert J. Rozner** for the agency division, and **Marius A.J. Hoogewerff** for ship operators.


## Ameron Corrosion Control Establishes Sales Regions

The Ameron Corrosion Control Division, manufacturers of corrosion-resistant products, has established five sales regions within the United States to better serve the diversified industries it supplies. Each region has sales offices which act as central points of information in the area they cover.

The Northeast Region, whose boundaries extend to the western borders of Ohio and Kentucky, has its regional sales office in Cherry Hill, N.J.

The Southeast Region has its sales office in Jacksonville, Fla., and covers the south below Kentucky and Virginia and west to Mississippi and Arkansas.

The Midwest Region, which has its sales office in Elk Grove, Ill., covers the area west from Michigan and Indiana to North Dakota and Kansas.

The Southern Region has sales offices both in New Orleans, La., and Houston, Texas, and covers the area south of Kansas and Missouri, all of Texas and west to mid-New Mexico.

The Western Region has its sales office in Brea, Calif., and covers all 12 remaining western states, including Alaska and Hawaii, as well as parts of South Dakota, Nebraska and New Mexico.

In addition to regions and sales offices, Ameron has strategically located warehousing and stocking points throughout the country to expedite shipments, as well as technical and customer service centers to aid its customers.

Ameron's Corrosion Control Division is an internationally known company founded over 30 years ago. In the corrosion control field it has an outstanding reputation for quality products as well as dependable service. With home offices in Brea, Calif., and sales and manufacturing facilities throughout the world, the division manufactures a full line of protective coatings under the trade names of Amercoat® and Dimetcote® protective coatings. It also manufactures Amer-Plate® and T-Lock® plastic liners, Nob-Lock® waterproofing membranes, Nu-Klad® surfacing cements, Nukem® cements, grout and membranes and Bondstrand® Fiberglass Reinforced Pipe.

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Must be experienced in shipboard fuel, steam generations, propulsion, auxiliary machinery and electrical systems to assist in the preparation of Engineering Operational Sequence Systems (EOSS) and the Operational Stations Book (OSB) for new general purpose assault ships.

**TRAINING ANALYSTS**
Experience in shipboard manuals and automated propulsion systems to assist in development and instructional duties of the LHA and DD963 programs.

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**ELECTRICAL SYSTEMS DESIGNERS**
Design lighting systems, ships control, instrument and control gauge boards.

**DAMAGE CONTROL DESIGNERS**
Design systems in fire, smoke, ballast/de-ballast, and integration of damage control systems.

**PRODUCTION PLANNERS**
Shipbuilding experience required in machinery, pipefitting, etc. Completion of apprentice program desired. Successful candidates will plan all jobs necessary to construct that portion of the ship to which assigned, including optimum sequencing and craft coordination.

If you qualify for one of the above openings, we invite you to send your resume to:

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Must be thoroughly experienced in the use of ABS Rules . . . Write:

**The American Ship Building Company**
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**Lorain, Ohio 44052**
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**NUMERICAL CONTROL PROGRAMMERS** — with and without shipbuilding experience to work on shipbuilding and industrial computer aided programming.

**SHIPYARD LOFTSMEN**—at least five years experience in a shipyard loft to work on computer aided lofting and validation.

Above vacancies offer permanent interesting employment with excellent salary and other benefits. Office is located in Virginia near Washington and provides pleasant surroundings and excellent working conditions.

Applicants should send a resume and salary history to the attention of the Director, Ship Design Division, COM/CODE Corporation, 2550 Huntington Avenue, Alexandria, Virginia 22303.

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**WANTED**
**SHIP HULL ENGINEER**

For varied design and engineering projects relating to Great Lakes bulk freighters. Send complete resume and salary requirements to:

**Trevor White**
Director of Engineering
**FRASER SHIPYARDS, INC.**
**P.O. Box 568**
**Superior, Wisconsin 54880**

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## Pott Industries Acquires Houma Shipyard Engaged In Offshore Construction

Pott Industries Inc. has announced that it has recently acquired all of the stock of Quality Equipment, Inc., in exchange for 30,000 shares of Pott common stock. Quality Equipment operates a shipyard near Houma, La., which is principally engaged in the new construction of tugs and supply boats for the offshore petroleum industry. Quality also provides maintenance personnel for the offshore petroleum industry in the Gulf of Mexico. Quality will continue under the management of **M.G. Harding,** president and chief executive officer.

For its fiscal year ending July 31, 1972, Quality had revenues of $2,867,000 and a net profit of $16,000. Pott Industries said that Quality's revenues and net income were expected to increase substantially.

Pott Industries has its headquarters at St. Louis, Mo. The company is engaged in inland shipbuilding and repair, inland barge operations, marine equipment leasing, and metal fabrication and distribution. Through its subsidiary, Gulf Mississippi Marine Corporation, headquartered at New Orleans, La., Pott also provides tug, supply boat and barge service to the offshore petroleum industry on a worldwide basis, but primarily in the Gulf of Mexico. Pott recently announced that it had formed a jointly owned company to provide such service in the Arabian Gulf area.

For the first nine months of 1972, Pott had sales and revenues of $80,296,000 and net income of $4,988,000, as compared to $60,797,000 and $3,796,000, respectively, for the first three quarters of 1971. This resulted in primary earnings of $2.65 per share for the first nine months of 1972, as compared to $2.04 for the same period in 1971.

## Royal Netherlands Steamship Announces Four Appointments

Royal Netherlands Steamship Co. (Antilles) N.V. has made the following appointments, according to an announcement by **Jan. F. Hooyberg**, managing director.

**Martin L. de Ruiter,** who had been serving as assistant general manager, was named general manager for the United States, Canada and Mexico. **Howard W. Buttner** was named director of sales. Two assistant general managers were named. **Albert J. Rozner** for the agency division, and **Marius A.J. Hoogewerff** for ship operators.


## Ameron Corrosion Control Establishes Sales Regions

The Ameron Corrosion Control Division, manufacturers of corrosion-resistant products, has established five sales regions within the United States to better serve the diversified industries it supplies. Each region has sales offices which act as central points of information in the area they cover.

The Northeast Region, whose boundaries extend to the western borders of Ohio and Kentucky, has its regional sales office in Cherry Hill, N.J.

The Southeast Region has its sales office in Jacksonville, Fla., and covers the south below Kentucky and Virginia and west to Mississippi and Arkansas.

The Midwest Region, which has its sales office in Elk Grove, Ill., covers the area west from Michigan and Indiana to North Dakota and Kansas.

The Southern Region has sales offices both in New Orleans, La., and Houston, Texas, and covers the area south of Kansas and Missouri, all of Texas and west to mid-New Mexico.

The Western Region has its sales office in Brea, Calif., and covers all 12 remaining western states, including Alaska and Hawaii, as well as parts of South Dakota, Nebraska and New Mexico.

In addition to regions and sales offices, Ameron has strategically located warehousing and stocking points throughout the country to expedite shipments, as well as technical and customer service centers to aid its customers.

Ameron's Corrosion Control Division is an internationally known company founded over 30 years ago. In the corrosion control field it has an outstanding reputation for quality products as well as dependable service. With home offices in Brea, Calif., and sales and manufacturing facilities throughout the world, the division manufactures a full line of protective coatings under the trade names of Amercoat® and Dimetcote® protective coatings. It also manufactures Amer-Plate® and T-Lock® plastic liners, Nob-Lock® waterproofing membranes, Nu-Klad® surfacing cements, Nukem® cements, grout and membranes and Bondstrand® Fiberglass Reinforced Pipe.

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**LOGISTICS SYSTEMS ANALYSTS—MAINTENANCE**
Maintenance engineering experience in one of the following areas. Naval auxiliary machinery, propulsion and assault systems, Marine electronics, communications, and electrical equipment systems. Maintenance in repair of damage control outfitting and furnishing, ordnance and facilities. Navy 3-M (maintenance and material management) systems experience desired.

**LOGISTICS ANALYSTS**
Must be experienced in shipboard fuel, steam generations, propulsion, auxiliary machinery and electrical systems to assist in the preparation of Engineering Operational Sequence Systems (EOSS) and the Operational Stations Book (OSB) for new general purpose assault ships.

**TRAINING ANALYSTS**
Experience in shipboard manuals and automated propulsion systems to assist in development and instructional duties of the LHA and DD963 programs.

**NAVAL ARCHITECTS—MARINE ENGINEERS**
To design hull, foundation and structures.

**MARINE DRAFTSMEN**
For piping and machinery systems, communication systems, propulsion and auxiliary machinery, HVAC.

**WEAPONS SYSTEMS DESIGNERS**
Including launching systems, torpedo handling systems, gun systems, cathodic protection systems and degaussing systems.

**ELECTRICAL SYSTEMS DESIGNERS**
Design lighting systems, ships control, instrument and control gauge boards.

**DAMAGE CONTROL DESIGNERS**
Design systems in fire, smoke, ballast/de-ballast, and integration of damage control systems.

**PRODUCTION PLANNERS**
Shipbuilding experience required in machinery, pipefitting, etc. Completion of apprentice program desired. Successful candidates will plan all jobs necessary to construct that portion of the ship to which assigned, including optimum sequencing and craft coordination.

If you qualify for one of the above openings, we invite you to send your resume to:

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SPERRY MARK 14, Model 1 Gyro Compasses, used, good, complete with Master Compass, with Binnacle, Amplifier panel, control panel, carbon pile voltage regulator, motor generator set, alarm panel, and repeaters with mounts.

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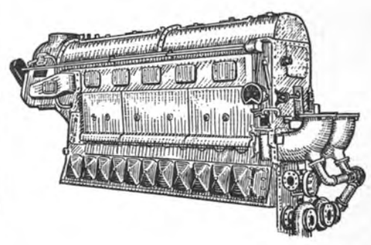

MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-⅛—1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8½" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ration—with Hydraulic Coupling.

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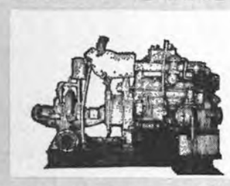
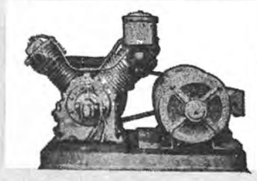


**2—BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver. centrifugal Pumps, Bronze, horizontally split case, 100 GPM, 280' head, 6" suction and 5" discharge.**



2—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5¾x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

3—INGERSOLL-RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

1—INGERSOLL-RAND, Size 4x1½x3½, 10 CFM, 600 PSI, with Diehl Motor, 7½ HP, 120 Volts DC.

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**Used, Good Condition, Trimmed Frames.**

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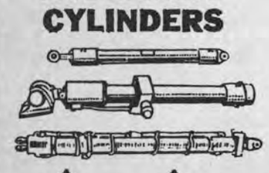
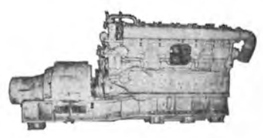


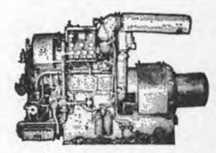
| Bore | Overall Stroke | Rod Diameter | retracted length | Action |
|---|---|---|---|---|
| 10" | 12" | 3.75" | 45½" | double |
| 10" | 26" | 3.75" | 58½" | single |
| 2" | 8" | 1½" | 20" | double |
| 2.5" | 15" | 1.12" | 25½" | double |
| 3" | 8" | 1.37" | 15½" | double |
| 6" | 8' | 4" | 144" | double |

## MARINE DIESEL GENERATORS



4—COOPER-BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

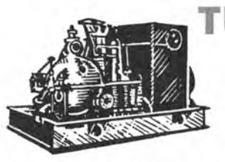
6—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.



4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.

3—GENERAL MOTORS, Model 3-268 A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

## TURBINE GENERATORS



4—GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW, 440/3/60.

1—GENERAL ELECTRIC, with G.E. Generator, 350 KW, 440/3/60.

3—GENERAL ELECTRIC, Type ATB-2, 1250 KW, 440/3/60.

4—GENERAL ELECTRIC, Type FN3-FN20, 500 KW, 450/3/60.

3—WORTHINGTON, 225 PSI, 397°F, 6510 RPM, with Westinghouse Generator, 150 KW, 120 DC, 1250 Amperes.

6—WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 DC.

4—ALLIS-CHALMERS, 440 PSI, 740°, with Allis-Chalmers Generators, 300 KW, 240/240 DC.

## SUBMARINE DIESEL GENERATOR ENGINES

(Without Generators)

2—GENERAL MOTORS, Model 16-278A, 1600 HP, 750 RPM.

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2—ALMON A. JOHNSON Stern Anchor Winches as removed from LST vessels, line pull rating 100,000 pounds at 10 FPM in low gear, complete with Contactor Panels, Resistors, and Master Switches.

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**Tonnage:** Gross 3805 — Net 2123 — DWT 6090 — Displ 8370

**Main Propulsion:** Single Screw, 1700 HP Diesel

**Auxiliary Generators:** 250 KW, 230V D.C. Diesel

Complete With All Accessories. Saw Very Little Service Before Government Layup. Extremely Good Condition.

Ideal as Self Propelled Drill Ship, Crane Ship, or as Stationary Supply or Quarter Ship.

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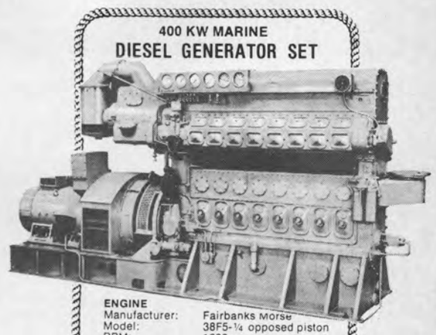
**400 KW MARINE**
**DIESEL GENERATOR SET**



| | |
|---|---|
| **ENGINE** | |
| Manufacturer: | Fairbanks Morse |
| Model: | 38F5-1/4 opposed piston |
| RPM: | 1200 |
| Cylinders: | 8 |
| Rotation: | Left hand (CCW from drive end) |
| **GENERATOR** | |
| Manufacturer: | Westinghouse |
| Capacity: | (500 KVA) 400 KW |
| Voltage: | 450 (3-phase, 60-cycle) |
| Amperes: | 641 |
| RPM: | 1200 |
| Exciter: | Direct mounted |
| Total Weight: | 21,000 lbs. |
| Condition: | **UNUSED** |

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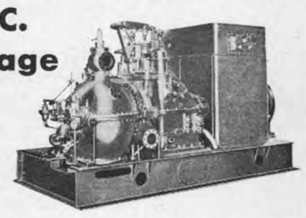
**Voltage**



4-1250 KW, General Electric. Turbines: Type FSN, 525 PSI, 7938 RPM. Generators: 1250 KW, 450/3/60, 3600 RPM, Type ABT2.

8-750 KW, General Electric. Turbines: Type FN3-FN24, 525 PSI, 10,033 RPM. Generators: 750 KW, 450/3/60, 1200 RPM, Type ATI.

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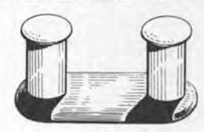

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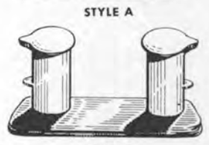

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National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
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**PUMPS**
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
Goulds Pumps, Seneca Falls, N.Y. 13148
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204
Worthington Corporation, Harrison, New Jersey 07029

**RATCHETS**
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

**REFRIGERATION—Refrigerant Valves**
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

**ROPE—Manila—Nylon—Hawsers—Wire**
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Du Pont Co., Room 3141, Wilmington, Delaware 19898
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Wall Rope Works, Inc., Beverly, N. J. 08010

**RUDDER ANGLE INDICATORS**
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

**SANDBLASTING EQUIPMENT**
Pauli & Griffin Co., 826 Folsom St., San Francisco, Calif. 94107

**SCAFFOLD BOARDS**
Howmet Corporaton, Southern Extrusions Division, P.O. Box 40, Magnolia, Arkansas 71753

**SEWAGE DISPOSAL**
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050

**SHAFT REVOLUTION INDICATOR EQUIP.**
Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

**SHIPBOARD VENTILATION**
Coppus Engineering Corp., P.O. Box 457, Worcester, Mass. 01613

**SHIPBREAKING—Salvage**
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corp., P.O. Box 398, Point Station, Richmond, Cal. 94807
National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

**SHIP BROKERS**
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

**SHIPBUILDING STEEL**
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
Huntington Alloy Products, Div. International Nickel Co., Inc., Huntington, W. Va. 25720
International Nickel Co., 1 New York Plaza, New York, N.Y. 10004

**SHIPBUILDING—Repairs, Maintenance, Drydocking**
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C.
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bertram Marine, Division of Whittaker, 3663 N.W. 21 Street, Miami, Fla. 33142.
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Brodogradiliste "SPLIT", P.O. Box 107, Split, Yugoslavia
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
Drava Corporation, Neville Island, Pittsburgh 25, Pa.
Empressa Nacional Bazan, 65 Castellana, Madrid 1, Spain
Equipment Systems, Inc., A Microdot Co., P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hongkong & Whampoa Dock Co. Ltd., Kowloon Docks, Hong Kong
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Kockums Malmo, Fack, Malmo, Sweden
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Marine Engineering & Construction Co., Inc., 1664 Tchoupitoulas St., New Orleans, La. 70130
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Newport Ship Yard, Inc., 379 Thames St., Newport, R.I. 02840.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Odense Steel Shipyard Ltd., P.O. Box 176, DK-5100 Odense, Denmark
Pococo, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Star Shipyards, Ltd., 61 Duncan St., New Westminster, Vancouver, B.C., Canada
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Swedish Shipbuilding Association, Fack S-402 70, Gothenburg 8, Sweden
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316

**SHIP MODEL BASIN**
Hydronautics, Incorporated, Laurel, Maryland 20810

**SHIP ROUTING**
Weather Routing, Inc., 90 Broad Street, New York, N.Y. 10004

**SHIP STABILIZERS**
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

**STEAM GENERATING EQUIPMENT**
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095

**STEERING SYSTEMS**
Wm. E. Hough Co., 1125 P N.W. 45th St., Seattle, Wash. 98107

**SWITCHBOARDS**
Hose McCann Telephone Co., Inc., 524 West 23 St., N.Y., N.Y. 10011

**TOWING—Salvage, Lighterage, Barge Chartering**
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Bouchard Transportation Co., Inc., 25 West Barclay St., Hicksville, L.I., N.Y. 11801
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, West End Ave., Oyster Bay, N.Y. 11771
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
Interstate Oil Transport Co., 214 Transportation Center, Six Penn Center Plaza, Philadelphia, Pa. 19103
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
L. Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

**VALVES AND FITTINGS—Hydraulic—Safety Flanges**
Dover Corp. / Norris Division, P.O. Box 1739, Tulsa, Okla. 74101.
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y. 11231
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
Mesco Tectonics, Inc., 5 Central Ave., Clifton, N.J. 07011

**WELDING EQUIPMENT**
Tweco Products, Inc., P.O. Box 666, Wichita, Kan. 67201

**WIRE ROPE**
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Bethlehem Steel Corp., Bethlehem, Pa. 18016
Macwhyte Wire Rope Co., 2959 14th Ave., Kenosha, Wis. 53140
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

**ZINC**
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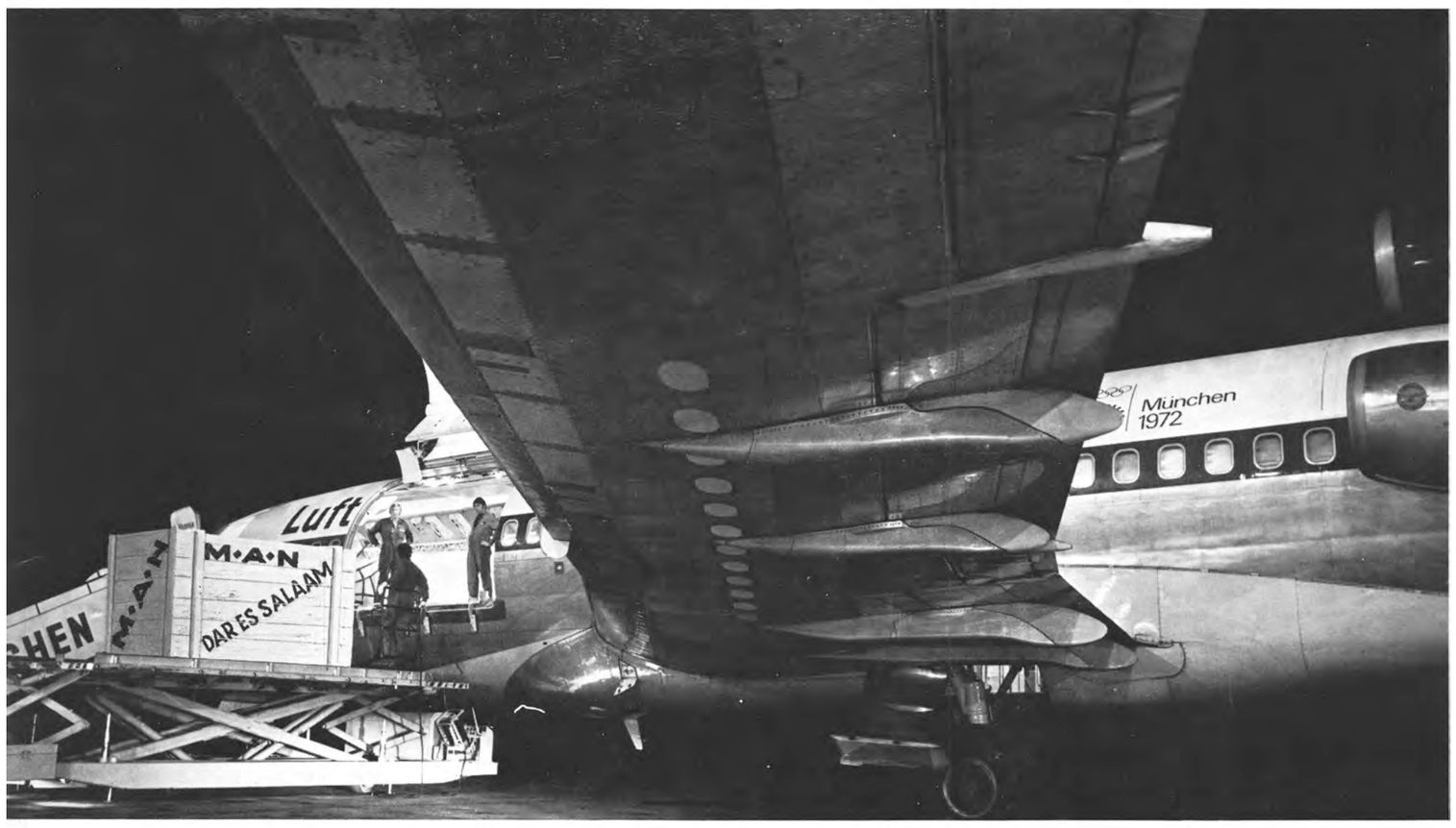
# A short weekend in Dar-es-Salaam




On Friday, 5.11.71, at about 17.00 hours, a call from London reached our service department in Augsburg: 'Ship one K6Z 70/120A piston head to Dar-es-Salaam. MS 'Alpha' due to reach port tomorrow.' One hour later the spare part was on its way to Munich Airport. At the same time, an M.A.N. erector from Durban got ready to depart. After a short harbour time, MS 'Alpha' was again ready to sail.
An example, but by no means an isolated case because we have:

1) more staff on servicing than on sales,
2) well-stocked spare parts stores and are extremely flexible,
3) a closely-knit network of service points, licensees and agencies spread over the whole world,
4) M.A.N. marine service teams on call day and night.

These facts speak in favour of M.A.N. when planning a marine propulsion system.

493e

M·A·N
AUGSBURG (W. GERMANY)

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As pioneers in developing the first effective epoxies and vinyls and the first inorganic zincs, Ameron gives you the best corrosion protection available. Ameron has been doing it for over 20 years... giving shipowners and shipbuilders the kind of reliable, economical corrosion protection performance they can depend on. Thousands of workboats, barges, tanks, offshore vessels and some of the largest ships afloat... protected by Ameron Amercoat and Dimetcote coatings ... have withstood a wide variety of corrosive elements and atmospheres for decades at a time. It's the kind of proven performance that makes Ameron's products stand above all other marine paints and coatings lines.

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## 4 Total Product Support

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*Specify Ameron Amercoat and Dimetcote Protective Coatings. Contact your regional sales office for more information today.*

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